



Via FedEx

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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 2019 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 (Fourth Quarter 2019). 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, which includes approximately 2,400 acres owned by Boeing, approximately 450 acres owned by the United States and administered by the National Aeronautics and Space Administration (NASA), and approximately 290 acres of Boeing's land for which the Department of Energy (DOE) has assumed responsibility for soil remediation.

Hard copies of this DMR are available to the public at the California State University Northridge Oviatt Library, the Simi Valley Public Library, and the Platt Branch of the Los Angeles Public Library. An electronic version of this DMR is located at: <a href="http://www.boeing.com/principles/environment/santa-susana/monitoring-reports.page">http://www.boeing.com/principles/environment/santa-susana/monitoring-reports.page</a>

#### **FOURTH QUARTER 2019 DMR CONTENTS**

This DMR includes the following sections and appendices:

- Discharge and Sample Collection Summary: This section describes the number of rain events, the number of samples collected, sample dates, and sample locations during the Fourth Quarter 2019. Table I summarizes the Fourth Quarter 2019 sampling record by outfall or location and sample type collected according to the requirements of the NPDES Permit.
- Fourth Quarter 2019 Summary of Exceedances and/or Non-Compliance: This section summarizes the Fourth Quarter 2019 sample results that exceeded NPDES Permit Limits, Benchmarks, and Receiving Water Limits, and the potential causes thereof.
- Fourth Quarter 2019 Santa Susana Site Stormwater Pollution Prevention Plan (SWPPP)/BMP Activities: This section presents the Santa Susana Site SWPPP and BMP-related activities implemented in the Fourth Quarter 2019 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. Table II summarizes typical BMP-related activities that occur at outfalls every quarter. Table III summarizes specific BMP activities completed during the Fourth Quarter 2019 by outfall location.
- Reasonable Potential Analysis: This section discusses the results of the analysis.



- Figure 1 shows the stormwater collection and 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 sampling location (RSW 002, Frontier Park) and upstream monitoring location.
- Appendix A summarizes the rainfall measured at the Santa Susana Site during the Fourth Quarter 2019.
- Appendix B tabulates waste shipment details during the Fourth Quarter 2019.
- Appendix C presents chemical analytical results from the Fourth Quarter 2019 stormwater and/or receiving water sample discharge monitoring in tabular form by outfall locations, constituents evaluated (analytes), sample dates, and data validation qualifiers.
- Appendix D summarizes the NPDES Permit Limit, Benchmark, and Receiving Water Limit exceedances.
- Appendix E contains copies of the laboratory analytical reports, chain of custody forms, and data validation reports (if validation was performed).
- Appendix F tabulates the Reasonable Potential Analysis.
- Appendix G presents the observations of the receiving water monitoring program required by the NPDES Permit and includes the Arroyo Simi, Bell Creek, and Dayton Canyon surveys.



#### **DISCHARGE AND SAMPLE COLLECTION SUMMARY**

The Santa Susana Site had 4 qualifying rain events during the Fourth Quarter 2019 that measured 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 four rain events. Two of the qualifying rain events produced stormwater discharges. Stormwater samples were collected at Outfalls 001, 002, 008, and 009 in one or more rain events this quarter. There were no changes in the discharge as described in the NPDES Permit during the reporting period.

In addition to outfall sampling, receiving water samples were collected. An offsite receiving water sample was collected at the Arroyo Simi location (RSW-002, Frontier Park; see Figure 2) and an onsite receiving water sample was collected at Outfall 002 (RSW-001).

Table I summarizes the Fourth Quarter 2019 sampling record by location, sample frequency, and sample type collected per NPDES Permit requirements; the results are included in Appendix C.

TABLE I: Sampling Record during the Fourth Quarter 2019

Date	Outfall/Location	Sample Frequency	Sample Type
12/04 – 12/05/2019	Outfall 002	Quarterly, Routine; Quarterly (RSW-001)	Grab, Composite
12/23 – 12/24/2019	Outfall 002	Routine	Grab, Composite
12/23 – 12/24/2019	Outfall 009	Semiannual, Routine	Grab, Composite
12/23/2019	Arroyo Simi Receiving Water (RSW-002, Frontier Park)	Quarterly Surface Water	Grab
12/26 – 12/27/2019	Outfall 001	Quarterly, Routine	Grab, Composite
12/26 – 12/27/2019	Outfall 008	Routine	Grab, Composite

#### Notes:

Routine = 1 per discharge event.

All analyses were conducted at analytical laboratories certified by the State Water Resources Control Board (SWRCB) for such analyses (i.e., all have current certification from the Environmental Laboratory Accreditation Program [ELAP] established by the California Environmental Laboratory Improvement Act) or have been approved by the SWRCB Executive Officer in accordance with current U.S. Environmental Protection Agency (EPA) guideline procedures or as specified in the NPDES Permit. Laboratory analytical reports, including validation reports (if validation was performed) 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 2019 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.



#### FOURTH QUARTER 2019 SUMMARY OF EXCEEDANCES AND/OR NON-COMPLIANCE

As summarized in Appendix D, the Fourth Quarter 2019 exceedances of Daily Maximum Benchmarks, Daily Maximum Permit Limits, or Receiving Water Limits included:

- Lead, iron, gross alpha<sup>1</sup> and Dioxins (TCDD) Toxic Equivalent (TEQ) at Outfall 001; and
- Iron and TCDD TEQ at Outfall 002.

A detailed discussion of the exceedances is provided below.

Boeing is committed to fulfilling the requirements of the NPDES Permit. Boeing and NASA each took actions during the Fourth Quarter 2019 to manage stormwater discharges (e.g., erosion and sediment transport, road run-off, etc.) on each party's property and/or area of responsibility. Boeing's actions are described in Tables II and III and in the sections below related to SWPPP/BMP Activities, and Outfall 001/002 BMP Compliance Report Related Activities. Repair and other erosion control measures associated with BMPs undertaken by NASA and DOE are also described below. The Expert Panel is currently evaluating the data contained in this DMR and will include the results of their analysis on the likely causes of the exceedances described below in their 2020 Annual Report.

#### Outfall 001

#### Metals: Iron and Lead

On December 27, 2019, a stormwater sample was collected from Outfall 001. Iron was detected at 14 milligrams per liter (mg/L), above the Daily Maximum Benchmark of 0.3 mg/L, and lead was detected at 6.6 micrograms per liter ( $\mu$ g/L), above the Daily Maximum Benchmark of 5.2  $\mu$ g/L.

The industrial areas upstream of Outfall 001 are monitored by Outfall 011. Given that Outfall 011 did not produce flow, and the property in the watershed between Outfall 011 and Outfall 001 includes little to no industrial materials, equipment, activities or developed areas, and the primary developed surfaces are dirt roads, Boeing believes the higher metals concentrations at Outfall 001 during the Fourth Quarter 2019 are attributable to the 2018 Woolsey Wildfire. This conclusion is consistent with the findings in prior site studies conducted by the Expert Panel which confirm that elevated metals are naturally occurring at the site unrelated to former industrial operations and were mobilized by the wildfire.

As discussed in the 2019 Expert Panel Annual Report, Section 2.2.1.1, "spatial and temporal patterns indicate the elevated iron [and lead] concentrations in stormwater this year [were] likely due to post-fire conditions." Recently published research supports that wildfires may produce elevated iron and lead concentrations in stormwater runoff. The Expert Panel compared particulate strengths in stormwater samples and solids concentration in potential source material samples and determined that natural background soils were likely the source of iron and atmospheric deposition, road road-off, and/or natural background soils were the likely sources of lead. The Expert Panel also reviewed metal ratio fingerprinting that further supports natural background soils as the likely source of both iron and lead in the samples having exceedances. Geosyntec and the Expert Panel are in the process of updating the analysis from the "SSFL Metals Background Report: Sources of Metals in SSFL Watersheds" (Pitt, 2009), and analyzing the latest NPDES outfall exceedances to determine their causes and formulating additional actions to reduce sources; the results of the Expert Panel's analysis will be included in their 2020 Annual Report.

<sup>&</sup>lt;sup>1</sup> Gross alpha results are in a separate section below.



The actions completed during Fourth Quarter 2019 to control sources in the Outfall 001 watershed are described in the Fourth Quarter 2019 Santa Susana Site SWPPP/BMP Activities section below. Boeing and the Expert Panel will continue to monitor and evaluate the effectiveness of BMPs within the Outfall 001 watershed.

#### Dioxins (TCDD) Toxic Equivalent (TEQ)

On December 27, 2019, TCDD TEQ was calculated in a stormwater sample collected from Outfall 001 at 5.1E-08  $\mu$ g/L, which is above the Daily Maximum Benchmark of 2.8E-08  $\mu$ g/L.

The Department of Toxic Substances Control's (DTSC) Chemical Soil Background Study found TCDD congeners in background soils and concluded that they could have originated from wildfire combustion processes and atmospheric deposition (DTSC, 2012). In addition, the Expert Panel has reported that elevated dioxin concentrations may be found in road run-off and soils adjacent to telephone/utility poles (treated wood), both of which can be mobilized by surface water flow following a wildfire event.

As discussed in the 2019 Expert Panel Annual Report, a comparison of particulate strengths in stormwater samples and solids concentration in potential source material samples indicated that soil near treated wood, atmospheric deposition, and/or road run-off were the likely sources of TCDD TEQ in samples exhibiting exceedances. The Expert Panel also reviewed congener fingerprinting that further supports that soil near treated wood as the likely source of TCDD TEQ in the exceeding samples.

The Expert Panel is evaluating the data contained in this DMR, as well as potential dioxin sources, and will include the results of their analysis on the likely cause of this exceedance in their 2020 Annual Report.

#### Outfall 002

#### Metals: Iron

On December 5, 2019, a stormwater sample was collected from Outfall 002. Iron was detected 1.5 mg/L, above the Daily Maximum Benchmark of 0.3 mg/L.

On December 24, 2019, a stormwater sample was collected from Outfall 002. Iron was detected 8.7 mg/L, above the Daily Maximum Benchmark of 0.3 mg/L.

The industrial areas upstream of Outfall 002 are monitored at Outfall 018. Given that Outfall 018 did not produce flow, and the property in the watershed between Outfall 018 and Outfall 002 lacks industrial materials, equipment, activities or developed areas, and the primary developed surfaces are dirt roads, Boeing believes that the higher iron concentrations at Outfall 002 during the Fourth Quarter 2019 are attributable to the 2018 Woolsey Wildfire. This conclusion is consistent with the findings in prior site studies conducted by the Expert Panel which confirm that elevated metals are naturally occurring at the site unrelated to former industrial operations and were mobilized by the wildfire.

As discussed in the 2019 Expert Panel Annual Report, Section 2.2.1.2, "spatial and temporal patterns indicate the elevated iron concentrations in stormwater this year was likely due to post-fire conditions." Recently published research supports that wildfires may produce elevated iron concentrations in stormwater runoff. The Expert Panel compared particulate strengths in stormwater samples and solids concentration in potential source material samples and determined that natural background soils were likely the source of iron. The Expert Panel also reviewed metal ratio fingerprinting that further supports natural background soils as the likely source of iron in samples having exceedances. Geosyntec and the Expert Panel are in the process of updating the analysis from the "SSFL Metals Background Report: Sources of Metals in SSFL Watersheds" (Pitt, 2009), and analyzing the latest NPDES



outfall exceedances to determine their causes and formulating additional actions to reduce sources; the results of the Expert Panel's analysis will be included in their 2020 Annual Report.

The actions completed during Fourth Quarter 2019 to control sources in Outfall 002 are described in the Fourth Quarter 2019 Santa Susana Site SWPPP/BMP Activities section below. Boeing and the Expert Panel will continue to monitor and evaluate the effectiveness of BMPs within the Outfall 002 watershed.

#### Dioxins (TCDD) Toxic Equivalent (TEQ)

On December 24, 2019, TCDD TEQ was calculated in a stormwater sample collected from Outfall 002 at 5.1E-08  $\mu$ g/L, above the Daily Maximum Benchmark of 2.8E-08  $\mu$ g/L.

As discussed above, the DTSC's Chemical Soil Background Study found TCDD congeners in background soils and concluded that they could have originated from wildfire combustion processes and atmospheric deposition (DTSC, 2012). In addition, the Expert Panel has reported that elevated dioxin concentrations may be found in road run-off and soils adjacent to telephone/utility pole (treated wood), both of which can be mobilized by surface water flow following a wildfire event.

As discussed in the 2019 Expert Panel Annual Report, a comparison of particulate strengths in stormwater samples and solids concentration in potential source material samples indicated that soil near treated wood and atmospheric deposition were the likely sources of TCDD TEQ in samples exhibiting exceedances. The Expert Panel also reviewed congener fingerprinting that further supports that soil near treated wood as the likely source of TCDD TEQ in the exceeding samples.

The Expert Panel is evaluating the data contained in this DMR, as well as potential dioxin sources, and will include the results of their analysis on the likely cause of this exceedance in their 2020 Annual Report.

#### Gross Alpha at Outfalls 001, 002, and 008

According to the NPDES Permit, if gross alpha is greater than 15 pCi/L, additional calculations and analysis must be made: uranium analysis must be performed, uranium results must be less than 20 pCi/L, gross alpha minus total uranium must be compared to the Daily Maximum Benchmark of 15 pCi/L, and the average gross alpha results for the calendar year must also be compared to the Daily Maximum Benchmark of 15 pCi/L.

#### Outfall 001

On December 27, 2019, a stormwater sample was collected from Outfall 001. Gross alpha was reported at 14.1 +/-3.61 picocuries per liter [pCi/L], which is indeterminate when compared to the Daily Maximum Benchmark of 15 pCi/L. Uranium analysis was performed, and the result was 0.664 +/- 0.436 pCi/L. Gross alpha minus total uranium was calculated to be 13.4 +/- 3.64 pCi/L, which is indeterminate when compared to the Daily Maximum Benchmark of 15 pCi/L, and the average gross alpha results for the calendar year must also be compared to the Daily Maximum Benchmark of 15 pCi/L.

Averaging the First Quarter and Fourth Quarter 2019 data gives an annual average of 3.65 +/- 0.64 pCi/L, below the Daily Maximum Benchmark. Thus, gross alpha at Outfall 001 is in compliance for 2019.

In addition, Boeing tested the December 27, 2019 sample from Outfall 001 at an independent, State-certified laboratory for an additional thirteen naturally occurring and four man-made alpha emitting radionuclides. That isotopic analysis confirmed that only naturally-occurring radioactive material (NORM) was detected. No anthropogenic (man-made) alpha emitting radionuclides were detected in the sample (Appendix C).



#### Outfall 002

Averaging First Quarter and Fourth Quarter 2019 data gives an annual average of 7.82 +/- 2.13 pCi/L, below the Daily Maximum Benchmark required by the Permit.

#### Outfall 008

Averaging the First Quarter and Fourth Quarter 2019 data gives an annual average of 3.74 +/- 0.78 pCi/L, below the Daily Maximum Benchmark required by the Permit.

#### Summary Evaluation of Gross Alpha at Outfalls 001, 002, and 008

These analytical results and the 2019 Expert Panel Annual Report support the conclusion that the gross alpha detected did not originate from previous nuclear industrial activities at the site but are rather a result of natural processes. Sections 2.2.1.2 and 2.2.1.3 of the 2019 Expert Panel Annual Report state that "spatial and temporal patterns indicate the elevated gross alpha concentration in stormwater this year was likely due to post-fire conditions." The Expert Panel compared particulate strengths in stormwater samples and solids concentration in potential source material samples and determined that none of the industrial activities were responsible for the gross alpha exceedance in stormwater. The Expert Panel also reviewed metal ratio fingerprinting and found that it supports natural background soils as the likely source of gross alpha in the samples with exceedances. The Expert Panel further considered laboratory analyses that indicated only naturally occurring alpha-emitting radionuclides were detected. No man-made alpha-emitting radionuclides were detected. The Expert Panel is evaluating the data contained in this DMR and will include the results of their analysis in their 2020 Annual Report.



#### FOURTH QUARTER 2019 SANTA SUSANA SITE SWPPP/BMP ACTIVITIES

Boeing implemented significant BMP activities in compliance with the Site-Wide SWPPP (Haley & Aldrich, 2019) to assist in improving stormwater quality and compliance at the Santa Susana Site. Table II summarizes typical BMP-related activities that occur at outfalls every quarter.

TABLE II: Routine Quarterly Outfall BMP Activities

BMP Activities						Out	falls					
BIVIP ACTIVITIES	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.	Х	Х	X	Х	Х	Х	Х	Х	X	X	Х	Х
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	Х	N/A						
Cleaned the sample box of sediment and debris, checked for the presence of animals, and performed weed abatement as needed.	х	х	Х	Х	х	Х	х	Х	N/A	х	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	Х	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	N/A

#### Notes:

X = BMP activity is applicable to the outfall and was completed in Fourth Quarter 2019.

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.



Table III summarizes the additional activities completed during the Fourth Quarter 2019 by outfall or BMP location.

TABLE III: Additional Fourth Quarter 2019 BMP Activities

Outfall or BMP Location	BMP Activities During Fourth Quarter 2019
001	Installed fiber roll and jute netting near flume. Removed sediment with the use of the SuperVac upstream of the flume and installed and rebuilt check structures.
002	Removed sediment with the use of the SuperVac upstream of the flume. Installed a riprap floor and check structure.
003	Repaired PVC pipe on manifold. Repaired the grout along the flume.
005	Removed damaged snow fencing.
006	Repaired the bleeder valve on the Charles King line. Redesigned and fabricated a new suction and discharge line for the Charles King pump.
008	Removed fallen tree downstream of sample box. Installed three check structures upstream of the flume.
010	Repaired the mesh covering on the large white PVC pipe. Resealed the upper sump basin.
011	Installed a thrust block for the conveyance pump line.
018	Designed and fabricated a new 12" HDPE suction line for the Charles King pump.
Lower Lot	Performed pump maintenance on low flow alarm.

#### Notes:

PVC = polyvinyl chloride

HDPE = high-density polyethylene

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

#### **NASA-Related Activities**

Demolition BMPs and stormwater 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). All demolition and soil disturbance activities were completed in 2018. During the Fourth Quarter 2019, NASA maintained fiber rolls as linear sediment controls, maintained silt fencing, and maintained hydroseeded areas within these sites where construction activities had been completed.

Demolition BMPs and stormwater control activities covered by NASA's Construction SWPPP (dated December 4, 2017) in the Coca Test Stand Area are inspected in accordance with the CGP. All demolition and soil disturbance activities in the Coca Test Stand Area were completed in Fourth Quarter 2018. During the Fourth Quarter 2019, NASA maintained fiber rolls as linear sediment controls and maintained sandbags.

Demolition BMPs 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 2019, NASA completed demolition activities in these areas and maintained fiber rolls as linear sediment controls and maintained sandbags.

#### **DOE Related Activities**

During the Fourth Quarter 2019, DOE removed silt buildup at the silt fences and replaced fiber rolls at the downstream end of the slope of the Building 54 landfill.



#### **Expert Panel-Related Activities**

The BMP activities discussed below were performed, commenced, or completed during the Fourth Quarter 2019 in coordination with the Expert Panel.

#### **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 from roads and/or the surrounding hillsides. The Fourth Quarter 2019 activities included:

- BMP inspections, including the culvert inlets and riprap check dams; and
- All CMs, basins, and weir boards were cleaned of debris, as applicable.

#### 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 from the ELV area. After being pumped from the cistern at the bottom of the swale to the ELV system, 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 sandbag berm was placed across the ELV asphalt swale to divert stormwater toward CM-1 for treatment instead of directly discharging to the Northern Drainage. A generator was installed at the ELV system during the Third Quarter 2019. The Fourth Quarter 2019 activities included BMP inspections.

#### Well 13 Road

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 2019 activities included BMP inspections.

#### B-1 Area

The B-1 Area BMPs include:

- 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 2019 activities included continued BMP inspections and clearing the areas of sediment and debris.

#### Upper Parking Lot Media Filter

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 and designed to treat runoff from parts of the parking lot as well as parts of the adjacent entrance road. The Fourth Quarter 2019 activities included BMP inspections and sediment and debris removal in and around the media bed.



#### 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 stormwater 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 2019 activities included BMP inspections, inlet cleaning, and wattle replacement.

#### Lower Lot Biofilter

The lower lot biofilter is a stormwater treatment BMP designed and built to capture, convey, and treat stormwater 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 2019 activities included inspections to verify that the sedimentation basin and biofilter were free of sediment and debris, checks of the cistern area and pump, weed abatement as needed, and inspections of surrounding BMPs.

Approximately 456,300 gallons of stormwater was pumped from the cistern to the sedimentation basin during the Fourth Quarter 2019.

#### <u>Administration Area Inlet Filters</u>

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 placed upstream of the inlet to increase solids settling. The Fourth Quarter 2019 activities included BMP inspections and sediment removal from the drop inlet structure.

#### Former Shooting Range

BMPs at the Former Shooting Range consist 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;
- 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 entire area continues to benefit from the growth of dense vegetation that shields lead shot from direct contact with or dislodging during precipitation events.



The Fourth Quarter 2019 activities included BMP inspections, sediment removal from the upper check structure, straw wattle replacement, and sandbag replacement. At the request of the Expert Panel, the Sage Ranch side of the Former Shooting Range was inspected to confirm that BMPs (i.e., fiber rolls, silt fence, etc.) control and/or treat from that side of the Former Shooting Range to the Northern Drainage.

#### Non-Industrial Sources Special Studies

Non-industrial sources special studies are intended to help identify source pollutants within various watersheds. The non-industrial sources special studies sampling have been discontinued according to the recommendations of the 2019 Expert Panel Annual Report (Geosyntec and the Expert Panel, 2019). Onsite and offsite samples were not collected during the Fourth Quarter 2019.

#### Northern Drainage BMPs

Boeing restored the Northern Drainage (Outfall 009) following cleanup activities performed under the Department of Toxic Substance Control oversight and in accordance with the requirements of the Regional Board's Cleanup and Abatement Order No. R4-2007-0054 (Regional Water Quality Control Board, 2007). The restoration and mitigation activities proposed in the Northern Drainage Restoration, Mitigation, and Monitoring Plan (RMMP)<sup>2</sup> 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 according to 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 had complied with all terms of the Cleanup and Abatement Order and Boeing's obligations under the Order would therefore be 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 2019.

#### Outfall 001/002 BMP Compliance Report Related Activities

Boeing and the Expert Panel will continue to monitor and evaluate the effectiveness of BMPs within the watersheds of Outfall 001 and Outfall 002. Recommendations for these watersheds are included 2019 Expert Panel Annual Report (Geosyntec and the Expert Panel, 2019).

#### OTHER BMP ACTIVITIES

BMP observations and maintenance inspections were conducted in conformance with the Site-Wide SWPPP (Haley & Aldrich, 2019) at and around the former test stands Alfa and Bravo and former Advanced Propulsion Test Facility.

<sup>&</sup>lt;sup>2</sup> 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 001, 002, 008 and 009 during the Fourth Quarter 2019. Analytical results from this quarter were added to the Reasonable Potential Analysis (RPA) dataset (Appendix F). Boeing believes that the analytical results for the Fourth Quarter 2019 did not trigger a reasonable potential for any other constituent not already regulated under the current NPDES Permit.

#### **CONCLUSIONS**

While naturally occurring constituent concentrations in stormwater continue to be elevated due to the Woolsey Wildfire, the Expert Panel has stated that concentrations are decreasing as vegetation and soil stabilization recover in the previously burned areas.

Boeing continues to implement, maintain, and monitor wide ranging control practices intended 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 Expert Panel is reviewing the data collected this year and will make BMP and monitoring recommendations that will be communicated in the Expert Panel's 2020 Annual Report.

#### **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 2020 at The Boeing Company, Seal Beach, California, Site.

Sincerely,

Kim O'Rourke

Kim O'Rounko.

Remediation Program Manager

Environment, Health & Safety



#### Enclosures:

#### References

Figure 1 – Site Map with Stormwater Collection and Conveyance System and Site Features

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

Appendix A – Fourth Quarter 2019 Rainfall Data Summary

Appendix B – Fourth Quarter 2019 Waste Shipment Summary Tables

Appendix C – Fourth Quarter 2019 Discharge Monitoring Data Summary Tables

Appendix D – Fourth Quarter 2019 Summary of Permit Limit Exceedances and/or Non-Compliance

Appendix E – Fourth Quarter 2019 Analytical Laboratory Reports, Chain of Custody Forms, and Validation Reports

Appendix F – Fourth Quarter 2019 Reasonable Potential Analysis Tables

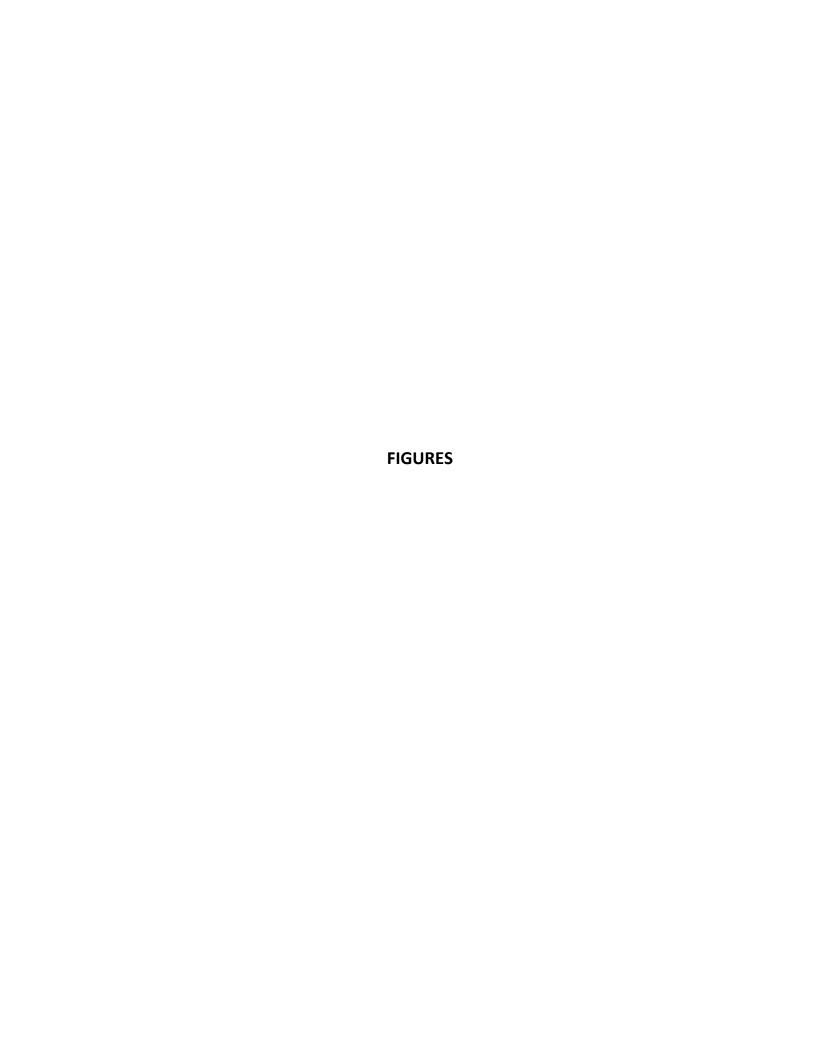
Appendix G – Fourth Quarter 2019 Receiving Water Surveys

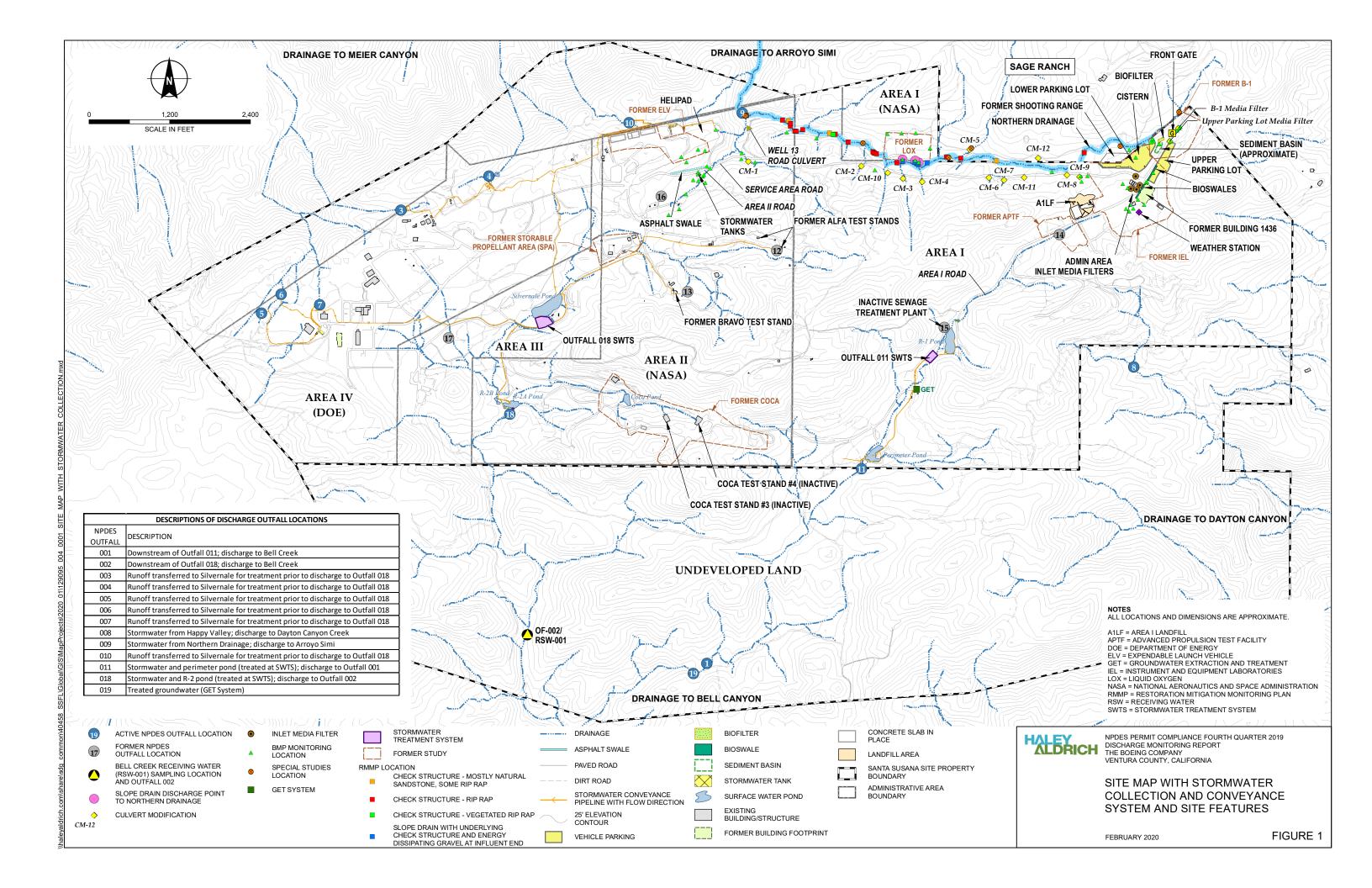
c: Los Angeles Regional Water Quality Control Board; Attn: Ms. Cassandra Owens California Department of Toxic Substances Control; Attn: Mr. Mark Malinowski California State University Northridge Oviatt Library Simi Valley Public Library Los Angeles Public Library, Platt Branch

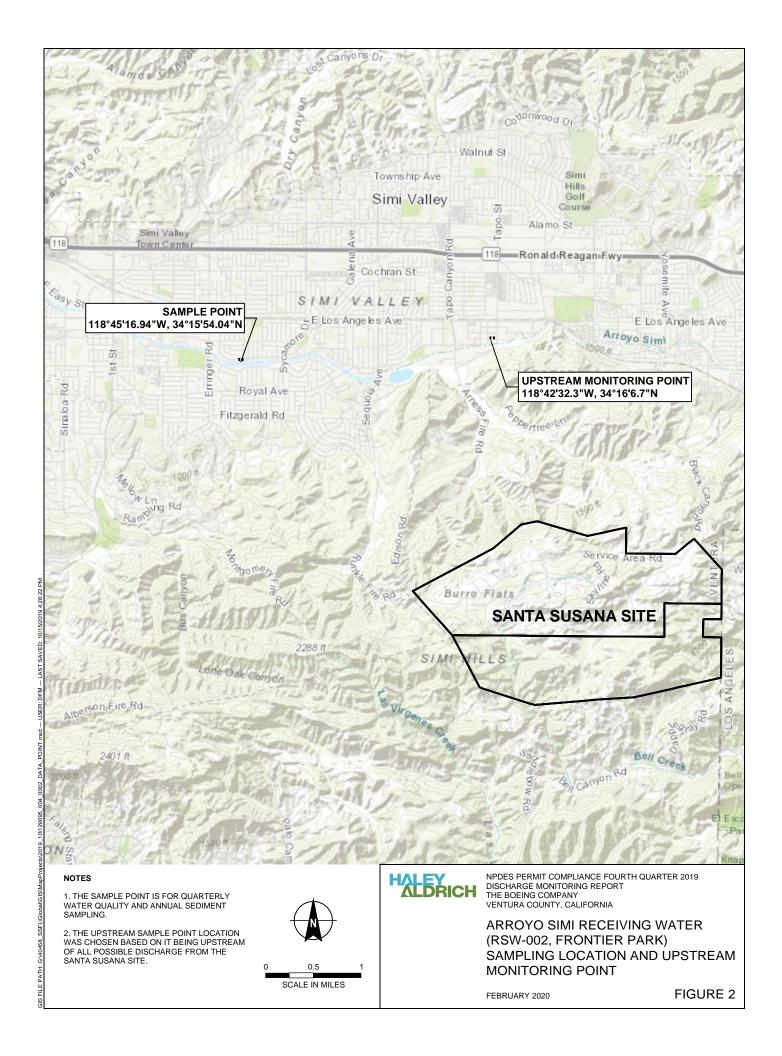


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- 2. California Regional Water Quality Control Board, Los Angeles Region, 2015. Waste Discharge Requirements for The Boeing Company, Santa Susana Field Laboratory (Order No. R4-2015-0033, NPDES No. CA0001309). 12 February.
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- 4. Geosyntec and the Expert Panel, 2019. Santa Susana Field Laboratory Site-Wide Stormwater Annual Report, 2018/19 Reporting Year, Ventura County, California (NPDES No. CA0001309, CI No.6027). 31 October.
- 5. Haley & Aldrich, Inc., 2017. Northern Drainage 2017 Annual Report, Clean Water Act Section 401 Water Quality Certification, File No. 12-001, Cleanup and Abatement Order No. R4-2007-0054, Streambed Alteration Agreement No. 1600-2003-5052-R5, Streambed Alteration Agreement No. 1600-2015-0079-R5, U.S. Army Corps of Engineers SPL-2012-00015, Santa Susana Field Laboratory, Ventura County, California. 13 December.
- 6. Haley & Aldrich, Inc., 2019. Stormwater Pollution and Prevention Plan (Version 6 for Compliance with 2015 NPDES Permit). 26 September.
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#### **APPENDIX A**

Fourth Quarter 2019 Rainfall Data Summary

#### **APPENDIX A**

#### **TABLE OF CONTENTS**

Table A – Daily Rainfall Summary

# TABLE A DAILY RAINFALL SUMMARY

# THE BOEING COMPANY NPDES PERMIT CA0001309

Station: AREA 1 Parameter: Rain

Month/Year: October 2019

#### HOUR OF THE DAY, PACIFIC STANDARD TIME

Ī	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	
ŀ	DAY			3	-	3	•		•	3	10	- ' '	12	13	17	13	10	- ' '	10	19	20	21		23	24	Total
ŀ	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
ŀ	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
ŀ	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
ľ	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
	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
Т	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
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	0.00
Е	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
М	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
T	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
ļ	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
ļ	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
ļ	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
ŀ	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
ŀ	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
ŀ	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
Į	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

## TABLE A DAILY RAINFALL SUMMARY

## THE BOEING COMPANY NPDES PERMIT CA0001309

Station: AREA 1 Parameter: Rain

Month/Year: Novmeber 2019

#### 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	
	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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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
	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	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
Т	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
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	0.00
Е	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	0.33	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.37
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
T	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
	26 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	0.02	0.04	0.09	0.20	0.16	0.05	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.05	0.08	0.00	0.00	0.00	0.00	0.00	1.15
	29	0.00	0.00	0.00	0.13	0.02	0.09	0.12	0.00	0.07	0.00	0.00	0.00	0.10	0.03	0.00	0.00	0.00	0.00	0.00	0.02	0.11	0.11	0.00	0.00	0.01
	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	0.01
	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	0.01	0.02	0.02	0.04	0.01	0.00	0.01	0.01	0.00	0.00	0.12

Flags: d = Off-line part of hour, invalid hour due to semi-annual audit (November 14). For the off-line event, the rain gauge at Sage Ranch did not record rainfall on November 14 during hour 07:00-08:00, however field forms confirm there was no rain on November 14.

# TABLE A DAILY RAINFALL SUMMARY

# THE BOEING COMPANY NPDES PERMIT CA0001309

Station: AREA 1
Parameter: Rain

Month/Year: December 2019

#### HOUR OF THE DAY, PACIFIC STANDARD TIME

HR-END 1 2 3 4 4 5 6 7 7 8 9 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 Total  1 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0	ĺ	UD DEC	^	4	_	_	4	-	_	-			<del></del>		10 3 I A	-		45	40	47	40	40	20	04	20	22	
DAY		HR-BEG	0	1	2	3	4	5	6	/	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1			1	2	3	4	5	6	/	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
2			2.22	2.22	2.22	2.22	0.00			0.00		0.00			2.22		2.22			2.22			2.22	2.22		2.22	
3																											
4 0.03 0.10 0.13 0.16 0.31 0.09 0.04 0.04 0.13 0.25 0.01 0.01 0.00 0.00 0.00 0.00 0.00 0.0																											
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A         9         0.00<																											
Y	D																										0.43
11   0.00   0.		9	0.00	0.00	0.00	0.00			0.00											0.00	0.00		0.00	0.00			
T   10   10   10   10   10   10   10	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
T   13   0.00		11	0.00													0.00			0.00						0.00		0.00
T	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
T   15	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
H		14	0.00	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	0.01
T	Т	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
18	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	0.00
M         19         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
O         20         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
N T         21         0.00         0.	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
T H H	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
H	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
24         0.00         0	Т	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	0.01	0.11	0.13	0.18	0.29	0.49	0.41	0.21	1.83
25         0.00         0	Н	23	0.06	0.09	0.05	0.05	0.06	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.34
26         0.24         0.03         0.08         0.00         0.00         0.00         0.01         0.01         0.00         0		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
27         0.00         0		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	0.02	0.22	0.41	0.40	0.29	1.34
27         0.00         0		26	0.24	0.03	0.08	0.00	0.00	0.00	0.00	0.01	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	0.37
29         0.00         0		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
29         0.00         0		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
<b>30</b> 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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
<b>31</b>   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 2019 Waste Shipment Summary Tables** 

#### **APPENDIX B**

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Table B – Waste Shipment Summary Table

## TABLE B WASTE SHIPMENT SUMMARY TABLE

# FOURTH QUARTER 2019 THE BOEING COMPANY SANTA SUSANA FIELD LABORATORY NPDES PERMIT CA0001309

TYPE OF WASTE		QTY.	UNITS	TRANSPORTER 1	TRANSPORTER 2	DESTINATION
Hazardous Waste	Liquid	8,438	G	Clean Harbors Environmental Services, Inc. 42 Longwater Drive Norwell, MA 02061	n/a	US Ecology Vernon 5375 South Boyle Avenue Los Angeles, CA 90058
Hazardous Waste	Liquid	17	Р	Clean Harbors Environmental Services, Inc. 42 Longwater Drive Norwell, MA 02061	Basin Transportation LLC 130 Express Lane Mcalester, OK 74501	Clean Harbors Aragonite LLC 11600 North Aptus Road Grantsville, UT 84029
Hazardous Waste	Liquid	4,069	Р	Clean Harbors Environmental Services, Inc. 42 Longwater Drive Norwell, MA 02061	n/a	Clean Harbors Wilmington LLC 1737 East Denni Street Wilmington, CA 90744
Hazardous Waste	Liquid	900	G	Patriot Environmental Services 508 East E Street Wilmington, CA 90744	n/a	US Ecology Vernon 5375 Boyle Avenue Los Angeles, CA 90056
Non-RCRA Hazardous Waste	Liquid	2,408	Р	Clean Harbors Environmental Services, Inc. 42 Longwater Drive Norwell, MA 02061	n/a	Clean Harbors Wilmington LLC 1737 East Denni Street Wilmington, CA 90744
Non Hazardous, Non D.O.T Regulated	Liquid	703	Р	Clean Harbors Environmental Services, Inc. 42 Longwater Drive Norwell, MA 02061	n/a	Clean Harbors Buttonwillow LLC 2500 West Lokern Road Buttonwillow, CA 93206
Non Hazardous Waste	Liquid	4,234	G	American Integrated Services, Inc. 1502 East Opp Street Wilmington, CA 90744	n/a	Crosby & Overton 1630 West 17th Street Long Beach, CA 90813
Asbestos	Liquid	70	Y	MP Environmental Services 3400 Manor Street Bakersfield, CA 96608	n/a	US Ecology Idaho 20400 Lemley Road Grand View, Idaho 83624
Hazardous Waste	Solid	210	Р	Clean Harbors Environmental Services, Inc. 42 Longwater Drive Norwell, MA 02061	Basin Transportation LLC 130 Express Lane Mcalester, OK 74501	Clean Harbors Environmental Services, Inc. 2247 South Highway 71 Kimball, NE 69145
Hazardous Waste Solid		14	Р	Clean Harbors Environmental Services, Inc. 42 Longwater Drive Norwell, MA 02061	n/a	Clean Harbors Wilmington LLC 1737 East Denni Street Wilmington, CA 90744

## TABLE B WASTE SHIPMENT SUMMARY TABLE

# FOURTH QUARTER 2019 THE BOEING COMPANY SANTA SUSANA FIELD LABORATORY NPDES PERMIT CA0001309

TYPE OF WASTE		QTY.	UNITS	TRANSPORTER 1	TRANSPORTER 2	DESTINATION
Hazardous Waste	Solid	112	Р	Patriot Environmental Services 508 East E Street Wilmington, CA 90744	n/a	US Ecology Nevada HWY 95 11 Mi South of Beatty Beatty, NV 89003
Non-RCRA Hazardous Waste	Solid	202	Р	Clean Harbors Environmental Services, Inc. 42 Longwater Drive Norwell, MA 02061	n/a	Clean Harbors Wilmington LLC 1737 East Denni Street Wilmington, CA 90744
Non Hazardous, Non D.O.T Regulated	Solid	7,619	Р	Clean Harbors Environmental Services, Inc. 42 Longwater Drive Norwell, MA 02061	n/a	Clean Harbors Buttonwillow LLC 2500 West Lokern Road Buttonwillow, CA 93206
Batteries, Dry, Sealed	Solid	60	Р	Clean Harbors Environmental Services, Inc. 42 Longwater Drive Norwell, MA 02061	n/a	Clean Harbors Wilmington LLC 1737 East Denni Street Wilmington, CA 90744

Notes:

G = Gallons

n/a = Not Applicable

P = Pounds

Y = Yards

# **APPENDIX C Fourth Quarter 2019 Discharge Monitoring Data Summary Tables**

#### **APPENDIX C**

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#### Reporting Summary Notes

Outfall 001 - Discharge Monitorir Outfall 001 - Discharge Monitorir	
Outfall 002 - Discharge Monitorir Outfall 002 - Discharge Monitorir	
Outfall 008 - Discharge Monitorir Outfall 008 - Discharge Monitorir	
Outfall 009 - Discharge Monitorir Outfall 009 - Discharge Monitorir	

Arroyo Simi - Discharge Monitoring Data Summary Table

Extended Radiochemistry

#### 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 compared to 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 receiving water limit.
<(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, semiannual, 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
Chromium VI	Hexavalent chromium
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.

MDL	Method detection limit.
Meas	Measure sample type.
MFL	Million fibers per liter.
MGD	Million gallons per day.
МНА	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.
ml/L	Milliliters per liter
ml/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.
NR	Not reported by laboratory by the deadline of this report.
NTU	Nephelometric turbidity unit.
OCDD	Octa CDD.
OCDF	Octa CDF.
Р	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.					
%R	Percent recovery.					
%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.
(a)	Based on Order No. R4-2015-0033, page 17, footnote 7, sampling event is a dry discharge and the NPDES Permit Limit for cadmium is 4.0 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 for cadmium 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/or 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/or 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 for selenium 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 for selenium is 8.2 ug/L and 8.06 lbs/day.
(g)	The sampling frequency of this constituent is increased from once per year to once per discharge until four consecutive sample results demonstrate compliance per the NPDES permit. The corresponding dissolved metal also increased in sampling frequency to once per discharge.
(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)	Reserved.
(1)	When field staff arrived onsite to collect the composite sample they discovered that the autosampler had malfunctioned and had not collected "sips." Field staff repaired the autosampler, reset it, determined it was functioning properly, then returned the next day to collect the composite sample.
(m)	The composite sample was collected as a grab sample from the sample box due to insufficient flow.
(n)	The grab sample was collected at the first opportunity given the short duration and low-flow at this Outfall.
(o)	Unsafe conditions all day prevented access to the Outfall.
(p)	Various annual constituents were analyzed by laboratory due to field and laboratory error.
(q)	Minimum level not met due to laboratory error.

## OUTFALL 001 DISCHARGE MONITORING DATA SUMMARY TABLE

#### FOURTH QUARTER 2019 THE BOEING COMPANY SANTA SUSANA FIELD LABORATORY NPDES PERMIT CA0001309

October 1 through December 31, 2019

ANALYTE					12/26/20	19 07:25	
CONVENTIONAL POLLUTANTS	ANALYTE	UNITS			SAMPLE TYPE	RESULT	
Boothemical Oxygen Demand (BODI)5-Day @ 20 deg. C)   mgl.   30   10 Discharge   Composite   2.9   1.		MGD	117.83	1/Discharge	Meas	0.131101	*
08 8 Grease							
pht	,						
Total Suppended Solitat							U*
PRIORITY POLLUTANTS							*
11-3-Dichloroethenne		mg/L	45	1/Discharge	Composite	190 <sup>(c)</sup>	-
1,2-Dichroreshane							
2.4.6-Trichforophenol         µg/L         13         1/Dscharge         Composite         ND < 0.11         U'           alpha-BHC         µg/L         0.03         1/Dscharge         Composite         ND < 0.026							
24-Dintrotoluses   sight   18	,						
alpha-BHC	· ·						
Antennory							
Assenic	<u>'</u>						
Beryllium							
Bis (ZEEHlythexyl) Pribhalate   µg/L   4.0   1/Discharge   Composite   ND ≤ 2.2   U* Cadmium   µg/L   4.0   1/Discharge   Composite   ND ≤ 2.5   U* Chromium VI (Hexavalent)   µg/L   16   1/Year   ANR   ANR   ANR   Composite   ND ≤ 2.5   U*   ANR   µg/L   14   1/Discharge   Composite   ND ≤ 2.5   U*   Composite   ND ≤ 1.1   U*   U*   U*   Composite   ND ≤ 1.1   U*   U*   U*   U*   U*   U*   U*   U							
Cadmium	· · · · · · · · · · · · · · · · · · ·						
Chromium VI (Hexavalent)							
Copper         μg/L         14         1/Discharge         Composite         7.2         —           Cyanide         μg/L         8.5         1/Discharge         Composite         6.6         —           Mercury         μg/L         5.2         1/Discharge         Composite         6.6         —           Nckel         μg/L         94         1/Year         ANR         ANR         ANR           Nevier         μg/L         16         1/Discharge         Composite         ND < 1.1			. ,				
Cyanide         μg/L         8.5         1/Discharge         Composite         ND < 2.5         U'           Mercury         μg/L         0.1         1/Discharge         Composite         ND < 0.10							
Lead   Mg/L   5.2   1/Discharge   Composite   6.6							
Mercury   μg/L   μg/							
Necker							
N-Nitrosodimethylamine	,						
Pentachlorophenol							
Selenium							
Silver							
Thalfillium			. ,				` '
Trichloroethene							
Mon-Conventional Pollutants   Mon-							
Ammonia - N   mg/L   10.1   1/Discharge   Composite   0.181   J (DNQ)		μg/L	119	1/Discharge	Composite	47	*
Barlum			40.4	4/0:	0	0.404	1 (DNO)
Chloride							
Chlorine, Total Residual (Field)   Pass or Fail and % Effect   Pass or % Effect and % Effect   Pass or % Effect   1st & 2nd rain event/Year   ANR							ANK *
Pass or Fail and % Effect   AST & 2nd rain   event/Year   ANR   ANR   ANR   ANR   ANR   Detergents (as MBAS)   mg/L   0.5   1/Discharge   Composite   ND < 0.050   U*   U*   Detergents (as MBAS)   mg/L   1.6   1/Year   ANR   ANR   ANR   ANR   ANR   Iron   mg/L   0.3   1/Discharge   Composite   1.4     ANR							AND
Chronic Toxicity   and % Effect   <50   event/Year   ANR   ANR   ANR   Detergents (as MBAS)   mg/L   0.5   1/Discharge   Composite   ND < 0.050   U*	Chlorine, Total Residual (Field)				ANK	ANK	ANK
Detergents (as MBAS)   mg/L   0.5   1/Discharge   Composite   ND < 0.050   U* Fluoride   mg/L   1.6   1/Year   ANR   ANR   ANR   ANR   ANR   ANR   ANR   Mng/L   1.6   1/Year   ANR   A	Chronic Toxicity				AND	AND	AND
Fluoride	Detergents (as MPAS)						
Iron   mg/L   0.3   1/Discharge   Composite   14							
Manganese							
Nitrate - N   Nitrate + Nitrite as Nitrogen (N)   mg/L   8   1/Discharge   Composite   1.6   *   Nitrate + Nitrite as Nitrogen (N)   mg/L   8   1/Discharge   Composite   1.6   *   Nitrate + Nitrite as Nitrogen (N)   mg/L   1   1/Discharge   Composite   ND < 0.025   U*   Nitrite - N   mg/L   1   1/Discharge   Composite   ND < 0.025   U*   No < 0.025   U*   No < 0.05   U*   Settleable Solids#   ml/L   0.3   1/Discharge   Grab   ND < 0.095   U*   Sulfate   mg/L   300   1/Discharge   Composite   6.8   *   Temperature (Field)   Deg F   86   1/Discharge   Grab   43.4   *   Total Dissolved Solids   mg/L   950   1/Discharge   Composite   86   *    REMAINING PRIORITY POLLUTANTS <sup>(P)</sup>							
Nitrate + Nitrite as Nitrogen (N)         mg/L         8         1/Discharge         Composite         1.6         *           Nitrite - N         mg/L         1         1/Discharge         Composite         ND < 0.025							
Mitrite   N   Mitrite   Mitrite   N   Mitrite   Mitrite   N   Mitrite		•					*
Perchlorate							
Settleable Solids#							
Sulfate							
Temperature (Field)   Deg F   86				•			-
Total Dissolved Solids   mg/L   950							
REMAINING PRIORITY POLLUTANTS   POLLUTANTS							
1,1,1-Trichloroethane         µg/L         -         1/Year         Grab         ND < 0.25		mg/L	950	1/Discharge	Composite	<b>გ</b> ხ	
1,1,2,2-Tetrachloroethane         µg/L         -         1/Year         Grab         ND < 0.25							
1,1,2-Trichloroethane         µg/L         -         1/Year         Grab         ND < 0.25         U           1,1-Dichloroethane         µg/L         -         1/Year         Grab         ND < 0.25	, ,						
1,1-Dichloroethane         µg/L         -         1/Year         Grab         ND < 0.25	* * *						
1,2,4-Trichlorobenzene         μg/L         -         1/Year         ANR         ANR         ANR           1,2-Dichlorobenzene         μg/L         -         1/Year         ANR         ANR         ANR           1,2-Dichlorobenzene         μg/L         -         1/Year         Grab         ND < 0.25	, ,						
1,2-Dichlorobenzene         µg/L         -         1/Year         ANR         ANR         ANR           1,2-Dichlorobenzene         µg/L         -         1/Year         Grab         ND < 0.25	*						
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	, ,		l -				
1,2-Dichloropropane         µg/L         -         1/Year         Grab         ND < 0.25         U           1,2-Diphenylhydrazine/Azobenzene         µg/L         -         1/Year         ANR         ANR         ANR           1,3-Dichlorobenzene         µg/L         -         1/Year         ANR         ANR         ANR           1,3-Dichlorobenzene         µg/L         -         1/Year         Grab         ND < 0.25							
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$							
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$\begin{array}{cccccccccccccccccccccccccccccccccccc$							
1,4-Dichlorobenzene µg/L - 1/Year ANR ANR ANR ANR			l -				
· · · · · · · · · · · · · · · · · · ·	,						
11 (I-Dichloropopage)	1,4-Dichlorobenzene	μg/L μg/L	-	1/Year 1/Year	Grab	ND < 0.25	U

# FOURTH QUARTER 2019 THE BOEING COMPANY SANTA SUSANA FIELD LABORATORY NPDES PERMIT CA0001309

				12/26/20	019 07:45 - 12/27/20	019 07:25
ANALYTE	UNITS	DAILY MAXIMUM BENCHMARK	SAMPLE FREQUENCY	SAMPLE TYPE	RESULT	LABORATORY/ VALIDATION QUALIFIER
2,4-Dichlorophenol	μg/L	-	1/Year	ANR	ANR	ANR
2,4-Dimethylphenol	μg/L	-	1/Year	ANR	ANR	ANR
2,4-Dinitrophenol	μg/L	-	1/Year	ANR	ANR	ANR
2,6-Dinitrotoluene	μg/L	-	1/Year	ANR	ANR	ANR
2-Chloroethyl vinyl ether	μg/L	-	1/Year	ANR	ANR	ANR
2-Chloronaphthalene	μg/L	-	1/Year	ANR	ANR	ANR
2-Chlorophenol	μg/L	-	1/Year	ANR	ANR	ANR
2-Methyl-4,6-dinitrophenol	μg/L	-	1/Year	ANR	ANR	ANR
2-Nitrophenol	μg/L	-	1/Year	ANR	ANR	ANR
3,3'-Dichlorobenzidine	μg/L	-	1/Year	ANR	ANR	ANR
4,4'-DDD	μg/L	-	1/Year	ANR	ANR	ANR
4,4'-DDE	μg/L	-	1/Year	ANR	ANR	ANR
4,4'-DDT	μg/L	-	1/Year	ANR	ANR	ANR
4-Bromophenyl phenyl ether	μg/L	-	1/Year	ANR	ANR	ANR
4-Chloro-3-methylphenol	μg/L	-	1/Year	ANR	ANR	ANR
4-Chlorophenyl phenyl ether	μg/L	-	1/Year	ANR	ANR	ANR
4-Nitrophenol	μg/L	-	1/Year	ANR	ANR	ANR
Acenaphthene	μg/L	-	1/Year	ANR	ANR	ANR
Acenaphthylene	μg/L	-	1/Year	ANR	ANR	ANR
Acrolein	μg/L	-	1/Year	ANR	ANR	ANR
Acrylonitrile	μg/L	-	1/Year	ANR	ANR	ANR
Aldrin	μg/L	-	1/Year	ANR	ANR	ANR
alpha-Endosulfan	μg/L	-	1/Year	ANR	ANR	ANR
Anthracene	μg/L	-	1/Year	ANR	ANR	ANR
Aroclor 1016	μg/L	-	1/Year	ANR	ANR	ANR
Aroclor 1221	μg/L	_	1/Year	ANR	ANR	ANR
Aroclor 1232	μg/L	_	1/Year	ANR	ANR	ANR
Aroclor 1242	μg/L	_	1/Year	ANR	ANR	ANR
Aroclor 1248	µg/L	-	1/Year	ANR	ANR	ANR
Aroclor 1254	μg/L	_	1/Year	ANR	ANR	ANR
Aroclor 1260	μg/L	-	1/Year	ANR	ANR	ANR
Benzene	μg/L	-	1/Year	Grab	ND < 0.25	U
Benzidine	μg/L	-	1/Year	ANR	ANR	ANR
Benzo(a)anthracene	μg/L	-	1/Year	ANR	ANR	ANR
Benzo(a)pyrene	μg/L	<del>-</del> -	1/Year	ANR	ANR	ANR
Benzo(b)fluoranthene		-	1/Year	ANR	ANR	ANR
Benzo(g,h,i)perylene	μg/L μg/L	-	1/Year	ANR	ANR	ANR
Benzo(k)fluoranthene		-	1/Year	ANR	ANR	ANR
beta-BHC	μg/L	-	1/Year	ANR	ANR	ANR
	μg/L	-				
beta-Endosulfan	μg/L	<u> </u>	1/Year	ANR	ANR	ANR ANR
Bis (2-Chloroethoxy) Methane	μg/L	-	1/Year	ANR	ANR	
Bis (2-Chloroethyl) Ether	μg/L	-	1/Year	ANR	ANR	ANR
Bis (2-Chloroisopropyl) Ether	μg/L	-	1/Year	ANR	ANR	ANR
Bromoform	μg/L	-	1/Year	Grab	ND < 0.40	U
Bromomethane	μg/L	-	1/Year	Grab	ND < 0.25	U
Butyl benzylphthalate	μg/L	-	1/Year	ANR	ANR	ANR
Carbon tetrachloride	μg/L	-	1/Year	Grab	ND < 0.25	UJ (C)
Chlordane	μg/L	-	1/Year	ANR	ANR	ANR
Chlorobenzene	μg/L	-	1/Year	Grab	ND < 0.25	U
Chlorodibromomethane	μg/L	-	1/Year	Grab	ND < 0.25	U
Chloroethane	μg/L	-	1/Year	Grab	ND < 0.40	U
Chloroform	μg/L	-	1/Year	Grab	ND < 0.25	U
Chloromethane (Methyl Chloride)	μg/L	-	1/Year	Grab	ND < 0.25	U
Chromium	μg/L	-	1/Year	ANR	ANR	ANR
Chrysene	μg/L	-	1/Year	ANR	ANR	ANR
cis-1,3-Dichloropropene	μg/L	-	1/Year	Grab	ND < 0.25	U
delta-BHC	μg/L	-	1/Year	ANR	ANR	ANR
Dibenz(a,h)anthracene	μg/L	-	1/Year	ANR	ANR	ANR
Dichlorobromomethane	μg/L	-	1/Year	Grab	ND < 0.25	U
Dieldrin	μg/L	-	1/Year	ANR	ANR	ANR
Diethyl phthalate	μg/L	-	1/Year	ANR	ANR	ANR
Dimethyl phthalate	μg/L	-	1/Year	ANR	ANR	ANR
Di-n-butyl phthalate	μg/L	-	1/Year	ANR	ANR	ANR
Di-n-octyl phthalate	μg/L	-	1/Year	ANR	ANR	ANR

# FOURTH QUARTER 2019 THE BOEING COMPANY SANTA SUSANA FIELD LABORATORY NPDES PERMIT CA0001309

				12/26/20	019 07:45 - 12/27/20	19 07:25
ANALYTE	UNITS	DAILY MAXIMUM BENCHMARK	SAMPLE FREQUENCY	SAMPLE TYPE	RESULT	LABORATORY/ VALIDATION QUALIFIER
Endosulfan sulfate	μg/L	-	1/Year	ANR	ANR	ANR
Endrin	μg/L	-	1/Year	ANR	ANR	ANR
Endrin aldehyde	μg/L	-	1/Year	ANR	ANR	ANR
Ethylbenzene	μg/L	-	1/Year	Grab	ND < 0.25	U
Fluoranthene	μg/L	-	1/Year	ANR	ANR	ANR
Fluorene	μg/L	-	1/Year	ANR	ANR	ANR
gamma-BHC (Lindane)	μg/L	-	1/Year	ANR	ANR	ANR
Heptachlor	μg/L	_	1/Year	ANR	ANR	ANR
Heptachlor epoxide	μg/L	_	1/Year	ANR	ANR	ANR
Hexachlorobenzene	μg/L	_	1/Year	ANR	ANR	ANR
Hexachlorobutadiene	μg/L	-	1/Year	ANR	ANR	ANR
Hexachlorocyclopentadiene	μg/L	-	1/Year	ANR	ANR	ANR
, ,		-	1/Year	ANR	ANR	ANR
Hexachloroethane	µg/L		1/Year	ANR	ANR	ANR
Indeno(1,2,3-cd)pyrene	μg/L	-				
Isophorone	μg/L	-	1/Year	ANR	ANR	ANR
m,p-Xylenes	μg/L	-	1/Year	ANR	ANR	ANR
Methylene chloride	μg/L	-	1/Year	Grab	ND < 0.88	U
Naphthalene	μg/L	-	1/Year	ANR	ANR	ANR
Naphthalene	μg/L	-	1/Year	Grab	ND < 0.40	U
Nitrobenzene	μg/L	-	1/Year	ANR	ANR	ANR
N-Nitroso-di-n-propylamine	μg/L	-	1/Year	ANR	ANR	ANR
N-Nitrosodiphenylamine	μg/L	-	1/Year	ANR	ANR	ANR
o-Xylene	μg/L	-	1/Year	ANR	ANR	ANR
Phenanthrene	μg/L	-	1/Year	ANR	ANR	ANR
Phenol	μg/L	-	1/Year	ANR	ANR	ANR
Pyrene	μg/L	-	1/Year	ANR	ANR	ANR
Tetrachloroethene	μg/L	_	1/Year	Grab	ND < 0.25	U
Toluene	μg/L	_	1/Year	Grab	ND < 0.25	Ü
Toxaphene	μg/L	_	1/Year	ANR	ANR	ANR
trans-1,2-Dichloroethene	μg/L	-	1/Year	Grab	ND < 0.25	U
trans-1,3-Dichloropropene		-	1/Year	Grab	ND < 0.25	U
Trichlorofluoromethane	µg/L	-	1/Year	ANR	ANR	ANR
	μg/L					U
Vinyl chloride	μg/L	-	1/Year	Grab	ND < 0.25	
Xylenes (Total)	μg/L	-	1/Year	ANR	ANR	ANR
EFFLUENT MONITORING (NO LIMITATIONS) POLLUTAI						
1,1,2-Trichloro-1,2,2-trifluoroethane	μg/L	-	1/Quarter	Grab	ND < 0.50	U
1,2-Dichloro-1,1,2-trifluoroethane	μg/L	-	1/Year	ANR	ANR	ANR
1,4-Dioxane	μg/L	-	1/Year	ANR	ANR	ANR
Boron	mg/L	-	1/Year	ANR	ANR	ANR
cis-1,2-Dichloroethene <sup>(p)</sup>	μg/L	-	1/Year	Grab	ND < 0.25	U
Cobalt	μg/L	-	1/Year	ANR	ANR	ANR
Conductivity	µmhos/cm	_	1/Discharge	Grab	1,400	
Cyclohexane	µg/L	_	1/Year	ANR	ANR	ANR
Diesel Range Organics (DRO C13-C28)	mg/L	-	1/Year	ANR	ANR	ANR
Dissolved Oxygen (Field)	mg/L		1/Discharge	Grab	16.31	*
E. Coli	mpn/100mL	-	1/Discharge	ANR	ANR	ANR
	· ·					
Gasoline Range Organics (GRO C4-C12)	mg/L	-	1/Year	ANR	ANR	ANR
Hardness (as CaCO3)	mg/L	-	1/Year	ANR	ANR	ANR
Monomethyl hydrazine	μg/L	-	1/Year	ANR	ANR	ANR
Total Organic Carbon	mg/L	-	1/Year	ANR	ANR	ANR
Turbidity	NTU	-	1/Discharge	Composite	200	*
Vanadium	μg/L	-	1/Year	ANR	ANR	ANR
ADDITIONAL POLLUTANTS <sup>(2)</sup>		1				
Antimony, dissolved	μg/L	-	Additional/Year	ANR	ANR	ANR
Arsenic, dissolved	μg/L	-	Additional/Year	ANR	ANR	ANR
Barium, dissolved	mg/L	-	Additional/Year	ANR	ANR	ANR
Beryllium, dissolved	μg/L	_	Additional/Year	ANR	ANR	ANR
Boron, dissolved	mg/L	-	Additional/Year	ANR	ANR	ANR
Cadmium, dissolved	μg/L	-	Additional/Discharge	Composite	ND < 0.25	U
Chromium, dissolved Chromium, dissolved		-	Additional/Year	ANR	ANR	ANR
Cobalt, dissolved	μg/L		Additional/Year			ANR
,	μg/L	-	Additional/Year Additional/Discharge	ANR	ANR	
Copper, dissolved Hardness, Dissolved (as CaCO3)	μg/L	-		Composite	1.9	J (DNQ)
	mg/L	-	Additional/Year	ANR	ANR	ANR

#### FOURTH QUARTER 2019 THE BOEING COMPANY SANTA SUSANA FIELD LABORATORY NPDES PERMIT CA0001309

				12/26/20	019 07:45 - 12/27/20	19 07:25
ANALYTE	UNITS	DAILY MAXIMUM BENCHMARK	SAMPLE FREQUENCY	SAMPLE TYPE	RESULT	LABORATORY/ VALIDATION QUALIFIER
Human Bacteroides	CEs/100mL	-	Additional/Year	ANR	ANR	ANR
Iron, dissolved	mg/L	-	Additional/Discharge (g)	Composite	0.29	
Lead, dissolved	μg/L	-	Additional/Discharge	Composite	ND < 0.50	U
Manganese, dissolved	μg/L	-	Additional/Year	ANR	ANR	ANR
Mercury, dissolved	μg/L	-	Additional/Discharge	Composite	ND < 0.10	U*
Nickel, dissolved	μg/L	-	Additional/Year	ANR	ANR	ANR
Selenium, dissolved	μg/L	-	Additional/Discharge	Composite	ND < 0.50	U
Silver, dissolved	μg/L	-	Additional/Year	ANR	ANR	ANR
Thallium, dissolved	μg/L	-	Additional/Year	ANR	ANR	ANR
Vanadium, dissolved	μg/L	-	Additional/Year	ANR	ANR	ANR
Zinc, dissolved	μg/L	-	Additional/Discharge	Composite	ND < 12	U*

# FOURTH QUARTER 2019 THE BOEING COMPANY SANTA SUSANA FIELD LABORATORY NPDES PERMIT CA0001309

October 1 through December 31, 2019

						12/27/2019 07:	25 (Composite)	
ANALYTE	OUTFALL SAMPLE FREQUENCY	1998 WHO TEF	BEF GREAT LAKES WATER QUALITY INITIATIVE	UNITS	LAB MDL	LAB RESULT	LABORATORY/ VALIDATION QUALIFIER	TCDD EQUIVALENT (w/out DNQ Values)
1,2,3,4,6,7,8-HpCDD	1/Discharge	0.01	0.05	μg/L	1.2E-06	1.0E-04	-	5.0E-08
1,2,3,4,6,7,8-HpCDF	1/Discharge	0.01	0.01	μg/L	7.6E-07	3.6E-05	U (B)	ND
1,2,3,4,7,8,9-HpCDF	1/Discharge	0.01	0.4	μg/L	9.2E-07	2.9E-06	UJ (*III)	ND
1,2,3,4,7,8-HxCDD	1/Discharge	0.1	0.3	μg/L	4.4E-07	3.4E-06	U (B)	ND
1,2,3,4,7,8-HxCDF	1/Discharge	0.1	0.08	μg/L	5.8E-07	2.9E-06	J (DNQ)	ND
1,2,3,6,7,8-HxCDD	1/Discharge	0.1	0.1	μg/L	4.7E-07	4.5E-06	U (B)	ND
1,2,3,6,7,8-HxCDF	1/Discharge	0.1	0.2	μg/L	6.0E-07	2.4E-06	J (DNQ)	ND
1,2,3,7,8,9-HxCDD	1/Discharge	0.1	0.1	μg/L	4.1E-07	3.5E-06	U (B)	ND
1,2,3,7,8,9-HxCDF	1/Discharge	0.1	0.6	μg/L	4.1E-07	2.2E-06	U (B)	ND
1,2,3,7,8-PeCDD	1/Discharge	1.0	0.9	μg/L	5.5E-07	1.7E-06	UJ (*III)	ND
1,2,3,7,8-PeCDF	1/Discharge	0.05	0.2	μg/L	4.4E-07	1.5E-06	J (DNQ)	ND
2,3,4,6,7,8-HxCDF	1/Discharge	0.1	0.7	μg/L	4.4E-07	2.6E-06	U (B)	ND
2,3,4,7,8-PeCDF	1/Discharge	0.5	1.6	μg/L	4.4E-07	1.4E-06	J (DNQ)	ND
2,3,7,8-TCDD	1/Discharge	1.0	1.0	μg/L	4.4E-07	1.6E-06	UJ (*III)	ND
2,3,7,8-TCDF	1/Discharge	0.1	0.8	μg/L	5.3E-07	1.2E-06	J (DNQ)	ND
OCDD	1/Discharge	0.0001	0.01	μg/L	8.9E-07	7.8E-04	-	7.8E-10
OCDF	1/Discharge	0.0001	0.02	μg/L	5.7E-07	7.0E-05	U (B)	ND

	TCDD TEQ w/out DNQ Values <sup>(4)</sup>	5.1E-08
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TCDD TEQ (PRIORITY POLLUTANTS) DAILY MAXIMUM BENCHMARK = 2.8E-08

# FOURTH QUARTER 2019 THE BOEING COMPANY SANTA SUSANA FIELD LABORATORY NPDES PERMIT CA0001309

				12/27/2019 07:25 (Composite)				
ANALYTE	UNITS	DAILY MAXIMUM BENCHMARK	SAMPLE FREQUENCY	RESULT	MDA	LABORATORY/ VALIDATION QUALIFIER		
NON-CONVENTIONAL POLLUTANTS								
Gross Alpha	pCi/L	15	1/Discharge	14.1 +/-3.61	2.76	J- (*III)		
Gross Beta	pCi/L	50	1/Discharge	7.80 +/-1.42	1.14			
Combined Radium-226 & Radium-228	pCi/L	5	1/Discharge	1.54 +/-0.616	NM	J+ (B, *III)		
Strontium-90	pCi/L	8	1/Discharge	0.107 +/-0.410	0.719	U		
Tritium	pCi/L	20,000	1/Discharge	-27.5 +/-152	283	U		
ADDITIONAL POLLUTANTS								
Cesium-137	pCi/L	200	1/Discharge	5.01 +/-9.91	16.8	U		
Uranium	pCi/L	20	1/Discharge	0.664 +/-0.436	0.407	U (B)		
ADDITIONAL POLLUTANTS WITHOUT LIMITS								
Potassium-40	pCi/L	-	1/Discharge	32.7 +/-90.4	152	U		

#### FOURTH QUARTER 2019 THE BOEING COMPANY SANTA SUSANA FIELD LABORATORY NPDES PERMIT CA0001309

				12/26/20	19 7:45 - 12/27/2	019 7:25
ANALYTE	UNITS	BENCHMARK DAILY MAX	SAMPLE FREQUENCY	SAMPLE TYPE	RESULT	LABORATORY/ VALIDATION QUALIFIER
Flow**	MGD	117.83	1/Discharge	Meas	0.131101	*
CONVENTIONAL POLLUTANTS			Ĭ			
Biochemical Oxygen Demand (BOD)	LBS/DAY	29.481	1/Discharge	Composite	3.2	*
Oil & Grease	LBS/DAY	14,741	1/Discharge	Grab	ND	U*
Total Suspended Solids <sup>#</sup>	LBS/DAY	44,222	1/Discharge	Composite	207.7 <sup>(c)</sup>	
PRIORITY POLLUTANTS	LDO/DAT	77,222	1/Discharge	Composite	201.1	
1.1-Dichloroethene	LBS/DAY	5.9	4/Dia-bassa	Grab	ND	U*
1,1 = 111111111111111111111111111111111	LBS/DAY LBS/DAY	0.49	1/Discharge	Grab	ND ND	U*
1,2-Dichloroethane	LBS/DAY	12.8	1/Discharge	Composite	ND ND	U*
2,4,6-Trichlorophenol 2.4-Dinitrotoluene	LBS/DAY LBS/DAY	17.7	1/Discharge 1/Discharge	Composite	ND ND	U*
alpha-BHC	LBS/DAY	0.03	1/Discharge	Composite	ND ND	U*
Antimony	LBS/DAY	5.9	1/Discharge 1/Year	ANR	ANR	ANR
Arsenic	LBS/DAY	9.83	1/Year	ANR	ANR	ANR
Bervllium	LBS/DAY	3.93	1/Year	ANR	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	ND <sup>(b)</sup>	II
Cadmium Chromium VI (Hexavalent)	LBS/DAY	15.72	1/Discharge	ANR	ANR	ANR
Copper	LBS/DAY	13.76	1/Discharge	Composite	0.0079	AINIX
Copper Cyanide	LBS/DAY	8.35	1/Discharge	Composite	0.0079 ND	LJ*
Lead	LBS/DAY	5.11	1/Discharge	Composite	0.0072	
Mercury	LBS/DAY	0.1	1/Discharge	Composite	0.0072 ND	LJ*
Nickel	LBS/DAY	92.4	1/Year	ANR	ANR	ANR
N-Nitrosodimethylamine	LBS/DAY	15.72	1/Discharge	Composite	ND	U (B)
Pentachlorophenol	LBS/DAY	16.22	1/Discharge	Composite	ND	U*
Selenium	LBS/DAY	(4.91) 8.06	1/Discharge	Composite	ND <sup>(f)</sup>	U (B)
Silver	LBS/DAY	4.03	1/Year	ANR	ANR	ANR
TCDD TEQ_NoDNQ <sup>(4)</sup>	LBS/DAY	2.75E-08	1/Discharge	Composite	5.6E-11	*
Thallium	LBS/DAY	1.97	1/Year	ANR	ANR	ANR
Trichloroethene	LBS/DAY	4.91	1/Discharge	Grab	ND	U*
Zinc	LBS/DAY	117	1/Discharge	Composite	0.051	*
NON-CONVENTIONAL POLLUTANTS	LBG/B/(I	117	17 Diconargo	Composito	0.001	
Ammonia – N	LBS/DAY	9,925.3	1/Discharge	Composite	0.198	J (DNQ)
Barium	LBS/DAY	983	1/Year	ANR	ANR	ANR
Chloride	LBS/DAY	147.405	1/Discharge	Composite	4.5	*
Chlorine, Total Residual (Field)	LBS/DAY	98.3	1/Year	ANR	ANR	ANR
Detergents (as MBAS)	LBS/DAY	491.4	1/Discharge	Composite	ND	U*
Fluoride	LBS/DAY	1,572.3	1/Year	ANR	ANR	ANR
Iron	LBS/DAY	295	1/Discharge <sup>(l)</sup>	Composite	15	
Manganese	LBS/DAY	49.1	1/Discharge*	ANR	ANR	ANR
Nitrate - N	LBS/DAY	7.862	1/Discharge	Composite	1.7	*
Nitrate + Nitrite as Nitrogen (N)	LBS/DAY	7,862	1/Discharge	Composite	1.7	*
Nitrite - N	LBS/DAY	983	1/Discharge	Composite	ND	U*
Perchlorate	LBS/DAY	5.9	1/Discharge	Composite	ND	U*
						+ <u> </u>
Sulfate	LBS/DAY	294.810	1/Discharge	Composite	7.4	*

# FOURTH QUARTER 2019 THE BOEING COMPANY SANTA SUSANA FIELD LABORATORY NPDES PERMIT CA0001309

						12/4/2019 13:30 - 12/5/2019 (		
ANALYTE	UNITS	BENCHMARK DAILY MAXIMUM	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	0.006605	*
CONVENTIONAL POLLUTANTS			_					
Biochemical Oxygen Demand (BOD)(5-Day @ 20 deg. C)	mg/L	30	1/Discharge	NA	-	Composite	16	*
Oil & Grease	mg/L	15	1/Discharge	NA	-	Grab	ND < 1.4	U*
pH (Field)	s.u.	6.5-8.5	1/Discharge	1/Quarter	6.5-8.5	Grab	7.63	*
Total Suspended Solids <sup>#</sup>	mg/L	45	1/Discharge	1/Year	-	Composite	49 <sup>(c)</sup>	
PRIORITY POLLUTANTS								
1,1-Dichloroethene	μg/L	6.0	1/Discharge	1/5 Years	-	Grab	ND < 0.25	U*
1,2-Dichloroethane	μg/L	0.5	1/Discharge	1/5 Years	-	Grab	ND < 0.25	U*
2,4,6-Trichlorophenol	μg/L	13	1/Discharge	1/5 Years	-	Composite	ND < 0.10	U*
2,4-Dinitrotoluene	μg/L	18	1/Discharge	1/5 Years	-	Composite	ND < 2.1	U*
alpha-BHC	μg/L	0.03	1/Discharge	1/5 Years	-	Composite	ND < 0.0026	U*
Antimony	μg/L	6.0	1/Year	1/5 Years	-	ANR	ANR	ANR
Arsenic	μg/L	10.0	1/Year	1/5 Years	-	ANR	ANR	ANR
Beryllium	μg/L	4.0	1/Year	1/5 Years	-	ANR	ANR	ANR
Bis (2-Ethylhexyl) Phthalate	μg/L	4.0	1/Discharge	1/5 Years	-	Composite	ND < 2.1	U*
Cadmium	μg/L	(4.0) 3.1	1/Discharge	1/5 Years	-	Composite	ND < 0.25 <sup>(b)</sup>	U
Chromium VI (Hexavalent)	μg/L	16	1/Year	1/5 Years	-	ANR	ANR	ANR
Copper	μg/L	14	1/Discharge	1/5 Years	-	Composite	3.6	
Cyanide	μg/L	8.5	1/Discharge	1/5 Years	-	Composite	ND < 2.5	U*
Lead	μg/L	5.2	1/Discharge	1/5 Years	-	Composite	1.1	
Mercury	μg/L	0.1	1/Discharge	1/5 Years	-	Composite	ND < 0.10	U*
Nickel	μg/L	94	1/Year	1/5 Years	-	ANR	ANR	ANR
N-Nitrosodimethylamine	μg/L	16	1/Discharge	1/5 Years	-	Composite	ND < 0.31	U*
Pentachlorophenol	μg/L	16.5	1/Discharge	1/5 Years	-	Composite	1.2	J (DNQ)
Selenium	μg/L	(5) 8.2	1/Discharge	1/5 Years	-	Composite	0.62 <sup>(f)</sup>	J (DNQ)
Silver	μg/L	4.1	1/Year	1/5 Years	-	ANR	ANR	ANR
Thallium	μg/L	2.0	1/Year	1/5 Years	-	ANR	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	18	J (DNQ)
NON-CONVENTIONAL POLLUTANT								
Ammonia - N	mg/L	10.1	1/Discharge	NA	-	Composite	0.147	J (DNQ)
Barium	mg/L	1.0	1/Year	NA	-	ANR	ANR	ANR
Chloride	mg/L	150	1/Discharge	NA	-	Composite	31	*
Chlorine, Total Residual (Field)	mg/L	0.1	1/Year	NA	-	ANR	ANR	ANR
Chronic Toxicity	Pass or Fail and % Effect	Pass or % Effect <50	1st & 2nd rain event/Year	NA	-	ANR	ANR	ANR

# FOURTH QUARTER 2019 THE BOEING COMPANY SANTA SUSANA FIELD LABORATORY NPDES PERMIT CA0001309

						12/4/2019 13:30 - 12/5/2019 09:50 <sup>(n)</sup>		
ANALYTE	UNITS	BENCHMARK DAILY MAXIMUM	OUTFALL SAMPLE FREQUENCY	RECEIVING WATER SAMPLE FREQUENCY	RECEIVING WATER LIMIT	SAMPLE TYPE	RESULT	LABORATORY/ VALIDATION QUALIFIER
Detergents (as MBAS)	mg/L	0.5	1/Discharge	NA	-	Composite	0.12	*
Fluoride	mg/L	1.6	1/Year	NA	-	ANR	ANR	ANR
Iron	mg/L	0.3	1/Discharge(g)	NA	-	Composite	1.5	J+ (Q)
Manganese	μg/L	50	1/Year	NA	-	ANR	ANR	ANR
Nitrate - N	mg/L	8	1/Discharge	NA	-	Composite	1.0	*
Nitrate + Nitrite as Nitrogen (N)	mg/L	8	1/Discharge	NA	-	Composite	1.0	*
Nitrite - N	mg/L	1	1/Discharge	NA	-	Composite	ND < 0.025	U*
Perchlorate	μg/L	6.0	1/Discharge	NA	-	Composite	ND < 0.95	U*
Settleable Solids#	ml/L	0.3	1/Discharge	NA	-	Grab	ND < 0.10 <sup>(c)</sup>	U*
Sulfate	mg/L	300	1/Discharge	NA	-	Composite	210	*
Temperature (Field)	Deg F	86	1/Discharge	1/Quarter	-	Grab	54.9	*
Total Dissolved Solids	mg/L	950	1/Discharge	NA	-	Composite	500	*
REMAINING PRIORITY POLLUTANTS(P)	_							
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	-	ANR	ANR	ANR
1,2-Dichlorobenzene	μg/L	-	1/Year	1/5 Years	-	Grab	ND < 0.25	U
1,2-Dichlorobenzene	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
1,2-Dichloropropane	μg/L	-	1/Year	1/5 Years	-	Grab	ND < 0.25	U
1,2-Diphenylhydrazine/Azobenzene	μg/L	-	1/Year	1/5 Years	-	ANR	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	-	ANR	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	-	ANR	ANR	ANR
2,4-Dichlorophenol	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
2,4-Dimethylphenol	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
2,4-Dinitrophenol	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
2,6-Dinitrotoluene	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
2-Chloroethyl vinyl ether	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
2-Chloronaphthalene	μg/L	-	1/Year	1/5 Years		ANR	ANR	ANR
2-Chlorophenol	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
2-Methyl-4,6-Dinitrophenol	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
2-Nitrophenol	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
3,3'-Dichlorobenzidine	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
4,4'-DDD	μg/L	-	1/Year	1/Quarter	0.0014	Composite	ND < 0.0042	U

# FOURTH QUARTER 2019 THE BOEING COMPANY SANTA SUSANA FIELD LABORATORY NPDES PERMIT CA0001309

						12/4/2019 13:30 - 12/5/2019		09:50 <sup>(n)</sup>
ANALYTE	UNITS	BENCHMARK DAILY MAXIMUM	OUTFALL SAMPLE FREQUENCY	RECEIVING WATER SAMPLE FREQUENCY	RECEIVING WATER LIMIT	SAMPLE TYPE	RESULT	LABORATORY/ VALIDATION QUALIFIER
4,4'-DDE	μg/L	-	1/Year	1/Quarter	0.001	Composite	ND < 0.0032	U
4,4'-DDT	μg/L	-	1/Year	1/Quarter	0.001	Composite	ND < 0.0042	U
4-Bromophenyl phenyl ether	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
4-Chloro-3-methylphenol	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
4-Chlorophenyl phenyl ether	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
4-Nitrophenol	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Acenaphthene	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Acenaphthylene	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Acrolein	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Acrylonitrile	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Aldrin	μg/L	-	1/Year	1/5 Years	-	Composite	ND < 0.0016	U
alpha-Endosulfan	μg/L	-	1/Year	1/5 Years	-	Composite	ND < 0.0032	U
Anthracene	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Aroclor 1016	μg/L	-	1/Year	1/Quarter	0.0003	Composite	ND < 0.26	U
Aroclor 1221	μg/L	-	1/Year	1/Quarter	0.0003	Composite	ND < 0.26	U
Aroclor 1232	μg/L	-	1/Year	1/Quarter	0.0003	Composite	ND < 0.26	U
Aroclor 1242	μg/L	-	1/Year	1/Quarter	0.0003	Composite	ND < 0.26	U
Aroclor 1248	μg/L	-	1/Year	1/Quarter	0.0003	Composite	ND < 0.26	U
Aroclor 1254	μg/L	-	1/Year	1/Quarter	0.0003	Composite	ND < 0.26	U
Aroclor 1260	μg/L	-	1/Year	1/Quarter	0.0003	Composite	ND < 0.26	U
Benzene	μg/L	-	1/Year	1/5 Years	-	Grab	ND < 0.25	U
Benzidine	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Benzo(a)anthracene	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Benzo(a)pyrene	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Benzo(b)fluoranthene	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Benzo(g,h,i)Perylene	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Benzo(k)fluoranthene	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
beta-BHC	μg/L	-	1/Year	1/5 Years	-	Composite	ND < 0.0042	U
beta-Endosulfan	μg/L	-	1/Year	1/5 Years	-	Composite	ND < 0.0021	U
Bis (2-Chloroethoxy) Methane	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Bis (2-Chloroethyl) Ether	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Bis (2-Chloroisopropyl) Ether	μg/L	-	1/Year	1/5 Years	-	ANR	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	-	ANR	ANR	ANR
Carbon Tetrachloride	μg/L	-	1/Year	1/5 Years	-	Grab	ND < 0.25	U
Chlordane	μg/L	-	1/Year	1/Quarter	0.001	Composite	ND < 0.084	U
Chlorobenzene	μg/L	-	1/Year	1/5 Years	-	Grab	ND < 0.25	U

# FOURTH QUARTER 2019 THE BOEING COMPANY SANTA SUSANA FIELD LABORATORY NPDES PERMIT CA0001309

					•	12/4/2019 13:30 - 12/5/2019 09:50 <sup>(n)</sup>		
ANALYTE	UNITS	BENCHMARK DAILY MAXIMUM	OUTFALL SAMPLE FREQUENCY	RECEIVING WATER SAMPLE FREQUENCY	RECEIVING WATER LIMIT	SAMPLE TYPE	RESULT	LABORATORY/ VALIDATION QUALIFIER
Chlorodibromomethane	μg/L	-	1/Year	1/5 Years	-	Grab	ND < 0.25	U
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	-	ANR	ANR	ANR
Chrysene	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
cis-1,3-Dichloropropene	μg/L	-	1/Year	1/5 Years	-	Grab	ND < 0.25	U
delta-BHC	μg/L	-	1/Year	1/5 Years	-	Composite	ND < 0.0037	U
Dibenz(a,h)anthracene	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Dichlorobromomethane	μg/L	-	1/Year	1/5 Years	-	Grab	ND < 0.25	U
Dieldrin	μg/L	-	1/Year	1/Quarter	0.0002	Composite	ND < 0.0021	U
Diethyl phthalate	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Dimethyl phthalate	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Di-n-butyl phthalate	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Di-n-octyl phthalate	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Endosulfan Sulfate	μg/L	-	1/Year	1/5 Years	-	Composite	ND < 0.0032	U
Endrin	μg/L	-	1/Year	1/5 Years	-	Composite	ND < 0.0021	U
Endrin Aldehyde	μg/L	-	1/Year	1/5 Years	-	Composite	ND < 0.0021	U
Ethylbenzene	μg/L	-	1/Year	1/5 Years	-	Grab	ND < 0.25	U
Fluoranthene	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Fluorene	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
gamma-BHC (Lindane)	μg/L	-	1/Year	1/5 Years	-	Composite	ND < 0.0032	U
Heptachlor	μg/L	-	1/Year	1/5 Years	-	Composite	ND < 0.0032	U
Heptachlor Epoxide	μg/L	-	1/Year	1/5 Years	-	Composite	ND < 0.0026	U
Hexachlorobenzene	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Hexachlorobutadiene	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Hexachlorocyclopentadiene	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Hexachloroethane	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Indeno(1,2,3-cd)pyrene	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Isophorone	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
m,p-Xylenes	μg/L	-	1/Year	1/5 Years	-	ANR	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	-	ANR	ANR	ANR
Nitrobenzene	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
N-Nitroso-di-n-propylamine	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
N-Nitrosodiphenylamine	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
o-Xylene	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR

# FOURTH QUARTER 2019 THE BOEING COMPANY SANTA SUSANA FIELD LABORATORY NPDES PERMIT CA0001309

						12/4/2019 13:30 - 12/5/201		09:50 <sup>(n)</sup>
ANALYTE	UNITS	BENCHMARK DAILY MAXIMUM	OUTFALL SAMPLE FREQUENCY	RECEIVING WATER SAMPLE FREQUENCY	RECEIVING WATER LIMIT	SAMPLE TYPE	RESULT	LABORATORY/ VALIDATION QUALIFIER
Phenanthrene	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Phenol	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Pyrene	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Tetrachloroethene	μg/L	-	1/Year	1/5 Years	-	Grab	ND < 0.25	U
Toluene	μg/L	-	1/Year	1/5 Years	-	Grab	ND < 0.25	U
Toxaphene	μg/L	-	1/Year	1/Quarter	0.0003	Composite	ND < 0.25	U
trans-1,2-Dichloroethene	μg/L	-	1/Year	1/5 Years	-	Grab	ND < 0.25	U
trans-1,3-Dichloropropene	μg/L	-	1/Year	1/5 Years	-	Grab	ND < 0.25	U
Trichlorofluoromethane	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Vinyl chloride	μg/L	-	1/Year	1/5 Years	-	Grab	ND < 0.25	U
Xylenes (Total)	μg/L		1/Year	1/5 Years	-	ANR	ANR	ANR
EFFLUENT MONITORING (NO LIMITATIONS) POLLUTAN	ITS							
1,1,2-Trichloro-1,2,2-trifluoroethane	μg/L		1/Quarter	NA	-	Grab	ND < 0.50	U
1,2-Dichloro-1,1,2-trifluoroethane	μg/L		1/Year	NA	-	ANR	ANR	ANR
1,4-Dioxane	μg/L	•	1/Year	NA	-	ANR	ANR	ANR
Boron	mg/L	•	1/Year	NA	-	ANR	ANR	ANR
cis-1,2-Dichloroethene <sup>(p)</sup>	μg/L	-	1/Year	NA	-	Grab	ND < 0.25	U
Cobalt	μg/L	-	1/Year	NA	-	ANR	ANR	ANR
Conductivity	µmhos/cm	-	1/Discharge	NA	-	Grab	680	
Cyclohexane	μg/L	-	1/Year	NA	-	ANR	ANR	ANR
Diesel Range Organics (DRO C13-C28)	mg/L	-	1/Year	NA	-	ANR	ANR	ANR
Dissolved Oxygen (Field)	mg/L	-	1/Discharge	NA	-	Grab	23.2	*
E. Coli	mpn/100mL	-	1/Year	1/Year	235	ANR	ANR	ANR
Gasoline Range Organics (GRO C4-C12)	mg/L	-	1/Year	NA	-	ANR	ANR	ANR
Hardness (as CaCO3)	mg/L	-	1/Year	1/Quarter	-	Composite	230	
Monomethyl hydrazine	μg/L	-	1/Year	NA	-	ANR	ANR	ANR
Total Organic Carbon	mg/L	-	1/Year	NA	-	ANR	ANR	ANR
Turbidity	NTU	-	1/Discharge	NA	-	Composite	35	
Vanadium	μg/L	-	1/Year	NA	-	ANR	ANR	ANR
ADDITIONAL POLLUTANTS <sup>(2)</sup>								
Antimony, dissolved	μg/L	-	Additional/Year	NA	-	ANR	ANR	ANR
Arsenic, dissolved	μg/L	-	Additional/Year	NA	-	ANR	ANR	ANR
Barium, dissolved	mg/L	-	Additional/Year	NA	-	ANR	ANR	ANR
Beryllium, dissolved	μg/L	-	Additional/Year	NA	-	ANR	ANR	ANR
Boron, dissolved	mg/L	-	Additional/Year	NA	-	ANR	ANR	ANR
Cadmium, dissolved	μg/L	-	Additional/Discharge	NA	-	Composite	ND < 0.25	U
Chlorpyrifos	μg/L	_	Additional <sup>(p)</sup>	1/Quarter	_	Composite	ND < 0.0069	U*

# FOURTH QUARTER 2019 THE BOEING COMPANY SANTA SUSANA FIELD LABORATORY NPDES PERMIT CA0001309

						12/4/20	12/4/2019 13:30 - 12/5/2019 09:50 <sup>(n)</sup>			
ANALYTE	UNITS	BENCHMARK DAILY MAXIMUM	OUTFALL SAMPLE FREQUENCY	RECEIVING WATER SAMPLE FREQUENCY	RECEIVING WATER LIMIT	SAMPLE TYPE	RESULT	LABORATORY/ VALIDATION QUALIFIER		
Chromium, dissolved	μg/L	-	Additional/Year	NA	-	ANR	ANR	ANR		
Cobalt, dissolved	μg/L	-	Additional/Year	NA	-	ANR	ANR	ANR		
Copper, dissolved	μg/L	-	Additional/Discharge	NA	-	Composite	2.0			
Diazinon	μg/L	-	Additional <sup>(p)</sup>	1/Quarter	-	Composite	ND < 0.0052	U*		
Hardness, Dissolved (as CaCO3)	mg/L	-	Additional/Year	NA	-	Composite	250			
Human Bacteroides	CEs/100mL	-	Additional/Year	NA	-	ANR	ANR	ANR		
Iron, dissolved	mg/L	-	Additional/Discharge <sup>(g)</sup>	NA	-	Composite	ND < 0.050	U		
Lead, dissolved	μg/L	-	Additional/Discharge	NA	-	Composite	ND < 0.50	U		
Manganese, dissolved	μg/L	-	Additional/Year	NA	-	ANR	ANR	ANR		
Mercury, dissolved	μg/L	-	Additional/Discharge	NA	-	Composite	ND < 0.10	U*		
Nickel, dissolved	μg/L	-	Additional/Year	NA	-	ANR	ANR	ANR		
Selenium, dissolved	μg/L	-	Additional/Discharge	NA	-	Composite	ND < 0.50	C		
Silver, dissolved	μg/L	-	Additional/Year	NA	-	ANR	ANR	ANR		
Thallium, dissolved	μg/L	-	Additional/Year	NA	-	ANR	ANR	ANR		
Vanadium, dissolved	μg/L	-	Additional/Year	NA	-	ANR	ANR	ANR		
Zinc, dissolved	μg/L	-	Additional/Discharge	NA	-	Composite	15	J (DNQ)		

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						12/23/2019 09:30 - 12/24/2019 08:20 <sup>(n)</sup>		
ANALYTE	UNITS	BENCHMARK DAILY MAXIMUM	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	0.028787	*
CONVENTIONAL POLLUTANTS			, and the second					
Biochemical Oxygen Demand (BOD)(5-Day @ 20 deg. C)	mg/L	30	1/Discharge	NA	-	Composite	3.6	*
Oil & Grease	mg/L	15	1/Discharge	NA	-	Grab	ND < 1.3	U*
pH (Field)	s.u.	6.5-8.5	1/Discharge	1/Quarter	6.5-8.5	Grab	7.21	*
Total Suspended Solids#	mg/L	45	1/Discharge	1/Year	-	Composite	110 <sup>(c)</sup>	
PRIORITY POLLUTANTS			_			·		
1,1-Dichloroethene	μg/L	6.0	1/Discharge	1/5 Years	-	Grab	ND < 0.25	U*
1,2-Dichloroethane	μg/L	0.5	1/Discharge	1/5 Years	-	Grab	ND < 0.25	U*
2,4,6-Trichlorophenol	μg/L	13	1/Discharge	1/5 Years	-	Composite	ND < 0.10	U*
2,4-Dinitrotoluene	μg/L	18	1/Discharge	1/5 Years	-	Composite	ND < 2.1	U*
alpha-BHC	μg/L	0.03	1/Discharge	1/5 Years	-	Composite	ND < 0.021	U*
Antimony	μg/L	6.0	1/Year	1/5 Years	-	ANR	ANR	ANR
Arsenic	μg/L	10.0	1/Year	1/5 Years	-	ANR	ANR	ANR
Beryllium	μg/L	4.0	1/Year	1/5 Years	-	ANR	ANR	ANR
Bis (2-Ethylhexyl) Phthalate	μg/L	4.0	1/Discharge	1/5 Years	-	Composite	ND < 2.1	U*
Cadmium	μg/L	(4.0) 3.1	1/Discharge	1/5 Years	-	Composite	ND < 0.25 <sup>(b)</sup>	U
Chromium VI (Hexavalent)	μg/L	16	1/Year	1/5 Years	-	ANR	ANR	ANR
Copper	μg/L	14	1/Discharge	1/5 Years	-	Composite	6.6	
Cyanide	μg/L	8.5	1/Discharge	1/5 Years	-	Composite	ND < 2.5	U*
Lead	μg/L	5.2	1/Discharge	1/5 Years	-	Composite	3.5	
Mercury	μg/L	0.1	1/Discharge	1/5 Years	-	Composite	ND < 0.10	U*
Nickel	μg/L	94	1/Year	1/5 Years	-	ANR	ANR	ANR
N-Nitrosodimethylamine	μg/L	16	1/Discharge	1/5 Years	-	Composite	ND < 5.1	U (B)
Pentachlorophenol	μg/L	16.5	1/Discharge	1/5 Years	-	Composite	ND < 1.0	U*
Selenium	μg/L	(5) 8.2	1/Discharge	1/5 Years	-	Composite	ND < 0.50 <sup>(f)</sup>	U
Silver	μg/L	4.1	1/Year	1/5 Years	-	ANR	ANR	ANR
Thallium	μg/L	2.0	1/Year	1/5 Years	-	ANR	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	31	
NON-CONVENTIONAL POLLUTANT						·		
Ammonia - N	mg/L	10.1	1/Discharge	NA	-	Composite	ND < 0.100	U*
Barium	mg/L	1.0	1/Year	NA	-	ANR	ANR	ANR
Chloride	mg/L	150	1/Discharge	NA	-	Composite	18	*
Chlorine, Total Residual (Field)	mg/L	0.1	1/Year	NA	-	ANR	ANR	ANR
Chronic Toxicity	Pass or Fail and % Effect	Pass or % Effect <50	1st & 2nd rain event/Year	NA	-	ANR	ANR	ANR

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						12/23/2019 09:30 - 12/24/2019		19 08:20 <sup>(n)</sup>
ANALYTE	UNITS	BENCHMARK DAILY MAXIMUM	OUTFALL SAMPLE FREQUENCY	RECEIVING WATER SAMPLE FREQUENCY	RECEIVING WATER LIMIT	SAMPLE TYPE	RESULT	LABORATORY/ VALIDATION QUALIFIER
Detergents (as MBAS)	mg/L	0.5	1/Discharge	NA	-	Composite	0.055	J (DNQ*)
Fluoride	mg/L	1.6	1/Year	NA	-	ANR	ANR	ANR
Iron	mg/L	0.3	1/Discharge(g)	NA	-	Composite	8.7	
Manganese	μg/L	50	1/Year	NA	-	ANR	ANR	ANR
Nitrate - N	mg/L	8	1/Discharge	NA	-	Composite	0.63	*
Nitrate + Nitrite as Nitrogen (N)	mg/L	8	1/Discharge	NA	-	Composite	0.72	*
Nitrite - N	mg/L	1	1/Discharge	NA	-	Composite	0.092	J (DNQ*)
Perchlorate	μg/L	6.0	1/Discharge	NA	-	Composite	ND < 0.95	U*
Settleable Solids#	ml/L	0.3	1/Discharge	NA	-	Grab	0.10 <sup>(c)</sup>	*
Sulfate	mg/L	300	1/Discharge	NA	-	Composite	130	*
Temperature (Field)	Deg F	86	1/Discharge	1/Quarter	-	Grab	50	*
Total Dissolved Solids	mg/L	950	1/Discharge	NA	-	Composite	360	*
REMAINING PRIORITY POLLUTANTS <sup>(p)</sup>								
1,1,1-Trichloroethane	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
1,1,2,2-Tetrachloroethane	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
1,1,2-Trichloroethane	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
1,1-Dichloroethane	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
1,2,4-Trichlorobenzene	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
1,2-Dichlorobenzene	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
1,2-Dichlorobenzene	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
1,2-Dichloropropane	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
1,2-Diphenylhydrazine/Azobenzene	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
1,3-Dichlorobenzene	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
1,3-Dichlorobenzene	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
1,4-Dichlorobenzene	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
1,4-Dichlorobenzene	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
2,4-Dichlorophenol	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
2,4-Dimethylphenol	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
2,4-Dinitrophenol	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
2,6-Dinitrotoluene	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
2-Chloroethyl vinyl ether	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
2-Chloronaphthalene	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
2-Chlorophenol	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
2-Methyl-4,6-Dinitrophenol	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
2-Nitrophenol	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
3,3'-Dichlorobenzidine	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
4,4'-DDD	μg/L	-	1/Year	1/Quarter	0.0014	ANR	ANR	ANR

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						12/23/2019 09:30 - 12/24/2019 08:20 <sup>(n)</sup>		
ANALYTE	UNITS	BENCHMARK DAILY MAXIMUM	OUTFALL SAMPLE FREQUENCY	RECEIVING WATER SAMPLE FREQUENCY	RECEIVING WATER LIMIT	SAMPLE TYPE	RESULT	LABORATORY/ VALIDATION QUALIFIER
4,4'-DDE	μg/L	-	1/Year	1/Quarter	0.001	ANR	ANR	ANR
4,4'-DDT	μg/L	-	1/Year	1/Quarter	0.001	ANR	ANR	ANR
4-Bromophenyl phenyl ether	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
4-Chloro-3-methylphenol	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
4-Chlorophenyl phenyl ether	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
4-Nitrophenol	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Acenaphthene	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Acenaphthylene	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Acrolein	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Acrylonitrile	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Aldrin	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
alpha-Endosulfan	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Anthracene	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Aroclor 1016	μg/L	-	1/Year	1/Quarter	0.0003	ANR	ANR	ANR
Aroclor 1221	μg/L	-	1/Year	1/Quarter	0.0003	ANR	ANR	ANR
Aroclor 1232	μg/L	_	1/Year	1/Quarter	0.0003	ANR	ANR	ANR
Aroclor 1242	μg/L	-	1/Year	1/Quarter	0.0003	ANR	ANR	ANR
Aroclor 1248	μg/L	-	1/Year	1/Quarter	0.0003	ANR	ANR	ANR
Aroclor 1254	μg/L	-	1/Year	1/Quarter	0.0003	ANR	ANR	ANR
Aroclor 1260	μg/L	-	1/Year	1/Quarter	0.0003	ANR	ANR	ANR
Benzene	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Benzidine	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Benzo(a)anthracene	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Benzo(a)pyrene	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Benzo(b)fluoranthene	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Benzo(g,h,i)Perylene	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Benzo(k)fluoranthene	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
beta-BHC	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
beta-Endosulfan	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Bis (2-Chloroethoxy) Methane	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Bis (2-Chloroethyl) Ether	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Bis (2-Chloroisopropyl) Ether	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Bromoform	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Bromomethane	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Butyl benzylphthalate	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Carbon Tetrachloride	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Chlordane	μg/L	-	1/Year	1/Quarter	0.001	ANR	ANR	ANR
Chlorobenzene	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR

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ANALYTE							12/23/2019 09:30 - 12/24/2019 08:20 <sup>(n)</sup>		
District   District	ANALYTE	UNITS			SAMPLE		SAMPLE TYPE	RESULT	
Debroid   Debr	Chlorodibromomethane	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
2-horomethane (Methyl Chloride)   ygl.	Chloroethane	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Denomium	Chloroform	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Pygl.   1/Year   1/5 Years   - ANR   AN	Chloromethane (Methyl Chloride)	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
1/Year   1	Chromium	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
1/9   1/9	Chrysene	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Jeffa-BHC	cis-1,3-Dichloropropene		-	1/Year	1/5 Years	-	ANR	ANR	ANR
Dichlorborborborborborborborborborborborborbo	delta-BHC		-	1/Year	1/5 Years	-	ANR	ANR	ANR
Jichlorbromomethane	Dibenz(a,h)anthracene	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Dieldrin	Dichlorobromomethane		-	1/Year	1/5 Years	-	ANR	ANR	ANR
Dimethyl phthalate	Dieldrin		-	1/Year	1/Quarter	0.0002	ANR	ANR	ANR
Dimetry phthalate	Diethyl phthalate	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Din-buty  phthalate	Dimethyl phthalate		-	1/Year	1/5 Years	-	ANR	ANR	ANR
Din-octy  phthalate	Di-n-butyl phthalate		-	1/Year	1/5 Years	-	ANR	ANR	ANR
Endosulfan Sulfate	Di-n-octyl phthalate		-	1/Year	1/5 Years	-	ANR	ANR	ANR
Endrin	Endosulfan Sulfate	µg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Endrin Aldehyde         μg/L         -         1/Year         1/5 Years         -         ANR         ANR         ANR           Eluoranthene         μg/L         -         1/Year         1/5 Years         -         ANR         ANR         ANR           Fluorene         μg/L         -         1/Year         1/5 Years         -         ANR         ANR         ANR           Jamma-BHC (Lindane)         μg/L         -         1/Year         1/5 Years         -         ANR         ANR         ANR           Heptachlor         μg/L         -         1/Year         1/5 Years         -         ANR         ANR         ANR           Heptachlor Epoxide         μg/L         -         1/Year         1/5 Years         -         ANR         ANR         ANR           Hexachlorobenzene         μg/L         -         1/Year         1/5 Years         -         ANR         ANR         ANR           Hexachlorocyclopentadiene         μg/L         -         1/Year         1/5 Years         -         ANR         ANR         ANR           Hexachlorocyclopentadiene         μg/L         -         1/Year         1/5 Years         -         ANR         ANR         ANR	Endrin		-	1/Year	1/5 Years	-	ANR	ANR	ANR
Ethylbenzene	Endrin Aldehyde		-	1/Year	1/5 Years	-	ANR	ANR	ANR
Fluoranthene	Ethylbenzene		-	1/Year	1/5 Years	-	ANR	ANR	ANR
Fluorene	Fluoranthene		-	1/Year	1/5 Years	-	ANR	ANR	ANR
Pamma-BHC (Lindane)	Fluorene		-	1/Year	1/5 Years	-	ANR	ANR	ANR
Heptachlor	gamma-BHC (Lindane)		-	1/Year	1/5 Years	-	ANR	ANR	ANR
Heptachlor Epoxide	Heptachlor		-	1/Year	1/5 Years	-	ANR	ANR	ANR
Hexachlorobenzene	Heptachlor Epoxide		-	1/Year	1/5 Years	-	ANR	ANR	ANR
Hexachlorobutadiene	Hexachlorobenzene		-	1/Year	1/5 Years	-	ANR	ANR	ANR
Hexachlorocyclopentadiene         μg/L         -         1/Year         1/5 Years         -         ANR         ANR         ANR           Hexachlorocyclopentadiene         μg/L         -         1/Year         1/5 Years         -         ANR         ANR         ANR           Indeno(1,2,3-cd)pyrene         μg/L         -         1/Year         1/5 Years         -         ANR         ANR         ANR           Sophorone         μg/L         -         1/Year         1/5 Years         -         ANR         ANR         ANR           Np,-Xylenes         μg/L         -         1/Year         1/5 Years         -         ANR         ANR         ANR           Nethylene chloride         μg/L         -         1/Year         1/5 Years         -         ANR         ANR         ANR           Naphthalene         μg/L         -         1/Year         1/5 Years         -         ANR         ANR         ANR           Naphthalene         μg/L         -         1/Year         1/5 Years         -         ANR         ANR         ANR           Nitrobenzene         μg/L         -         1/Year         1/5 Years         -         ANR         ANR         ANR	Hexachlorobutadiene		-	1/Year	1/5 Years	-	ANR	ANR	ANR
Hexachloroethane         μg/L         -         1/Year         1/5 Years         -         ANR         ANR         ANR           Indeno(1,2,3-cd)pyrene         μg/L         -         1/Year         1/5 Years         -         ANR         ANR         ANR           Sophorone         μg/L         -         1/Year         1/5 Years         -         ANR         ANR         ANR           Methylenes         μg/L         -         1/Year         1/5 Years         -         ANR         ANR         ANR           Naphthalene         μg/L         -         1/Year         1/5 Years         -         ANR         ANR         ANR           Naphthalene         μg/L         -         1/Year         1/5 Years         -         ANR         ANR         ANR           Naphthalene         μg/L         -         1/Year         1/5 Years         -         ANR         ANR         ANR           Naphthalene         μg/L         -         1/Year         1/5 Years         -         ANR         ANR         ANR           Naphthalene         μg/L         -         1/Year         1/5 Years         -         ANR         ANR         ANR           Naphthalene	Hexachlorocyclopentadiene		-	1/Year	1/5 Years	-	ANR	ANR	ANR
sophorone         μg/L         -         1/Year         1/5 Years         -         ANR         ANR         ANR           m,p-Xylenes         μg/L         -         1/Year         1/5 Years         -         ANR         ANR         ANR           Methylene chloride         μg/L         -         1/Year         1/5 Years         -         ANR         ANR         ANR           Naphthalene         μg/L         -         1/Year         1/5 Years         -         ANR         ANR         ANR           Naphthalene         μg/L         -         1/Year         1/5 Years         -         ANR         ANR         ANR           Naphthalene         μg/L         -         1/Year         1/5 Years         -         ANR         ANR         ANR           Naphthalene         μg/L         -         1/Year         1/5 Years         -         ANR         ANR         ANR           Naphthalene         μg/L         -         1/Year         1/5 Years         -         ANR         ANR         ANR           Naphthalene         μg/L         -         1/Year         1/5 Years         -         ANR         ANR         ANR           Naphthalene	Hexachloroethane		-	1/Year	1/5 Years	-	ANR	ANR	ANR
μg/L   -   1/Year   1/5 Years   -   ANR   ANR	Indeno(1,2,3-cd)pyrene	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
μg/L   -   1/Year   1/5 Years   -   ANR   ANR	Isophorone	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Methylene chloride         μg/L         -         1/Year         1/5 Years         -         ANR         ANR         ANR           Naphthalene         μg/L         -         1/Year         1/5 Years         -         ANR         ANR         ANR           Naphthalene         μg/L         -         1/Year         1/5 Years         -         ANR         ANR         ANR           Nitrobenzene         μg/L         -         1/Year         1/5 Years         -         ANR         ANR         ANR           N-Nitroso-di-n-propylamine         μg/L         -         1/Year         1/5 Years         -         ANR         ANR         ANR           N-Nitrosodiphenylamine         μg/L         -         1/Year         1/5 Years         -         ANR         ANR         ANR	m,p-Xylenes		-	1/Year	1/5 Years	-	ANR	ANR	ANR
Naphthalene         μg/L         -         1/Year         1/5 Years         -         ANR         ANR         ANR           Naphthalene         μg/L         -         1/Year         1/5 Years         -         ANR         ANR         ANR           Nitrobenzene         μg/L         -         1/Year         1/5 Years         -         ANR         ANR         ANR           N-Nitroso-di-n-propylamine         μg/L         -         1/Year         1/5 Years         -         ANR         ANR         ANR           N-Nitrosodiphenylamine         μg/L         -         1/Year         1/5 Years         -         ANR         ANR         ANR	Methylene chloride		-	1/Year	1/5 Years	-	ANR	ANR	ANR
Naphthalene         μg/L         -         1/Year         1/5 Years         -         ANR         ANR         ANR           Nitrobenzene         μg/L         -         1/Year         1/5 Years         -         ANR         ANR         ANR           N-Nitroso-di-n-propylamine         μg/L         -         1/Year         1/5 Years         -         ANR         ANR         ANR           N-Nitrosodiphenylamine         μg/L         -         1/Year         1/5 Years         -         ANR         ANR         ANR	Naphthalene		-	1/Year	1/5 Years	-	ANR	ANR	ANR
Nitroso-di-n-propylamine         μg/L         -         1/Year         1/5 Years         -         ANR         ANR         ANR           N-Nitroso-di-n-propylamine         μg/L         -         1/Year         1/5 Years         -         ANR         ANR         ANR           N-Nitrosodiphenylamine         μg/L         -         1/Year         1/5 Years         -         ANR         ANR         ANR	Naphthalene		-	1/Year	1/5 Years	-	ANR	ANR	ANR
N-Nitroso-di-n-propylamine $\mu$ g/L - $1/Y$ ear $1/S$ Years - ANR ANR ANR ANR N-Nitrosodiphenylamine $\mu$ g/L - $1/Y$ ear $1/S$ Years - ANR ANR ANR ANR ANR	Nitrobenzene		-	1/Year	1/5 Years	-	ANR	ANR	ANR
N-Nitrosodiphenylamine µg/L - 1/Year 1/5 Years - ANR ANR ANR	N-Nitroso-di-n-propylamine		-	1/Year	1/5 Years	-	ANR	ANR	ANR
1 7	N-Nitrosodiphenylamine		-	1/Year		-			
	o-Xylene		-	1/Year	1/5 Years	-	ANR	ANR	ANR

# FOURTH QUARTER 2019 THE BOEING COMPANY SANTA SUSANA FIELD LABORATORY NPDES PERMIT CA0001309

						12/23/2019 09:30 - 12/24/2019 08:20 <sup>(n)</sup>		
ANALYTE	UNITS	BENCHMARK DAILY MAXIMUM	OUTFALL SAMPLE FREQUENCY	RECEIVING WATER SAMPLE FREQUENCY	RECEIVING WATER LIMIT	SAMPLE TYPE	RESULT	LABORATORY/ VALIDATION QUALIFIER
Phenanthrene	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Phenol	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Pyrene	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Tetrachloroethene	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Toluene	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Toxaphene	μg/L	-	1/Year	1/Quarter	0.0003	ANR	ANR	ANR
trans-1,2-Dichloroethene	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
trans-1,3-Dichloropropene	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Trichlorofluoromethane	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Vinyl chloride	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
Xylenes (Total)	μg/L	-	1/Year	1/5 Years	-	ANR	ANR	ANR
<b>EFFLUENT MONITORING (NO LIMITATIONS) POLLUTAN</b>	TS							
1,1,2-Trichloro-1,2,2-trifluoroethane	μg/L	-	1/Quarter	NA	-	ANR	ANR	ANR
1,2-Dichloro-1,1,2-trifluoroethane	μg/L	-	1/Year	NA	-	ANR	ANR	ANR
1,4-Dioxane	μg/L	-	1/Year	NA	-	ANR	ANR	ANR
Boron	mg/L	-	1/Year	NA	-	ANR	ANR	ANR
cis-1,2-Dichloroethene <sup>(p)</sup>	μg/L	-	1/Year	NA	-	ANR	ANR	ANR
Cobalt	μg/L	-	1/Year	NA	-	ANR	ANR	ANR
Conductivity	µmhos/cm	-	1/Discharge	NA	-	Grab	510	
Cyclohexane	μg/L	-	1/Year	NA	-	ANR	ANR	ANR
Diesel Range Organics (DRO C13-C28)	mg/L	-	1/Year	NA	-	ANR	ANR	ANR
Dissolved Oxygen (Field)	mg/L	-	1/Discharge	NA	-	Grab	7.17	*
E. Coli	mpn/100mL	-	1/Year	1/Year	235	ANR	ANR	ANR
Gasoline Range Organics (GRO C4-C12)	mg/L	-	1/Year	NA	-	ANR	ANR	ANR
Hardness (as CaCO3)	mg/L	-	1/Year	1/Quarter	-	ANR	ANR	ANR
Monomethyl hydrazine	μg/L	-	1/Year	NA	-	ANR	ANR	ANR
Total Organic Carbon	mg/L	-	1/Year	NA	-	ANR	ANR	ANR
Turbidity	NTU	-	1/Discharge	NA	-	Composite	220	*
Vanadium	μg/L	-	1/Year	NA	-	ANR	ANR	ANR
ADDITIONAL POLLUTANTS <sup>(2)</sup>								
Antimony, dissolved	μg/L	-	Additional/Year	NA	-	ANR	ANR	ANR
Arsenic, dissolved	μg/L	-	Additional/Year	NA	-	ANR	ANR	ANR
Barium, dissolved	mg/L	-	Additional/Year	NA	-	ANR	ANR	ANR
Beryllium, dissolved	μg/L	-	Additional/Year	NA	-	ANR	ANR	ANR
Boron, dissolved	mg/L	-	Additional/Year	NA	-	ANR	ANR	ANR
Cadmium, dissolved	μg/L	-	Additional/Discharge	NA	-	Composite	ND < 0.25	UJ (H)
Chlorpyrifos	μg/L	-	Additional <sup>(p)</sup>	1/Quarter	-	Composite	ND < 0.034	U*

# FOURTH QUARTER 2019 THE BOEING COMPANY SANTA SUSANA FIELD LABORATORY NPDES PERMIT CA0001309

						12/23/2019 09:30 - 12/24/2019 08:20 <sup>(n)</sup>			
ANALYTE	UNITS	BENCHMARK DAILY MAXIMUM	OUTFALL SAMPLE FREQUENCY	RECEIVING WATER SAMPLE FREQUENCY	RECEIVING WATER LIMIT	SAMPLE TYPE	RESULT	LABORATORY/ VALIDATION QUALIFIER	
Chromium, dissolved	μg/L	-	Additional/Year	NA	-	ANR	ANR	ANR	
Cobalt, dissolved	μg/L	-	Additional/Year	NA	-	ANR	ANR	ANR	
Copper, dissolved	μg/L	-	Additional/Discharge	NA	-	Composite	1.9	J (H, DNQ)	
Diazinon	μg/L	-	Additional <sup>(p)</sup>	1/Quarter	-	Composite	ND < 0.026	U*	
Hardness, Dissolved (as CaCO3)	mg/L	-	Additional/Year	NA	-	ANR	ANR	ANR	
Human Bacteroides	CEs/100mL	-	Additional/Year	NA	-	ANR	ANR	ANR	
Iron, dissolved	mg/L	-	Additional/Discharge <sup>(g)</sup>	NA	-	Composite	0.061	J (H, DNQ)	
Lead, dissolved	μg/L	-	Additional/Discharge	NA	-	Composite	ND < 0.50	UJ (H)	
Manganese, dissolved	μg/L	-	Additional/Year	NA	-	ANR	ANR	ANR	
Mercury, dissolved	μg/L	-	Additional/Discharge	NA	-	Composite	ND < 0.10	U*	
Nickel, dissolved	μg/L	-	Additional/Year	NA	-	ANR	ANR	ANR	
Selenium, dissolved	μg/L	-	Additional/Discharge	NA	-	Composite	ND < 0.65	UJ (H, B)	
Silver, dissolved	μg/L	-	Additional/Year	NA	-	ANR	ANR	ANR	
Thallium, dissolved	μg/L	-	Additional/Year	NA	-	ANR	ANR	ANR	
Vanadium, dissolved	μg/L	-	Additional/Year	NA	-	ANR	ANR	ANR	
Zinc, dissolved	μg/L	-	Additional/Discharge	NA	-	Composite	27	J (H)	

# FOURTH QUARTER 2019 THE BOEING COMPANY SANTA SUSANA FIELD LABORATORY NPDES PERMIT CA0001309

October 1 through December 31, 2019

						12/5/2019 9:50 (Composite) <sup>(n)</sup>					
ANALYTE	OUTFALL SAMPLE FREQUENCY	RECEIVING WATER SAMPLE FREQUENCY	1998 WHO TEF	BEF GREAT LAKES WATER QUALITY INITIATIVE	UNITS	LAB MDL	LAB RESULT	LABORATORY/ VALIDATION QUALIFIER	TCDD EQUIVALENT (w/out DNQ Values)		
1,2,3,4,6,7,8-HpCDD	1/Discharge	1/Year	0.01	0.05	μg/L	1.5E-06	1.5E-06	U (B)	ND		
1,2,3,4,6,7,8-HpCDF	1/Discharge	1/Year	0.01	0.01	μg/L	2.1E-06	2.1E-06	U (B)	ND		
1,2,3,4,7,8,9-HpCDF	1/Discharge	1/Year	0.01	0.4	μg/L	2.6E-06	ND	U	ND		
1,2,3,4,7,8-HxCDD	1/Discharge	1/Year	0.1	0.3	μg/L	1.5E-06	ND	U	ND		
1,2,3,4,7,8-HxCDF	1/Discharge	1/Year	0.1	0.08	μg/L	1.3E-06	ND	U	ND		
1,2,3,6,7,8-HxCDD	1/Discharge	1/Year	0.1	0.1	μg/L	1.6E-06	ND	U	ND		
1,2,3,6,7,8-HxCDF	1/Discharge	1/Year	0.1	0.2	μg/L	1.3E-06	ND	U	ND		
1,2,3,7,8,9-HxCDD	1/Discharge	1/Year	0.1	0.1	μg/L	1.3E-06	ND	U	ND		
1,2,3,7,8,9-HxCDF	1/Discharge	1/Year	0.1	0.6	μg/L	1.0E-06	ND	U	ND		
1,2,3,7,8-PeCDD	1/Discharge	1/Year	1.0	0.9	μg/L	1.8E-06	ND	U	ND		
1,2,3,7,8-PeCDF	1/Discharge	1/Year	0.05	0.2	μg/L	1.5E-06	ND	U	ND		
2,3,4,6,7,8-HxCDF	1/Discharge	1/Year	0.1	0.7	μg/L	9.6E-07	ND	U	ND		
2,3,4,7,8-PeCDF	1/Discharge	1/Year	0.5	1.6	μg/L	1.6E-06	ND	U	ND		
2,3,7,8-TCDD	1/Discharge	1/Year	1.0	1.0	μg/L	1.3E-06	ND	U	ND		
2,3,7,8-TCDF	1/Discharge	1/Year	0.1	0.8	μg/L	9.0E-07	ND	U	ND		
OCDD	1/Discharge	1/Year	0.0001	0.01	μg/L	2.1E-06	3.7E-04		3.7E-10		
OCDF	1/Discharge	1/Year	0.0001	0.02	μg/L	2.3E-06	3.6E-05	J (DNQ)	ND		

TCDD TEQ w/out DNQ Values <sup>(4)</sup>	3.7E-10

TCDD TEQ (PRIORITY POLLUTANTS) DAILY MAXIMUM BENCHMARK<sup>(j)</sup> = 2.8E-08

# FOURTH QUARTER 2019 THE BOEING COMPANY SANTA SUSANA FIELD LABORATORY NPDES PERMIT CA0001309

October 1 through December 31, 2019

						12/24/2019 8:20 (Composite) <sup>(n)</sup>					
ANALYTE	OUTFALL SAMPLE FREQUENCY	RECEIVING WATER SAMPLE FREQUENCY	1998 WHO TEF	BEF GREAT LAKES WATER QUALITY INITIATIVE	UNITS	LAB MDL	LAB RESULT	LABORATORY/ VALIDATION QUALIFIER	TCDD EQUIVALENT (w/out DNQ Values)		
1,2,3,4,6,7,8-HpCDD	1/Discharge	1/Year	0.01	0.05	μg/L	2.5E-06	9.9E-05		5.0E-08		
1,2,3,4,6,7,8-HpCDF	1/Discharge	1/Year	0.01	0.01	μg/L	1.6E-06	3.7E-05	U (B)	ND		
1,2,3,4,7,8,9-HpCDF	1/Discharge	1/Year	0.01	0.4	μg/L	1.8E-06	ND	U	ND		
1,2,3,4,7,8-HxCDD	1/Discharge	1/Year	0.1	0.3	μg/L	2.4E-06	6.8E-06	U (B)	ND		
1,2,3,4,7,8-HxCDF	1/Discharge	1/Year	0.1	0.08	μg/L	2.9E-06	ND	U	ND		
1,2,3,6,7,8-HxCDD	1/Discharge	1/Year	0.1	0.1	μg/L	2.5E-06	6.5E-06	U (B)	ND		
1,2,3,6,7,8-HxCDF	1/Discharge	1/Year	0.1	0.2	μg/L	3.0E-06	ND	U	ND		
1,2,3,7,8,9-HxCDD	1/Discharge	1/Year	0.1	0.1	μg/L	2.2E-06	ND	U	ND		
1,2,3,7,8,9-HxCDF	1/Discharge	1/Year	0.1	0.6	μg/L	2.3E-06	ND	U	ND		
1,2,3,7,8-PeCDD	1/Discharge	1/Year	1.0	0.9	μg/L	4.1E-06	ND	U	ND		
1,2,3,7,8-PeCDF	1/Discharge	1/Year	0.05	0.2	μg/L	2.6E-06	ND	U	ND		
2,3,4,6,7,8-HxCDF	1/Discharge	1/Year	0.1	0.7	μg/L	2.3E-06	ND	U	ND		
2,3,4,7,8-PeCDF	1/Discharge	1/Year	0.5	1.6	μg/L	2.6E-06	ND	U	ND		
2,3,7,8-TCDD	1/Discharge	1/Year	1.0	1.0	μg/L	1.7E-06	ND	U	ND		
2,3,7,8-TCDF	1/Discharge	1/Year	0.1	0.8	μg/L	1.5E-06	ND	U	ND		
OCDD	1/Discharge	1/Year	0.0001	0.01	μg/L	6.6E-06	1.3E-03		1.3E-09		
OCDF	1/Discharge	1/Year	0.0001	0.02	μg/L	4.9E-06	1.1E-04	U (B)	ND		

TCDD TEQ w/out DNQ Values <sup>(4)</sup>	5.1E-08

TCDD TEQ (PRIORITY POLLUTANTS) DAILY MAXIMUM BENCHMARK(1) = 2.8E-08

# FOURTH QUARTER 2019 THE BOEING COMPANY SANTA SUSANA FIELD LABORATORY NPDES PERMIT CA0001309

						12/5/2	019 09:50 (Comp	osite) <sup>(n)</sup>
ANALYTE	UNITS	DAILY MAXIMUM BENCHMARK	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	-/-	0.868 +/-3.14	5.64	UJ (*III)
Gross Beta	pCi/L	50	1/Discharge	NA	-/-	4.77 +/-1.50	1.85	
Combined Radium-226 & Radium-228	pCi/L	5.0	1/Discharge	NA	-/-	0.546+/-0.323	NM	UJ (*III)
Strontium-90	pCi/L	8.0	1/Discharge	NA	-/-	0.463 +/-0.493	0.804	U
Tritium	pCi/L	20,000	1/Discharge	NA	-/-	-207 +/-171	338	U
ADDITIONAL POLLUTANTS								
Cesium-137	pCi/L	200	1/Discharge	NA	-/-	3.02 +/-7.82	9.83	U
Uranium	pCi/L	20	1/Discharge	NA	-/-	1.55 +/-0.516	0.303	
ADDITIONAL POLLUTANTS WITHOUT LIMITS								
Potassium-40	pCi/L	-	1/Discharge	NA	-/-	-12.2 +/-85.5	157	U

# FOURTH QUARTER 2019 THE BOEING COMPANY SANTA SUSANA FIELD LABORATORY NPDES PERMIT CA0001309

						12/24/2	posite) <sup>(n)</sup>	
ANALYTE	UNITS	DAILY MAXIMUM BENCHMARK	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	-/-	3.41 +/-2.32	3.29	UJ (B, *III)
Gross Beta	pCi/L	50	1/Discharge	NA	-/-	5.02 +/-1.14	1.14	
Combined Radium-226 & Radium-228	pCi/L	5.0	1/Discharge	NA	-/-	1.48 +/-0.661	NM	U
Strontium-90	pCi/L	8.0	1/Discharge	NA	-/-	0.0221 +/-0.345	0.618	U
Tritium	pCi/L	20,000	1/Discharge	NA	-/-	34.7 +/-159	281	U
ADDITIONAL POLLUTANTS								
Cesium-137	pCi/L	200	1/Discharge	NA	-/-	0.725 +/-8.27	14.8	U
Uranium	pCi/L	20	1/Discharge	NA	-/-	1.31 +/-0.507	0.395	J+ (B)
ADDITIONAL POLLUTANTS WITHOUT LIMITS								
Potassium-40	pCi/L	-	1/Discharge	NA	-/-	-19.5 +/-165	214	U

#### FOURTH QUARTER 2019 THE BOEING COMPANY SANTA SUSANA FIELD LABORATORY NPDES PERMIT CA0001309

				12/4/201	19 9:50 <sup>(n)</sup>	
ANALYTE	UNITS	BENCHMARK DAILY MAX	SAMPLE FREQUENCY	SAMPLE TYPE	RESULT	LABORATORY/ VALIDATION QUALIFIER
Flow**	MGD	117.83	1/Discharge	Meas	0.006605	*
CONVENTIONAL POLLUTANTS		111100	.,			
Biochemical Oxygen Demand (BOD)	LBS/DAY	29,481	1/Discharge	Composite	0.88	*
Oil & Grease	LBS/DAY	14.741	1/Discharge	Grab	ND	U*
Total Suspended Solids <sup>#</sup>	LBS/DAY	44.222	1/Discharge	Composite	2.7 <sup>(c)</sup>	
	LD3/DA1	44,222	1/Discharge	Composite	2.1	-
PRIORITY POLLUTANTS						
1,1-Dichloroethene	LBS/DAY	5.9	1/Discharge	Grab	ND	U*
1,2-Dichloroethane	LBS/DAY	0.49	1/Discharge	Grab	ND	U*
2,4,6-Trichlorophenol	LBS/DAY	12.8	1/Discharge	Composite	ND	U*
2,4-Dinitrotoluene	LBS/DAY	17.7	1/Discharge	Composite	ND	U*
alpha-BHC	LBS/DAY	0.03	1/Discharge	Composite	ND	U*
Antimony	LBS/DAY	5.9	1/Year	ANR	ANR	ANR
Arsenic	LBS/DAY	9.83	1/Year	ANR	ANR	ANR
Beryllium	LBS/DAY	3.93	1/Year	ANR	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	ND <sup>(b)</sup>	U
Chromium VI (Hexavalent)	LBS/DAY	15.72	1/Year	ANR	ANR	ANR
Copper	LBS/DAY	13.76	1/Discharge	Composite	2.0E-04	
Cyanide	LBS/DAY	8.35	1/Discharge	Composite	ND	U*
Lead	LBS/DAY	5.11	1/Discharge	Composite	6.1E-05	
Mercury	LBS/DAY	0.1	1/Discharge	Composite	ND	U*
Nickel	LBS/DAY	92.4	1/Year	ANR	ANR	ANR
N-Nitrosodimethylamine	LBS/DAY	15.72	1/Discharge	Composite	ND	U*
Pentachlorophenol	LBS/DAY	16.22	1/Discharge	Composite	6.6E-05	J (DNQ)
Selenium	LBS/DAY	(4.91) 8.06	1/Discharge	Composite	0.034 <sup>(f)</sup>	J (DNQ)
Silver	LBS/DAY	4.03	1/Year	ANR	ANR	ANR
TCDD TEQ_NoDNQ <sup>(4)</sup>	LBS/DAY	2.75E-08	1/Discharge	Composite	2.0E-14	*
Thallium	LBS/DAY	1.97	1/Year	ANR	ANR	ANR
Trichloroethene	LBS/DAY	4.91	1/Discharge	Grab	ND	U*
Zinc	LBS/DAY	117	1/Discharge	Composite	9.9E-04	J (DNQ)
NON-CONVENTIONAL POLLUTANTS			g	J 3		(=::=,)
Ammonia – N	LBS/DAY	9.925.3	1/Discharge	Composite	0.00810	J (DNQ)
Barium	LBS/DAY	983	1/Year	ANR	ANR	ANR
Chloride	LBS/DAY	147.405	1/Discharge	Composite	1.7	*
Chlorine, Total Residual (Field)	LBS/DAY	98.3	1/Year	ANR	ANR	ANR
Detergents (as MBAS)	LBS/DAY	491.4	1/Discharge	Composite	0.0066	*
Fluoride	LBS/DAY	1,572.3	1/Year	ANR	ANR	ANR
Iron	LBS/DAY	295	1/Discharge <sup>(I)</sup>	Composite	0.083	J+ (Q)
Manganese	LBS/DAY	49.1	1/Discharge	ANR	ANR	ANR
Nitrate - N	LBS/DAY	7,862	1/Discharge	Composite	0.055	*
Nitrate + Nitrite as Nitrogen (N)	LBS/DAY	7,862	1/Discharge	Composite	0.055	*
Nitrate + Nitrite as Nitrogen (N) Nitrite - N	LBS/DAY LBS/DAY	983	1/Discharge	Composite	0.055 ND	U*
Perchlorate	LBS/DAY LBS/DAY	5.9	1/Discharge	Composite	ND ND	U*
Sulfate	LBS/DAY LBS/DAY	294.810	1/Discharge	Composite	12	U" *
Suitate Total Dissolved Solids	LBS/DAY LBS/DAY	933.567	1/Discharge 1/Discharge	Composite	28	*

#### FOURTH QUARTER 2019 THE BOEING COMPANY SANTA SUSANA FIELD LABORATORY NPDES PERMIT CA0001309

				12/23/20	019 8:20 <sup>(n)</sup>	
ANALYTE	UNITS	BENCHMARK DAILY MAX	SAMPLE FREQUENCY	SAMPLE TYPE	RESULT	LABORATORY/ VALIDATION QUALIFIER
Flow**	MGD	117.83	1/Discharge	Meas	0.028787	*
CONVENTIONAL POLLUTANTS			,,g_		***************************************	
Biochemical Oxygen Demand (BOD)	LBS/DAY	29,481	1/Discharge	Composite	0.86	*
Oil & Grease	LBS/DAY	14.741	1/Discharge	Grab	ND	U*
Total Suspended Solids <sup>#</sup>	LBS/DAY	44.222	1/Discharge	Composite	26.4 <sup>(c)</sup>	
PRIORITY POLLUTANTS	LBS/BA1	44,222	1/Discharge	Composite	20.4	-
	1.00/04)/	5.0	4/0:	01	ND	U*
1,1-Dichloroethene	LBS/DAY	5.9	1/Discharge	Grab	ND	U^
1,2-Dichloroethane	LBS/DAY	0.49	1/Discharge	Grab	ND	
2,4,6-Trichlorophenol	LBS/DAY	12.8	1/Discharge	Composite	ND	U*
2,4-Dinitrotoluene	LBS/DAY	17.7	1/Discharge	Composite	ND	U*
alpha-BHC	LBS/DAY	0.03	1/Discharge	Composite	ND	U*
Antimony	LBS/DAY	5.9	1/Year	ANR	ANR	ANR
Arsenic	LBS/DAY	9.83	1/Year	ANR	ANR	ANR
Beryllium	LBS/DAY	3.93	1/Year	ANR	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	ND <sup>(b)</sup>	U
Chromium VI (Hexavalent)	LBS/DAY	15.72	1/Year	ANR	ANR	ANR
Copper	LBS/DAY	13.76	1/Discharge	Composite	0.0016	-
Cyanide	LBS/DAY	8.35	1/Discharge	Composite	ND	U*
Lead	LBS/DAY	5.11	1/Discharge	Composite	8.4E-04	
Mercury	LBS/DAY	0.1	1/Discharge	Composite	ND	U*
Nickel	LBS/DAY	92.4	1/Year	ANR	ANR	ANR
N-Nitrosodimethylamine	LBS/DAY	15.72	1/Discharge	Composite	ND	U (B)
Pentachlorophenol	LBS/DAY	16.22	1/Discharge	Composite	ND	U*
Selenium	LBS/DAY	(4.91) 8.06	1/Discharge	Composite	ND <sup>(f)</sup>	U
Silver	LBS/DAY	4.03	1/Year	ANR	ANR	ANR
TCDD TEQ NoDNQ <sup>(4)</sup>	LBS/DAY	2.75E-08	1/Discharge	Composite	1.2E-11	*
Thallium	LBS/DAY	1.97	1/Year	ANR	ANR	ANR
Trichloroethene	LBS/DAY	4.91	1/Discharge	Grab	ND	U*
Zinc	LBS/DAY	117	1/Discharge	Composite	0.0074	-
NON-CONVENTIONAL POLLUTANTS						
Ammonia – N	LBS/DAY	9,925.3	1/Discharge	Composite	ND	U*
Barium	LBS/DAY	983	1/Year	ANR	ANR	ANR
Chloride	LBS/DAY	147,405	1/Discharge	Composite	4.3	*
Chlorine, Total Residual (Field)	LBS/DAY	98.3	1/Year	ANR	ANR	ANR
Detergents (as MBAS)	LBS/DAY	491.4	1/Discharge	Composite	0.013	J (DNQ*)
Fluoride	LBS/DAY	1,572.3	1/Year	ANR	ANR	ANR
Iron	LBS/DAY	295	1/Discharge <sup>(I)</sup>	Composite	2.1	
Manganese	LBS/DAY	49.1	1/Year	ANR	ANR	ANR
Nitrate - N	LBS/DAY	7,862	1/Discharge	Composite	0.15	*
Nitrate + Nitrite as Nitrogen (N)	LBS/DAY	7.862	1/Discharge	Composite	0.17	*
Nitrite - N	LBS/DAY	983	1/Discharge	Composite	0.022	J (DNQ*)
Perchlorate	LBS/DAY	5.9	1/Discharge	Composite	ND	U*
Sulfate	LBS/DAY	294,810	1/Discharge	Composite	31.2	*
Total Dissolved Solids	LBS/DAY	933.567	1/Discharge	Composite	86.4	*

# FOURTH QUARTER 2019 THE BOEING COMPANY SANTA SUSANA FIELD LABORATORY NPDES PERMIT CA0001309

				12/26/2019 08:10 - 12/27/2019 08:25				
ANALYTE	UNITS	DAILY MAXIMUM PERMIT LIMIT	SAMPLE FREQUENCY	SAMPLE TYPE	RESULT	LABORATORY/ VALIDATION QUALIFIER		
Flow**	MGD	7.21	1/Discharge	Meas	0.034524	*		
CONVENTIONAL POLLUTANTS								
Oil & Grease	mg/L	15	1/Discharge	Grab	ND < 1.4	U*		
pH (Field)	s.u	6.5-8.5	1/Discharge	Grab	7.45	*		
PRIORITY POLLUTANTS								
Antimony	μg/L	6.0	1/Discharge	Composite	ND < 0.50	U		
Cadmium	μg/L	(4.0) 3.1	1/Discharge	Composite	ND < 0.25 <sup>(b)</sup>	U		
Copper	μg/L	14	1/Discharge	Composite	3.0			
Cyanide	μg/L	9.5	1/Discharge	Composite	ND < 2.5	U*		
Lead	μg/L	5.2	1/Discharge	Composite	0.77	J (DNQ)		
Mercury	μg/L	0.13	1/Discharge	Composite	ND < 0.10	U*		
Nickel	μg/L	86	1/Discharge	Composite	ND < 5.0	U		
Selenium	μg/L	5	1/Discharge	Composite	ND < 1.2	U (B)		
Thallium	μg/L	2.0	1/Discharge	Composite	ND < 0.20	U		
Zinc	μg/L	120	1/Discharge	Composite	12	J (DNQ)		
NON-CONVENTIONAL POLLUTANTS	1							
Ammonia - N	mg/L	10.1	1/Discharge	Composite	0.183	J- (Q, DNQ)		
Boron	mg/L	1.0	1/Year	ANR	ANR	ANR		
Chloride	mg/L	150	1/Discharge	Composite	5.1	*		
Chronic Toxicity	Pass or Fail	Pass or % Effect	1st & 2nd rain	ANR	ANR	ANR		
•	and % Effect	<50	event/Year	****	****	AND		
Fluoride	mg/L	1.6	1/Year	ANR	ANR	ANR		
Nitrate - N	mg/L	8	1/Discharge	Composite	2.8			
Nitrate + Nitrite as Nitrogen (N)	mg/L	8	1/Discharge	Composite	2.8	, (DNO+)		
Nitrite - N	mg/L	1	1/Discharge	Composite	0.049	J (DNQ*) U*		
Perchlorate Sulfate	μg/L	6.0 300	1/Discharge	Composite	ND < 0.95	U"		
	mg/L	300 86	1/Discharge	Composite Grab	4.9 45.9	*		
Temperature (Field) Total Dissolved Solids	Deg F		1/Discharge	Composite	130	*		
REMAINING PRIORITY POLLUTANTS	mg/L	950	1/Discharge	Composite	130			
1,1,1-Trichloroethane	μg/L	-	1/Year	ANR	ANR	ANR		
1,1,2,2-Tetrachloroethane	μg/L μg/L	-	1/Year	ANR	ANR	ANR		
1.1.2-Trichloroethane	μg/L		1/Year	ANR	ANR	ANR		
1,1-Dichloroethane	μg/L	_	1/Year	ANR	ANR	ANR		
1,1-Dichloroethene	μg/L	-	1/Year	ANR	ANR	ANR		
1,2,4-Trichlorobenzene	μg/L	-	1/Year	ANR	ANR	ANR		
1.2-Dichlorobenzene	μg/L	-	1/Year	ANR	ANR	ANR		
1.2-Dichlorobenzene	μg/L	_	1/Year	ANR	ANR	ANR		
1,2-Dichloroethane	μg/L	_	1/Year	ANR	ANR	ANR		
1,2-Dichloropropane	μg/L	_	1/Year	ANR	ANR	ANR		
1,2-Diphenylhydrazine/Azobenzene	μg/L	_	1/Year	ANR	ANR	ANR		
1.3-Dichlorobenzene	µg/L	_	1/Year	ANR	ANR	ANR		
1.3-Dichlorobenzene	μg/L	_	1/Year	ANR	ANR	ANR		
1,4-Dichlorobenzene	μg/L	-	1/Year	ANR	ANR	ANR		
1.4-Dichlorobenzene	μg/L	-	1/Year	ANR	ANR	ANR		
2,4,6-Trichlorophenol	μg/L	-	1/Year	ANR	ANR	ANR		
2,4-Dichlorophenol	μg/L	-	1/Year	ANR	ANR	ANR		
2,4-Dimethylphenol	μg/L	-	1/Year	ANR	ANR	ANR		
2,4-Dinitrophenol	μg/L	-	1/Year	ANR	ANR	ANR		
2,4-Dinitrotoluene	μg/L	-	1/Year	ANR	ANR	ANR		
2,6-Dinitrotoluene	μg/L	-	1/Year	ANR	ANR	ANR		
2-Chloroethyl vinyl ether	μg/L	-	1/Year	ANR	ANR	ANR		
2-Chloronaphthalene	μg/L	-	1/Year	ANR	ANR	ANR		
2-Chlorophenol	μg/L	-	1/Year	ANR	ANR	ANR		
2-Methyl-4,6-dinitrophenol	μg/L	-	1/Year	ANR	ANR	ANR		
2-Nitrophenol	μg/L	-	1/Year	ANR	ANR	ANR		
3,3'-Dichlorobenzidine	μg/L	-	1/Year	ANR	ANR	ANR		
4,4'-DDD	μg/L	-	1/Year	ANR	ANR	ANR		
4,4'-DDE	μg/L	-	1/Year	ANR	ANR	ANR		
4,4'-DDT	μg/L	-	1/Year	ANR	ANR	ANR		
4-Bromophenyl phenyl ether	μg/L	-	1/Year	ANR	ANR	ANR		
4-Chloro-3-methylphenol	μg/L	-	1/Year	ANR	ANR	ANR		
4-Chlorophenyl phenyl ether	μg/L	-	1/Year	ANR	ANR	ANR		
4-Nitrophenol	μg/L	-	1/Year	ANR	ANR	ANR		

# FOURTH QUARTER 2019 THE BOEING COMPANY SANTA SUSANA FIELD LABORATORY NPDES PERMIT CA0001309

				12/26/20	19 08:10 - 12/27/2019 08:25	
ANALYTE	UNITS	DAILY MAXIMUM PERMIT LIMIT	SAMPLE FREQUENCY	SAMPLE TYPE	RESULT	LABORATORY/ VALIDATION QUALIFIER
Acenaphthene	μg/L	-	1/Year	ANR	ANR	ANR
Acenaphthylene	μg/L	-	1/Year	ANR	ANR	ANR
Acrolein	μg/L	-	1/Year	ANR	ANR	ANR
Acrylonitrile	μg/L	-	1/Year	ANR	ANR	ANR
Aldrin	μg/L	-	1/Year	ANR	ANR	ANR
alpha-BHC	μg/L	-	1/Year	ANR	ANR	ANR
alpha-Endosulfan	μg/L	-	1/Year	ANR	ANR	ANR
Anthracene	μg/L	-	1/Year	ANR	ANR	ANR
Aroclor 1016	μg/L	-	1/Year	ANR	ANR	ANR
Aroclor 1221	μg/L	-	1/Year	ANR	ANR	ANR
Aroclor 1232	μg/L	-	1/Year	ANR	ANR	ANR
Aroclor 1242	μg/L	-	1/Year	ANR	ANR	ANR
Aroclor 1248	μg/L	-	1/Year	ANR	ANR	ANR
Aroclor 1254	μg/L	-	1/Year	ANR	ANR	ANR
Aroclor 1260	μg/L	-	1/Year	ANR	ANR	ANR
Arsenic	μg/L	-	1/Year	ANR	ANR	ANR
Asbestos	MFL	-	1/Year	ANR	ANR	ANR
Benzene	μg/L	-	1/Year	ANR	ANR	ANR
Benzidine	μg/L	-	1/Year	ANR	ANR	ANR
Benzo(a)anthracene	μg/L	-	1/Year	ANR	ANR	ANR
Benzo(a)pyrene	μg/L	-	1/Year	ANR	ANR	ANR
Benzo(b)fluoranthene	μg/L	-	1/Year	ANR	ANR	ANR
Benzo(g,h,i)perylene	μg/L	-	1/Year	ANR	ANR	ANR
Benzo(k)fluoranthene	μg/L	-	1/Year	ANR	ANR	ANR
Beryllium	μg/L	-	1/Year	ANR	ANR	ANR
beta-BHC	μg/L	-	1/Year	ANR	ANR	ANR
beta-Endosulfan	μg/L	-	1/Year	ANR	ANR	ANR
Bis (2-Chloroethoxy) Methane	μg/L	_	1/Year	ANR	ANR	ANR
Bis (2-Chloroethyl) Ether	µg/L	-	1/Year	ANR	ANR	ANR
Bis (2-Chloroisopropyl) Ether	µg/L	-	1/Year	ANR	ANR	ANR
Bis (2-Ethylhexyl) Phthalate	µg/L	_	1/Year	ANR	ANR	ANR
Bromoform	μg/L	-	1/Year	ANR	ANR	ANR
Bromomethane	μg/L	-	1/Year	ANR	ANR	ANR
Butyl benzylphthalate	μg/L	-	1/Year	ANR	ANR	ANR
Carbon tetrachloride	μg/L	-	1/Year	ANR	ANR	ANR
Chlordane	μg/L		1/Year	ANR	ANR	ANR
Chlorobenzene	μg/L μg/L	-	1/Year	ANR	ANR	ANR
Chlorodibromomethane			1/Year	ANR	ANR	ANR
Chloroethane	μg/L	-	1/Year	ANR	ANR	ANR
Chloroform	μg/L	-	1/Year	ANR	ANR	ANR
	μg/L	<u> </u>				
Chloromethane (Methyl Chloride)	μg/L	-	1/Year	ANR	ANR	ANR
Chromium	μg/L	-	1/Year	ANR	ANR	ANR
Chromium VI (Hexavalent)	μg/L	-	1/Year	ANR	ANR	ANR
Chrysene	μg/L	-	1/Year	ANR	ANR	ANR
cis-1,3-Dichloropropene	μg/L	-	1/Year	ANR	ANR	ANR
delta-BHC	μg/L	-	1/Year	ANR	ANR	ANR
Dibenz(a,h)anthracene	μg/L	-	1/Year	ANR	ANR	ANR
Dichlorobromomethane	μg/L	-	1/Year	ANR	ANR	ANR
Dieldrin	μg/L	-	1/Year	ANR	ANR	ANR
Diethyl phthalate	μg/L	-	1/Year	ANR	ANR	ANR
Dimethyl phthalate	μg/L	-	1/Year	ANR	ANR	ANR
Di-n-butyl phthalate	μg/L	-	1/Year	ANR	ANR	ANR
Di-n-octyl phthalate	μg/L	-	1/Year	ANR	ANR	ANR
Endosulfan sulfate	μg/L	-	1/Year	ANR	ANR	ANR
Endrin	μg/L	-	1/Year	ANR	ANR	ANR
Endrin aldehyde	μg/L	-	1/Year	ANR	ANR	ANR
Ethylbenzene	μg/L	-	1/Year	ANR	ANR	ANR
Fluoranthene	μg/L	-	1/Year	ANR	ANR	ANR
Fluorene	μg/L	-	1/Year	ANR	ANR	ANR
gamma-BHC (Lindane)	μg/L	-	1/Year	ANR	ANR	ANR
Heptachlor	μg/L	-	1/Year	ANR	ANR	ANR
Heptachlor epoxide	μg/L	-	1/Year	ANR	ANR	ANR
Hexachlorobenzene	μg/L	-	1/Year	ANR	ANR	ANR
Hexachlorobutadiene	μg/L	-	1/Year	ANR	ANR	ANR

#### FOURTH QUARTER 2019 THE BOEING COMPANY SANTA SUSANA FIELD LABORATORY NPDES PERMIT CA0001309

				12/26/2019 08:10 - 12/27/2019 08:25				
ANALYTE	UNITS	DAILY MAXIMUM PERMIT LIMIT	SAMPLE FREQUENCY	SAMPLE TYPE	RESULT	LABORATORY/ VALIDATION QUALIFIER		
Hexachlorocyclopentadiene	μg/L	-	1/Year	ANR	ANR	ANR		
Hexachloroethane	μg/L	-	1/Year	ANR	ANR	ANR		
Indeno(1,2,3-cd)pyrene	μg/L	-	1/Year	ANR	ANR	ANR		
Isophorone	μg/L	-	1/Year	ANR	ANR	ANR		
Methylene chloride	μg/L	-	1/Year	ANR	ANR	ANR		
Naphthalene	μg/L	-	1/Year	ANR	ANR	ANR		
Naphthalene	μg/L	-	1/Year	ANR	ANR	ANR		
Nitrobenzene	μg/L	-	1/Year	ANR	ANR	ANR		
N-Nitrosodimethylamine	μg/L	-	1/Year	ANR	ANR	ANR		
N-Nitroso-di-n-propylamine	μg/L	-	1/Year	ANR	ANR	ANR		
N-Nitrosodiphenylamine	μg/L	-	1/Year	ANR	ANR	ANR		
Pentachlorophenol	μg/L	-	1/Year	ANR	ANR	ANR		
Phenanthrene	μg/L	-	1/Year	ANR	ANR	ANR		
Phenol	μg/L	-	1/Year	ANR	ANR	ANR		
Pyrene	μg/L	-	1/Year	ANR	ANR	ANR		
Tetrachloroethene	μg/L	-	1/Year	ANR	ANR	ANR		
Toluene	μg/L	-	1/Year	ANR	ANR	ANR		
Toxaphene	μg/L	-	1/Year	ANR	ANR	ANR		
trans-1,2-Dichloroethene	μg/L	-	1/Year	ANR	ANR	ANR		
trans-1,3-Dichloropropene	μg/L	-	1/Year	ANR	ANR	ANR		
Trichloroethene	μg/L	-	1/Year	ANR	ANR	ANR		
Trichlorofluoromethane	μg/L	-	1/Year	ANR	ANR	ANR		
Vinyl chloride	μg/L	-	1/Year	ANR	ANR	ANR		
Xylenes (Total)	μg/L	-	1/Year	ANR	ANR	ANR		
EFFLUENT MONITORING (NO LIMITATIONS) POLLUTAN	rs							
Aluminum	μg/L	-	1/Year	ANR	ANR	ANR		
Chlorpyrifos	μg/L	-	1/Year	ANR	ANR	ANR		
Diazinon	μg/L	-	1/Year	ANR	ANR	ANR		
E. Coli	mpn/100mL	-	1/Year	ANR	ANR	ANR		
Hardness (as CaCO3)	mg/L	-	1/Year	ANR	ANR	ANR		
Iron	mg/L	-	1/Year	ANR	ANR	ANR		
Silver	μg/L	-	1/Discharge	Composite	ND < 0.50	U		
Total Suspended Solids	mg/L	-	1/Year	Composite	12	*		
Vanadium	μg/L	-	1/Year	ANR	ANR	ANR		
ADDITIONAL POLLUTANTS <sup>(2)</sup>								
Aluminum, dissolved	μg/L	-	Additional/Year	ANR	ANR	ANR		
Antimony, dissolved	μg/L	-	Additional/Discharge	Composite	ND < 0.50	U		
Arsenic, dissolved	μg/L	_	Additional/Year	ANR	ANR	ANR		
Beryllium, dissolved	μg/L	-	Additional/Year	ANR	ANR	ANR		
Boron, dissolved	mg/L	_	Additional/Year	ANR	ANR	ANR		
Cadmium, dissolved	μg/L	-	Additional/Discharge	Composite	ND < 0.25	U		
Chromium, dissolved	μg/L	-	Additional/Year	ANR	ANR	ANR		
cis-1,2-Dichloroethene	μg/L	-	Additional/Year	ANR	ANR	ANR		
Copper. dissolved	μg/L	-	Additional/Discharge	Composite	5.0			
Dissolved Oxygen (Field)	mg/L	-	Additional	ANR	ANR	ANR		
Hardness, Dissolved (as CaCO3)	mg/L	-	Additional/Year	ANR	ANR	ANR		
Human Bacteriodes	CEs/100mL	-	Additional/Year	ANR	ANR	ANR		
Iron, dissolved	mg/L	-	Additional/Year	ANR	ANR	ANR		
Lead, dissolved	· · ·		Additional/Discharge	Composite	ND < 0.50	U		
Mercury, dissolved	μg/L μg/L	-	Additional/Discharge	Composite	ND < 0.10	U*		
Nickel, dissolved	μg/L	-	Additional/Discharge	Composite	ND < 5.0	U		
Selenium, dissolved		-	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 < 0.30	U		
	μg/L							
Turbidity	NTU	-	Additional	ANR	ANR	ANR		
Vanadium, dissolved	μg/L	-	Additional/Year	ANR	ANR	ANR		
Zinc, dissolved	μg/L	-	Additional/Discharge	Composite	ND < 12	U		

# FOURTH QUARTER 2019 THE BOEING COMPANY SANTA SUSANA FIELD LABORATORY NPDES PERMIT CA0001309

October 1 through December 31, 2019

					12/27/2019 08:25 (Composite)				
ANALYTE	OUTFALL SAMPLE FREQUENCY	1998 WHO TEF	BEF GREAT LAKES WATER QUALITY INITIATIVE	UNITS	LAB MDL	LAB RESULT	LABORATORY/ VALIDATION QUALIFIER	TCDD EQUIVALENT (w/out DNQ Values)	
1,2,3,4,6,7,8-HpCDD	1/Discharge	0.01	0.05	μg/L	4.2E-07	5.0E-06	U (B)	ND	
1,2,3,4,6,7,8-HpCDF	1/Discharge	0.01	0.01	μg/L	4.8E-07	3.4E-06	U (B)	ND	
1,2,3,4,7,8,9-HpCDF	1/Discharge	0.01	0.4	μg/L	5.7E-07	1.2E-06	UJ (*III)	ND	
1,2,3,4,7,8-HxCDD	1/Discharge	0.1	0.3	μg/L	4.7E-07	2.1E-06	U (B)	ND	
1,2,3,4,7,8-HxCDF	1/Discharge	0.1	0.08	μg/L	5.5E-07	9.3E-07	J (DNQ)	ND	
1,2,3,6,7,8-HxCDD	1/Discharge	0.1	0.1	μg/L	5.1E-07	1.1E-06	U (B)	ND	
1,2,3,6,7,8-HxCDF	1/Discharge	0.1	0.2	μg/L	5.7E-07	9.3E-07	J (DNQ)	ND	
1,2,3,7,8,9-HxCDD	1/Discharge	0.1	0.1	μg/L	4.4E-07	1.0E-06	U (B)	ND	
1,2,3,7,8,9-HxCDF	1/Discharge	0.1	0.6	μg/L	4.0E-07	1.2E-06	U (B)	ND	
1,2,3,7,8-PeCDD	1/Discharge	1.0	0.9	μg/L	6.4E-07	8.2E-07	UJ (*III)	ND	
1,2,3,7,8-PeCDF	1/Discharge	0.05	0.2	μg/L	4.8E-07	8.9E-07	J (DNQ)	ND	
2,3,4,6,7,8-HxCDF	1/Discharge	0.1	0.7	μg/L	4.1E-07	8.1E-07	U (B)	ND	
2,3,4,7,8-PeCDF	1/Discharge	0.5	1.6	μg/L	4.8E-07	8.4E-07	J (DNQ)	ND	
2,3,7,8-TCDD	1/Discharge	1.0	1.0	μg/L	4.6E-07	ND	U	ND	
2,3,7,8-TCDF	1/Discharge	0.1	0.8	μg/L	7.6E-07	ND	U	ND	
OCDD	1/Discharge	0.0001	0.01	μg/L	7.2E-07	3.4E-05	U (B)	ND	
OCDF	1/Discharge	0.0001	0.02	μg/L	6.1E-07	9.4E-06	U (B)	ND	

TCDD TEQ w/out DNQ Values <sup>(4)</sup>	ND

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

# FOURTH QUARTER 2019 THE BOEING COMPANY SANTA SUSANA FIELD LABORATORY NPDES PERMIT CA0001309

			12/27/2019 08:25 (Composite)			
ANALYTE	UNITS	PERMIT LIMIT DAILY MAX	SAMPLE FREQUENCY	RESULT	MDA	LABORATORY/ VALIDATION QUALIFIER
NON-CONVENTIONAL POLLUTANTS						
Gross Alpha	pCi/L	15	1/Discharge	1.62 +/-1.18	1.71	UJ (*III, C)
Gross Beta	pCi/L	50	1/Discharge	2.78 +/-0.820	0.968	
Combined Radium-226 & Radium-228	pCi/L	5.0	1/Discharge	0.609 +/-0.368	NM	U
Strontium-90	pCi/L	8.0	1/Discharge	0.0203 +/-0.325	0.582	U
Tritium	pCi/L	20,000	1/Discharge	32.9 +/-156	276	U
ADDITIONAL POLLUTANTS						
Cesium-137	pCi/L	200	1/Discharge	2.85 +/-6.80	11.7	U
Uranium	pCi/L	20	1/Discharge	0.465 +/-0.270	0.222	U (B)
ADDITIONAL POLLUTANTS WITHOUT LIMITS			·			
Potassium-40	pCi/L	-	1/Discharge	-82.1 +/-191	238	U

#### FOURTH QUARTER 2019 THE BOEING COMPANY SANTA SUSANA FIELD LABORATORY NPDES PERMIT CA0001309

				12/26/2	019 8:10 - 12/27/2	019 8:25
ANALYTE	UNITS	PERMIT LIMIT DAILY MAX	SAMPLE FREQUENCY	SAMPLE TYPE	RESULT	LABORATORY/ VALIDATION QUALIFIER
Flow**	MGD	7.21	1/Discharge	Meas	0.034524	*
CONVENTIONAL POLLUTANTS						
Oil & Grease	LBS/DAY	902	1/Discharge	Grab	ND	U*
PRIORITY POLLUTANTS			_			
Antimony	LBS/DAY	0.36	1/Discharge	Composite	ND	U
Cadmium	LBS/DAY	(0.24)0.19	1/Discharge	Composite	ND <sup>(b)</sup>	U
Copper	LBS/DAY	0.84	1/Discharge	Composite	8.6E-04	
Cyanide	LBS/DAY	0.57	1/Discharge	Composite	ND	U*
Lead	LBS/DAY	0.31	1/Discharge	Composite	2.2E-04	J (DNQ)
Mercury	LBS/DAY	0.008	1/Discharge	Composite	ND	U*
Nickel	LBS/DAY	5.2	1/Discharge	Composite	ND	U
Selenium	LBS/DAY	0.3	1/Discharge	Composite	ND	U (B)
TCDD TEQ NoDNQ <sup>(4)</sup>	LBS/DAY	1.70E-09	1/Discharge	Composite	ND	U*
Thallium	LBS/DAY	0.12	1/Discharge	Composite	ND	U
Zinc	LBS/DAY	7.22	1/Discharge	Composite	3.5E-03	J (DNQ)
NON-CONVENTIONAL POLLUTANTS						
Ammonia - N	LBS/DAY	607.3	1/Discharge	Composite	0.0527	J- (Q, DNQ)
Boron	LBS/DAY	60	1/Year	ANR	ANR	ANR
Chloride	LBS/DAY	9,020	1/Discharge	Composite	1.5	*
Fluoride	LBS/DAY	96.2	1/Year	ANR	ANR	ANR
Nitrate - N	LBS/DAY	481	1/Discharge	Composite	0.81	*
Nitrate + Nitrite as Nitrogen (N)	LBS/DAY	481	1/Discharge	Composite	0.81	*
Nitrite - N	LBS/DAY	60	1/Discharge	Composite	0.01	J (DNQ*)
Perchlorate	LBS/DAY	0.36	1/Discharge	Composite	ND	U*
Sulfate	LBS/DAY	18,039	1/Discharge	Composite	1.4	*
Total Dissolved Solids	LBS/DAY	57,124	1/Discharge	Composite	37	*

# FOURTH QUARTER 2019 THE BOEING COMPANY SANTA SUSANA FIELD LABORATORY NPDES PERMIT CA0001309

				12/23/2019 09:00 - 12/24/2019 07:35			
ANALYTE	UNITS	DAILY MAXIMUM PERMIT LIMIT	SAMPLE FREQUENCY	SAMPLE TYPE	RESULT	LABORATORY/ VALIDATION QUALIFIER	
Flow**	MGD	64.33	1/Discharge	Meas	0.514717	*	
CONVENTIONAL POLLUTANTS							
Oil & Grease	mg/L	15	1/Discharge	Grab	ND < 1.5	U*	
pH (Field)	s.u	6.5-8.5	1/Discharge	Grab	7.4	*	
PRIORITY POLLUTANTS			4/5: 1		ND O	11 (5)	
Antimony	μg/L	6.0	1/Discharge	Composite	ND < 2.0	U (B)	
Cadmium Copper	μg/L	4.0 13	1/Discharge 1/Discharge	Composite Composite	ND < 0.25 3.7		
Cyanide	μg/L μg/L	9.5	1/Discharge	Composite	ND < 2.5	U*	
Lead	μg/L	5.2	1/Discharge	Composite	1.3		
Mercury	μg/L	0.13	1/Discharge	Composite	ND < 0.10	U*	
Nickel	μg/L	86	1/Discharge	Composite	ND < 5.0	Ü	
Thallium	µg/L	2.0	1/Discharge	Composite	ND < 0.20	Ü	
Zinc	μg/L	120	1/Discharge	Composite	27		
NON-CONVENTIONAL POLLUTANTS	13	-		- '			
Boron	mg/L	1.0	1/Year	ANR	ANR	ANR	
Chloride	mg/L	150	1/Discharge	Composite	3.2		
Chronic Toxicity	Pass or Fail	Pass or % Effect	1st & 2nd rain	ANR	ANR	ANR	
•	and % Effect	<50	event/Year				
Fluoride	mg/L	1.6	1/Year	ANR	ANR	ANR	
Nitrate + Nitrite as Nitrogen (N)	mg/L	10	1/Discharge	Composite	1.1		
Perchlorate	μg/L	6.0	1/Semiannual	Composite	ND < 0.95	U*	
Sulfate	mg/L	250	1/Discharge	Composite	3.0	*	
Temperature (Field) Total Dissolved Solids	Deg F	86 850	1/Discharge	Grab	49.6 62	*	
REMAINING PRIORITY POLLUTANTS	mg/L	650	1/Discharge	Composite	02		
1,1,1-Trichloroethane	ua/l	-	1/Year	ANR	ANR	ANR	
1,1,2,2-Tetrachloroethane	μg/L μg/L	-	1/Year	ANR	ANR	ANR	
1,1,2-Trichloroethane	μg/L	-	1/Year	ANR	ANR	ANR	
1,1-Dichloroethane	μg/L	_	1/Year	ANR	ANR	ANR	
1,1-Dichloroethene	μg/L	-	1/Year	ANR	ANR	ANR	
1,2,4-Trichlorobenzene	μg/L	-	1/Year	ANR	ANR	ANR	
1,2-Dichlorobenzene	μg/L	-	1/Year	ANR	ANR	ANR	
1,2-Dichlorobenzene	μg/L	-	1/Year	ANR	ANR	ANR	
1,2-Dichloroethane	μg/L	-	1/Year	ANR	ANR	ANR	
1,2-Dichloropropane	μg/L	-	1/Year	ANR	ANR	ANR	
1,2-Diphenylhydrazine/Azobenzene	μg/L	-	1/Year	ANR	ANR	ANR	
1,3-Dichlorobenzene	μg/L	-	1/Year	ANR	ANR	ANR	
1,3-Dichlorobenzene	μg/L	-	1/Year	ANR	ANR	ANR	
1,4-Dichlorobenzene	μg/L	-	1/Year	ANR	ANR	ANR	
1,4-Dichlorobenzene	μg/L	-	1/Year	ANR	ANR	ANR	
2,4,6-Trichlorophenol	μg/L	-	1/Year	ANR	ANR	ANR	
2,4-Dichlorophenol	μg/L	-	1/Year	ANR	ANR	ANR	
2,4-Dimethylphenol	µg/L	-	1/Year 1/Year	ANR ANR	ANR ANR	ANR ANR	
2,4-Dinitrophenol 2,4-Dinitrotoluene	μg/L μg/L	-	1/Year 1/Year	ANR	ANR	ANR	
2,6-Dinitrotoluene	μg/L μg/L	-	1/Year	ANR	ANR	ANR	
2-Chloroethyl vinyl ether	μg/L μg/L	-	1/Year	ANR	ANR	ANR	
2-Chloronaphthalene	µg/L	_	1/Year	ANR	ANR	ANR	
2-Chlorophenol	μg/L	-	1/Year	ANR	ANR	ANR	
2-Methyl-4,6-dinitrophenol	µg/L	-	1/Year	ANR	ANR	ANR	
2-Nitrophenol	μg/L	-	1/Year	ANR	ANR	ANR	
3,3'-Dichlorobenzidine	μg/L	-	1/Year	ANR	ANR	ANR	
4,4'-DDD	μg/L	-	1/Year	ANR	ANR	ANR	
4,4'-DDE	μg/L	-	1/Year	ANR	ANR	ANR	
4,4'-DDT	μg/L	-	1/Year	ANR	ANR	ANR	
4-Bromophenyl phenyl ether	μg/L	-	1/Year	ANR	ANR	ANR	
4-Chloro-3-methylphenol	μg/L	-	1/Year	ANR	ANR	ANR	
4-Chlorophenyl phenyl ether	μg/L	-	1/Year	ANR	ANR	ANR	
4-Nitrophenol	µg/L	-	1/Year	ANR	ANR	ANR	
Acenaphthene	μg/L	-	1/Year	ANR	ANR	ANR	
Acceptain	µg/L	-	1/Year	ANR	ANR	ANR	
Acrolein Acrylonitrile	μg/L	-	1/Year 1/Year	ANR ANR	ANR ANR	ANR ANR	
Acryloniulie	μg/L	-	ı, rear	ANK	ANK	ANK	

# FOURTH QUARTER 2019 THE BOEING COMPANY SANTA SUSANA FIELD LABORATORY NPDES PERMIT CA0001309

				12/23/20	2019 09:00 - 12/24/2019 07:35		
ANALYTE	UNITS	DAILY MAXIMUM PERMIT LIMIT	SAMPLE FREQUENCY	SAMPLE TYPE	RESULT	LABORATORY/ VALIDATION QUALIFIER	
Aldrin	μg/L	-	1/Year	ANR	ANR	ANR	
alpha-BHC	μg/L	-	1/Year	ANR	ANR	ANR	
alpha-Endosulfan	μg/L	-	1/Year	ANR	ANR	ANR	
Anthracene	μg/L	-	1/Year	ANR	ANR	ANR	
Aroclor 1016	μg/L	-	1/Year	ANR	ANR	ANR	
Aroclor 1221	μg/L	-	1/Year	ANR	ANR	ANR	
Aroclor 1232	μg/L	-	1/Year	ANR	ANR	ANR	
Aroclor 1242	μg/L	-	1/Year	ANR	ANR	ANR	
Aroclor 1248	μg/L	-	1/Year	ANR	ANR	ANR	
Aroclor 1254	μg/L	-	1/Year	ANR	ANR	ANR	
Aroclor 1260	μg/L	-	1/Year	ANR	ANR	ANR	
Arsenic	μg/L	-	1/Year	ANR	ANR	ANR	
Asbestos	MFL	-	1/Year	ANR	ANR	ANR	
Benzene	μg/L	-	1/Year	ANR	ANR	ANR	
Benzidine	μg/L	-	1/Year	ANR	ANR	ANR	
Benzo(a)anthracene	μg/L	-	1/Year	ANR	ANR	ANR	
Benzo(a)pyrene	μg/L	-	1/Year	ANR	ANR	ANR	
Benzo(b)fluoranthene	μg/L	-	1/Year	ANR	ANR	ANR	
Benzo(g,h,i)perylene	μg/L	-	1/Year	ANR	ANR	ANR	
Benzo(k)fluoranthene	μg/L	-	1/Year	ANR	ANR	ANR	
Beryllium	μg/L	-	1/Year	ANR	ANR	ANR	
beta-BHC	μg/L	-	1/Year	ANR	ANR	ANR	
beta-Endosulfan	μg/L	-	1/Year	ANR	ANR	ANR	
Bis (2-Chloroethoxy) Methane	μg/L	-	1/Year	ANR	ANR	ANR	
Bis (2-Chloroethyl) Ether	μg/L	-	1/Year	ANR	ANR	ANR	
Bis (2-Chloroisopropyl) Ether	μg/L	-	1/Year	ANR	ANR	ANR	
Bis (2-Ethylhexyl) Phthalate	μg/L	-	1/Year	ANR	ANR	ANR	
Bromoform	μg/L	-	1/Year	ANR	ANR	ANR	
Bromomethane	μg/L	-	1/Year	ANR	ANR	ANR	
Butyl benzylphthalate	µg/L	-	1/Year	ANR	ANR	ANR	
Carbon tetrachloride	μg/L	-	1/Year	ANR	ANR	ANR	
Chlordane	μg/L	-	1/Year	ANR	ANR	ANR	
Chlorobenzene	µg/L	-	1/Year	ANR	ANR	ANR	
Chlorodibromomethane	µg/L	-	1/Year	ANR	ANR	ANR	
Chloroethane	µg/L	-	1/Year	ANR	ANR	ANR	
Chloroform	µg/L	-	1/Year	ANR	ANR	ANR	
Chloromethane (Methyl Chloride)	µg/L	_	1/Year	ANR	ANR	ANR	
Chromium	µg/L	_	1/Year	ANR	ANR	ANR	
Chromium VI (Hexavalent)	μg/L	_	1/Year	ANR	ANR	ANR	
Chrysene	µg/L	-	1/Year	ANR	ANR	ANR	
cis-1,3-Dichloropropene	µg/L	_	1/Year	ANR	ANR	ANR	
delta-BHC	µg/L	_	1/Year	ANR	ANR	ANR	
Dibenz(a,h)anthracene	µg/L	_	1/Year	ANR	ANR	ANR	
Dichlorobromomethane	µg/L	_	1/Year	ANR	ANR	ANR	
Dieldrin	µg/L	-	1/Year	ANR	ANR	ANR	
Diethyl phthalate	μg/L	-	1/Year	ANR	ANR	ANR	
Dimethyl phthalate	μg/L	<del>                                     </del>	1/Year	ANR	ANR	ANR	
Di-n-butyl phthalate	μg/L	-	1/Year	ANR	ANR	ANR	
Di-n-octyl phthalate	µg/L		1/Year	ANR	ANR	ANR	
Endosulfan sulfate	μg/L	-	1/Year	ANR	ANR	ANR	
Endrin	μg/L	-	1/Year	ANR	ANR	ANR	
Endrin aldehyde	μg/L μg/L	-	1/Year	ANR	ANR	ANR	
Ethylbenzene	μg/L μg/L	<del>-</del> -	1/Year	ANR	ANR	ANR	
Fluoranthene	μg/L μg/L		1/Year	ANR	ANR	ANR	
Fluorene	μg/L μg/L	-	1/Year	ANR	ANR	ANR	
gamma-BHC (Lindane)	μg/L μg/L	<del>-</del> -	1/Year	ANR	ANR	ANR	
Heptachlor	μg/L μg/L		1/Year	ANR	ANR	ANR	
Heptachlor epoxide		-	1/Year	ANR	ANR	ANR	
Hexachlorobenzene	μg/L	-	1/Year	ANR	ANR	ANR	
Hexachlorobutadiene	μg/L	-	1/Year	ANR	ANR	ANR	
	μg/L	_					
Hexachlorocyclopentadiene	µg/L	-	1/Year	ANR	ANR	ANR	
Hexachloroethane	µg/L	-	1/Year	ANR	ANR	ANR	
Indeno(1,2,3-cd)pyrene	µg/L	-	1/Year	ANR	ANR	ANR	
Isophorone	μg/L	-	1/Year	ANR	ANR	ANR	

#### FOURTH QUARTER 2019 THE BOEING COMPANY SANTA SUSANA FIELD LABORATORY NPDES PERMIT CA0001309

				12/23/2019 09:00 - 12/24/2019 07:35		
ANALYTE	UNITS	DAILY MAXIMUM PERMIT LIMIT	SAMPLE FREQUENCY	SAMPLE TYPE	RESULT	LABORATORY/ VALIDATION QUALIFIER
Methylene chloride	μg/L	-	1/Year	ANR	ANR	ANR
Naphthalene	μg/L	-	1/Year	ANR	ANR	ANR
Naphthalene	μg/L	-	1/Year	ANR	ANR	ANR
Nitrobenzene	μg/L	-	1/Year	ANR	ANR	ANR
N-Nitrosodimethylamine	μg/L	-	1/Year	ANR	ANR	ANR
N-Nitroso-di-n-propylamine	μg/L	-	1/Year	ANR	ANR	ANR
N-Nitrosodiphenylamine	μg/L	-	1/Year	ANR	ANR	ANR
Pentachlorophenol	μg/L	-	1/Year	ANR	ANR	ANR
Phenanthrene	μg/L	-	1/Year	ANR	ANR	ANR
Phenol	μg/L	-	1/Year	ANR	ANR	ANR
Pyrene	μg/L	-	1/Year	ANR	ANR	ANR
Tetrachloroethene	μg/L	-	1/Year	ANR	ANR	ANR
Toluene	μg/L	-	1/Year	ANR	ANR	ANR
Toxaphene	μg/L	-	1/Year	ANR	ANR	ANR
trans-1,2-Dichloroethene	µg/L	_	1/Year	ANR	ANR	ANR
trans-1,3-Dichloropropene	µg/L	_	1/Year	ANR	ANR	ANR
Trichloroethene	µg/L	_	1/Year	ANR	ANR	ANR
Trichlorofluoromethane	μg/L	-	1/Year	ANR	ANR	ANR
Vinyl chloride	µg/L	_	1/Year	ANR	ANR	ANR
Xylenes (Total)	μg/L	_	1/Year	ANR	ANR	ANR
EFFLUENT MONITORING (NO LIMITATIONS) POLLUTAN			171001	74414	74414	7 11 11 1
Aluminum	μg/L	_	1/Year	ANR	ANR	ANR
Chlorpyrifos	μg/L		1/Year	ANR	ANR	ANR
Diazinon	μg/L	-	1/Year	ANR	ANR	ANR
E. Coli	mpn/100mL	-	1/Year	ANR	ANR	ANR
Hardness (as CaCO3)	mg/L	-	1/Year	ANR	ANR	ANR
Iron		-	1/Year	ANR	ANR	ANR
Selenium	mg/L	-	1/Discharge	Composite	ND < 0.50	U
	μg/L		·		ND < 0.50	
Silver	µg/L	-	1/Discharge	Composite		U
Total Suspended Solids	mg/L	-	1/Year	Composite	11	
Vanadium	μg/L	-	1/Year	ANR	ANR	ANR
ADDITIONAL POLLUTANTS <sup>(2)</sup>						
Aluminum, dissolved	μg/L	-	Additional/Year	ANR	ANR	ANR
Antimony, dissolved	μg/L	-	Additional/Discharge	Composite	0.62	J (H, DNQ)
Arsenic, dissolved	μg/L	-	Additional/Year	ANR	ANR	ANR
Beryllium, dissolved	μg/L	-	Additional/Year	ANR	ANR	ANR
Biochemical Oxygen Demand (BOD)(5-Day @ 20 deg. C)	mg/L	-	Additional	ANR	ANR	ANR
Boron, dissolved	mg/L	-	Additional/Year	ANR	ANR	ANR
Cadmium, dissolved	μg/L	-	Additional/Discharge	Composite	ND < 0.25	UJ (H)
Chromium, dissolved	μg/L	-	Additional/Year	ANR	ANR	ANR
cis-1,2-Dichloroethene	μg/L	-	Additional/Year	ANR	ANR	ANR
Copper, dissolved	μg/L	-	Additional/Discharge	Composite	3.2	J (H)
Hardness, dissolved (as CaCO3)	mg/L	-	Additional/Year	ANR	ANR	ANR
Human Bacteriodes	CEs/100mL	-	Additional/Year	ANR	ANR	ANR
Iron, dissolved	mg/L	-	Additional/Year	ANR	ANR	ANR
Lead, dissolved	μg/L	-	Additional/Discharge	Composite	ND < 0.50	UJ (H)
Mercury, dissolved	μg/L	-	Additional/Discharge	Composite	ND < 0.10	U*
Nickel, dissolved	μg/L	-	Additional/Discharge	Composite	ND < 5.0	UJ (H)
Selenium, dissolved	μg/L	-	Additional/Discharge	Composite	ND < 0.50	UJ (H)
Silver, dissolved	µg/L	-	Additional/Discharge	Composite	ND < 0.50	UJ (H)
Thallium, dissolved	µg/L	-	Additional/Discharge	Composite	ND < 0.20	UJ (H)
Vanadium, dissolved	μg/L	-	Additional/Year	ANR	ANR	ANR
Zinc, dissolved	µg/L	-	Additional/Discharge	Composite	15	J (H, DNQ)

# FOURTH QUARTER 2019 THE BOEING COMPANY SANTA SUSANA FIELD LABORATORY NPDES PERMIT CA0001309

October 1 through December 31, 2019

					12/24/2019 07:35 (Composite)				
ANALYTE	SAMPLE FREQUENCY	1998 WHO TEF	BEF GREAT LAKES WATER QUALITY INITIATIVE	UNITS	LAB MDL	LAB RESULT	LABORATORY/ VALIDATION QUALIFIER	TCDD EQUIVALENT (w/out DNQ Values)	
1,2,3,4,6,7,8-HpCDD	1/Discharge	0.01	0.05	μg/L	1.7E-06	1.8E-05	U (B)	ND	
1,2,3,4,6,7,8-HpCDF	1/Discharge	0.01	0.01	μg/L	1.5E-06	5.2E-06	U (B)	ND	
1,2,3,4,7,8,9-HpCDF	1/Discharge	0.01	0.4	μg/L	1.7E-06	1.8E-06	U (B)	ND	
1,2,3,4,7,8-HxCDD	1/Discharge	0.1	0.3	μg/L	1.4E-06	2.4E-06	U (B)	ND	
1,2,3,4,7,8-HxCDF	1/Discharge	0.1	0.08	μg/L	2.7E-06	ND	U	ND	
1,2,3,6,7,8-HxCDD	1/Discharge	0.1	0.1	μg/L	1.5E-06	ND	U	ND	
1,2,3,6,7,8-HxCDF	1/Discharge	0.1	0.2	μg/L	2.8E-06	ND	U	ND	
1,2,3,7,8,9-HxCDD	1/Discharge	0.1	0.1	μg/L	1.3E-06	ND	U	ND	
1,2,3,7,8,9-HxCDF	1/Discharge	0.1	0.6	μg/L	2.2E-06	ND	U	ND	
1,2,3,7,8-PeCDD	1/Discharge	1.0	0.9	μg/L	2.2E-06	ND	U	ND	
1,2,3,7,8-PeCDF	1/Discharge	0.05	0.2	μg/L	1.7E-06	ND	U	ND	
2,3,4,6,7,8-HxCDF	1/Discharge	0.1	0.7	μg/L	2.1E-06	ND	U	ND	
2,3,4,7,8-PeCDF	1/Discharge	0.5	1.6	μg/L	1.6E-06	ND	U	ND	
2,3,7,8-TCDD	1/Discharge	1.0	1.0	μg/L	2.2E-06	3.3E-06	UJ (*III)	ND	
2,3,7,8-TCDF	1/Discharge	0.1	0.8	μg/L	2.0E-06	ND	U	ND	
OCDD	1/Discharge	0.0001	0.01	μg/L	3.3E-06	2.0E-04		2.0E-10	
OCDF	1/Discharge	0.0001	0.02	μg/L	2.6E-06	1.3E-05	U (B)	ND	

TCDD TEQ w/out DNQ Values <sup>(4)</sup>	2.0E-10

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

# FOURTH QUARTER 2019 THE BOEING COMPANY SANTA SUSANA FIELD LABORATORY NPDES PERMIT CA0001309

					12/24/2019 07:35 (Composite)			
ANALYTE	UNITS	PERMIT LIMIT DAILY MAX	SAMPLE FREQUENCY	RESULT	MDA	LABORATORY/ VALIDATION QUALIFIER		
NON-CONVENTIONAL POLLUTANTS								
Gross Alpha	pCi/L	15	1/Discharge	1.38 +/-0.871	1.16	U (B, *III, C)		
Gross Beta	pCi/L	50	1/Discharge	1.56 +/-0.741	1.04	J- (B)		
Combined Radium-226 & Radium-228	pCi/L	5.0	1/Discharge	0.529 +/-0.307	NM	U		
Strontium-90	pCi/L	8.0	1/Discharge	0.147 +/-0.251	0.426	U		
Tritium	pCi/L	20,000	1/Discharge	40.5 +/-157	276	U		
ADDITIONAL POLLUTANTS								
Cesium-137	pCi/L	200	1/Discharge	-5.64 +/-10.7	18.1	U		
Uranium	pCi/L	20	1/Discharge	0.158 +/-0.322	0.432	U		
ADDITIONAL POLLUTANTS WITHOUT LIMITS								
Potassium-40	pCi/L	-	1/Discharge	-1.92 +/-118	176	U		

#### FOURTH QUARTER 2019 THE BOEING COMPANY SANTA SUSANA FIELD LABORATORY NPDES PERMIT CA0001309

				12/23/2019 9:00 - 12/24/2019 7:35			
ANALYTE	UNITS	PERMIT LIMIT DAILY MAX	SAMPLE FREQUENCY	SAMPLE TYPE	RESULT	LABORATORY/ VALIDATION QUALIFIER	
Flow**	MGD	64.33	1/Discharge	Meas	0.514717	*	
CONVENTIONAL POLLUTANTS							
Oil & Grease	LBS/DAY	8,048	1/Discharge	Grab	ND	U*	
PRIORITY POLLUTANTS							
Antimony	LBS/DAY	3.22	1/Discharge	Composite	ND	U (B)	
Cadmium	LBS/DAY	2.15	1/Discharge	Composite	ND	U	
Copper	LBS/DAY	7	1/Discharge	Composite	0.016		
Cyanide	LBS/DAY	5.1	1/Discharge	Composite	ND	U*	
Lead	LBS/DAY	2.8	1/Discharge	Composite	0.0056		
Mercury	LBS/DAY	0.07	1/Discharge	Composite	ND	U*	
Nickel	LBS/DAY	46.14	1/Discharge	Composite	ND	U	
TCDD TEQ_NoDNQ <sup>(4)</sup>	LBS/DAY	1.5E-08	1/Discharge	Composite	8.6E-13	*	
Thallium	LBS/DAY	1.1	1/Discharge	Composite	ND	U	
Zinc	LBS/DAY	64.4	1/Discharge	Composite	0.12		
NON-CONVENTIONAL POLLUTANTS							
Boron	LBS/DAY	537	1/Year	ANR	ANR	ANR	
Chloride	LBS/DAY	80,477	1/Discharge	Composite	14		
Fluoride	LBS/DAY	858	1/Year	ANR	ANR	ANR	
Nitrate + Nitrite as Nitrogen (N)	LBS/DAY	5,365	1/Discharge	Composite	4.7		
Perchlorate	LBS/DAY	3.22	1/Semiannual	Composite	ND	U*	
Sulfate	LBS/DAY	134,128	1/Discharge	Composite	13		
Total Dissolved Solids	LBS/DAY	456,034	1/Discharge	Composite	266	*	

## ARROYO SIMI DISCHARGE MONITORING DATA SUMMARY TABLE

#### FOURTH QUARTER 2019 THE BOEING COMPANY SANTA SUSANA FIELD LABORATORY NPDES PERMIT CA0001309

October 1 through January 31, 2019

					12/23/2019 08:00	
ANALYTE	UNITS	PERMIT LIMIT DAILY MAX	SAMPLE FREQUENCY	SAMPLE TYPE	RESULT	LABORATORY/ VALIDATION QUALIFIER
POLLUTANTS WITH LIMITS						
4,4'-DDD	μg/L	0.0014	1/Quarter	Grab	ND < 0.0044	U*
4,4'-DDE	μg/L	0.001	1/Quarter	Grab	ND < 0.0033	U*
4,4'-DDT	μg/L	0.001	1/Quarter	Grab	ND < 0.0044	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 < 0.089	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 < 0.0022	U*
E. coli	MPN/100mL	235	1/Year	ANR	ANR	ANR
pH (Field)	s.u.	6.5-8.5	1/Quarter	Grab	7.11	*
Toxaphene	μg/L	0.0003	1/Quarter	Grab	ND < 0.27	U*
POLLUTANTS WITHOUT LIMITS						
Hardness (as CaCO3)	mg/L	-	1/Quarter	Grab	100	*
Priority Pollutants	NA	-	1/5 Years	ANR	ANR	ANR
Temperature (Field)	Deg F	-	1/Quarter	Grab	50.3	*
TCDD - Equivalents	μg/L	-	1/Year	ANR	ANR	ANR
Total Suspended Solids	mg/L	-	1/Year	ANR	ANR	ANR
Water Velocity	ft/sec	-	1/Quarter	Meas	0.1	*

#### EXTENDED RADIOCHEMISTRY

#### FOURTH QUARTER 2019 THE BOEING COMPANY SANTA SUSANA FIELD LABORATORY NPDES PERMIT CA0001309

#### October 1 through December 31, 2019

	I		OUTFALL 001 12/27/2019 7:25 (Composite)					
ANALYTE	UNITS	DAILY MAXIMUM BENCHMARK	RESULT	MDA	LABORATORY/ VALIDATION QUALIFIER			
MAN-MADE RADIOCHEMISTR	Y RESULTS		ll					
Americium-241	pCi/L	-/-	0.000 +/-0.0918	0.274	U*			
Plutonium-238	pCi/L	-/-	0.0238 +/-0.101	0.267	U*			
Plutonium-239/240	pCi/L	-/-	-0.0239 +/-0.0338	0.267	U*			
NATURALLY OCCURRING RA	DIOCHEMISTRY RESU	LTS BY GAMMA SPECTROS	•		•			
Actinium-227	pCi/L	-/-	29.3 +/-43.3	99.0	U*			
Bismuth-211	pCi/L	-/-	29.3 +/-43.3	99.0	U*			
Bismuth-212	pCi/L	-/-	28.4 +/-89.6	157	U*			
Cesium-137	pCi/L	-/-	3.88 +/-8.12	13.9	U*			
Polonium-210	pCi/L	-/-	0.524 +/-0.318	0.445	*			
Protactinium-231	pCi/L	-/-	51.3 +/-172	564	U*			
Radium-223	pCi/L	-/-	29.3 +/-43.3	99.0	U*			
Radium-224	pCi/L	-/-	13.5 +/-14.0	17.9	U*			
Thorium-227	pCi/L	-/-	29.3 +/-43.3	99.0	U*			
NATURALLY OCCURRING RA	DIOCHEMISTRY RESU	LTS BY ALPHA SPECTROS	<u> </u>					
Thorium-228	pCi/L	-/-	0.957 +/-0.487	0.515	*			
Thorium-230	pCi/L	-/-	0.669 +/-0.431	0.445	*			
Thorium-232	pCi/L	-/-	0.774 +/-0.399	0.361	*			

## **APPENDIX D**

Fourth Quarter 2019 NPDES Permit Limit Exceedances and/or Non-Compliance

#### **APPENDIX D**

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Table D – Summary of Permit Limit Exceedances and/or Non-Compliance

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

# Fourth QUARTER 2019 THE BOEING COMPANY SANTA SUSANA FIELD LABORATORY NPDES PERMIT CA0001309

October 1 through December 31, 2019

	DAILY MAXIMUM BENCHMARK EXCEEDANCES AND/OR NON-COMPLIANCE										
OUTFALL	SAMPLE DATE	SAMPLE TYPE	ANALYTE		DAILY MAX RESULT	UNITS	LABORATORY/ VALIDATION QUALIFIER				
Outfall 001	12/27/2019	Comp	Lead	5.2	6.6	μg/L					
Outfall 001	12/27/2019	Comp	Iron	0.3	14	mg/L					
Outfall 001	12/27/2019	Comp	Gross Alpha <sup>(1)</sup>	15	14.1 +/- 3.61	pCi/L	J- (*III)				
Outfall 001	12/27/2019	Comp	TCDD TEQ w/out DNQ	2.8E-08	5.1E-08	μg/L	*				
Outfall 002	12/05/2019	Comp	Iron	0.3	1.5	mg/L	J+ (Q)				
Outfall 002	12/24/2019	Comp	Iron	0.3	8.7	mg/L					
Outfall 002	12/24/2019	Comp	TCDD TEQ w/out DNQ	2.8E-08	5.1E-08	μg/L	*				

<sup>(1) =</sup> Gross Alpha minus total uranium was calculated to be 13.4 +/- 3.64 pCi/L, which is indeterminant of the Daily Maximum Benchmark Limit of 15 pCi/L. Gross Alpha is in compliance based on the annual average at Outfall 001, which is 3.65 +/- 0.64 pCi/L.

## **APPENDIX E**

Fourth Quarter 2019 Analytical Laboratory Reports, Chain of Custody Forms, and Validation Reports

#### **APPENDIX E**

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#### **DATA VALIDATION REPORT**

## **Boeing SSFL NPDES**

SAMPLE DELIVERY GROUP: 440-258161-1

#### **Prepared for**

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

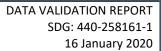
16 January 2020





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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<sup>x</sup> Project No.: 1272.003D.01 002

Sample Delivery Group: 440-258161-1

**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	Matrix	Collection	Method
OUTFALL001_20191226_ GRAB	440-258161-1	WM	12/26/2019 7:45:00 AM	E120.1, E624.1



#### II. SAMPLE MANAGEMENT

According to the case narrative, Login Sample Receipt Checklist, and the chain-of-custody (COC) provided by the laboratory for sample delivery group (SDG) 440-258161-1:

- The laboratory received the samples in this SDG on ice and within the temperature limits of <6 degrees Celsius (°C) and >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 coolers; however, no evidence of tampering was noted.
- It should be noted that, although marked for validation, no data was submitted for field parameter dissolved oxygen. This parameter was not reviewed for validation.



#### **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 624.1—VOLATILE ORGANIC COMPOUNDS (VOCs)

#### L. Calvin of MEC<sup>x</sup> reviewed the SDG on January 16, 2020

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC<sup>X</sup> Data Validation Procedure for Volatile Organics (DVP-2, Rev. 2), EPA Method 624.1, and the National Functional Guidelines for Superfund Organic Methods Data Review (2017).

#### **III.1. HOLDING TIMES**

The analytical holding time was met. The preserved water site sample was analyzed within 14 days of collection.

#### III.2. GC/MS TUNING AND CALIBRATION

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

Except as noted below, 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 applicable CCV recoveries were within the method control limits, except the high response in the CCV for carbon tetrachloride (141%). Though not detected in the site sample, the sample result for carbon tetrachloride was qualified as estimated (UJ).

#### **III.3. QUALITY CONTROL SAMPLES**

#### III.3.1. METHOD BLANKS

Target compounds were not detected above the MDL in the method blank.

#### III.3.2. LABORATORY CONTROL SAMPLES

The LCS had a recovery above the method control limits for carbon tetrachloride; however, as carbon tetrachloride was not detected in the sample, qualifications were not assigned. Remaining LCS recoveries were within the method control limits.

#### III.3.3. SURROGATE RECOVERY

Recoveries were within the laboratory control limits.

#### 11.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the site sample in this SDG. MEC<sup>x</sup> evaluated method accuracy based on the associated LCS results.

#### III.4. FIELD QC SAMPLES

MEC<sup>x</sup> 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<sup>x</sup> 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-20191226 was identified as the trip blank associated with the site sample in this SDG. The trip blank had no target compound detects above the MDL.

#### 111.4.2. 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 29 target compounds by Method 624.1. 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. METHOD EPA 120.1 — SPECIFIC CONDUCTANCE

M. Hilchey of MEC<sup>X</sup> reviewed the SDG on January 16, 2020.

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC<sup>X</sup> Data Validation Procedure for General Minerals (DVP-6, Rev. 1), EPA Method 120.1 and the National Functional Guidelines for Inorganic Superfund Methods Data Review (2017).

#### **IV.1. HOLDING TIMES**

The QAPP holding time, 28 days for specific conductance, was met.



#### IV.2. CALIBRATION

Probe calibration data was not provided. The initial and continuing calibration verification recoveries met laboratory control limits.

#### **IV.3. QUALITY CONTROL SAMPLES**

#### IV.3.1. METHOD BLANKS

The method blank had no detection of specific conductivity.

#### IV.3.2. LABORATORY CONTROL SAMPLES

Laboratory control sample recovery met QAPP control limits.

#### IV.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were performed on the sample in this SDG. The RPD met laboratory limits.

#### IV.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses are not applicable to this method.

#### **IV.4. SAMPLE RESULT VERIFICATION**

Raw data was not provided; therefore, sample results could not be verified against raw data. Reported nondetects are valid to the MDL.

#### **IV.5. FIELD QC SAMPLES**

MEC<sup>x</sup> 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<sup>x</sup> 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: 4402581611

Analysis Method E120.1

Sample Name OUTFALL001\_20191226\_GRAB Matrix Type: WM Result Type: TRG

Sample Date: 12/26/2019 7:45:00 AM Validation Level: 8

**Lab Sample Name:** 440-258161-1

Fraction: CAS No RLMDL Analyte Result Result Lab Validation Validation Value Units Qualifier Qualifier Notes Specific Conductance CONDSPEC 1400 1.0 1.0 umhos/c

Analysis Method E624.1

Sample Name OUTFALL001\_20191226\_GRAB Matrix Type: WM Result Type: TRG

Sample Date: 12/26/2019 7:45:00 AM Validation Level: 8

**Lab Sample Name:** 440-258161-1

Analyte	Fraction	: CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,1,1-Trichloroethane	N	71-55-6	ND	0.50	0.25	ug/L	U	U	
1,1,2,2-Tetrachloroethane	N	79-34-5	ND	0.50	0.25	ug/L	U	U	
1,1,2-Trichloroethane	N	79-00-5	ND	0.50	0.25	ug/L	U	U	
1,1-Dichloroethane	N	75-34-3	ND	0.50	0.25	ug/L	U	U	
1,2-Dichlorobenzene	N	95-50-1	ND	0.50	0.25	ug/L	U	U	
1,2-Dichloropropane	N	78-87-5	ND	0.50	0.25	ug/L	U	U	
1,3-Dichlorobenzene	N	541-73-1	ND	0.50	0.25	ug/L	U	U	
1,4-Dichlorobenzene	N	106-46-7	ND	0.50	0.25	ug/L	U	U	
Benzene	N	71-43-2	ND	0.50	0.25	ug/L	U	U	
Bromodichloromethane	N	75-27-4	ND	0.50	0.25	ug/L	U	U	
Bromoform	N	75-25-2	ND	1.0	0.40	ug/L	U	U	
Bromomethane (Methyl Bromide	) N	74-83-9	ND	0.50	0.25	ug/L	U	U	
Carbon tetrachloride	N	56-23-5	ND	0.50	0.25	ug/L	ULQ	UJ	С
Chlorobenzene	N	108-90-7	ND	0.50	0.25	ug/L	U	U	
Chloroethane	N	75-00-3	ND	1.0	0.40	ug/L	U	U	
Chloroform (Trichloromethane)	N	67-66-3	ND	0.50	0.25	ug/L	U	U	
Chloromethane (Methyl Chloride	) N	74-87-3	ND	0.50	0.25	ug/L	U	U	
cis-1,2-Dichloroethene	N	156-59-2	ND	0.50	0.25	ug/L	U	U	
cis-1,3-Dichloropropene	N	10061-01-5	ND	0.50	0.25	ug/L	U	U	
Dibromochloromethane	N	124-48-1	ND	0.50	0.25	ug/L	U	U	
Ethylbenzene	N	100-41-4	ND	0.50	0.25	ug/L	U	U	
Methylene chloride	N	75-09-2	ND	2.0	0.88	ug/L	U	U	
Naphthalene	N	91-20-3	ND	1.0	0.40	ug/L	U	U	
Tetrachloroethene	N	127-18-4	ND	0.50	0.25	ug/L	U	U	
Toluene	N	108-88-3	ND	0.50	0.25	ug/L	U	U	
trans-1,2-Dichloroethene	N	156-60-5	ND	0.50	0.25	ug/L	U	U	
trans-1,3-Dichloropropene	N	10061-02-6	ND	0.50	0.25	ug/L	U	U	

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Analysis Method	E624	4.1						
Trifluorotrichloroethane (Freon 113)	N	76-13-1	ND	2.0	0.50	ug/L	U	U
Vinyl chloride	N	75-01-4	ND	0.50	0.25	ug/L	U	U

Tuesday, January 21, 2020 Page 2 of 2



## **ANALYTICAL REPORT**

Eurofins Calscience Irvine 17461 Derian Ave Suite 100 Irvine, CA 92614-5817 Tel: (949)261-1022

Laboratory Job ID: 440-258161-1

Client Project/Site: Quarterly Outfall 001 Grab

#### For:

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

Attn: Katherine Miller

Authorized for release by: 1/10/2020 10:02:05 AM

Christian Bondoc, Project Manager I

(949)260-3218

christian.bondoc@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.

Christian Bondoc Project Manager I 1/10/2020 10:02:05 AM Laboratory Job ID: 440-258161-1

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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Client: Haley & Aldrich, Inc. Project/Site: Quarterly Outfall 001 Grab Laboratory Job ID: 440-258161-1

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## **Sample Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 001 Grab

Client Sample ID Lab Sample ID Matrix Collected Received Asset ID Outfall001\_20191226\_Grab <u>12/26/19 07:45</u> <u>12/26/19 11:45</u> 440-258161-1 Water TB-20191226 440-258161-3 Water 12/26/19 07:45 12/26/19 11:45

Job ID: 440-258161-1

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#### **Case Narrative**

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 001 Grab

Job ID: 440-258161-1

Job ID: 440-258161-1

**Laboratory: Eurofins Calscience Irvine** 

Narrative

Job Narrative 440-258161-1

#### Comments

No additional comments.

#### Receipt

The samples were received on 12/26/2019 11:45 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.9° C.

#### Receipt Exceptions

The following sample was received with headspace in the sample containe:. TB-20191226 (440-258161-3). All containers had headspace.

#### **GC/MS VOA**

Method 624.1: The following volatile sample was received and analyzed with significant headspace in the sample container(s): TB-20191226 (440-258161-3). Significant headspace is defined as a bubble greater than 6 mm in diameter.

Method 624.1: The continuing calibration verification (CCV) associated with batch 440-588294 recovered above the upper control limit for 1.1.1-Trichloroethane and Carbon tetrachloride. The samples associated with this CCV were non-detects for the affected analytes: therefore, the data have been reported.

Method 624.1: The laboratory control sample (LCS) for analytical batch 440-588294 recovered outside control limits for the following analytes: Carbon tetrachloride. These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.

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

#### **General Chemistry**

Method SM 2540F: Insufficient sample volume was available to perform a sample duplicate (DUP) associated with analytical batch 440-588030.

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

#### **Organic Prep**

Methods 1664A, 1664B: Lowered reporting limits are provided for the following samples due to excess sample provided for preparation/analysis; (LCS 440-589086/2-A), (440-258344-A-4-A) and (440-258344-A-4-B MS). Note that these samples are composites: there were 2 full liters for each composite. Method 1664A/1664B.

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

#### **VOA Prep**

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

## **Client Sample Results**

Client: Haley & Aldrich, Inc. Job ID: 440-258161-1

Project/Site: Quarterly Outfall 001 Grab

Client Sample ID: Outfall001\_20191226\_Grab

Lab Sample ID: 440-258161-1 Date Collected: 12/26/19 07:45 **Matrix: Water** 

Date Received: 12/26/19 11:45

HEM (Oil & Grease)

Settleable Solids

**Specific Conductance** 

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		0.50	0.25	ug/L			12/28/19 14:34	1
1,1,2,2-Tetrachloroethane	ND		0.50	0.25	ug/L			12/28/19 14:34	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		2.0	0.50	ug/L			12/28/19 14:34	1
1,1,2-Trichloroethane	ND		0.50	0.25	ug/L			12/28/19 14:34	1
1,1-Dichloroethane	ND		0.50	0.25	ug/L			12/28/19 14:34	1
1,1-Dichloroethene	ND		0.50	0.25	ug/L			12/28/19 14:34	1
1,2-Dichlorobenzene	ND		0.50	0.25	ug/L			12/28/19 14:34	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			12/28/19 14:34	1
1,2-Dichloropropane	ND		0.50	0.25	ug/L			12/28/19 14:34	1
1,3-Dichlorobenzene	ND		0.50	0.25	ug/L			12/28/19 14:34	1
1,4-Dichlorobenzene	ND		0.50	0.25	ug/L			12/28/19 14:34	1
Benzene	ND		0.50	0.25	ug/L			12/28/19 14:34	1
Bromoform	ND		1.0	0.40	ug/L			12/28/19 14:34	1
Bromomethane	ND		0.50	0.25	ug/L			12/28/19 14:34	1
Carbon tetrachloride	ND	LQ	0.50	0.25	ug/L			12/28/19 14:34	1
Chlorobenzene	ND		0.50	0.25	ug/L			12/28/19 14:34	1
Dibromochloromethane	ND		0.50	0.25	ug/L			12/28/19 14:34	1
Chloroethane	ND		1.0	0.40	ug/L			12/28/19 14:34	1
Chloroform	ND		0.50	0.25	ug/L			12/28/19 14:34	1
Chloromethane	ND		0.50	0.25	ug/L			12/28/19 14:34	1
cis-1,2-Dichloroethene	ND		0.50	0.25	ug/L			12/28/19 14:34	1
cis-1,3-Dichloropropene	ND		0.50	0.25	ug/L			12/28/19 14:34	1
Bromodichloromethane	ND		0.50	0.25	ug/L			12/28/19 14:34	1
Ethylbenzene	ND		0.50	0.25	ug/L			12/28/19 14:34	1
Methylene Chloride	ND		2.0	0.88	ug/L			12/28/19 14:34	1
Naphthalene	ND		1.0	0.40	ug/L			12/28/19 14:34	1
Tetrachloroethene	ND		0.50	0.25	ug/L			12/28/19 14:34	1
Toluene	ND		0.50	0.25	ug/L			12/28/19 14:34	1
trans-1,2-Dichloroethene	ND		0.50		ug/L			12/28/19 14:34	1
trans-1,3-Dichloropropene	ND		0.50	0.25	ug/L			12/28/19 14:34	1
Trichloroethene	ND		0.50	0.25	ug/L			12/28/19 14:34	1
Vinyl chloride	ND		0.50	0.25	ug/L			12/28/19 14:34	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	103		60 - 140					12/28/19 14:34	1
Dibromofluoromethane (Surr)	108		60 - 140					12/28/19 14:34	1
Toluene-d8 (Surr)	106		60 - 140					12/28/19 14:34	1
General Chemistry									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac

**Eurofins Calscience Irvine** 

Analyzed

12/27/19 08:39

12/26/19 15:03

Dil Fac

1/10/2020

1

01/03/20 15:57 01/03/20 18:27

Prepared

4.8

RL

1.0

0.10

1.3 mg/L

**RL** Unit

0.10 mL/L/Hr

1.0 umhos/cm

D

ND

1400

ND

Result Qualifier

## **Client Sample Results**

Client: Haley & Aldrich, Inc.

Job ID: 440-258161-1

Project/Site: Quarterly Outfall 001 Grab

Client Sample ID: TB-20191226

Date Collected: 12/26/19 07:45 Date Received: 12/26/19 11:45 Lab Sample ID: 440-258161-3

**Matrix: Water** 

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		0.50	0.25	ug/L			12/28/19 15:03	1
1,1,2,2-Tetrachloroethane	ND		0.50	0.25	ug/L			12/28/19 15:03	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		2.0	0.50	ug/L			12/28/19 15:03	1
1,1,2-Trichloroethane	ND		0.50	0.25	ug/L			12/28/19 15:03	1
1,1-Dichloroethane	ND		0.50	0.25	ug/L			12/28/19 15:03	1
1,1-Dichloroethene	ND		0.50	0.25	ug/L			12/28/19 15:03	1
1,2-Dichlorobenzene	ND		0.50	0.25	ug/L			12/28/19 15:03	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			12/28/19 15:03	1
1,2-Dichloropropane	ND		0.50	0.25	ug/L			12/28/19 15:03	1
1,3-Dichlorobenzene	ND		0.50	0.25	ug/L			12/28/19 15:03	1
1,4-Dichlorobenzene	ND		0.50	0.25	ug/L			12/28/19 15:03	1
Benzene	ND		0.50	0.25	ug/L			12/28/19 15:03	1
Bromoform	ND		1.0	0.40	ug/L			12/28/19 15:03	1
Bromomethane	ND		0.50	0.25	ug/L			12/28/19 15:03	1
Carbon tetrachloride	ND	LQ	0.50	0.25	ug/L			12/28/19 15:03	1
Chlorobenzene	ND		0.50	0.25	ug/L			12/28/19 15:03	1
Dibromochloromethane	ND		0.50	0.25	ug/L			12/28/19 15:03	1
Chloroethane	ND		1.0	0.40	ug/L			12/28/19 15:03	1
Chloroform	ND		0.50	0.25	ug/L			12/28/19 15:03	1
Chloromethane	ND		0.50	0.25	ug/L			12/28/19 15:03	1
cis-1,2-Dichloroethene	ND		0.50	0.25	ug/L			12/28/19 15:03	1
cis-1,3-Dichloropropene	ND		0.50	0.25	ug/L			12/28/19 15:03	1
Bromodichloromethane	ND		0.50	0.25	ug/L			12/28/19 15:03	1
Ethylbenzene	ND		0.50	0.25	ug/L			12/28/19 15:03	1
Methylene Chloride	ND		2.0	0.88	ug/L			12/28/19 15:03	1
Naphthalene	ND		1.0	0.40	ug/L			12/28/19 15:03	1
Tetrachloroethene	ND		0.50	0.25	ug/L			12/28/19 15:03	1
Toluene	ND		0.50	0.25	ug/L			12/28/19 15:03	1
trans-1,2-Dichloroethene	ND		0.50	0.25	ug/L			12/28/19 15:03	1
trans-1,3-Dichloropropene	ND		0.50	0.25	ug/L			12/28/19 15:03	1
Trichloroethene	ND		0.50	0.25	ug/L			12/28/19 15:03	1
Vinyl chloride	ND		0.50	0.25	ug/L			12/28/19 15:03	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	105		60 - 140			-		12/28/19 15:03	1
Dibromofluoromethane (Surr)	112		60 - 140					12/28/19 15:03	1
Toluene-d8 (Surr)	104		60 - 140					12/28/19 15:03	1

1/10/2020

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## **Method Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 001 Grab

Method **Method Description** Protocol Laboratory 40CFR136A TAL IRV 624.1 Volatile Organic Compounds (GC/MS) 120.1 Conductivity, Specific Conductance **MCAWW** TAL IRV HEM and SGT-HEM 1664A TAL IRV 1664A SM 2540F Solids, Settleable SM TAL IRV

#### **Protocol References:**

1664A

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"

HEM and SGT-HEM (SPE)

#### **Laboratory References:**

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

Job ID: 440-258161-1

TAL IRV

1664A

#### **Lab Chronicle**

Client: Haley & Aldrich, Inc.

Job ID: 440-258161-1

Project/Site: Quarterly Outfall 001 Grab

Client Sample ID: Outfall001\_20191226\_Grab Lab Sample ID: 440-258161-1

Date Collected: 12/26/19 07:45 Matrix: Water Date Received: 12/26/19 11:45

	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		1	10 mL	10 mL	588294	12/28/19 14:34	JB	TAL IRV
Total/NA	Analysis	120.1		1			588120	12/27/19 08:39	XL	TAL IRV
Total/NA	Prep	1664A			1045 mL	1000 mL	589086	01/03/20 15:57	AJH	TAL IRV
Total/NA	Analysis	1664A		1			589113	01/03/20 18:27	AJH	TAL IRV
Total/NA	Analysis	SM 2540F		1	1000 mL	1 L	588030	12/26/19 15:03	HZ	TAL IRV

Date Collected: 12/26/19 07:45 Matrix: Water

Date Received: 12/26/19 11:45

	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		1	10 mL	10 mL	588294	12/28/19 15:03	JB	TAL IRV

**Laboratory References:** 

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

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Job ID: 440-258161-1

Project/Site: Quarterly Outfall 001 Grab

Method: 624.1 - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-588294/4

**Matrix: Water** 

Analysis Batch: 588294

Client: Haley & Aldrich, Inc.

**Client Sample ID: Method Blank** 

**Prep Type: Total/NA** 

Analysis Batch. 300234	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		0.50	0.25	ug/L			12/28/19 11:38	1
1,1,2,2-Tetrachloroethane	ND		0.50	0.25	ug/L			12/28/19 11:38	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		2.0	0.50	ug/L			12/28/19 11:38	1
1,1,2-Trichloroethane	ND		0.50	0.25	ug/L			12/28/19 11:38	1
1,1-Dichloroethane	ND		0.50	0.25	ug/L			12/28/19 11:38	1
1,1-Dichloroethene	ND		0.50	0.25	ug/L			12/28/19 11:38	1
1,2-Dichlorobenzene	ND		0.50	0.25	ug/L			12/28/19 11:38	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			12/28/19 11:38	1
1,2-Dichloropropane	ND		0.50	0.25	ug/L			12/28/19 11:38	1
1,3-Dichlorobenzene	ND		0.50	0.25	ug/L			12/28/19 11:38	1
1,4-Dichlorobenzene	ND		0.50	0.25	ug/L			12/28/19 11:38	1
Benzene	ND		0.50	0.25	ug/L			12/28/19 11:38	1
Bromoform	ND		1.0	0.40	ug/L			12/28/19 11:38	1
Bromomethane	ND		0.50	0.25	ug/L			12/28/19 11:38	1
Carbon tetrachloride	ND		0.50	0.25	ug/L			12/28/19 11:38	1
Chlorobenzene	ND		0.50	0.25	ug/L			12/28/19 11:38	1
Dibromochloromethane	ND		0.50	0.25	ug/L			12/28/19 11:38	1
Chloroethane	ND		1.0	0.40	ug/L			12/28/19 11:38	1
Chloroform	ND		0.50	0.25	ug/L			12/28/19 11:38	1
Chloromethane	ND		0.50	0.25	ug/L			12/28/19 11:38	1
cis-1,2-Dichloroethene	ND		0.50	0.25	ug/L			12/28/19 11:38	1
cis-1,3-Dichloropropene	ND		0.50	0.25	ug/L			12/28/19 11:38	1
Bromodichloromethane	ND		0.50	0.25	ug/L			12/28/19 11:38	1
Ethylbenzene	ND		0.50	0.25	ug/L			12/28/19 11:38	1
Methylene Chloride	ND		2.0	0.88	ug/L			12/28/19 11:38	1
Naphthalene	ND		1.0	0.40	ug/L			12/28/19 11:38	1
Tetrachloroethene	ND		0.50	0.25	ug/L			12/28/19 11:38	1
Toluene	ND		0.50	0.25	ug/L			12/28/19 11:38	1
trans-1,2-Dichloroethene	ND		0.50	0.25	ug/L			12/28/19 11:38	1
trans-1,3-Dichloropropene	ND		0.50	0.25	ug/L			12/28/19 11:38	1
Trichloroethene	ND		0.50	0.25	ug/L			12/28/19 11:38	1
Vinyl chloride	ND		0.50		ug/L			12/28/19 11:38	1

MB MB Surrogate %Recovery Qualifier Limits Prepared Analyzed Dil Fac 4-Bromofluorobenzene (Surr) 101 60 - 140 12/28/19 11:38 Dibromofluoromethane (Surr) 106 60 - 140 12/28/19 11:38 1 105 60 - 140 Toluene-d8 (Surr) 12/28/19 11:38

Spike

Added

25.0

25.0

25.0

25.0

25.0

27.0

ug/L

Lab Sample ID: LCS 440-588294/1002

**Matrix: Water** 

1,1,1-Trichloroethane

1,1,2-Trichloroethane

1,1-Dichloroethane

1,1-Dichloroethene

1,1,2,2-Tetrachloroethane

Analyte

Analysis Batch: 588294

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

LCS	LCS				%Rec.
Result	Qualifier	Unit	D	%Rec	Limits
35.0		ug/L	_	140	69 - 151
22.5		ug/L		90	68 - 136
23.3		ug/L		93	75 - 136
29.9		ug/L		120	71 - 143

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**Eurofins Calscience Irvine** 

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## **QC Sample Results**

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 001 Grab

Job ID: 440-258161-1

### Method: 624.1 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 440-588294/1002

**Matrix: Water** 

**Analysis Batch: 588294** 

**Client Sample ID: Lab Control Sample** 

Prep Type: Total/NA

-	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
1,2-Dichlorobenzene	25.0	26.9		ug/L		108	59 - 174	
1,2-Dichloroethane	25.0	28.6		ug/L		115	72 - 137	
1,2-Dichloropropane	25.0	25.5		ug/L		102	19 - 181	
1,3-Dichlorobenzene	25.0	27.9		ug/L		112	75 <sub>-</sub> 144	
1,4-Dichlorobenzene	25.0	27.1		ug/L		108	59 - 174	
Benzene	25.0	25.5		ug/L		102	75 - 125	
Bromoform	25.0	28.3		ug/L		113	57 - 156	
Bromomethane	25.0	26.9		ug/L		108	10 - 206	
Carbon tetrachloride	25.0	35.3	LQ	ug/L		141	65 - 125	
Chlorobenzene	25.0	25.9		ug/L		104	82 - 137	
Dibromochloromethane	25.0	30.3		ug/L		121	69 - 133	
Chloroethane	25.0	27.9		ug/L		111	42 - 202	
Chloroform	25.0	27.7		ug/L		111	68 - 121	
Chloromethane	25.0	28.0		ug/L		112	10 - 230	
cis-1,2-Dichloroethene	25.0	24.4		ug/L		98	60 - 140	
cis-1,3-Dichloropropene	25.0	25.6		ug/L		103	5 - 195	
Bromodichloromethane	25.0	30.5		ug/L		122	50 - 140	
Ethylbenzene	25.0	27.7		ug/L		111	75 - 134	
Methylene Chloride	25.0	24.8		ug/L		99	10 - 205	
Naphthalene	25.0	17.4		ug/L		70	60 - 140	
Tetrachloroethene	25.0	31.1		ug/L		124	70 - 130	
Toluene	25.0	27.0		ug/L		108	75 - 134	
trans-1,2-Dichloroethene	25.0	27.3		ug/L		109	70 - 130	
trans-1,3-Dichloropropene	25.0	25.5		ug/L		102	38 - 162	
Trichloroethene	25.0	29.5		ug/L		118	75 - 138	
Vinyl chloride	25.0	27.1		ug/L		108	10 - 218	

LCS LCS Surrogate %Recovery Qualifier Limits 106 60 - 140 4-Bromofluorobenzene (Surr) Dibromofluoromethane (Surr) 106 60 - 140 Toluene-d8 (Surr) 99 60 - 140

Lab Sample ID: 440-258180-F-1 MS

**Matrix: Water** 

Analysis Batch: 588294

_	Sample	Sample	Spike	MS	MS				%Rec.	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
1,1,1-Trichloroethane	ND		10.0	12.4		ug/L		124	52 - 162	
1,1,2,2-Tetrachloroethane	ND		10.0	8.33		ug/L		83	46 - 157	
1,1,2-Trichloroethane	ND		10.0	8.84		ug/L		88	52 - 150	
1,1-Dichloroethane	ND		10.0	10.5		ug/L		105	59 - 155	
1,1-Dichloroethene	ND		10.0	9.19		ug/L		92	10 - 234	
1,2-Dichlorobenzene	ND		10.0	10.1		ug/L		101	18 - 190	
1,2-Dichloroethane	ND		10.0	10.5		ug/L		105	49 - 155	
1,2-Dichloropropane	ND		10.0	9.07		ug/L		91	10 - 210	
1,3-Dichlorobenzene	ND		10.0	10.1		ug/L		101	59 - 156	
1,4-Dichlorobenzene	ND		10.0	10.4		ug/L		104	18 - 190	
Benzene	ND		10.0	9.26		ug/L		93	37 - 151	

**Eurofins Calscience Irvine** 

1/10/2020

**Client Sample ID: Matrix Spike** 

Prep Type: Total/NA

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Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 001 Grab

Job ID: 440-258161-1

## Method: 624.1 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-258180-F-1 MS

**Matrix: Water** 

Analysis Batch: 588294

Client Sample ID: Matrix Spike Prep Type: Total/NA

%Rec. Sample Sample Spike MS MS Result Qualifier Result Qualifier Limits **Analyte** Added Unit D %Rec Bromoform ND 10.0 10.1 101 45 - 169 ug/L Bromomethane ND 10.0 9.24 ug/L 92 10 - 242 Carbon tetrachloride ND LQ 10.0 12.7 ug/L 127 70 - 140 Chlorobenzene ND ug/L 97 37 - 160 10.0 9.74 Dibromochloromethane ND 10.0 10.6 ug/L 106 53 - 149 Chloroethane ND 10.0 9.47 14 - 230 ug/L 95 Chloroform 10.0 9.90 99 51 - 138 ND ug/L ND 10.0 90 10 - 273 Chloromethane 9.04 ug/L cis-1,2-Dichloroethene ND 10.0 9.01 ug/L 90 60 - 140cis-1,3-Dichloropropene ND 10.0 9.05 ug/L 91 10 - 227 ND Bromodichloromethane 10.0 10.9 ug/L 109 35 - 155 Ethylbenzene ND 10.0 10.2 ug/L 102 37 - 162 Methylene Chloride ND 10.0 7.85 ug/L 78 10 - 221Naphthalene ND 10.0 6.85 68 60 - 140 ug/L Tetrachloroethene ND 10.0 11.2 ug/L 112 64 - 148 Toluene ND 10.0 10.1 ug/L 101 47 - 150 trans-1,2-Dichloroethene ND 10.0 9.40 94 54 - 156 ug/L trans-1,3-Dichloropropene ND 10.0 9.24 ug/L 92 17 - 183 ND 10.9 109 Trichloroethene 10.0 ug/L 70 - 157

10.0

9.09

ug/L

MS MS

ND

Surrogate	%Recovery Qualifier	Limits
4-Bromofluorobenzene (Surr)	104	60 - 140
Dibromofluoromethane (Surr)	107	60 - 140
Toluene-d8 (Surr)	99	60 - 140

Lab Sample ID: 440-258180-F-1 MSD

**Matrix: Water** 

Vinyl chloride

Analysis Batch: 588294

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

91

10 - 251

Analysis Daten. 300234											
	Sample	Sample	Spike	MSD	MSD				%Rec.		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
1,1,1-Trichloroethane	ND		10.0	12.5		ug/L		125	52 - 162	0	36
1,1,2,2-Tetrachloroethane	ND		10.0	9.67		ug/L		97	46 - 157	15	61
1,1,2-Trichloroethane	ND		10.0	8.67		ug/L		87	52 - 150	2	45
1,1-Dichloroethane	ND		10.0	10.5		ug/L		105	59 - 155	0	40
1,1-Dichloroethene	ND		10.0	9.32		ug/L		93	10 - 234	1	32
1,2-Dichlorobenzene	ND		10.0	10.7		ug/L		107	18 - 190	6	57
1,2-Dichloroethane	ND		10.0	10.9		ug/L		109	49 - 155	3	49
1,2-Dichloropropane	ND		10.0	9.55		ug/L		96	10 - 210	5	55
1,3-Dichlorobenzene	ND		10.0	10.8		ug/L		108	59 - 156	6	43
1,4-Dichlorobenzene	ND		10.0	10.4		ug/L		104	18 - 190	1	57
Benzene	ND		10.0	9.59		ug/L		96	37 - 151	4	61
Bromoform	ND		10.0	10.3		ug/L		103	45 - 169	2	42
Bromomethane	ND		10.0	9.37		ug/L		94	10 - 242	1	61
Carbon tetrachloride	ND	LQ	10.0	13.1		ug/L		131	70 - 140	3	41
Chlorobenzene	ND		10.0	10.0		ug/L		100	37 - 160	3	53
Dibromochloromethane	ND		10.0	11.2		ug/L		112	53 - 149	5	50
Chloroethane	ND		10.0	9.20		ug/L		92	14 - 230	3	78

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1/10/2020

Client: Haley & Aldrich, Inc.

Job ID: 440-258161-1 Project/Site: Quarterly Outfall 001 Grab

Method: 624.1 - Volatile Organic Compounds (GC/MS) (Continued)

**Matrix: Water** 

Analysis Batch: 588294

Lab Sample ID: 440-258180-F-1 MSD

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
Chloroform	ND		10.0	10.6		ug/L		106	51 - 138	7	54
Chloromethane	ND		10.0	9.24		ug/L		92	10 - 273	2	60
cis-1,2-Dichloroethene	ND		10.0	9.29		ug/L		93	60 - 140	3	35
cis-1,3-Dichloropropene	ND		10.0	9.16		ug/L		92	10 - 227	1	58
Bromodichloromethane	ND		10.0	11.4		ug/L		114	35 - 155	4	56
Ethylbenzene	ND		10.0	10.3		ug/L		103	37 - 162	1	63
Methylene Chloride	ND		10.0	8.17		ug/L		82	10 - 221	4	28
Naphthalene	ND		10.0	7.37		ug/L		74	60 - 140	7	35
Tetrachloroethene	ND		10.0	12.0		ug/L		120	64 - 148	7	39
Toluene	ND		10.0	10.1		ug/L		101	47 - 150	0	41
trans-1,2-Dichloroethene	ND		10.0	9.43		ug/L		94	54 - 156	0	45
trans-1,3-Dichloropropene	ND		10.0	9.38		ug/L		94	17 - 183	2	86
Trichloroethene	ND		10.0	10.8		ug/L		108	70 - 157	1	48
Vinyl chloride	ND		10.0	9.25		ug/L		92	10 - 251	2	66

MSD MSD

Surrogate	%Recovery	Qualifier	Limits
4-Bromofluorobenzene (Surr)	107		60 - 140
Dibromofluoromethane (Surr)	105		60 - 140
Toluene-d8 (Surr)	97		60 - 140

#### Method: 120.1 - Conductivity, Specific Conductance

Lab Sample ID: MB 440-588120/3

**Matrix: Water** 

**Analysis Batch: 588120** 

Prep Type: Total/NA

MB MB Analyte Result Qualifier RL **RL** Unit Prepared Analyzed Dil Fac Specific Conductance ND 1.0 1.0 umhos/cm 12/27/19 08:39

Lab Sample ID: LCS 440-588120/4

**Matrix: Water** 

**Analysis Batch: 588120** 

		Spike	LCS	LCS				%Rec.	
Analyte		Added	Result	Qualifier	Unit	D	%Rec	Limits	
Specific Conductance	 	1030	1000		umhos/cm	_	97	90 - 110	-

Lab Sample ID: 440-258161-1 DU

**Matrix: Water** 

Ana	iysis	Batcn:	588120

	Sample	Sample	DU	DU				RPD
Analyte	Result	Qualifier	Result	Qualifier	Unit	D	RPD	Limit
Specific Conductance	1400		 1440		umhos/cm	_	 0	5

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**Client Sample ID: Method Blank** 

**Client Sample ID: Lab Control Sample** 

Prep Type: Total/NA

1/10/2020

## QC Sample Results

Client: Haley & Aldrich, Inc. Job ID: 440-258161-1

Project/Site: Quarterly Outfall 001 Grab

Method: 1664A - HEM and SGT-HEM

Lab Sample ID: MB 440-589086/1-A **Matrix: Water** 

**Analysis Batch: 589113** 

MB MB Analyte Result Qualifier

RL MDL Unit Prepared Analyzed Dil Fac 5.0 01/03/20 15:57 01/03/20 18:27 HEM (Oil & Grease) 1.4 mg/L ND

Spike

Added

40.0

Spike

Added

40.0

Lab Sample ID: LCS 440-589086/2-A **Matrix: Water** 

**Analysis Batch: 589113** 

HEM (Oil & Grease)

Lab Sample ID: LCSD 440-589086/3-A **Matrix: Water** 

**Analysis Batch: 589113** 

Analyte

Lab Sample ID: 440-258344-A-4-B MS

**Matrix: Water** 

HEM (Oil & Grease)

**Analysis Batch: 589113** 

Result Qualifier Analyte HEM (Oil & Grease) 6.3

Sample Sample

Spike Added 20.5

MS MS Result Qualifier 26.0

LCS LCS

LCSD LCSD

37.2

Result Qualifier

38.3

Result Qualifier

Unit mg/L

Unit

mg/L

Unit

mg/L

D %Rec 96

D %Rec

D %Rec

93

96

Client Sample ID: Lab Control Sample Dup

Limits 78 - 114

%Rec.

Client Sample ID: Method Blank

**Client Sample ID: Lab Control Sample** 

%Rec.

Limits

78 - 114

%Rec.

Limits

78 - 114

**Client Sample ID: Matrix Spike** 

**Prep Type: Total/NA** 

Prep Batch: 589086

Prep Type: Total/NA

**Prep Batch: 589086** 

Prep Type: Total/NA

**Prep Batch: 589086** 

Prep Type: Total/NA

**Prep Batch: 589086** 

RPD

**RPD** 

Limit

## **QC Association Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 001 Grab

## **GC/MS VOA**

#### Analysis Batch: 588294

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258161-1	Outfall001_20191226_Grab	Total/NA	Water	624.1	
440-258161-3	TB-20191226	Total/NA	Water	624.1	
MB 440-588294/4	Method Blank	Total/NA	Water	624.1	
LCS 440-588294/1002	Lab Control Sample	Total/NA	Water	624.1	
440-258180-F-1 MS	Matrix Spike	Total/NA	Water	624.1	
440-258180-F-1 MSD	Matrix Spike Duplicate	Total/NA	Water	624.1	

## **General Chemistry**

#### **Analysis Batch: 588030**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258161-1	Outfall001_20191226_Grab	Total/NA	Water	SM 2540F	

#### **Analysis Batch: 588120**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258161-1	Outfall001_20191226_Grab	Total/NA	Water	120.1	
MB 440-588120/3	Method Blank	Total/NA	Water	120.1	
LCS 440-588120/4	Lab Control Sample	Total/NA	Water	120.1	
440-258161-1 DU	Outfall001_20191226_Grab	Total/NA	Water	120.1	

#### Prep Batch: 589086

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258161-1	Outfall001_20191226_Grab	Total/NA	Water	1664A	
MB 440-589086/1-A	Method Blank	Total/NA	Water	1664A	
LCS 440-589086/2-A	Lab Control Sample	Total/NA	Water	1664A	
LCSD 440-589086/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	
440-258344-A-4-B MS	Matrix Spike	Total/NA	Water	1664A	

#### **Analysis Batch: 589113**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258161-1	Outfall001_20191226_Grab	Total/NA	Water	1664A	589086
MB 440-589086/1-A	Method Blank	Total/NA	Water	1664A	589086
LCS 440-589086/2-A	Lab Control Sample	Total/NA	Water	1664A	589086
LCSD 440-589086/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	589086
440-258344-A-4-B MS	Matrix Spike	Total/NA	Water	1664A	589086

**Eurofins Calscience Irvine** 

Job ID: 440-258161-1

## **Definitions/Glossary**

Client: Haley & Aldrich, Inc. Job ID: 440-258161-1

Project/Site: Quarterly Outfall 001 Grab

#### **Qualifiers**

**GC/MS VOA** 

Qualifier Qualifier Description

LCS/LCSD recovery above method control limits

#### **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. Job ID: 440-258161-1

Project/Site: Quarterly Outfall 001 Grab

## **Laboratory: Eurofins Calscience Irvine**

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

Authority California		rogram tate Program	Identification Number CA ELAP 2706	Expiration Date 06-30-20	
The following analytes the agency does not on		ort, but the laboratory is r	ot certified by the governing authority.	This list may include analytes for v	
Analysis Method	Prep Method	Matrix	Analyte		
624.1		Water	1,1,2-Trichloro-1,2,2-trifluoro	ethane	

1:

120 10g D Field Readings: (Include units) T& Aにドエ写 Field Readings Meter senal # Checked Date/Time: 12-26 19/0740 Normal 10 Day. Time of Readings: ひ子付ひ Comments On Ice 7.78 PHunit Temp 43.4 "CIE) DO 16.31 mg/L Field readings QC 12 July 19  $\tilde{\mathscr{O}}$ Data Requirements: (Check) Store samples for 6 months 5 Day Turn-around time: (Check) Sample Integrity (Check) X .440-258161 Chain of Custody 무 HOH 24 Hour \_\_\_\_\_ No Level IV Intact 5411 51/20 Legend: A=Annual, C=Conditional, EP=Expert Panel, R=Routine, Q=Quarterly, QRSW=Quarterly Receiving Water, S=Semi-Annual

| Company | Com 01:01 /1/92/21 ANALYSIS REQUIRED x Conductivity (SM2510B / E120 1) able Solids (E160.5 (SM2540F)) # × \OC2 + Freon 113 (E624) Pobale Gergis MS/MSD £ 운 2 ş ŝ 2 욷 Ş Boeing-SSFL NPDES Permit 2019 Quarterly Outfall (001, 002, 011, 018) Outfall 001 Bottle # Project Manager Katherine Miller 520 289.8606, 520.904 6944 (cell) ű 2 2 22 ıç. 8 72 8 Field Manager. Mark Dominick 978.234.5033, 818 599 0702 (cell) Preservative None None None ᄗ 쟞 ᄗ 空 Ÿ # of Cont \* 7 7 'n ~ m Container Type 1 L Glass Amber 1 L Glass Amber 500 mL Poly 40 ml. VOA 500 mL Poly 40 mil VOA 40 mL VOA 1 L Poly Sample Matrix ΝN Ν× × × Ν× Ν Š Š TestAmenca's services under this CoC shall be performed in accordance with the 18.Cs within Bunket Service Agreements 2019-22-TestAmenca by and between Haley & Athrich, Inc., this subsidence and affisiates, and restAmenca Laboratones inc. 1212612018 12/26/2019/74 Shto Sampling Date/Time 12/26/2019 12-26-1 61-92-2) Outfall001\_20191226\_Grab\_Extra Outfail001\_20191226\_Grab Sample 1 D Test America Contact: Urvashi Patel 17461 Derian Ave Sutte #100 5333 Mission Center Rd Suite 300 San Diego, CA 92108 Solish dipology TB-20191226 Client Name/Address: Sampler Dan Smith Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055 Haley & Aldnch Relinquished By Sample Description Trip Blank Outfall 001 Page 18 of 19

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CHAIN OF CUSTODY FORM

#### **DATA VALIDATION REPORT**

## **Boeing SSFL NPDES**

SAMPLE DELIVERY GROUP: 440-258219-1

### **Prepared for**

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

23 January 2020



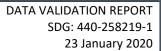


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#### **TABLES**

- 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<sup>x</sup> Project No.: 1272.003D.01 002

Sample Delivery Group: 440-258219-1

**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	Matrix	Collection	Method
OUTFALL001_20191227_ COMP	440-258219-1	Water	12/27/19 7:25 AM	E1613B, E200.7, E200.8, E625.1, SM2540D, SM4500-NH3G
OUTFALL001_20191227_ COMP_F	440-258219-3	Water	12/27/19 7:25 AM	E200.7, E200.8



#### II. SAMPLE MANAGEMENT

According to the case narrative, Login Sample Receipt Checklist, and the chain-of-custody (COC) provided by the laboratory for sample delivery group (SDG) 440-258219-1:

- The laboratory received the samples in this SDG on ice and within the temperature limits of <6 degrees Celsius (°C) and >0°C.
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Field and/or laboratory personnel signed and dated the appropriate original and transfer COCs.
- According to the Login Sample Receipt Checklists, custody seals were absent on the coolers upon receipt at TA-Irvine; however, no evidence of tampering was noted. A custody seal was present on the cooler received at TA-Sacramento.
- The case narrative indicated that the site sample for the 1613B analysis was received in a wide-mouth amber glass bottle, and slightly less sample volume (954 milliliters) was available for extraction.



#### **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<sup>x</sup> reviewed the SDG on January 23, 2020

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC<sup>X</sup> 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

Initial 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-HpCDD, 1,2,3,4,6,7,8-HxCDD, 1,2,3,4,6,7,8-HxCDD, 1,2,3,7,8,9-HxCDD, 1,2,3,7,8,9-HxCDF, 2,3,4,6,7,8-HxCDF, 2,3,7,8-TCDF, OCDD and OCDF, and for totals HpCDD, HpCDF HxCDD, HxCDF and total TCDF. The sample results for isomers detected below the RL in the sample were qualified as nondetects (U) at the level of contamination. The method blank concentrations of 1,2,3,4,6,7,8-HpCDD and OCDD were not sufficient to qualify the sample concentrations above the RL. The reviewer compared peaks comprising the method blank totals to those in the sample totals. Totals HpCDD, HpCDF HxCDD, HxCDF and TCDF were



qualified as estimated (J), as only a portion of each total was determined to be method blank contamination.

#### III.4.2. LABORATORY CONTROL SAMPLES

Recoveries were within the acceptance criteria listed in Table 6 of Method 1613B.

#### III.5. FIELD QC SAMPLES

MEC<sup>x</sup> 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<sup>x</sup> 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.

#### 111.5.2. 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.

Second-column confirmation analysis was performed for isomer 2,3,7,8-TCDF detected in the initial analysis of the sample and its method blank. The sample result was confirmed and the method blank result was not. Both initial and confirmation results were reported for the sample. As the confirmation column is more specific for the detection of 2,3,7,8-TCDF, the confirmation result was retained and the initial result rejected (R) as duplicate data.

#### 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.

As noted in the case narrative, RLs and EDLs were slightly elevated due to somewhat limited sample volume. Rather than approximately 1000 milliliters (ml), a 954 ml sample volume was available for extraction.

Isomers previously qualified as method blank contamination were not further qualified as EMPCs. Isomer results reported as EMPCs were qualified as estimated nondetects (UJ). The concentrations of total TCDD and total PeCDD matched the associated isomer results qualified as EMPCs, and were therefore also



qualified as estimated nondetects (UJ). Totals HpCDF and HxCDD including one or more EMPC peaks were qualified as estimated (J).

#### IV. METHODS 200.7 AND 200.8 — METALS

M. Hilchey of MEC<sup>X</sup> reviewed the SDG on January 26, 2020.

The samples listed in Table 1 for these analyses were validated based on the guidelines outlined in the MEC<sup>X</sup> Data Validation Procedure for Metals (DVP-5, Rev. 2), EPA Methods 200.7 and 200.8 and the National Functional Guidelines for Inorganic Methods Data Review (2017).

#### **IV.1. HOLDING TIMES**

The analytical holding time, six months for metals, was met. Sample Outfall001\_20191227\_Comp\_F was filtered and preserved within 24 hours after receipt.

#### IV.2. CALIBRATION

QAPP calibration criteria were met. A blank and two to four standards were used for calibration of ICP-AES and ICP-MS target analytes. 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 90-110% for ICP-MS. Continuing calibration verification recoveries were within QAPP control limits of 90-110%.

#### **IV.3. QUALITY CONTROL SAMPLES**

#### IV.3.1. **METHOD BLANKS**

There were no target analyte detections in the method blanks or calibration blanks of sufficient concentration to warrant qualification of associated site sample results with the following exception. Selenium was detected (0.940  $\mu$ g/L) in a calibration blank bracketing sample OUTFALL001\_20191227\_COMP. The selenium result for this sample was a detect below the reporting limit and was qualified as nondetect (U).

#### **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. Interferents were not present in the samples at concentrations comparable to those in the ICSAs; therefore, interference was not suspected.

#### IV.3.3. LABORATORY CONTROL SAMPLES

Laboratory control samples recoveries (total and dissolved) 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 OUTFALL001\_20191227\_COMP-F for Method 200.7. 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%.

The laboratory did not perform post-digestion spike analyses as there were no MS/MSD outliers.

#### **IV.4. SERIAL DILUTION**

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

#### **IV.5. 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.

#### **IV.6. FIELD QC SAMPLES**

MEC<sup>x</sup> 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<sup>x</sup> used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

#### IV.6.1. FIELD BLANKS AND EQUIPMENT BLANKS

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

#### IV.6.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

#### V. EPA METHOD 625.1 — N-NITROSODIMETHYLAMINE

L. Calvin of MEC<sup>X</sup> reviewed the SDG on January 23, 2020

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC<sup>X</sup> Data Validation Procedure for Semivolatile Organics (DVP-3, Rev. 1), EPA Method 625.1 and the National Functional Guidelines for Superfund Organic Methods Data Review (2017).

#### V.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.

#### V.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. Initial calibration average relative response factors (RRFs) were within the method control limits, and the %RSDs were  $\leq$ 35% or  $r^2$  values  $\geq$ 0.990. For applicable target compound n-



nitrosodimethylamine, ICV and CCV RRFs were within the method control limits. ICV recoveries and CCV %Ds were within method control limits.

#### V.3. QUALITY CONTROL SAMPLES

#### V.3.1. METHOD BLANKS

The method blank had a detect above the RL for n-nitrosodimethylamine (7.5  $\mu$ g/L). The sample result below the RL was qualified as a nondetect (U) at the RL.

#### V.3.2. LABORATORY CONTROL SAMPLES

LCS/LCS recoveries and the RPD were within the laboratory control limits.

#### V.3.3. **SURROGATE RECOVERY**

Surrogate recoveries were within laboratory control limits.

#### V.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the site sample in this SDG. MEC<sup>x</sup> evaluated method accuracy and precision based on the LCS/LCSD results.

#### V.4. FIELD QC SAMPLES

MEC<sup>X</sup> 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<sup>X</sup> 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. 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.

#### V.6. COMPOUND IDENTIFICATION

Compound identification was verified. The laboratory analyzed for n-nitrosodimethylamine by EPA Method 625.1. Review of the sample chromatogram, retention times, and spectra indicated no issues with target compound identification.

#### V.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. The result reported below the RL was initially qualified as estimated (J) and coded with DNQ to comply with the NPDES permit reporting requirements; however, the result was subsequently qualified as a nondetect (see Method Blanks section). The nondetect is valid to the RL. The



sample did not require dilution.

The laboratory's preparation bench sheet indicated the sample extract was light yellow and cloudy.

#### V.8. TENTATIVELY IDENTIFIED COMPOUNDS (TICS)

The laboratory did not report TICs for this SDG.

#### **V.9. SYSTEM PERFORMANCE**

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

#### VI. METHODS EPA SM2540C AND 4500-NH3G —TOTAL SUSPENDED SOLIDS (TSS) AND AMMONIA

M. Hilchey of MEC<sup>x</sup> reviewed the SDG on January 26, 2020.

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC<sup>X</sup> Data Validation Procedure for General Minerals (DVP-6, Rev. 1), Standard Methods for the Examination of Water and Wastewater 2540D and 4500-NH3G and the National Functional Guidelines for Inorganic Superfund Methods Data Review (2017).

#### **VI.1. HOLDING TIMES**

The QAPP holding times, 7 days for TSS and 28 days for ammonia, were met.

#### VI.2. CALIBRATION

Calibration criteria were met. The Method 4500-NH3G initial calibration  $r^2$  values were  $\geq 0.995$  and all initial calibration verification recoveries met QAPP requirements. All ammonia continuing calibration verification recoveries were within 90-110%. Analytical balance calibration logs were provided by the laboratory and found to be correctly calibrated and verified.

#### VI.3. QUALITY CONTROL SAMPLES

#### VI.3.1. METHOD BLANKS

The method blanks and calibration blanks had no detects.

#### VI.3.2. LABORATORY CONTROL SAMPLES

Laboratory control sample recoveries were within the QAPP control limits.

#### VI.3.3. LABORATORY DUPLICATES

Laboratory duplicate analysis was performed on the sample in this SDG for ammonia. Laboratory precision criteria were met.

#### VI.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

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



#### **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. The result reported below the RL was initially qualified as estimated (J) and coded with DNQ to comply with the NPDES permit reporting requirements. The sample did not require dilution.

#### VI.5. FIELD QC SAMPLES

MEC<sup>x</sup> 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<sup>x</sup> 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.

# Validated Sample Result Forms: 4402582191

Analysis Method E1613B

Sample Name OUTFALL001\_20191227\_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/27/2019 7:25:00 AM Validation Level: 8

**Lab Sample Name:** 440-258219-1

Analyte F	raction	: CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,2,3,4,6,7,8,9- Octachlorodibenzofuran (OCDF)	N	39001-02-0	0.000070	0.00010	0.00000057	ug/L	J,DXMB	U	В
1,2,3,4,6,7,8,9-Octachlorodibenzo-pdioxin (OCDD)	o- N	3268-87-9	0.00078	0.00010	0.00000089	ug/L	MB		
1,2,3,4,6,7,8- Heptachlorodibenzofuran (HpCDF)	N	67562-39-4	0.000036	0.000052	0.00000076	ug/L	J,DXMB	U	В
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	- N	35822-46-9	0.00010	0.000052	0.0000012	ug/L	MB		
1,2,3,4,7,8,9- Heptachlorodibenzofuran (HpCDF)	N	55673-89-7	0.0000029	0.000052	0.00000092	ug/L	J,DXq	UJ	*III
1,2,3,4,7,8-Hexachlorodibenzofurar (HxCDF)	n N	70648-26-9	0.0000029	0.000052	0.00000058	ug/L	J,DX	J	DNQ
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	39227-28-6	0.0000034	0.000052	0.00000044	ug/L	J,DXMB	U	В
1,2,3,6,7,8-Hexachlorodibenzofurar (HxCDF)	n N	57117-44-9	0.0000024	0.000052	0.00000060	ug/L	J,DX	J	DNQ
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	57653-85-7	0.0000045	0.000052	0.00000047	ug/L	J,DXMB	U	В
1,2,3,7,8,9-Hexachlorodibenzofurar (HxCDF)	n N	72918-21-9	0.0000022	0.000052	0.00000041	ug/L	J,DXMB	U	В
1,2,3,7,8,9-Hexachlorodibenzo-p- dioxin (HxCDD)	N	19408-74-3	0.0000035	0.000052	0.00000041	ug/L	J,DXMB	U	В
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-41-6	0.0000015	0.000052	0.00000044	ug/L	J,DX	J	DNQ
1,2,3,7,8-Pentachlorodibenzo-p- dioxin (PeCDD)	N	40321-76-4	0.0000017	0.000052	0.00000055	ug/L	J,DXq	UJ	*Ш
2,3,4,6,7,8-Hexachlorodibenzofurar (HxCDF)	n N	60851-34-5	0.0000026	0.000052	0.00000044	ug/L	J,DXMB	U	В
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-31-4	0.0000014	0.000052	0.00000044	ug/L	J,DX	J	DNQ
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	0.00000077	0.000010	0.00000022	ug/L	J,DXMB	R	D
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	0.0000012	0.000010	0.00000053	ug/L	J,DX	J	DNQ
2,3,7,8-Tetrachlorodibenzo-p-dioxir (TCDD)	ı N	1746-01-6	0.0000016	0.000010	0.00000044	ug/L	J,DXq	UJ	*Ш
Total Heptachlorodibenzofuran (HpCDF)	N	38998-75-3	0.000068	0.000052	0.00000076	ug/L	J,DXMBq	J	B, DNQ, *Ⅲ
Total Heptachlorodibenzo-p-dioxin (HpCDD)	N	37871-00-4	0.00018	0.000052	0.0000012	ug/L	MB	J	В
Total Hexachlorodibenzofuran (HxCDF)	N	55684-94-1	0.000026	0.000052	0.00000041	ug/L	J,DXMB	J	B, DNQ
Total Hexachlorodibenzo-p-dioxin (HxCDD), Mixture	N	34465-46-8	0.000024	0.000052	0.00000041	ug/L	J,DXMBq	J	В, DNQ, *Ш

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Analysis Method	E16	13B						
Total Pentachlorodibenzofuran (PeCDF)	N	30402-15-4	0.0000063	0.000052	0.00000044 ug/L	J,DXq	J	DNQ, *III
Total Pentachlorodibenzo-p-dioxin (PeCDD)	N	36088-22-9	0.0000017	0.000052	0.00000055 ug/L	J,DXq	UJ	*Ш
Total Tetrachlorodibenzofuran (TCDF)	N	55722-27-5	0.00000077	0.000010	0.00000022 ug/L	J,DXMB	J	B, DNQ
Total Tetrachlorodibenzo-p-dioxin (TCDD)	N	41903-57-5	0.0000016	0.000010	0.00000044 ug/L	J,DXq	UJ	*Ш

Analysis Method E200.7

Sample Name OUTFALL001 20191227 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/27/2019 7:25:00 AM Validation Level: 8

**Lab Sample Name:** 440-258219-1

Fraction: CAS No Result RLMDL Result Analyte Lab Validation Validation Value Units Qualifier Qualifier Notes 14000 Iron 7439-89-6 100 50 ug/L

Sample Name OUTFALL001\_20191227\_COMP\_F Matrix Type: WM Result Type: TRG

Sample Date: 12/27/2019 7:25:00 AM Validation Level: 8

**Lab Sample Name:** 440-258219-3

**Analyte** Fraction: CAS No Result RLMDL Result Lab Validation Validation Value Units Qualifier **Qualifier** Notes Iron 7439-89-6 0.29 0.10 0.050 mg/L

Analysis Method E200.8

Sample Name OUTFALL001 20191227 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/27/2019 7:25:00 AM Validation Level: 8

**Lab Sample Name:** 440-258219-1

Analyte Fraction: CAS No Result RLMDL Result Lab Validation Validation Value Units **Qualifier Oualifier** Notes Cadmium Т 7440-43-9 ND 1.0 0.25 U ug/L Copper T 7440-50-8 7.2 2.0 0.50 ug/L Lead Т 7439-92-1 6.6 1.0 0.50 ug/L Selenium 7782-49-2 1.7 2.0 0.50 ug/L J.DX В

Sample Name OUTFALL001 20191227 COMP F Matrix Type: WM Result Type: TRG

Sample Date: 12/27/2019 7:25:00 AM Validation Level: 8

**Lab Sample Name:** 440-258219-3

**Analyte** Fraction: CAS No Result RL**MDL** Result Lab Validation Validation Value Units Qualifier **Oualifier** Notes 7440-43-9 ND U Cadmium D 1.0 0.25 ug/L D 7440-50-8 1.9 2.0 J,DX J Copper 0.50 ug/L DNQ Lead D 7439-92-1 ND 1.0 0.50 U U ug/L Selenium D 7782-49-2 ND 2.0 0.50 ug/L U U

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Analysis Method E625.1

Sample Name OUTFALL001\_20191227\_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/27/2019 7:25:00 AM Validation Level: 8

**Lab Sample Name:** 440-258219-1

Fraction: CAS No RLMDL Analyte Result Result Lab Validation Validation Value Units Qualifier Qualifier Notes N-Nitrosodimethylamine ND 62-75-9 5.4 0.32 ug/L J,DXMB U В

Analysis Method SM2540D

Sample Name OUTFALL001 20191227 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/27/2019 7:25:00 AM Validation Level: 8

**Lab Sample Name:** 440-258219-1

Analyte Fraction: CAS No Result RLMDL Result Lab Validation Validation Value Units Qualifier **Qualifier** Notes Total Suspended Solids (TSS) 190 TSS 40 20 mg/L

Analysis Method SM4500-NH3G

Sample Name OUTFALL001\_20191227\_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/27/2019 7:25:00 AM Validation Level: 8

**Lab Sample Name:** 440-258219-1

Analyte Fraction: CAS No Result RLMDL Result Lab Validation Validation Value Units Qualifier Qualifier Notes Ammonia (as N) 7664-41-7N 0.181 0.200 0.100 mg/L J.DX DNQ

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## **Login Sample Receipt Checklist**

Client: Haley & Aldrich, Inc.

Job Number: 440-258161-1

Login Number: 258161 List Source: Eurofins Irvine

List Number: 1

Creator: Soderblom, Tim

oreator. Coucibioni, 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").	False	Headspace larger than 1/4".
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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## **ANALYTICAL REPORT**

Eurofins Calscience Irvine 17461 Derian Ave Suite 100 Irvine, CA 92614-5817 Tel: (949)261-1022

Laboratory Job ID: 440-258219-1

Client Project/Site: Quarterly Outfall 001 Comp

Revision: 1

For:

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

Attn: Katherine Miller

Authorized for release by: 1/21/2020 11:23:20 AM

Christian Bondoc, Project Manager I

(949)260-3218

christian.bondoc@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.

Christian Bondoc Project Manager I 1/21/2020 11:23:20 AM Laboratory Job ID: 440-258219-1

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 001 Comp

 Lab Sample ID
 Client Sample ID
 Matrix
 Collected
 Received
 Asset ID

 440-258219-1
 Outfall001\_20191227\_Comp
 Water
 12/27/19 07:25
 12/27/19 11:20

 440-258219-3
 Outfall001\_20191227\_Comp\_F
 Water
 12/27/19 07:25
 12/27/19 11:20

Job ID: 440-258219-1

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#### **Case Narrative**

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-1

Job ID: 440-258219-1

**Laboratory: Eurofins Calscience Irvine** 

**Narrative** 

Job Narrative 440-258219-1

#### Comments

Revised to add Zn.

#### Receipt

The samples were received on 12/27/2019 11:20 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 1.6° C, 1.7° C and 1.8° C.

#### GC/MS Semi VOA

Method 625.1: N-Nitrosodimethylamine was detected above the reporting limit (RL) in the method blank associated with preparation batch 440-589031 and analytical batch 440-589221 The affected samples have a concentration for N-Nitrosodimethylamine <RL and >MDL. Samples are reported possible high bias for N-Nitrosodimethylamine. Outfall001 20191227 Comp (440-258219-1) and (MB 440-589031/1-A).

Method 625.1: Surrogate (Terphenyl-d14) recovery for the following sample was outside below control limits: Outfall001 20191227 Comp. (440-258219-1). Re-extraction and re-analysis was performed with concurring results. The second analysis has been reported with possible low bias.

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.

Method 608.3: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with batch preparation batch 440-588273 and analytical batch 440-588436. 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.

#### Dioxin

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

Method FILTRATION: The following samples requested dissolved metals and were not filtered in the field: Outfall001 20191227 Comp F (440-258219-3). These samples were filtered and preserved upon receipt to the laboratory.

12/28/19

150mL of sample filtered 2.5mL of HNO3 LOt: 0000234822

Method 200.7 Rev 4.4: The matrix spike / matrix spike duplicate (MS/MSD) recoveries of Iron for preparation batch 440-588241 and analytical batch 440-588599 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.

#### **Organic Prep**

#### **Case Narrative**

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-1

### Job ID: 440-258219-1 (Continued)

#### **Laboratory: Eurofins Calscience Irvine (Continued)**

Methods 608: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-588273. Method 8081-8082

Methods 625: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with 8270C preparation batch 440-588303. LCS was performed in duplicate to provide precision of data.

Method 625: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with 8270C preparation batch 440-589031. LCS was performed in duplicate to provide precision of data.

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

#### **Dioxin Prep**

Method 1613B: Elevated reporting limits are provided for the following sample due to insufficient sample provided for 1613B\_Sox\_Sep\_P preparation/analysis: Sample Outfall001\_20191227\_Comp (440-258219-1) was received in a narrow-mouth amber glass bottle.

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

## **Client Sample Results**

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 001 Comp

Client Sample ID: Outfall001\_20191227\_Comp Lab Sample ID: 440-258219-1

Date Collected: 12/27/19 07:25 **Matrix: Water** 

Date Received: 12/27/19 11:20

Method: 625.1 - Semivolatile Analyte		npounds (C Qualifier	JC/MS) RL	MDI	Unit	D	Prepared	Analyzed	Dil Fac
2,4,6-Trichlorophenol	ND	Qualifier	6.5	0.11			01/03/20 10:02	01/06/20 11:33	1
Bis(2-ethylhexyl) phthalate	ND		5.4		ug/L			01/06/20 11:33	1
N-Nitrosodimethylamine	1.2	J,DX MB	5.4		ug/L			01/06/20 11:33	1
Pentachlorophenol	ND	J,DX IVID	5.4	1.1	ug/L			01/06/20 11:33	
2,4-Dinitrotoluene	ND		5.4		ug/L			01/06/20 11:33	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol	<u></u>		60 - 140				01/03/20 10:02	01/06/20 11:33	1
2-Fluorobiphenyl	78		60 - 140				01/03/20 10:02	01/06/20 11:33	1
2-Fluorophenol	78		60 - 140				01/03/20 10:02	01/06/20 11:33	1
Nitrobenzene-d5	83		15 - 314				01/03/20 10:02	01/06/20 11:33	1
Terphenyl-d14	53	LG	60 - 140				01/03/20 10:02	01/06/20 11:33	1
Phenol-d5	71		8 - 424				01/03/20 10:02	01/06/20 11:33	1
Method: 608.3 - Organochio	orine Pesticide	es in Water							
Analyte		Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
alpha-BHC	ND		0.0051	0.0026	ug/L		12/28/19 07:02	12/30/19 13:46	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	60		10 - 104				12/28/19 07:02	12/30/19 13:46	1
DCB Decachlorobiphenyl (Surr)	75		18 - 134				12/28/19 07:02	12/30/19 13:46	1
Method: 300.0 - Anions, Ion	Chromatogra	vhq							
Analyte		Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	4.1		0.50	0.25	mg/L			12/27/19 15:24	1
Nitrate as N	1.6		0.11	0.055	mg/L			12/27/19 15:24	1
Nitrite as N	ND		0.15	0.025	mg/L			12/27/19 15:24	1
Sulfate	6.8		0.50	0.25	mg/L			12/27/19 15:24	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			12/30/19 15:57	1
Method: NO3NO2 Calc - Nit	rogen, Nitrate	-Nitrite							
Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	1.6		0.15	0.055	mg/L			01/09/20 13:02	1
Method: 1613B - Dioxins an									
Analyte		Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	0.0000016	J,DX q	0.000010	0.0000004	ug/L		01/08/20 11:27	01/13/20 21:00	1
1,2,3,7,8-PeCDD	0.000017	J,DX q	0.000052	0.0000005 5	ug/L		01/08/20 11:27	01/13/20 21:00	1
1,2,3,7,8-PeCDF	0.0000015	J,DX	0.000052	0.0000004	ug/L		01/08/20 11:27	01/13/20 21:00	1
2,3,4,7,8-PeCDF	0.0000014	J,DX	0.000052	0.0000004	ug/L		01/08/20 11:27	01/13/20 21:00	1
1,2,3,4,7,8-HxCDD	0.000034	J,DX MB	0.000052	0.0000004	ug/L		01/08/20 11:27	01/13/20 21:00	1
1,2,3,6,7,8-HxCDD	0.0000045	J,DX MB	0.000052	0.0000004 7	ug/L		01/08/20 11:27	01/13/20 21:00	1
1,2,3,7,8,9-HxCDD	0.000035	J,DX MB	0.000052	0.0000004	ug/L		01/08/20 11:27	01/13/20 21:00	1

**Eurofins Calscience Irvine** 

Job ID: 440-258219-1

## **Client Sample Results**

Client: Haley & Aldrich, Inc. Job ID: 440-258219-1

Project/Site: Quarterly Outfall 001 Comp

Client Sample ID: Outfall001\_20191227\_Comp Lab Sample ID: 440-258219-1

Date Collected: 12/27/19 07:25

Matrix: Water

Date Received: 12/27/19 11:20

Analyte		Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,7,8-HxCDF	0.0000029	J,DX	0.000052	0.0000005 8	ug/L		01/08/20 11:27	01/13/20 21:00	1
1,2,3,6,7,8-HxCDF	0.0000024	J,DX	0.000052	0.0000006	ug/L		01/08/20 11:27	01/13/20 21:00	1
1,2,3,7,8,9-HxCDF	0.0000022	J.DX MB	0.000052	0.0000004	ug/L		01/08/20 11:27	01/13/20 21:00	1
.,_,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	0.0000=	<b>0,2</b> 702		1	3				
2,3,4,6,7,8-HxCDF	0.0000026	J,DX MB	0.000052	0.0000004	ug/L		01/08/20 11:27	01/13/20 21:00	1
1,2,3,4,6,7,8-HpCDD	0.00010	MB	0.000052	0.0000012	ug/L		01/08/20 11:27	01/13/20 21:00	
1,2,3,4,6,7,8-HpCDF	0.000036	J,DX MB	0.000052	0.0000007	ug/L		01/08/20 11:27	01/13/20 21:00	
1 2 3 4 7 8 0 UnCDE	0.0000029	LDY a	0.000052	6 0.0000009	ua/l		01/08/20 11:27	01/13/20 21:00	
1,2,3,4,7,8,9-HpCDF	0.0000029	J,DX q	0.000032	0.0000009	ug/L		01/00/20 11.27	01/13/20 21:00	
OCDD	0.00078	MB	0.00010	0.0000008	ug/L		01/08/20 11:27	01/13/20 21:00	
OCDF	0.000070	J,DX MB	0.00010	9 0.0000005	ug/L		01/08/20 11:27	01/13/20 21:00	
Total TCDD	0.0000046	LDV «	0.000010	7	ua/l		01/08/20 11:27	01/13/20 21:00	
Total TCDD	0.0000016	J,DX q	0.000010	0.0000004	ug/L		01/06/20 11.27	01/13/20 21:00	
Total TCDF	0.0000077	J,DX MB	0.000010	0.0000002	ug/L		01/08/20 11:27	01/13/20 21:00	
Total PeCDD	0.0000017	J,DX q	0.000052	0.0000005	ug/L		01/08/20 11:27	01/13/20 21:00	
			0.000050	5	//		04/00/00 44:07	04/40/00 04:00	
Total PeCDF	0.0000063	J,DX q	0.000052	0.0000004	ug/L		01/08/20 11:27	01/13/20 21:00	
Total HxCDD	0.000024	J,DX MB q	0.000052	0.0000004	ug/L		01/08/20 11:27	01/13/20 21:00	
Total HxCDF	0.000026	J,DX MB	0.000052	0.0000004	ug/L		01/08/20 11:27	01/13/20 21:00	
Total HpCDD	0.00018	MB	0.000052	0.0000012	ua/L		01/08/20 11:27	01/13/20 21:00	
Total HpCDF		J,DX MB q	0.000052	0.0000007	•			01/13/20 21:00	
				6					
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
13C-2,3,7,8-TCDD	60		25 - 164					01/13/20 21:00	
13C-2,3,7,8-TCDF	61		24 - 169					01/13/20 21:00	
13C-1,2,3,7,8-PeCDD	61		25 - 181				01/08/20 11:27	01/13/20 21:00	
13C-1,2,3,7,8-PeCDF	62		24 - 185				01/08/20 11:27	01/13/20 21:00	
13C-2,3,4,7,8-PeCDF	67		21 - 178				01/08/20 11:27	01/13/20 21:00	
13C-1,2,3,4,7,8-HxCDD	66		32 - 141				01/08/20 11:27	01/13/20 21:00	
13C-1,2,3,6,7,8-HxCDD	57		28 - 130				01/08/20 11:27	01/13/20 21:00	
13C-1,2,3,4,7,8-HxCDF	63		26 - 152				01/08/20 11:27	01/13/20 21:00	
13C-1,2,3,6,7,8-HxCDF	54		26 - 123				01/08/20 11:27	01/13/20 21:00	
13C-1,2,3,7,8,9-HxCDF	59		29 - 147				01/08/20 11:27	01/13/20 21:00	
13C-2,3,4,6,7,8-HxCDF	58		28 - 136				01/08/20 11:27	01/13/20 21:00	
13C-1,2,3,4,6,7,8-HpCDD	57		23 - 140				01/08/20 11:27	01/13/20 21:00	
13C-1,2,3,4,6,7,8-HpCDF	57		28 - 143				01/08/20 11:27	01/13/20 21:00	
13C-1,2,3,4,7,8,9-HpCDF	63		26 - 138				01/08/20 11:27	01/13/20 21:00	
13C-OCDD	54		17 - 157				01/08/20 11:27	01/13/20 21:00	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
37CI4-2,3,7,8-TCDD	96		35 - 197				01/08/20 11:27	01/13/20 21:00	-

Client: Haley & Aldrich, Inc. Job ID: 440-258219-1

Project/Site: Quarterly Outfall 001 Comp

Client Sample ID: Outfall001\_20191227\_Comp Lab Sample ID: 440-258219-1

Date Collected: 12/27/19 07:25 **Matrix: Water** 

Date Received: 12/27/19 11:20

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.0000012	J,DX	0.000010	0.0000005	ug/L		01/08/20 11:27	01/16/20 16:31	
				3					
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	66		24 - 169				01/08/20 11:27	01/16/20 16:31	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
37Cl4-2,3,7,8-TCDD	98		35 - 197				01/08/20 11:27	01/16/20 16:31	
Method: 200.7 Rev 4.4 - Meta	ls (ICP) - Tot	tal Recove	rable						
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Iron	14000		100	50	ug/L		12/30/19 08:35	12/30/19 18:00	
Zinc	47		20	12	ug/L		12/30/19 08:35	12/30/19 18:00	
Method: 200.8 - Metals (ICP/N	/IS) - Total R	ecoverable	)						
Analyte		Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Cadmium	ND		1.0	0.25	ug/L		12/28/19 09:46	12/30/19 18:34	
Copper	7.2		2.0	0.50	ug/L		12/28/19 09:46	12/30/19 18:34	
Lead	6.6		1.0	0.50	ug/L		12/28/19 09:46	12/30/19 18:34	
Selenium	1.7	J,DX	2.0	0.50	ug/L		12/28/19 09:46	12/30/19 18:34	
Method: 245.1 - Mercury (CV/	<b>4A</b> )								
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Mercury	ND		0.20	0.10	ug/L		12/31/19 12:32	01/02/20 13:28	
General Chemistry									
Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fa
Turbidity	200		2.0	0.80	NTU			12/27/19 18:11	20
Total Dissolved Solids	86		10	5.0	mg/L			12/30/19 08:51	
Total Suspended Solids	190		40		mg/L			12/27/19 16:12	
Cyanide, Total	ND		5.0	2.5	ug/L		01/02/20 10:20	01/02/20 12:53	
Ammonia (as N)	0.181	J,DX	0.200	0.100	mg/L			12/30/19 15:38	
Methylene Blue Active Substances	ND		0.10	0.050	mg/L			12/27/19 15:06	
<b>Biochemical Oxygen Demand</b>	2.9		2.0	0.50	mg/L			12/28/19 08:14	

Client Sample ID: Outfall001\_20191227\_Comp\_F

Lab Sample ID: 440-258219-3 Date Collected: 12/27/19 07:25 **Matrix: Water** 

Date Received: 12/27/19 11:20

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	0.29		0.10	0.050	mg/L		12/28/19 11:55	01/03/20 16:19	1
Zinc	ND		0.020	0.012	mg/L		12/28/19 11:55	01/03/20 16:19	1
Method: 200.8 - Meta						_			
		ed Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Analyte			RL 1.0		Unit ug/L	D	Prepared 12/30/19 11:16	Analyzed 12/30/19 20:43	Dil Fac
Analyte Cadmium	Result ND			0.25		<u>D</u>		12/30/19 20:43	Dil Fac
Method: 200.8 - Meta Analyte Cadmium Copper Lead	Result ND	Qualifier	1.0	0.25 0.50	ug/L	D	12/30/19 11:16 12/30/19 11:16	12/30/19 20:43	Dil Fac 1 1 1

## **Client Sample Results**

Client: Haley & Aldrich, Inc. Job ID: 440-258219-1

Project/Site: Quarterly Outfall 001 Comp

Client Sample ID: Outfall001\_20191227\_Comp\_F Lab Sample ID: 440-258219-3

Date Collected: 12/27/19 07:25

Matrix: Water

Date Received: 12/27/19 11:20

Method: 245.1 - Mercury (CVAA) - Dissolved
Analyte Result Qualifier RL MDL Unit D Prepared Analyzed

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## **Method Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 001 Comp

Method **Method Description** Laboratory **Protocol** 625.1 Semivolatile Organic Compounds (GC/MS) 40CFR136A TAL IRV Organochlorine Pesticides in Water 40CFR136A TAL IRV 608.3 300.0 Anions, Ion Chromatography **MCAWW** TAL IRV 314.0 Perchlorate (IC) **EPA** TAL IRV NO3NO2 Calc Nitrogen, Nitrate-Nitrite **EPA** TAL IRV Dioxins and Furans (HRGC/HRMS) 40CFR136A 1613B TAL SAC Metals (ICP) 200.7 Rev 4.4 EPA TAL IRV 200.8 Metals (ICP/MS) **EPA** TAL IRV 245.1 Mercury (CVAA) **EPA** 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 Separatory Funnel (L/L) Extraction with Soxhlet Extraction of Dioxin and Furans 1613B 40CFR136A TAL SAC 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 TAL IRV Liquid-Liquid Extraction 40CFR136A Distill/CN Distillation, Cyanide None TAL IRV **FILTRATION** TAL IRV Sample Filtration None

#### **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.

None = None

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

#### **Laboratory References:**

TAL IRV = Eurofins Calscience Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022 TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Eurofins Calscience Irvine

2

Job ID: 440-258219-1

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11

12

1/

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16

Client Sample ID: Outfall001 20191227 Comp

Date Collected: 12/27/19 07:25 Date Received: 12/27/19 11:20

Lab Sample ID: 440-258219-1 **Matrix: Water** 

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	625			925 mL	2.0 mL	589031	01/03/20 10:02		TAL IRV
Total/NA	Analysis	625.1		1			589221	01/06/20 11:33	HN	TAL IRV
Total/NA	Prep	608			975 mL	2 mL	588273	12/28/19 07:02	L1H	TAL IRV
Total/NA	Analysis	608.3		1			588436	12/30/19 13:46	D1D	TAL IRV
Total/NA	Analysis	300.0		1			588133	12/27/19 15:24	NTN	TAL IRV
Total/NA	Analysis	300.0		1			588134	12/27/19 15:24	NTN	TAL IRV
Total/NA	Analysis	314.0		1			588445	12/30/19 15:57	CTH	TAL IRV
Total/NA	Analysis	NO3NO2 Calc		1			589801	01/09/20 13:02	TLN	TAL IRV
Total/NA Total/NA	Prep Analysis	1613B 1613B		1	953.6 mL	20 uL	349535 350522	01/08/20 11:27 01/13/20 21:00		TAL SAC
Total/NA	Prep	1613B	RA		953.6 mL	20 uL	349535	01/08/20 11:27		TAL SAC
Total/NA	Analysis	1613B	RA	1			351318	01/16/20 16:31		TAL SAC
Total Recoverable	Prep	200.2			25 mL	25 mL	588241	12/30/19 08:35	EP	TAL IRV
Total Recoverable	Analysis	200.7 Rev 4.4		1			588599	12/30/19 18:00	TQN	TAL IRV
Total Recoverable	Prep	200.2			25 mL	25 mL	588198	12/28/19 09:46	M1G	TAL IRV
Total Recoverable	Analysis	200.8		1			588597	12/30/19 18:34	B1H	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	588737	12/31/19 12:32	MEM	TAL IRV
Total/NA	Analysis	245.1		1			588954	01/02/20 13:28	MEM	TAL IRV
Total/NA	Analysis	180.1		20			588245	12/27/19 18:11	HZ	TAL IRV
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	588440	12/30/19 08:51	XL	TAL IRV
Total/NA	Analysis	SM 2540D		1	25 mL	1000 mL	588223	12/27/19 16:12	KL	TAL IRV
Total/NA	Prep	Distill/CN			50 mL	50 mL	588874	01/02/20 10:20	CKL	TAL IRV
Total/NA	Analysis	SM 4500 CN E		1			588897	01/02/20 12:53	CKL	TAL IRV
Total/NA	Analysis	SM 4500 NH3 G		1	0.8 mL	8.0 mL	588582	12/30/19 15:38	KMY	TAL IRV
Total/NA	Analysis	SM 5540C		1	100 mL	100 mL	588210	12/27/19 15:06	KMY	TAL IRV
Total/NA	Analysis	SM5210B		1	300 mL	300 mL	588283	12/28/19 08:14	MMP	TAL IRV

Client Sample ID: Outfall001\_20191227\_Comp\_F

Batch

200.2

200.2

200.8

245.1

245.1

Method

**FILTRATION** 

200.7 Rev 4.4

**FILTRATION** 

**FILTRATION** 

Date Received: 12/27/19 11:20

**Prep Type** 

Dissolved

Dissolved

Dissolved

Dissolved

Dissolved

Dissolved

Dissolved

Dissolved

Dissolved

Batch

Type

Prep

Prep

Prep

Filtration

Analysis

Filtration

Analysis

Filtration

Analysis

Date Collected: 12/27/19 07:25

Run

Batch	Prepared		
Number	or Analyzed	Analyst	Lab
588288	12/28/19 09:35	EP	TAL IRV
588307	12/28/19 11:55	EP	TAL IRV
589092	01/03/20 16:19	P1R	TAL IRV
588288	12/28/19 09:35	EP	TAL IRV
588503	12/30/19 11:16	EP	TAL IRV
588634	12/30/19 20:43	B1H	TAL IRV
589977	01/10/20 11:30	EP	TAL IRV

01/15/20 11:35 MEM

01/16/20 11:11 MEM

Lab Sample ID: 440-258219-3

**Matrix: Water** 

**Eurofins Calscience Irvine** 

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Dil

1

1

**Factor** 

Initial

**Amount** 

150 mL

25 mL

150 mL

25 mL

100 mL

20 mL

Final

**Amount** 

150 mL

25 mL

150 mL

25 mL

100 mL

20 mL

590663

590948

TAL IRV

TAL IRV

## **Lab Chronicle**

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-1

#### **Laboratory References:**

TAL IRV = Eurofins Calscience Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022 TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

4

7

0

10

11

13

15

16

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 001 Comp

Method: 625.1 - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-589031/1-A

**Matrix: Water** 

Analysis Batch: 589221

Client S	Sample	ID: Me	thod	<b>Blank</b>

Prep Type: Total/NA

Job ID: 440-258219-1

**Prep Batch: 589031** 

	IVID	IVID							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,6-Trichlorophenol	ND		6.0	0.10	ug/L		01/03/20 10:02	01/06/20 10:10	1
Bis(2-ethylhexyl) phthalate	ND		5.0	2.0	ug/L		01/03/20 10:02	01/06/20 10:10	1
N-Nitrosodimethylamine	7.53		5.0	0.30	ug/L		01/03/20 10:02	01/06/20 10:10	1
Pentachlorophenol	ND		5.0	1.0	ug/L		01/03/20 10:02	01/06/20 10:10	1
2,4-Dinitrotoluene	ND		5.0	2.0	ug/L		01/03/20 10:02	01/06/20 10:10	1

MR MR

	IVID	IVID				
Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol	89		60 - 140	01/03/20 10:02	01/06/20 10:10	1
2-Fluorobiphenyl	85		60 - 140	01/03/20 10:02	01/06/20 10:10	1
2-Fluorophenol	84		60 - 140	01/03/20 10:02	01/06/20 10:10	1
Nitrobenzene-d5	85		15 - 314	01/03/20 10:02	01/06/20 10:10	1
Terphenyl-d14	100		60 - 140	01/03/20 10:02	01/06/20 10:10	1
Phenol-d5	82		8 - 424	01/03/20 10:02	01/06/20 10:10	1

Lab Sample ID: LCS 440-589031/2-A

Lab Sample ID: LCSD 440-589031/3-A

**Matrix: Water** 

**Matrix: Water** 

Pentachlorophenol

**Analysis Batch: 589221** 

Analysis Batch: 589221

Client Sample	ID: Lab	Control	Sample	
---------------	---------	---------	--------	--

Prep Type: Total/NA **Prep Batch: 589031** 

%Rec.

Limits

Analyte Added Result Qualifier Unit %Rec 2,4,6-Trichlorophenol 15.0 14.8 98 52 - 129 ug/L Bis(2-ethylhexyl) phthalate 15.0 17.2 ug/L 115 29 - 137N-Nitrosodimethylamine 15.0 20.9 139 ug/L 60 - 140Pentachlorophenol 30.0 29.3 ug/L 98 38 - 152

LCS LCS

Spike

LCS LCS

Surrogate	%Recovery	Qualifier	Limits
2,4,6-Tribromophenol	95		60 - 140
2-Fluorobiphenyl	84		60 - 140
2-Fluorophenol	85		60 - 140
Nitrobenzene-d5	84		15-314
Terphenyl-d14	92		60 - 140
Phenol-d5	83		8 - 424

**Client Sample ID: Lab Control Sample Dup** 

Prep Type: Total/NA **Prep Batch: 589031** 

Spike LCSD LCSD %Rec. **RPD** Added Result Qualifier RPD Limit **Analyte** Unit D %Rec Limits 2 2,4,6-Trichlorophenol 15.0 15.1 ug/L 100 52 - 129 15.0 29 - 137 Bis(2-ethylhexyl) phthalate 17.7 ug/L 118 3 N-Nitrosodimethylamine 15.0 20.3 ug/L 136

27.2

ug/L

30.0

LCSD LCSD

Surrogate	%Recovery	Qualifier	Limits
2,4,6-Tribromophenol	95		60 - 140
2-Fluorobiphenyl	85		60 - 140
2-Fluorophenol	84		60 - 140
Nitrobenzene-d5	87		15-314

35 35 60 - 140 3 35 38 - 152 35

Job ID: 440-258219-1

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 001 Comp

### Method: 625.1 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 440-589031/3-A

**Matrix: Water** 

**Analysis Batch: 589221** 

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 589031

LCSD LCSD

Surrogate %Recovery Qualifier Limits Terphenyl-d14 60 - 140 90 Phenol-d5 87 8 - 424

### Method: 608.3 - Organochlorine Pesticides in Water

Lab Sample ID: MB 440-588273/1-A

**Matrix: Water** 

**Analysis Batch: 588436** 

**Client Sample ID: Method Blank** 

Prep Type: Total/NA

Prep Batch: 588273

MB MB

Analyte Result Qualifier RL **MDL** Unit Dil Fac Prepared Analyzed alpha-BHC ND 0.0050 0.0025 ug/L 12/28/19 07:02 12/30/19 11:47

MB MB

Qualifier Limits Prepared Surrogate %Recovery Analyzed Dil Fac 48 10 - 104 12/28/19 07:02 12/30/19 11:47 Tetrachloro-m-xylene DCB Decachlorobiphenyl (Surr) 63 18 - 134 12/28/19 07:02 12/30/19 11:47

LCS LCS

LCSD LCSD

Lab Sample ID: LCS 440-588273/2-A

**Matrix: Water** 

Analysis Batch: 588436

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

**Prep Batch: 588273** 

%Rec.

Limits

Analyte Added Result Qualifier Unit D %Rec alpha-BHC 0.400 0.327 82 ug/L 37 - 140

Spike

Spike

LCS LCS

%Recovery Qualifier Limits Surrogate Tetrachloro-m-xylene 74 10 - 104 DCB Decachlorobiphenyl (Surr) 81 18 - 134

Lab Sample ID: LCSD 440-588273/3-A

**Matrix: Water** 

**Analysis Batch: 588436** 

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 588273

RPD %Rec.

Analyte Added Result Qualifier Unit %Rec Limits RPD Limit alpha-BHC 0.400 0.332 ug/L 83 37 - 140

LCSD LCSD

Surrogate %Recovery Qualifier Limits Tetrachloro-m-xylene 72 10 - 104 DCB Decachlorobiphenyl (Surr) 80 18 - 134

### Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 440-588133/6

**Matrix: Water** 

**Analysis Batch: 588133** 

**Client Sample ID: Method Blank** 

Prep Type: Total/NA

MB MB

Result Qualifier RL **MDL** Unit Analyte Prepared Analyzed Dil Fac Nitrate as N ND 0.11 0.055 mg/L 12/27/19 12:01 Nitrite as N ND 0.15 0.025 mg/L 12/27/19 12:01

Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-1

**Prep Type: Total/NA** 

**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: 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** 

Client Sample ID: Matrix Spike

**Client Sample ID: Matrix Spike Duplicate** 

### Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCS 440-588133/5

**Matrix: Water** 

Analysis Ratch: 588133

Alialysis Dalcii. 500 155								
-	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Nitrate as N	 1.13	1.10		mg/L		97	90 - 110	
Nitrite as N	1.52	1.51		mg/L		99	90 - 110	

Lab Sample ID: 440-258197-G-1 MS

**Matrix: Water** 

Analysis Batch: 588133

/ manyone Dates in cochec	Sample	Sample	Spike	MS	MS				%Rec.	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Nitrate as N	0.60		1.13	1.70		mg/L		98	80 - 120	
Nitrite as N	0.094	J,DX	1.52	1.53		mg/L		94	80 - 120	

Lab Sample ID: 440-258197-G-1 MSD

**Matrix: Water** 

**Analysis Batch: 588133** 

	Sample	Sample	Spike	MSD	MSD				%Rec.		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Nitrate as N	0.60		1.13	1.74		mg/L		101	80 - 120	2	20
Nitrite as N	0.094	J,DX	1.52	1.55		mg/L		96	80 - 120	1	20

Lab Sample ID: MB 440-588134/6

**Matrix: Water** 

Analysis Batch: 588134

	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50	0.25	mg/L			12/27/19 12:01	1
Sulfate	ND		0.50	0.25	mg/L			12/27/19 12:01	1

Lab Sample ID: LCS 440-588134/5

**Matrix: Water** 

Analysis Batch: 588134

Allalysis Datcil. 300134								
	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Chloride	5.00	4.85		mg/L		97	90 - 110	
Sulfate	5.00	5.04		mg/L		101	90 - 110	

Lab Sample ID: 440-258197-G-1 MS

**Matrix: Water** 

Analysis Batch: 588134

Analysis Buton: 000104	Sample	Sample	Spike	MS	MS				%Rec.	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Chloride	5.3		5.00	10.4		mg/L		102	80 - 120	
Sulfate	700	EY	5.00	702	EY BB	mg/L		44	80 - 120	

Lab Sample ID: 440-258197-G-1 MSD

**Matrix: Water** 

Analysis Batch: 588134

	Sample	Sample	Spike	MSD	MSD				%Rec.		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Chloride	5.3		5.00	10.5		mg/L		104	80 - 120	1	20
Sulfate	700	EY	5.00	702	EY BB	mg/L		51	80 - 120	0	20

**Eurofins Calscience Irvine** 

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Job ID: 440-258219-1

Prep Type: Total/NA

Prep Type: Total/NA

Prep Type: Total/NA

Prep Batch: 349535

**Client Sample ID: Matrix Spike** 

Client Sample ID: Matrix Spike Duplicate

Client: Haley & Aldrich, Inc. Project/Site: Quarterly Outfall 001 Comp

Method: 314.0 - Perchlorate (IC)

Lab Sample ID: MB 440-588445/6 Client Sample ID: Method Blank

MB MB

**Matrix: Water** 

**Analysis Batch: 588445** 

Prep Type: Total/NA

Result Qualifier RL **MDL** Unit Analyzed Dil Fac Analyte Prepared Perchlorate 4.0 0.95 ug/L 12/30/19 10:57 ND

Lab Sample ID: LCS 440-588445/5 **Client Sample ID: Lab Control Sample Matrix: Water** Prep Type: Total/NA

**Analysis Batch: 588445** 

LCS LCS Spike %Rec. Analyte Added Result Qualifier Unit D %Rec Limits 25.0 Perchlorate 25.2 ug/L 101 85 - 115

Lab Sample ID: MRL 440-588445/4 **Client Sample ID: Lab Control Sample Matrix: Water** Prep Type: Total/NA

**Analysis Batch: 588445** 

Spike MRL MRL %Rec. Added Result Qualifier Unit Limits Analyte D %Rec Perchlorate 1.00 1.04 J,DX 75 - 125 ug/L 104

Lab Sample ID: MRL 440-588445/8 **Client Sample ID: Lab Control Sample** 

**Matrix: Water** 

**Analysis Batch: 588445** 

Spike MRL MRL %Rec. Added Analyte Result Qualifier D %Rec Limits Unit Perchlorate 4.00 3.96 J,DX 99 75 - 125 ug/L

Lab Sample ID: 440-258138-C-1 MS

**Matrix: Water** 

Analysis Batch: 588445

Sample Sample Spike MS MS %Rec Added Analyte Result Qualifier Result Qualifier Unit %Rec Limits Perchlorate 25.0 100 80 - 120 3.3 J,DX 28.2 ug/L

Lab Sample ID: 440-258138-C-1 MSD

**Matrix: Water** 

**Analysis Batch: 588445** 

MSD MSD **RPD** Sample Sample Spike %Rec. RPD Analyte Result Qualifier Added Result Qualifier Unit %Rec Limits Limit ug/L Perchlorate 3.3 J.DX 25.0 27.6 80 - 120

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Lab Sample ID: MB 320-349535/1-A **Client Sample ID: Method Blank Matrix: Water** Prep Type: Total/NA

**Analysis Batch: 350522** 

MR MR Analyte Result Qualifier RL **EDL Unit** Prepared Analyzed 2,3,7,8-TCDD  $\overline{\mathsf{ND}}$ 0.000010 ug/L 01/08/20 11:27 01/13/20 14:52 0.0000007 9 01/08/20 11:27 01/13/20 14:52 1.2.3.7.8-PeCDD ND 0.000050 0.0000007 ug/L 1,2,3,7,8-PeCDF ND 0.000050 01/08/20 11:27 01/13/20 14:52 0.0000005 ug/L 5

### **QC Sample Results**

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-1

### Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample	ID: MB	320-349535/1-A
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**Matrix: Water** 

**Analysis Batch: 350522** 

Client	Sample	ID:	Metho	d Bla	ank
	Pre	T as	vpe: 1	<b>Total</b>	/NA

rep Batch:	349535
Analyzed	Dil Fac

Alialysis Batch. 350522	MR	МВ						Prep Batch.	349333
Analyte		Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,4,7,8-PeCDF	ND		0.000050	0.0000005	ug/L		01/08/20 11:27	01/13/20 14:52	1
1,2,3,4,7,8-HxCDD	0.00000175	J,DX	0.000050	0.0000004	ug/L		01/08/20 11:27	01/13/20 14:52	1
1,2,3,6,7,8-HxCDD	0.000000762	J,DX	0.000050	0.0000005	ug/L		01/08/20 11:27	01/13/20 14:52	1
1,2,3,7,8,9-HxCDD	0.00000109	J,DX	0.000050	0.0000004	ug/L		01/08/20 11:27	01/13/20 14:52	1
1,2,3,4,7,8-HxCDF	ND		0.000050	0.0000007	ug/L		01/08/20 11:27	01/13/20 14:52	1
1,2,3,6,7,8-HxCDF	ND		0.000050	0.0000008	ug/L		01/08/20 11:27	01/13/20 14:52	1
1,2,3,7,8,9-HxCDF	0.00000119	J,DX	0.000050	0.0000005	ug/L		01/08/20 11:27	01/13/20 14:52	1
2,3,4,6,7,8-HxCDF	0.000000647	J,DX	0.000050	0.0000005	ug/L		01/08/20 11:27	01/13/20 14:52	1
1,2,3,4,6,7,8-HpCDD	0.00000175	J,DX	0.000050	0.0000004	ug/L		01/08/20 11:27	01/13/20 14:52	1
1,2,3,4,6,7,8-HpCDF	0.00000215	J,DX	0.000050	0.0000004	ug/L		01/08/20 11:27	01/13/20 14:52	1
1,2,3,4,7,8,9-HpCDF	ND		0.000050	0.0000005	ug/L		01/08/20 11:27	01/13/20 14:52	1
OCDD	0.0000115	J,DX	0.00010	0.0000007	ug/L		01/08/20 11:27	01/13/20 14:52	1
OCDF	0.00000502	J,DX	0.00010	0.0000007	ug/L		01/08/20 11:27	01/13/20 14:52	1
Total TCDD	ND		0.000010	0.0000007	ug/L		01/08/20 11:27	01/13/20 14:52	1
Total TCDF	0.000000535	J,DX	0.000010	0.0000004	ug/L		01/08/20 11:27	01/13/20 14:52	1
Total PeCDD	ND		0.000050	0.0000007	ug/L		01/08/20 11:27	01/13/20 14:52	1
Total PeCDF	ND		0.000050	0.0000005	ug/L		01/08/20 11:27	01/13/20 14:52	1
Total HxCDD	0.00000360	J,DX	0.000050	0.0000004	ug/L		01/08/20 11:27	01/13/20 14:52	1
Total HxCDF	0.00000184	J,DX	0.000050	0.0000005	ug/L		01/08/20 11:27	01/13/20 14:52	1
Total HpCDD	0.00000357	J,DX	0.000050	0.0000004	ug/L		01/08/20 11:27	01/13/20 14:52	1
Total HpCDF	0.00000309	J,DX	0.000050	0.0000004	ug/L		01/08/20 11:27	01/13/20 14:52	1
	МВ	МВ		/					
Isotope Dilution	%Recovery		Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	63		25 - 164				01/08/20 11:27	01/13/20 14:52	
400 0 0 7 0 TODE	65		04 400				04/00/00 44:07	04/40/00 44:50	

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	63		25 - 164	01/08/20 11:27	01/13/20 14:52	1
13C-2,3,7,8-TCDF	65		24 - 169	01/08/20 11:27	01/13/20 14:52	1
13C-1,2,3,7,8-PeCDD	69		25 - 181	01/08/20 11:27	01/13/20 14:52	1
13C-1,2,3,7,8-PeCDF	68		24 - 185	01/08/20 11:27	01/13/20 14:52	1
13C-2,3,4,7,8-PeCDF	74		21 - 178	01/08/20 11:27	01/13/20 14:52	1
13C-1,2,3,4,7,8-HxCDD	75		32 - 141	01/08/20 11:27	01/13/20 14:52	1
13C-1,2,3,6,7,8-HxCDD	64		28 - 130	01/08/20 11:27	01/13/20 14:52	1
13C-1,2,3,4,7,8-HxCDF	73		26 - 152	01/08/20 11:27	01/13/20 14:52	1
13C-1,2,3,6,7,8-HxCDF	62		26 - 123	01/08/20 11:27	01/13/20 14:52	1
13C-1,2,3,7,8,9-HxCDF	67		29 - 147	01/08/20 11:27	01/13/20 14:52	1

### **QC Sample Results**

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-1

### Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

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Lab Sample ID: MB 320-349535/1-A **Matrix: Water** 

**Analysis Batch: 350522** 

Client Sample ID: Method Blank

**Prep Type: Total/NA Prep Batch: 349535** 

	MB MB				
Isotope Dilution	%Recovery Qualific	er Limits	Prepared	Analyzed	Dil Fac
13C-2,3,4,6,7,8-HxCDF	66	28 - 136	01/08/20 11:27	01/13/20 14:52	1
13C-1,2,3,4,6,7,8-HpCDD	64	23 - 140	01/08/20 11:27	01/13/20 14:52	1
13C-1,2,3,4,6,7,8-HpCDF	64	28 - 143	01/08/20 11:27	01/13/20 14:52	1
13C-1,2,3,4,7,8,9-HpCDF	71	26 - 138	01/08/20 11:27	01/13/20 14:52	1
13C-OCDD	63	17 - 157	01/08/20 11:27	01/13/20 14:52	1
	MB MB				
Surrogate	%Recovery Qualific	er Limits	Prepared	Analyzed	Dil Fac

35 - 197

Lab Sample ID: LCS 320-349535/2-A

**Matrix: Water** 

37CI4-2,3,7,8-TCDD

**Analysis Batch: 350522** 

**Client Sample ID: Lab Control Sample** 

**Prep Type: Total/NA Prep Batch: 349535** 

01/08/20 11:27 01/13/20 14:52

	Spike	LCS	LCS				%Rec.
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits
2,3,7,8-TCDD	0.000200	0.000194		ug/L		97	67 - 158
2,3,7,8-TCDF	0.000200	0.000184	MB	ug/L		92	75 <sub>-</sub> 158
1,2,3,7,8-PeCDD	0.00100	0.000970		ug/L		97	70 - 142
1,2,3,7,8-PeCDF	0.00100	0.000964		ug/L		96	80 - 134
2,3,4,7,8-PeCDF	0.00100	0.000876		ug/L		88	68 - 160
1,2,3,4,7,8-HxCDD	0.00100	0.000883	MB	ug/L		88	70 <sub>-</sub> 164
1,2,3,6,7,8-HxCDD	0.00100	0.000966	MB	ug/L		97	76 - 134
1,2,3,7,8,9-HxCDD	0.00100	0.000917	MB	ug/L		92	64 - 162
1,2,3,4,7,8-HxCDF	0.00100	0.000860		ug/L		86	72 <sub>-</sub> 134
1,2,3,6,7,8-HxCDF	0.00100	0.000900		ug/L		90	84 - 130
1,2,3,7,8,9-HxCDF	0.00100	0.000917	MB	ug/L		92	78 <sub>-</sub> 130
2,3,4,6,7,8-HxCDF	0.00100	0.000914	MB	ug/L		91	70 <sub>-</sub> 156
1,2,3,4,6,7,8-HpCDD	0.00100	0.000990	MB	ug/L		99	70 - 140
1,2,3,4,6,7,8-HpCDF	0.00100	0.000972	MB	ug/L		97	82 - 122
1,2,3,4,7,8,9-HpCDF	0.00100	0.000900		ug/L		90	78 <sub>-</sub> 138
OCDD	0.00200	0.00194	MB	ug/L		97	78 <sub>-</sub> 144
OCDF	0.00200	0.00199	MB	ug/L		99	63 - 170

LCS	100
LUS	LUS

Isotope Dilution	%Recovery	Qualifier	Limits
13C-2,3,7,8-TCDD	64		20 - 175
13C-2,3,7,8-TCDF	65		22 - 152
13C-1,2,3,7,8-PeCDD	69		21 - 227
13C-1,2,3,7,8-PeCDF	66		21 - 192
13C-2,3,4,7,8-PeCDF	73		13 - 328
13C-1,2,3,4,7,8-HxCDD	74		21 - 193
13C-1,2,3,6,7,8-HxCDD	60		25 - 163
13C-1,2,3,4,7,8-HxCDF	69		19 - 202
13C-1,2,3,6,7,8-HxCDF	61		21 - 159
13C-1,2,3,7,8,9-HxCDF	65		17 - 205
13C-2,3,4,6,7,8-HxCDF	64		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	62		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	63		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	71		20 - 186
13C-OCDD	62		13 - 199

Job ID: 440-258219-1

Client: Haley & Aldrich, Inc.

**Analysis Batch: 350522** 

**Matrix: Water** 

Project/Site: Quarterly Outfall 001 Comp

Lab Sample ID: LCS 320-349535/2-A

**Client Sample ID: Lab Control Sample** 

Prep Type: Total/NA

**Prep Batch: 349535** 

Prep Type: Total/NA

**Prep Batch: 349535** 

**Client Sample ID: Method Blank** 

Client Sample ID: Method Blank

**Client Sample ID: Lab Control Sample** 

%Rec.

**Prep Type: Total Recoverable** 

**Prep Type: Total Recoverable** 

**Client Sample ID: Matrix Spike** 

**Client Sample ID: Matrix Spike Duplicate** 

**Prep Type: Total Recoverable** 

**Prep Type: Total Recoverable** 

**Prep Batch: 588241** 

**Prep Batch: 588241** 

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

LCS LCS

Surrogate %Recovery Qualifier Limits 37CI4-2.3.7.8-TCDD 31 - 191

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Lab Sample ID: MB 320-349535/1-A **Matrix: Water** 

**Analysis Batch: 351071** 

MB MB

Result Qualifier RL **EDL Unit** Prepared Analyzed Dil Fac 2,3,7,8-TCDF - RA ND 0.000010 0.0000005 ug/L 01/08/20 11:27 01/15/20 15:46 8

MB MB

Isotope Dilution %Recovery Qualifier Limits Prepared Analyzed Dil Fac 13C-2,3,7,8-TCDF - RA 70 24 - 169 01/08/20 11:27 01/15/20 15:46

MB MB

Dil Fac Surrogate %Recovery Qualifier Limits Prepared Analyzed 37CI4-2,3,7,8-TCDD - RA 96 35 - 197 01/08/20 11:27 01/15/20 15:46

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: MB 440-588241/1-A

**Matrix: Water** 

**Analysis Batch: 588599** 

MB MB

Result Qualifier Analyte

RL **MDL** Unit D Dil Fac Prepared Analyzed Iron 100  $\overline{\mathsf{ND}}$ 50 ug/L <u>12/30/19 08:35</u> <u>12/30/19 17:25</u> ND 20 12/30/19 08:35 12/30/19 17:25 Zinc 12 ug/L

Lab Sample ID: LCS 440-588241/2-A

**Matrix: Water** 

Analysis Batch: 588599

Spike LCS LCS

Analyte Added Result Qualifier Unit %Rec Limits Iron 500 438 ug/L 88 85 - 115 Zinc 500 504 ug/L 101 85 - 115

Lab Sample ID: 440-257890-E-6-C MS

**Matrix: Water** 

**Analysis Batch: 588599** 

**Prep Batch: 588241** Sample Sample Spike MS MS %Rec. Added Limits Analyte Result Qualifier Result Qualifier Unit D %Rec Iron 1700 500 2570 LM ug/L 167 70 - 130 ND 500 103 70 - 130 Zinc 516 ug/L

Lab Sample ID: 440-257890-E-6-D MSD

**Matrix: Water** 

**Analysis Batch: 588599** 

Prep Batch: 588241 Sample Sample Spike MSD MSD %Rec. **RPD** Result Qualifier Added Result Qualifier Unit Limits RPD Limit Analyte %Rec 1700 500 Iron 2540 IM ug/L 162 70 - 130

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-1

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

Lab Sample ID: 440-257890-E-6-D MSD **Client Sample ID: Matrix Spike Duplicate Matrix: Water Analysis Batch: 588599** Sample Sample Spike MSD MSD

Result Qualifier

ND

**Prep Type: Total Recoverable Prep Batch: 588241** %Rec. **RPD** Result Qualifier Limit Unit %Rec Limits RPD

100

Lab Sample ID: MB 440-588288/1-C

**Matrix: Water** 

Zinc

Analysis Batch: 589092 MR MR Client Sample ID: Method Blank **Prep Type: Dissolved** 

70 - 130

Prep Batch: 588307

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	ND		0.10	0.050	mg/L		12/28/19 11:55	01/03/20 16:14	1
Zinc	ND		0.020	0.012	mg/L		12/28/19 11:55	01/03/20 16:14	1

501

ua/L

Lab Sample ID: LCS 440-588288/2-C

**Matrix: Water** Analysis Batch: 589092 **Client Sample ID: Lab Control Sample Prep Type: Dissolved** 

**Prep Batch: 588307** 

Spike LCS LCS %Rec. Added Result Qualifier Analyte Unit D %Rec Limits Iron 0.500 0.447 89 85 - 115 mg/L 102 Zinc 0.500 0.511 mg/L 85 - 115

Added

500

Lab Sample ID: 440-258219-3 MS

**Matrix: Water** 

Analysis Batch: 589092

Client Sample ID: Outfall001\_20191227\_Comp\_F

**Prep Type: Dissolved Prep Batch: 588307** 

MS MS Spike Sample Sample %Rec. Result Qualifier Added Result Qualifier Unit D %Rec Limits Analyte Iron 0.29 0.500 0.766 mg/L 95 70 - 130 Zinc ND 0.500 0.511 mg/L 102 70 - 130

Lab Sample ID: 440-258219-3 MSD

**Matrix: Water** 

**Analysis Batch: 589092** 

Client Sample ID: Outfall001\_20191227\_Comp\_F

**Prep Type: Dissolved Prep Batch: 588307** 

Spike MSD MSD **RPD** Sample Sample %Rec. Result Qualifier Analyte Added Result Qualifier Unit %Rec Limits **RPD** Limit Iron 0.29 0.500 0.761 mg/L 94 70 - 130 20 ND 0.500 0.518 Zinc mg/L 104 70 - 130 20

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 440-588198/1-A

**Matrix: Water** 

Analysis Batch: 588597

**Client Sample ID: Method Blank Prep Type: Total Recoverable** 

**Prep Batch: 588198** 

-	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		12/28/19 09:46	12/30/19 17:42	1
Copper	ND		2.0	0.50	ug/L		12/28/19 09:46	12/30/19 17:42	1
Lead	ND		1.0	0.50	ug/L		12/28/19 09:46	12/30/19 17:42	1
Selenium	ND		2.0	0.50	ug/L		12/28/19 09:46	12/30/19 17:42	1

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-1

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

Lab Sample ID: LCS 440-588198/2-A

**Matrix: Water** 

Analysis Batch: 588597

**Client Sample ID: Lab Control Sample Prep Type: Total Recoverable** 

**Prep Batch: 588198** 

	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Cadmium	80.0	85.7		ug/L		107	85 - 115	
Copper	80.0	88.0		ug/L		110	85 - 115	
Lead	80.0	83.1		ug/L		104	85 - 115	
Selenium	80.0	84.9		ug/L		106	85 - 115	

Lab Sample ID: 440-258216-B-4-B MS

**Matrix: Water** 

Analysis Batch: 588597

**Client Sample ID: Matrix Spike Prep Type: Total Recoverable** 

Prep Batch: 588198

Analysis Batch: 00007	Sample	Sample	Spike	MS	MS				%Rec.
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits
Cadmium	ND		80.0	79.1		ug/L		99	70 - 130
Copper	1.4	J,DX	80.0	77.5		ug/L		95	70 - 130
Lead	ND		80.0	77.3		ug/L		97	70 - 130
Selenium	0.80	J,DX	80.0	83.6		ug/L		103	70 - 130

Lab Sample ID: 440-258216-B-4-C MSD

**Matrix: Water** 

Analysis Batch: 588597

Client Sample ID: Matrix Spike Duplicate

**Prep Type: Total Recoverable** 

**Prep Batch: 588198** 

	Sample	Sample	Spike	MSD	MSD				%Rec.		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Cadmium	ND		80.0	79.2		ug/L		99	70 - 130	0	20
Copper	1.4	J,DX	80.0	78.8		ug/L		97	70 - 130	2	20
Lead	ND		80.0	76.9		ug/L		96	70 - 130	1	20
Selenium	0.80	J,DX	80.0	81.5		ug/L		101	70 - 130	3	20

Lab Sample ID: MB 440-588288/1-D

**Matrix: Water** 

**Analysis Batch: 588634** 

**Client Sample ID: Method Blank Prep Type: Dissolved** 

**Prep Batch: 588503** 

	MB	MB						•	
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		12/30/19 11:16	12/30/19 20:12	1
Copper	ND		2.0	0.50	ug/L		12/30/19 11:16	12/30/19 20:12	1
Lead	ND		1.0	0.50	ug/L		12/30/19 11:16	12/30/19 20:12	1
Selenium	ND		2.0	0.50	ug/L		12/30/19 11:16	12/30/19 20:12	1

Lab Sample ID: LCS 440-588288/2-D

Matrix: Water

Analysis Batch: 588634

**Client Sample ID: Lab Control Sample Prep Type: Dissolved Prep Batch: 588503** 

-	Spike	LCS	LCS				%Rec.		
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits		
Cadmium	80.0	79.6		ug/L		100	85 - 115	 	
Copper	80.0	77.1		ug/L		96	85 - 115		
Lead	80.0	79.5		ug/L		99	85 - 115		
Selenium	80.0	80.7		ug/L		101	85 - 115		

Spike

Added

80.0

0.08

0.08

80.0

Client: Haley & Aldrich, Inc. Job ID: 440-258219-1

MS MS

78.9

80.9

79.3

80.8

Result Qualifier

Unit

ug/L

ug/L

ug/L

ug/L

Project/Site: Quarterly Outfall 001 Comp

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

Sample Sample

ND

5.0

ND

ND

Result Qualifier

Lab Sample ID: 440-258227-B-2-G MS **Matrix: Water** 

Analysis Batch: 588634

Client Sample ID: Matrix Spike **Prep Type: Dissolved** 

Prep Batch: 588503 %Rec. %Rec Limits 70 - 130 99 95 70 - 130 99 70 - 130

70 - 130

Lab Sample ID: 440-258227-B-2-H MSD

**Matrix: Water** 

Analyte

Copper

Lead

Cadmium

Selenium

**Analysis Batch: 588634** 

**Client Sample ID: Matrix Spike Duplicate** 

101

**Prep Type: Dissolved** Prep Batch: 588503

Sample Sample MSD MSD Spike %Rec. **RPD** Result Qualifier Added Limits RPD Limit Analyte Result Qualifier Unit D %Rec Cadmium ND 80.0 80.6 101 70 - 130 2 20 ug/L 5.0 80.0 96 70 - 130 20 Copper 81.4 ug/L Lead ND 80.0 81.1 ug/L 101 70 - 130 2 20 ND 80.0 81.2 70 - 130 20 Selenium ug/L 102

Method: 245.1 - Mercury (CVAA)

Lab Sample ID: MB 440-588737/1-A

**Matrix: Water** 

**Analysis Batch: 588954** 

Client Sample ID: Method Blank

**Client Sample ID: Lab Control Sample** 

%Rec.

Limits

85 - 115

75 - 125

**Client Sample ID: Matrix Spike** 

89

Prep Type: Total/NA

Prep Batch: 588737

Prep Type: Total/NA

Prep Batch: 588737

MR MR Result Qualifier RL **MDL** Unit Prepared

Analyte

Analyzed 12/31/19 12:32 01/02/20 13:12 Mercury  $\overline{\mathsf{ND}}$ 0.20 0.10 ug/L

Lab Sample ID: LCS 440-588737/2-A **Matrix: Water** 

Analyte

Mercury

Analyte

Mercury

Mercury

**Analysis Batch: 588954** 

Spike

LCS LCS Added Result Qualifier Unit %Rec 4.00 3.55 ug/L

Lab Sample ID: 440-258077-D-1-H MS

**Matrix: Water** 

**Analysis Batch: 588954** 

Sample Sample

 $\overline{\mathsf{ND}}$ 

Result Qualifier

Spike MS MS Added Result Qualifier

4.00

Spike

Added

4.00

Unit

ug/L

Unit

ug/L

%Rec 86 **Prep Batch: 588737** %Rec. Limits

Prep Type: Total/NA

Lab Sample ID: 440-258077-D-1-I MSD

**Matrix: Water** 

Analysis Batch: 588954

**Analyte** 

Sample Sample Result Qualifier

ND

MSD MSD Result Qualifier 3.55

3.43

**Client Sample ID: Matrix Spike Duplicate** 

D %Rec

89

Prep Type: Total/NA Prep Batch: 588737 %Rec.

**RPD** Limits RPD Limit 75 - 125 3

Client: Haley & Aldrich, Inc. Job ID: 440-258219-1

Project/Site: Quarterly Outfall 001 Comp

Method: 245.1 - Mercury (CVAA) (Continued)

Lab Sample ID: MB 440-589977/1-C **Matrix: Water** 

Analysis Batch: 590948

MB MB

Result Qualifier ND

RL 0.20 **MDL** Unit 0.10 ug/L

Prepared

Client Sample ID: Method Blank

Analyzed Dil Fac 01/15/20 11:35 01/16/20 11:00

**Prep Type: Dissolved** 

**Prep Batch: 590663** 

**Prep Type: Dissolved** 

Prep Batch: 590663

Lab Sample ID: LCS 440-589977/2-C

**Matrix: Water** 

Analyte

Mercury

Analyte

Mercury

**Analyte** 

Mercury

Analyte

Mercury

**Analysis Batch: 590948** 

Spike Added 4.00

LCS LCS Result Qualifier 3.98

Unit ug/L

D %Rec 99

Limits 85 - 115

Client Sample ID: Matrix Spike

%Rec.

**Client Sample ID: Lab Control Sample** 

**Prep Type: Dissolved** 

**Prep Type: Dissolved** 

**Prep Batch: 590663** 

Prep Type: Total/NA

Prep Type: Total/NA

Prep Type: Total/NA

Lab Sample ID: 440-258718-A-2-H MS

**Matrix: Water** 

**Analysis Batch: 590948** 

Sample Sample Result Qualifier

ND

 $\overline{\mathsf{ND}}$ 

Spike Added 4.00

MS MS Result Qualifier 4.11

Unit D %Rec ug/L 103 **Prep Batch: 590663** %Rec. Limits

75 - 125

**Client Sample ID: Matrix Spike Duplicate** 

Lab Sample ID: 440-258718-A-2-I MSD

**Matrix: Water** 

**Analysis Batch: 590948** 

Spike Sample Sample Added Result Qualifier

MSD MSD 4.00

Result Qualifier Unit D %Rec 3.97 ug/L

%Rec. Limits 99 75 - 125

Client Sample ID: Method Blank

**RPD** RPD Limit 20

Method: 180.1 - Turbidity, Nephelometric

Lab Sample ID: MB 440-588245/5

**Matrix: Water** 

**Analysis Batch: 588245** 

MB MB

Analyte

Result Qualifier **Turbidity**  $\overline{\mathsf{ND}}$ 

**MDL** Unit RI 0.10 0.040 NTU

Prepared

D

Analyzed 12/27/19 18:11

Client Sample ID: Outfall001\_20191227\_Comp

Dil Fac

Lab Sample ID: 440-258219-1 DU

**Matrix: Water** 

Analysis Batch: 588245

**Analyte** 

Sample Sample Result Qualifier 200

DU DU Result Qualifier 191

Unit NTU **RPD** 

**RPD** Limit 20

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

Lab Sample ID: MB 440-588440/1

**Matrix: Water** 

Turbidity

**Analysis Batch: 588440** 

Analyte Total Dissolved Solids

MB MB Result Qualifier

 $\overline{\mathsf{ND}}$ 

RL MDL Unit 10

5.0 ma/L

Prepared

Analyzed 12/30/19 08:51

Client Sample ID: Method Blank

Dil Fac

Client: Haley & Aldrich, Inc.

Analysis Batch: 588440

Project/Site: Quarterly Outfall 001 Comp

Lab Sample ID: LCS 440-588440/2

Job ID: 440-258219-1

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

Client Sample ID: Lab Control Sample

**Matrix: Water** 

Prep Type: Total/NA

12/27/19 16:12

Spike LCS LCS %Rec. Added Result Qualifier %Rec Limits Analyte Unit Total Dissolved Solids 1000 100 90 - 110 996 mg/L

Lab Sample ID: 440-258259-K-14 DU **Client Sample ID: Duplicate** 

**Matrix: Water** Prep Type: Total/NA

**Analysis Batch: 588440** 

RPD DU DU Sample Sample Analyte Result Qualifier Result Qualifier Unit D RPD Limit **Total Dissolved Solids** 47 47.0 mg/L 0

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

 $\overline{ND}$ 

Lab Sample ID: MB 440-588223/1 Client Sample ID: Method Blank Prep Type: Total/NA

**Matrix: Water** 

Analyte

**Analysis Batch: 588223** 

MB MB Result Qualifier RL MDL Unit Prepared Analyzed Dil Fac

0.50 mg/L

Lab Sample ID: LCS 440-588223/2 **Client Sample ID: Lab Control Sample** Prep Type: Total/NA

1.0

**Matrix: Water** 

**Total Suspended Solids** 

**Analysis Batch: 588223** 

Spike LCS LCS %Rec. Added Analyte Result Qualifier Unit D %Rec Limits Total Suspended Solids 1000 969 mg/L 97 85 - 115

Lab Sample ID: 440-258219-1 DU Client Sample ID: Outfall001\_20191227\_Comp Prep Type: Total/NA

**Matrix: Water** 

**Analysis Batch: 588223** 

Sample Sample DU DU **RPD** Result Qualifier Analyte Result Qualifier Unit ח RPD Limit **Total Suspended Solids** 190 184 mg/L

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

Lab Sample ID: MB 440-588874/1-A Client Sample ID: Method Blank **Matrix: Water** Prep Type: Total/NA **Analysis Batch: 588897** Prep Batch: 588874

MB MB

Analyte Result Qualifier RL **MDL** Unit Prepared Analyzed Dil Fac 5.0 Cyanide, Total  $\overline{\mathsf{ND}}$ 2.5 ug/L 01/02/20 10:20 01/02/20 12:52

Lab Sample ID: LCS 440-588874/2-A **Client Sample ID: Lab Control Sample** Prep Type: Total/NA

**Matrix: Water Analysis Batch: 588897** Prep Batch: 588874

Spike LCS LCS %Rec. Analyte Added Result Qualifier Unit %Rec Limits 100 Cyanide, Total 95.1 ua/L 80 - 120

Client: Haley & Aldrich, Inc. Job ID: 440-258219-1

Project/Site: Quarterly Outfall 001 Comp

Cyanide, Total

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

ND

Lab Sample ID: 440-258219-1 MS					Clie	nt Sampl	le ID:	Outfall	001_20191227_Comp
Matrix: Water									Prep Type: Total/NA
Analysis Batch: 588897									Prep Batch: 588874
_	Sample	Sample	Spike	MS	MS				%Rec.
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits

96.8

ug/L

100

Lab Sample ID: 440-258219-1 MSD Matrix: Water Analysis Batch: 588897					Clie	nt Samp	ole ID:	Outfall	001_2019 Prep Tyl Prep Ba	pe: Tot	al/NA
•	Sample	Sample	Spike	MSD	MSD				%Rec.		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Cyanide, Total	ND		100	95.3		ug/L		95	75 - 125	2	20

Method: SM 4500 NH3 G - Ammonia

Lab Sample ID: MRL 440-588582/9

Lab Sample ID: 440-258185-K-1 MS

Lab Sample ID: MB 440-588582/10						C	lient Samp	ole ID: Method	l Blank
Matrix: Water								Prep Type: To	otal/NA
Analysis Batch: 588582									
-	MB	MB							
Analyte Re	sult	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac

Ammonia (as N)	ND	0.200	0.100 Hig/L	12/30/19 13.17
Lab Sample ID: LCS 440-58 Matrix: Water	8582/11			Client Sample ID: Lab Control Sampl Prep Type: Total/N
Analysis Batch: 588582				

	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Ammonia (as N)	 5.00	5 080		ma/l	_	102	90 - 110	

Matrix: Water Analysis Batch: 588582						•	Prep Type: Total/NA
	Spike	MRL	MRL				%Rec.
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits

Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Ammonia (as N)	0.200	0.1740	J,DX	mg/L		87	50 - 150	

Matrix: Water									Prep 1y	pe: rotal/NA
Analysis Batch: 588582										
	Sample	Sample	Spike	MS	MS				%Rec.	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Ammonia (as N)	ND		5.00	5.040		mg/L		101	90 - 110	

Lab Sample ID: 440-258185 Matrix: Water	5-K-1 MSD			Client Sample ID:	•	e Duplicate e: Total/NA
Analysis Batch: 588582					- 1	
-	Sample Sample	Spike	MSD MSD		%Rec.	RPD

**Eurofins Calscience Irvine** 

2

3

5

75 - 125

**Client Sample ID: Lab Control Sample** 

**Client Sample ID: Matrix Spike** 

7

8

10

12

13

15

Client: Haley & Aldrich, Inc. Job ID: 440-258219-1

Project/Site: Quarterly Outfall 001 Comp

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

Lab Sample ID: MB 440-588210/4

**Matrix: Water** 

Analysis Batch: 588210

MB MB Result Qualifier Analyte

RL **MDL** Unit Analyzed Dil Fac Prepared Methylene Blue Active Substances 0.10 0.050 mg/L 12/27/19 15:06 ND

Lab Sample ID: LCS 440-588210/5

**Matrix: Water** 

**Analysis Batch: 588210** 

LCS LCS Spike %Rec. Analyte Added Result Qualifier Unit D %Rec Limits 0.250 0.248 mg/L 99 90 - 110 Methylene Blue Active

Substances

Lab Sample ID: MRL 440-588210/3

**Matrix: Water** 

**Analysis Batch: 588210** 

Spike MRL MRL %Rec. Analyte Added Result Qualifier Unit %Rec Limits 0.100 Methylene Blue Active 0.110 mq/L 110 50 - 150

Substances

Lab Sample ID: 440-258219-1 MS

**Matrix: Water** 

Analysis Batch: 588210

MS MS Sample Sample Spike %Rec. Result Qualifier Added Result Qualifier Analyte Unit D %Rec I imits Methylene Blue Active ND 0.250 0.257 mg/L 103 50 - 125

Substances

Lab Sample ID: 440-258219-1 MSD

**Matrix: Water** 

**Analysis Batch: 588210** 

Spike MSD MSD %Rec. **RPD** Sample Sample Result Qualifier Added Result Qualifier Unit %Rec Limits RPD Limit ND 0.250 0.256 mg/L 102 50 - 125 Methylene Blue Active

Substances

Method: SM5210B - BOD, 5 Day

Lab Sample ID: USB 440-588283/1

**Matrix: Water** 

**Analysis Batch: 588283** 

USB USB

Analyte Result Qualifier RL MDL Unit Prepared Analyzed Dil Fac Biochemical Oxygen Demand ND 2.0 0.50 mg/L 12/28/19 08:14

Lab Sample ID: LCS 440-588283/5

**Matrix: Water** 

**Analysis Batch: 588283** 

Spike LCS LCS %Rec. Analyte Added Result Qualifier Unit D %Rec Limits **Biochemical Oxygen Demand** 199 218 mg/L 85 - 115 110

**Eurofins Calscience Irvine** 

Client Sample ID: Method Blank

**Client Sample ID: Lab Control Sample** 

Client Sample ID: Lab Control Sample

Client Sample ID: Outfall001 20191227 Comp

Client Sample ID: Outfall001 20191227 Comp

Prep Type: Total/NA

Client Sample ID: Method Blank

**Client Sample ID: Lab Control Sample** 

### **QC Sample Results**

Client: Haley & Aldrich, Inc. Job ID: 440-258219-1

Project/Site: Quarterly Outfall 001 Comp

Method: SM5210B - BOD, 5 Day (Continued)

Lab Sample ID: LCSD 440-588283/6	Client Sample ID: Lab Control Sample Dup
Matrix: Water	Prep Type: Total/NA

**Analysis Batch: 588283** 

-	Spike	LCSD	LCSD				%Rec.		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Biochemical Oxygen Demand	199	220		mg/L	_	111	85 - 115	1	20

Lab Sample ID: LCSD 440-588283/7 **Client Sample ID: Lab Control Sample Dup Matrix: Water** Prep Type: Total/NA

Analysis Batch: 588283

•	Spike	LCSD	LCSD				%Rec.		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Biochemical Oxygen Demand	199	216		mg/L		109	85 - 115	1	20

Lab Sample ID: 440-258213-A-1 DU **Client Sample ID: Duplicate** Prep Type: Total/NA

**Matrix: Water** 

Analysis Batch: 588283

•	Sample	Sample	D	J DU				RPD
Analyte	Result	Qualifier	Resu	t Quali	fier Unit	D	RPD	Limit
Biochemical Oxygen Demand	2.1		2.0	7	mg/L		 0	20

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 001 Comp

**GC/MS Semi VOA** 

_	<b>—</b> • • •	
Prep	Batch:	589031

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-1	Outfall001_20191227_Comp	Total/NA	Water	625	
MB 440-589031/1-A	Method Blank	Total/NA	Water	625	
LCS 440-589031/2-A	Lab Control Sample	Total/NA	Water	625	
LCSD 440-589031/3-A	Lab Control Sample Dup	Total/NA	Water	625	

### **Analysis Batch: 589221**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-1	Outfall001_20191227_Comp	Total/NA	Water	625.1	589031
MB 440-589031/1-A	Method Blank	Total/NA	Water	625.1	589031
LCS 440-589031/2-A	Lab Control Sample	Total/NA	Water	625.1	589031
LCSD 440-589031/3-A	Lab Control Sample Dup	Total/NA	Water	625.1	589031

### **GC Semi VOA**

### **Prep Batch: 588273**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-1	Outfall001_20191227_Comp	Total/NA	Water	608	
MB 440-588273/1-A	Method Blank	Total/NA	Water	608	
LCS 440-588273/2-A	Lab Control Sample	Total/NA	Water	608	
LCSD 440-588273/3-/	A Lab Control Sample Dup	Total/NA	Water	608	

### **Analysis Batch: 588436**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-1	Outfall001_20191227_Comp	Total/NA	Water	608.3	588273
MB 440-588273/1-A	Method Blank	Total/NA	Water	608.3	588273
LCS 440-588273/2-A	Lab Control Sample	Total/NA	Water	608.3	588273
LCSD 440-588273/3-A	Lab Control Sample Dup	Total/NA	Water	608.3	588273

### HPLC/IC

### **Analysis Batch: 588133**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-1	Outfall001_20191227_Comp	Total/NA	Water	300.0	
MB 440-588133/6	Method Blank	Total/NA	Water	300.0	
LCS 440-588133/5	Lab Control Sample	Total/NA	Water	300.0	
440-258197-G-1 MS	Matrix Spike	Total/NA	Water	300.0	
440-258197-G-1 MSD	Matrix Spike Duplicate	Total/NA	Water	300.0	

### **Analysis Batch: 588134**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-1	Outfall001_20191227_Comp	Total/NA	Water	300.0	
MB 440-588134/6	Method Blank	Total/NA	Water	300.0	
LCS 440-588134/5	Lab Control Sample	Total/NA	Water	300.0	
440-258197-G-1 MS	Matrix Spike	Total/NA	Water	300.0	
440-258197-G-1 MSD	Matrix Spike Duplicate	Total/NA	Water	300.0	

### **Analysis Batch: 588445**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-1	Outfall001_20191227_Comp	Total/NA	Water	314.0	
MB 440-588445/6	Method Blank	Total/NA	Water	314.0	
LCS 440-588445/5	Lab Control Sample	Total/NA	Water	314.0	
MRL 440-588445/4	Lab Control Sample	Total/NA	Water	314.0	

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Job ID: 440-258219-1

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 001 Comp

**HPLC/IC (Continued)** 

### **Analysis Batch: 588445 (Continued)**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MRL 440-588445/8	Lab Control Sample	Total/NA	Water	314.0	
440-258138-C-1 MS	Matrix Spike	Total/NA	Water	314.0	
440-258138-C-1 MSD	Matrix Spike Duplicate	Total/NA	Water	314.0	

### **Analysis Batch: 589801**

La	ıb Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
44	0-258219-1	Outfall001_20191227_Comp	Total/NA	Water	NO3NO2 Calc	

### **Specialty Organics**

### **Prep Batch: 349535**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-1	Outfall001_20191227_Comp	Total/NA	Water	1613B	
440-258219-1 - RA	Outfall001_20191227_Comp	Total/NA	Water	1613B	
MB 320-349535/1-A	Method Blank	Total/NA	Water	1613B	
MB 320-349535/1-A - RA	Method Blank	Total/NA	Water	1613B	
LCS 320-349535/2-A	Lab Control Sample	Total/NA	Water	1613B	

### **Analysis Batch: 350522**

Lab Sample ID 440-258219-1	Client Sample ID Outfall001_20191227_Comp	Prep Type Total/NA	Matrix Water	Method 1613B	Prep Batch 349535
MB 320-349535/1-A	Method Blank	Total/NA	Water	1613B	349535
LCS 320-349535/2-A	Lab Control Sample	Total/NA	Water	1613B	349535

### **Analysis Batch: 351071**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 320-349535/1-A - RA	Method Blank	Total/NA	Water	1613B	349535

### **Analysis Batch: 351318**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-1 - RA	Outfall001_20191227_Comp	Total/NA	Water	1613B	349535

### **Metals**

### **Prep Batch: 588198**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-1	Outfall001_20191227_Comp	Total Recoverable	Water	200.2	
MB 440-588198/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-588198/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-258216-B-4-B MS	Matrix Spike	Total Recoverable	Water	200.2	
440-258216-B-4-C MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.2	

### **Prep Batch: 588241**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-1	Outfall001_20191227_Comp	Total Recoverable	Water	200.2	
MB 440-588241/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-588241/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-257890-E-6-C MS	Matrix Spike	Total Recoverable	Water	200.2	
440-257890-E-6-D MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.2	

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Job ID: 440-258219-1

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Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 001 Comp

**Metals** 

Filtration Batch: 588288

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-3	Outfall001_20191227_Comp_F	Dissolved	Water	FILTRATION	
MB 440-588288/1-C	Method Blank	Dissolved	Water	FILTRATION	
MB 440-588288/1-D	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-588288/2-C	Lab Control Sample	Dissolved	Water	FILTRATION	
LCS 440-588288/2-D	Lab Control Sample	Dissolved	Water	FILTRATION	
440-258219-3 MS	Outfall001_20191227_Comp_F	Dissolved	Water	FILTRATION	
440-258219-3 MSD	Outfall001_20191227_Comp_F	Dissolved	Water	FILTRATION	
440-258227-B-2-G MS	Matrix Spike	Dissolved	Water	FILTRATION	
440-258227-B-2-H MSD	Matrix Spike Duplicate	Dissolved	Water	FILTRATION	

**Prep Batch: 588307** 

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-3	Outfall001_20191227_Comp_F	Dissolved	Water	200.2	588288
MB 440-588288/1-C	Method Blank	Dissolved	Water	200.2	588288
LCS 440-588288/2-C	Lab Control Sample	Dissolved	Water	200.2	588288
440-258219-3 MS	Outfall001_20191227_Comp_F	Dissolved	Water	200.2	588288
440-258219-3 MSD	Outfall001_20191227_Comp_F	Dissolved	Water	200.2	588288

Prep Batch: 588503

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-3	Outfall001_20191227_Comp_F	Dissolved	Water	200.2	588288
MB 440-588288/1-D	Method Blank	Dissolved	Water	200.2	588288
LCS 440-588288/2-D	Lab Control Sample	Dissolved	Water	200.2	588288
440-258227-B-2-G MS	Matrix Spike	Dissolved	Water	200.2	588288
440-258227-B-2-H MSD	Matrix Spike Duplicate	Dissolved	Water	200.2	588288

**Analysis Batch: 588597** 

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-1	Outfall001_20191227_Comp	Total Recoverable	Water	200.8	588198
MB 440-588198/1-A	Method Blank	Total Recoverable	Water	200.8	588198
LCS 440-588198/2-A	Lab Control Sample	Total Recoverable	Water	200.8	588198
440-258216-B-4-B MS	Matrix Spike	Total Recoverable	Water	200.8	588198
440-258216-B-4-C MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.8	588198

**Analysis Batch: 588599** 

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-1	Outfall001_20191227_Comp	Total Recoverable	Water	200.7 Rev 4.4	588241
MB 440-588241/1-A	Method Blank	Total Recoverable	Water	200.7 Rev 4.4	588241
LCS 440-588241/2-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	588241
440-257890-E-6-C MS	Matrix Spike	Total Recoverable	Water	200.7 Rev 4.4	588241
440-257890-E-6-D MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.7 Rev 4.4	588241

Analysis Batch: 588634

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-3	Outfall001_20191227_Comp_F	Dissolved	Water	200.8	588503
MB 440-588288/1-D	Method Blank	Dissolved	Water	200.8	588503
LCS 440-588288/2-D	Lab Control Sample	Dissolved	Water	200.8	588503
440-258227-B-2-G MS	Matrix Spike	Dissolved	Water	200.8	588503
440-258227-B-2-H MSD	Matrix Spike Duplicate	Dissolved	Water	200.8	588503

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Job ID: 440-258219-1

Client: Haley & Aldrich, Inc.

Job ID: 440-258219-1

Project/Site: Quarterly Outfall 001 Comp

### Metals

Pren	Ratch:	588737	7

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-1	Outfall001_20191227_Comp	Total/NA	Water	245.1	
MB 440-588737/1-A	Method Blank	Total/NA	Water	245.1	
LCS 440-588737/2-A	Lab Control Sample	Total/NA	Water	245.1	
440-258077-D-1-H MS	Matrix Spike	Total/NA	Water	245.1	
440-258077-D-1-I MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	

### Analysis Batch: 588954

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-1	Outfall001_20191227_Comp	Total/NA	Water	245.1	588737
MB 440-588737/1-A	Method Blank	Total/NA	Water	245.1	588737
LCS 440-588737/2-A	Lab Control Sample	Total/NA	Water	245.1	588737
440-258077-D-1-H MS	Matrix Spike	Total/NA	Water	245.1	588737
440-258077-D-1-I MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	588737

### **Analysis Batch: 589092**

	Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
	440-258219-3	Outfall001_20191227_Comp_F	Dissolved	Water	200.7 Rev 4.4	588307
	MB 440-588288/1-C	Method Blank	Dissolved	Water	200.7 Rev 4.4	588307
	LCS 440-588288/2-C	Lab Control Sample	Dissolved	Water	200.7 Rev 4.4	588307
١	440-258219-3 MS	Outfall001_20191227_Comp_F	Dissolved	Water	200.7 Rev 4.4	588307
	440-258219-3 MSD	Outfall001_20191227_Comp_F	Dissolved	Water	200.7 Rev 4.4	588307

### Filtration Batch: 589977

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-3	Outfall001_20191227_Comp_F	Dissolved	Water	FILTRATION	
MB 440-589977/1-C	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-589977/2-C	Lab Control Sample	Dissolved	Water	FILTRATION	
440-258718-A-2-H MS	Matrix Spike	Dissolved	Water	FILTRATION	
440-258718-A-2-I MSD	Matrix Spike Duplicate	Dissolved	Water	FILTRATION	

### **Prep Batch: 590663**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-3	Outfall001_20191227_Comp_F	Dissolved	Water	245.1	589977
MB 440-589977/1-C	Method Blank	Dissolved	Water	245.1	589977
LCS 440-589977/2-C	Lab Control Sample	Dissolved	Water	245.1	589977
440-258718-A-2-H MS	Matrix Spike	Dissolved	Water	245.1	589977
440-258718-A-2-I MSD	Matrix Spike Duplicate	Dissolved	Water	245.1	589977

### **Analysis Batch: 590948**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-3	Outfall001_20191227_Comp_F	Dissolved	Water	245.1	590663
MB 440-589977/1-C	Method Blank	Dissolved	Water	245.1	590663
LCS 440-589977/2-C	Lab Control Sample	Dissolved	Water	245.1	590663
440-258718-A-2-H MS	Matrix Spike	Dissolved	Water	245.1	590663
440-258718-A-2-I MSD	Matrix Spike Duplicate	Dissolved	Water	245.1	590663

### **General Chemistry**

### **Analysis Batch: 588210**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-1	Outfall001_20191227_Comp	Total/NA	Water	SM 5540C	<u> </u>

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Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 001 Comp

### **General Chemistry (Continued)**

### **Analysis Batch: 588210 (Continued)**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 440-588210/4	Method Blank	Total/NA	Water	SM 5540C	
LCS 440-588210/5	Lab Control Sample	Total/NA	Water	SM 5540C	
MRL 440-588210/3	Lab Control Sample	Total/NA	Water	SM 5540C	
440-258219-1 MS	Outfall001_20191227_Comp	Total/NA	Water	SM 5540C	
440-258219-1 MSD	Outfall001_20191227_Comp	Total/NA	Water	SM 5540C	

### **Analysis Batch: 588223**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-1	Outfall001_20191227_Comp	Total/NA	Water	SM 2540D	
MB 440-588223/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 440-588223/2	Lab Control Sample	Total/NA	Water	SM 2540D	
440-258219-1 DU	Outfall001_20191227_Comp	Total/NA	Water	SM 2540D	

### Analysis Batch: 588245

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-1	Outfall001_20191227_Comp	Total/NA	Water	180.1	
MB 440-588245/5	Method Blank	Total/NA	Water	180.1	
440-258219-1 DU	Outfall001_20191227_Comp	Total/NA	Water	180.1	

### **Analysis Batch: 588283**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-1	Outfall001_20191227_Comp	Total/NA	Water	SM5210B	
USB 440-588283/1	Method Blank	Total/NA	Water	SM5210B	
LCS 440-588283/5	Lab Control Sample	Total/NA	Water	SM5210B	
LCSD 440-588283/6	Lab Control Sample Dup	Total/NA	Water	SM5210B	
LCSD 440-588283/7	Lab Control Sample Dup	Total/NA	Water	SM5210B	
440-258213-A-1 DU	Duplicate	Total/NA	Water	SM5210B	

### **Analysis Batch: 588440**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-1	Outfall001_20191227_Comp	Total/NA	Water	SM 2540C	
MB 440-588440/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 440-588440/2	Lab Control Sample	Total/NA	Water	SM 2540C	
440-258259-K-14 DU	Dunlicate	Total/NA	Water	SM 2540C	

### **Analysis Batch: 588582**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-1	Outfall001_20191227_Comp	Total/NA	Water	SM 4500 NH3 G	
MB 440-588582/10	Method Blank	Total/NA	Water	SM 4500 NH3 G	
LCS 440-588582/11	Lab Control Sample	Total/NA	Water	SM 4500 NH3 G	
MRL 440-588582/9	Lab Control Sample	Total/NA	Water	SM 4500 NH3 G	
440-258185-K-1 MS	Matrix Spike	Total/NA	Water	SM 4500 NH3 G	
440-258185-K-1 MSD	Matrix Spike Duplicate	Total/NA	Water	SM 4500 NH3 G	

### **Prep Batch: 588874**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-1	Outfall001_20191227_Comp	Total/NA	Water	Distill/CN	·
MB 440-588874/1-A	Method Blank	Total/NA	Water	Distill/CN	
LCS 440-588874/2-A	Lab Control Sample	Total/NA	Water	Distill/CN	
440-258219-1 MS	Outfall001_20191227_Comp	Total/NA	Water	Distill/CN	
440-258219-1 MSD	Outfall001 20191227 Comp	Total/NA	Water	Distill/CN	

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Job ID: 440-258219-1

Client: Haley & Aldrich, Inc.

Job ID: 440-258219-1

Project/Site: Quarterly Outfall 001 Comp

### **General Chemistry**

### **Analysis Batch: 588897**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-1	Outfall001_20191227_Comp	Total/NA	Water	SM 4500 CN E	588874
MB 440-588874/1-A	Method Blank	Total/NA	Water	SM 4500 CN E	588874
LCS 440-588874/2-A	Lab Control Sample	Total/NA	Water	SM 4500 CN E	588874
440-258219-1 MS	Outfall001_20191227_Comp	Total/NA	Water	SM 4500 CN E	588874
440-258219-1 MSD	Outfall001_20191227_Comp	Total/NA	Water	SM 4500 CN E	588874

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### **Definitions/Glossary**

Client: Haley & Aldrich, Inc. Job ID: 440-258219-1

Project/Site: Quarterly Outfall 001 Comp

### Qualifiers

001	MC	C	MOA
GC/	IVI 5	Semi	VOA

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

LG LG=Surrogate recovery below the acceptance limits

LG LG=Surrogate recovery below the acceptance limits
MB Analyte present in the method blank

**Qualifier Description** 

**HPLC/IC** 

Qualifier

Qualifier Qualifier Description

BB Sample > 4X spike concentration

EY Result exceeds normal dynamic range; reported as a min. est.

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

**Dioxin** 

Qualifier Qualifier Description

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.

**Metals** 

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

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

**General Chemistry** 

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

### **Glossary**

Abbreviation	These commonly used abbreviations may or may not be present in	n this report
ADDIEVIALIOII	THESE COMMINDING USED ADDIEVIATIONS MAY OF MAY HOLDE DIESEMENT	

Example 2 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.

Job ID: 440-258219-1

Project/Site: Quarterly Outfall 001 Comp

### **Laboratory: Eurofins Calscience Irvine**

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

Authority California		ogram ate Program	Identification Number CA ELAP 2706	Expiration Date 06-30-20
The following analyte	s are included in this repo	ort, but the laboratory is r	not certified by the governing authority.	This list may include analytes for which
the agency does not	offer certification.	·	, , ,	,

### Laboratory: Eurofins TestAmerica, Sacramento

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	01-20-21
ANAB	Dept. of Defense ELAP	L2468	01-20-21
ANAB	Dept. of Energy	L2468.01	01-20-21
ANAB	ISO/IEC 17025	L2468	01-20-21
Arizona	State	AZ0708	08-11-20
Arkansas DEQ	State	19-042-0	06-17-20
California	State	2897	01-31-20 *
Colorado	State	CA0004	08-31-20
Connecticut	State	PH-0691	06-30-21
Florida	NELAP	E87570	06-30-20
Georgia	State	4040	01-29-20 *
Hawaii	State	<cert no.=""></cert>	01-29-20 *
Illinois	NELAP	200060	03-17-20
Kansas	NELAP	E-10375	10-31-20 *
Louisiana	NELAP	01944	06-30-20
Maine	State	2018009	04-14-20
Michigan	State	9947	01-29-20 *
Michigan	State Program	9947	01-31-20
Nevada	State	CA000442020-1	07-31-20
New Hampshire	NELAP	2997	04-18-20
New Jersey	NELAP	CA005	06-30-20
New York	NELAP	11666	04-01-20
Oregon	NELAP	4040	01-29-20 *
Pennsylvania	NELAP	68-01272	03-31-20
Texas	NELAP	T104704399-19-13	05-31-20
US Fish & Wildlife	US Federal Programs	58448	07-31-20
USDA	US Federal Programs	P330-18-00239	07-31-21
Utah	NELAP	CA000442019-01	02-29-20
Vermont	State	VT-4040	04-16-20
Virginia	NELAP	460278	03-14-20
Washington	State	C581	05-05-20
West Virginia (DW)	State	9930C	12-31-19 *
Wyoming	State Program	8TMS-L	01-28-19 *

**Eurofins Calscience Irvine** 

1/21/2020 (Rev. 1)

<sup>\*</sup> Accreditation/Certification renewal pending - accreditation/certification considered valid.

440-258219 Chain of Custody

Z Hell	Client Name/Address;									۲	۲	2	ANALY	ANALYSIS REQUIRED	UIRED				
Haley & 5333 Mis San Dieg	Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108	Q				B	Project: Boeing-SSFL NPDES Permit 2019	DES				, V			0.000				
Test Am 17461 D Irvine CA Tel 949- Cell 949	Test America Contact: Unvashi Patei 17461 Derian Ave Suite #100 Irvine CA 92614 Tel 949-280-3259 Cell 949-333-9055	ate			1	Quarterly	Quarteny Ouffail (901, 002, 011, 018) Ouffail 001 Comp	72, 011, 018]		e; :si	rs) (E1813B)	46-4, NO3+NO2-1 156-4, NO3+NO2-1	OC/E1801)		luene, Bis(2-	US: Mercury (E245	: 91	West Constitution of the C	Comments
TestAmerica Service Agre	TresAmerica's services under this COC chait be performed in accordance with the TSCs within Blankel. Service Agents 2019-22-12 and Cock and Deliveon Haley & Addich, Inc. its subsidiaries and streams and Teneskand Coll is Cock and Cock and Deliveon Haley & Addich, Inc. its subsidiaries and streams and Teneskand Coll is Cock and Cock and Deliveon Haley & Addich, Inc. its subsidiaries and	performed in accordan- ind between Haley & Atc	toe with the T&Cs within drich, Inc its subsidiari	Blanket es and		Project	Project Manager: Kath	Katherine Miller		e Meta		ılıN N−	OÞ9ZWS		otortini		93( ពស្ត ខាស់ស្គា ១		
Sampler	: Dan Smith					Field I 978.234	Field Manager: Mark Dominick 978.234.5033, 818.599.0702 (cell)	Dominick 10702 (cell)		: Cn' bp		edsstil/i,	e) sat ,		P, 2,4 D		idene voo		
Sample Description	on Sample I.D	Ö	Sampling Date/Time	Sample me Matrix	te x Container Type	**	Preservative	Bottle #	GSW/SW	Total Re (E200.7) (8.005)	s) daot Bods (2 (SMS)30		Turbidity	031) SST sinommA	-18-siqle -27.4,6 TC		(7 0053) (7 0053)		
				WW	500 mL Poly	-	HNO3	95	2	×				<del> </del>		×	×		Cauthour and vindage of the Fernanda Community
				₩.	1 L Glass Amber	2	None	110	N		×	<u>                                     </u>	_						
	-			W	11. Poly	-	None	115	No.		×	<u> </u>							
Pa				WW	500 mL Poly	2	Моле	120	No.			×							
ge	Outfall001_20191227_Comp	227_Сопр	, e1027Z1Z1Z1	WW	500 mt. Poly	2	None	130	oN.			×							48 hours Holding Time NO <sub>3</sub> & NO <sub>3</sub>
37				Z vww	500 mL Poly	-	Моле	150	No				×						48 hours Holding Time for Turbidity
Outrail 00.	-		•	WM	500 mL Poly	-	H-SO4	160	No.					×					
48				WW	1 L Glass Amber	2	None	. 021	No						×				
₹				W	1 L Glass Amber	2	None	981	No						×				
				X	1L Poty		None	185	NO.	_				×					
				WW	1 L Glass Amber	2	None	110	No.		ı								Hold
				WM	500 mL Poly	2	None	120	No			I							Hold
-	Outfall001_20191227_Comp_Extra	Comp Extra	610272721	MA.	500 mL Poly	2	None	130				I							Нога
			77.0	3.5	1 L Glass Amber	2	None	170	No.						ı				Hold
			2	Z MMM	1 L Glass Amber	2	None	180	No										Hold
(		4		Lec	Legend: A=Annual, C=Conditional, EP≃E	II, C=Conditio	nal, EP=Expe	xpert Panel, R=Routine,	outine, Q=Quart	Q=Quarterly, QRSW=Quarterly Receiving Water, S=Semi-Annual	W≕Quarte	rly Receiv	ing Water	, S≕Semi	Annual	1			
1	Jan	12/21/19	9 Bits		HALE Y	HALEY & ALDRICH	<u>중</u>	Kecewed By	1	Satestime.	5//2	syll?	1	15/18	>	Turn-arou 24 Hour. 48 Hour.	nd time: (	Check) 72 Hour: 5 Day:	10 Day:X
Refinquish	The state of the s	Date/Time:	61/		Company:	_	20	Received By		Date/Time	6	***************************************				Sample	itegrity: (C	ock)	On loe
Relinquished By	ed By	Date/Time:			Company			Received By	The state of the s	Date/Time	A	NZI	3	27	20	Store sample Data Requir	Store samples for 6 months.  Data Requirements: (Check) No Level IV:		All Level IV:X
2020					***	***			+				1:4	1		20	8-		1.3/1.6 1894
) (Rev	) (Rev						12/21	07 PI/FS	_					_		•			_
2019-202 Version 1	O Rainy Season	440-25827	440-258219 Chain of Cristody				•												

O œ

**CHAIN OF CUSTODY FORM** 

Test America

Company   Comp	1   Chair Article   Chair Port   Chair Article   Cha	1   1   1   1   1   1   1   1   1   1	12   12   12   12   12   12   12   12	Color   Colo	ğ.	Ollent Name/Address:											ALYSIS R	ANALYSIS REQUIRED	ED			L	
Control   Cont	Control   Cont	11 Class Antice   2	Comparison   Com	Company of the control of the cont	raley & Aldrich 5333 Mission Ce San Diego, CA 9	naley & Algrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108				Boe	Project: sing-SSFL NPD Permit 2019	S			otal	)' K-40'		(80			·		
11 Class Anther   2	1   Column   Column	11 Class Anther   2	Communication   Communicatio	Comparison of the first control of the first cont		Test America Contact: Unvashi Patel 17461 Detian Ave Suite #100 Invine CA 92614 Tel 949-260-3269 Cell 948-333-9056				Quarterly O	utfall [001, 002 Outfall 001 Comp	,011,018]			.0063)steB escv5 rT ,(0.8063) 08-\2	(0.809∃) muinsiU (1.10			:		(E252 S)	<del> </del>	Comments
11 Class Arber   2	1   Pay   1	11   Pay   1   Norm   250   N		The control of the		s under this CoC shall be performed in accordance wit by and between Haley & Aldrich, Inc., its subsidiaries of	th the T&Cs within Blanket Service Ag-	eemente		Project N	lanager: Kathe	rine Miller 6944 (cell)			(0.000	.0 t E9(			<del>cos</del> Metals	Yara aya	nonise		
1227/2016   1   1   1   1   1   1   1   1   1	Sample   Contact   Type   T	Sample Debortion   Sample   Container Type   a of Container Type				Smith		$\prod$		Field M	anager: Mark L	Jominick		uz:	93) (E-H	3) 853 (E901 (			pevios	D.p. 108	(G, 20)		
VAM         11 Poy         11 Poy         11 Poy         11 Poy         11 Poy         11 Poy         12 Poy         12 Poy         14 Nore         250 · No         No         X         X         X         X           VAM         11 Casas Anther         2         Nore         250 · No         No         X<	132772019	WM	201,2015727, Comp. F. 12777079 J. Wal 1, 1. Page 1, Page 1, 1. Pag	200   10   10   10   10   10   10   10		Semple I.D.	Semping Date/Time	Sample	Container Type	# of Cont	Preservative	Bottle #	GSWSW	(ES00 1)	IA aeonĐ	CS-137 (			eiG latoT	oct atol	СЫогруп	······································	
122772019	122772019   WAM   1, Pay   1   None   200   No   X   X   X   X   X   X   X   X   X	122770019   WM	201,201,201,201,201,010, 1	1		Series Control of the		AW.	1 L Poly	-	None	l	£						×			Filter and lab at OF	d preserve with 24hrs of receipt 2011,002,011, or 018.
122772019  VM 11. Class Arrber 2 Name 220 · No	122772019 WM 1.1 Chass Arriber 2 Norre 220 · No	122772019	201, 2019 1227, Comp. 37  2019 2019 1227, Co	201_2019 577_Com_F F				WW	500 ml. Poly	-	HNO3	80	δ.						×				et OF001,002,011, or 018.
WM   1 Class Arrber   2   Name   250	WM         11 Class Anther         2         None         220 ·         No         X         X           VMM         500 nit Poby         1         None         220 ·         No         X         X         X           VMM         1. Class Anther         1         None         225 ·         No         X         X         X           VMM         1. Class Anther         2         None         235 ·         No         X         X         X           VMM         1. Class Anther         2         HCI         275 ·         No         X         X         X	VW   1 Claus Anther   2   None   220   No     No   No     No     No     No     No     No     No     No     No   No   No     No   No   No     No	WM   1   Case Arrive   2   Note   220   No   No   No   No   No   No   No   N	Wild   1 Cases Anther   2   Note   250   No   No   No   No   250   No   No   No   250   No   No   No   250   No   No   No   250   No   No   250   No   No   No   250   No   No   250   No   No   No   250   No   No   No   250   No   No   No   No   No   No   No   N		Outfelk01_2019127_Comp_F	16102172121	MA.	1l. Poly	-	None		<u>8</u>	×						×		Tifer and with en Oi- Cultain Co-	
VMM         Documentation vieta         1         Number easienty DO NOT OFFIX BASE         No.         X         No.         Description of the proper of the cory Prepriety DO NOT OFFIX BASE           VMM         2.5 Gal Cube         1         Norm         2.25 · No         No         X         Unfiltered and unpreserved analysis of your orders and worknown.           VMM         1.1 Gals Cube         6         Norm         2.25 · No         No         Available of the contraction of the properties of the p	WM Scored cate visits         1 Notre         320 · No         No         X         A second cate visits	VM   Docosical value   1   Note   220   No   No   No   No   No   No   No   N	Will   Scotle Box   Will   Will   Scotle Box   Will   Will   Scotle Box   Will   Will   Scotle Box   Will   W	12   20   12   12   12   13   14   15   15   15   15   15   15   15					1 L Glass Amber	61	None	ŀ	S.					1/3				Chlordan dlefdfn,P or 018.	e, DDD, DDE, DDT, CBs,toxaphere at OF001,002
WM         S50 mL Pay         1         Name         220 ·         No         X         R           1227/2019         VM         1. Cleass Anther         1         None         225 ·         No         X         R           VM         1. Cleass Anther         2         HCI         275         No         L           VM         1. Cleass Anther         2         HCI         275         No         L	122772019  WM 1.1 Gless Amber 2 HCI 225 · No X  WM 1.1 Cless Amber 2 HCI 275 · No X  WM 1.1 Cless Amber 2 HCI 275 · No X  WM 1.1 Cless Amber 2 HCI 275 · No X  WM 1.1 Cless Amber 2 HCI 275 · No X  WM 1.1 Cless Amber 2 HCI 275 · No X  WM 1.1 Cless Amber 2 HCI 275 · No X  WM 1.1 Cless Amber 2 HCI 275 · No X  WM 1.1 Cless Amber 2 HCI 275 · NO X  WM 1.1 Cless Amber 2 HCI 275 · NO X  WM 1.2 Cless Amber 2 HCI 275 · NO X  WM 1.2 Cless Amber 2 HCI 275 · NO X  WM 1.2 Cless Amber 2 HCI 275 · NO X  WM 1.2 Cless Amber 2 HCI 275 · NO X  WM 1.2 Cless Amber 2 HCI 275 · NO X  WM 1.2 Cless Amber 2 HCI 275 · NO X  WM 1.2 Cless Amber 2 HCI 275 · NO X  WM 1.2 Cless Amber 2 HCI 275 · NO X  WM 1.2 Cless Amber 2 HCI 275 · NO X  WM 1.2 Cless Amber 2 HCI 275 · NO X  WM 1.2 Cless Amber 2 HCI 275 · NO X  WM 1.2 Cless Amber 2 HCI 275 · NO X  WM 1.2 Cless Amber 2 HCI 275 · NO X  WM 1.2 Cless Amber 2 HCI 275 · NO X  WM 1.2 Cless Amber 2 HCI 275 · NO X  WM 1.2 Cless Amber 2 HCI 275 · NO X  WM 1.2 Cless Amber 2 HCI 275 · NO X  WM 1.3 Cless Amber 2 HCI 275 · NO X	VMM   15.00 Fig. 25   No	Note   1   Note   N	12/2/12/4 9440		,		-	borosilicate viels	-	None	320	8				×					Sample ra to be ope procedum	eceiving DO NOT OPEN BAG aned in Mercury Prep using clear es.
1227/2019 WM 1. Cleass Amber 1 None 255 · No	127772019 WM 1. Cleass Amber 1 None 225 · No	122772319   WM   1. Class Anther   1   None   225   No	1001_2016727_Comp	1277/2019  127/2				WW	500 mL Poly	-	HOBN	520	No ON		×			-					
122770219 WM 11 Galcube 6 None 230 No 712.  WM 1. Class Amber 2 HC 276 No 712.	1227/10319	1227/2019 WM 1 L Glass Amber 1 None 230 No	12   2   2   2   2   2   2   2   2   2	12/2/2/2/2   100				WW	2.5 Gai Cube	+	None		No		,							Unfiltered	d and unpreserved analysis.
WM 1. Class Anther 2 HCI 275 No	WM 1. Class Anther 2 HC; 275 No	Company:   Can Cube   6   None   235   No   1.0   Cass Anther   2   Hot   275   No   1.0   Cass Anther   2   Hot   275   No   1.0   Cass Anther   2   Hot   Cass Anther   2   Hot   275   No   1.0   Cass Anther		12/27/2019 Congrange			122772019		1 L Glass Amber	1	None		No		< 							Analyze d	diplicate, not MS/MSD.
11. Class Amber 2 HCI 275 Re	da da	WM   1 Class Anther   2 HC  275 No.   No	Date/Times    Company   Co	Legend: Advinual, C=Conditional, EP-Expert Panel, Refloutine, O=Cystrenty, ORSW-Cuarterly Receiving Water, S=Semi-Annual    2/27/2014 OR4V		Outla@01_20191227_Comp	Ki	WW	1 Gal Cube	æ	None	235	2	·		13	7			***************************************		Only teal the year Venture,	d if first or second ram even Deliver to A&C Lebs in , C.A.
		Legend: A=Annual, C=Conditional, EP=Expert Panel, Received By    Company   C	2/27/2014 0940   HALEY APLDAICH   Received by Company   12/27/2014 0940   HALEY APLDAICH   Received by Company   12/27/2014 0940   HALEY APLDAICH   HALEY APLDAICH   Hamel Received by Company   12/27/2014   HALEY APLDAICH   HALEY APLDAICH   Hamel Check	Legand: Adhmusi, Conditional, EP-Expert Panel, Received by Coursery, ORSVEQuarterly, Receiving Water, S-Semi-Annual   2/27/2014 09440		**		<del>                                     </del>	1. Glass Amber	2	Ÿ	275	R2.								ġ:	Extract w	iffin 24-Hours of sampling at V
		Legend: A-Annual, C-Conditional, EP-Expert Panel, R-Routine, Q-Quarterty, QRSW-Quarterty Receiving Water, S-Semi-Annual  Company  HALEY GALDAICH  10 27 / 1 CG 45  48 Hour 5 Day.  Normal:	Describing Company.    2/27/2019 09410   All LDAICH   Received by   DaterTime.   Da	Legend: A-Annual, C-Conditional, EP-Expert Panel, Reserved by Congarterly, ORSW-Quarterly Receiving Water, S-Semi-Annual  12/2/12/12/14 OR4V  ALDAICH  Received by Congarier (Congary)  Company  Company  ALDAICH  Received by Congary  Company  ALDAICH  Received by Congary  Company  Company  Company  ALDAICH  Received by Congary  Company  TA IV (ALDAICH  Received by Congary  Company  All tenel IV. X  All tenel IV. X																	in the second		
		Legend: A=Annual, C=Conditional, EP=Expert Panel, R=Routine, Q=Qyarterty, QRSW=Quarterty Receiving Water, S=Semi-Annual  Turn-around time; (Check)  ARCHARGE A PAIL TO POLY  AS Hour 10 Day.  AS Hour 5 Day.  Normail	Describing Company.    Contract   Company   Co	Date/Times  Company    2/2/2014 OR40	1 1																		
		Legend: A-Annual, C=Conditional, EP=Expert Panel, R=Routine, Q=Quarterly, QRSW=Quarterly Receiving Water, S=Semi-Annual Company  HALEY A PLD PICH  10 Pay  12 / 21 / 1 CG 4/5  12 / 27 / 1 CG 4/5  12 / 27 / 1 CG 4/5  13 / 27 / 1 CG 4/5  14 Hour  10 Day  Normal:	Legend: A=Annual, C=Conditional, EP=Expert Panel, Received by Castw-Quarterly, GRSW-Quarterly, Receiving Water, S=Semi-Annual  12/27/2014 0940 HALL ALL ALL ALL ALL ALL ALL ALL ALL ALL	DateTing Company.  Legend: A=Annual, C=Conditional, EP=Expert Panel, R=Routine, Q=Quarterly, QRSW=Quarterly, Receiving Water, S=Semi-Annual  Legend: A=Annual, C=Conditional, EP=Expert Panel, R=Received by Delettine Company.  Delettine  Company.  Delettine  Company.  Company.  Company.  Company.  Delettine  Company.  Delettine  Company.  Delettine  Company.  Delettine  Company.  All Level IV.																			
Legend: A-Annual, Ca-Conditional, EP-Expert Panel, Rateoutine, Q-Squarterty, QRSW-Quarterty, Receiving Water, S-Semi-Annual  Company,  HALEY A PLDPICH  Received by  Received by  A STATIT CG VS  24 Hour 77 Hour 10 Day.  As Hour 5 Day.  Normal:  Company  A STATIT CG VS  A State 5 Day.  Normal:  Company  A STATIT CG VS  A State 6 Day.  Normal:  Company  A STATIT CG VS  A State 6 Day.  Normal:  Company  Compa	Received By Date/Time. Sample Integrity. (Check)						Constant is						OF		λV	2	=3		e samples a Requiren Level IV:	ion o mon	uns. ack) All Level	- 1	ļ

CHAIN OF CUSTODY FORM

Pressession RAGE 2 of 2

Test America

# Environment Testing Testing TostAmerica

### Chain of Custody Record

Eurofins TestAmerica, Irvine 17461 Derian Ave Suite 100

Irvine, CA 92614-5817 Phone: 949-261-1022 Fax: 949-260-3297

Client Information (Sub Contract Lab)				Pate	Patel, Urvashi	. <u> </u>				E.		·/alac. B		440-150639.1	τ.	
Client Contact:	Phone:			E-Mail:						S	State of Origin:	1		Page:		
Company:				nrva	urvashi patei@testamericainc.com	@test	merica	IIIC.COI	٤.	٩	California			Page 1 of 1		
TestAmerica Laboratories, Inc.					Accreations Required (See note): State Program - California	rogram	quired (S	ee note) ornia						Job #: 440-258219-1	-	
Address: 13715 Rider Trail North,	Due Date Requested: 1/9/2020	:pa						Ana	Vsis	Regn	Analysis Reguested			Preservation Codes	Codes:	
City. Earth City State, Ztp: MO, 63045	TAT Requested (days	ays):											1000000	B - NaOH C - Zn Acetate D - Nitric Acid	M - Hexane N - None O - AsNaO2 P - Na2O4S	ле 502 45
Phoe: 314-298-8566(Tel) 314-298-8757(Fax)	#O###				(0)		_							F - NaHSO4 F - MeOH G - Amchior H - Ascorbic Acid		Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate
LINGUE	***					-				,-				-		96
Project Name: Boeing NPDES SSFL outfalls	Project #: 44009879									muitinT			aeniet	Contract Contract	W - pH 4-5 Z - other (specify)	5 specify)
Site:	:#XOOSS					-				dsng			403 jc	Other:		
Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (w=water, S=solid, O=wastefoil, BT=Tissue, A=Air)	Field Filtered S Perform MS/M	901.1_Cs/Fill_Ge A01R_U/ExtChro	900.0/Evaporatio	903.0/PrecSep_2 904.0/PrecSep_0	905_S190IPrecSe	_1sid_D&L\0.806			o 1edmuM IstoT		Special Instructions/Note-	Note.
		X	Preservation Code:	on Code:	$\stackrel{\times}{\sim}$							100 100 100				
Outfall001_20191227_Comp (440-258219-1)	12/27/19	07:25 Pacific		Water		×	×	×	×	×			2	*	Boeing SSFL; DO NOT FILTER; use prep	ER; use prep
						-				+	L	-		date from preservation	ervation	
						-				+	1		SP AUG			
								-								
													2.5			
													2050 2050 2050 2050 2050 2050 2050 2050			
Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica 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 state of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica.	merica places the ownership latrix being analyzed, the sa nt to date, return the signed	of method, ar mples must be Chain of Cust	nalyte & accredit s shipped back to ody attesting to s	ation complian the Eurofins '	ce upon o FestAmeri ce to Euro	nt subco ca labora fins Tesi	ntract lab itory or o America	oratories ther instr	. This suctions	ample s will be p	npment is footided. An	orwarded ur	der chain-c accreditat	f-custody. If the Is on status should t	iboratory does ni e brought to Eur	of our ently of fins
Possible Hazard Identification					Sam	ole Dis	posal	(A fee	may t	e asse	ssed if s	amples	ire retain	Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)	n 1 month)	
Unconfirmed						Retur	Return To Client	lient	Ц	$\Box_{Disp}$	Disposal By Lab	ab	Arc	Archive For	Months	·
Deliverable Requested: I, II, III, IV, Other (specify)	Primary Deliverable Rank: 2	ble Rank: 2			Spec	al Inst	Special Instructions/QC Requirements	S/QC R	equire	ments:						
Empty Kit Relinquished by:		Date:			Time:				1		Method o	Method of Shipment.				
Relinquished by:	Date/Time:		ŭ	Company	2VI	Received by	1		1			Date/Time:	31.8	2, 2	Company	E
Relinquished by:	Date/Time:		ŏ	Company	œ	Received by	) So					Date/Time			Company	
Reinquished by:	Date/Time:		ŏ	Company	œ	Received by	oy:			ŀ		Date/Time	ài		Company	
Custody Seals Intact: Custody Seal No.:					Ö	ooler Ter	Cooler Temperature(s) °C and Other Remarks.	e(s) oC a	nd Othe	Remar						
					1				1							0.04

Ver: 01/16/2019

Company Orl

825

11/28/19

eceived by

Company

0.0

and

Cooler Temperature(s) °C and Other Remarks.

Received by:

Company

## eurofins

Chain of Custody Record

Eurofins TestAmerica, Irvine

17461 Derian Ave Suite 100

Irvine, CA 92614-5817

Environment Testing TestAmerica

Change   Control Con	Patel, Urvashi	440-150636.1
Due Date Requested:   19/2020     19/202	State of Origin: urvashi.patel@testamericainc.com California	Page 1 of 1
19/2020   TAT Requested (days):   19/2020   TAT Requested (days):   19/2020   TAT Requested (days):   19/2020   TAT Requested (days):   19/2020	Accreditations Required (See note). State Program - California	Job #: 440-258219-1
TAT Requested (days):   Sacramento   Dot #:	Analysis Requested	ion Code
73-5600(Tel) 916-372-1059(Fax)  Nome:  Nome:  Robert #:  Robert #:	sletoT	A - TOL M - Hasare B - NaOH N - Nane C - Zn Acetale O - AsNaO2 D - Ninn Acid P - Na2SO3 E - NaHSO4 Q - Na2SO3
Name:   No #:   No #	_ [M ]S[7]	Acid
ing NPDES SSFL outfalls		I - Ice J - Di Water
Sample Identification - Client ID (Lab ID)  Sample Date Time G=grab)  Sample Of C=comp, G=weater, G= G=grab)  Sample Of Date Time G=grab (W=water, G=grab (W=water, G=grab (W=water))  Sample Of Date Time G=grab (W=water)  Sample		K - EDTA W - pH 4-5  L - EDA Z - other (specify)
Sample Matrix et al.   Sample Date Sample Date Sample Date Date Date Date Date Date Date Dat		Other:
1) Preservation Code: XX	C. C. C. B. P. C.	Total Number Special Instructions/Note:
12/27/19 07:25 Water Pacific		
	×	See QAS, Boeing _w/u to zero, ug/L; Use Boeing glassware.

Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)

Return To Client Disposal By Lab Archive For Mon ethod of Shipment Special Instructions/QC Requirements: Time: Primary Deliverable Rank: 2 Date: beliverable Requested: I, II, III, IV, Other (specify) Possible Hazard Identification Empty Kit Relinquished by:

Date/Time: 364 Kenner Custody Seals Intact: Custody Seal No. danshed by: yd baysingr

Page 40 of 48

nquished by:

### **Login Sample Receipt Checklist**

Client: Haley & Aldrich, Inc.

Job Number: 440-258219-1

Login Number: 258219 List Source: Eurofins Irvine

List Number: 1

Creator: Soderblom, Tim

Creator. Souerbiolii, Tilli		
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	
s 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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14

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### **Login Sample Receipt Checklist**

Client: Haley & Aldrich, Inc. Job Number: 440-258219-1

Login Number: 258219 List Source: Eurofins TestAmerica, Sacramento

List Number: 3 List Creation: 12/28/19 11:10 AM Creator: Guzman, Juan

Creator: Guzman, Juan		
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	Seal present with no number.
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	1.3c
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").	True	
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. Job ID: 440-258219-1

Project/Site: Quarterly Outfall 001 Comp

### Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water Prep Type: Total/NA

**TCDF** 

PeCDD

**TCDD** 

Percent Isotope Dilution Recovery (Acceptance Limits)

**PeCF** 

HxCDD

HxDD

**PeCDF** 

Lab Sample ID	Client Sample ID	(25-164)	(24-169)	(25-181)	(24-185)	(21-178)	(32-141)	(28-130)	(26-152)	
440-258219-1	Outfall001_20191227_Comp	60	61	61	62	67	66	57	63	
440-258219-1 - RA	Outfall001_20191227_Comp		66							
MB 320-349535/1-A	Method Blank	63	65	69	68	74	75	64	73	
MB 320-349535/1-A - RA	Method Blank		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)		
440-258219-1	Outfall001_20191227_Comp	54	59	58	57	57	63	54		
440-258219-1 - RA	Outfall001_20191227_Comp									
MB 320-349535/1-A	Method Blank	62	67	66	64	64	71	63		
MB 320-349535/1-A - RA	Method Blank									

### **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

11-ODE 400 4 0 0 4 0 7 0 11-ODE

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 320-349535/2-A	Lab Control Sample	64	65	69	66	73	74	60	69
			Perc	ent Isotope	Dilution Re	ecovery (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 320-349535/2-A	Lab Control Sample	61	65	64	62	63	71	62	

### **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

**Eurofins Calscience Irvine** 

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**HxCDF** 

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### **Isotope Dilution Summary**

Client: Haley & Aldrich, Inc.

OCDD = 13C-OCDD

Project/Site: Quarterly Outfall 001 Comp

HxDF = 13C-1,2,3,6,7,8-HxCDF HxCF = 13C-1,2,3,7,8,9-HxCDF13CHxCF = 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 Job ID: 440-258219-1

### Environment Testing TestAmerica

### Sacramento Sample Receiving Notes

100000000000000000000000000000000000000	MODEL CONTRACTOR OF THE CONTRA
440,252310	

Tracking #: 1119 - 9742 - 5322

SO /@Ø / FO / SAT / 2-Day / Ground / UPS / CDO / Courier GSO / OnTrac / Goldstreak / USPS / Other\_\_\_\_\_

Job:

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations. File in the job folder with the COC.

otes:	Therm. ID: Corr. Factor: (+/-)	
	Ice Wet Gel Other_	
	Cooler Custody Seal: Scal	
	Cooler ID: 20 / 2	
		7
	Temp Observed: 1-3 °C Corrected: 1	ر ک_°c
	From: Temp Blank D Sample D	
	A STATE OF THE PARTY OF THE PAR	lo NA
	Cooler complementation and	
	Cooler Temperature is acceptable?	
	CoC is complete w/o discrepancies?	
	Samples received within holding time?	3
	Initials: J & Date: 12/28/	19
		lo NA
	Samples compromised/tampered with?	
	Sample containers have legible labels?	ם מ
	Containers are not broken or leaking?	
	Sample date/times are provided?	
	Appropriate containers are used?	
	Sample bottles are completely filled?	
	Sample preservatives verified?	
	Samples w/o discrepancies?	
	Zero headspace?*	
	Alkalinity has no headspace?	
	Perchlorate has headspace?  (Methods 314, 331, 6850)	
		-
	Multiphasic samples are not present?	ם נ

W18-A

QA-812 TGT 10/04/2019

### **Environment Testing** TestAmerica

### Sacramento Sample Receiving Notes

	Medical Sherifabal for
1	

Tracking #:	1119	9742	4311	

SO / PO / FO / SAT / 2-Day / Ground / UPS / CDO / Courier GSO / OnTrac / Goldstreak / USPS / Other\_

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations.

Therm. ID: Corr. Factor: (+1)		
NA COLUMN TO THE RESERVE OF THE PARTY OF THE		
Cooler Custody Seal:		
Temp Observed:°C Corrected: _	0.0	_°C
	1	
	No.	NA
100	D	
COO IS COMPLETE IN CALCULATION		
Samples received within holding time?		ם
Initials: 97	9	
	No	NA
Samples compromised/tampered with?	10	D
Sample containers have legible labels?		
Sample custody seal?	-	
Containers are not broken or leaking?	_ 0	
Sample date/times are provided? 占	D	
Appropriate containers are used?		
Sample bottles are completely filled?		
Sample preservatives verified?		2
Samples w/o discrepancies?		
— Zero headspace?* □	D	
Alkalinity has no headspace?	ם	D
Perchlorate has headspace?  (Methods 314, 331, 6850)	ם	D
	_ 0	
NCM Filed D		D
	Cooler Custody Seal:  Cooler ID:  Temp Observed:  From: Temp Blank Sample D  During Initial Triage  Cooler Compromised/tampered with?  Cooler Temperature is acceptable?  CoC is complete w/o discrepancies?  Samples received within holding time?  Initials:  During Labeling  Sample containers have legible labels?  Sample custody seal?  Containers are not broken or leaking?  Sample date/times are provided?  Appropriate containers are used?  Sample bottles are completely filled?  Sample preservatives verified?  Samples w/o discrepancies?  Zero headspace?*  Alkalinity has no headspace?  (Methods 314, 331, 6850)  Multiphasic samples are not present?	Cooler Custody Seal:  Cooler ID:  Temp Observed:  From: Temp Blank  Sample  Samples received within holding time?  Initials:  During Labeling  Yes  No  Sample  Samples compromised/tampered with?  During Labeling  Yes  No  Sample  Sample

W18-A

### Christine, Mark B.

From: Baluran, Dwayne < DBaluran@haleyaldrich.com>

Monday, December 30, 2019 2:54 PM Sent:

To: Christine, Mark B. Cc: Miller, Katherine

Subject: FW: Eurofins TestAmerica sample confirmation files from 440-258216-1 BMP

Performance OF 001, 002, and/or 009

**Attachments:** SmpLoginAckLimits\_440-258216-1 [Std\_Tal\_Login\_Limits].pdf; COC 440-258216

(201912271418).pdf; SampleLoginAck\_440-258216-1 [Std\_Tal\_Login\_Ack].pdf; Eurofins

TestAmerica sample confirmation files from 440-258219-1 Outfall 001 Comp.msg

Importance: High

### -External Email-

Hi Mark,

After reviewing the sample receipts for recent events (BMP sampling, OF001 comp, OF008 comp) I have the following comments:

Sampling Event	Sample Delivery Group	Samples Included	Work Order or COC Corrections?
ISRA/BMP	440-258216-1	A1BMP0002_20191226, A1BMP0003_20191226, LXBMP0011_20191226, LXBMP0012_20191226, EPSW001IE01_20191226, EPSW002BG01_20191226	COC - incorrect sample ID names. All should be readjusted to "20191226" (the date the samples were collected) in the work order. Incorrect project number. Please update Work Order to "129095-004 <b>5.1</b> "  I assume the Gross Alpha Total and Dissolved for the last two sample IDs are in a separate SDG (440-258216-2) that will be sent to us at a later date?
OF001 -Qrtrly	440-258219-1	Outfall001_20191227_Comp, Outfall001_20191227_Comp_F	Work Order - per the comments, only test for Fe at OF001. Please remove Al, As, and Mn from both Total and Dissolved Metals.

From: Miller, Katherine < <a href="mailto:KMiller@haleyaldrich.com">KMiller@haleyaldrich.com</a>>

Sent: Monday, December 30, 2019 9:15 AM

To: Baluran, Dwayne < DBaluran@haleyaldrich.com >

Subject: FW: Eurofins TestAmerica sample confirmation files from 440-258216-1 BMP Performance OF 001, 002, and/or

009

Importance: High

Please review and see email below

Katherine Miller **HALEY & ALDRICH** 

Tel: 520.289.8606

From: Mark Christine < mark.christine@testamericainc.com >

Sent: Monday, December 30, 2019 10:01 AM

To: Kim Schultz <kim.schultz@mecx.net>; Miller, Katherine <KMiller@haleyaldrich.com>

Subject: Eurofins TestAmerica sample confirmation files from 440-258216-1 BMP Performance OF 001, 002, and/or 009

### **CAUTION: External Email**

Hello,

Attached please find the sample confirmation files for job 440-258216-1; BMP Performance OF 001, 002, and/or 009.

Please verify sample IDs. COC SAMPLE #\_2019121226, looks like it is doubled up on the 12s. Logged in per COC.

Sample #1 A1BMP002\_2019121226 (440-258216-1) has a "1" instead of an "X" under the 1613 Dioxons. Sample was logged in for the dioxins, please confirm.

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

Thank you.

### Mark B Christine

Project Manager Assistant

Eurofins TestAmerica, Irvine

E-mail: mark.christine@testamericainc.com www.eurofinsus.com | www.testamericainc.com



Reference: [440-575685] Attachments: 3

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

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### **DATA VALIDATION REPORT**

### **Boeing SSFL NPDES**

SAMPLE DELIVERY GROUP: 440-258219-2

### **Prepared for**

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

29 January 2020







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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<sup>x</sup> Project No.:** 1272.003H.01

Sample Delivery Group: 440-258219-2

**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
OUTFALL001_201912 27_COMP	440-258219-1	N/A	Water	12/27/2019 7:25:00 AM	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) 440-258219-2:

- 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.
- Field and laboratory personnel signed and dated the COCs.
- Some corrections to the original COCs were initialed but not dated. The cross-outs did not affect data quality.
- Sample containers were transferred to TestAmerica St. Louis laboratory for all radionuclide analyses. Sample condition upon receipt information was taken from the case narrative.



### **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**

D	TABLE 5 - REASON CODE	NEI EREIVEE
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.
Е	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.
*  , *	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<sup>X</sup> reviewed the SDG on January 29, 2020

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 with proper preservation according the laboratory case narrative.

#### III.2. CALIBRATION:

The daily calibrations were acceptable. The detector efficiencies for gross alpha (7.481%) and radium-226 (18.714%) were <20%; therefore, the results for gross alpha and radium-226 were qualified as estimated with a potential negative bias (J- for the detect and UJ for the nondetect following blank evaluation). All other detector efficiencies were >20% and no further qualifications were required. Carrier/tracer recoveries were within the laboratory control limits.

#### **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 Ra-226 and total uranium. The detected sample results for Ra-226 and total uranium were qualified as nondetect (U). 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 5% level of confidence for Ra-228. The detected sample result for Ra-228 was qualified as estimated (J+). No further qualifications were required.

### III.3.2. LABORATORY CONTROL SAMPLES:

The recoveries were within laboratory-established control limits.

#### III.3.3. LABORATORY DUPLICATES:

Laboratory duplicates were performed on the sample from this SDG for potassium-40 and cesium-137. The DER was <2.13 and therefore acceptable.

#### 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 IV review was performed on the sample in this data package. Detected sample results were verified. Reported nondetects are valid to the MDC. Several aliquots for prep were reduced due to sediment or discoloration in the sample resulting in elevated MDCs.



#### **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: 4402582192

Analysis Method E900

Sample Name OUTFALL001 20191227 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/27/2019 7:25:00 AM Validation Level: 8

**Lab Sample Name:** 440-258219-1

RLCAS No Result Total **MDC** Result Analyte Lab Validation Validation Uncert. Value Units **Qualifier** Qualifier Notes \*Ш Gross Alpha Analytes GROSSALPHA 14.1 3.61 3.00 2.76 pCi/L Gross Beta Analytes GROSSBETA 7.80 1.42 4.00 1.14 pCi/L

Analysis Method E901.1

Sample Name OUTFALL001 20191227 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/27/2019 7:25:00 AM Validation Level: 8

**Lab Sample Name:** 440-258219-1

**MDC Analyte** CAS No Result Total RLResult Lab Validation Validation Value Uncert. Units Qualifier **Qualifier** Notes Cesium-137 10045-97-3 5.01 9.91 20.0 16.8 pCi/L U U Potassium-40 U U 13966-00-2 32.7 90.4 152 152 pCi/L

Analysis Method E903.0

Sample Name OUTFALL001 20191227 COMP Matrix Type: WM Result Type: TRO

Sample Date: 12/27/2019 7:25:00 AM Validation Level: 8

**Lab Sample Name:** 440-258219-1

Total RL**MDC** Analyte CAS No Result Result Lab Validation Validation **Oualifier** Value Uncert. Units Qualifier Notes 0.334 IJ Radium-226 13982-63-3 0.178 1.00 0.227 pCi/L В. \*Ш

Analysis Method E904.0

Sample Name OUTFALL001 20191227 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/27/2019 7:25:00 AM Validation Level: 8

**Lab Sample Name:** 440-258219-1

**Analyte** CAS No Result Total RL**MDC** Result Lab Validation Validation Value Uncert. Units Qualifier Qualifier Notes Radium-228 15262-20-1 1.54 0.607 1.00 0.824 pCi/L

Wednesday, January 29, 2020 Page 1 of 2

Analysis Method E905.0

Sample Name OUTFALL001 20191227 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/27/2019 7:25:00 AM Validation Level: 8

**Lab Sample Name:** 440-258219-1

**MDC Analyte** CAS No Result Total RLResult Lab Validation Validation Value Uncert. Units Qualifier **Qualifier** Notes Strontium-90 10098-97-2 0.107 0.410 3.00 0.719 pCi/L

Analysis Method E906.0

Sample Name OUTFALL001 20191227 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/27/2019 7:25:00 AM Validation Level: 8

**Lab Sample Name:** 440-258219-1

CAS No Result Total RLMDC **Analyte** Result Lab Validation Validation Qualifier Value Uncert. Units Qualifier Notes -27.5 Tritium 10028-17-8 152 500 283 pCi/L

Analysis Method HASL-300 U Mod

Sample Name OUTFALL001\_20191227\_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/27/2019 7:25:00 AM Validation Level: 8

**Lab Sample Name:** 440-258219-1

Result **Total** RL**MDC** Result Analyte CAS No Lab Validation Validation Value Uncert. Units Qualifier **Qualifier** Notes Total Uranium **URANIUM** 0.664 0.436 1.00 0.407 pCi/L

Wednesday, January 29, 2020 Page 2 of 2



# **ANALYTICAL REPORT**

Eurofins Calscience Irvine 17461 Derian Ave Suite 100 Irvine, CA 92614-5817 Tel: (949)261-1022

Laboratory Job ID: 440-258219-2

Client Project/Site: Quarterly Outfall 001 Comp

For:

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

Attn: Katherine Miller

Authorized for release by: 1/28/2020 9:39:24 AM

Christian Bondoc, Project Manager I

(949)260-3218

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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.

Laboratory Job ID: 440-258219-2

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.

Client: Haley & Aldrich, Inc. Project/Site: Quarterly Outfall 001 Comp Laboratory Job ID: 440-258219-2

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# **Sample Summary**

Client: Haley & Aldrich, Inc. Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
zas campic is	onone oumpions			110001100	/ locot is
440-258219-1	Outfall001 20191227 Comp	Water	12/27/19 07:25	12/27/19 11:20	
TTU-2302 13-1	Outrailed I_Ze 13 1ZZ1_Comp	vvalci	12/21/10 01.20	12/21/10 11.20	

### **Case Narrative**

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-2

Job ID: 440-258219-2

**Laboratory: Eurofins Calscience Irvine** 

**Narrative** 

Job Narrative 440-258219-2

#### Comments

No additional comments.

#### Receipt

The samples were received on 12/27/2019 11:20 AM: the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 1.6° C, 1.7° C and 1.8° C.

#### **RAD**

Method 900.0: Gross Alpha Beta Prep Batch 160-455777

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date. Outfall001 20191227 Comp (440-258219-1), (LCS 160-455777/2-A), (LCSB 160-455777/3-A), (MB 160-455777/1-A), (440-258077-J-1-F), (440-258077-J-1-G MS), (440-258077-J-1-I MSBT), (440-258077-J-1-J MSBTD) and (440-258077-J-1-H MSD)

Method 901.1: Gamma Prep Batch: 160-455659

The cesium-137 MDC (20.8 pCi/L) for the method blank (MB) is above the requested limit of 20 pCi/L. Cesium-137 activity was not observed in the MB above the MDC or RL. The MDC for the associated samples is less than the requested limit. The data have been reported with the MDC achieved. Outfall001 20191227 Comp (440-258219-1), (LCS 160-455659/2-A), (MB 160-455659/1-A) and (440-258219-Q-1-B DU).

Method 901.1: Gamma Prep Batch 160-455659

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Many isotopes requested for analysis do not have any gamma emissions, or the gamma emissions they do have are very poor. Often, such analytes are reported by gamma spectrometry assuming secular equilibrium with a longer-lived parent. The client should ensure that such inference is acceptable for their sample based upon process knowledge. The following assumptions were made for this report: Inferred from Reported to Analyte

Th-234	Pa-234
Th-234	U-238
Pb-210	Po-210
Pb-210	Bi-210
Cs-137	Ba-137m
Pb-212	Po-216
Xe-131m	Xe-131
Sb-125	Te-125m
Ag-108m	Ag-108
Rh-106	Ru-106
Pb-212	Th-228
Pb-212	Ra-224
U-235	Th-231
Ac-228	Th-232
Ac-228	Ra-228
Th-227	Ra-223
Th-227	Ac-227
Th-227	Bi-211
Th-227	Pb-211

### **Case Narrative**

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-2

# Job ID: 440-258219-2 (Continued)

#### **Laboratory: Eurofins Calscience Irvine (Continued)**

Outfall001\_20191227\_Comp (440-258219-1), (LCS 160-455659/2-A), (MB 160-455659/1-A) and (440-258219-Q-1-B DU)

Methods 904.0, 9320: Radium-228 Prep Batch 160-455727

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Outfall001\_20191227\_Comp (440-258219-1), (LCS 160-455727/1-A), (MB 160-455727/22-A), (160-36828-B-23-C) and (160-36828-B-23-D DU)

Method 905: Strontium-90 Prep Batch 160-455843

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date. Outfall001 20191227 Comp (440-258219-1), (LCS 160-455843/1-A), (MB 160-455843/10-A), (440-258077-J-1-K), (440-258077-F-1-G MS) and (440-258077-F-1-H MSD)

Method 906.0: LSC Tritium Prep Batch 160-455651

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Outfall001 20191227 Comp (440-258219-1), (LCS 160-455651/2-A), (MB 160-455651/1-A), (440-258077-I-1-A), (440-258077-I-1-B MS) and (440-258077-I-1-C MSD)

Method A-01-R: Isotopic Uranium Prep Batch 160-455686

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date. Outfall001\_20191227\_Comp (440-258219-1), (LCS 160-455686/2-A), (MB 160-455686/1-A), (440-258077-J-1-E), (440-258077-F-1-E MS) and (440-258077-F-1-F MSD)

Method ExtChrom: Uranium Prep Batch 160-455686

The following samples were prepared at a reduced aliquot due to a yellow discoloration. Outfall001 20191227 Comp (440-258219-1). Samples 440-258085-1 and 440-258219-1 was a darker yellow than the other samples and had suspended solids. Sample 440-258227-1 also had suspended solids present.

Method PrecSep\_0: Radium 228 Prep Batch 160-455727:

The following sample was prepared at a reduced aliquot due to possible matrix interference: Outfall001 20191227 Comp (440-258219-1). Sample 440-258219-1 was reduced due to brown discoloration and heavy sediment levels. Sample 440-258227-1 was reduced due to yellow discoloration. Sample 280-132316-9 was reduced due to sample containing white floating particulates.

Method PrecSep-21: Radium 226 Prep Batch 160-455705:

The following sample was prepared at a reduced aliquot due to possible matrix interference: Outfall001 20191227 Comp (440-258219-1). Sample 440-258219-1 was reduced due to brown discoloration and heavy sediment levels. Sample 440-258227-1 was reduced due to yellow discoloration. Sample 280-132316-9 was reduced due to sample containing white floating particulates.

### **Case Narrative**

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-2

### Job ID: 440-258219-2 (Continued)

### **Laboratory: Eurofins Calscience Irvine (Continued)**

Method PrecSep-7: Strontium 90 Prep Batch 160-445843:

Sample 258227-1 and samples 258077-1, 1MS, and 1MSD were reduced due to yellow discoloration. Samples 258085-1 and 258219-1 were reduced due to brown discoloration and a cloudy appearance: Outfall001\_20191227\_Comp (440-258219-1).

1/8/2020- Samples 440-258077-1,440-258077-1MS, 440-258077-1MSD, 110-258227-1, 440-258085-1 all had 1-2x smaller pellets than the QC samples at the end of the into-ingrowth process. While decanting the presence of matrix interference was seen in the amount of sediment at the bottom of the beaker.

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

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# **Client Sample Results**

Client: Haley & Aldrich, Inc.

Job ID: 440-258219-2

Project/Site: Quarterly Outfall 001 Comp

Client Sample ID: Outfall001\_20191227\_Comp Lab Sample ID: 440-258219-1

Date Collected: 12/27/19 07:25 Matrix: Water

Date Received: 12/27/19 11:20

Method: 900.0 - G	ross Alpha and Gros	ss Beta Rad	lioactivity						
		Count	Total						
		Uncert.	Uncert.						
Analyte	Result Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	14.1	3.23	3.61	3.00	2.76	pCi/L	01/06/20 07:19	01/12/20 12:26	1
Gross Beta	7.80	1.18	1.42	4.00	1.14	pCi/L	01/06/20 07:19	01/12/20 12:26	1

Method: 901.1 - 0	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	5.01	U	9.90	9.91	20.0	16.8	pCi/L	12/30/19 13:52	12/30/19 18:50	1
Potassium-40	32.7	U	90.4	90.4		152	pCi/L	12/30/19 13:52	12/30/19 18:50	1

Method: 903.0 - 1	Radium-226	(GFPC)	Count Uncert.	Total Uncert.						
Analyte Radium-226	Result 0.334	Qualifier	(2σ+/-) 0.176	( <b>2</b> σ+/-) 0.178	RL 1.00	MDC	Unit pCi/L	Prepared	Analyzed 01/27/20 11:12	Dil Fac
Carrier		Qualifier	Limits	0.170	1.00	0.221	POILE	Prepared	Analyzed	Dil Fac
Ba Carrier	96.4		40 - 110						01/27/20 11:12	1

Method: 904.0 - R	adium-228	(GFPC)								
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.54		0.590	0.607	1.00	0.824	pCi/L	12/31/19 11:01	01/14/20 17:00	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	96.4		40 - 110					12/31/19 11:01	01/14/20 17:00	1
Y Carrier	88.7		40 - 110					12/31/19 11:01	01/14/20 17:00	1

Method: 905 - St	rontium-90 (	GFPC)								
			Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.107	U	0.410	0.410	3.00	0.719	pCi/L	01/07/20 06:20	01/15/20 10:01	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	73.7		40 - 110					01/07/20 06:20	01/15/20 10:01	1
Y Carrier	87.5		40 - 110					01/07/20 06:20	01/15/20 10:01	1

Method: 906.0 - Tr	itium, Tota	al (LSC)								
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-27.5	U	152	152	500	283	pCi/L	12/30/19 13:27	12/31/19 11:34	1

Method: A-01-R -	Isotopic Uranium	(Alpha Specti	rometry)						
	•	Count	Total						
		Uncert.	Uncert.						
Analyte	Result Qualifie	r (2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Total Uranium	0.664	0.434	0.436	1.00	0.407	pCi/L	12/30/19 16:10	01/16/20 09:32	1

**Eurofins Calscience Irvine** 

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# **Client Sample Results**

Client: Haley & Aldrich, Inc.

Job ID: 440-258219-2

Project/Site: Quarterly Outfall 001 Comp

Client Sample ID: Outfall001\_20191227\_Comp Lab Sample ID: 440-258219-1

Date Collected: 12/27/19 07:25

Matrix: Water

Date Received: 12/27/19 11:20

	Tracer	%Yield	Qualifier	Limits	Prepared Analyzed	Dil Fac
'	Uranium-232	51.6		30 - 110	12/30/19 16:10 01/16/20 09:32	1

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# **Method Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 001 Comp

Method **Method Description** Protocol Laboratory TAL SL 900.0 Gross Alpha and Gross Beta Radioactivity EPA TAL SL 901.1 Cesium 137 & Other Gamma Emitters (GS) **EPA** Radium-226 (GFPC) TAL SL 903.0 **EPA** 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 Preparation, Evaporation TAL SL Evaporation None ExtChrom Preparation, Extraction Chromatography Resin Actinide Separation None TAL SL Fill\_Geo-0 Fill Geometry, No In-Growth TAL SL None LSC\_Dist\_Susp Distillation and Suspension (LSC) None TAL SL PrecSep\_0 Preparation, Precipitate Separation None TAL SL TAL SL PrecSep-21 Preparation, Precipitate Separation (21-Day In-Growth) None 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 = Eurofins TestAmerica, St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Job ID: 440-258219-2

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# **Lab Chronicle**

Client: Haley & Aldrich, Inc. Job ID: 440-258219-2

Project/Site: Quarterly Outfall 001 Comp

Client Sample ID: Outfall001\_20191227\_Comp

Lab Sample ID: 440-258219-1 Date Collected: 12/27/19 07:25 **Matrix: Water** 

Date Received: 12/27/19 11:20

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	Evaporation			200.24 mL	1.0 g	455777	01/06/20 07:19	RJD	TAL SL
Total/NA	Analysis	900.0		1	1.0 mL	1.0 mL	456563	01/12/20 12:26	AJD	TAL SL
Total/NA	Prep	Fill_Geo-0			1000 mL	1.0 g	455659	12/30/19 13:52	SCB	TAL SL
Total/NA	Analysis	901.1		1			455612	12/30/19 18:50	KLS	TAL SL
Total/NA	Prep	PrecSep-21			500.40 mL	1.0 g	455705	12/31/19 09:06	JLC	TAL SL
Total/NA	Analysis	903.0		1			458192	01/27/20 11:12	AJD	TAL SL
Total/NA	Prep	PrecSep_0			500.40 mL	1.0 g	455727	12/31/19 11:01	JLC	TAL SL
Total/NA	Analysis	904.0		1			456741	01/14/20 17:00	AJD	TAL SL
Total/NA	Prep	PrecSep-7			500.2 mL	1.0 g	455843	01/07/20 06:20	MNH	TAL SL
Total/NA	Analysis	905		1			456913	01/15/20 10:01	AJD	TAL SL
Total/NA	Prep	LSC_Dist_Susp			100.3 mL	1.0 g	455651	12/30/19 13:27	KNF	TAL SL
Total/NA	Analysis	906.0		1			456022	12/31/19 11:34	JS	TAL SL
Total/NA	Prep	ExtChrom			250.01 mL	1.0 mL	455686	12/30/19 16:10	KLH	TAL SL
Total/NA	Analysis	A-01-R		1			457046	01/16/20 09:32	KRR	TAL SL

#### **Laboratory References:**

TAL SL = Eurofins TestAmerica, St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Client: Haley & Aldrich, Inc. Job ID: 440-258219-2

Project/Site: Quarterly Outfall 001 Comp

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Lab Sample ID: MB 160-455777/1-A

**Matrix: Water** 

Analysis Batch: 456563

Client Sample ID: Method Blank

Prep Type: Total/NA **Prep Batch: 455777** 

Count Total мв мв Uncert. Uncert. Result Qualifier RL **MDC** Unit Dil Fac Analyte  $(2\sigma + / -)$  $(2\sigma + / -)$ Prepared Analyzed Gross Alpha 01/06/20 07:19 01/12/20 12:20 0.01239 U 0.607 0.607 3.00 1.18 pCi/L Gross Beta -0.2482 U 0.440 0.440 4.00 0.843 pCi/L 01/06/20 07:19 01/12/20 12:20

Lab Sample ID: LCS 160-455777/2-A

**Matrix: Water** 

**Analysis Batch: 456563** 

**Client Sample ID: Lab Control Sample** 

Prep Type: Total/NA **Prep Batch: 455777** 

LCS LCS Spike

Total Uncert.

%Rec.

RL Analyte Added  $(2\sigma + / -)$ **MDC** Unit Limits Result Qual %Rec Gross Alpha 49.6 48.74 7.33 3.00 1.85 pCi/L 98 75 - 125

Lab Sample ID: LCSB 160-455777/3-A

**Matrix: Water** 

**Analysis Batch: 456567** 

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

**Prep Batch: 455777** 

Total Spike LCSB LCSB %Rec. Uncert. Added Result Qual  $(2\sigma + / -)$ RL MDC Unit Limits Analyte %Rec 4.00 85.0 94 75 - 125 **Gross Beta** 79.96 8.53 0.814 pCi/L

Lab Sample ID: 440-258077-J-1-G MS

**Matrix: Water** 

**Analysis Batch: 456567** 

**Client Sample ID: Matrix Spike** Prep Type: Total/NA

**Prep Batch: 455777** 

Total %Rec. Sample Sample **Spike** MS MS Uncert. Analyte Result Qual Added Result Qual  $(2\sigma + / -)$ RL MDC Unit %Rec Limits Gross Alpha 1.38 49.6 41.94 6.03 3.00 1.42 pCi/L 82 60 - 140

Lab Sample ID: 440-258077-J-1-H MSD

**Matrix: Water** 

Analysis Batch: 456563

**Client Sample ID: Matrix Spike Duplicate** 

97

Prep Type: Total/NA

**Prep Batch: 455777** 

Total MSD MSD %Rec. Sample Sample Spike Uncert. **RER** RL Analyte Result Qual Added Result Qual  $(2\sigma + / -)$ **MDC** Unit %Rec Limits RER Limit Gross Alpha 1.38 49.6 47.24 6.58 3.00 1.16 pCi/L 60 - 140 0.42

8.91

4.00

0.935 pCi/L

Lab Sample ID: 440-258077-J-1-I MSBT

1.56

**Matrix: Water** 

Gross Beta

**Analysis Batch: 456563** 

**Client Sample ID: Matrix Spike** 

60 - 140

Prep Type: Total/NA

**Prep Batch: 455777** 

Total MSBT MSBT Sample Sample Spike Uncert. Added Analyte Result Qual Result Qual  $(2\sigma + / -)$ RL **MDC** Unit %Rec Limits

84.01

85.0

Project/Site: Quarterly Outfall 001 Comp

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity (Continued)

Lab Sample ID: 440-258077-J-1-J MSBTD

**Matrix: Water** 

Analysis Batch: 456563

**Client Sample ID: Matrix Spike Duplicate** 

Prep Type: Total/NA

Job ID: 440-258219-2

**Prep Batch: 455777** 

						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	1.56		84.9	82.77		8.79	4.00	0.852 pCi/L	96	60 - 140	0.07	1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Lab Sample ID: MB 160-455659/1-A

**Matrix: Water** 

Analysis Batch: 455610

**Client Sample ID: Method Blank** 

Prep Type: Total/NA

**Prep Batch: 455659** 

			Count	Total						
	MB	MB	Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	0.0000	UG	5.31	5.31	20.0	20.8	pCi/L	12/30/19 13:52	12/30/19 18:47	1
Potassium-40	-41.44	U	118	118		173	pCi/L	12/30/19 13:52	12/30/19 18:47	1

Lab Sample ID: LCS 160-455659/2-A

**Matrix: Water** 

Analysis Batch: 455611

**Client Sample ID: Lab Control Sample** 

Prep Type: Total/NA

**Prep Batch: 455659** 

Total %Rec. LCS LCS Spike Uncert. Analyte Added Result Qual  $(2\sigma + / -)$ RLMDC Unit %Rec Limits Americium-241 136000 129800 15000 400 pCi/L 96 90 - 111 Cesium-137 44000 43660 4380 20.0 99.2 pCi/L 99 90 - 111 Cobalt-60 27300 26580 2630 64.0 pCi/L 89 - 110 97

Lab Sample ID: 440-258219-1 DU

**Matrix: Water** 

Analysis Batch: 455610

Client Sample ID: Outfall001\_20191227\_Comp

**Prep Type: Total/NA** 

**Prep Batch: 455659** 

•					Total				•		
	Sample	Sample	DU	DU	Uncert.						RER
Analyte	Result	Qual	Result	Qual	(2σ+/-)	RL	MDC	Unit		RER	Limit
Cesium-137	5.01	U	3.919	U	8.21	20.0	14.2	pCi/L	 	0.06	1
Potassium-40	32.7	U	-100.9	U	92.3		234	pCi/L		0.73	1

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-455705/22-B

**Matrix: Water** 

Carrier

Ba Carrier

Analysis Batch: 458192

**Client Sample ID: Method Blank** 

Prep Type: Total/NA

**Prep Batch: 455705** 

			Count	Total						
	MB	MB	Uncert.	Uncert.						
Analyte	Pocult	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Allalyte	Nesuit	Qualifier	(20:7-)	(20:1-)	111	IVIDO	Oilit	ricparca	Analyzou	Dii i ac

MB MB **%Yield Qualifier** 

105

Limits 40 - 110

Prepared Analyzed <u>12/31/19 09:06</u> <u>01/27/20 13:04</u>

Dil Fac

Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-2

# Method: 903.0 - Radium-226 (GFPC) (Continued)

Lab Sample ID: LCS 160-455705/1-A

**Matrix: Water** 

**Matrix: Water** 

Analysis Batch: 458192

Client Sample ID: Lab Control Sample

%Rec.

Prep Type: Total/NA

**Prep Batch: 455705** 

Total Spike LCS LCS

Uncert. Added RL Analyte Result Qual  $(2\sigma + / -)$ 

MDC Unit Limits %Rec Radium-226 75 - 125 11.3 9.173 0.960 1.00 0.0876 pCi/L 81

LCS LCS

Carrier %Yield Qualifier Limits 105 Ba Carrier 40 - 110

Lab Sample ID: 160-36828-B-23-B DU

**Client Sample ID: Duplicate** 

Prep Type: Total/NA

**Prep Batch: 455705** 

Analysis Batch: 458192 Total

Sample Sample DU DU Uncert. **RER** RL Analyte Result Qual Result Qual  $(2\sigma + / -)$ MDC Unit RER Limit Radium-226 0.620 0.4687 0.127 1.00 0.102 pCi/L 0.56

DU DU

Carrier %Yield Qualifier Limits 108 Ba Carrier 40 - 110

# Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-455727/22-A

Analysis Batch: 456742

Client Sample ID: Method Blank **Matrix: Water** Prep Type: Total/NA Prep Batch: 455727

MB MB Uncert. Uncert. Analyte Result Qualifier  $(2\sigma + / -)$  $(2\sigma + / -)$ RL **MDC** Unit Prepared Analyzed Dil Fac Radium-228 0.09351 U 0.211 0.211 1.00 0.362 pCi/L 12/31/19 11:01 01/14/20 16:49

Total

Count

MB MB

Carrier %Yield Qualifier Limits Prepared Analyzed Dil Fac Ba Carrier 40 - 110 12/31/19 11:01 01/14/20 16:49 105 Y Carrier 88.7 40 - 110 12/31/19 11:01 01/14/20 16:49

Lab Sample ID: LCS 160-455727/1-A

**Matrix: Water** 

**Analysis Batch: 456741** 

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

Prep Batch: 455727

Total **Spike** LCS LCS Uncert. %Rec. RL Analyte Added Result Qual  $(2\sigma + / -)$ MDC Unit %Rec Limits 1.00 75 - 125 Radium-228 9.20 9.320 1.08 0.346 pCi/L 101

LCS LCS Carrier %Yield Qualifier Limits

Ba Carrier 105 40 - 110 Y Carrier 86.6 40 - 110

Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-2

# Method: 904.0 - Radium-228 (GFPC) (Continued)

Lab Sample ID: 160-36828-B-23-D DU **Client Sample ID: Duplicate** 

**Matrix: Water** 

Analysis Batch: 456742

Prep Type: Total/NA

**Prep Batch: 455727** 

					iolai						
	Sample	Sample	DU	DU	Uncert.						RER
Analyte	Result	Qual	Result	Qual	(2σ+/-)	RL	MDC	Unit		RER	Limit
Radium-228	1.14		0.7430		0.265	1.00	0.340	pCi/L	 	0.64	1

DU DU

Carrier	%Yield	Qualifier	Limits
Ba Carrier	108		40 - 110
Y Carrier	85.7		40 - 110

### Method: 905 - Strontium-90 (GFPC)

Lab Sample ID: MB 160-455843/10-A **Client Sample ID: Method Blank** 

**Matrix: Water** 

Analysis Batch: 456913

Count

Prep Type: Total/NA **Prep Batch: 455843** 

Total MB MB Uncert. Uncert. Analyte Result Qualifier  $(2\sigma + / -)$  $(2\sigma + / -)$ RL **MDC** Unit Prepared Analyzed Dil Fac Strontium-90 01/07/20 06:20 01/15/20 10:02 -0.05834 Ū 0.268 0.268 3.00 0.482 pCi/L

MΒ Dil Fac Carrier **%Yield Qualifier** Limits Prepared Analyzed Sr Carrier 85.9 40 - 110 01/07/20 06:20 01/15/20 10:02 Y Carrier 91.2 40 - 110 01/07/20 06:20 01/15/20 10:02

Lab Sample ID: LCS 160-455843/1-A

**Matrix: Water** 

**Analysis Batch: 456913** 

**Client Sample ID: Lab Control Sample** 

Prep Type: Total/NA **Prep Batch: 455843** 

Total **Spike** LCS LCS Uncert. %Rec. RL **MDC** Unit Analyte Added Result Qual  $(2\sigma + / -)$ %Rec Limits Strontium-90 10.6 8.906 0.945 3.00 0.327 pCi/L 84 75 - 125

LCS LCS Carrier %Yield Qualifier Limits Sr Carrier 96.9 40 - 110 96.8 40 - 110 Y Carrier

Lab Sample ID: 440-258077-F-1-G MS **Client Sample ID: Matrix Spike** 

**Matrix: Water** 

**Analysis Batch: 456913** 

Prep Type: Total/NA **Prep Batch: 455843** Total

Sample Sample Spike MS MS Uncert. %Rec. Result Qual Added Result Qual  $(2\sigma + / -)$ MDC Unit Limits Analyte RL %Rec Strontium-90 0.147 U 10.6 10.38 1.21 3.00 0.501 pCi/L 97 19 - 150

	MS	MS	
Carrier	%Yield	Qualifier	Limits
Sr Carrier	59.4		40 - 110
Y Carrier	92.3		40 - 110

**Eurofins Calscience Irvine** 

1/28/2020

Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-2

# Method: 905 - Strontium-90 (GFPC) (Continued)

Lab Sample ID: 440-258077-F-1-H MSD

**Matrix: Water** 

**Analysis Batch: 456913** 

**Client Sample ID: Matrix Spike Duplicate** 

**Prep Type: Total/NA** 

**Prep Batch: 455843** 

						rotai							
	Sample	Sample	Spike	MSD	MSD	Uncert.					%Rec.		RER
Analyte	Result	Qual	Added	Result	Qual	(2σ+/-)	RL	MDC	Unit	%Rec	Limits	RER	Limit
Strontium-90	0.147	U	10.6	10.34		1.15	3.00	0.477	pCi/L	96	19 - 150	0.02	1

MSD MSD

Carrier	%Yield	Qualifier	Limits
Sr Carrier	70.6		40 - 110
Y Carrier	95.3		40 - 110

### Method: 906.0 - Tritium, Total (LSC)

Lab Sample ID: MB 160-455651/1-A

**Matrix: Water** 

**Analysis Batch: 456022** 

**Client Sample ID: Method Blank** 

**Prep Type: Total/NA** 

**Prep Batch: 455651** 

ı				Count	Total						
		MB	MB	Uncert.	Uncert.						
	Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Į	Tritium	-49.55	U	149	149	500	280	pCi/L	12/30/19 13:27	12/31/19 09:18	1

Lab Sample ID: LCS 160-455651/2-A

**Matrix: Water** 

Analysis Batch: 456022

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

**Prep Batch: 455651** 

				Total					
	Spike	LCS	LCS	Uncert.				%Rec.	
Analyte	Added	Result	Qual	(2σ+/-)	RL	MDC Unit	%Rec	Limits	
Tritium	2510	2646		413	500	286 pCi/L	105	75 - 114	_

Lab Sample ID: 440-258077-I-1-B MS

**Matrix: Water** 

**Analysis Batch: 456022** 

Client Sample ID: Matrix Spike

Prep Type: Total/NA Prep Batch: 455651

Total %Rec. Sample Sample Spike MS MS Uncert. Analyte Result Qual Added Result Qual  $(2\sigma + / -)$ RL **MDC** Unit %Rec Limits 40.5 U 2510 294 pCi/L 67 - 130

410

Total

500

2556

Lab Sample ID: 440-258077-I-1-C MSD

**Matrix: Water** 

Tritium

Analysis Batch: 456022

**Client Sample ID: Matrix Spike Duplicate** 

100

Prep Type: Total/NA

**Prep Batch: 455651** 

						iotai							
	Sample	Sample	Spike	MSD	MSD	Uncert.				%Rec.		RER	
Analyte	Result	Qual	Added	Result	Qual	(2σ+/-)	RL	MDC Unit	%Rec	Limits	RER	Limit	
Tritium	40.5	U	2500	2430		391	500	279 pCi/L	95	67 - 130	0.16	1	

### Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Lab Sample ID: MB 160-455686/1-A

**Matrix: Water** 

Analysis Batch: 457035

**Client Sample ID: Method Blank** 

Prep Type: Total/NA

**Prep Batch: 455686** 

			Count	Total					
	MB	MB	Uncert.	Uncert.					
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC Unit	Prepared	Analyzed	Dil Fac
Total Uranium	0.2103		0.180	0.181	1.00	0.182 pCi/L	12/30/19 16:10	01/16/20 09:32	1

# QC Sample Results

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-2

# Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

	MB	MB			
Tracer	%Yield	Qualifier	Limits	Prepared Analyzed	Dil Fac
Uranium-232	83.2		30 - 110	12/30/19 16:10 01/16/20 09:32	1

Lab Sample ID: LCS 160-455686/2-A

**Matrix: Water** 

**Analysis Batch: 457036** 

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

**Prep Batch: 455686** 

				Total						
	Spike	LCS	LCS	Uncert.					%Rec.	
Analyte	Added	Result	Qual	(2σ+/-)	RL	MDC	Unit	%Rec	Limits	
Uranium-234	25.5	24.59		2.97	1.00	0.329	pCi/L	97	75 - 125	
Uranium-238	26.0	25.84		3.08	1.00	0.309	pCi/L	99	75 - 125	

LCS LCS

Tracer **%Yield Qualifier** Limits 60.6 30 - 110 Uranium-232

Lab Sample ID: 440-258077-F-1-E MS **Client Sample ID: Matrix Spike** 

**Matrix: Water** 

**Analysis Batch: 457038** 

Prep Type: Total/NA **Prep Batch: 455686** 

Total Sample Sample Spike MS MS Uncert. %Rec. Analyte Result Qual Added Result Qual  $(2\sigma + / -)$ RL **MDC** Unit %Rec Limits 0.128 U Uranium-234 25.5 23.28 2.86 1.00 0.424 pCi/L 91 65 - 146 0.0960 U Uranium-238 26.0 25.85 3.09 1.00 0.349 pCi/L 99 68 - 143

MS MS Tracer %Yield Qualifier Limits Uranium-232 61.7 30 - 110

Lab Sample ID: 440-258077-F-1-F MSD

**Matrix: Water** 

**Analysis Batch: 457042** 

**Client Sample ID: Matrix Spike Duplicate** Prep Type: Total/NA **Prep Batch: 455686** 

						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	0.128	U	25.5	23.64		2.93	1.00	0.446	pCi/L	92	65 - 146	0.06	1
Uranium-238	0.0960	U	26.0	24.68		3.02	1.00	0.367	pCi/L	94	68 - 143	0.19	1

MSD MSD Tracer %Yield Qualifier Limits Uranium-232 68.1 30 - 110

# **QC Association Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 001 Comp

Rad

Dron	Patch:	455651
PIEU	Dall.II.	4330031

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-1	Outfall001_20191227_Comp	Total/NA	Water	LSC_Dist_Susp	
MB 160-455651/1-A	Method Blank	Total/NA	Water	LSC_Dist_Susp	
LCS 160-455651/2-A	Lab Control Sample	Total/NA	Water	LSC_Dist_Susp	
440-258077-I-1-B MS	Matrix Spike	Total/NA	Water	LSC_Dist_Susp	
440-258077-I-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	LSC_Dist_Susp	

### **Prep Batch: 455659**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-1	Outfall001_20191227_Comp	Total/NA	Water	Fill_Geo-0	
MB 160-455659/1	-A Method Blank	Total/NA	Water	Fill_Geo-0	
LCS 160-455659/2	2-A Lab Control Sample	Total/NA	Water	Fill_Geo-0	
440-258219-1 DU	Outfall001_20191227_Comp	Total/NA	Water	Fill_Geo-0	

# **Prep Batch: 455686**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-1	Outfall001_20191227_Comp	Total/NA	Water	ExtChrom	
MB 160-455686/1-A	Method Blank	Total/NA	Water	ExtChrom	
LCS 160-455686/2-A	Lab Control Sample	Total/NA	Water	ExtChrom	
440-258077-F-1-E MS	Matrix Spike	Total/NA	Water	ExtChrom	
440-258077-F-1-F MSD	Matrix Spike Duplicate	Total/NA	Water	ExtChrom	

### **Prep Batch: 455705**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-1	Outfall001_20191227_Comp	Total/NA	Water	PrecSep-21	
MB 160-455705/22-B	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-455705/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
160-36828-B-23-B DU	Duplicate	Total/NA	Water	PrecSep-21	

### **Prep Batch: 455727**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-1	Outfall001_20191227_Comp	Total/NA	Water	PrecSep_0	
MB 160-455727/22-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-455727/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
160-36828-B-23-D DU	Duplicate	Total/NA	Water	PrecSep_0	

# **Prep Batch: 455777**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-1	Outfall001_20191227_Comp	Total/NA	Water	Evaporation	-
MB 160-455777/1-A	Method Blank	Total/NA	Water	Evaporation	
LCS 160-455777/2-A	Lab Control Sample	Total/NA	Water	Evaporation	
LCSB 160-455777/3-A	Lab Control Sample	Total/NA	Water	Evaporation	
440-258077-J-1-G MS	Matrix Spike	Total/NA	Water	Evaporation	
440-258077-J-1-H MSD	Matrix Spike Duplicate	Total/NA	Water	Evaporation	
440-258077-J-1-I MSBT	Matrix Spike	Total/NA	Water	Evaporation	
440-258077-J-1-J MSBTD	Matrix Spike Duplicate	Total/NA	Water	Evaporation	

# **Prep Batch: 455843**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-1	Outfall001_20191227_Comp	Total/NA	Water	PrecSep-7	
MB 160-455843/10-A	Method Blank	Total/NA	Water	PrecSep-7	
LCS 160-455843/1-A	Lab Control Sample	Total/NA	Water	PrecSep-7	

Eurofins Calscience Irvine

1/28/2020

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# **QC Association Summary**

Client: Haley & Aldrich, Inc.

Job ID: 440-258219-2

Project/Site: Quarterly Outfall 001 Comp

# Rad (Continued)

# Prep Batch: 455843 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258077-F-1-G MS	Matrix Spike	Total/NA	Water	PrecSep-7	
440-258077-F-1-H MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep-7	

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# **Definitions/Glossary**

Client: Haley & Aldrich, Inc.

Job ID: 440-258219-2

Project/Site: Quarterly Outfall 001 Comp

# **Qualifiers**

RL

**RPD** 

TEF

**TEQ** 

Rad Qualifier	Qualifier Description
G	The Sample MDC is greater than the requested RL.
U	Result is less than the sample detection limit.

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)

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

# **Accreditation/Certification Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-2

# **Laboratory: Eurofins Calscience Irvine**

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	<b>Expiration Date</b>
California	State Program	CA ELAP 2706	06-30-20

# Laboratory: Eurofins TestAmerica, St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
ANAB	Dept. of Defense ELAP	L2305	04-06-22
ANAB	Dept. of Energy	L2305.01	04-06-22
ANAB	ISO/IEC 17025	L2305	04-06-22
Arizona	State	AZ0813	12-08-20
California	Los Angeles County Sanitation Districts	10259	06-30-20
California	State	2886	06-30-20
Connecticut	State	PH-0241	03-31-21
Florida	NELAP	E87689	06-30-20
HI - RadChem Recognition	State	n/a	06-30-20
Illinois	NELAP	004553	11-30-19 *
lowa	State	373	09-17-20
Kansas	NELAP	E-10236	10-31-20
Kentucky (DW)	State	KY90125	12-31-20
Louisiana	NELAP	04080	06-30-20
Louisiana (DW)	State	LA011	12-31-20
Maryland	State	310	09-30-20
MI - RadChem Recognition	State	9005	06-30-20
Missouri	State	780	06-30-22
Nevada	State	MO000542020-1	07-31-20
New Jersey	NELAP	MO002	06-30-20
New York	NELAP	11616	04-01-20
North Dakota	State	R-207	06-30-20
NRC	NRC	24-24817-01	12-31-22
Oklahoma	State	9997	08-31-20
Pennsylvania	NELAP	68-00540	02-28-20
South Carolina	State	85002001	06-30-20
Texas	NELAP	T104704193-19-13	07-31-20
US Fish & Wildlife	US Federal Programs	058448	07-31-20
USDA	US Federal Programs	P330-17-00028	02-02-20
Utah	NELAP	MO000542019-11	07-31-20
Virginia	NELAP	10310	06-14-20
Washington	State	C592	08-30-20
West Virginia DEP	State	381	10-31-20

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<sup>\*</sup> Accreditation/Certification renewal pending - accreditation/certification considered valid.

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1.3/1.6

10 Day: X Normal:

72 Hour. 5 Day: \_\_

24 Hour. 48 Hour.

5/2/0

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J.

一年记入

P1/12/6

Relinquished By

HALEY & ALDRICH

12/27/19 Ba:48

Turn-around time: (Check)

Legend: A=Annual, C=Conditional, EP=Expert Panel, R=Routine, Q=Quarterly, QRSW=Quarterly Receiving Water, S=Semi-Annual Company

On Ice

Sample Integrity: (Check)

intact:

Store samples for 6 months. Data Requirements: (Check)

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0761/EZ/21

440-258219 Chain of Custody

70505/82/1 0019-2020 Rainy Season Version 1

48 hours Holding Time NO<sub>3</sub> & NO<sub>2</sub> 48 hours Holding Time for Turbidity Comments Hold 용 P Por SSOOR) VEVE MULLES O × œ otal Recoverable Metals: Mercury (E245.1) 2,4,6 TCP, 2,4 Dinitrotoluene, Bis(2-ethylnexyl)phthalate, NDMA, PCP (SVOCs E625) œ × ANALYSIS REQUIRED œ alpha-BHC (E608) (3:05c) N-sinomm/ R/EP (CODESCMS) 2:091) SSI œ Turbidity, TDS (SM2540C/E180.1) C)-, SO4, Mitrate-N, Mitrite-N, MO3+MO2-N, Petchlorate (E300) ~ I. œ Surfactants (MBAS) (SM5540C/E425.1) I (SWES 108 BODC9(c)) BOD2 (SO deđuesa C) (E402 1 œ LCDD (and all congeners) (E1613B) r Total Recoverable Metals: (E200.7): Zn (E200.8): Cu, Pb, Cd, Se œ MS/MSD 2 ջ 2 ş 운 운 운 ŝ ŝ 윷 2 ş ş ž ŝ Project:
Boeing-SSFL NPDES
Permit 2019
Quarterly Outfall (001, 002, 011, 018)
Comp Bottle # 6 130 Project Manager: Katherine Miller 520.289.8606, 520.904,6944 (celf) 115 130 8 8 Field Manager: Mark Dominick 978.234.5033, 818.599.0702 (cell) 8 10 8 150 5 385 140 170 180 Preservative H-5004 Ğ. None None Моле None # of Cont. 2 1 8 1 L Glass Amber Container Type 1 L Glass Ambe 500 mL Poly 500 mt. Poly 500 mil. Poly 500 mt. Poly 500 mL Poly 500 mL Poly 500 mL Poly 1L Poty 1L Poly Sample Matrix MM ××× WW 3 N. WM ΛM Š Š Š MM Š MM ž N. (1) Test/merica's services under the COC shall be performed in accordance with the T&Co within Blanker Service Agenemies 30-922-rest/merica by and between Heley & Adrich, Inc., its autoidances and Affaithse, and Test/merica Laboratories inc.
Sampler: Dan Smith Sampling Date/Time , 6102772/21 12/27/2019 Outfall001\_20191227\_Comp\_Extra Outfall001\_20191227\_Comp Test America Contact: Urvashi Patel 17461 Derian Ave Suite #100 17161 CA 92614 Tel 949-326-3269 Cell 949-333-9055 Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108 Sample I.D. Sample Description Outfall 001

Test America

CHAIN OF CUSTODY FORM

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1   Class Ambre   200   100	1   1   1   1   1   1   1   1   1   1	1. Chairs Arribor   2.00 289 800% 200.004.   2.00	1 Clean Arter   1	Company   Comp	Client Name Address. Haley & Addrich 5333 Mission Center Rd Suite 300 5333 Mission Center Rd Suite 300 Test Annerica Contact: Unrash Patel Tr451 Derian Ave Suite #100 Invine CA 92614	300   Patel				Boein F Quarterly Out	Project: Boeing-SSEL NPDES Permit 2019 Cuarterly Outfail (001, 002, 011, 018) Comp	S 311, 018 <u>j</u>			Beta(E900.0), fistoT ,(0.200E) 8.0 to E903.1)	AD structure Y mile acti	38	S (8093) 983-4+	,		AD 2016	
11   Cases Anther   220 Case Service   220 Case S	11 Chies Anther   2	1. Cases Arther   2	11   Pay   1   Nove   200   No   No   No   No   No   No   No	1. Character wide   1. Character	1		the Township Blanch Control			:	:	***************************************			, Gross ( 9, Sr-80 26 (E903) 26 (E903)	untaanek eu 054			:sje	44.6 433	.da ⊨erg	Comments
Sample   Debot   The part   The	The control of the	Sample Dearline   Sample   S	Sumprigue   Comment   Finest Words   Water   Comment   Water	Secretary   Secr	y & Aldrich,	ed in accordance with	i the Tekus water Stankes before Agre nd affiliates, and TestAmerica Labora	tories		Project Mai 520.289.86	nager: Katheri 06, 520.904.60	ne Miller 344 (cell)			(0.008 0.806 2.muii 0.406	(610-5 14 - Se			steM b	(1954.) (PM ).e	onissi 1975el-	
Sumphy Debulline   Sumphy Debu	Sample Debet Tree   Sample	Sample Debuttre   Sample Container Type   4 of Cost   Preservative   Budde st   Michael St   M	Sumpregnenting   Sump	1277/2019   Wild   1.5 Pg   1.10 Pg   200    100 Pg   200 Pg   2						Field Man 978 234 50	ager: Mark Do	minick 702 (cell)		uz i	Pha(E H-3) (P H-3) (P	ioixoT 30-8-1:			90 06	wilw i biner	l <b>íos,</b> D in súi	
WM   11 Pay   1   Norm   150 -   No     X	1.22772019  WM 11. Pay 11 Norm 1200 No	1227/2019	11   11   12   13   14   15   14   15   15   15   15   15	Wild   1, Pay   1,	aldm	.D.			Container Type	# of Cont	Preservative	Bottle #	MSMSD	(E 500 S)	A asono multin midmo mulbas	Chronic S8-A93			eiG leto]	(± 0033 (± 0033	nyqioldC Su XoeVA	***************************************
WM         11 Ches Ariber         1         HNOs         200 °         No         X           VM         11 Ches Ariber         2         Nore         220 °         No         X           VM         Docusicate vids         1         Nore         220 °         No         X           VM         25 Gal Ches         1         Nore         225 °         No         X           VM         1 Gal Ches         1         Nore         225 °         No         X           VM         1 Gal Ches         6         Nore         225 °         No         X           VM         1 Gal Ches         6         Nore         225 °         No         X	1227/2019   1   1400-3   10   1400-3	13277029   WM	1   1   1   1   1   1   1   1   1   1	100   100		TO THE PARTY OF TH		<del> </del>	1 L Poly	+	None		£	1	}	<u> </u>	ļ	<del>                                     </del>	×			Filter and preserve with 24ths of receipt lab at OF001,002,011, or 018.
122772019	122772019/ WM 1L Class Arriber 2 Nore 250 No X X X X X X X X X X X X X X X X X X	1227/2019   WM	12070519   1	12277009   WM				WIR	500 mL Poly	-	HNO3	80 *	oN O			-		×			ļ.,	at OF001,002,011, or 018.
VWM         1 L Class Amber         2         None         250 ·         No           VWM         500 nL Poly         1         None         225 ·         No         X           VWM         2.5 Cal Cube         1         None         225 ·         No         X           VWM         1. Class Amber         1         None         235 ·         No         X           VWM         1. Class Amber         2         HCI         275 ·         No         X	WM         11 Class Anther         2         Norm         250 · No         No         X           VMM         500 nit. Poly         1         Norm         220 · No         X         X           VMM         1. Class Anther         1         Norm         225 · No         X         X           VMM         1. Class Anther         2         Norm         225 · No         X         X           VMM         1. Class Anther         2         HCI         275 · No         No         X	WW   1. Class Arther   2   None   220   No     No     No	VM	12770010   1	ä	91227_Comp_F	127721	¥,	1L Poly	<del>-</del>	None		No	×						×		Fries and preservo was data as a second
WM         brossicate vides         1         None         320 · No         No         X           VMM         15 Gal Cube         1         None         226 · No         X         X           1227/2019         VMM         11 Gless Amber         1         None         230 · No         X           VMM         11 Cless Amber         1         None         235 · No         No           VMM         11 Cless Amber         2         HCI         275 · No	VMM         Dotosilcate viels         1         None         320 · No         No         X           VMM         25 Gai Cube         1         None         225 · No         X         X           VMM         1 L Class Amber         1         None         235 · No         X         X           VMM         1 Cas Cube         6         None         235 · No         X         X           VMM         1 Cas Cube         6         None         235 · No         X         X	VWM   Decodicate Vides   1   Notice   220   No   X   X   X   X   X   X   X   X   X	WM   SOCIETA VIB   New   1   New	WM   SOOR, Pay   1   Match   220   No					L Glass Amber	61	None	ł	S.				1,	<b>4</b> /3				Chordane, DDD, DDE, DDT, detdn, PCBs, toxephene at OF001,002, or 018.
122772019 / WM 1. Classs Amber 1 None 220 · No X  WM 1. Classs Amber 1 None 225 · No X  WM 1. Classs Amber 225 · No X  WM 1. Class Amber 225 · No X  WM	1227/2019  WM 1.L Class Amber 1 None 225 · No	122772019  WM 1.Class Anther 1 None 225 No X X X X X X X X X X X X X X X X X X	VAM   2.5 GisCape   1 None   225	122772019   1		•	<u> </u>	-	orosilicate vials	-	None		o <sub>N</sub>				×					Sample receiving DO NOT OPEN BAG. to be opened in Mercury Prep using cleer procedures.
1227/2019 / WM 1. Class Anther 1 None 225 · No None 230 · No No None 235 · No None 235	122772019 WM 1. Class Amber 1 None 225 · No	VMM   1. Gals Anther   1   None   225	VM   1. Cass Anter   1   None   25   No   No   1. Cass Anter   2   No   1. Cass Anter   2   No   1. Cass Anter   2   No   275   No   2	12772019   WM   1.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0				WW	500 mL Poly	-	HOBN	1	No		×			-	_			
1277/2019   WM   1 Class Amber   1 None   235 No	WM 1.Class Arriber 1 None 230 No	122772019 WM 1.1 Gats Amber 1 None 230 No	1227/2019   1 Class Anther   1 None   230 No   1 Class Anther   2 No   275 No   2 NO	1021/2019   Wild   1 Galf Cube   6   Norm   235   No   74.25				<del> </del>	2.5 Gal Cube	-	None		No		>				ļ			Unfiltered and unpreserved analysis.
WM 1. Class Anther 2 HC 275 No	WM 1. Cleas Anther 2 HC; 275 No	Company   1 Gal Cube   6   None   235   No   1 Gals Amber   2   HC    275   No   1 Gals Amber   2   HC    275   No   1 Gals Amber   2   HC    275   No   1 Gals Ambural, C=Conditional, EP=Expert Panel, Recovered by   Date/Time   The 24 hour   10   24 hour   25 hour   26	C37   VMM   1 Gal Glab   6   Norm   235   No   140	Legend: Administ Caconditional EP-Expert Panel, Receiving Water, Second-Annual  Legend: Administ Caconditional EP-Expert Panel, Receiving Water, Second-Annual  Received by Company  13/37/9 CG VS 7 24 Hour 27 Hour 101 Hours 101			12/27/2019		L Glass Amber	1	None	230	No		<							Analyze duplicate, not MS/MSD.
11. Class Anther 2 HCJ 2775 12:0	2 HGI 276 126	Legend: A=Annual, C=Conditional, EP=Expert Panel, R=Routine, Q=Oyarterty, QRSW=Quarterly Receiving Water, S=Semt-Annual  Company.  HALEY A PLDAICH  A SHour 101  12/27/7 CG VS 148 Hour 50av No	Legend: A=Annual, C=Conditional, EP=Expert Panel, Received By  Company,  ALEY  Received By  Company,  Comp	Legend: A=Annual, C=Conditional, EP-Expert Panel, Received by Company.  Legend: A=Annual, C=Conditional, EP-Expert Panel, Received by Company.  HALEY A PLDPICH Received by Contentine.  Company.  HALEY A PLDPICH Received by Contentine.  Company.  TA I DV 127   Closed Security Check)  All Level IV. All Level IV	<b>ର୍</b>	191227_Comp	Kity	VVM	† Gal Cube	9	None	235	90			13	7.					Only text if their or second removed the year Deliver in ASC Labs in Venture, C.A.
		Legend: A=Annual, C=Conditional, EP=Expert Panel, Receiving ORSW=Quarterly, ORSW=Quarterly, Receiving Water, S=Semi-Annual  Company.    ALDPICH   ALDPICH   Albert	Legend: A=Annual, C=Conditional, EP=Expert Panel, R=Routine, Q=Cyarterly, QRSW=Quarterly, Receiving Water, S=Semi-Annual  Company:    ALDPICH   Received by   Company:   A   A   A   A   A   A   A   A   A	Legend: A-Annual, C-Conditional, EP-Expert Panel, R-Routine, Q-Courterly, QRSW-Cuarterly, Receiving Water, S-Semi-Annual  Company,  HALEY A ALDAICH  Received by  Company,  ALDAICH  Received by  Company,  TA IV V V V Z Z IV V Date Short  Company,				-	i. Glass Amber	2	HC	275	1881								g:	Extract within 24-Hours of sampling at W Labs
		Legend: Andhrusal, C=Conditional, EP=Expert Panel, ReFourtine, Q=Qyarterty, QRSW=Quarterty Receiving Water, S=Semi-Annual  Company.  HALEY A PLDPICH  As hour 5 24 hou	Legend: A=Annual, C=Conditional, EP=Expert Panel, Recovered by  Company:  HALEY A HLDPICH  Received by  Company:  A TATA  Company:  Comp	Legend: A=Annual, C=Conditional, EP=Expert Panel, Received by  Company  HALEY A PLDP ICH  Received by  Company  A TR I V V LZ 7   1 2 2 1   1 2 1   1 2   1 3   1																	2	
		Legend: A=Annual, C=Conditional, EP=Expert Panel, R=Routine, Q=Qyarterly, QRSW=Quarterly Receiving Water, S=Semi-Annual Receiving Water, S=Semi-Annual Received by Determine:    A   A   A   A   A   A   A   A   A	Legend: A=Annual, C=Conditional, EP=Expert Panel, R=Routine, QRSW=Quarterly, Receiving Water, S=Semi-Annual  Company:  HALEY A HLDPICH  Received by DaterTime.  A Hour 5 Day  A Hour 5 Day  A Hour 5 Day  A Hour 5 Day  A Hour 7 Day  A Hour 5 Day  A Hour 7 Day  A Hour 5 Day  A Hour 5 Day  A Hour 5 Day  A Hour 5 Day  Day  The In Day of the Checky Company.  A Son e samples to 8 months.  Company.  The In Day of the Checky Day  The In Day of the Requirements. (Checky Day  The In Day of the Received By Day  The In Day of the Checky Da	Legend: A=Annual, C=Conditional, EP=Expert Panel, R=Routine, Q=Cygarterty, QRSW=Quarterty Receiving Water, S=Semi-Annual  Company.    ALDAICY   ALDAICH   Received by   DaterTime.   A   A   A   A   A   A   A   A   A				$\top$								_			-			
		Legend: A=Annual, C=Conditional, EP=Expert Panel, R=Routine, Q=Quarterly, QRSW=Quarterly Receiving Water, S=Semi-Annual    Company	Legend: Andhrual, C-Conditional, EP-Expert Panel, R-Routine, Q-Cyarterly, QRSW-Quarterly, Receiving Water, S-Semi-Annual  Company:    ALDAICH   Received by   Company:   ALDAICH   Albur   12   Albur	Legend: A-Annual, C—Conditional, EP-Expert Panel, R-Routine, Q-Quarterly, QRSW-Quarterly, Receiving Water, S=Semi-Annual  Company:  HALEY G. A. L.D.P.I.C.H.  TATAN 17 CG 45 24 Hour 72 Hour 72 Hour 5.00 Page 18												_			-			
		Legend: A=Annual, C=Conditional, EP=Expert Panel, R=Routine, Q=Cyanterty, QRSW=Quarterly Receiving Water, S=Semi-Annual Company.    Company   August   Augus	Legend: A=Annual, C=Conditional, EP=Expert Panel, R=Routine, Q=Quarterty, QRSW=Quarterty, Receiving Water, S=Semi-Annual  The The Thorist Checks  The Thorist Checks  A Hour 5 Days  A Hour 5 Days  A Hour 5 Days  A Hour 5 Days  A Hour 7 Days  A Hour 5 Days  Company.	Legend: A=Annual, C=Conditional, EP=Expert Panel, Received by DaterTime.  Company.  HALEY A PLDPICH Received by DaterTime.  A 27/7 CG 45  24 Hour.  77 ETM 24 Hour.  78 Hour.  78 Hour.  79 Hour.  70 Hour.  70 Hour.  70 Hour.  71 Hour.  71 Hour.  71 Hour.  71 Hour.  71 Hour.  72 Hour.  73 Hour.  74 Hour.  74 Hour.  74 Hour.  75 Hour.  76 Hour.  76 Hour.  76 Hour.  77 Hour.  78 Hour.  78 Hour.  78 Hour.  78 Hour.  79 Hour.  70 Hour.  71 Hour.  71 Hour.  71 Hour.  71 Hour.  71 Hour.  72 Hour.  73 Hour.  74 Hour.  74 Hour.  74 Hour.  75 Hour.  76 Hour.  76 Hour.  76 Hour.  77 Hour.  77 Hour.  78 Hour.  7																		

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R GRSW GRSW GRSW C/EP GRSW

CHAIN OF CUSTODY FORM

Job Number: 440-258219-2

Login Number: 258219 List Source: Eurofins Irvine

List Number: 1

Creator: Soderblom, Tim

Creator. Societion, 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	

Client: Haley & Aldrich, Inc. Job Number: 440-258219-2

Login Number: 258219

List Number: 2

Creator: Harris, Lorin C

List Source: Eurofins TestAmerica, St. Louis

List Creation: 12/28/19 12:04 PM

Question Answer Comment
Radioactivity wasn't checked or is = background as measured by a survey True meter.</td
The cooler's custody seal, if present, is intact.
Sample custody seals, if present, are intact.
The cooler or samples do not appear to have been compromised or True tampered with.
Samples were received on ice.
Cooler Temperature is acceptable. True
Cooler Temperature is recorded. True
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?
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.  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 True MS/MSDs
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

Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-2

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)		
160-36828-B-23-B DU	Duplicate	108		
440-258219-1	Outfall001_20191227_Comp	96.4		
LCS 160-455705/1-A	Lab Control Sample	105		
MB 160-455705/22-B	Method Blank	105		
Tracer/Carrier Legen	t			
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)		
160-36828-B-23-D DU	Duplicate	108	85.7		
440-258219-1	Outfall001_20191227_Comp	96.4	88.7		
LCS 160-455727/1-A	Lab Control Sample	105	86.6		
MB 160-455727/22-A	Method Blank	105	88.7		
Tracer/Carrier Legend					
Ba Carrier = Ba Carrier					
Y Carrier = Y Carrier					

Method: 905 - Strontium-90 (GFPC)

Matrix: Water Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Sr Carrier (40-110)	Y Carrier (40-110)	Percent Yield (Acceptance Limits)
440-258077-F-1-G MS	Matrix Spike	59.4	92.3	
440-258077-F-1-H MSD	Matrix Spike Duplicate	70.6	95.3	
440-258219-1	Outfall001_20191227_Comp	73.7	87.5	
LCS 160-455843/1-A	Lab Control Sample	96.9	96.8	
MB 160-455843/10-A	Method Blank	85.9	91.2	
Tracer/Carrier Legend				
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)		
440-258077-F-1-E MS	Matrix Spike	61.7		
440-258077-F-1-F MSD	Matrix Spike Duplicate	68.1		
440-258219-1	Outfall001_20191227_Comp	51.6		
LCS 160-455686/2-A	Lab Control Sample	60.6		
MB 160-455686/1-A	Method Blank	83.2		
Tracer/Carrier Legend				
Uranium-232 = Uranium	1-232			

**Eurofins Calscience Irvine** 

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# Christine, Mark B.

From: Baluran, Dwayne < DBaluran@haleyaldrich.com>

Monday, December 30, 2019 2:54 PM Sent:

To: Christine, Mark B. Cc: Miller, Katherine

FW: Eurofins TestAmerica sample confirmation files from 440-258216-1 BMP Subject:

Performance OF 001, 002, and/or 009

Attachments: SmpLoginAckLimits\_440-258216-1 [Std\_Tal\_Login\_Limits].pdf; COC 440-258216

(201912271418).pdf; SampleLoginAck\_440-258216-1 [Std\_Tal\_Login\_Ack].pdf; Eurofins

TestAmerica sample confirmation files from 440-258219-1 Outfall 001 Comp.msq

Importance: High

### -External Email-

Hi Mark,

After reviewing the sample receipts for recent events (BMP sampling, OF001 comp, OF008 comp) I have the following comments:

Sampling Event	Sample Delivery Group	Samples Included	Work Order or COC Corrections?
ISRA/BMP	440-258216-1	A1BMP0002_20191226, A1BMP0003_20191226, LXBMP0011_20191226, LXBMP0012_20191226, EPSW001IE01_20191226, EPSW002BG01_20191226	COC - incorrect sample ID names. All should be readjusted to "20191226" (the date the samples were collected) in the work order. Incorrect project number. Please update Work Order to "129095-004 <b>5.1</b> "  I assume the Gross Alpha Total and Dissolved for the last two sample IDs are in a separate SDG (440-258216-2) that will be sent to us at a later date?
OF001 -Qrtrly	440-258219-1	Outfall001_20191227_Comp, Outfall001_20191227_Comp_F	Work Order - per the comments, only test for Fe at OF001. Please remove AI, As, and Mn from both Total and Dissolved Metals.

From: Miller, Katherine < <a href="mailto:KMiller@haleyaldrich.com">KMiller@haleyaldrich.com</a>>

Sent: Monday, December 30, 2019 9:15 AM

To: Baluran, Dwayne < DBaluran@haleyaldrich.com >

Subject: FW: Eurofins TestAmerica sample confirmation files from 440-258216-1 BMP Performance OF 001, 002, and/or

009

Importance: High

Please review and see email below

Katherine Miller **HALEY & ALDRICH** 

1

Page 27 of 28

Tel: 520.289.8606

From: Mark Christine <mark.christine@testamericainc.com>

Sent: Monday, December 30, 2019 10:01 AM

To: Kim Schultz < kim.schultz@mecx.net >; Miller, Katherine < KMiller@haleyaldrich.com >

Subject: Eurofins TestAmerica sample confirmation files from 440-258216-1 BMP Performance OF 001, 002, and/or 009

#### **CAUTION: External Email**

Hello,

Attached please find the sample confirmation files for job 440-258216-1; BMP Performance OF 001, 002, and/or 009.

Please verify sample IDs. COC SAMPLE # 2019121226, looks like it is doubled up on the 12s. Logged in per COC.

Sample #1 A1BMP002\_2019121226 (440-258216-1) has a "1" instead of an "X" under the 1613 Dioxons. Sample was logged in for the dioxins, please confirm.

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

Thank you.

#### **Mark B Christine**

**Project Manager Assistant** 

Eurofins TestAmerica, Irvine

E-mail: mark.christine@testamericainc.com www.eurofinsus.com | www.testamericainc.com



Reference: [440-575685] Attachments: 3

Please let us know if we met your expectations by rating the service you received from Eurofins TestAmerica on this project by visiting our website at: Project Feedback



## **ANALYTICAL REPORT**

Eurofins Calscience Irvine 17461 Derian Ave Suite 100 Irvine, CA 92614-5817 Tel: (949)261-1022

Laboratary Jab JD: 440 050

Laboratory Job ID: 440-258219-4

Client Project/Site: Quarterly Outfall 001 Comp

### For:

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

Attn: Katherine Miller

Authorized for release by: 2/13/2020 10:01:08 AM

Christian Bondoc, Project Manager I (949)260-3218

christian.bondoc@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.

Project/Site: Quarterly Outfall 001 Comp

Christian Bondoc Project Manager I 2/13/2020 10:01:08 AM Laboratory Job ID: 440-258219-4

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 attached have been evaluated for completeness and quality control acceptability.

Page 2 of 23 2/13/2020 Client: Haley & Aldrich, Inc. Project/Site: Quarterly Outfall 001 Comp Laboratory Job ID: 440-258219-4

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## **Sample Summary**

Client: Haley & Aldrich, Inc. Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-4

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
440-258219-1	Outfall001_20191227_Comp	Water	12/27/19 07:25	12/27/19 11:20	

### **Case Narrative**

Client: Haley & Aldrich, Inc.

Job ID: 440-258219-4 Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-4

**Laboratory: Eurofins Calscience Irvine** 

Narrative

Job Narrative 440-258219-4

#### Comments

No additional comments.

#### Receipt

The samples were received on 12/27/2019 11:20 AM: the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 1.6° C, 1.7° C and 1.8° C.

#### **RAD**

Bi-214

Method 901.1: Gamma Prep Batch 160-457943

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Many isotopes requested for analysis do not have any gamma emissions, or the gamma emissions they do have are very poor. Often, such analytes are reported by gamma spectrometry assuming secular equilibrium with a longer-lived parent. The client should ensure that such inference is acceptable for their sample based upon process knowledge. The following assumptions were made for this report:

Inferred from Reported to Analyte Th-234 Pa-234 Th-234 U-238 Pb-210 Po-210 Pb-210 Bi-210 Ba-137m Cs-137 Pb-212 Po-216 Xe-131 Xe-131m Sb-125 Te-125m Ag-108m Ag-108 Rh-106 Ru-106 Th-228 Pb-212 Pb-212 Ra-224 Th-231 U-235 Th-232 Ac-228 Ac-228 Ra-228 Ra-223 Th-227 Th-227 Ac-227 Th-227 Bi-211 Th-227 Pb-211

Outfall001 20191227 Comp (440-258219-1), (LCS 160-457943/2-A), (MB 160-457943/1-A) and (440-258219-Q-1-I DU)

Method A-01-R: Isotopic Americium Prep Batch 160-458734

Ra-226

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date. Outfall001 20191227 Comp (440-258219-1), (LCS 160-458734/2-A), (LCSD 160-458734/3-A) and (MB 160-458734/1-A)

Method A-01-R: Isotopic Polonium Prep Batch 160-459832

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

### **Case Narrative**

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-4

### Job ID: 440-258219-4 (Continued)

### **Laboratory: Eurofins Calscience Irvine (Continued)**

Outfall001 20191227 Comp (440-258219-1), (LCS 160-459832/2-A), (MB 160-459832/1-A) and (440-258219-Q-1-P DU)

Method A-01-R: Isotopic Plutonium Prep Batch 160-458733

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date. Outfall001 20191227 Comp (440-258219-1), (LCS 160-458733/2-A), (LCSD 160-458733/3-A) and (MB 160-458733/1-A)

#### Method A-01-R: Isotopic Thorium Prep Batch 160-458735

A blank population correction was applied to account for contributions to the analyte count rate from sources other than the sample itself. Interferences may include, but are not limited to, impurities in reagents, tracers, or glassware, or effects due to the measurement process (such as tailing or crosstalk).

Outfall001\_20191227\_Comp (440-258219-1), (LCS 160-458735/2-A), (LCSD 160-458735/3-A) and (MB 160-458735/1-A)

#### Method A-01-R: Isotopic Thorium Prep Batch 160-458735

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date. Outfall001\_20191227\_Comp (440-258219-1), (LCS 160-458735/2-A), (LCSD 160-458735/3-A) and (MB 160-458735/1-A)

#### Method Digest/Cu Plate: Polonium Prep Batch 458677:

The following samples were run at a reduced aliquot due to heavy sediment in the sample matrix: Outfall001 20191227 Comp (440-258219-1) and (440-258219-Q-1 DU).

### Method ExtChrom: Plutonium Prep Batch 160-458733

The following samples were prepared at a reduced aliquot due to a brown discoloration and suspended solids: Outfall001 20191227 Comp (440-258219-1). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead of a sample (DUP) to demonstrate batch precision.

### Method ExtChrom: Americium Prep Batch 160-458734

The following samples were prepared at a reduced aliquot due to a brown discoloration and suspended solids: Outfall001 20191227 Comp (440-258219-1). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead of a sample (DUP) to demonstrate batch precision.

#### Method ExtChrom: Thorium Prep Batch 160-458735

The following samples were prepared at a reduced aliquot due to a brown discoloration and suspended solids: Outfall001 20191227 Comp (440-258219-1). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead of a sample (DUP) to demonstrate batch precision.

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

Project/Site: Quarterly Outfall 001 Comp

Client Sample ID: Outfall001\_20191227\_Comp

Date Collected: 12/27/19 07:25 Date Received: 12/27/19 11:20

Lab Sample ID: 440-258219-1

**Matrix: Water** 

			Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-227	29.3	U	43.2	43.3		99.0	pCi/L	01/23/20 16:27	01/24/20 07:55	1
Cesium-137	3.88	U	8.11	8.12	20.0	13.9	pCi/L	01/23/20 16:27	01/24/20 07:55	1
Bismuth-211	29.3	U	43.2	43.3		99.0	pCi/L	01/23/20 16:27	01/24/20 07:55	1
Bismuth-212	28.4	U	89.6	89.6		157	pCi/L	01/23/20 16:27	01/24/20 07:55	1
Thorium-227	29.3	U	43.2	43.3		99.0	pCi/L	01/23/20 16:27	01/24/20 07:55	1
Radium-223	29.3	U	43.2	43.3		99.0	pCi/L	01/23/20 16:27	01/24/20 07:55	1
Radium-224	13.5	U	13.9	14.0		17.9	pCi/L	01/23/20 16:27	01/24/20 07:55	1
Protactinium-231	51.3	U	171	172		564	pCi/L	01/23/20 16:27	01/24/20 07:55	1

### Method: A-01-R - Isotopic Curium and/or Americium 241 (Alpha Spectrometry)

			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Americium-241	0.000	U	0.0918	0.0918	1.00	0.274	pCi/L	01/30/20 17:21	02/07/20 12:36	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Americium-243	81.5		30 - 110					01/30/20 17:21	02/07/20 12:36	1

### Method: A-01-R - Isotopic Plutonium and Neptunium (Alpha Spectrometry)

	-		Count	Total	•					
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.0238	U	0.101	0.101	1.00	0.267	pCi/L	01/30/20 17:10	02/07/20 12:35	1
Plutonium-239/240	-0.0239	U	0.0337	0.0338	1.00	0.267	pCi/L	01/30/20 17:10	02/07/20 12:35	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	65.8		30 - 110					01/30/20 17:10	02/07/20 12:35	1

#### Method: A-01-R - Isotopic Polonium (Alpha Spectrometry)

		•	Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Polonium-210	0.524		0.315	0.318	1.00	0.445	pCi/L	02/10/20 16:01	02/12/20 06:46	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Polonium-209	92.4		30 - 110					02/10/20 16:01	02/12/20 06:46	

### Method: A-01-R - Isotopic Thorium (Alpha Spectrometry)

		Uncert.	Uncert.						
Analyte	Result Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Thorium-228	0.957	0.480	0.487	1.00	0.515	pCi/L	01/30/20 17:24	02/07/20 12:31	1
Thorium-230	0.669	0.427	0.431	1.00	0.445	pCi/L	01/30/20 17:24	02/07/20 12:31	1
Thorium-232	0.774	0.394	0.399	1.00	0.361	pCi/L	01/30/20 17:24	02/07/20 12:31	1
Tracer	%Yield Qualifier	Limits					Prepared	Analyzed	Dil Fac
Thorium-229	61.1	30 - 110					01/30/20 17:24	02/07/20 12:31	1

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### **Method Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 001 Comp

Method	Method Description	Protocol	Laboratory
901.1	Cesium 137 & Other Gamma Emitters (GS)	EPA	TAL SL
A-01-R	Isotopic Curium and/or Americium 241 (Alpha Spectrometry)	DOE	TAL SL
A-01-R	Isotopic Plutonium and Neptunium (Alpha Spectrometry)	DOE	TAL SL
A-01-R	Isotopic Polonium (Alpha Spectrometry)	DOE	TAL SL
A-01-R	Isotopic Thorium (Alpha Spectrometry)	DOE	TAL SL
Digest/Cu Plate	Preparation, Digestion & Copper Plating	TAL-STL	TAL SL
ExtChrom	Preparation, Extraction Chromatography Resin Actinide Separation	None	TAL SL
Fill Geo-0	Fill Geometry, No In-Growth	None	TAL SL

#### **Protocol References:**

DOE = U.S. Department of Energy

EPA = US Environmental Protection Agency

None = None

TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

### Laboratory References:

TAL SL = Eurofins TestAmerica, St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

**Eurofins Calscience Irvine** 

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Job ID: 440-258219-4

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### **Lab Chronicle**

Client: Haley & Aldrich, Inc.

Job ID: 440-258219-4

Project/Site: Quarterly Outfall 001 Comp

Client Sample ID: Outfall001\_20191227\_Comp Lab Sample ID: 440-258219-1

Date Collected: 12/27/19 07:25 Matrix: Water

Date Received: 12/27/19 11:20

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	Fill_Geo-0			1000 mL	1.0 g	457943	01/23/20 16:27	CLP	TAL SL
Total/NA	Analysis	901.1		1			458007	01/24/20 07:55	KLS	TAL SL
Total/NA	Prep	ExtChrom			250.08 mL	1.0 mL	458735	01/30/20 17:24	KLH	TAL SL
Total/NA	Analysis	A-01-R		1			459694	02/07/20 12:31	KRR	TAL SL
Total/NA	Prep	ExtChrom			250.08 mL	1.0 mL	458733	01/30/20 17:10	KLH	TAL SL
Total/NA	Analysis	A-01-R		1			459653	02/07/20 12:35	KRR	TAL SL
Total/NA	Prep	ExtChrom			250.08 mL	1.0 mL	458734	01/30/20 17:21	KLH	TAL SL
Total/NA	Analysis	A-01-R		1			459648	02/07/20 12:36	KRR	TAL SL
Total/NA	Prep	Digest/Cu Plate			100.08 mL	1.0 g	459832	02/10/20 16:01	HET	TAL SL
Total/NA	Analysis	A-01-R		1			460122	02/12/20 06:46	KRR	TAL SL

### **Laboratory References:**

TAL SL = Eurofins TestAmerica, St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

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Project/Site: Quarterly Outfall 001 Comp

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Lab Sample ID: MB 160-457943/1-A

**Matrix: Water** 

Analysis Batch: 458006

**Client Sample ID: Method Blank** 

**Prep Type: Total/NA** 

Job ID: 440-258219-4

**Prep Batch: 457943** 

			Count	Total						
	МВ	MB	Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-227	37.48	U	79.8	79.9		99.1	pCi/L	01/23/20 16:27	01/24/20 07:54	1
Cesium-137	-3.689	U	13.3	13.3	20.0	19.2	pCi/L	01/23/20 16:27	01/24/20 07:54	1
Bismuth-211	37.48	U	79.8	79.9		99.1	pCi/L	01/23/20 16:27	01/24/20 07:54	1
Bismuth-212	40.33	U	89.3	89.4		153	pCi/L	01/23/20 16:27	01/24/20 07:54	1
Thorium-227	37.48	U	79.8	79.9		99.1	pCi/L	01/23/20 16:27	01/24/20 07:54	1
Radium-223	37.48	U	79.8	79.9		99.1	pCi/L	01/23/20 16:27	01/24/20 07:54	1
Radium-224	-4.012	U	16.9	16.9		29.1	pCi/L	01/23/20 16:27	01/24/20 07:54	1
Protactinium-231	0.0000	U	129	129		624	pCi/L	01/23/20 16:27	01/24/20 07:54	1

Lab Sample ID: LCS 160-457943/2-A

**Matrix: Water** 

Analysis Batch: 458006

**Client Sample ID: Lab Control Sample** 

**Prep Type: Total/NA** 

**Prep Batch: 457943** 

				Total						
	Spike	LCS	LCS	Uncert.					%Rec.	
Analyte	Added	Result	Qual	(2σ+/-)	RL	MDC	Unit	%Rec	Limits	
Americium-241	136000	129000		14900		414	pCi/L	95	90 - 111	_
Cesium-137	43900	43850		4400	20.0	101	pCi/L	100	90 - 111	
Cobalt-60	27000	26420		2610		60.7	pCi/L	98	89 - 110	

Lab Sample ID: 440-258219-1 DU

**Matrix: Water** 

**Analysis Batch: 458005** 

Client Sample ID: Outfall001\_20191227\_Comp

**Prep Type: Total/NA Prep Batch: 457943** 

					Total				•	
	Sample	Sample	DU	DU	Uncert.					RER
Analyte	Result	Qual	Result	Qual	(2σ+/-)	RL	MDC	Unit	RER	Limit
Actinium-227	29.3	U	6.297	U	17.0		133	pCi/L	0.38	1
Cesium-137	3.88	U	0.2454	U	7.65	20.0	14.2	pCi/L	0.23	1
Bismuth-211	29.3	U	6.297	U	17.0		133	pCi/L	0.38	1
Bismuth-212	28.4	U	35.23	U	73.2		128	pCi/L	0.04	1
Thorium-227	29.3	U	6.297	U	17.0		133	pCi/L	0.38	1
Radium-223	29.3	U	6.297	U	17.0		133	pCi/L	0.38	1
Radium-224	13.5	U	-7.191	U	21.6		37.2	pCi/L	0.58	1
Protactinium-231	51.3	U	95.84	U	248		571	pCi/L	0.11	1

Method: A-01-R - Isotopic Thorium (Alpha Spectrometry)

Lab Sample ID: MB 160-458735/1-A

**Matrix: Water** 

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

Analysis Batch:	459688								Prep Batch:	458735
			Count	Total						
	MB	MB	Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Thorium-228	-0.2270	U	0.210	0.211	1.00	0.551	pCi/L	01/30/20 17:24	02/07/20 12:31	1
Thorium-230	-0.1018	U	0.259	0.259	1.00	0.507	pCi/L	01/30/20 17:24	02/07/20 12:31	1
Thorium-232	-0.005540	U	0.150	0.150	1.00	0.361	pCi/L	01/30/20 17:24	02/07/20 12:31	1
	МВ	MB								
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Thorium-229	86.8		30 - 110					01/30/20 17:24	02/07/20 12:31	1

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Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-4

### Method: A-01-R - Isotopic Thorium (Alpha Spectrometry)

Lab Sample ID: LCS 160-458735/2-A

**Matrix: Water** 

Analysis Batch: 459689

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

**Prep Batch: 458735** 

Total Spike LCS LCS

Analyte Added Result Qual Thorium-230 16.1 17.08

Uncert. RL  $(2\sigma + / -)$ 

1.00

2.10

**MDC** Unit %Rec

0.421 pCi/L

MDC Unit

0.376 pCi/L

%Rec.

Limits 81 - 125

LCS LCS

Tracer %Yield Qualifier Thorium-229 95.7

Limits 30 - 110

Client Sample ID: Lab Control Sample Dup

106

Prep Type: Total/NA

**Prep Batch: 458735** 

Lab Sample ID: LCSD 160-458735/3-A **Matrix: Water** 

Analyte

Thorium-230

Thorium-229

**Analysis Batch: 459693** 

Total Uncert.

2.10

 $(2\sigma + / -)$ 

RL

1.00

%Rec

106

%Rec. Limits

**RER** RER Limit

LCSD LCSD Tracer

%Yield Qualifier I imits 92.6

30 - 110

Spike

Added

16.1

LCSD LCSD

Result Qual

17.10

### Method: A-01-R - Isotopic Polonium (Alpha Spectrometry)

Lab Sample ID: MB 160-459832/1-A

**Matrix: Water** 

**Analysis Batch: 460119** 

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

**Prep Batch: 459832** 

Count Total MB MB Uncert. Uncert.

85.0

Analyte Result Qualifier  $(2\sigma + / -)$  $(2\sigma + / -)$ RL **MDC** Unit Polonium-210 0.02111 U 0.302 0.302 1.00 0.555 pCi/L

30 - 110

0.6624

30 - 110

Prepared Analyzed Dil Fac 02/10/20 16:01 02/12/20 06:46

MB MB %Yield Qualifier Limits Prepared Analyzed Dil Fac

Lab Sample ID: LCS 160-459832/2-A

**Matrix: Water** 

Polonium-209

Polonium-210

Tracer

Polonium-209

Analysis Batch: 460120

Client Sample ID: Lab Control Sample

02/10/20 16:01 02/12/20 06:46

Prep Type: Total/NA

**Prep Batch: 459832** 

Total LCS LCS %Rec. **Spike** Uncert. RL **MDC** Unit

Analyte Added Result Qual  $(2\sigma + / -)$ %Rec Limits Polonium-210 83.8 82.35 7.41 1.00 0.395 pCi/L 98 79 - 124

LCS LCS

Tracer %Yield Qualifier Limits 89.8

Lab Sample ID: 440-258219-1 DU

**Matrix: Water** 

0.524

Client Sample ID: Outfall001\_20191227\_Comp Prep Type: Total/NA

**Prep Batch: 459832** 

0.21

**Analysis Batch: 460127** Total DU DU Sample Sample Uncert. **RER** Result Qual Result Qual  $(2\sigma + / -)$ RL **MDC** Unit Analyte RER Limit

0.337

1.00

0.437 pCi/L

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Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-4

Method: A-01-R - Isotopic Polonium (Alpha Spectrometry) (Continued)

DU DU Tracer %Yield Qualifier Limits Polonium-209 74.5 30 - 110

Method: A-01-R - Isotopic Curium and/or Americium 241 (Alpha Spectrometry)

Lab Sample ID: MB 160-458734/1-A **Client Sample ID: Method Blank Matrix: Water** Prep Type: Total/NA Analysis Batch: 459645 **Prep Batch: 458734** Count Total

MB MB Uncert. Uncert. Result Qualifier **MDC** Unit Analyte  $(2\sigma + / -)$  $(2\sigma + / -)$ RL Prepared Analyzed Dil Fac Americium-241 -0.04445 Ū 0.0398 0.0401 1.00 0.253 pCi/L 01/30/20 17:21 02/07/20 12:36 MB MB

%Yield Qualifier Limits Tracer Prepared Analyzed Dil Fac Americium-243 86.3 30 - 110 01/30/20 17:21 02/07/20 12:36

Lab Sample ID: LCS 160-458734/2-A **Client Sample ID: Lab Control Sample Matrix: Water** Prep Type: Total/NA

**Analysis Batch: 459646** Prep Batch: 458734 Total

Spike LCS LCS Uncert. %Rec. Added Result Qual  $(2\sigma + / -)$ RL **MDC** Unit Limits Analyte %Rec Americium-241 2.42 1.00 0.190 pCi/L 115 80 - 116 148 17 07

LCS LCS Tracer %Yield Qualifier Limits 97.6 30 - 110 Americium-24 3

Client Sample ID: Lab Control Sample Dup Lab Sample ID: LCSD 160-458734/3-A **Matrix: Water** Prep Type: Total/NA

**Analysis Batch: 459647** Prep Batch: 458734

Total LCSD LCSD %Rec. RER **Spike** Uncert. Analyte Added Result Qual  $(2\sigma + / -)$ RL **MDC** Unit %Rec Limits RER Limit Americium-241 14.8 16.76 2.41 1.00 0.241 pCi/L 113 80 - 116 0.06

LCSD LCSD Tracer %Yield Qualifier Limits Americium-24 84.2 30 - 110

Method: A-01-R - Isotopic Plutonium and Neptunium (Alpha Spectrometry)

Lab Sample ID: MB 160-458733/1-A **Client Sample ID: Method Blank Matrix: Water** Prep Type: Total/NA **Prep Batch: 458733 Analysis Batch: 459649** 

Total Count MB MB Uncert. Uncert. Result Qualifier **MDC** Unit Dil Fac Analyte  $(2\sigma + / -)$  $(2\sigma + / -)$ RI Prepared Analyzed Plutonium-238 0.07358 Ū 0.133 0.133 1.00 0.246 pCi/L 01/30/20 17:10 02/07/20 12:34 Plutonium-239/240 0.01841 U 0.0781 0.0781 1.00 0.206 pCi/L 01/30/20 17:10 02/07/20 12:34

**Eurofins Calscience Irvine** 

### QC Sample Results

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 001 Comp

Method: A-01-R - Isotopic Plutonium and Neptunium (Alpha Spectrometry) (Continued)

Lab Sample ID: MB 160-458733/1-A

Lab Sample ID: LCS 160-458733/2-A

**Matrix: Water** 

**Matrix: Water** 

Analysis Batch: 459649

Analysis Batch: 459651

MB MB

Tracer **%Yield Qualifier** Limits Pu-242 (T) 75.7 30 - 110 Client Sample ID: Method Blank

Analyzed

Prep Type: Total/NA

Job ID: 440-258219-4

**Prep Batch: 458733** 

01/30/20 17:10 02/07/20 12:34

**Client Sample ID: Lab Control Sample** 

Prepared

Prep Type: Total/NA

**Prep Batch: 458733** 

				Total						
	Spike	LCS	LCS	Uncert.					%Rec.	
Analyte	Added	Result	Qual	(2σ+/-)	RL	MDC	Unit	%Rec	Limits	
Plutonium-238	21.0	22.08		2.52	1.00	0.0996	pCi/L	105	79 - 115	
Plutonium-239/2	21.1	21.16		2.44	1.00	0.161	pCi/L	100	85 - 120	
40										

LCS LCS Tracer **%Yield Qualifier** Limits Pu-242 (T) 84.5 30 - 110

Lab Sample ID: LCSD 160-458733/3-A

**Matrix: Water** 

Analysis Batch: 459652

**Client Sample ID: Lab Control Sample Dup** 

**Prep Type: Total/NA Prep Batch: 458733** 

Spike LCSD LCSD %Rec. **RER** Uncert. Analyte Added Result Qual  $(2\sigma + / -)$ RL **MDC** Unit Limits %Rec RER Limit Plutonium-238 21.0 23.98 2.78 1.00 0.237 pCi/L 114 79 - 115 0.36 21.1 23.58 2.75 1.00 0.256 pCi/L 85 - 120 Plutonium-239/2 112 0.47 40

Total

LCSD LCSD Tracer %Yield Qualifier Limits Pu-242 (T) 73.6 30 - 110

**Eurofins Calscience Irvine** 

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2/13/2020

## **QC Association Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 001 Comp

### Rad

### **Prep Batch: 457943**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method Prep Batch
440-258219-1	Outfall001_20191227_Comp	Total/NA	Water	Fill_Geo-0
MB 160-457943/1-A	Method Blank	Total/NA	Water	Fill_Geo-0
LCS 160-457943/2-A	Lab Control Sample	Total/NA	Water	Fill_Geo-0
440-258219-1 DU	Outfall001_20191227_Comp	Total/NA	Water	Fill_Geo-0

### **Prep Batch: 458733**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-1	Outfall001_20191227_Comp	Total/NA	Water	ExtChrom	
MB 160-458733/1-A	Method Blank	Total/NA	Water	ExtChrom	
LCS 160-458733/2-A	Lab Control Sample	Total/NA	Water	ExtChrom	
LCSD 160-458733/3-A	Lab Control Sample Dup	Total/NA	Water	ExtChrom	

### **Prep Batch: 458734**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-1	Outfall001_20191227_Comp	Total/NA	Water	ExtChrom	
MB 160-458734/1-A	Method Blank	Total/NA	Water	ExtChrom	
LCS 160-458734/2-A	Lab Control Sample	Total/NA	Water	ExtChrom	
LCSD 160-458734/3-A	Lab Control Sample Dup	Total/NA	Water	ExtChrom	

### **Prep Batch: 458735**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-1	Outfall001_20191227_Comp	Total/NA	Water	ExtChrom	
MB 160-458735/1-A	Method Blank	Total/NA	Water	ExtChrom	
LCS 160-458735/2-A	Lab Control Sample	Total/NA	Water	ExtChrom	
LCSD 160-458735/3-A	Lab Control Sample Dup	Total/NA	Water	ExtChrom	

### **Prep Batch: 459832**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258219-1	Outfall001_20191227_Comp	Total/NA	Water	Digest/Cu Plate	
MB 160-459832/1-A	Method Blank	Total/NA	Water	Digest/Cu Plate	
LCS 160-459832/2-A	Lab Control Sample	Total/NA	Water	Digest/Cu Plate	
440-258219-1 DU	Outfall001_20191227_Comp	Total/NA	Water	Digest/Cu Plate	

Job ID: 440-258219-4

### **Definitions/Glossary**

Client: Haley & Aldrich, Inc. Job ID: 440-258219-4

Project/Site: Quarterly Outfall 001 Comp

### **Qualifiers**

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Qualifier **Qualifier Description** 

Result is less than the sample detection limit.

### **Glossary**

Abbreviation	These commonly used abbreviations may or may not be present in this report.
	Listed wader the UDU selvers to decimate that the property is property as a service that 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

Detection Limit (DoD/DOE) DΙ

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)

Estimated Detection Limit (Dioxin) **EDL** Limit of Detection (DoD/DOE) LOD LOQ Limit of Quantitation (DoD/DOE)

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

MDL Method Detection Limit ML Minimum Level (Dioxin)

NC Not Calculated

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

**PQL Practical Quantitation Limit** 

QC **Quality Control** 

Relative Error Ratio (Radiochemistry) **RER** 

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)

### **Accreditation/Certification Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-4

### **Laboratory: Eurofins Calscience Irvine**

The accreditations/certifications listed below are applicable to this report.

	Authority	Program	Identification Number	<b>Expiration Date</b>
	California	State Program	CA ELAP 2706	06-30-20

### Laboratory: Eurofins TestAmerica, St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	<b>Expiration Date</b>
ANAB	Dept. of Defense ELAP	L2305	04-06-22
ANAB	Dept. of Energy	L2305.01	04-06-22
ANAB	ISO/IEC 17025	L2305	04-06-22
Arizona	State	AZ0813	12-08-20
California	Los Angeles County Sanitation Districts	10259	06-30-20
California	State	2886	06-30-20
Connecticut	State	PH-0241	03-31-21
Florida	NELAP	E87689	06-30-20
HI - RadChem Recognition	State	n/a	06-30-20
Illinois	NELAP	004553	11-30-19 *
lowa	State	373	09-17-20
Kansas	NELAP	E-10236	10-31-20
Kentucky (DW)	State	KY90125	12-31-20
Louisiana	NELAP	04080	06-30-20
Louisiana (DW)	State	LA011	12-31-20
Maryland	State	310	09-30-20
MI - RadChem Recognition	State	9005	06-30-20
Missouri	State	780	06-30-22
Nevada	State	MO000542020-1	07-31-20
New Jersey	NELAP	MO002	06-30-20
New York	NELAP	11616	04-01-20
North Dakota	State	R-207	06-30-20
NRC	NRC	24-24817-01	12-31-22
Oklahoma	State	9997	08-31-20
Pennsylvania	NELAP	68-00540	02-28-20 *
South Carolina	State	85002001	06-30-20
Texas	NELAP	T104704193-19-13	07-31-20
US Fish & Wildlife	US Federal Programs	058448	07-31-20
Utah	NELAP	MO000542019-11	07-31-20
Virginia	NELAP	10310	06-14-20
Washington	State	C592	08-30-20
West Virginia DEP	State	381	10-31-20

Eurofins Calscience Irvine

2/13/2020

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 $<sup>{}^{\</sup>star}\operatorname{Accreditation/Certification\ renewal\ pending\ -\ accreditation/certification\ considered\ valid}.$ 

### Bondoc, Christian M.

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

Sent: Thursday, January 23, 2020 10:13 AM

To:Bondoc, Christian M.Subject:RE: 440-258219-2

**Importance:** High

Follow Up Flag: Follow up Flag Status: Flagged

### -External Email-

Please add the following to 440-258219-2 (similar to 440-226830-1) on the fastest turn possible. Please let me know when this can report.

MAN-MADE RADIOCHEMISTRY RESULTS
Americium-241
Plutonium-238
Plutonium-239/240
NATURALLY OCCURRING RADIOCHEMISTRY RESULTS BY GAMMA SPECTROSCOPY
Actinium-227
Bismuth-211
Bismuth-212
Polonium-210
Protactinium-231
Radium-223
Radium-224
Thorium-227
NATURALLY OCCURRING RADIOCHEMISTRY RESULTS BY ALPHA SPECTROSCOPY
Thorium-228
Thorium-230
Thorium-232

Katherine Miller
HALEY & ALDRICH
Tel: 520, 280, 8606

Tel: 520.289.8606

**From:** Bondoc, Christian M. < <a href="mailto:christian.Bondoc@testamericainc.com">christian.Bondoc@testamericainc.com</a>>

Sent: Thursday, January 23, 2020 10:47 AM

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

**Subject:** RE: 440-258219-2

**CAUTION: External Email** 

Here is the L2 prelim report. Let me know if you need anything further.

### Thanks,

#### **Christian Bondoc**

Main: 949-261-1022 Direct: 949-260-3218 Cell: 657-250-0229

E-mail: Christian.bondoc@testamericainc.com

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

Sent: Thursday, January 23, 2020 9:33 AM

**To:** Bondoc, Christian M. **Subject:** 440-258219-2 Importance: High

### -External Email-

### Christian,

Could you get me the prelim results for 440-258219-2 Gross Alpha including result, error, and MDA? If I have an exceedance, we will need to ask for gamma list.

#### **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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1.3/1.6

10 Day: X Normal:

72 Hour. 5 Day: \_\_

24 Hour. 48 Hour.

1500

5/260

P1/2/19

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13/27/19

Relinquished By

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HALEY & ALDRICH

12/27/19 Ba:48

Turn-around time: (Check)

Legend: A=Annual, C=Conditional, EP=Expert Panel, R=Routine, Q=Quarterly, QRSW=Quarterly Receiving Water, S=Semi-Annual Company

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180

None

1 L Glass Amber

WM

Piot

On Ice

Sample Integrity: (Check)

intact:

Store samples for 6 months. Data Requirements: (Check)

+2

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1

0761/EZ/21



440-258219 Chain of Custody

7/13/202/821/7/2020 Rainy Season Version 1

48 hours Holding Time NO<sub>3</sub> & NO<sub>2</sub> 48 hours Holding Time for Turbidity Comments Hotel 용 P SSOOR) VEVE MULLES × otal Recoverable Metals: Mercury (E245.1) 2,4,6 TCP, 2,4 Dinitrotoluene, Bis(2-ethylnexyl)phthalate, NDMA, PCP (SVOCs E625) × ANALYSIS REQUIRED alpha-BHC (E608) (3:05c) N-sinomm/ (CODESCMS) 2:091) SSI Turbidity, TDS (SM2540C/E180.1) C)-, SO4, Mitrate-N, Mitrite-N, MO3+MO2-N, Petchlorate (E300) Surfactants (MBAS) (SM5540C/E425.1) I (SWES 10B BODC9(c)) BOD2 (SO deđuesa C) (E1102 1 LCDD (and all congeners) (E1613B) r Total Recoverable Metals: (E200.7): Zn (E200.8): Cu, Pb, Cd, Se MS/MSD 2 ջ 2 ş 운 운 운 ŝ ŝ 윷 2 ş ş ž Project:
Boeing-SSFL NPDES
Permit 2019
Quarterly Outfall (001, 002, 011, 018)
Comp Bottle # 6 130 Project Manager: Katherine Miller 520.289.8606, 520.904,6944 (celf) 115 130 8 30 Field Manager: Mark Dominick 978.234.5033, 818.599.0702 (cell) 8 10 8 150 5 385 140 170 Preservative H-5004 Ğ. None None Моле None None None None None None None None None # of Cont. 2 1 8 1 L Glass Amber 1 L Glass Amber 1 L Glass Amber 1 L Glass Amber Container Type 1 L Glass Ambe 500 mL Poly 500 mt. Poly 500 mil. Poly 500 mt. Poly 500 mL Poly 500 mL Poly 500 mL Poly 1L Poty 1L Poly Sample Matrix MM ××× N. ΛM Š Š Š MM Š MM ž N. WW M (1) Test/merica's services under the COC shall be performed in accordance with the T&Co within Blanker Service Agenemies 30-922-rest/merica by and between Heley & Adrich, Inc., its autoidances and Affaithse, and Test/merica Laboratories inc.
Sampler: Dan Smith Sampling Date/Time , 6102772/21 12/27/2019 Outfall001\_20191227\_Comp\_Extra Outfall001\_20191227\_Comp Test America Contact: Urvashi Patel 17461 Derian Ave Suite #100 17161 CA 92614 Tel 949-326-3269 Cell 949-333-9055 Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108 Sample I.D. Sample Description Outfall 001

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R/EP

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Test America

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13   13   13   13   13   13   13   13	1   Committee	1 Class Arelet   22 October   20	1   Column   1
1   Company	1   Country	11 Class Andre   22	1. Chara Andrew   1. Chara A
11 Class Anther   2	11   12   12   13   13   14   14   15   15   15   15   15   15	11 Class Amber   1	11   Pay   1   None   20   No   No   No   No   No   No   No   N
Note   11   Pay   1   Pay   Pay	The control of the	Segretary   Segr	The complete   Start   The complete   The complet
Samples Doubline   Samples   Sampl	Sampling Colore/Time	Samplery Debuttree Seeper Consumer Type in Notice 1999 1990 1990 1990 1990 1990 1990 199	September   Sept
11   12   12   13   14   14   14   14   14   14   14	VMM   11 Pay   1   Norm   150 - No   No   No   No   No   No   No   No	122772019	WM
122772019	122772019	122772019   WM   1.0845 Anther   1   HiO,   10   Nor   200   No   X   X   X   X   X   X   X   X   X	WM
122772019  VM 11. Class Arrber 2 Name 220 · No	122772019	1227/2019   1   1   1   1   1   1   1   1   1	1.
WM   11 Class Amber   2   Nore   220   No   No   X   No	VVM         11. Classs Armber         2         Nore         250 · No         No         X         X           VVM         500 mt. Poby         1         Nache         220 · No         X         X         X           VVM         2.5 Get Cube         1         Nache         225 · No         No         X         X           VVM         1. Classs Amber         1         Nore         220 · No         No         X         X           VVM         1. Class Amber         2         No         235 · No         No         X         X           VVM         1. Class Amber         2         NC         275 · No         No         X	WM   11 Class Anther   2   None   220   No   X   X   X   X   X   X   X   X   X	WW   1. Class Amber   2   Note   220   No   X   X   X   X   X   X   X   X   X
VMM         Storm LPoly         1         None         220 · No         X         X           VMM         2.5 Gal Cube         1         None         225 · No         X         X           VMM         1.1 Glass Anther         1         None         225 · No         X         X           VMM         1. Class Anther         2         None         235 · No         Y           VMM         1. Class Anther         2         HCl         276 · No	WM Docosicate viels         1 None         320 · No         No         X         X           VMM 12 Gel Cube         1 None         225 · No         X         X         X           1227/2019 J. WM 1.L Glass Amber         1 None         235 · No         No         X           VWM 1.L Class Amber         2 HCl         275 · No         No         Y	WM   Dorosilicate vides   1   None   320	WW   brosslerine wisk   1   Nare   320
VVM         25 Gal Cube         1         None         220 ·         No         X         No         X           1-227/2019         VVM         11 Class Anther         1         None         225 ·         No         X         No	WM         500 nt Poly         1         Neore         220 ·         No         X           122772019         WM         11 Class Anther         1         Nore         225 ·         No         X           WM         11 Class Anther         2         HCI         235 ·         No         X           WM         11 Class Anther         2         HCI         275 ·         No	WMM   Storm L Poly   1   None   225	VMM         25 Gel Cube         1         None         225 -         No         X         X         X           VMM         14 Class Anther         1         None         225 -         No         X </td
1277/2019   WM   1 Gless Anther   1   None   225	1227/2019   WM   1. Caless Arriber   1   Norre   225	WM   1. Gais Cube   1   Norme   235	VMM   1. Class Anther   1   None   225
122712019 WM 1 Gal Cube 6 None 235 No 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.	WM 1. Class Anther 2 HC; 275 No	WM 1 Gal Cabe 6 None 235 No Tucker 2 HC 275 No Tuck	
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11. Classs Anther 2 HCI 2775 %:	11. Class Anther 2 HCI 2775 ??)	Legend: A=Annual, C=Conditional, EP=Expert Panel, R=Routine, Q=Quartenty, QRSW=Quartenty Receiving Water, S=Semi-Annual  Legend: A=Annual, C=Conditional, EP=Expert Panel, R=Routine, Q=Quartenty, QRSW=Quartenty Receiving Water, S=Semi-Annual  Legend: A=Annual, C=Conditional, EP=Expert Panel, R=Routine, Q=Quartenty, QRSW=Quartenty, Receiving Water, S=Semi-Annual  Legend: A=Annual, C=Conditional, EP=Expert Panel, R=Routine, Q=Quartenty, QRSW=Quartenty, QRSW=Qua	Legend: A=Annual, C=Conditional, EP=Expert Panel, Received by  HALEY A H. LDP III  Received by
		Legend: A=Annual, C=Conditional, EP=Expert Panel, R=Routine, Q=Ourherty, QRSW=Quarterty Receiving Water, S=Semi-Annual  Turn-around time (Check)  HALEY A PLDBICH  As Hour 5 Day Named:	Legend: A-Annual, C=Conditional, EP-Expert Panal, R=Routine, Q=Quarterty, QRSW=Quarterty Receiving Water, S=Semi-Annual Turn-around time: (Check) APLEY APLEY APLEY APLOY To Gay S Hour 10 Day. APLEY APLEY APLOY Second By DaterTime. Sample Integrity, Check) APLEY APPLIANCE APP
		Legend: A=Annual, C=Conditional, EP=Expert Panel, R=Routine, Q=Oustrerty, QRSW=Quarterty Receiving Water, S=Semi-Annual  This 24 Hour 10 Day.  AREA AREA 10 Day.  AREA 10 DAY.	Legend: A=Annual, C=Conditional, EP=Expert Panel, Received By  HALEY A HOLD 17 27 17 29 45 18 Hour 10 Day.  ARREST No. 12/27/17 29 45 18 Hour 10 Day.  ARREST No. 12/27/17 29 45 19 10 Day.  ARREST No. 12/27/17 29 45 19 10 Day.  ARREST No. 12/27/17 29 45 19 DAY.  ARREST NO. 12/27/17 29 19 DAY.
		Legend: A=Annual, C=Conditional, EP=Expert Panel, R=Routine, Q=Quarterly, QRSW=Quarterly Receiving Water, S=Semi-Annual  The The The Conditional Conditional Conditions (Check)  HALEY A PLDAICH  12/27/7 CG YS  248 Hour 5 Day Named:	Legend: A-Annual, C-Conditional, EP-Expert Panel, R-Routine, Q-Outsterty, QRSW-Quarterty Receiving Water, S-Semi-Annual Turn-around time (Check) 24 Hour 72 Hour 10 Day.  AR Hour 5 Day Normal: A Received By Carefine: Share Normal: A Received By Carefine: Share Normal: Sample Integrity, (Check) A Received By Carefine: Share Normal: Sample Integrity, (Check)
	The state of the s	Legend: A=Annual, C=Conditional, EP=Expert Panel, R=Routine, Q=Ourrectly, QRSW=Quarterly, Receiving Water, S=Semi-Annual  This This The Table To The Conditional To T	Legend: A-Annual, C-Conditional, EP-Expert Panel, Receiving Construction (Check)    ALL ALL ALL ALL ALL ALL ALL ALL ALL AL
			Company  (A 12)  (A 12

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### **Login Sample Receipt Checklist**

Client: Haley & Aldrich, Inc.

Job Number: 440-258219-4

Login Number: 258219 List Source: Eurofins Irvine

List Number: 1

Creator: Soderblom, Tim

Steator. Soderbiolii, Tilli		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey neter.</td <td>True</td> <td></td>	True	
he 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 ampered with.	True	
Samples were received on ice.	True	
ooler 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	
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	
ample containers have legible labels.	True	
Containers are not broken or leaking.	True	
ample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
sample Preservation Verified.	N/A	
here is sufficient vol. for all requested analyses, incl. any requested IS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is 6mm (1/4").	True	
fultiphasic 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: 440-258219-4

Login Number: 258219 List Number: 2 List Source: Eurofins TestAmerica, St. Louis

List Creation: 12/28/19 12:04 PM

Creator: Harris, Lorin C

Creator. Harris, Lorini C		
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.	True	
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?	False	
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").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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Project/Site: Quarterly Outfall 001 Comp

Job ID: 440-258219-4

Method: A-01-R - Isotopic Curium and/or Americium 241 (Alpha Spectrometry)

**Matrix: Water** Prep Type: Total/NA

			Percent Yield (Acceptance Limits)
		nericium-2	
_ab Sample ID	Client Sample ID	(30-110)	
140-258219-1	Outfall001_20191227_Comp	81.5	
_CS 160-458734/2-A	Lab Control Sample	97.6	
_CSD 160-458734/3-A	Lab Control Sample Dup	84.2	
MB 160-458734/1-A	Method Blank	86.3	
Tracer/Carrier Legend			

Method: A-01-R - Isotopic Plutonium and Neptunium (Alpha Spectrometry)

Prep Type: Total/NA **Matrix: Water** 

			Percent Yield (Acceptance Limits)
		Pu-242 (T)	
Lab Sample ID	Client Sample ID	(30-110)	
440-258219-1	Outfall001_20191227_Comp	65.8	
LCS 160-458733/2-A	Lab Control Sample	84.5	
LCSD 160-458733/3-A	Lab Control Sample Dup	73.6	
MB 160-458733/1-A	Method Blank	75.7	
Tracer/Carrier Legenc	i		
Pu-242 (T) = Pu-242 (T			<del></del>

**Method: A-01-R - Isotopic Polonium (Alpha Spectrometry)** 

**Matrix: Water** Prep Type: Total/NA

	olonium-2	
Client Sample ID	(30-110)	
Outfall001_20191227_Comp	92.4	
Outfall001_20191227_Comp	74.5	
Lab Control Sample	89.8	
Method Blank	85.0	
L	Outfall001_20191227_Comp Outfall001_20191227_Comp .ab Control Sample	Outfall001_20191227_Comp       92.4         Outfall001_20191227_Comp       74.5         Lab Control Sample       89.8         Method Blank       85.0

**Method: A-01-R - Isotopic Thorium (Alpha Spectrometry)** 

**Matrix: Water** Prep Type: Total/NA

			Percent Yield (Acceptance Limits)
		horium-22	
Lab Sample ID	Client Sample ID	(30-110)	
440-258219-1	Outfall001_20191227_Comp	61.1	
LCS 160-458735/2-A	Lab Control Sample	95.7	
LCSD 160-458735/3-A	Lab Control Sample Dup	92.6	
MB 160-458735/1-A	Method Blank	86.8	
Tracer/Carrier Legenc	i		
Thorium-229 = Thorium	1-229		

**Eurofins Calscience Irvine** 

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### **DATA VALIDATION REPORT**

## **Boeing SSFL NPDES**

SAMPLE DELIVERY GROUP: 440-256471-1

### **Prepared for**

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

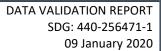
09 January 2020





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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<sup>x</sup> Project No.: 1272.003D.01 002

Sample Delivery Group: 440-256471-1

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	Matrix	Collection	Method
OUTFALL002_20191204_GRAB	440-256471-1	WM	12/4/19 1:30 PM	E120.1, E624



#### II. SAMPLE MANAGEMENT

According to the case narrative, Login Sample Receipt Checklist, and the chain-of-custody (COC) provided by the laboratory for sample delivery group (SDG) 440-256471-1:

- The laboratory received the sample in this SDG on ice and within the temperature limits of <6 degrees Celsius (°C) and >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 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 624.1—VOLATILE ORGANIC COMPOUNDS (VOCs)

### L. Calvin of MEC<sup>x</sup> reviewed the SDG on January 9, 2020

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC<sup>X</sup> Data Validation Procedure for Volatile Organics (DVP-2, Rev. 2), EPA Method 624.1, and the National Functional Guidelines for Superfund Organic Methods Data Review (2017).

#### **III.1. HOLDING TIMES**

The analytical holding time was met. The preserved water site sample was analyzed within 14 days of collection.

### III.2. GC/MS TUNING AND CALIBRATION

The BFB tunes met the method abundance criteria. Samples 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. No qualifications were required.

#### **III.3. QUALITY CONTROL SAMPLES**

#### III.3.1. METHOD BLANKS

Target compounds were not detected in the method blank above the MDL.

### III.3.2. LABORATORY CONTROL SAMPLES

LCS/LCSD recoveries and RPDs were within the method 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<sup>x</sup> evaluated method accuracy and precision based on the associated LCS/LCSD results.

### III.4. FIELD QC SAMPLES

MEC<sup>x</sup> 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<sup>x</sup> 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-20191204 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.



#### 11.4.3. 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 624.1. 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. METHOD EPA 120.1 — SPECIFIC CONDUCTANCE

M. Hilchey of MEC<sup>X</sup> reviewed the SDG on January 16, 2020.

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC<sup>X</sup> Data Validation Procedure for General Minerals (DVP-6, Rev. 1), EPA Method 120.1 and the National Functional Guidelines for Inorganic Superfund Methods Data Review (2017).

### **IV.1. HOLDING TIMES**

The QAPP holding time, 28 days for specific conductance, was met.

#### IV.2. CALIBRATION

Probe calibration data was not provided. The initial and continuing calibration verification recoveries met laboratory control limits.

#### **IV.3. QUALITY CONTROL SAMPLES**

#### IV.3.1. METHOD BLANKS

The method blank had no detection of specific conductivity.



#### IV.3.2. LABORATORY CONTROL SAMPLES

Laboratory control sample recovery met QAPP control limits.

### **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 are not applicable to this method.

### **IV.4. SAMPLE RESULT VERIFICATION**

Raw data was not provided; therefore, sample results could not be verified against raw data. Reported nondetects are valid to the MDL.

### **IV.5. FIELD QC SAMPLES**

MEC<sup>x</sup> 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<sup>x</sup> 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: 4402564711

Analysis Method E120.1

Sample Name OUTFALL002 20191204 GRAB Matrix Type: WM Result Type: TRG

Sample Date: 12/4/2019 1:30:00 PM Validation Level: 8

**Lab Sample Name:** 440-256471-1

Fraction: CAS No Result RLMDL Analyte Result Lab Validation Validation Value Units Qualifier Qualifier Notes Specific Conductance CONDSPEC 680 1.0 1.0 umhos/c

Analysis Method E624.1

Sample Name OUTFALL002\_20191204\_GRAB Matrix Type: WM Result Type: TRG

Sample Date: 12/4/2019 1:30:00 PM Validation Level: 8

**Lab Sample Name:** 440-256471-1

Analyte	Fractio	n: CAS No	Result Value	<b>RL</b> 0.50	MDL 0.25	Result Units	Lab Qualifier	Validation Qualifier U	Validation Notes
1,1,1-Trichloroethane	N	71-55-6							
1,1,2,2-Tetrachloroethane	N	79-34-5	ND	0.50	0.25	ug/L	U	U	
1,1,2-Trichloroethane	N	79-00-5	ND	0.50	0.25	ug/L	U	U	
1,1-Dichloroethane	N	75-34-3	ND	0.50	0.25	ug/L	U	U	
1,2-Dichlorobenzene	N	95-50-1	ND	0.50	0.25	ug/L	U	U	
1,2-Dichloropropane	N	78-87-5	ND	0.50	0.25	ug/L	U	U	
1,3-Dichlorobenzene	N	541-73-1	ND	0.50	0.25	ug/L	U	U	
1,4-Dichlorobenzene	N	106-46-7	ND	0.50	0.25	ug/L	U	U	
Benzene	N	71-43-2	ND	0.50	0.25	ug/L	U	U	
Bromodichloromethane	N	75-27-4	ND	0.50	0.25	ug/L	U	U	
Bromoform	N	75-25-2	ND	1.0	0.40	ug/L	U	U	
Bromomethane (Methyl Bromide	) N	74-83-9	ND	0.50	0.25	ug/L	U	U	
Carbon tetrachloride	N	56-23-5	ND	0.50	0.25	ug/L	U	U	
Chlorobenzene	N	108-90-7	ND	0.50	0.25	ug/L	U	U	
Chloroethane	N	75-00-3	ND	1.0	0.40	ug/L	U	U	
Chloroform (Trichloromethane)	N	67-66-3	ND	0.50	0.25	ug/L	U	U	
Chloromethane (Methyl Chloride	) N	74-87-3	ND	0.50	0.25	ug/L	U	U	
cis-1,2-Dichloroethene	N	156-59-2	ND	0.50	0.25	ug/L	U	U	
cis-1,3-Dichloropropene	N	10061-01-5	ND	0.50	0.25	ug/L	U	U	
Dibromochloromethane	N	124-48-1	ND	0.50	0.25	ug/L	U	U	
Ethylbenzene	N	100-41-4	ND	0.50	0.25	ug/L	U	U	
Methylene chloride	N	75-09-2	ND	2.0	0.88	ug/L	U	U	
Naphthalene	N	91-20-3	ND	1.0	0.40	ug/L	U	U	
Tetrachloroethene	N	127-18-4	ND	0.50	0.25	ug/L	U	U	
Toluene	N	108-88-3	ND	0.50	0.25	ug/L	U	U	
trans-1,2-Dichloroethene	N	156-60-5	ND	0.50	0.25	ug/L	U	U	
trans-1,3-Dichloropropene	N	10061-02-6	ND	0.50	0.25	ug/L	U	U	

Tuesday, January 21, 2020 Page 1 of 2

Analysis Method	E624	4.1						
Trifluorotrichloroethane (Freon 113)	N	76-13-1	ND	2.0	0.50	ug/L	U	U
Vinyl chloride	N	75-01-4	ND	0.50	0.25	ug/L	U	U

Tuesday, January 21, 2020 Page 2 of 2

# **ANALYTICAL REPORT**

Eurofins TestAmerica, Irvine 17461 Derian Ave Suite 100 Irvine, CA 92614-5817

Tel: (949)261-1022

Laboratory Job ID: 440-256471-1

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 fatel

Authorized for release by: 12/27/2019 10:30:45 PM

Urvashi Patel, Manager of Project Management (949)260-3269

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.

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Project/Site: Quarterly Outfall 002 Grab

Ushi fatel

Urvashi Patel

Laboratory Job ID: 440-256471-1

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.

12/27/2019 10:30:45 PM

Manager of Project Management

Client: Haley & Aldrich, Inc. Project/Site: Quarterly Outfall 002 Grab Laboratory Job ID: 440-256471-1

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# **Sample Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Grab

 Lab Sample ID
 Client Sample ID
 Matrix
 Collected
 Received
 Asset ID

 440-256471-1
 Outfall002\_20191204\_Grab
 Water
 12/04/19 13:30
 12/05/19 16:37

 440-256471-3
 TB\_20191204
 Water
 12/04/19 13:30
 12/05/19 16:37

4

Job ID: 440-256471-1

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## **Case Narrative**

Client: Haley & Aldrich, Inc.

Job ID: 440-256471-1 Project/Site: Quarterly Outfall 002 Grab

Job ID: 440-256471-1

Laboratory: Eurofins TestAmerica, Irvine

**Narrative** 

Job Narrative 440-256471-1

#### Comments

No additional comments.

#### Receipt

The samples were received on 12/5/2019 4:37 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 5 coolers at receipt time were 1.0° C, 1.8° C, 2.1° C, 2.5° C and 2.6° C.

#### **GC/MS VOA**

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

### **General Chemistry**

Methods 120.1, SM 2510B: Conductivity result was reported at a dilution and may have increased error compared to an undiluted sample.

(440-257042-G-1) and (440-257042-G-1 DU)

Method SM 2540F: Insufficient sample volume was available to perform a sample duplicate (DUP) associated with analytical batch 440-584130.

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

#### **Organic Prep**

Methods 1664A, 1664B: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-587436 and analytical batch 440-587447. The Laboratory Control Sample (LCS) was performed in duplicate to provide precise data for this batch. Method 1664A/1664B.

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

#### **VOA Prep**

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

HEM (Oil & Grease)

Settleable Solids

**Specific Conductance** 

Analyte

Project/Site: Quarterly Outfall 002 Grab

Client Sample ID: Outfall002\_20191204\_Grab

Date Collected: 12/04/19 13:30 Date Received: 12/05/19 16:37 Lab Sample ID: 440-256471-1

Matrix: Water

Method: 624.1 - Volatile Orga Analyte		Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
1,1,1-Trichloroethane	ND		0.50	0.25	ug/L			12/06/19 11:50	
1,1,2,2-Tetrachloroethane	ND		0.50	0.25	ug/L			12/06/19 11:50	•
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		2.0	0.50	ug/L			12/06/19 11:50	
1,1,2-Trichloroethane	ND		0.50	0.25	ug/L			12/06/19 11:50	
1,1-Dichloroethane	ND		0.50	0.25	ug/L			12/06/19 11:50	•
1,1-Dichloroethene	ND		0.50	0.25	ug/L			12/06/19 11:50	•
1,2-Dichlorobenzene	ND		0.50	0.25	ug/L			12/06/19 11:50	
1,2-Dichloroethane	ND		0.50	0.25	ug/L			12/06/19 11:50	
1,2-Dichloropropane	ND		0.50	0.25	ug/L			12/06/19 11:50	
1,3-Dichlorobenzene	ND		0.50	0.25	ug/L			12/06/19 11:50	· · · · · · · · ·
1,4-Dichlorobenzene	ND		0.50	0.25	ug/L			12/06/19 11:50	
Benzene	ND		0.50	0.25	ug/L			12/06/19 11:50	
Bromoform	ND		1.0	0.40	ug/L			12/06/19 11:50	· · · · · · · ·
Bromomethane	ND		0.50	0.25	ug/L			12/06/19 11:50	
Carbon tetrachloride	ND		0.50	0.25	ug/L			12/06/19 11:50	
Chlorobenzene	ND		0.50	0.25	ug/L			12/06/19 11:50	· · · · · · · · ·
Dibromochloromethane	ND		0.50	0.25	ug/L			12/06/19 11:50	
Chloroethane	ND		1.0	0.40	ug/L			12/06/19 11:50	
Chloroform	ND		0.50	0.25	ug/L			12/06/19 11:50	· · · · · · · · ·
Chloromethane	ND		0.50	0.25				12/06/19 11:50	
cis-1,2-Dichloroethene	ND		0.50	0.25	ug/L			12/06/19 11:50	
cis-1,3-Dichloropropene	ND		0.50		ug/L			12/06/19 11:50	· · · · · · · · ·
Bromodichloromethane	ND		0.50	0.25	ug/L			12/06/19 11:50	
Ethylbenzene	ND		0.50	0.25	ug/L			12/06/19 11:50	
Methylene Chloride	ND		2.0	0.88	ug/L			12/06/19 11:50	· · · · · · · · ·
Naphthalene	ND		1.0	0.40	ug/L			12/06/19 11:50	
Tetrachloroethene	ND		0.50	0.25	ug/L			12/06/19 11:50	
Toluene	ND		0.50	0.25	ug/L			12/06/19 11:50	· · · · · · · · ·
trans-1,2-Dichloroethene	ND		0.50	0.25				12/06/19 11:50	
trans-1,3-Dichloropropene	ND		0.50		ug/L			12/06/19 11:50	
Trichloroethene	ND		0.50		ug/L			12/06/19 11:50	
Vinyl chloride	ND		0.50		ug/L			12/06/19 11:50	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
4-Bromofluorobenzene (Surr)	97		60 - 140			-		12/06/19 11:50	
Dibromofluoromethane (Surr)	99		60 - 140					12/06/19 11:50	
Toluene-d8 (Surr)	102		60 - 140					12/06/19 11:50	
General Chemistry									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
			4.0				10/00/10 15 10	10/00/10 10 00	

Analyzed

12/16/19 13:04

12/05/19 18:53

<u>12/22/19 15:12</u> <u>12/22/19 18:06</u>

Prepared

4.8

RL

1.0

0.10

1.4 mg/L

**RL** Unit

0.10 mL/L/Hr

1.0 umhos/cm

ND

680

ND

Result Qualifier

Dil Fac

# **Client Sample Results**

Client: Haley & Aldrich, Inc.

Job ID: 440-256471-1

Project/Site: Quarterly Outfall 002 Grab

Client Sample ID: TB\_20191204

Date Collected: 12/04/19 13:30 Date Received: 12/05/19 16:37

Toluene-d8 (Surr)

Lab Sample ID: 440-256471-3

**Matrix: Water** 

Analyte	Result	Qualifier	RL	MDL		D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		0.50	0.25	ug/L			12/06/19 12:19	1
1,1,2,2-Tetrachloroethane	ND		0.50	0.25	ug/L			12/06/19 12:19	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		2.0	0.50	ug/L			12/06/19 12:19	1
1,1,2-Trichloroethane	ND		0.50	0.25	ug/L			12/06/19 12:19	1
1,1-Dichloroethane	ND		0.50	0.25	ug/L			12/06/19 12:19	1
1,1-Dichloroethene	ND		0.50	0.25	ug/L			12/06/19 12:19	1
1,2-Dichlorobenzene	ND		0.50	0.25	ug/L			12/06/19 12:19	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			12/06/19 12:19	1
1,2-Dichloropropane	ND		0.50	0.25	ug/L			12/06/19 12:19	1
1,3-Dichlorobenzene	ND		0.50	0.25	ug/L			12/06/19 12:19	1
1,4-Dichlorobenzene	ND		0.50	0.25	ug/L			12/06/19 12:19	1
Benzene	ND		0.50	0.25	ug/L			12/06/19 12:19	1
Bromoform	ND		1.0	0.40	ug/L			12/06/19 12:19	1
Bromomethane	ND		0.50	0.25	ug/L			12/06/19 12:19	1
Carbon tetrachloride	ND		0.50	0.25	ug/L			12/06/19 12:19	1
Chlorobenzene	ND		0.50	0.25	ug/L			12/06/19 12:19	1
Dibromochloromethane	ND		0.50	0.25	ug/L			12/06/19 12:19	1
Chloroethane	ND		1.0	0.40	ug/L			12/06/19 12:19	1
Chloroform	ND		0.50	0.25	ug/L			12/06/19 12:19	1
Chloromethane	ND		0.50	0.25	ug/L			12/06/19 12:19	1
cis-1,2-Dichloroethene	ND		0.50	0.25	ug/L			12/06/19 12:19	1
cis-1,3-Dichloropropene	ND		0.50	0.25	ug/L			12/06/19 12:19	1
Bromodichloromethane	ND		0.50	0.25	ug/L			12/06/19 12:19	1
Ethylbenzene	ND		0.50	0.25	ug/L			12/06/19 12:19	1
Methylene Chloride	ND		2.0	0.88	ug/L			12/06/19 12:19	1
Naphthalene	ND		1.0	0.40	ug/L			12/06/19 12:19	1
Tetrachloroethene	ND		0.50	0.25	ug/L			12/06/19 12:19	1
Toluene	ND		0.50	0.25	ug/L			12/06/19 12:19	1
trans-1,2-Dichloroethene	ND		0.50	0.25	ug/L			12/06/19 12:19	1
trans-1,3-Dichloropropene	ND		0.50	0.25	ug/L			12/06/19 12:19	1
Trichloroethene	ND		0.50	0.25	ug/L			12/06/19 12:19	1
Vinyl chloride	ND		0.50	0.25	ug/L			12/06/19 12:19	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	104		60 - 140			=		12/06/19 12:19	1
Dibromofluoromethane (Surr)	103		60 - 140					12/06/19 12:19	1

12/27/2019

12/06/19 12:19

60 - 140

101

6

8

10

40

# **Method Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Grab

Method	Method Description	Protocol	Laboratory
624.1	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 = Eurofins TestAmerica, Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

12/27/2019

Job ID: 440-256471-1

4

6

0

9

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# **Lab Chronicle**

Client: Haley & Aldrich, Inc. Job ID: 440-256471-1

Project/Site: Quarterly Outfall 002 Grab

Client Sample ID: Outfall002\_20191204\_Grab

Lab Sample ID: 440-256471-1 Date Collected: 12/04/19 13:30 **Matrix: Water** 

Date Received: 12/05/19 16:37

	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		1	10 mL	10 mL	584182	12/06/19 11:50	RM	TAL IRV
Total/NA	Analysis	120.1		1			586195	12/16/19 13:04	XL	TAL IRV
Total/NA	Prep	1664A			1035 mL	1000 mL	587436	12/22/19 15:12	AJH	TAL IRV
Total/NA	Analysis	1664A		1			587447	12/22/19 18:06	AJH	TAL IRV
Total/NA	Analysis	SM 2540F		1	1000 mL	1 L	584130	12/05/19 18:53	HZ	TAL IRV

Client Sample ID: TB\_20191204 Lab Sample ID: 440-256471-3

Date Collected: 12/04/19 13:30

Date Received: 12/05/19 16:37

	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		1	10 mL	10 mL	584182	12/06/19 12:19	RM	TAL IRV

**Laboratory References:** 

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

**Matrix: Water** 

Eurofins TestAmerica, Irvine

12/27/2019

Job ID: 440-256471-1

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

# Method: 624.1 - Volatile Organic Compounds (GC/MS)

ND

Lab Sample ID: MB 440-584182/5

**Matrix: Water** 

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

12/06/19 08:59

12/06/19 08:59

12/06/19 08:59

12/06/19 08:59

12/06/19 08:59

12/06/19 08:59

12/06/19 08:59

12/06/19 08:59

12/06/19 08:59

12/06/19 08:59

12/06/19 08:59

12/06/19 08:59

Analysis Batch: 584182 MR MR RL **MDL** Unit Prepared Dil Fac Analyte Result Qualifier Analyzed 0.50 12/06/19 08:59 1,1,1-Trichloroethane 0.25 ug/L ND 1,1,2,2-Tetrachloroethane ND 0.50 0.25 ug/L 12/06/19 08:59 1 1,1,2-Trichloro-1,2,2-trifluoroethane ND 2.0 0.50 ug/L 12/06/19 08:59 1 1,1,2-Trichloroethane ND 0.50 0.25 ug/L 12/06/19 08:59 1.1-Dichloroethane ND 0.50 0.25 ug/L 12/06/19 08:59 1,1-Dichloroethene ND 0.50 0.25 ug/L 12/06/19 08:59 1,2-Dichlorobenzene ND 0.50 0.25 ug/L 12/06/19 08:59 1,2-Dichloroethane ND 0.50 0.25 ug/L 12/06/19 08:59 1,2-Dichloropropane ND 0.50 0.25 ug/L 12/06/19 08:59 1,3-Dichlorobenzene ND 0.50 0.25 ug/L 12/06/19 08:59 1,4-Dichlorobenzene ND 0.50 0.25 ug/L 12/06/19 08:59 Benzene ND 0.50 0.25 ug/L 12/06/19 08:59 1 Bromoform ND 1.0 0.40 ug/L 12/06/19 08:59 Bromomethane NΠ 0.50 0.25 ug/L 12/06/19 08:59 Carbon tetrachloride ND 0.50 0.25 ug/L 12/06/19 08:59 ND Chlorobenzene 0.50 0.25 ug/L 12/06/19 08:59 Dibromochloromethane ND 0.50 0.25 ug/L 12/06/19 08:59 Chloroethane ND 1.0 0.40 ug/L 12/06/19 08:59 Chloroform ND 0.50 0.25 ug/L 12/06/19 08:59 Chloromethane ND 0.50 0.25 ug/L 12/06/19 08:59

0.50

0.50

0.50

0.50

2.0

1.0

0.50

0.50

0.50

0.50

0.50

0.50

0.25 ug/L

0.25 ug/L

0.25 ug/L

0.88 ug/L

0.40 ug/L

0.25 ug/L

MB MB Surrogate %Recovery Qualifier Limits Prepared Analyzed Dil Fac 4-Bromofluorobenzene (Surr) 100 60 - 140 12/06/19 08:59 102 Dibromofluoromethane (Surr) 60 - 140 12/06/19 08:59 Toluene-d8 (Surr) 102 60 - 140 12/06/19 08:59

Lab Sample ID: LCS 440-584182/1002

**Matrix: Water** 

cis-1,2-Dichloroethene

cis-1,3-Dichloropropene

Bromodichloromethane

Methylene Chloride

Tetrachloroethene

Trichloroethene

Vinyl chloride

trans-1,2-Dichloroethene

trans-1,3-Dichloropropene

Ethylbenzene

Naphthalene

Toluene

**Analysis Batch: 584182** 

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	29.1		ug/L		117	69 - 151	
1,1,2,2-Tetrachloroethane	25.0	24.6		ug/L		98	68 - 136	
1,1,2-Trichloroethane	25.0	23.2		ug/L		93	75 <sub>-</sub> 136	
1,1-Dichloroethane	25.0	27.5		ug/L		110	71 - 143	
1,1-Dichloroethene	25.0	26.8		ug/L		107	19 - 212	

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# **QC Sample Results**

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Grab

Job ID: 440-256471-1

# Method: 624.1 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 440-584182/1002

**Matrix: Water** 

**Analysis Batch: 584182** 

**Client Sample ID: Lab Control Sample** 

Prep Type: Total/NA 0/ Doo

Analysis Daton. 304102	Spike	LCS L	CC		%Rec.
Analyte	Added	Result 0		D %Rec	Limits
1,2-Dichlorobenzene		25.1	ug/L		59 - 174
1,2-Dichloroethane	25.0	27.9	ug/L	112	72 - 137
1,2-Dichloropropane	25.0	27.5	ug/L	110	19 - 181
1,3-Dichlorobenzene	25.0	25.7	ug/L	103	75 <sub>-</sub> 144
1,4-Dichlorobenzene	25.0	24.7	ug/L	99	59 - 174
Benzene	25.0	26.6	ug/L	107	75 <sub>-</sub> 125
Bromoform	25.0	29.1	ug/L	116	57 - 156
Bromomethane	25.0	24.4	ug/L	98	10 - 206
Carbon tetrachloride	25.0	31.2	ug/L	125	65 - 125
Chlorobenzene	25.0	23.8	ug/L	95	82 - 137
Dibromochloromethane	25.0	28.7	ug/L	115	69 - 133
Chloroethane	25.0	26.0	ug/L	104	42 - 202
Chloroform	25.0	26.6	ug/L	106	68 - 121
Chloromethane	25.0	25.8	ug/L	103	10 - 230
cis-1,2-Dichloroethene	25.0	26.1	ug/L	105	60 - 140
cis-1,3-Dichloropropene	25.0	24.5	ug/L	98	5 - 195
Bromodichloromethane	25.0	30.2	ug/L	121	50 - 140
Ethylbenzene	25.0	24.3	ug/L	97	75 - 134
Methylene Chloride	25.0	27.2	ug/L	109	10 - 205
Naphthalene	25.0	23.0	ug/L	92	60 - 140
Tetrachloroethene	25.0	25.6	ug/L	102	70 - 130
Toluene	25.0	24.2	ug/L	97	75 - 134
trans-1,2-Dichloroethene	25.0	26.9	ug/L	108	70 - 130
trans-1,3-Dichloropropene	25.0	25.3	ug/L	101	38 - 162
Trichloroethene	25.0	28.5	ug/L	114	75 - 138
Vinyl chloride	25.0	25.0	ug/L	100	10 - 218

LCS LCS Surrogate %Recovery Qualifier Limits 60 - 140 4-Bromofluorobenzene (Surr) 99 Dibromofluoromethane (Surr) 107 60 - 140 Toluene-d8 (Surr) 91 60 - 140

Lab Sample ID: LCSD 440-584182/3

**Matrix: Water** 

Analysis Batch: 584182

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

•	Spike	LCSD	LCSD				%Rec.		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
1,1,1-Trichloroethane	25.0	27.8	-	ug/L		111	69 - 151	5	35
1,1,2,2-Tetrachloroethane	25.0	25.9		ug/L		104	68 - 136	5	35
1,1,2-Trichloroethane	25.0	26.0		ug/L		104	75 - 136	12	35
1,1-Dichloroethane	25.0	26.4		ug/L		106	71 - 143	4	35
1,1-Dichloroethene	25.0	25.0		ug/L		100	19 - 212	7	35
1,2-Dichlorobenzene	25.0	25.8		ug/L		103	59 - 174	3	35
1,2-Dichloroethane	25.0	27.6		ug/L		110	72 - 137	1	35
1,2-Dichloropropane	25.0	26.2		ug/L		105	19 - 181	5	35
1,3-Dichlorobenzene	25.0	24.8		ug/L		99	75 - 144	4	35
1,4-Dichlorobenzene	25.0	24.8		ug/L		99	59 - 174	0	35
Benzene	25.0	25.2		ug/L		101	75 - 125	6	35

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Project/Site: Quarterly Outfall 002 Grab

Job ID: 440-256471-1

Method: 624.1 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 440-584182/3

**Matrix: Water** 

**Analysis Batch: 584182** 

**Client Sample ID: Lab Control Sample Dup** 

Prep Type: Total/NA

•	Spike	LCSD	LCSD			%Rec	%Rec.		RPD
Analyte	Added	Result	Qualifier	Unit	D		Limits	RPD	Limit
Bromoform	25.0	28.7	-	ug/L		115	57 - 156	1	35
Bromomethane	25.0	23.8		ug/L		95	10 - 206	3	35
Carbon tetrachloride	25.0	29.0		ug/L		116	65 - 125	7	35
Chlorobenzene	25.0	24.5		ug/L		98	82 - 137	3	35
Dibromochloromethane	25.0	29.3		ug/L		117	69 - 133	2	35
Chloroethane	25.0	24.4		ug/L		98	42 - 202	6	35
Chloroform	25.0	25.8		ug/L		103	68 - 121	3	35
Chloromethane	25.0	25.3		ug/L		101	10 - 230	2	35
cis-1,2-Dichloroethene	25.0	24.7		ug/L		99	60 - 140	6	35
cis-1,3-Dichloropropene	25.0	26.1		ug/L		104	5 - 195	6	35
Bromodichloromethane	25.0	29.0		ug/L		116	50 - 140	4	35
Ethylbenzene	25.0	25.8		ug/L		103	75 - 134	6	35
Methylene Chloride	25.0	26.2		ug/L		105	10 - 205	3	35
Naphthalene	25.0	23.6		ug/L		95	60 - 140	3	35
Tetrachloroethene	25.0	26.4		ug/L		106	70 - 130	3	35
Toluene	25.0	24.2		ug/L		97	75 - 134	0	35
trans-1,2-Dichloroethene	25.0	26.4		ug/L		106	70 - 130	2	35
trans-1,3-Dichloropropene	25.0	26.0		ug/L		104	38 - 162	3	35
Trichloroethene	25.0	26.8		ug/L		107	75 - 138	6	35
Vinyl chloride	25.0	23.7		ug/L		95	10 - 218	5	35

LCSD LCSD

Sample Sample

Surrogate	%Recovery	Qualifier	Limits
4-Bromofluorobenzene (Surr)	103		60 - 140
Dibromofluoromethane (Surr)	101		60 - 140
Toluene-d8 (Surr)	94		60 - 140

Lab Sample ID: 550-134255-A-1 MS

**Matrix: Water** 

**Analysis Batch: 584182** 

Client Sample ID: Matrix Spike Prep Type: Total/NA

%Rec.

Analyte	Result Qualifier	Added	Result Qualif	ier Unit	D %Rec	Limits	
1,1,1-Trichloroethane	ND	10.0	11.5	ug/L	115	52 - 162	
1,1,2,2-Tetrachloroethane	ND	10.0	10.3	ug/L	103	46 - 157	
1,1,2-Trichloroethane	ND	10.0	10.1	ug/L	101	52 - 150	
1,1-Dichloroethane	ND	10.0	10.8	ug/L	108	59 - 155	
1,1-Dichloroethene	ND	10.0	9.90	ug/L	99	10 - 234	
1,2-Dichlorobenzene	ND	10.0	10.3	ug/L	103	18 - 190	
1,2-Dichloroethane	ND	10.0	11.2	ug/L	112	49 - 155	
1,2-Dichloropropane	ND	10.0	10.4	ug/L	104	10 - 210	
1,3-Dichlorobenzene	ND	10.0	9.81	ug/L	98	59 - 156	
1,4-Dichlorobenzene	ND	10.0	10.3	ug/L	103	18 - 190	
Benzene	ND	10.0	10.2	ug/L	102	37 - 151	
Bromoform	ND	10.0	12.1	ug/L	121	45 - 169	
Bromomethane	ND	10.0	8.91	ug/L	89	10 - 242	
Carbon tetrachloride	ND	10.0	11.3	ug/L	113	70 - 140	
Chlorobenzene	ND	10.0	10.1	ug/L	101	37 - 160	
Dibromochloromethane	ND	10.0	11.8	ug/L	118	53 - 149	
Chloroethane	ND	10.0	9.35	ug/L	94	14 - 230	

Spike

MS MS

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12/27/2019

Project/Site: Quarterly Outfall 002 Grab

Job ID: 440-256471-1

# Method: 624.1 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 550-134255-A-1 MS

**Matrix: Water** 

**Analysis Batch: 584182** 

Client Sample ID: Matrix Spike

**Prep Type: Total/NA** 

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	Sample	Sample	Spike	MS	MS				%Rec.	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Chloroform	ND		10.0	10.4		ug/L		104	51 - 138	
Chloromethane	ND		10.0	9.22		ug/L		92	10 - 273	
cis-1,2-Dichloroethene	ND		10.0	10.1		ug/L		101	60 - 140	
cis-1,3-Dichloropropene	ND		10.0	10.9		ug/L		109	10 - 227	
Bromodichloromethane	ND		10.0	11.7		ug/L		117	35 - 155	
Ethylbenzene	ND		10.0	10.0		ug/L		100	37 - 162	
Methylene Chloride	ND		10.0	10.1		ug/L		101	10 - 221	
Naphthalene	ND		10.0	9.16		ug/L		92	60 - 140	
Tetrachloroethene	ND		10.0	10.5		ug/L		105	64 - 148	
Toluene	ND		10.0	10.2		ug/L		102	47 - 150	
trans-1,2-Dichloroethene	ND		10.0	9.91		ug/L		99	54 - 156	
trans-1,3-Dichloropropene	ND		10.0	11.5		ug/L		115	17 - 183	
Trichloroethene	ND		10.0	10.9		ug/L		109	70 - 157	
Vinyl chloride	ND		10.0	8.70		ug/L		87	10 - 251	

MS MS

Surrogate	%Recovery	Qualifier	Limits
4-Bromofluorobenzene (Surr)	99		60 - 140
Dibromofluoromethane (Surr)	103		60 - 140
Toluene-d8 (Surr)	97		60 - 140

Lab Sample ID: 550-134255-A-1 MSD

**Matrix: Water** 

**Analysis Batch: 584182** 

Client Sample ID:	<b>Matrix Spike Duplicate</b>
	Prep Type: Total/NA

Allalysis Batcii. 504102	Sample	Sample	Spike	MSD	MSD				%Rec.		RPD
Analyte	•	Qualifier	Added	_	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
1,1,1-Trichloroethane	ND	<u> </u>	10.0	11.5		ug/L		115	52 - 162	1	36
1,1,2,2-Tetrachloroethane	ND		10.0	10.9		ug/L		109	46 - 157	5	61
1,1,2-Trichloroethane	ND		10.0	10.7		ug/L		107	52 - 150	6	45
1,1-Dichloroethane	ND		10.0	10.6		ug/L		106	59 - 155	2	40
1,1-Dichloroethene	ND		10.0	10.2		ug/L		102	10 - 234	3	32
1,2-Dichlorobenzene	ND		10.0	10.6		ug/L		106	18 - 190	3	57
1,2-Dichloroethane	ND		10.0	11.2		ug/L		112	49 - 155	0	49
1,2-Dichloropropane	ND		10.0	10.8		ug/L		108	10 - 210	4	55
1,3-Dichlorobenzene	ND		10.0	10.2		ug/L		102	59 - 156	3	43
1,4-Dichlorobenzene	ND		10.0	9.99		ug/L		100	18 - 190	3	57
Benzene	ND		10.0	10.1		ug/L		101	37 - 151	1	61
Bromoform	ND		10.0	12.0		ug/L		120	45 - 169	1	42
Bromomethane	ND		10.0	9.13		ug/L		91	10 - 242	2	61
Carbon tetrachloride	ND		10.0	11.2		ug/L		112	70 - 140	1	41
Chlorobenzene	ND		10.0	10.2		ug/L		102	37 - 160	1	53
Dibromochloromethane	ND		10.0	12.2		ug/L		122	53 - 149	3	50
Chloroethane	ND		10.0	9.44		ug/L		94	14 - 230	1	78
Chloroform	ND		10.0	10.2		ug/L		102	51 - 138	3	54
Chloromethane	ND		10.0	9.87		ug/L		99	10 - 273	7	60
cis-1,2-Dichloroethene	ND		10.0	9.58		ug/L		96	60 - 140	6	35
cis-1,3-Dichloropropene	ND		10.0	10.2		ug/L		102	10 - 227	6	58
Bromodichloromethane	ND		10.0	11.7		ug/L		117	35 - 155	0	56
Ethylbenzene	ND		10.0	10.3		ug/L		103	37 - 162	3	63

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Project/Site: Quarterly Outfall 002 Grab

Method: 624.1 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 550-134255-A-1 MSD

**Matrix: Water** 

Analysis Batch: 584182

**Client Sample ID: Matrix Spike Duplicate** 

Prep Type: Total/NA

Job ID: 440-256471-1

	Sample	Sample	Spike	MSD	MSD				%Rec.		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Methylene Chloride	ND		10.0	9.11		ug/L		91	10 - 221	11	28
Naphthalene	ND		10.0	9.51		ug/L		95	60 - 140	4	35
Tetrachloroethene	ND		10.0	10.8		ug/L		108	64 - 148	3	39
Toluene	ND		10.0	10.1		ug/L		101	47 - 150	0	41
trans-1,2-Dichloroethene	ND		10.0	10.0		ug/L		100	54 - 156	1	45
trans-1,3-Dichloropropene	ND		10.0	10.5		ug/L		105	17 - 183	8	86
Trichloroethene	ND		10.0	10.7		ug/L		107	70 - 157	2	48
Vinyl chloride	ND		10.0	9.56		ug/L		96	10 - 251	9	66

MSD MSD

MB MB

Result Qualifier

120

Surrogate	%Recovery	Qualifier	Limits
4-Bromofluorobenzene (Surr)	100		60 - 140
Dibromofluoromethane (Surr)	102		60 - 140
Toluene-d8 (Surr)	96		60 - 140

Method: 120.1 - Conductivity, Specific Conductance

Lab Sample ID: MB 440-586195/3

**Matrix: Water** 

**Analysis Batch: 586195** 

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

Prep Type: Total/NA

**RPD** 

Limit

**Client Sample ID: Lab Control Sample** 

Result Qualifier RL **RL** Unit Dil Fac Analyte Prepared Analyzed Specific Conductance 1.0 1.0 umhos/cm 12/16/19 13:04 ND

Lab Sample ID: LCS 440-586195/4

**Matrix: Water** 

**Analysis Batch: 586195** 

	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Specific Conductance	1030	1010		umhos/cm	-	98	90 - 110	

Lab Sample ID: 320-56690-D-1 DU

Specific Conductance

Analyte

**Client Sample ID: Duplicate Matrix: Water** Prep Type: Total/NA **Analysis Batch: 586195** Sample Sample DU DU RPD

Result Qualifier

125

Method: 1664A - HEM and SGT-HEM

Lab Sample ID: MB 440-587436/1-A

**Matrix: Water** 

**Analysis Batch: 587447** 

**Client Sample ID: Method Blank** Prep Type: Total/NA Prep Batch: 587436 мв мв

Unit

umhos/cm

Result Qualifier RL **MDL** Unit Prepared Analyzed Dil Fac HEM (Oil & Grease)  $\overline{\mathsf{ND}}$ 5.0 1.4 mg/L <u>12/22/19 15:12</u> <u>12/22/19 18:06</u>

Eurofins TestAmerica, Irvine

# **QC Sample Results**

Client: Haley & Aldrich, Inc.

Job ID: 440-256471-1

Project/Site: Quarterly Outfall 002 Grab

Method: 1664A - HEM and SGT-HEM (Continued)

Lab Sample ID: LCS 440-587436/2-A				Clie	nt Saı	mple ID	: Lab Con	trol Sample
Matrix: Water							Prep Ty	pe: Total/NA
Analysis Batch: 587447							Prep Ba	itch: 587436
	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
HEM (Oil & Grease)	40.0	32.8		mg/L		82	78 - 114	

Lab Sample ID: LCSD 440-587436/3-A			Client Sample ID: Lab Control Sample Du							
	Matrix: Water							Prep Ty	pe: Tot	al/NA
	Analysis Batch: 587447							Prep Ba	atch: 58	37436
		Spike	LCSD	LCSD				%Rec.		RPD
	Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
	HEM (Oil & Grease)	40.0	36.4		mg/L		91	78 - 114	10	11

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12

# **QC Association Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Grab

# **GC/MS VOA**

# Analysis Batch: 584182

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256471-1	Outfall002_20191204_Grab	Total/NA	Water	624.1	_
440-256471-3	TB_20191204	Total/NA	Water	624.1	
MB 440-584182/5	Method Blank	Total/NA	Water	624.1	
LCS 440-584182/1002	Lab Control Sample	Total/NA	Water	624.1	
LCSD 440-584182/3	Lab Control Sample Dup	Total/NA	Water	624.1	
550-134255-A-1 MS	Matrix Spike	Total/NA	Water	624.1	
550-134255-A-1 MSD	Matrix Spike Duplicate	Total/NA	Water	624.1	

# **General Chemistry**

# **Analysis Batch: 584130**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256471-1	Outfall002_20191204_Grab	Total/NA	Water	SM 2540F	

# **Analysis Batch: 586195**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256471-1	Outfall002_20191204_Grab	Total/NA	Water	120.1	
MB 440-586195/3	Method Blank	Total/NA	Water	120.1	
LCS 440-586195/4	Lab Control Sample	Total/NA	Water	120.1	
320-56690-D-1 DU	Duplicate	Total/NA	Water	120.1	

## **Prep Batch: 587436**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256471-1	Outfall002_20191204_Grab	Total/NA	Water	1664A	<del>_</del>
MB 440-587436/1-A	Method Blank	Total/NA	Water	1664A	
LCS 440-587436/2-A	Lab Control Sample	Total/NA	Water	1664A	
LCSD 440-587436/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	

# **Analysis Batch: 587447**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256471-1	Outfall002_20191204_Grab	Total/NA	Water	1664A	587436
MB 440-587436/1-A	Method Blank	Total/NA	Water	1664A	587436
LCS 440-587436/2-A	Lab Control Sample	Total/NA	Water	1664A	587436
LCSD 440-587436/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	587436

Job ID: 440-256471-1

# **Definitions/Glossary**

Client: Haley & Aldrich, Inc. Job ID: 440-256471-1

Project/Site: Quarterly Outfall 002 Grab

# Glossary

	<del>~.,</del>	
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	

Decision Level Concentration (Radiochemistry) DLC **EDL** Estimated Detection Limit (Dioxin)

LOD Limit of Detection (DoD/DOE) Limit of Quantitation (DoD/DOE) LOQ

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

MDL Method Detection Limit MLMinimum 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)

Reporting Limit or Requested Limit (Radiochemistry) RL

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

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

# **Accreditation/Certification Summary**

Client: Haley & Aldrich, Inc.

Job ID: 440-256471-1

Project/Site: Quarterly Outfall 002 Grab

# **Laboratory: Eurofins TestAmerica, Irvine**

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

Authority California		rogram tate Program	Identification Number CA ELAP 2706	Expiration Date 06-30-20
The following analytes the agency does not on		ort, but the laboratory is r	ot certified by the governing authority.	This list may include analytes for v
Analysis Method	Prep Method	Matrix	Analyte	
624.1		Water	1,1,2-Trichloro-1,2,2-trifluoro	ethane

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State   Accordance   Commence	Clent Nam	Clent Name/Address:				Pro	Project			5/0	~	œ	AN	LYSIS F	ANALYSIS REQUIRED	۵	Field Readings   Meter senal #
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Contract   Contract	Test Amen	ica Contact Urvashi Patel				Out	¥ 002		<del></del>								120
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1330 WM   1 Glass Amber   2 HG  15 No H   HG    Hod	<del>2ag</del>			WW	1 L Poly	-	None		Ļ		×						
The Blank   Te-2019/204   Grape   Extra   T24/GO19   WM   40 mL VOA   3   HC    20   No	Outfall 002		1330	WM	500 mL Poly	÷	None	<u> </u>	_			×					
Trp Blank   Te 20191204   Grab_Effe   12442019   Wah   40 mil VOA   2   HG    20   No   X   H   Hold	<del>9 o</del>			WM	1 L Glass Amber	2	호	ļ						_			Hold
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Trip Blank   TB-20191204   124/2019/373   Wa   40 mit VoA   2   HCl   20   No   X	)		1330		500 mL Poly	-	None					I					Hold
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	9																

**CHAIN OF CUSTODY FORM** 

Page 1 of 1

Job Number: 440-256471-1

Login Number: 256471

List Number: 1

Creator: Soderblom, Tim

List Source: Eurofins TestAmerica, Irvine

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.	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	

Eurofins TestAmerica, Irvine

## **DATA VALIDATION REPORT**

# **Boeing SSFL NPDES**

SAMPLE DELIVERY GROUP: 440-256464-1

# **Prepared for**

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

14 January 2020





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3 - Reason Code Reference	



## I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC<sup>x</sup> Project No.: 1272.003D.01 002

Sample Delivery Group: 440-256464-1

**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	Matrix	Collection	Method
OUTFALL002_20191205_ COMP_F	440-256464-3	WM	12/5/19 9:50 AM	E200.7, E200.8, E608.3, SM2340
OUTFALL002_20191205_ COMP	440-256464-1	WM	12/5/19 9:50 AM	E180.1, E200.7, E200.8, E625.1, SM2340, SM2540D, SM4500- NH3G



#### II. SAMPLE MANAGEMENT

According to the case narrative, Login Sample Receipt Checklist, and the chain-of-custody (COC) provided by the laboratory for sample delivery group (SDG) 440-256464-1:

- The laboratory received the samples in this SDG on ice and within the temperature limits of <6 degrees Celsius (°C) and >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 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	
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.
Α	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. METHODS 200.7 AND 200.8 — METALS

M. Hilchey of MEC<sup>x</sup> reviewed the SDG on January 14, 2020.

The samples listed in Table 1 for these analyses were validated based on the guidelines outlined in the MEC<sup>X</sup> Data Validation Procedure for Metals (DVP-5, Rev. 2), EPA Methods 200.7 and 200.8 and the National Functional Guidelines for Inorganic Method Data Review (2017).

#### **III.1. HOLDING TIMES**

The analytical holding time, six months for metals, was met. Sample OUTFALL002\_20191205\_COMP\_F was filtered and preserved within 24 hours of receipt.

#### III.2. CALIBRATION

QAPP calibration criteria were met. A blank and two to four standards were used for calibration of ICP-AES and ICP-MS target analytes. The initial calibration r values were ≥0.995. CRQL, at the reporting limit, 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 90-110% for ICP-MS. Continuing calibration verification recoveries were within QAPP control limits of 90-110%.

#### **III.3. QUALITY CONTROL SAMPLES**

#### III.3.1. METHOD BLANKS

There were no target analyte detections in the method blanks or calibration blanks of sufficient concentration to warrant qualification of associated site sample results.

#### 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 non-spiked analytes were detected in the ICSAs; therefore, interference was not evaluated.

#### 11.3.3. LABORATORY CONTROL SAMPLES

Laboratory control sample recoveries (total and dissolved) 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 OUTFALL002\_20191205\_COMP and OUTFALL002\_20191205\_COMP-F for ICP-AES analytes. 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% with the exception of total iron (227%/235% recovery). The detected result for total iron was qualified as estimated with potential high bias (J+). MS/MSD analyses were not performed on a sample in this SDG for ICP-MS.

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. 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.6. FIELD QC SAMPLES**

MEC<sup>X</sup> 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<sup>X</sup> used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

#### III.6.1. FIELD BLANKS AND EQUIPMENT BLANKS

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

#### III.6.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

#### IV. EPA METHOD 608.3 –PESTICIDES AND PCBS

## L. Calvin of MEC<sup>X</sup> reviewed the SDG on May 23, 2019

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC<sup>x</sup> Data Validation Procedure for Organochlorine Pesticides/PCBs by GC (DVP-4, Rev. 1), EPA Method 608.3* and the *National Functional Guidelines for Superfund Organic Methods Data Review* (2017).

#### 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 %RSDs were  $\leq$ 15% or  $r^2 \geq$ 0.990. The initial calibration verification (ICV) recoveries were within the control limit of  $\pm$ 20%, and continuing calibration verification (CCV) %Ds met method criteria.

## IV.3. QUALITY CONTROL SAMPLES

## IV.3.1. METHOD BLANKS

The pesticide method blank had a detect below the RL for aldrin (0.00205  $\mu$ g/L); however, as aldrin was not detected in the sample, no qualification was necessary. The method blanks had no other detects for pesticides and no detects for Aroclors.



#### IV.3.2. LABORATORY CONTROL SAMPLES

LCS/LCSD recoveries and RPDs were within the respective laboratory control limits for pesticides and PCBs. Toxaphene and chlordane were not spiked into the pesticide LCS/LCSD samples.

#### IV.3.3. SURROGATE RECOVERY

Pesticide surrogate tetrachloro-m-xylene (TCMX) was recovered within the laboratory control limits of 10-104% in the site sample and PCB surrogate decachlorobiphenyl (DCB) was recovered within the laboratory control limits of 18-134%.

#### IV.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the sample in this SDG due to insufficient sample volume. MEC<sup>x</sup> evaluated method accuracy and precision based on the LCS/LCSD results.

#### **IV.4. FIELD QC SAMPLES**

MEC<sup>x</sup> 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<sup>x</sup> 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 issues with target compound identification. The laboratory analyzed for seven Aroclors and 18 pesticide target compounds by Method 608.3.

#### **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. Pesticides and PCB Aroclors were not detected in the sample. Reported nondetects are valid to the reporting limit.

The laboratory's extraction bench sheet for pesticides indicated the sample extract was brown with an emulsion.

# V. EPA METHOD 625.1 — SEMIVOLATILE ORGANIC COMPOUNDS (SVOCS)

#### L. Calvin of MEC<sup>X</sup> reviewed the SDG on January 15, 2020

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC<sup>X</sup> Data Validation Procedure for Semivolatile Organics (DVP-3, Rev. 1), EPA Method 625.1 and the National Functional Guidelines for Superfund Organic Methods Data Review (2017).



#### V.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.

#### V.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. Initial calibration average relative response factors (RRFs) were within the method control limits, and the %RSDs were ≤35% or r<sup>2</sup> values ≥0.990. For applicable target compound pentachlorophenol, ICV and CCV RRFs were within the method control limits. ICV recoveries and CCV %Ds were within method control limits.

#### V.3. QUALITY CONTROL SAMPLES

#### V.3.1. **METHOD BLANKS**

The target compound was not detected in the method blank.

#### V.3.2. LABORATORY CONTROL SAMPLES

LCS recovery was within the laboratory control limits.

#### V.3.3. SURROGATE RECOVERY

Surrogate recoveries were within laboratory control limits.

## V.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the site sample in this SDG. MEC<sup>X</sup> evaluated method accuracy based on the LCS result.

## V.4. FIELD QC SAMPLES

MEC<sup>x</sup> 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. MECX 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. 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.



#### V.6. COMPOUND IDENTIFICATION

Compound identification was verified. The laboratory analyzed for pentachlorophenol by EPA Method 625.1. Review of the sample chromatogram, retention times, and spectra indicated no issues with target compound identification.

## V.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. The result reported below the RL was qualified as estimated (J) and coded with DNQ to comply with the NPDES permit reporting requirements. The sample did not require dilution.

The laboratory's preparation bench sheet indicated the sample extract was light yellow and cloudy.

## V.8. TENTATIVELY IDENTIFIED COMPOUNDS (TICS)

The laboratory did not report TICs for this SDG.

#### V.9. System Performance

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

#### VI. VARIOUS METHODS — GENERAL CHEMISTRY

M. Hilchey of MEC<sup>X</sup> reviewed the SDG on January 14, 2020.

The samples listed in Table 1 for these analyses were validated based on the guidelines outlined in the MEC<sup>x</sup> Data Validation Procedure for General Minerals (DVP-6, Rev. 1), EPA Method 180.1, Standard Methods for the Examination of Water and Wastewater 2340B, 2540D and 4500 NH3 G and the National Functional Guidelines for Inorganic Superfund Method Data Review (2017).

#### **VI.1. HOLDING TIMES**

The QAPP holding times, as listed below, were met.

- 7 days for total suspended solids (TSS) by Method SM2540D
- 28 days for ammonia by Method SM4500 NH3 G
- 48 hours for turbidity by Method 180.1
- 180 days for hardness by Method SM2340B

#### VI.2. CALIBRATION

The initial calibration  $r^2$  value for ammonia was  $\geq 0.995$  and all initial calibration verification recoveries were within QC limits. All continuing calibration verification recoveries were within 90-110% for ammonia. Analytical balance calibration logs were provided by the laboratory and found to be correctly calibrated and verified. No calibration data were provided for Method 180.1. See section III Metals for Method 2340B (magnesium and calcium) calibration review.



#### **VI.3. QUALITY CONTROL SAMPLES**

#### VI.3.1. **METHOD BLANKS**

The method blanks and calibration blanks had no detects of sufficient concentration to warrant qualification of associated site sample results.

#### VI.3.2. LABORATORY CONTROL SAMPLES

Laboratory control sample recoveries were within the laboratory control limits. See section III Metals for Method 2340B (magnesium and calcium) LCS review.

#### VI.3.3. LABORATORY DUPLICATES

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

#### VI.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the sample in this SDG. See section III Metals for Method 2340B (magnesium and calcium) MS/MSD review.

#### 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. 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.

### VI.5. FIELD QC SAMPLES

MEC<sup>x</sup> 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<sup>x</sup> 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.

# Validated Sample Result Forms: 4402564641

Analysis Method E180.1

Sample Name OUTFALL002 20191205 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/5/2019 9:50:00 AM Validation Level: 8

**Lab Sample Name:** 440-256464-1

RLMDL Fraction: CAS No Result Result Analyte Lab Validation Validation Value Units **Oualifier Qualifier** Notes TURBIDITY Turbidity NTU 35 1.0 0.40

Analysis Method E200.7

Sample Name OUTFALL002 20191205 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/5/2019 9:50:00 AM Validation Level: 8

**Lab Sample Name:** 440-256464-1

Fraction: CAS No RLMDL **Analyte** Result Result Lab Validation Validation Value Units **Qualifier Qualifier** Notes 7439-89-6 1500 Iron 100 50 ug/L J+ Q Zinc 7440-66-6 18 12 Τ 20 ug/L J.DX J DNQ

Sample Name OUTFALL002\_20191205\_COMP\_F Matrix Type: WM Result Type: TRG

Sample Date: 12/5/2019 9:50:00 AM Validation Level: 8

**Lab Sample Name:** 440-256464-3

MDL **Analyte** Fraction: CAS No Result RL Result Lab Validation Validation Value Units Qualifier Oualifier Notes Iron D 7439-89-6 ND 0.10 0.050 mg/L Zinc D 7440-66-6 15 20 12 ug/L J,DX DNQ

Analysis Method E200.8

Sample Name OUTFALL002 20191205 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/5/2019 9:50:00 AM Validation Level: 8

**Lab Sample Name:** 440-256464-1

**Analyte** Fraction: CAS No Result RLMDL Result Lab Validation Validation Value Units **Qualifier Qualifier** Notes Cadmium 7440-43-9 ND 0.25 T 1.0 ug/L Т Copper 3.6 2.0 0.50 7440-50-8 ug/L Lead T 7439-92-1 1.1 1.0 0.50 ug/L Selenium Т 7782-49-2 0.62 2.0 0.50 J,DX DNQ ug/L

Sample Name OUTFALL002\_20191205\_COMP\_F Matrix Type: WM Result Type: TRG

Sample Date: 12/5/2019 9:50:00 AM Validation Level: 8

**Lab Sample Name:** 440-256464-3

**Analyte** Fraction: CAS No Result RLMDL Result Lab Validation Validation Value Units Qualifier Qualifier Notes Cadmium D 7440-43-9 ND 1.0 0.25 ug/L U D 2.0 2.0 0.50 Copper 7440-50-8 ug/L

Tuesday, January 21, 2020 Page 1 of 3

Analysis Method	E20	00.8							
Lead	D	7439-92-1	ND	1.0	0.50	ug/L	U	U	
Selenium	D	7782-49-2	ND	2.0	0.50	ug/L	U	U	
Analysis Method	E60	<i>08.3</i>							

Sample Name OUTFALL002\_20191205\_COMP\_F Matrix Type: WM Result Type: TRG

Sample Date: 12/5/2019 9:50:00 AM Validation Level: 8

**Lab Sample Name:** 440-256464-3

Analyte	Fractio	on: CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
4,4'-DDD	N	72-54-8	ND	0.0053	0.0042	ug/L	U	U	
4,4'-DDE	N	72-55-9	ND	0.0053	0.0032	ug/L	U	U	
4,4'-DDT	N	50-29-3	ND	0.011	0.0042	ug/L	U	U	
Aldrin	N	309-00-2	ND	0.0053	0.0016	ug/L	U	U	
Aroclor-1016 (PCB-1016)	N	12674-11-2	ND	0.53	0.26	ug/L	U	U	
Aroclor-1221 (PCB-1221)	N	11104-28-2	ND	0.53	0.26	ug/L	U	U	
Aroclor-1232 (PCB-1232)	N	11141-16-5	ND	0.53	0.26	ug/L	U	U	
Aroclor-1242 (PCB-1242)	N	53469-21-9	ND	0.53	0.26	ug/L	U	U	
Aroclor-1248 (PCB-1248)	N	12672-29-6	ND	0.53	0.26	ug/L	U	U	
Aroclor-1254 (PCB-1254)	N	11097-69-1	ND	0.53	0.26	ug/L	U	U	
Aroclor-1260 (PCB-1260)	N	11096-82-5	ND	0.53	0.26	ug/L	U	U	
beta-BHC	N	319-85-7	ND	0.011	0.0042	ug/L	U	U	
Chlordane	N	57-74-9	ND	0.11	0.084	ug/L	U	U	
delta-BHC	N	319-86-8	ND	0.0053	0.0037	ug/L	U	U	
Dieldrin	N	60-57-1	ND	0.0053	0.0021	ug/L	U	U	
Endosulfan I	N	959-98-8	ND	0.0053	0.0032	ug/L	U	U	
Endosulfan II	N	33213-65-9	ND	0.0053	0.0021	ug/L	U	U	
Endosulfan sulfate	N	1031-07-8	ND	0.011	0.0032	ug/L	U	U	
Endrin	N	72-20-8	ND	0.0053	0.0021	ug/L	U	U	
Endrin aldehyde	N	7421-93-4	ND	0.011	0.0021	ug/L	U	U	
gamma-BHC (Lindane)	N	58-89-9	ND	0.011	0.0032	ug/L	U	U	
Heptachlor	N	76-44-8	ND	0.0095	0.0032	ug/L	U	U	
Heptachlor epoxide	N	1024-57-3	ND	0.0053	0.0026	ug/L	U	U	
Toxaphene	N	8001-35-2	ND	0.53	0.25	ug/L	U	U	

## Analysis Method E625.1

Sample Name OUTFALL002\_20191205\_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/5/2019 9:50:00 AM Validation Level: 8

**Lab Sample Name:** 440-256464-1

Analyte	Fractio	on: CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes	
Pentachlorophenol	N	87-86-5	1.2	5.2	1.0	ug/L	J,DX	J	DNQ	

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Analysis Method SM2340

Sample Name OUTFALL002 20191205 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/5/2019 9:50:00 AM Validation Level: 8

**Lab Sample Name:** 440-256464-1

RLMDL Analyte Fraction: CAS No Result Result Lab Validation Validation Value Units Qualifier **Qualifier** Notes Hardness as CaCO3 HARDNESSCA 230 0.33 0.17 mg/L CO3

Sample Name OUTFALL002 20191205 COMP F Matrix Type: WM Result Type: TRG

Sample Date: 12/5/2019 9:50:00 AM Validation Level: 8

**Lab Sample Name:** 440-256464-3

**Analyte** Fraction: CAS No Result RL**MDL** Result Lab Validation Validation Value Qualifier Units **Qualifier** Notes Hardness as CaCO3 HARDNESSCA 250 0.33 0.17 mg/L CO3

Analysis Method SM2540D

Sample Name OUTFALL002 20191205 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/5/2019 9:50:00 AM Validation Level:

**Lab Sample Name:** 440-256464-1

Fraction: CAS No Result RLMDL Analyte Result Lab Validation Validation Value Units Qualifier Notes **Qualifier** Total Suspended Solids (TSS) TSS 49 13 6.7 mg/L

Analysis Method SM4500-NH3G

Sample Name OUTFALL002 20191205 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/5/2019 9:50:00 AM Validation Level: 8

**Lab Sample Name:** 440-256464-1

Fraction: CAS No RLMDL Analyte Result Result Lab Validation Validation Value Units Qualifier Qualifier Notes Ammonia (as N) N 7664-41-7N 0.147 0.200 0.100 mg/L J,DX DNO

Tuesday, January 21, 2020 Page 3 of 3



## **ANALYTICAL REPORT**

Eurofins Calscience Irvine 17461 Derian Ave Suite 100 Irvine, CA 92614-5817 Tel: (949)261-1022

Laboratory Job ID: 440-256464-1

Client Project/Site: Quaterly Outfall 002 Comp

#### For:

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

Attn: Katherine Miller

Authorized for release by: 1/7/2020 1:19:30 PM

Christian Bondoc, Project Manager I

(949)260-3218

christian.bondoc@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.

Laboratory Job ID: 440-256464-1

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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Christian Bondoc Project Manager I 1/7/2020 1:19:30 PM Client: Haley & Aldrich, Inc. Laboratory Job ID: 440-256464-1 Project/Site: Quaterly Outfall 002 Comp

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## **Sample Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Quaterly Outfall 002 Comp

 Lab Sample ID
 Client Sample ID
 Matrix
 Collected
 Received
 Asset ID

 440-256464-1
 Outfall002\_20191205\_Comp
 Water
 12/05/19 09:50
 12/05/19 16:37

 440-256464-3
 Outfall002\_20191205\_Comp\_F
 Water
 12/05/19 09:50
 12/05/19 16:37

Job ID: 440-256464-1

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### **Case Narrative**

Client: Haley & Aldrich, Inc.

Project/Site: Quaterly Outfall 002 Comp

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Job ID: 440-256464-1

**Laboratory: Eurofins Calscience Irvine** 

Narrative

Job Narrative 440-256464-1

#### Comments

No additional comments.

#### Receipt

The samples were received on 12/5/2019 4:37 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 5 coolers at receipt time were 1.0° C, 1.8° C, 2.1° C, 2.5° C and 2.6° C.

#### GC/MS Semi VOA

Method 625.1: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 440-584297 and analytical batch 440-584602 were 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.

#### HPLC/IC

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

#### GC Semi VOA

Method 608.3: The method blank (MB) for preparation batch 440-584166 and analytical batch 440-584266 contained Aldrin above the method detection limit. This target analyte concentration was less than the reporting limit (RL); therefore, re-extraction and re-analysis of samples was not performed. Samples associated with this MB are non-detect (ND).

Method 608.3: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-584166 and analytical batch 440-584266. 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.

#### Metals

Method 200.2: The following samples requested dissolved metals and were not filtered in the field: Outfall002\_20191205\_Comp (440-256464-1). These samples were filtered and preserved upon receipt to the laboratory.

Method 200.7 Rev 4.4: The continuing calibration blank (CCB) for 440-584548 contained Magnesium above the reporting limit (RL). All reported samples associated with this CCB were either ND for this analyte or contained this analyte at a concentration greater than 10X the value found in the CCB; therefore, re-analysis of samples was not performed.

Method 200.7 Rev 4.4: The continuing calibration blank (CCB) for 440-584548 contained Calcium above the method detection limit (MDL). This target analyte concentration was less than the reporting limit (RL).(CCB 440-584548/47)

Method 200.7 Rev 4.4: The matrix spike / matrix spike duplicate (MS/MSD) recoveries and precision of Iron for preparation batch 440-584128 and analytical batch 440-584599 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected. The associated laboratory control sample / laboratory sample control duplicate (LCS/LCSD) precision was within acceptance limits.

Method 200.7 Rev 4.4: The method blank for preparation batch 440-584128 and analytical batch 440-584599 contained Calcium 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.

Method 200.7 Rev 4.4: The continuing calibration blank (CCB) for 440-584548 contained Magnesium above the method detection limit (MDL). This target analyte concentration was less than the reporting limit (RL).(CCB 440-584548/17)

Method 200.7 Rev 4.4: The method blank for preparation batch 440-584365 and 440-584398 and analytical batch 440-584548 contained Magnesium above the method detection limit. This target analyte concentration was less than the reporting limit (RL); therefore,

Job ID: 440-256464-1

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#### **Case Narrative**

Client: Haley & Aldrich, Inc.

Project/Site: Quaterly Outfall 002 Comp

Job ID: 440-256464-1

### Job ID: 440-256464-1 (Continued)

#### **Laboratory: Eurofins Calscience Irvine (Continued)**

re-extraction and/or re-analysis of samples was not performed.

Method 245.1: The method blank for preparation batch 440-584987 contained Mercury above the reporting limit (RL). None of the samples associated with this method blank contained the target compound; therefore, re-extraction and/or re-analysis of samples were not performed.

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.

#### **Organic Prep**

Methods 608: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-584166. Method 8081-8082

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

## **Client Sample Results**

Client: Haley & Aldrich, Inc.

Project/Site: Quaterly Outfall 002 Comp

Client Sample ID: Outfall002\_20191205\_Comp Lab Sample ID: 440-256464-1

Date Collected: 12/05/19 09:50 **Matrix: Water** 

Date Received: 12/05/19 16:37

Method: 625.1 - Semivolatil Analyte		Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
2,4,6-Trichlorophenol	ND		6.2	0.10	ug/L		12/06/19 11:21	12/11/19 11:58	
Bis(2-ethylhexyl) phthalate	ND		5.2		ug/L		12/06/19 11:21	12/11/19 11:58	
N-Nitrosodimethylamine	ND		5.2	0.31	ug/L		12/06/19 11:21	12/11/19 11:58	
Pentachlorophenol	1.2	J,DX	5.2	1.0	ug/L		12/06/19 11:21	12/11/19 11:58	
2,4-Dinitrotoluene	ND	-,	5.2		ug/L		12/06/19 11:21	12/11/19 11:58	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil F
2,4,6-Tribromophenol	97		60 - 140				12/06/19 11:21	12/11/19 11:58	
2-Fluorobiphenyl	87		60 - 140				12/06/19 11:21	12/11/19 11:58	
2-Fluorophenol	82		60 - 140				12/06/19 11:21	12/11/19 11:58	
Nitrobenzene-d5	95		15 - 314				12/06/19 11:21	12/11/19 11:58	
Terphenyl-d14	67		60 - 140				12/06/19 11:21	12/11/19 11:58	
Method: 608.3 - Organochio	orine Pesticide	es in Water							
Analyte		Qualifier	RL		Unit	D	Prepared	Analyzed	Dil F
alpha-BHC	ND		0.0051	0.0026	ug/L		12/06/19 05:36	12/06/19 13:36	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil F
Tetrachloro-m-xylene	51		10 - 104				12/06/19 05:36	12/06/19 13:36	
OCB Decachlorobiphenyl (Surr)	68		18 - 134				12/06/19 05:36	12/06/19 13:36	
Method: 300.0 - Anions, Ior									
analyte		Qualifier	RL _	MDL		D	Prepared	Analyzed	Dil F
Chloride	31		10		mg/L			12/05/19 22:44	
Nitrate as N	1.0		0.11	0.055	-			12/05/19 22:26	
Nitrite as N	ND		0.15	0.025	ū			12/05/19 22:26	
Sulfate	210		10	5.0	mg/L			12/05/19 22:44	
Method: 314.0 - Perchlorate							_		
Analyte		Qualifier	RL	MDL		D	Prepared	Analyzed	Dil F
Perchlorate	ND		4.0	0.95	ug/L			12/10/19 13:45	
Method: NO3NO2 Calc - Nit						_			
Analyte		Qualifier	RL -	MDL		D	Prepared	Analyzed	Dil F
litrate Nitrite as N	1.0		0.15	0.055	mg/L			12/13/19 14:22	
Method: 200.7 Rev 4.4 - Me				MDI	1114		Duamanad	Amakanad	D:I F
Analyte		Qualifier	RL	MDL		D	Prepared	Analyzed	Dil F
Zinc		J,DX	20		ug/L		12/06/19 07:20	12/08/19 18:20	
ron	1500		100	50	ug/L		12/06/19 07:20	12/08/19 18:20	
Method: 200.8 - Metals (ICP	,	ecoverable Qualifier	RL	MDL	Unit	г.	Droporod	Analyzad	Dil F
Cadmium	ND	- Quaiiiiei	1.0		ug/L	D	Prepared 12/06/19 08:00	Analyzed 12/06/19 23:53	ם ווע
					_				
Copper	3.6		2.0		ug/L		12/06/19 08:00	12/06/19 23:53	
Lead Selenium	1.1 0.62	J,DX	1.0 2.0		ug/L ug/L		12/06/19 08:00 12/06/19 08:00		
Mothod: 245.1 Moroum: (C									
Method: 245.1 - Mercury (C Analyte	•	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil F
uiaiyi <del>o</del>	resuit	«uaiiiiti	0.20		ug/L	ט	riepaieu	Allalyzeu	ם ווכ

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Job ID: 440-256464-1

Project/Site: Quaterly Outfall 002 Comp

Client Sample ID: Outfall002\_20191205\_Comp

Lab Sample ID: 440-256464-1 Date Collected: 12/05/19 09:50 **Matrix: Water** 

Date Received: 12/05/19 16:37

Method: SM 2340B - Total Hardness (as CaCO3) by calculation - Total Recoverable											
Analyte	Result Qu	alifier RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac			
Hardness, as CaCO3	230	0.33	0.17	mg/L			12/10/19 19:14	1			
_											

General Chemistry Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Turbidity	35		1.0	0.40	NTU			12/05/19 18:56	10
Total Dissolved Solids	500		10	5.0	mg/L			12/12/19 08:56	1
<b>Total Suspended Solids</b>	49		13	6.7	mg/L			12/06/19 13:19	1
Cyanide, Total	ND		5.0	2.5	ug/L		12/11/19 15:57	12/12/19 14:41	1
Ammonia (as N)	0.147	J,DX	0.200	0.100	mg/L			12/11/19 13:14	1
<b>Methylene Blue Active</b>	0.12		0.10	0.050	mg/L			12/05/19 20:18	1
Substances									
<b>Biochemical Oxygen Demand</b>	16		10	2.5	mg/L			12/06/19 16:10	1

Client Sample ID: Outfall002\_20191205\_Comp\_F

Lab Sample ID: 440-256464-3 Date Collected: 12/05/19 09:50 **Matrix: Water** 

Date Received: 12/05/19 16:37

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	ND		0.0053	0.0016	ug/L		12/06/19 05:36	12/06/19 13:51	1
alpha-BHC	ND		0.0053	0.0026	ug/L		12/06/19 05:36	12/06/19 13:51	1
beta-BHC	ND		0.011	0.0042	ug/L		12/06/19 05:36	12/06/19 13:51	1
delta-BHC	ND		0.0053	0.0037	ug/L		12/06/19 05:36	12/06/19 13:51	1
gamma-BHC (Lindane)	ND		0.011	0.0032	ug/L		12/06/19 05:36	12/06/19 13:51	1
Chlordane (technical)	ND		0.11	0.084	ug/L		12/06/19 05:36	12/06/19 13:51	1
4,4'-DDD	ND		0.0053	0.0042	ug/L		12/06/19 05:36	12/06/19 13:51	1
4,4'-DDE	ND		0.0053	0.0032	ug/L		12/06/19 05:36	12/06/19 13:51	1
4,4'-DDT	ND		0.011	0.0042	ug/L		12/06/19 05:36	12/06/19 13:51	1
Dieldrin	ND		0.0053	0.0021	ug/L		12/06/19 05:36	12/06/19 13:51	1
Endosulfan I	ND		0.0053	0.0032	ug/L		12/06/19 05:36	12/06/19 13:51	1
Endosulfan II	ND		0.0053	0.0021	ug/L		12/06/19 05:36	12/06/19 13:51	1
Endosulfan sulfate	ND		0.011	0.0032	ug/L		12/06/19 05:36	12/06/19 13:51	1
Endrin	ND		0.0053	0.0021	ug/L		12/06/19 05:36	12/06/19 13:51	1
Endrin aldehyde	ND		0.011	0.0021	ug/L		12/06/19 05:36	12/06/19 13:51	1
Heptachlor	ND		0.0095	0.0032	ug/L		12/06/19 05:36	12/06/19 13:51	1
Heptachlor epoxide	ND		0.0053	0.0026	ug/L		12/06/19 05:36	12/06/19 13:51	1
Toxaphene	ND		0.53	0.25	ug/L		12/06/19 05:36	12/06/19 13:51	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	70		10 - 104				12/06/19 05:36	12/06/19 13:51	1

Analyte	Result Qu	ualifier RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor 1016	ND ND	0.53	0.26	ug/L		12/06/19 05:36	12/09/19 17:41	1
Aroclor 1221	ND	0.53	0.26	ug/L		12/06/19 05:36	12/09/19 17:41	1
Aroclor 1232	ND	0.53	0.26	ug/L		12/06/19 05:36	12/09/19 17:41	1
Aroclor 1242	ND	0.53	0.26	ug/L		12/06/19 05:36	12/09/19 17:41	1
Aroclor 1248	ND	0.53	0.26	ug/L		12/06/19 05:36	12/09/19 17:41	1
Aroclor 1254	ND	0.53	0.26	ug/L		12/06/19 05:36	12/09/19 17:41	1
Aroclor 1260	ND	0.53	0.26	ug/L		12/06/19 05:36	12/09/19 17:41	1

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## **Client Sample Results**

Client: Haley & Aldrich, Inc.

Project/Site: Quaterly Outfall 002 Comp

Lab Sample ID: 440-256464-3

**Matrix: Water** 

Job ID: 440-256464-1

Date Collected: 12/05/19 09:50 Date Received: 12/05/19 16:37

Client Sample ID: Outfall002\_20191205\_Comp\_F

Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl (Surr)	77		18 - 134				12/06/19 05:36	12/09/19 17:41	1
Method: 200.7 Rev 4.4 - Met	als (ICP) - Dis	solved							
Analyte	• •	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Zinc	15	J,DX	20	12	ug/L		12/31/19 10:18	12/31/19 16:36	1
Iron	ND		0.10	0.050	mg/L		12/31/19 10:18	12/31/19 16:36	1
Method: 200.8 - Metals (ICP/	•					_			
Analyte		Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		12/06/19 18:24	12/08/19 16:00	1
Copper	2.0		2.0	0.50	ug/L		12/06/19 18:24	12/06/19 23:37	1
Lead	ND		1.0	0.50	ug/L		12/06/19 18:24	12/06/19 23:37	1
Selenium	ND		2.0	0.50	ug/L		12/06/19 18:24	12/08/19 16:00	1
Method: 245.1 - Mercury (C\	/AA) - Dissolv	red							
Analyte	•	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		12/09/19 18:03	12/10/19 10:30	1
Method: SM 2340B - Total H	ardness (as C	aCO3) by	calculation -	Dissolv	red				
Analyte	•	Qualifier	RL	MDL		D	Prepared	Analyzed	Dil Fac
Hardness, as CaCO3	250		0.33	0.17	mg/L			01/06/20 10:47	

## **Method Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Quaterly Outfall 002 Comp

Semivolatile Organic Compounds (GC/MS)  Organochlorine Pesticides in Water  Polychlorinated Biphenyls (PCBs) (GC)  Anions, Ion Chromatography  Perchlorate (IC)  NO3NO2 Calc Nitrogen, Nitrate-Nitrite  Netals (ICP)  Metals (ICP/MS)	40CFR136A 40CFR136A	TAL IRV
Polychlorinated Biphenyls (PCBs) (GC) Anions, Ion Chromatography Anions, Ion Chromatography Perchlorate (IC) NO3NO2 Calc Nitrogen, Nitrate-Nitrite Metals (ICP) Metals (ICP/MS)	40CFR136A	
Anions, Ion Chromatography Perchlorate (IC) NO3NO2 Calc Nitrogen, Nitrate-Nitrite Notation No	10011110011	TAL IRV
NO3NO2 Calc Nitrogen, Nitrate-Nitrite NO0.7 Rev 4.4 Metals (ICP) No0.8 Metals (ICP/MS)	40CFR136A	TAL IRV
IO3NO2 Calc Nitrogen, Nitrate-Nitrite 00.7 Rev 4.4 Metals (ICP) 00.8 Metals (ICP/MS)	MCAWW	TAL IRV
00.7 Rev 4.4 Metals (ICP) 00.8 Metals (ICP/MS)	EPA	TAL IRV
00.8 Metals (ICP/MS)	EPA	TAL IRV
	EPA	TAL IRV
	EPA	TAL IRV
45.1 Mercury (CVAA)	EPA	TAL IRV
M 2340B Total Hardness (as CaCO3) by calculation	SM	TAL IRV
80.1 Turbidity, Nephelometric	MCAWW	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
M 4500 NH3 G Ammonia	SM	TAL IRV
M 5540C Methylene Blue Active Substances (MBAS)	SM	TAL IRV
M5210B BOD, 5 Day	SM	TAL IRV
00.2 Preparation, Total Recoverable Metals	EPA	TAL IRV
45.1 Preparation, Mercury	EPA	TAL IRV
D8 Liquid-Liquid Extraction (Separatory Funnel)	40CFR136A	TAL IRV
25 Liquid-Liquid Extraction	40CFR136A	TAL IRV
istill/CN Distillation, Cyanide	None	TAL IRV
ILTRATION 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.

None = None

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

#### **Laboratory References:**

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

**Eurofins Calscience Irvine** 

Job ID: 440-256464-1

### **Lab Chronicle**

Client: Haley & Aldrich, Inc. Job ID: 440-256464-1

Project/Site: Quaterly Outfall 002 Comp

Client Sample ID: Outfall002\_20191205\_Comp

Date Collected: 12/05/19 09:50

Date Received: 12/05/19 16:37

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	625			960 mL	2.0 mL	584297	12/06/19 11:21	HN	TAL IRV
Total/NA	Analysis	625.1		1			585174	12/11/19 11:58	L1B	TAL IRV
Total/NA	Prep	608			980 mL	2 mL	584166	12/06/19 05:36	L1H	TAL IRV
Total/NA	Analysis	608.3		1			584266	12/06/19 13:36	D1D	TAL IRV
Total/NA	Analysis	300.0		1			583996	12/05/19 22:26	NTN	TAL IRV
Total/NA	Analysis	300.0		20			583997	12/05/19 22:44	NTN	TAL IRV
Total/NA	Analysis	314.0		1			584890	12/10/19 13:45	PS	TAL IRV
Total/NA	Analysis	NO3NO2 Calc		1			585814	12/13/19 14:22	NN	TAL IRV
Total Recoverable	Prep	200.2			25 mL	25 mL	584128	12/06/19 07:20	M1G	TAL IRV
Total Recoverable	Analysis	200.7 Rev 4.4		1			584599	12/08/19 18:20	KE	TAL IRV
Total Recoverable	Prep	200.2			25 mL	25 mL	584107	12/06/19 08:00	EP	TAL IRV
Total Recoverable	Analysis	200.8		1			584511	12/06/19 23:53	MQP	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	584987	12/10/19 13:41	MEM	TAL IRV
Total/NA	Analysis	245.1		1			585123	12/10/19 19:48	DB	TAL IRV
Total Recoverable	Analysis	SM 2340B		1			583360	12/10/19 19:14	P1R	TAL IRV
Total/NA	Analysis	180.1		10			584132	12/05/19 18:56	HZ	TAL IRV
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	585486	12/12/19 08:56	XL	TAL IRV
Total/NA	Analysis	SM 2540D		1	75 mL	1000 mL	584312	12/06/19 13:19	XL	TAL IRV
Total/NA	Prep	Distill/CN			50 mL	50 mL	585328	12/11/19 15:57	KMY	TAL IRV
Total/NA	Analysis	SM 4500 CN E		1			585569	12/12/19 14:41	KMY	TAL IRV
Total/NA	Analysis	SM 4500 NH3 G		1	0.8 mL	8.0 mL	585315	12/11/19 13:14	KMY	TAL IRV
Total/NA	Analysis	SM 5540C		1	100 mL	100 mL	584147	12/05/19 20:18	HTL	TAL IRV
Total/NA	Analysis	SM5210B		1	60 mL	300 mL	584278	12/06/19 16:10	MMP	TAL IRV

Client Sample ID: Outfall002\_20191205\_Comp\_F

Date Collected: 12/05/19 09:50
Date Received: 12/05/19 16:37

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	608			950 mL	2 mL	584166	12/06/19 05:36	L1H	TAL IR\
Total/NA	Analysis	608.3		1			584266	12/06/19 13:51	D1D	TAL IR\
Total/NA	Prep	608			950 mL	2 mL	584166	12/06/19 05:36	L1H	TAL IR\
Total/NA	Analysis	608.3		1			584714	12/09/19 17:41	JM	TAL IR\
Dissolved	Filtration	FILTRATION			150 mL	150 mL	584365	12/06/19 16:00	EP	TAL IR\
Dissolved	Prep	200.2			25 mL	25 mL	588693	12/31/19 10:18	EP	TAL IR\
Dissolved	Analysis	200.7 Rev 4.4		1			588791	12/31/19 16:36	TQN	TAL IR\
Dissolved	Filtration	FILTRATION			150 mL	150 mL	584365	12/06/19 16:00	EP	TAL IR\
Dissolved	Prep	200.2			25 mL	25 mL	584391	12/06/19 18:24	EP	TAL IR\
Dissolved	Analysis	200.8		1			584509	12/06/19 23:37	MQP	TAL IR\
Dissolved	Filtration	FILTRATION			150 mL	150 mL	584365	12/06/19 16:00	EP	TAL IR\
Dissolved	Prep	200.2			25 mL	25 mL	584391	12/06/19 18:24	EP	TAL IR
Dissolved	Analysis	200.8		1			584550	12/08/19 16:00	MQP	TAL IR
Diocolvoa	7 thanyon	200.0		•			001000	12/00/10 10:00	·····	

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**Matrix: Water** 

Lab Sample ID: 440-256464-1

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### **Lab Chronicle**

Client: Haley & Aldrich, Inc. Job ID: 440-256464-1

Project/Site: Quaterly Outfall 002 Comp

Client Sample ID: Outfall002\_20191205\_Comp\_F

Lab Sample ID: 440-256464-3 Date Collected: 12/05/19 09:50 **Matrix: Water** 

Date Received: 12/05/19 16:37

	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	584365	12/06/19 16:00	EP	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	584800	12/09/19 18:03	DB	TAL IRV
Dissolved	Analysis	245.1		1			585048	12/10/19 10:30	DB	TAL IRV
Dissolved	Analysis	SM 2340B		1			588702	01/06/20 10:47	A1S	TAL IRV

#### **Laboratory References:**

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

Project/Site: Quaterly Outfall 002 Comp

### Method: 625.1 - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-584297/1-A

Lab Sample ID: LCS 440-584297/2-A

Lab Sample ID: 440-256489-O-1-A MS

**Matrix: Water** 

**Matrix: Water** 

**Matrix: Water** 

**Analysis Batch: 584602** 

**Analysis Batch: 584602** 

Client Samp	le ID:	Method	Blank
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Prep Type: Total/NA

**Prep Batch: 584297** 

	IVID	IVID							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,6-Trichlorophenol	ND		6.0	0.10	ug/L		12/06/19 11:21	12/09/19 10:14	1
Bis(2-ethylhexyl) phthalate	ND		5.0	2.0	ug/L		12/06/19 11:21	12/09/19 10:14	1
N-Nitrosodimethylamine	ND		5.0	0.30	ug/L		12/06/19 11:21	12/09/19 10:14	1
Pentachlorophenol	ND		5.0	1.0	ug/L		12/06/19 11:21	12/09/19 10:14	1
2,4-Dinitrotoluene	ND		5.0	2.0	ug/L		12/06/19 11:21	12/09/19 10:14	1

MR MR

	וו טווו	VID				
Surrogate	%Recovery 0	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol	89		60 - 140	12/06/19 11:21	12/09/19 10:14	1
2-Fluorobiphenyl	85		60 - 140	12/06/19 11:21	12/09/19 10:14	1
2-Fluorophenol	81		60 - 140	12/06/19 11:21	12/09/19 10:14	1
Nitrobenzene-d5	60		15 - 314	12/06/19 11:21	12/09/19 10:14	1
Terphenyl-d14	97		60 - 140	12/06/19 11:21	12/09/19 10:14	1

**Client Sample ID: Lab Control Sample** 

Prep Type: Total/NA

**Prep Batch: 584297** %Rec.

Spike LCS LCS Added Result Qualifier Analyte Unit D %Rec Limits 2,4,6-Trichlorophenol 15.0 13.9 ug/L 92 52 - 129 Bis(2-ethylhexyl) phthalate 15.0 15.8 ug/L 105 29 - 137 N-Nitrosodimethylamine 15.0 11.6 ug/L 77 60 - 140Pentachlorophenol 30.0 27.1 38 - 152 ug/L

LCS LCS

Surrogate	%Recovery	Qualifier	Limits
2,4,6-Tribromophenol	95		60 - 140
2-Fluorobiphenyl	79		60 - 140
2-Fluorophenol	78		60 - 140
Nitrobenzene-d5	76		15-314
Terphenyl-d14	88		60 - 140

**Client Sample ID: Matrix Spike** 

Prep Type: Total/NA Prep Batch: 584297

**Analysis Batch: 584602** Sample Sample Spike MS MS %Rec. Result Qualifier Added Result Qualifier Limits **Analyte** Unit D %Rec 37 - 144 2,4,6-Trichlorophenol  $\overline{\mathsf{ND}}$ 14.4 14.1 ug/L 98 Bis(2-ethylhexyl) phthalate 3.8 J,DX 14.4 15.7 ug/L 83 8 - 158 76 N-Nitrosodimethylamine ND 14.4 11.0 ug/L 60 - 140ug/L Pentachlorophenol ND 28.7 27.6 96 14 - 176

IVIS	IVIS

Surrogate	%Recovery	Qualifier	Limits
2,4,6-Tribromophenol	105		60 - 140
2-Fluorobiphenyl	85		60 - 140
2-Fluorophenol	81		60 - 140
Nitrobenzene-d5	80		15 - 314
Terphenyl-d14	94		60 - 140

**Eurofins Calscience Irvine** 

Job ID: 440-256464-1 Project/Site: Quaterly Outfall 002 Comp

### Method: 625.1 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-256489-O-1-B MSD

**Matrix: Water** 

**Analysis Batch: 584602** 

**Client Sample ID: Matrix Spike Duplicate** 

**Prep Type: Total/NA** 

**Prep Batch: 584297** 

	Sample	Sample	Spike	MSD	MSD				%Rec.		RPD
Α	nalyte Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
2	,4,6-Trichlorophenol ND		14.4	13.1		ug/L		92	37 - 144	7	58
В	is(2-ethylhexyl) phthalate 3.8	J,DX	14.4	15.0		ug/L		78	8 - 158	5	82
N	l-Nitrosodimethylamine ND		14.4	10.8		ug/L		75	60 - 140	2	35
P	entachlorophenol ND		28.7	26.0		ug/L		91	14 - 176	6	86

MSD MSD

Surrogate	%Recovery	Qualifier	Limits
2,4,6-Tribromophenol	94		60 - 140
2-Fluorobiphenyl	80		60 - 140
2-Fluorophenol	74		60 - 140
Nitrobenzene-d5	76		15-314
Terphenyl-d14	87		60 - 140

### Method: 608.3 - Organochlorine Pesticides in Water

Lab Sample ID: MB 440-584166/1-A

**Matrix: Water** 

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

Analysis Batch: 584266								Prep Batch:	584166
•	МВ	MB						•	
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	0.00205	J,DX	0.0050	0.0015	ug/L		12/06/19 05:36	12/06/19 14:06	1
alpha-BHC	ND		0.0050	0.0025	ug/L		12/06/19 05:36	12/06/19 14:06	1
beta-BHC	ND		0.010	0.0040	ug/L		12/06/19 05:36	12/06/19 14:06	1
delta-BHC	ND		0.0050	0.0035	ug/L		12/06/19 05:36	12/06/19 14:06	1
gamma-BHC (Lindane)	ND		0.010	0.0030	ug/L		12/06/19 05:36	12/06/19 14:06	1
Chlordane (technical)	ND		0.10	0.080	ug/L		12/06/19 05:36	12/06/19 14:06	1
4,4'-DDD	ND		0.0050	0.0040	ug/L		12/06/19 05:36	12/06/19 14:06	1
4,4'-DDE	ND		0.0050	0.0030	ug/L		12/06/19 05:36	12/06/19 14:06	1
4,4'-DDT	ND		0.010	0.0040	ug/L		12/06/19 05:36	12/06/19 14:06	1
Dieldrin	ND		0.0050	0.0020	ug/L		12/06/19 05:36	12/06/19 14:06	1
Endosulfan I	ND		0.0050	0.0030	ug/L		12/06/19 05:36	12/06/19 14:06	1
Endosulfan II	ND		0.0050	0.0020	ug/L		12/06/19 05:36	12/06/19 14:06	1
Endosulfan sulfate	ND		0.010	0.0030	ug/L		12/06/19 05:36	12/06/19 14:06	1
Endrin	ND		0.0050	0.0020	ug/L		12/06/19 05:36	12/06/19 14:06	1
Endrin aldehyde	ND		0.010	0.0020	ug/L		12/06/19 05:36	12/06/19 14:06	1
Heptachlor	ND		0.0090	0.0030	ug/L		12/06/19 05:36	12/06/19 14:06	1
Heptachlor epoxide	ND		0.0050	0.0025	ug/L		12/06/19 05:36	12/06/19 14:06	1
Toxaphene	ND		0.50	0.24	ug/L		12/06/19 05:36	12/06/19 14:06	1

MB MB

%Recovery Qualifier Limits Prepared Dil Fac Surrogate Analyzed 10 - 104 <u>12/06/19 05:36</u> <u>12/06/19 14:06</u> Tetrachloro-m-xylene 40

Lab Sample ID: LCS 440-584166/2-A

**Matrix: Water** 

**Analysis Batch: 584266** 

Client Sample ID: Lab Control Sample **Prep Type: Total/NA** Prep Batch: 584166

	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Aldrin	0.400	0.273		ug/L	-	68	42 - 140	
alpha-BHC	0.400	0.268		ug/L		67	37 - 140	

**Eurofins Calscience Irvine** 

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Project/Site: Quaterly Outfall 002 Comp

Job ID: 440-256464-1

Method: 608.3 - Organochlorine Pesticides in Water (Continued)

Lab Sample ID: LCS 440-584166/2-A

**Matrix: Water** 

**Analysis Batch: 584266** 

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

Prep Batch: 584166

<b>,</b>	Spike	LCS	LCS				%Rec.	•
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
beta-BHC	0.400	0.288		ug/L		72	17 - 147	_
delta-BHC	0.400	0.293		ug/L		73	19 - 140	
gamma-BHC (Lindane)	0.400	0.269		ug/L		67	32 - 140	
4,4'-DDD	0.400	0.312		ug/L		78	31 - 141	
4,4'-DDE	0.400	0.300		ug/L		75	30 - 145	
4,4'-DDT	0.400	0.326		ug/L		81	25 - 160	
Dieldrin	0.400	0.292		ug/L		73	36 - 146	
Endosulfan I	0.400	0.294		ug/L		73	45 - 153	
Endosulfan II	0.400	0.291		ug/L		73	10 - 202	
Endosulfan sulfate	0.400	0.304		ug/L		76	26 - 144	
Endrin	0.400	0.281		ug/L		70	30 - 147	
Endrin aldehyde	0.400	0.287		ug/L		72	60 - 140	
Heptachlor	0.400	0.263		ug/L		66	34 - 140	
Heptachlor epoxide	0.400	0.292		ug/L		73	37 - 142	
Портавлю срежие	0.400	0.202		ug/L		70	07 - 142	

LCS LCS

Surrogate	%Recovery Qualifier	Limits
DCB Decachlorobiphenyl (Surr)	76	18 - 134
Tetrachloro-m-xvlene	65	10 - 104

Lab Sample ID: LCSD 440-584166/3-A

**Matrix: Water** 

**Client Sample ID: Lab Control Sample Dup** 

Prep Type: Total/NA

**Prep Batch: 584166 Analysis Batch: 584266** LCSD LCSD Spike %Rec. **RPD** Analyte Added Result Qualifier Unit %Rec Limits RPD Limit Aldrin 0.400 0.297 ug/L 74 42 - 140 8 35 alpha-BHC 0.400 0.293 ug/L 73 37 - 140 9 36 beta-BHC 0.400 0.306 76 17 - 147 ug/L 6 44 0.400 78 52 delta-BHC 0.313 ug/L 19 - 140 6 0.400 0.288 72 32 - 140 39 gamma-BHC (Lindane) ug/L 4,4'-DDD 0.400 0.326 ug/L 82 31 - 1415 39 4,4'-DDE 0.400 0.315 ug/L 79 30 - 145 5 35 4,4'-DDT 0.400 86 5 42 0.343 ug/L 25 - 160 Dieldrin 0.400 0.307 77 49 ug/L 36 - 146 Endosulfan I 0.400 0.310 ug/L 78 45 - 153 5 28 Endosulfan II 0.400 0.305 76 10 - 202 53 ug/L Endosulfan sulfate 0.400 80 38 0.319 ug/L 26 - 144 Endrin 0.400 0.294 ug/L 73 30 - 147 48 0.400 0.302 76 60 - 140 30 Endrin aldehyde ug/L 5 Heptachlor 0.400 0.287 ug/L 72 34 - 140 43 Heptachlor epoxide 0.400 0.308 77 37 - 142 26 ug/L

LCSD LCSD

Surrogate	%Recovery	Qualifier	Limits
DCB Decachlorobiphenyl (Surr)	82		18 - 134
Tetrachloro-m-xvlene	72		10 - 104

**Eurofins Calscience Irvine** 

Project/Site: Quaterly Outfall 002 Comp

#### Method: 608.3 - Polychlorinated Biphenyls (PCBs) (GC)

Lab Sample ID: MB 440-584166/1-A Client Sample ID: Method Blank **Matrix: Water** Prep Type: Total/NA Analysis Batch: 584714 **Prep Batch: 584166** 

MB MB Analyte Result Qualifier RL **MDL** Unit Prepared Analyzed Dil Fac 0.25 ug/L Aroclor 1016 0.50 12/06/19 05:36 12/09/19 15:13  $\overline{\mathsf{ND}}$ Aroclor 1221 ND 0.50 0.25 ug/L 12/06/19 05:36 12/09/19 15:13 0.25 ug/L Aroclor 1232 ND 0.50 12/06/19 05:36 12/09/19 15:13 Aroclor 1242 ND 0.50 0.25 ug/L 12/06/19 05:36 12/09/19 15:13 Aroclor 1248 ND 0.50 0.25 ug/L 12/06/19 05:36 12/09/19 15:13 Aroclor 1254 ND 0.50 0.25 ug/L 12/06/19 05:36 12/09/19 15:13 ND Aroclor 1260 0.50 0.25 ug/L 12/06/19 05:36 12/09/19 15:13

MB MB Qualifier Limits Dil Fac Surrogate %Recovery Prepared Analyzed 18 - 134 12/06/19 05:36 12/09/19 15:13 DCB Decachlorobiphenyl (Surr) 57

**Client Sample ID: Lab Control Sample** Lab Sample ID: LCS 440-584166/4-A **Matrix: Water** 

**Analysis Batch: 584373** 

	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Aroclor 1016	4.00	3.30		ug/L		82	50 - 140	
Aroclor 1260	4.00	3.70		ug/L		93	8 - 140	

LCS LCS Surrogate %Recovery Qualifier Limits DCB Decachlorobiphenyl (Surr) 81 18 - 134

Lab Sample ID: 440-256489-Q-1-A MS Client Sample ID: Matrix Spike Prep Type: Total/NA

**Matrix: Water** 

**Analysis Batch: 584373** Prep Batch: 584166 Sample Sample Spike MS MS %Rec. Analyte Result Qualifier Added Result Qualifier Unit %Rec Limits Aroclor 1016 ND 3.83 3.30 ug/L 86 50 - 140

18 - 134

Aroclor 1260 ND 3.38 3.83 ug/L MS MS Surrogate %Recovery Qualifier Limits

Lab Sample ID: 440-256489-Q-1-B MSD

**Matrix: Water** 

DCB Decachlorobiphenyl (Surr)

Analysis Batch: 584373									Prep Ba	atch: 58	34166
_	Sample	Sample	Spike	MSD	MSD				%Rec.		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Aroclor 1016	ND		3.83	3.82		ug/L		100	50 - 140	15	36
Aroclor 1260	ND		3.83	3.91		ug/L		102	8 - 140	14	38

MSD MSD Surrogate %Recovery Qualifier Limits DCB Decachlorobiphenyl (Surr) 18 - 134 88

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1/7/2020

Prep Type: Total/NA

**Prep Batch: 584166** 

88

Client Sample ID: Matrix Spike Duplicate

8 - 140

Prep Type: Total/NA

Job ID: 440-256464-1

Prep Type: Total/NA

**Prep Type: Total/NA** 

## Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 440-583996/6

**Matrix: Water** 

Analyte

Nitrate as N

Nitrite as N

Analysis Batch: 583996

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

**Client Sample ID: Lab Control Sample** 

**Client Sample ID: Matrix Spike Duplicate** 

MB MB Result Qualifier RL **MDL** Unit Prepared Analyzed Dil Fac 0.11 0.055 mg/L 12/05/19 13:58 ND 0.15 0.025 mg/L 12/05/19 13:58 ND

Lab Sample ID: LCS 440-583996/7

**Matrix: Water** 

Analysis Batch: 583996

Spike LCS LCS %Rec. Analyte Added Result Qualifier Unit D %Rec Limits Nitrate as N 1.13 1.11 mg/L 98 90 - 110 Nitrite as N 1.52 1.50 mg/L 98 90 - 110

Lab Sample ID: 440-256222-A-4 MS **Client Sample ID: Matrix Spike Matrix: Water** Prep Type: Total/NA

Analysis Batch: 583996

	Sample	Sample	Spike	MS	MS				%Rec.	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Nitrate as N	9.2		22.6	31.9		mg/L		101	80 - 120	
Nitrite as N	ND		30.4	30.7		mg/L		101	80 - 120	

Lab Sample ID: 440-256222-A-4 MSD

**Matrix: Water** 

**Analysis Batch: 583996** 

	Sample	Sample	Spike	MSD	MSD				%Rec.		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Nitrate as N	9.2		22.6	32.0		mg/L		101	80 - 120	0	20
Nitrite as N	ND		30.4	30.8		mg/L		101	80 - 120	0	20

Lab Sample ID: MB 440-583997/6 Client Sample ID: Method Blank Prep Type: Total/NA

**Matrix: Water** 

**Analysis Batch: 583997** 

MB MB

Analyte	Result Qual	lifier RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND	0.50	0.25	mg/L			12/05/19 13:58	1
Sulfate	ND	0.50	0.25	mg/L			12/05/19 13:58	1

**Client Sample ID: Lab Control Sample** Lab Sample ID: LCS 440-583997/7 Prep Type: Total/NA

**Matrix: Water** 

**Analysis Batch: 583997** 

	Spike	LCS	LCS			%Rec.	
Analyte	Added	Result	Qualifier	Unit E	%Rec	Limits	
Chloride	5.00	4.90		mg/L	98	90 - 110	
Sulfate	5.00	5.07		ma/L	101	90 - 110	

Lab Sample ID: 440-256222-A-4 MS **Client Sample ID: Matrix Spike** 

**Matrix: Water** 

**Analysis Batch: 583997** 

	Sample	Sample	Spike	MS	MS				%Rec.	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Chloride	120		100	229		mg/L		111	80 - 120	 
Sulfate	110		100	208		mg/L		101	80 - 120	

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1/7/2020

Prep Type: Total/NA

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Project/Site: Quaterly Outfall 002 Comp

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: 440-256222-A-4 MSD **Client Sample ID: Matrix Spike Duplicate Prep Type: Total/NA** 

**Matrix: Water** 

Analysis Batch: 583997

Alialysis Datcii. 303337	Sample	Sample	Spike	MSD	MSD				%Rec.		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Chloride	120		100	229		mg/L		111	80 - 120	0	20
Sulfate	110		100	209		mg/L		103	80 - 120	1	20

Method: 314.0 - Perchlorate (IC)

Lab Sample ID: MB 440-584890/5 **Client Sample ID: Method Blank** Prep Type: Total/NA

**Matrix: Water** 

**Analysis Batch: 584890** 

MB MB

Analyte	Result Qualifier	RL	MDL Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND	4.0	0.95 ug/L			12/10/19 09:55	1

Lab Sample ID: LCS 440-584890/6 **Client Sample ID: Lab Control Sample Matrix: Water Prep Type: Total/NA** 

**Analysis Batch: 584890** 

LCS LCS Spike %Rec. Analyte Added Result Qualifier Unit Limits D %Rec Perchlorate 10.0 10.3 ug/L 103 85 - 115

Lab Sample ID: MRL 440-584890/4 **Client Sample ID: Lab Control Sample** Prep Type: Total/NA

**Matrix: Water** 

**Analysis Batch: 584890** 

	Spike	MRL	MRL				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Perchlorate	1.00	ND		ug/L		94	75 - 125	

**Client Sample ID: Lab Control Sample** Lab Sample ID: MRL 440-584890/8 **Matrix: Water Prep Type: Total/NA** 

**Analysis Batch: 584890** 

	<b>эріке</b>	IVIKL	WIKL				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Perchlorate	4.00	3.86	J,DX	ug/L		96	75 - 125	

Lab Sample ID: 320-56783-D-2 MS **Client Sample ID: Matrix Spike Matrix: Water** Prep Type: Total/NA

Analysis Batch: 584890

Allalysis Batoli. 004000											
	Sample	Sample	Spike	MS	MS				%Rec.		
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits		
Perchlorate	ND		10.0	10 4		ua/l		104	80 - 120		

Lab Sample ID: 320-56783-D-2 MSD **Client Sample ID: Matrix Spike Duplicate** Prep Type: Total/NA

**Matrix: Water** 

Analysis Batch: 584890

Analysis Batch: 004000	Sample	Sample	Spike	MSD	MSD				%Rec.		RPD	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit	
Perchlorate	ND		10.0	10.4		ug/L		104	80 - 120	0	15	

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Project/Site: Quaterly Outfall 002 Comp

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: MB 440-584128/1-A

**Matrix: Water** 

Analysis Batch: 584599

Client Sample ID: Method Blank **Prep Type: Total Recoverable** 

Prep Batch: 584128

Prep Batch: 584128

**Prep Batch: 584128** 

Job ID: 440-256464-1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Zinc	ND		20	12	ug/L		12/06/19 07:20	12/08/19 18:15	1
Iron	ND		100	50	ug/L		12/06/19 07:20	12/08/19 18:15	1

Lab Sample ID: LCS 440-584128/2-A

**Matrix: Water** 

Analyte

Zinc

Iron

Iron

**Analysis Batch: 584599** 

Spike Added 500

500

LCS LCS Result Qualifier 489

462

MS MS

D %Rec Unit 98 ug/L ug/L 92

D

%Rec

98

%Rec. Limits 85 - 115

**Client Sample ID: Lab Control Sample** 

85 - 115

%Rec.

Limits

70 - 130

**Prep Type: Total Recoverable** 

**Prep Type: Total Recoverable** 

Lab Sample ID: 440-256464-1 MS

**Matrix: Water** 

**Analysis Batch: 584599** 

Analyte

Sample Sample Zinc

Spike Result Qualifier 18 J,DX

Added 500 1500 500

Lab Sample ID: 440-256464-1 MSD

MR MR

Result Qualifier 508 2670 LM

RL

20

0.10

Spike

Added

500

0.500

ug/L

Unit

ug/L

227 70 - 130Client Sample ID: Outfall002\_20191205\_Comp

Client Sample ID: Outfall002\_20191205\_Comp

**Prep Type: Total Recoverable** Prep Batch: 584128 **RPD** %Rec.

RPD

0

Limit

Dil Fac

20

20

MSD MSD Sample Sample Spike Analyte Result Qualifier Added Result Qualifier Unit %Rec Limits Zinc J,DX 500 510 98 70 - 130 18 ug/L Iron 1500 500 2710 LM ug/L 235 70 - 130

Lab Sample ID: MB 440-584365/1-F

**Matrix: Water** 

Zinc

**Matrix: Water** 

**Analysis Batch: 588791** 

**Analysis Batch: 584599** 

MB MB

ND

Analyte

Result Qualifier Zinc  $\overline{\mathsf{ND}}$ 

Iron Lab Sample ID: LCS 440-584365/2-F

**Matrix: Water Analysis Batch: 588791** 

Analyte

Iron Lab Sample ID: 440-256464-3 MS

**Matrix: Water** Analysis Batch: 588791

Sample Sample Spike Analyte Result Qualifier Added Zinc 15 J.DX 500 ND 0.500 Iron

**MDL** Unit 12 ug/L

LCS LCS

MS MS

449

0.437

Result Qualifier

475

0.456

Result Qualifier

0.050 mg/L

Unit

ug/L

mg/L

Unit

ug/L

mg/L

D

12/31/19 10:18 12/31/19 16:14 12/31/19 10:18 12/31/19 16:14

D

Prepared

**Client Sample ID: Lab Control Sample** 

Client Sample ID: Method Blank

**Prep Type: Dissolved Prep Batch: 588693** 

**Prep Type: Dissolved** 

Analyzed

**Prep Batch: 588693** 

%Rec. Limits %Rec

95 85 - 115 91 85 - 115

Client Sample ID: Outfall002\_20191205\_Comp\_F

**Prep Type: Dissolved Prep Batch: 588693** 

%Rec. %Rec Limits 70 - 130

87 87 70 - 130

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Project/Site: Quaterly Outfall 002 Comp

Job ID: 440-256464-1

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: 440-256464-3 MSD

Client Sample ID: Outfall002\_20191205\_Comp\_F

**Matrix: Water** 

**Prep Type: Dissolved Prep Batch: 588693** 

Analysis Batch: 588791 MSD MSD Sample Sample Spike **RPD** %Rec. Analyte Result Qualifier Added Result Qualifier Unit %Rec Limits RPD Limit Zinc J,DX 500 473 92 70 - 130 5 20 15 ug/L Iron ND 0.500 0.498 mg/L 100 70 - 130 13 20

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 440-584107/1-A

**Matrix: Water** 

**Analysis Batch: 584511** 

**Client Sample ID: Method Blank Prep Type: Total Recoverable** 

**Prep Batch: 584107** 

MB MB Result Qualifier RL **MDL** Unit Dil Fac **Analyte** D Prepared Analyzed Cadmium  $\overline{\mathsf{ND}}$ 1.0 0.25 ug/L 12/06/19 08:00 12/06/19 23:08 Copper ND 2.0 12/06/19 08:00 12/06/19 23:08 0.50 ug/L 1 Lead ND 1.0 0.50 ug/L 12/06/19 08:00 12/06/19 23:08 Selenium ND 2.0 0.50 ug/L 12/06/19 08:00 12/06/19 23:08

Lab Sample ID: LCS 440-584107/2-A

**Matrix: Water** 

**Analysis Batch: 584511** 

**Client Sample ID: Lab Control Sample Prep Type: Total Recoverable** 

Prep Batch: 584107

LCS LCS Spike %Rec. Added Result Qualifier D %Rec Limits Analyte Unit Cadmium 80.0 80.6 ug/L 101 85 - 115 Copper 80.0 80.1 ug/L 100 85 - 115 ug/L Lead 80.0 76.5 96 85 - 115Selenium 80.0 76.6 ug/L 96 85 - 115

Lab Sample ID: 440-256457-A-1-B MS

**Matrix: Water** 

Analysis Batch: 584511

**Client Sample ID: Matrix Spike Prep Type: Total Recoverable** 

Prep Batch: 584107

Analysis Baton: 004011	Sample	Sample	Spike	MS	MS				%Rec.	1011. 004101
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Cadmium	0.50	J,DX	80.0	77.0		ug/L		96	70 - 130	
Copper	69		80.0	148		ug/L		98	70 - 130	
Lead	6.6		80.0	81.4		ug/L		94	70 - 130	
Selenium	ND		80.0	78.6		ua/l		98	70 - 130	

Lab Sample ID: 440-256457-A-1-C MSD

Sample Sample

**Matrix: Water** 

**Analysis Batch: 584511** 

**Client Sample ID: Matrix Spike Duplicate Prep Type: Total Recoverable** 

Prep Batch: 584107 **RPD** %Rec. %Rec Limits RPD Limit 96 70 - 130 20 0 98 70 - 130 20 0 20

Analyte Result Qualifier Added Result Qualifier Unit Cadmium 0.50  $\overline{\mathsf{J},\mathsf{DX}}$ 80.0 77.0 ug/L 69 80.0 147 Copper ug/L Lead 6.6 80.0 81.4 ug/L 94 70 - 130 0 Selenium ND 80.0 76.7 ug/L 96 70 - 130 2 20

Spike

MSD MSD

**Eurofins Calscience Irvine** 

Project/Site: Quaterly Outfall 002 Comp

Job ID: 440-256464-1

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

Lab Sample ID: MB 440-584365/1-B

**Matrix: Water** 

**Analysis Batch: 584509** 

**Client Sample ID: Method Blank** 

**Prep Type: Dissolved Prep Batch: 584391** 

	IVID IVID							
Analyte	Result Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	ND	2.0	0.50	ug/L		12/06/19 18:24	12/06/19 22:10	1
Lead	ND	1.0	0.50	ug/L		12/06/19 18:24	12/06/19 22:10	1

Lab Sample ID: MB 440-584365/1-B

**Matrix: Water** 

**Analysis Batch: 584550** 

Client Sample ID: Method Blank **Prep Type: Dissolved** 

**Client Sample ID: Lab Control Sample** 

85 - 115

**Client Sample ID: Matrix Spike** 

**Client Sample ID: Matrix Spike** 

**Client Sample ID: Matrix Spike Duplicate** 

Client Sample ID: Lab Control Sample

97

**Prep Batch: 584391** 

**Prep Type: Dissolved** 

**Prep Type: Dissolved** 

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		12/06/19 18:24	12/08/19 15:48	1
Selenium	ND		2.0	0.50	ug/L		12/06/19 18:24	12/08/19 15:48	1

MB MB

Lab Sample ID: LCS 440-584365/2-B

**Matrix: Water** 

Analyte Copper Lead

Analysis Batch: 584509

n: <b>584509</b>								Prep Ba	atch: 584	
		Spike	LCS	LCS				%Rec.		
		Added	Result	Qualifier	Unit	D	%Rec	Limits		
	 	80.0	76.5		ug/L	 _	96	85 - 115		

77.4

ug/L

Lab Sample ID: LCS 440-584365/2-B

Matrix: Water

Analysis Batch: 584550					Prep Batch: 584391
	Spike	LCS LCS			%Rec.
Analyte	Added	Result Qualifie	r Unit	D %Rec	Limits
Cadmium	80.0	80.1	ug/L	100	85 - 115
Selenium	80.0	79.4	ug/L	99	85 <sub>-</sub> 115

80.0

Lab Sample ID: 440-256253-B-7-C MS

Matrix: Water

Analysis Batch: 584509										e. Dissolved atch: 584391
	Sample	Sample	Spike	MS	MS				%Rec.	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Copper	6.5		80.0	81.4		ug/L		94	70 - 130	
Lead	ND		80.0	76.0		ug/L		95	70 - 130	

Lab Sample ID: 440-256253-B-7-C MS

Matrix: Water									<b>Prep Typ</b>	e: Dissolved
Analysis Batch: 584550									Prep Ba	atch: 584391
-	Sample	Sample	Spike	MS	MS				%Rec.	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Cadmium	ND		80.0	78.9		ug/L		99	70 - 130	
Selenium	0.61	J.DX	80.0	78.4		ug/L		97	70 - 130	

Lab Sample ID: 440-256253-B-7-D MSD

Matrix: Water

man min reaco.									ob b.		
Analysis Batch: 584509									Prep Ba	itch: 58	34391
	Sample	Sample	Spike	MSD	MSD				%Rec.		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Copper	6.5		80.0	78.5		ug/L		90	70 - 130	4	20
Lead	ND		80.0	73.8		ug/L		92	70 - 130	3	20

**Eurofins Calscience Irvine** 

Prep Type: Dissolved

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Project/Site: Quaterly Outfall 002 Comp

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: 440-256253-B-7-D MSD Client Sample ID: Matrix Spike Duplicate

**Matrix: Water** 

MB MB

**Prep Type: Dissolved** 

Analysis Batch: 584550 **Prep Batch: 584391** MSD MSD Sample Sample Spike **RPD** %Rec. %Rec Analyte Result Qualifier Added Result Qualifier Limits RPD Limit Unit Cadmium ND 80.0 76.7 96 70 - 130 3 20 ug/L Selenium 0.61 J,DX 80.0 75.0 ug/L 93 70 - 130 5 20

Method: 245.1 - Mercury (CVAA)

Lab Sample ID: MB 440-584987/1-A **Client Sample ID: Method Blank** 

**Matrix: Water** 

**Analysis Batch: 585123** 

Prep Type: Total/NA

**Prep Batch: 584987** 

Prep Batch: 584987

RI **MDL** Unit **Analyte** Result Qualifier Prepared Analyzed Dil Fac 0.20 12/10/19 13:41 12/10/19 19:24 Mercury 0.236 0.10 ug/L

Lab Sample ID: LCS 440-584987/2-A **Client Sample ID: Lab Control Sample Matrix: Water** Prep Type: Total/NA

**Analysis Batch: 585123** 

LCS LCS Spike %Rec. Limits Added Result Qualifier Unit D %Rec

Analyte Mercury 4.00 4.09 ug/L 102 85 - 115

Lab Sample ID: 440-256668-A-7-B MS **Client Sample ID: Matrix Spike** 

**Matrix: Water** 

**Analysis Batch: 585123** 

Prep Type: Total/NA Prep Batch: 584987

%Rec.

MS MS Sample Sample Spike Analyte Result Qualifier Added Result Qualifier Unit %Rec Limits Mercury ND 4.00 4.01 ug/L 100 75 - 125

Lab Sample ID: 440-256668-A-7-C MSD Client Sample ID: Matrix Spike Duplicate **Matrix: Water** Prep Type: Total/NA

**Analysis Batch: 585123** 

**Prep Batch: 584987** %Rec. RPD

MSD MSD Sample Sample Spike Analyte Result Qualifier Added Result Qualifier Unit %Rec Limits Limit Mercury ND 4.00 4.02 101 75 <sub>-</sub> 125 ug/L

Lab Sample ID: MB 440-584365/1-D Client Sample ID: Method Blank **Matrix: Water Prep Type: Dissolved** 

**Analysis Batch: 585048** 

Prep Batch: 584800 MB MB Analyte Result Qualifier RL **MDL** Unit Prepared Analyzed Dil Fac

0.20 12/09/19 18:03 12/10/19 10:28 Mercury ND 0.10 ug/L

Lab Sample ID: LCS 440-584365/2-D **Client Sample ID: Lab Control Sample Matrix: Water Prep Type: Dissolved** 

**Analysis Batch: 585048** 

**Prep Batch: 584800** Spike LCS LCS %Rec.

Added Analyte Result Qualifier Unit %Rec Limits Mercury 4.00 3.96 ug/L 99 85 - 115

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Project/Site: Quaterly Outfall 002 Comp

Method: 245.1 - Mercury (CVAA) (Continued)

Lab Sample ID: 440-256464-3 MS Client Sample ID: Outfall002\_20191205\_Comp\_F

**Matrix: Water** 

**Prep Type: Dissolved** Analysis Batch: 585048 **Prep Batch: 584800** Sample Sample Spike MS MS %Rec.

Analyte Result Qualifier Added Result Qualifier Limits Unit %Rec ND 4.00 102 75 - 125 Mercury 4.09 ug/L

Lab Sample ID: 440-256464-3 MSD Client Sample ID: Outfall002\_20191205\_Comp\_F

**Matrix: Water** 

**Analysis Batch: 585048** 

**Prep Type: Dissolved Prep Batch: 584800** MSD MSD %Rec. **RPD** Sample Sample Spike

Analyte Result Qualifier Added Result Qualifier Unit D %Rec Limits RPD Limit ND 4.00 Mercury 3.74 ug/L 94 75 - 125 9 20

Method: 180.1 - Turbidity, Nephelometric

Lab Sample ID: MB 440-584132/5 Client Sample ID: Method Blank Prep Type: Total/NA

**Matrix: Water** 

**Analysis Batch: 584132** 

MB MB Analyte Result Qualifier RL **MDL** Unit D Prepared Analyzed Dil Fac 0.10 Turbidity  $\overline{\mathsf{ND}}$ 0.040 NTU 12/05/19 18:56

Lab Sample ID: 440-256466-A-12 DU **Client Sample ID: Duplicate** Prep Type: Total/NA

**Matrix: Water** 

**Analysis Batch: 584132** 

Sample Sample DU DU **RPD** Result Qualifier Analyte Result Qualifier Unit D RPD Limit 150 NTU Turbidity 144 20

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

Lab Sample ID: MB 440-585486/1 Client Sample ID: Method Blank Prep Type: Total/NA

**Matrix: Water** 

**Analysis Batch: 585486** 

MB MB

Result Qualifier RL **MDL** Unit Dil Fac Analyte D Analyzed Prepared Total Dissolved Solids 10 12/12/19 08:56  $\overline{\mathsf{ND}}$ 5.0 mg/L

Lab Sample ID: LCS 440-585486/2 Client Sample ID: Lab Control Sample Prep Type: Total/NA

**Matrix: Water** 

**Analysis Batch: 585486** 

Spike LCS LCS %Rec. Analyte Added Result Qualifier Unit D %Rec Limits **Total Dissolved Solids** 1000 992 mg/L 99 90 - 110

Lab Sample ID: 440-256464-1 DU Client Sample ID: Outfall002\_20191205\_Comp **Matrix: Water** Prep Type: Total/NA

**Analysis Batch: 585486** 

Sample Sample DU DU **RPD Result Qualifier** Analyte Result Qualifier Unit **RPD** Limit Total Dissolved Solids 500 507 ma/L 0.8

**Eurofins Calscience Irvine** 

Project/Site: Quaterly Outfall 002 Comp

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

Lab Sample ID: MB 440-584312/1 Client Sample ID: Method Blank

**Matrix: Water** 

Analysis Batch: 584312

MB MB Result Qualifier RL **MDL** Unit Analyzed Dil Fac Analyte Prepared Total Suspended Solids 1.0 0.50 mg/L 12/06/19 13:19 ND

Lab Sample ID: LCS 440-584312/2 **Client Sample ID: Lab Control Sample** Prep Type: Total/NA

**Matrix: Water** 

**Analysis Batch: 584312** 

LCS LCS Spike %Rec. Added Result Qualifier Unit D %Rec Limits 1000 **Total Suspended Solids** 1020 mg/L 102 85 - 115

Lab Sample ID: 440-256390-A-1 DU **Client Sample ID: Duplicate** Prep Type: Total/NA

**Matrix: Water** 

**Analysis Batch: 584312** 

Sample Sample DU DU **RPD** Result Qualifier Result Qualifier Unit ח RPD Limit Analyte **Total Suspended Solids** 3900 3960 mg/L 10

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

Lab Sample ID: MB 440-585328/1-A Client Sample ID: Method Blank

**Matrix: Water** 

**Analysis Batch: 585569** 

MB MB

RL **Analyte** Result Qualifier **MDL** Unit Prepared Analyzed Dil Fac 5.0 <u>12/11/19 15:57</u> <u>12/12/19 14:40</u> Cyanide, Total ND 2.5 ug/L

LCS LCS

Lab Sample ID: LCS 440-585328/2-A **Client Sample ID: Lab Control Sample Matrix: Water** Prep Type: Total/NA

**Analysis Batch: 585569** 

Added Limits Analyte Result Qualifier Unit %Rec 100 99.2 99 80 - 120

Spike

Cyanide, Total ug/L

Lab Sample ID: LCSD 440-585328/3-A **Matrix: Water** 

Analysis Batch: 585569

Spike LCSD LCSD %Rec. **RPD** Added Analyte Result Qualifier Unit %Rec Limits **RPD** Limit

100 97.3 Cyanide, Total ug/L 80 - 120

Lab Sample ID: 440-256718-D-2-A MS

**Matrix: Water** 

Prep Type: Total/NA **Analysis Batch: 585569** Prep Batch: 585328 MS MS Sample Sample Spike %Rec. Result Qualifier Added Result Qualifier Limits 75 - 125 Cyanide, Total ND 100 97.0 ug/L

**Eurofins Calscience Irvine** 

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Prep Type: Total/NA

Prep Type: Total/NA

Prep Batch: 585328

**Prep Batch: 585328** 

Prep Type: Total/NA

Prep Batch: 585328

%Rec.

Client Sample ID: Matrix Spike

Client Sample ID: Lab Control Sample Dup

Project/Site: Quaterly Outfall 002 Comp

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

Lab Sample ID: 440-256718-D-2-B MSD Client Sample ID: Matrix Spike Duplicate **Matrix: Water** Prep Type: Total/NA Analysis Batch: 585569 Prep Batch: 585328 Sample Sample Spike MSD MSD **RPD** %Rec.

Analyte Result Qualifier Added Result Qualifier Limits RPD Limit Unit %Rec Cyanide, Total ND 100 91 75 - 125 20 91 1 ug/L 6

Method: SM 4500 NH3 G - Ammonia

Lab Sample ID: MB 440-585315/10 Client Sample ID: Method Blank Prep Type: Total/NA

**Matrix: Water** 

Analysis Batch: 585315

MR MR Result Qualifier RL **MDL** Unit Prepared Analyzed Dil Fac Ammonia (as N) 0.200  $\overline{\mathsf{ND}}$ 0.100 mg/L 12/11/19 12:37

Lab Sample ID: LCS 440-585315/11 **Client Sample ID: Lab Control Sample Matrix: Water** Prep Type: Total/NA **Analysis Batch: 585315** Spike LCS LCS %Rec.

Analyte Added Result Qualifier Unit %Rec Limits Ammonia (as N) 5.00 5.060 mg/L 101 90 - 110

Lab Sample ID: MRL 440-585315/9 **Client Sample ID: Lab Control Sample Matrix: Water** Prep Type: Total/NA

**Analysis Batch: 585315** 

Spike MRL MRL %Rec. Added **Analyte** Result Qualifier Unit D %Rec Limits 0.200 Ammonia (as N) 0.1990 J,DX mg/L 100 50 - 150

Lab Sample ID: 440-256372-A-1 MS **Client Sample ID: Matrix Spike Matrix: Water** Prep Type: Total/NA

**Analysis Batch: 585315** 

Sample Sample Spike MS MS %Rec. Result Qualifier Added Analyte Result Qualifier Unit %Rec I imits Ammonia (as N) ND 5.00 5.410 mg/L 108 90 - 110

Lab Sample ID: 440-256372-A-1 MSD **Client Sample ID: Matrix Spike Duplicate** 

**Matrix: Water** Prep Type: Total/NA

Analysis Batch: 585315

Sample Sample Spike MSD MSD %Rec. **RPD** Result Qualifier Analyte Added Result Qualifier Unit %Rec Limits **RPD** Limit Ammonia (as N) 5.00 5.440  $\overline{\mathsf{ND}}$ mg/L 109 90 - 110

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

Lab Sample ID: MB 440-584147/3 Client Sample ID: Method Blank Prep Type: Total/NA

**Matrix: Water** 

**Analysis Batch: 584147** 

MB MB Result Qualifier RL **MDL** Unit D Prepared Analyzed Dil Fac 0.10 12/05/19 20:17 Methylene Blue Active Substances  $\overline{\mathsf{ND}}$ 0.050 mg/L

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Project/Site: Quaterly Outfall 002 Comp

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

Lab Sample ID: LCS 440-584147/4 Client Sample ID: Lab Control Sample Prep Type: Total/NA

**Matrix: Water** 

Analysis Batch: 584147 Spike LCS LCS %Rec. Added Result Qualifier %Rec Analyte Unit Limits 0.250 0.262 105 90 - 110 mg/L

Substances

Lab Sample ID: 440-256464-1 MS Client Sample ID: Outfall002\_20191205\_Comp **Matrix: Water** Prep Type: Total/NA

Methylene Blue Active

Analysis Batch: 584147

Sample Sample Spike MS MS %Rec. Result Qualifier Added Result Qualifier Limits **Analyte** Unit D %Rec 0.12 0.250 0.378 mg/L 103 50 - 125 Methylene Blue Active

Substances

Lab Sample ID: 440-256464-1 MSD Client Sample ID: Outfall002 20191205 Comp **Matrix: Water** Prep Type: Total/NA

Analysis Batch: 584147

RPD Spike MSD MSD %Rec. Sample Sample Added Result Qualifier Unit %Rec Limits RPD Analyte Result Qualifier Limit 0.250 0.360 mg/L 96 50 <sub>-</sub> 125 Methylene Blue Active 0.12 20 Substances

Method: SM5210B - BOD, 5 Day

Lab Sample ID: USB 440-584278/1 Client Sample ID: Method Blank Prep Type: Total/NA

**Matrix: Water** 

**Analysis Batch: 584278** 

USB USB RL Analyte Result Qualifier MDI Unit D Prepared Analyzed Dil Fac 2.0 **Biochemical Oxygen Demand**  $\overline{\mathsf{ND}}$ 0.50 mg/L 12/06/19 10:45

Lab Sample ID: LCS 440-584278/5 **Client Sample ID: Lab Control Sample** Prep Type: Total/NA

**Matrix: Water** 

**Analysis Batch: 584278** 

Spike LCS LCS %Rec. Added Result Qualifier Limits Analyte Unit D %Rec **Biochemical Oxygen Demand** 199 223 112 85 - 115 mg/L

Lab Sample ID: LCSD 440-584278/6 Client Sample ID: Lab Control Sample Dup **Matrix: Water** Prep Type: Total/NA

**Analysis Batch: 584278** 

Spike LCSD LCSD %Rec **RPD** Analyte Added Result Qualifier Unit %Rec Limits **RPD** Limit 199 224 113 85 - 115 **Biochemical Oxygen Demand** mg/L

Lab Sample ID: LCSD 440-584278/7 Client Sample ID: Lab Control Sample Dup **Matrix: Water** Prep Type: Total/NA

**Analysis Batch: 584278** 

LCSD LCSD **RPD** Spike %Rec. Added Result Qualifier Limits Limit Unit %Rec **RPD Biochemical Oxygen Demand** 199 221 111 85 - 115 mg/L

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## **QC Sample Results**

Job ID: 440-256464-1 Client: Haley & Aldrich, Inc.

Project/Site: Quaterly Outfall 002 Comp

Method: SM5210B - BOD, 5 Day (Continued)

Lab Sample ID: 440-256552-B-1 DU **Client Sample ID: Duplicate Prep Type: Total/NA** 

**Matrix: Water** 

**Analysis Batch: 584278** 

DU DU RPD Sample Sample Analyte **Result Qualifier** Result Qualifier Unit RPD Limit 20 Biochemical Oxygen Demand 4.8 4.75 mg/L

Client: Haley & Aldrich, Inc.

Project/Site: Quaterly Outfall 002 Comp

GC/MS Semi VOA

Pren	Batch:	584297
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Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-1	Outfall002_20191205_Comp	Total/NA	Water	625	
MB 440-584297/1-A	Method Blank	Total/NA	Water	625	
LCS 440-584297/2-A	Lab Control Sample	Total/NA	Water	625	
440-256489-O-1-A MS	Matrix Spike	Total/NA	Water	625	
440-256489-O-1-B MSD	Matrix Spike Duplicate	Total/NA	Water	625	

### **Analysis Batch: 584602**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method P	rep Batch
MB 440-584297/1-A	Method Blank	Total/NA	Water	625.1	584297
LCS 440-584297/2-A	Lab Control Sample	Total/NA	Water	625.1	584297
440-256489-O-1-A MS	Matrix Spike	Total/NA	Water	625.1	584297
440-256489-O-1-B MSD	Matrix Spike Duplicate	Total/NA	Water	625.1	584297

### Analysis Batch: 585174

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-1	Outfall002_20191205_Comp	Total/NA	Water	625.1	584297

### **GC Semi VOA**

### **Prep Batch: 584166**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-1	Outfall002_20191205_Comp	Total/NA	Water	608	
440-256464-3	Outfall002_20191205_Comp_F	Total/NA	Water	608	
MB 440-584166/1-A	Method Blank	Total/NA	Water	608	
LCS 440-584166/2-A	Lab Control Sample	Total/NA	Water	608	
LCS 440-584166/4-A	Lab Control Sample	Total/NA	Water	608	
LCSD 440-584166/3-A	Lab Control Sample Dup	Total/NA	Water	608	
440-256489-Q-1-A MS	Matrix Spike	Total/NA	Water	608	
440-256489-Q-1-B MSD	Matrix Spike Duplicate	Total/NA	Water	608	

### **Analysis Batch: 584266**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-1	Outfall002_20191205_Comp	Total/NA	Water	608.3	584166
440-256464-3	Outfall002_20191205_Comp_F	Total/NA	Water	608.3	584166
MB 440-584166/1-A	Method Blank	Total/NA	Water	608.3	584166
LCS 440-584166/2-A	Lab Control Sample	Total/NA	Water	608.3	584166
LCSD 440-584166/3-A	Lab Control Sample Dup	Total/NA	Water	608.3	584166

### **Analysis Batch: 584373**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 440-584166/4-A	Lab Control Sample	Total/NA	Water	608.3	584166
440-256489-Q-1-A MS	Matrix Spike	Total/NA	Water	608.3	584166
440-256489-Q-1-B MSD	Matrix Spike Duplicate	Total/NA	Water	608.3	584166

## Analysis Batch: 584714

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-3	Outfall002_20191205_Comp_F	Total/NA	Water	608.3	584166
MB 440-584166/1-A	Method Blank	Total/NA	Water	608.3	584166

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Job ID: 440-256464-1

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Client: Haley & Aldrich, Inc.

Project/Site: Quaterly Outfall 002 Comp

## HPLC/IC

### Analysis Batch: 583996

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-1	Outfall002_20191205_Comp	Total/NA	Water	300.0	
MB 440-583996/6	Method Blank	Total/NA	Water	300.0	
LCS 440-583996/7	Lab Control Sample	Total/NA	Water	300.0	
440-256222-A-4 MS	Matrix Spike	Total/NA	Water	300.0	
440-256222-A-4 MSD	Matrix Spike Duplicate	Total/NA	Water	300.0	

### Analysis Batch: 583997

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-1	Outfall002_20191205_Comp	Total/NA	Water	300.0	
MB 440-583997/6	Method Blank	Total/NA	Water	300.0	
LCS 440-583997/7	Lab Control Sample	Total/NA	Water	300.0	
440-256222-A-4 MS	Matrix Spike	Total/NA	Water	300.0	
440-256222-A-4 MSD	Matrix Spike Duplicate	Total/NA	Water	300.0	

#### **Analysis Batch: 584890**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-1	Outfall002_20191205_Comp	Total/NA	Water	314.0	<del>-</del>
MB 440-584890/5	Method Blank	Total/NA	Water	314.0	
LCS 440-584890/6	Lab Control Sample	Total/NA	Water	314.0	
MRL 440-584890/4	Lab Control Sample	Total/NA	Water	314.0	
MRL 440-584890/8	Lab Control Sample	Total/NA	Water	314.0	
320-56783-D-2 MS	Matrix Spike	Total/NA	Water	314.0	
320-56783-D-2 MSD	Matrix Spike Duplicate	Total/NA	Water	314.0	

### **Analysis Batch: 585814**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-1	Outfall002_20191205_Comp	Total/NA	Water	NO3NO2 Calc	

#### **Metals**

#### **Analysis Batch: 583360**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-1	Outfall002_20191205_Comp	Total Recoverable	Water	SM 2340B	

#### **Prep Batch: 584107**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-1	Outfall002_20191205_Comp	Total Recoverable	Water	200.2	
MB 440-584107/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-584107/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-256457-A-1-B MS	Matrix Spike	Total Recoverable	Water	200.2	
440-256457-A-1-C MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.2	

#### **Prep Batch: 584128**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-1	Outfall002_20191205_Comp	Total Recoverable	Water	200.2	
MB 440-584128/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-584128/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-256464-1 MS	Outfall002_20191205_Comp	Total Recoverable	Water	200.2	
440-256464-1 MSD	Outfall002_20191205_Comp	Total Recoverable	Water	200.2	

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Job ID: 440-256464-1

Client: Haley & Aldrich, Inc.

Project/Site: Quaterly Outfall 002 Comp

**Metals** 

Filtration Batch: 584365

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-3	Outfall002_20191205_Comp_F	Dissolved	Water	FILTRATION	
MB 440-584365/1-B	Method Blank	Dissolved	Water	FILTRATION	
MB 440-584365/1-D	Method Blank	Dissolved	Water	FILTRATION	
MB 440-584365/1-F	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-584365/2-B	Lab Control Sample	Dissolved	Water	FILTRATION	
LCS 440-584365/2-D	Lab Control Sample	Dissolved	Water	FILTRATION	
LCS 440-584365/2-F	Lab Control Sample	Dissolved	Water	FILTRATION	
440-256253-B-7-C MS	Matrix Spike	Dissolved	Water	FILTRATION	
440-256253-B-7-D MSD	Matrix Spike Duplicate	Dissolved	Water	FILTRATION	
440-256464-3 MS	Outfall002_20191205_Comp_F	Dissolved	Water	FILTRATION	
440-256464-3 MSD	Outfall002_20191205_Comp_F	Dissolved	Water	FILTRATION	

**Prep Batch: 584391** 

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-3	Outfall002_20191205_Comp_F	Dissolved	Water	200.2	584365
MB 440-584365/1-B	Method Blank	Dissolved	Water	200.2	584365
LCS 440-584365/2-B	Lab Control Sample	Dissolved	Water	200.2	584365
440-256253-B-7-C MS	Matrix Spike	Dissolved	Water	200.2	584365
440-256253-B-7-D MSD	Matrix Spike Duplicate	Dissolved	Water	200.2	584365

**Analysis Batch: 584509** 

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-3	Outfall002_20191205_Comp_F	Dissolved	Water	200.8	584391
MB 440-584365/1-B	Method Blank	Dissolved	Water	200.8	584391
LCS 440-584365/2-B	Lab Control Sample	Dissolved	Water	200.8	584391
440-256253-B-7-C MS	Matrix Spike	Dissolved	Water	200.8	584391
440-256253-B-7-D MSD	Matrix Spike Duplicate	Dissolved	Water	200.8	584391

**Analysis Batch: 584511** 

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-1	Outfall002_20191205_Comp	Total Recoverable	Water	200.8	584107
MB 440-584107/1-A	Method Blank	Total Recoverable	Water	200.8	584107
LCS 440-584107/2-A	Lab Control Sample	Total Recoverable	Water	200.8	584107
440-256457-A-1-B MS	Matrix Spike	Total Recoverable	Water	200.8	584107
440-256457-A-1-C MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.8	584107

**Analysis Batch: 584550** 

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-3	Outfall002_20191205_Comp_F	Dissolved	Water	200.8	584391
MB 440-584365/1-B	Method Blank	Dissolved	Water	200.8	584391
LCS 440-584365/2-B	Lab Control Sample	Dissolved	Water	200.8	584391
440-256253-B-7-C MS	Matrix Spike	Dissolved	Water	200.8	584391
440-256253-B-7-D MSD	Matrix Spike Duplicate	Dissolved	Water	200.8	584391

Analysis Batch: 584599

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-1	Outfall002_20191205_Comp	Total Recoverable	Water	200.7 Rev 4.4	584128
MB 440-584128/1-A	Method Blank	Total Recoverable	Water	200.7 Rev 4.4	584128
LCS 440-584128/2-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	584128
440-256464-1 MS	Outfall002_20191205_Comp	Total Recoverable	Water	200.7 Rev 4.4	584128
440-256464-1 MSD	Outfall002_20191205_Comp	Total Recoverable	Water	200.7 Rev 4.4	584128

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Job ID: 440-256464-1

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Client: Haley & Aldrich, Inc.

Project/Site: Quaterly Outfall 002 Comp

**Metals** 

**Prep Batch: 584800** 

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-3	Outfall002_20191205_Comp_F	Dissolved	Water	245.1	584365
MB 440-584365/1-D	Method Blank	Dissolved	Water	245.1	584365
LCS 440-584365/2-D	Lab Control Sample	Dissolved	Water	245.1	584365
440-256464-3 MS	Outfall002_20191205_Comp_F	Dissolved	Water	245.1	584365
440-256464-3 MSD	Outfall002_20191205_Comp_F	Dissolved	Water	245.1	584365

**Prep Batch: 584987** 

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-1	Outfall002_20191205_Comp	Total/NA	Water	245.1	
MB 440-584987/1-A	Method Blank	Total/NA	Water	245.1	
LCS 440-584987/2-A	Lab Control Sample	Total/NA	Water	245.1	
440-256668-A-7-B MS	Matrix Spike	Total/NA	Water	245.1	
440-256668-A-7-C MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	

**Analysis Batch: 585048** 

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-3	Outfall002_20191205_Comp_F	Dissolved	Water	245.1	584800
MB 440-584365/1-D	Method Blank	Dissolved	Water	245.1	584800
LCS 440-584365/2-D	Lab Control Sample	Dissolved	Water	245.1	584800
440-256464-3 MS	Outfall002_20191205_Comp_F	Dissolved	Water	245.1	584800
440-256464-3 MSD	Outfall002_20191205_Comp_F	Dissolved	Water	245.1	584800

**Analysis Batch: 585123** 

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-1	Outfall002_20191205_Comp	Total/NA	Water	245.1	584987
MB 440-584987/1-A	Method Blank	Total/NA	Water	245.1	584987
LCS 440-584987/2-A	Lab Control Sample	Total/NA	Water	245.1	584987
440-256668-A-7-B MS	Matrix Spike	Total/NA	Water	245.1	584987
440-256668-A-7-C MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	584987

**Prep Batch: 588693** 

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-3	Outfall002_20191205_Comp_F	Dissolved	Water	200.2	584365
MB 440-584365/1-F	Method Blank	Dissolved	Water	200.2	584365
LCS 440-584365/2-F	Lab Control Sample	Dissolved	Water	200.2	584365
440-256464-3 MS	Outfall002_20191205_Comp_F	Dissolved	Water	200.2	584365
440-256464-3 MSD	Outfall002_20191205_Comp_F	Dissolved	Water	200.2	584365

**Analysis Batch: 588702** 

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-3	Outfall002_20191205_Comp_F	Dissolved	Water	SM 2340B	

Analysis Batch: 588791

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-3	Outfall002_20191205_Comp_F	Dissolved	Water	200.7 Rev 4.4	588693
MB 440-584365/1-F	Method Blank	Dissolved	Water	200.7 Rev 4.4	588693
LCS 440-584365/2-F	Lab Control Sample	Dissolved	Water	200.7 Rev 4.4	588693
440-256464-3 MS	Outfall002_20191205_Comp_F	Dissolved	Water	200.7 Rev 4.4	588693
440-256464-3 MSD	Outfall002_20191205_Comp_F	Dissolved	Water	200.7 Rev 4.4	588693

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Job ID: 440-256464-1

Client: Haley & Aldrich, Inc.

Project/Site: Quaterly Outfall 002 Comp

**General Chemistry** 

<b>Analysis</b>	Batch:	584132

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-1	Outfall002_20191205_Comp	Total/NA	Water	180.1	
MB 440-584132/5	Method Blank	Total/NA	Water	180.1	
440-256466-A-12 DU	Duplicate	Total/NA	Water	180.1	

### **Analysis Batch: 584147**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-1	Outfall002_20191205_Comp	Total/NA	Water	SM 5540C	
MB 440-584147/3	Method Blank	Total/NA	Water	SM 5540C	
LCS 440-584147/4	Lab Control Sample	Total/NA	Water	SM 5540C	
440-256464-1 MS	Outfall002_20191205_Comp	Total/NA	Water	SM 5540C	
440-256464-1 MSD	Outfall002_20191205_Comp	Total/NA	Water	SM 5540C	

### **Analysis Batch: 584278**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-1	Outfall002_20191205_Comp	Total/NA	Water	SM5210B	_
USB 440-584278/1	Method Blank	Total/NA	Water	SM5210B	
LCS 440-584278/5	Lab Control Sample	Total/NA	Water	SM5210B	
LCSD 440-584278/6	Lab Control Sample Dup	Total/NA	Water	SM5210B	
LCSD 440-584278/7	Lab Control Sample Dup	Total/NA	Water	SM5210B	
440-256552-B-1 DU	Duplicate	Total/NA	Water	SM5210B	

#### Analysis Batch: 584312

Lab Sample ID 440-256464-1	Client Sample ID Outfall002 20191205 Comp	Prep Type Total/NA	Matrix Water	Method SM 2540D	Prep Batch
MB 440-584312/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 440-584312/2	Lab Control Sample	Total/NA	Water	SM 2540D	
440-256390-A-1 DU	Duplicate	Total/NA	Water	SM 2540D	

#### **Analysis Batch: 585315**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-1	Outfall002_20191205_Comp	Total/NA	Water	SM 4500 NH3 G	
MB 440-585315/10	Method Blank	Total/NA	Water	SM 4500 NH3 G	
LCS 440-585315/11	Lab Control Sample	Total/NA	Water	SM 4500 NH3 G	
MRL 440-585315/9	Lab Control Sample	Total/NA	Water	SM 4500 NH3 G	
440-256372-A-1 MS	Matrix Spike	Total/NA	Water	SM 4500 NH3 G	
440-256372-A-1 MSD	Matrix Spike Duplicate	Total/NA	Water	SM 4500 NH3 G	

### **Prep Batch: 585328**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-1	Outfall002_20191205_Comp	Total/NA	Water	Distill/CN	
MB 440-585328/1-A	Method Blank	Total/NA	Water	Distill/CN	
LCS 440-585328/2-A	Lab Control Sample	Total/NA	Water	Distill/CN	
LCSD 440-585328/3-A	Lab Control Sample Dup	Total/NA	Water	Distill/CN	
440-256718-D-2-A MS	Matrix Spike	Total/NA	Water	Distill/CN	
440-256718-D-2-B MSD	Matrix Spike Duplicate	Total/NA	Water	Distill/CN	

### **Analysis Batch: 585486**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-1	Outfall002_20191205_Comp	Total/NA	Water	SM 2540C	<del></del>
MB 440-585486/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 440-585486/2	Lab Control Sample	Total/NA	Water	SM 2540C	

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Job ID: 440-256464-1

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Client: Haley & Aldrich, Inc.

Job ID: 440-256464-1

Project/Site: Quaterly Outfall 002 Comp

## **General Chemistry (Continued)**

### **Analysis Batch: 585486 (Continued)**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-1 DU	Outfall002_20191205_Comp	Total/NA	Water	SM 2540C	

#### **Analysis Batch: 585569**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-1	Outfall002_20191205_Comp	Total/NA	Water	SM 4500 CN E	585328
MB 440-585328/1-A	Method Blank	Total/NA	Water	SM 4500 CN E	585328
LCS 440-585328/2-A	Lab Control Sample	Total/NA	Water	SM 4500 CN E	585328
LCSD 440-585328/3-A	Lab Control Sample Dup	Total/NA	Water	SM 4500 CN E	585328
440-256718-D-2-A MS	Matrix Spike	Total/NA	Water	SM 4500 CN E	585328
440-256718-D-2-B MSD	Matrix Spike Duplicate	Total/NA	Water	SM 4500 CN E	585328

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## **Definitions/Glossary**

Client: Haley & Aldrich, Inc. Job ID: 440-256464-1

Project/Site: Quaterly Outfall 002 Comp

#### **Qualifiers**

**GC/MS Semi VOA** 

Qualifier Qualifier Description

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

**GC Semi VOA** 

Qualifier Qualifier Description

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

**HPLC/IC** 

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

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

**General Chemistry** 

Qualifier Qualifier Description

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.

Job ID: 440-256464-1

Project/Site: Quaterly Outfall 002 Comp

## **Laboratory: Eurofins Calscience Irvine**

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

Authority California		ogram ate Program	CA ELAP 2706	Expiration Date 06-30-20
The following analytes the agency does not one	•	ort, but the laboratory is no	ot certified by the governing authori	ity. This list may include analytes for
Analysis Method	Prep Method	Matrix	Analyte	

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Page 1 or 2

Test America

Client Na	Client Name/Address.		_		ď	Project:			œ	<b>~</b>	RR	œ	œ	œ	æ	<u>د</u>			ANALY	<b>/SIS RE</b> (	ANALYSIS REQUIRED	
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Test America Co 17461 Derian Av Irvine CA 92614 Tel 949-260-326 Cell 949-333-906	Test America Contact: Urvashi Patel 17461 Derian Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055		<u> </u>		<b>5</b> 0	Ouffall 002 Comp		`SI		(881913) (ar 1.804:1	12240C/E4S2 1)	-SON+SON, N-9H	C/E180 1)	(		luene, Bis(2-	MA, PCP (SVOC	:sı		***************************************	Comments	
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#### CHAIN OF CUSTODY FORM

Page 1 or 2

Client Nam	e/Address.			1	F	Project:			R	R	R	R	R	R	R	R	R	R			ANA	LYSIS R	EQUIRED
San Diego, Test Americ	on Center Rd Suite 300 CA 92108 Ta Contact: Urvashi Patel an Ave Suite #100 2614 1-3269			Quarterly	Per Outfal	SSFL NPDE: mit 2019 I [001, 002, 0 Ifall 002 Comp	11, 01		tals. Se	TCDD (and all congeners) (E1613B)	(E405.1	Surfactants (MBAS) (SM5540C/E4251)	Cl-, SO4, Nitrate-N, Nitrite-N, NO3+NO2-N, Perchlorate (E300)	Turbidity, TDS (SM2540C/E180 1)	((			oluene, Bis(2- NDMA, PCP (SVOCs E625)	Total Recoverable Metals: Mercury (E245.1)	Metals;			Comments
Service Agreem	ervices under this CoC shall be performed in accordate entil 2015-18-TestAmerica by and between Haley & Al sstAmerica Laboratones inc eal Smith			520.28 Field	9.8606 Manag	ger: Katherir i, 520.904 69 jer: Mark Do	44 (ce minick	l)	Recoverable Metals: 7): Zn 3.8): Cu, Pb, Cd, Se	all conger	BOD5 (20 degrees C) (E405.1 (SMS2108_BODCalc))	(MBAS) (S	itrate-N, Ni (E300)	DS (SM25	TSS (160 2 (SM2540D))	J (350.2)	(E608)	2,4,6 TCP, 2,4 Dinitrotoluene, ethylhexyl)phthalate, NDMA, F	verable Me	verable Me			
Sample			Sample		# of	9, 818 599.07 Preservative	02 (cel Bottle	MS/MSD	Total Recor (E200 7): Z (E200.8): C	CDD (and	DD5 (20 c) M5210B	ırfactants	-, SO4, N erchlorate	ırbidıty, T	SS (160 <sub>2</sub>	Ammonia-N (350.2)	alpha-BHC (E608)	4,6 TCP, hylhexyl)	otal Reco	Total Recoverable (E200 7) Fe. Mo			3UL 12/5/19
Description	Sample I D	Sampling Date/Time	Matrix	Container Type 500 mL Poly	Cont	HNO <sub>3</sub>	90	No	X 5.m.m	7	B (S)	S	2 6	12	12	Ā	ra .	6,2	×	X			Outfall 001 analyze for Fe and Mn Outfalls 002 and 011 analyze for Fe only
Outfail 002	Outfall002_20191205_Comp Outfall002_20191205_Comp_Extra	12/5/2019 6756 12/5/2019	WW WM W	1 L Glass Amber 1 L Poly 500 mL Poly 500 mL Poly 500 mL Poly 500 mL Poly 1 L Glass Amber 1 L	2 1 2 2 1 1 2 2 1 2 2 2 2 2 2 2 2 2 2 2	None None None None None None None None	110 115 120 130 150 160 170 180 185 110 120 130 170 180	No N		Н	x	Х	н	х	x	x	X	X			440-256464 Chain of Custody		48 hours Holding Time NO3 & NO2 48 hours Holding Time for Tubidity Hold Hold Hold Hold Hold
				1 C Olds Allido		14016	,,,,,						<u> </u>								1		100
Relinquished in Relinquished i	Hohn 12/05/ Date/Time	19 XDF 15/19		Company  Company  Company  Company				ed By			Da Da		12 e +23/1	/s,	/19	2/5	131		24 Hou 48 Hou Sample Intact: Store si Data Re		72 Ho 5 Day (Check)  6 Month	Or Or	10 Day*X Normal  1 Ice
	1.6/1.8,01	8/1.0,	2.4	/2.6,	1.	9/2.1	٠,:	2.3%	2.5	· #	‡8	9											13

#### **CHAIN OF CUSTODY FORM**

Page 2 of 2

Client Name/	Address			T		Project.			R	R	R	R		QRSW	QRSW	QRSW		ALY			
Haley & Aldri	ch					SSFL NPDE	S				9	Г		T			Č	Π			
	Center Rd Suite 300			0		rmit 2019	n44 n	4.01	1	l	Gross Alpha(E900.0), Gross Beta(E900.0), Tritum (H-3) (E906.0), Sr-30 (E905.0), Total Combined Radium 226 (E903.0 or E903.1).8 Radium 228 (E904.0), Unanlum (E908.0), K-40, CS-137 (E901.0 or E901.1)			8			Bigeino				
San Diego, C	4 92108			Quarten		all [001, 002, outfall 002	ט,ווט	181	1		00 T S		1	8			100				
Test America	Contact Urvashi Patel		_	1	0	Comp					86.698		1 %	E S			D	12			
	Ave Suite #100					Comp				5	or 906		1	ő			2	ià			
rvine CA 926				1						88	8 E E	E	Ě	4	8	8					
Tel 949-260-										1 22	8 6 8 E C	str	le le	Seg	. 0	ŭ	Q	2			
Cell 949-333	9055								.; es	W W	S 2 5 7 10	E	2	ţċ	Sas	Ü	S	ω			Comments
	rices under this CoC shall be performed in accordental terms to the second of the seco			Projec	t Mana	ger: Katheri	ne Mill	ler	Total Dissolved Metals: (E200.7): Zn , Fe (E200 8): Cu, Pb, Cd, Se	Cyanide (SM4500-CN-E / E335 2)	6.0 g 6 m	Chronic Toxicity - Selenastrum (EPA-821-R-02-013)	Total Dissolved Metals: Mercury (E245 1)	Priority Pollutants-Pesticides+PCBs (E608)	Total Recoverable Metals: (E200.7): Hardness as CaCO3	Total Dissolved Metals: (E200.7). Hardness as CaCO3	Chlorpyrifos	3		1	1
restAmerica Labo		IC , its subsidiaries and aminate	58, 81 KJ	520.2	89.860	6, 520.904 69	944 (ce	ell)	Ž d	8	069 500	20	Ž	iş.	P S S	¥ 8	*	Ь		1	
Sampler, Nea	l Smith			Field	Mana	ger. Mark Do	minic	k	2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 -	4	E 200	들었	1 8	la la	ard ard	yed	9		\		
•				1		3, 818 599.0			SSO	8	E22 E	54	loss	1 2	8 I	8 H	7				
Sample		T	Comple			T	T	T	88	gi	s A m (bine 37	물육	ä	1	8.6	₩. C.	3	1			
Description	Sample I D	Sampling Date/Time	Sample	Container Type	# of Cont	Preservative	Bottle #	MS/MSD	cla	yau	adii S-1	le M	ogal	J.	otal	otal 20	5				1
		-	-	<del> </del>	-		-		Fee	0	0 = 0 = 0	100	1-	1 -	1				$\vdash$	-	Filter and preserve w/in 24hrs of
			WM	1 L Poly	1	None	190	No	}						l	x	*				receipt at lab at OF001,002,011, or
									L								115				018
			WM	500 mL Poly	1	HNO <sub>3</sub>	80	No							x						at OF001,002,011, or 018
		1	1	i			7	1		1		1		1	1				1		Filter and preserve with 24hrs of
1		]	WM	1L Poly	1	None	200	No	Х									1			receipt at lab at OF001,002,011, or
											<u> </u>	-	-	-							018
		1		44.01						1	i										Chlordane, DDD, DDE, DDT,
	Outfatl002_20191205_Comp_F	12/5/2019	WM	1 L Glass Amber	2	None	250	No					1	X	1						dieldrin, PCBs, toxaphene at
		_		711001																	OF001,002,011, or 018
							7	4						-	<b>†</b>			_			
utfall 002		/	WM	borosilicate	1	None	320	No		1		]	x	1							Sample receiving DO NOT OPEN
		0950	,	vials	'	1401.6	320	1		1		1	1 ^								BAG Bag to be opened in Mercury
-		0.0	1400	F00 1 P 1			-		-	<del> </del>	<del>                                     </del>	-	-					_		-	Prep using clean procedures
1		1	WW	500 mL Poly	1	NaOH	220	No		X	}	-	-	-			_				Unfiltered and unpreserved
1			WM	2 5 Gal Cube	1	None	225X	No	1			-	1								analysis Separate RAD onto
- 1	Outfatl002_20191205_Comp	12/5/2019	WM	1 L Glass	1	None	230	No			X	1	1		1						another workorder Analyze
		/0-		Amber		1.000		110													duplicate, not MS/MSD
		1095	ww.	1-Gel-Gube	-	None	225	L-No-		-	-	-X-									Only test if first or second rain
		910	24				-					-	-								events of the year
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0 0 0	Sampler:	Lab PM	PM:	Carrier Tracking No(s)	(S)0	
Client Contact  Client Contact	01.	Pate	Patel, Urvashi	•		
Shipping/Receiving	Flione	E-Mail: urvas	E-Mail: urvashi.patel@testamericainc.com	State of Origin: California	Page: Page 1 of 1	
Company.  TestAmerica Laboratories, Inc.			Accreditations Required (See note): State Program - California		# 400 # 400	
Address: 13715 Rider Trail North,	Due Date Requested: 12/17/2019		200	o cion	440-255464-1 Preservation Codes:	
City:	TAT Requested (days):		Allo	Alialysis Requested		
Earth City State, Zip. MO, 63045					B - NaOH N - None C - Zn Acetate O - AsNaO2 D - Nitric Acid P - Na2O4S	
Phone: 314-298-8566(Tel) 314-298-8757(Fax)	PO#.		7£1-n		E - NaHSO4 Q - Na2SO3 F - MeOH R - Na2S2O3 G - Amchlor S - H2SO4	
Email:	WO#.		O) Cesiur Urani	06-		hydrate
Project Name: Boeing NPDES SSFL outfalls	Project #. 44009879		bns 0# letoT ni eriqlA s	muitno	1- U) Water	5
Site:	:#MOSS		D (Ye	48 T_0	Other:	
Sample Identification - Client ID (Lab ID)	Sample Date Time	Sample (Wavater, Type Septid. (C=Comp.) G=gratel.	Field Filtered S Perform MS/MS 900.1_Cs/FIII_Geo 900.0/Evaporation 900.0/Evaporation 0.006/	04,0/PrecSep 25,90/PrecSep 06,0/LSC_Dist_S	otsi Number of	
	X		; ;	6	Special Instructions/Note:	te:
Outfall002_20191205_Comp (440-256464-1)	12/5/19 09:50	Water	>	>	Boeing SSEL DO NOT EIL TEB	
	Pacific		< <	× ×	2 date from preservation	de brep
					984	
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/less/matrix being analysized, 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 affesting to said complicance to TestAmerica Laboratories, inc.	aboratories, Inc. places the ownership of is/lests/matrix being analyzed, the samp current to date, return the signed Chain of	method, analyte & accreditation les must be shipped back to the of Custody attesting to said comp	compliance upon out subcontract is TestAmerica laboratory or other ins plicance to TestAmerica Laboratorie	aboratories. This sample shipmen tructions will be provided. Any chr. s. Inc.	ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not seed, 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.	not
Possible Hazard Identification			Cample Dienagel / A E.			
Unconfirmed			Return To Client	may be assessed if sam	ger than 1 mo	
Deliverable Requested: I, II, III, IV, Other (specify)	Primary Deliverable Rank: 2	2	Special Instructions/QC Requirements	Requirements:	Archive For Months	
Empty Kit Relinquished by:	Date:		Time	Method of Shipment	pment:	
Relinquished by: -1 + + + + + + + + + + + + + + + + + +	Date/Tinge 170	S Company	Received by:		DateTime 7 / 5 O8.30 EV S7	2
Relinquished by:	Date/Time:	Company	Received by	Č		
Custody Seals Intact: Custody Seal No		A Company of Comment			Company	
$\neg$			Cooler Temperature(s) °C and Other Remarks.	and Other Remarks.		

: eurofins Environment Testing TestAmerica

Chain of Custody Record

Eurofins TestAmerica, Irvine
17461 Derian Ave Suite 100
Irvine, CA 92614-5817
Phone: 949-261-1022 Fax: 949-260-3297

# **Login Sample Receipt Checklist**

Client: Haley & Aldrich, Inc.

Job Number: 440-256464-1

Login Number: 256464 List Source: Eurofins Irvine

List Number: 1

Creator: Soderblom, Tim

Creator: Soderblom, IIm		
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	

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# Environment Testing TestAmerica

# Sacramento Sample Receiving Notes



440-256464 Field Sheet

	440-2564	164 Field	She
Job:			

Tracking # :_	1119-6	1741	-89	50	
The fall have the second					

SO / PO / SAT / 2-Day / Ground / UPS / CDO / Courier GSO / OnTrac / Goldstreak / USPS / Other\_\_\_\_\_

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations. File in the job folder with the COC.

lotes:	Therm. ID: <u>/k/-/ </u> Corr. Factor: (♣/-) <u>C</u>	1.4°C
	IceV Wet Gel Other_	
	Cooler Custody Seal: Scal	
	Cooler ID:	
	Temp Observed: 1.3 °C Corrected: 1. From: Temp Blank 🕒 Sample 🗅	<u>7</u> _∘c
	During Initial Triage Yes No.	NA
	Cooler compromised/tampered with?	_ 0
	Cooler Temperature is acceptable?	
	CoC is complete w/o discrepancies?	
	Samples received within holding time?	
	Initials: 5 G Date: 12/7/19	
	During Labeling Yes No.	NA
	Samples compromised/tampered with?	
	Sample containers have legible labels?	
	Sample custody seal?	ø
	Containers are not broken or leaking?	
	Containers are not broken or leaking?	0
	Appropriate containers are used?	
		ם
	Appropriate containers are used?	0 0
	Appropriate containers are used?	0 0 0
	Appropriate containers are used?  Sample bottles are completely filled?  Sample preservatives verified?	00000
	Appropriate containers are used?  Sample bottles are completely filled?  Sample preservatives verified?  Samples w/o discrepancies?	00000
	Appropriate containers are used?  Sample bottles are completely filled?  Sample preservatives verified?  Samples w/o discrepancies?  Zero headspace?*	0000
	Appropriate containers are used?  Sample bottles are completely filled?  Sample preservatives verified?  Samples w/o discrepancies?  Zero headspace?*  Alkalinity has no headspace?  Perchlorate has headspace?	4404000
	Appropriate containers are used?  Sample bottles are completely filled?  Sample preservatives verified?  Samples w/o discrepancies?  Zero headspace?*  Alkalinity has no headspace?  Perchlorate has headspace?  (Methods 314, 331, 6850)	

WRIA

# Nguyen, Jocelyn

From: Patel, Urvashi

Sent: Tuesday, December 10, 2019 12:12 PM

To: Nguyen, Jocelyn

FW: Updates - Sample Login 440-256464-1 Subject:

#### Jocelyn

Please use the email below to update 256464

#### **Urvashi Patel**

Phone: 949-333-9055

E-mail: Urvashi.Patel@testamericainc.com

From: Baluran, Dwayne [mailto:DBaluran@haleyaldrich.com]

Sent: Tuesday, December 10, 2019 12:08 PM

To: Patel, Urvashi

Subject: Updates - Sample Login 440-256464-1

#### -External Email-

Hi Urvashi,

Please make the following updates to the work order.

Sampling Event	Sample Delivery Group	Sample Date	Samples Included	Work Order or COC Corrections?
OF002 - Qtrly	440-256464-1	12/5/2019	Outfall002_20191205_Comp, Outfall002_20191205_Comp_F	~method 200.7 Dissolved Metals needs to add Fe (COC) ~Alpha-BHC has two methods on work order? (met and 608). It's listed on COC as method 608. ~PCB has method 608.3 listed but COC states 608 ~PP has two methods on work order? (608.3 and 6 listed on COC as method 608.
OF002 - Qtrly	440-256464-2	12/5/2019	Outfall002_20191205_Comp_Extra	~Alpha-BHC listed in work order as method 608.3. COC as method 608.

Dwayne Baluran, EIT, QSP

Staff Engineer

Haley & Aldrich, Inc.

5850 Canoga Avenue | Suite 400 Woodland Hills, CA 91367

T: (978) 234.5022

www.haleyaldrich.com

## Nguyen, Jocelyn

From: Patel, Urvashi

Sent: Monday, December 09, 2019 12:22 PM

**To:** 'Baluran, Dwayne'; Bondoc, Christian M.; Nguyen, Jocelyn

**Cc:** Miller, Katherine

**Subject:** RE: Updates - Sample Login 440-256464-1

Hi Dwayne

We'll make the corrections listed below.

Thanks Urvashi

#### **Urvashi Patel**

Phone: 949-333-9055

E-mail: Urvashi.Patel@testamericainc.com

**From:** Baluran, Dwayne [mailto:DBaluran@haleyaldrich.com]

Sent: Monday, December 09, 2019 8:55 AM

**To:** Patel, Urvashi **Cc:** Miller, Katherine

Subject: Updates - Sample Login 440-256464-1

#### -External Email-

Hi Urvashi,

I have proofed both the Outfall 002 grab and composite work orders. Please review the following comments.

Sampling Event	Sample Delivery Group	Sample Date	Samples Included	Work Order or COC Corrections?
OF002 - Qtrly	440-256464-1	12/5/2019	Outfall002_20191205_Comp, Outfall002_20191205_Comp_F	~method 200.7 Total Recoverable Metals needs to and add Zn. In addition needs to add As and Mn (w on COC) ~method 200.7 Dissolved Metals needs to add As a (missing on COC) ~Alpha-BHC has two methods on work order? (met and 608). It's listed on COC as method 608. ~PCB has method 608.3 listed but COC states 608 ~PP has two methods on work order? (608.3 and 6 listed on COC as method 608.
OF002 - Qtrly	440-256464-2	12/5/2019	Outfall002_20191205_Comp_Extra	~Alpha-BHC listed in work order as method 608.3. COC as method 608.

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Thank you, **Dwayne Baluran, EIT, QSP**Staff Engineer

#### Haley & Aldrich, Inc.

5850 Canoga Avenue | Suite 400 Woodland Hills, CA 91367

T: (978) 234.5022 C: (818) 224.0704

www.haleyaldrich.com

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## Nguyen, Jocelyn

From: Patel, Urvashi

Sent: Thursday, December 05, 2019 3:12 PM

To: Nguyen, Jocelyn FW: OF002 sample ID Subject:

See below. I gave the info to S/R.

#### **Urvashi Patel**

Phone: 949-333-9055

E-mail: <u>Urvashi.Patel@testamericainc.com</u>

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

Sent: Thursday, December 05, 2019 2:07 PM

To: Patel, Urvashi

Subject: OF002 sample ID

#### -External Email-

Urvashi,

There are two lines on the COC for OF002 that don't have a sample label. These should be Outfall002\_20191205\_Comp with a date/time of 12/5/19 at 0950.

#### **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

#### Patel, Urvashi

From: Miller, Katherine <KMiller@haleyaldrich.com>
Sent: Wednesday, December 11, 2019 2:44 PM

**To:** Nguyen, Jocelyn; Barr, Anastasia; Hernandez, Elysse; Kim Schultz; Patel, Urvashi; Baluran,

Dwayne

**Subject:** RE: Eurofins TestAmerica revised sample confirmation files from 440-256464-1 Quaterly

Outfall 002 Comp

#### -External Email-

Urvashi,

Are dioxins and RAD going to be analyzed? These were on the original sample confirmation, but not this revision. Please delete As and Mn. Could you also add chloropyrifos and diazinon?

Katherine

Katherine Miller HALEY & ALDRICH Tel: 520.289.8606

From: Jocelyn Nguyen < <a href="mailto:jocelyn.nguyen@testamericainc.com">jocelyn.nguyen@testamericainc.com</a>>

Sent: Tuesday, December 10, 2019 5:36 PM

**To:** Barr, Anastasia < <u>ABarr@haleyaldrich.com</u>>; Hernandez, Elysse < <u>EHernandez@haleyaldrich.com</u>>; Kim Schultz

< kim.schultz@mecx.net >; Miller, Katherine < KMiller@haleyaldrich.com >; Ms. Urvashi Patel

<urvashi.patel@testamericainc.com>

Subject: Eurofins TestAmerica revised sample confirmation files from 440-256464-1 Quaterly Outfall 002 Comp

**CAUTION: External Email** 

Hello,

Attached please find the sample confirmation files for job 440-256464-1; Quaterly Outfall 002 Comp

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

Thank you.

#### Jocelyn Nguyen

**Project Manager Assistant** 

Eurofins TestAmerica, Irvine

E-mail: jocelyn.nguyen@testamericainc.com www.eurofinsus.com | www.testamericainc.com

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Reference: [440-571461] Attachments: 3

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

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#### Patel, Urvashi

From: Baluran, Dwayne < DBaluran@haleyaldrich.com>

Sent: Thursday, December 26, 2019 4:53 PM

**To:** Patel, Urvashi; Miller, Katherine; Nguyen, Jocelyn; Barr, Anastasia; Hernandez, Elysse; Kim

Schultz

**Cc:** Bondoc, Christian M.

**Subject:** RE: Eurofins TestAmerica revised sample confirmation files from 440-256464-1 Quaterly

Outfall 002 Comp

#### -External Email-

Hi Urvashi – on behalf of Katherine, As and Mn do not need to be included in this sample for Outfall 002 Quarterly. Other than the metals listed, please add Fe for both total and dissolved.

Thanks, Dwayne

**From:** Patel, Urvashi < Urvashi.Patel@testamericainc.com>

Sent: Thursday, December 26, 2019 4:42 PM

To: Miller, Katherine <KMiller@haleyaldrich.com>; Nguyen, Jocelyn <Jocelyn.Nguyen@testamericainc.com>; Barr,

Anastasia <ABarr@haleyaldrich.com>; Hernandez, Elysse <EHernandez@haleyaldrich.com>; Kim Schultz

<kim.schultz@mecx.net>; Baluran, Dwayne <DBaluran@haleyaldrich.com>

Cc: Bondoc, Christian M. < Christian. Bondoc@testamericainc.com>

Subject: RE: Eurofins TestAmerica revised sample confirmation files from 440-256464-1 Quaterly Outfall 002 Comp

#### **CAUTION: External Email**

Hi Katherine

On this job, am I adding As and Mn to both total and dissolved? Or just total?

#### **Urvashi Patel**

Phone: 949-333-9055

E-mail: <u>Urvashi.Patel@testamericainc.com</u>

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

Sent: Wednesday, December 11, 2019 2:44 PM

To: Nguyen, Jocelyn; Barr, Anastasia; Hernandez, Elysse; Kim Schultz; Patel, Urvashi; Baluran, Dwayne

Subject: RE: Eurofins TestAmerica revised sample confirmation files from 440-256464-1 Quaterly Outfall 002 Comp

#### -External Email-

Urvashi,

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1/7/2020

Are dioxins and RAD going to be analyzed? These were on the original sample confirmation, but not this revision. Please delete As and Mn. Could you also add chloropyrifos and diazinon?

Katherine

Katherine Miller **HALEY & ALDRICH** Tel: 520.289.8606

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

Sent: Tuesday, December 10, 2019 5:36 PM

To: Barr, Anastasia <ABarr@haleyaldrich.com>; Hernandez, Elysse <EHernandez@haleyaldrich.com>; Kim Schultz

<a href="mailto:kim.schultz@mecx.net"><a href="mailto:kim.schultz@mecx

<urvashi.patel@testamericainc.com>

Subject: Eurofins TestAmerica revised sample confirmation files from 440-256464-1 Quaterly Outfall 002 Comp

**CAUTION: External Email** 

Hello,

Attached please find the sample confirmation files for job 440-256464-1; Quaterly Outfall 002 Comp

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

Thank you.

#### Jocelyn Nguyen

Project Manager Assistant

Eurofins TestAmerica, Irvine

E-mail: jocelyn.nguyen@testamericainc.com www.eurofinsus.com | www.testamericainc.com



Reference: [440-571461] Attachments: 3

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

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#### **DATA VALIDATION REPORT**

# **Boeing SSFL NPDES**

SAMPLE DELIVERY GROUP: 440-256464-2

#### **Prepared for**

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

09 January 2020





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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<sup>x</sup> Project No.: 1272.003D.01 002

Sample Delivery Group: 440-256464-2

**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
OUTFALL002_20191205_COMP	440- 256464-1	NA	WM	12/5/19 9:50 AM	E1613B



#### II. SAMPLE MANAGEMENT

According to the case narrative, Login Sample Receipt Checklist and the chains-of-custody (COCs) provided by the laboratories for sample delivery group (SDG) 440-256464-2:

- 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/or laboratory personnel signed and dated the original and transfer COCs.
- According to the Login Sample Receipt Checklist, custody seals were absent on the coolers upon receipt at TA-Irvine. No evidence of tampering was noted. The Login Sample Receipt Checklist indicated a custody seal was present (but with no number) upon receipt at TA-Sacramento.
- The case narrative indicated that the site sample was received in wide-mouth amber glass bottles, and slightly less sample volume (967 milliliters) was available for extraction.



#### **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.
*  , *	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<sup>x</sup> reviewed the SDG on January 9, 2020

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC<sup>X</sup> 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

Initial 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-HpCDD, and for totals TCDD, HpCDD and HpCDF. The sample results for isomers 1,2,3,4,6,7,8-HpCDD, 1,2,3,4,6,7,8-HpCDF detected below the RL in the sample were qualified as a nondetect (U) at the level of contamination. The method blank concentration of OCDD was not sufficient to qualify the sample concentration above the RL. The reviewer compared peaks comprising the method blank totals to those in the sample totals. The retention times of total HpCDD peaks in the sample matched those in the method blank, at similar concentrations; therefore, the result for total HpCDD was qualified as a



nondetect (U) at the level of contamination. Total HpCDF was qualified as estimated (J), as only a portion of the total was determined to be method blank contamination. Total TCDD was not detected in the sample.

#### 11.4.2. 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<sup>x</sup> 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<sup>x</sup> 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. 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. Second-column confirmation analysis for isomer 2,3,7,8-TCDF was not performed, as 2,3,7,8-TCDF was not detected in the initial analysis of the sample.

#### 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.

As noted in the case narrative, RLs and EDLs were slightly elevated due to somewhat limited sample volume. Rather than approximately 1000 milliliters (ml), a 967 ml sample volume was available for extraction.

Isomer 1,2,3,4,6,7,8-HpCDF previously qualified as method blank contamination was not further qualified as an EMPC. As totals HpCDF and HxCDF each included one EMPC peak, both were qualified as estimated (J).

# Validated Sample Result Forms: 4402564642

# Analysis Method E1613B

Sample Name OUTFALL002\_20191205\_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/5/2019 9:50:00 AM Validation Level: 8

**Lab Sample Name:** 440-256464-1

Analyte I	Fraction	n: CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,2,3,4,6,7,8,9- Octachlorodibenzofuran (OCDF)	N	39001-02-0	0.000036	0.00010	0.0000023	ug/L	J,DX	J	DNQ
1,2,3,4,6,7,8,9-Octachlorodibenzo-dioxin (OCDD)	p- N	3268-87-9	0.00037	0.00010	0.0000021	ug/L	MB		
1,2,3,4,6,7,8- Heptachlorodibenzofuran (HpCDF)	N	67562-39-4	0.0000095	0.000052	0.0000021	ug/L	J,DXqMB	U	В
1,2,3,4,6,7,8-Heptachlorodibenzo-p dioxin (HpCDD)	- N	35822-46-9	0.000033	0.000052	0.0000015	ug/L	J,DXMB	U	В
1,2,3,4,7,8,9- Heptachlorodibenzofuran (HpCDF)	N	55673-89-7	ND	0.000052	0.0000026	ug/L	U	U	
1,2,3,4,7,8-Hexachlorodibenzofurar (HxCDF)	n N	70648-26-9	ND	0.000052	0.0000013	ug/L	U	U	
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	39227-28-6	ND	0.000052	0.0000015	ug/L	U	U	
1,2,3,6,7,8-Hexachlorodibenzofurar (HxCDF)	n N	57117-44-9	ND	0.000052	0.0000013	ug/L	U	U	
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	57653-85-7	ND	0.000052	0.0000016	ug/L	U	U	
1,2,3,7,8,9-Hexachlorodibenzofurar (HxCDF)	n N	72918-21-9	ND	0.000052	0.0000010	ug/L	U	U	
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	N	19408-74-3	ND	0.000052	0.0000013	ug/L	U	U	
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-41-6	ND	0.000052	0.0000015	ug/L	U	U	
1,2,3,7,8-Pentachlorodibenzo-p- dioxin (PeCDD)	N	40321-76-4	ND	0.000052	0.0000018	ug/L	U	U	
2,3,4,6,7,8-Hexachlorodibenzofurar (HxCDF)	n N	60851-34-5	ND	0.000052	0.00000096	ug/L	U	U	
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-31-4	ND	0.000052	0.0000016	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	ND	0.000010	0.00000090	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzo-p-dioxi: (TCDD)	n N	1746-01-6	ND	0.000010	0.0000013	ug/L	U	U	
Total Heptachlorodibenzofuran (HpCDF)	N	38998-75-3	0.000025	0.000052	0.0000021	ug/L	J,DXqMB	J	B, DNQ, *III
Total Heptachlorodibenzo-p-dioxin (HpCDD)	N	37871-00-4	0.000064	0.000052	0.0000015	ug/L	MB	U	В
Total Hexachlorodibenzofuran (HxCDF)	N	55684-94-1	0.0000039	0.000052	0.00000096	ug/L	J,DXq	J	DNQ, *Ⅲ
Total Hexachlorodibenzo-p-dioxin (HxCDD), Mixture	N	34465-46-8	ND	0.000052	0.0000013	ug/L	U	U	
Total Pentachlorodibenzofuran (PeCDF)	N	30402-15-4	ND	0.000052	0.0000015	ug/L	U	U	

Tuesday, January 21, 2020

Analysis Method	E10	613B						
Total Pentachlorodibenzo-p-dioxin (PeCDD)	N	36088-22-9	ND	0.000052	0.0000018 ug	g/L U	U	
Total Tetrachlorodibenzofuran (TCDF)	N	55722-27-5	ND	0.000010	0.00000090 ug	g/L U	U	
Total Tetrachlorodibenzo-p-dioxin (TCDD)	N	41903-57-5	ND	0.000010	0.0000013 ug	g/L U	U	

Tuesday, January 21, 2020 Page 2 of 2

# **Environment Testing TestAmerica**

# **ANALYTICAL REPORT**

Eurofins TestAmerica, Irvine 17461 Derian Ave Suite 100 Irvine, CA 92614-5817

Tel: (949)261-1022

Laboratory Job ID: 440-256464-2

Client Project/Site: Quaterly 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: 12/27/2019 10:23:45 PM

Urvashi Patel, Manager of Project Management (949)260-3269

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: Quaterly Outfall 002 Comp

Ushi fatel

Manager of Project Management

12/27/2019 10:23:45 PM

Urvashi Patel

Laboratory Job ID: 440-256464-2

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.

Client: Haley & Aldrich, Inc.

Laboratory Job ID: 440-256464-2

Project/Site: Quaterly Outfall 002 Comp

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# **Sample Summary**

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

Job ID: 440-256464-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
440-256464-1	Outfall002_20191205_Comp	Water	12/05/19 09:50	12/05/19 16:37	

#### **Case Narrative**

Client: Haley & Aldrich, Inc.

Job ID: 440-256464-2 Project/Site: Quaterly Outfall 002 Comp

Job ID: 440-256464-2

Laboratory: Eurofins TestAmerica, Irvine

**Narrative** 

Job Narrative 440-256464-2

#### Comments

No additional comments.

#### Receipt

The samples were received on 12/5/2019 4:37 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 5 coolers at receipt time were 1.0° C, 1.8° C, 2.1° C, 2.5° C and 2.6° C.

#### Dioxin

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

#### **Dioxin Prep**

Method 1613B: Elevated reporting limits are provided for the following sample due to insufficient sample provided for 1613B. Sox. Sep. P./ 1613B preparation/analysis: Samples Outfall002 20191205 Comp (440-256464-1) were received in wide-mouth amber glass bottles.

preparation batch 320-345993 Method: 1613B Sox Sep P / 1613B

Matrix: Aqueous

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

# **Client Sample Results**

Client: Haley & Aldrich, Inc. Job ID: 440-256464-2

Project/Site: Quaterly Outfall 002 Comp

Client Sample ID: Outfall002\_20191205\_Comp

Lab Sample ID: 440-256464-1 Date Collected: 12/05/19 09:50 **Matrix: Water** 

Date Received: 12/05/19 16:37

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000010	0.0000013	ug/L		12/17/19 09:23	12/21/19 03:33	1
2,3,7,8-TCDF	ND		0.000010	0.0000009	ug/L		12/17/19 09:23	12/21/19 03:33	1
1,2,3,7,8-PeCDD	ND		0.000052	0.0000018	ug/L		12/17/19 09:23	12/21/19 03:33	1
1,2,3,7,8-PeCDF	ND		0.000052	0.0000015	ug/L		12/17/19 09:23	12/21/19 03:33	1
2,3,4,7,8-PeCDF	ND		0.000052	0.0000016	ug/L		12/17/19 09:23	12/21/19 03:33	1
1,2,3,4,7,8-HxCDD	ND		0.000052	0.0000015	ug/L		12/17/19 09:23	12/21/19 03:33	1
1,2,3,6,7,8-HxCDD	ND		0.000052	0.0000016	ug/L		12/17/19 09:23	12/21/19 03:33	1
1,2,3,7,8,9-HxCDD	ND		0.000052	0.0000013	ug/L		12/17/19 09:23	12/21/19 03:33	1
1,2,3,4,7,8-HxCDF	ND		0.000052	0.0000013	ug/L		12/17/19 09:23	12/21/19 03:33	1
1,2,3,6,7,8-HxCDF	ND		0.000052	0.0000013	ug/L		12/17/19 09:23	12/21/19 03:33	1
1,2,3,7,8,9-HxCDF	ND		0.000052	0.0000010	-		12/17/19 09:23	12/21/19 03:33	1
2,3,4,6,7,8-HxCDF	ND		0.000052	0.0000009	-		12/17/19 09:23	12/21/19 03:33	1
1,2,3,4,6,7,8-HpCDD	0.000033	J,DX MB	0.000052	0.0000015	ug/L		12/17/19 09:23	12/21/19 03:33	1
1,2,3,4,6,7,8-HpCDF		J,DX q MB	0.000052	0.0000021	-		12/17/19 09:23	12/21/19 03:33	1
1,2,3,4,7,8,9-HpCDF	ND		0.000052	0.0000026	-		12/17/19 09:23	12/21/19 03:33	1
OCDD	0.00037	MB	0.00010	0.0000021	-		12/17/19 09:23	12/21/19 03:33	1
OCDF	0.000036		0.00010	0.0000023	-		12/17/19 09:23	12/21/19 03:33	1
Total TCDD	ND	-,	0.000010	0.0000013	-		12/17/19 09:23	12/21/19 03:33	1
Total TCDF	ND		0.000010	0.0000009				12/21/19 03:33	1
Total PeCDD	ND		0.000052	0.0000018	ua/L		12/17/19 09:23	12/21/19 03:33	1
Total PeCDF	ND		0.000052	0.0000015	-			12/21/19 03:33	1
Total HxCDD	ND		0.000052	0.0000013				12/21/19 03:33	
Total HxCDF	0.0000039	J,DX q	0.000052	0.0000009	-			12/21/19 03:33	1
Total HpCDD	0.000064	MB	0.000052	0.0000015	ua/L		12/17/19 09:23	12/21/19 03:33	1
Total HpCDF		J,DX q MB	0.000052	0.0000021	-			12/21/19 03:33	1
Isotope Dilution	%Recovery		Limits		Ü		Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	53		25 - 164				12/17/19 09:23	12/21/19 03:33	1
13C-2,3,7,8-TCDF	53		24 - 169				12/17/19 09:23	12/21/19 03:33	1
13C-1,2,3,7,8-PeCDD	48		25 - 181				12/17/19 09:23	12/21/19 03:33	1
13C-1,2,3,7,8-PeCDF	48		24 - 185				12/17/19 09:23	12/21/19 03:33	1
13C-2,3,4,7,8-PeCDF	51		21 - 178				12/17/19 09:23	12/21/19 03:33	1
13C-1,2,3,4,7,8-HxCDD	54		32 - 141				12/17/19 09:23	12/21/19 03:33	1
13C-1,2,3,6,7,8-HxCDD	55		28 - 130				12/17/19 09:23	12/21/19 03:33	1
13C-1,2,3,4,7,8-HxCDF	54		26 - 152				12/17/19 09:23	12/21/19 03:33	1
13C-1,2,3,6,7,8-HxCDF	53		26 - 123				12/17/19 09:23	12/21/19 03:33	1
13C-1,2,3,7,8,9-HxCDF	51		29 - 147				12/17/19 09:23	12/21/19 03:33	1
13C-2,3,4,6,7,8-HxCDF	53		28 - 136				12/17/19 09:23	12/21/19 03:33	1
13C-1,2,3,4,6,7,8-HpCDD	50		23 - 140					12/21/19 03:33	1
13C-1,2,3,4,6,7,8-HpCDF	49		28 - 143				12/17/19 09:23	12/21/19 03:33	1
13C-1,2,3,4,7,8,9-HpCDF	52		26 - 138					12/21/19 03:33	1
13C-OCDD	52		17 - 157					12/21/19 03:33	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37CI4-2,3,7,8-TCDD	97		35 - 197				12/17/19 09:23	12/21/19 03:33	1

# **Method Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Quaterly Outfall 002 Comp

Laboratory Method **Method Description** Protocol 1613B Dioxins and Furans (HRGC/HRMS) 40CFR136A TAL SAC TAL SAC 1613B Separatory Funnel (L/L) Extraction with Soxhlet Extraction of Dioxin and Furans 40CFR136A

#### **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 = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Job ID: 440-256464-2

# **Lab Chronicle**

Client: Haley & Aldrich, Inc. Job ID: 440-256464-2

Project/Site: Quaterly Outfall 002 Comp

Client Sample ID: Outfall002\_20191205\_Comp Lab Sample ID: 440-256464-1

Date Collected: 12/05/19 09:50 East Sumple 15: 446 266464

Date Received: 12/05/19 16:37

_	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	1613B			967.3 mL	20 uL	345993	12/17/19 09:23	RDR	TAL SAC
Total/NA	Analysis	1613B		1			346948	12/21/19 03:33	AS	TAL SAC

#### **Laboratory References:**

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

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# QC Sample Results

Client: Haley & Aldrich, Inc.

13C-1,2,3,4,7,8,9-HpCDF

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Job ID: 440-256464-2 Project/Site: Quaterly Outfall 002 Comp

# Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Client Sample ID: Method Blank Lab Sample ID: MB 320-345993/1-A **Matrix: Water** Prep Type: Total/NA

Analysis Batch: 346948 Prep Batch: 345993 MR MR **EDL** Unit Analyte Result Qualifier RL Prepared Analyzed Dil Fac 2,3,7,8-TCDD 0.000010 12/17/19 09:23 12/20/19 23:35 ug/L ND 0.0000009 9 2.3.7.8-TCDF ND 0.000010 0.0000009 12/17/19 09:23 12/20/19 23:35 ug/L 12/17/19 09:23 12/20/19 23:35 1,2,3,7,8-PeCDD ND 0.000050 0.0000020 ug/L 1,2,3,7,8-PeCDF ND 0.000050 0.0000013 ug/L 12/17/19 09:23 12/20/19 23:35 2,3,4,7,8-PeCDF ND 0.000050 0.0000014 ug/L 12/17/19 09:23 12/20/19 23:35 NΠ 0.0000011 ug/L 12/17/19 09:23 12/20/19 23:35 1,2,3,4,7,8-HxCDD 0.000050 1,2,3,6,7,8-HxCDD ND 0.000050 0.0000011 ug/L 12/17/19 09:23 12/20/19 23:35 1,2,3,7,8,9-HxCDD 12/17/19 09:23 12/20/19 23:35 ND 0.000050 0.0000010 ug/L 1,2,3,4,7,8-HxCDF ND 0.000050 0.000010 12/17/19 09:23 12/20/19 23:35 1,2,3,6,7,8-HxCDF ND 0.000050 12/17/19 09:23 12/20/19 23:35 0.0000009 ug/L ND 0.0000008 12/17/19 09:23 12/20/19 23:35 1,2,3,7,8,9-HxCDF 0.000050 ug/L 2,3,4,6,7,8-HxCDF ND 0.000050 12/17/19 09:23 12/20/19 23:35 80000008 ug/L 12/17/19 09:23 12/20/19 23:35 1,2,3,4,6,7,8-HpCDD 0.00000252 J,DX q 0.000050 0.0000008 ug/L 0.0000015 ug/L 0.00000258 J.DX 0.000050 12/17/19 09:23 12/20/19 23:35 1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF ND 0.000050 0.0000021 12/17/19 09:23 12/20/19 23:35 OCDD 0.0000113 J,DX 0.00010 0.0000014 ug/L 12/17/19 09:23 12/20/19 23:35 **OCDF** ND 0.00010 0.0000024 12/17/19 09:23 12/20/19 23:35 ua/L Total TCDD 0.000010 12/17/19 09:23 12/20/19 23:35 0.00000124 J,DX q 0.0000009 ug/L 9 Total TCDF ND 0.000010 0.0000009 12/17/19 09:23 12/20/19 23:35 ug/L Total PeCDD ND 0.000050 0.0000020 ug/L 12/17/19 09:23 12/20/19 23:35 0.000050 Total PeCDF 0.0000013 ug/L 12/17/19 09:23 12/20/19 23:35 ND Total HxCDD ND 0.000050 0.0000010 ug/L 12/17/19 09:23 12/20/19 23:35 0.000050 Total HxCDF ND 12/17/19 09:23 12/20/19 23:35 0.0000008 ug/L 0 Total HpCDD 0.00000526 J,DX q 0.000050 12/17/19 09:23 12/20/19 23:35 0.0000008 ug/L Total HpCDF 0.00000258 J.DX 0.000050 0.0000015 ug/L 12/17/19 09:23 12/20/19 23:35 MB MB Isotope Dilution %Recovery Qualifier Limits Prepared Analyzed Dil Fac 13C-2,3,7,8-TCDD 53 25 - 164 12/17/19 09:23 12/20/19 23:35 53 13C-2,3,7,8-TCDF 24 - 169 12/17/19 09:23 12/20/19 23:35 13C-1,2,3,7,8-PeCDD 52 25 - 181 12/17/19 09:23 12/20/19 23:35 53 12/17/19 09:23 12/20/19 23:35 13C-1,2,3,7,8-PeCDF 24 - 185 13C-2.3.4.7.8-PeCDF 55 21 - 178 12/17/19 09:23 12/20/19 23:35 13C-1,2,3,4,7,8-HxCDD 61 32 - 141 12/17/19 09:23 12/20/19 23:35 13C-1,2,3,6,7,8-HxCDD 62 28 - 130 12/17/19 09:23 12/20/19 23:35 13C-1,2,3,4,7,8-HxCDF 61 26 - 152 12/17/19 09:23 12/20/19 23:35 62 26 - 123 12/17/19 09:23 12/20/19 23:35 13C-1,2,3,6,7,8-HxCDF 57 29 - 147 12/17/19 09:23 12/20/19 23:35 13C-1,2,3,7,8,9-HxCDF 13C-2,3,4,6,7,8-HxCDF 58 28 - 136 12/17/19 09:23 12/20/19 23:35 53 12/17/19 09:23 12/20/19 23:35 23 - 14013C-1,2,3,4,6,7,8-HpCDD 13C-1,2,3,4,6,7,8-HpCDF 54 28 - 143 12/17/19 09:23 12/20/19 23:35

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Eurofins TestAmerica, Irvine

12/17/19 09:23 12/20/19 23:35

Page 9 of 23 12/27/2019

# **QC Sample Results**

Client: Haley & Aldrich, Inc.

Project/Site: Quaterly Outfall 002 Comp

Job ID: 440-256464-2

# Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: MB 320-345993/1-A

**Matrix: Water** 

37CI4-2,3,7,8-TCDD

Analysis Batch: 346948

Prep Type: Total/NA **Prep Batch: 345993** MB MB

Isotope Dilution Prepared %Recovery Qualifier Limits Analyzed Dil Fac 13C-OCDD 51 17 - 157 12/17/19 09:23 12/20/19 23:35

MB MB

%Recovery Qualifier Surrogate Limits Prepared Analyzed Dil Fac 37CI4-2,3,7,8-TCDD 35 - 197 12/17/19 09:23 12/20/19 23:35 96

Lab Sample ID: LCS 320-345993/2-A **Client Sample ID: Lab Control Sample Matrix: Water** Prep Type: Total/NA Pren Batch: 345993 Analysis Ratch: 346948

Analysis Batch: 346948	Spike	LCS	LCS				WRec.
Analyte	Added		Qualifier	Unit	D	%Rec	Limits
2,3,7,8-TCDD	0.000200	0.000217		ug/L		108	67 - 158
2,3,7,8-TCDF	0.000200	0.000236		ug/L		118	75 <sub>-</sub> 158
1,2,3,7,8-PeCDD	0.00100	0.00107		ug/L		107	70 - 142
1,2,3,7,8-PeCDF	0.00100	0.00113		ug/L		113	80 - 134
2,3,4,7,8-PeCDF	0.00100	0.00107		ug/L		107	68 - 160
1,2,3,4,7,8-HxCDD	0.00100	0.000979		ug/L		98	70 - 164
1,2,3,6,7,8-HxCDD	0.00100	0.00106		ug/L		106	76 - 134
1,2,3,7,8,9-HxCDD	0.00100	0.000964		ug/L		96	64 - 162
1,2,3,4,7,8-HxCDF	0.00100	0.00102		ug/L		102	72 - 134
1,2,3,6,7,8-HxCDF	0.00100	0.00107		ug/L		107	84 - 130
1,2,3,7,8,9-HxCDF	0.00100	0.00109		ug/L		109	78 <sub>-</sub> 130
2,3,4,6,7,8-HxCDF	0.00100	0.00109		ug/L		109	70 - 156
1,2,3,4,6,7,8-HpCDD	0.00100	0.000942	MB	ug/L		94	70 - 140
1,2,3,4,6,7,8-HpCDF	0.00100	0.00103	MB	ug/L		103	82 - 122
1,2,3,4,7,8,9-HpCDF	0.00100	0.000982		ug/L		98	78 <sub>-</sub> 138
OCDD	0.00200	0.00183	MB	ug/L		92	78 - 144
OCDF	0.00200	0.00195		ug/L		98	63 - 170

OCDF			0.00200
	LCS	LCS	
Isotope Dilution	%Recovery	Qualifier	Limits
13C-2,3,7,8-TCDD	64		20 - 175
13C-2,3,7,8-TCDF	65		22 - 152
13C-1,2,3,7,8-PeCDD	61		21 - 227
13C-1,2,3,7,8-PeCDF	61		21 - 192
13C-2,3,4,7,8-PeCDF	65		13 - 328
13C-1,2,3,4,7,8-HxCDD	70		21 - 193
13C-1,2,3,6,7,8-HxCDD	70		25 - 163
13C-1,2,3,4,7,8-HxCDF	68		19 - 202
13C-1,2,3,6,7,8-HxCDF	68		21 - 159
13C-1,2,3,7,8,9-HxCDF	64		17 - 205
13C-2,3,4,6,7,8-HxCDF	67		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	62		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	60		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	65		20 - 186
13C-OCDD	60		13 - 199
	LCS	LCS	
Surrogate	%Recovery	Qualifier	Limits

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Eurofins TestAmerica, Irvine

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**Client Sample ID: Method Blank** 

# **QC Association Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Quaterly Outfall 002 Comp

Job ID: 440-256464-2

# **Specialty Organics**

# **Prep Batch: 345993**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-1	Outfall002_20191205_Comp	Total/NA	Water	1613B	
MB 320-345993/1-A	Method Blank	Total/NA	Water	1613B	
LCS 320-345993/2-A	Lab Control Sample	Total/NA	Water	1613B	

# **Analysis Batch: 346948**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-1	Outfall002_20191205_Comp	Total/NA	Water	1613B	345993
MB 320-345993/1-A	Method Blank	Total/NA	Water	1613B	345993
LCS 320-345993/2-A	Lab Control Sample	Total/NA	Water	1613B	345993

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# **Definitions/Glossary**

Client: Haley & Aldrich, Inc. Job ID: 440-256464-2

Project/Site: Quaterly Outfall 002 Comp

#### **Qualifiers**

Dioxin
Qualifier

Qualifier Description

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**

Abbreviation	These commonly used abbreviations may 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.

Project/Site: Quaterly Outfall 002 Comp

Job ID: 440-256464-2

# **Laboratory: Eurofins TestAmerica, Irvine**

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	<b>Expiration Date</b>
California	State Program	CA ELAP 2706	06-30-20

# Laboratory: Eurofins TestAmerica, Sacramento

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	01-20-21
ANAB	Dept. of Defense ELAP	L2468	01-20-21
ANAB	Dept. of Energy	L2468.01	01-20-21
ANAB	ISO/IEC 17025	L2468	01-20-21
Arizona	State	AZ0708	08-11-20
Arkansas DEQ	State	19-042-0	06-17-20
California	State	2897	01-31-20
Colorado	State	CA0004	08-31-20
Connecticut	State	PH-0691	06-30-21
Florida	NELAP	E87570	06-30-20
Georgia	State	4040	01-29-20
Hawaii	State	<cert no.=""></cert>	01-29-20
Illinois	NELAP	200060	03-17-20
Kansas	NELAP	E-10375	10-31-20 *
Louisiana	NELAP	01944	06-30-20
Maine	State	2018009	04-14-20
Michigan	State	9947	01-29-20
Michigan	State Program	9947	01-31-20
Nevada	State	CA000442020-1	07-31-20
New Hampshire	NELAP	2997	04-18-20
New Jersey	NELAP	CA005	06-30-20
New York	NELAP	11666	04-01-20
Oregon	NELAP	4040	01-29-20
Pennsylvania	NELAP	68-01272	03-31-20
Texas	NELAP	T104704399-19-13	05-31-20
US Fish & Wildlife	US Federal Programs	58448	07-31-20
USDA	US Federal Programs	P330-18-00239	07-31-21
Utah	NELAP	CA000442019-01	02-29-20
Vermont	State	VT-4040	04-16-20
Virginia	NELAP	460278	03-14-20
Washington	State	C581	05-05-20
West Virginia (DW)	State	9930C	12-31-19
Wyoming	State Program	8TMS-L	01-28-19 *

<sup>\*</sup> Accreditation/Certification renewal pending - accreditation/certification considered valid.

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Haley & Aldrich	rich				9 8 8	ing-SS	Boeing-SSFL NPDES										(SZ					
San Diede CA 02108	5555 Mission Center Ra Suite 300			• • • • • • • • • • • • • • • • • • • •	Quarterly Out		Fall 1001, 002, 011, 018	. 018]					'1				? E6	(ŀ.		•		
Test America Control 17461 Derian Ave Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055	Jan Loegy, CA 22 100 Test America Contact. Urvashi Patel 17461 Derian Ave Suite #100 Tel 949-260-3269 Cell 949-333-9065					Outfall 002 Comp	005 ub	•	`S		(E1613B) (A05.1	2240C/E4S2 1)	n-SON+6ON ,N-ea	C/E1801)			uene, Bis(2- MA, PCP (SVOC:	z: Mercury (E245	;s		***************************************	Comments
TestAmenca's ser Service Agreemen	Testanencia's services under this COC shall be performed in accordance with the TaCos within Blantier. Service Agreement# 2015:18-TestAmerica by and between Haley & Aldrich, Inc., its subsidiares and	accordance with the T&Cs - latey & Aldrich, Inc., its subs	other Blanket	-	Project N	lanager 1606 5%	Project Manager: Katherine Miller 520 289 8606 520 904 6944 (cell)	Miller	IstaM 9		<del>9</del> ) (⊃ sə	((alc))					ilototini Iste, ND	isteM ele				
Sampler: Neal Smith	America Laboratores inc				Field Mi 978 234 6	anager: 1033, 8:	Field Manager: Mark Dominick 978 234 5033, 818 599,0702 (cell)	nick ? (cell)	COVETRD	. Cu, Pb	ergeb 0	008_80		· · · · · · · · · · · · · · · · · · ·	9-N (320		P, 2,4 D M)phtha	солегар	coverab Fe, Min			
Sample Description	Sample I D	Sampling Date/Time	Sample Time Matrix		Container Type	Cont of	Preservative	Bottle MS	ASWASM SA IstoT	(E 500 1)	BOD2 (S	(SMS21	CI-, SO4		inommA	l8-sriqis	2,4,6 TC ethyfiex	aЯ lstoT		· W		326 12/5/19
			WW		500 mL Poly		, ONH	8	9	×								×	×			Outfall 001 analyze for Fe and Mn Cutfalls 002 and 011 analyze for Fe only
			××	<del> </del>	1 L Glass Amber	7	None	110.1	2		×				<u> </u>					-		
		-	N.	$\vdash$	1L Poly	-	$\vdash$		윈			×		H	H			 				
			×	_	500 mL Poly	2	None	120	₽ 2		1	×			-	1						
14	Outfall002_20191205_Comp	12/5/2019	Mγ		500 mL Paly	2	None	130	o <sub>N</sub>				×									48 hours Holding Time NO3 & NO2
			WW	<u> </u>	500 mL Poly	-	None	150 X	2					×							-	48 hours Holding Time for Tubidity
			WW	-	500 mL Poly	-	H-SO.	160 ×	S.						×			   `		λp		
Outfall 002		0(1,0	)C		1 L Glass Amber	2	None	170 🕌	<del>2</del>			-				×				ojen		
			WM		1 L Glass Amber	2	None	180	2		<del> </del>			_			×			) Jo		
			WW	igdash	1L Poly		None	185	S.	$\prod$		$\parallel$		H	×					uje		
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11/1	" Rice	17/5/21		9/	637			<u>∪</u>		4	$\bigvee$		121KU	ć	12/	5/19	6.3	Sample Zact:	Sample Integrity: (Check)	(Check)	on Ice	lce
Relinquished By	۵	Date/Time		රි	Company		er_	Received By				Date/Time	ā					Store sa Data Re	mples for quirement	Store samples for 6 months Data Requirements, (Check)	~	
																		Ala I must B.f.			Att a see B.	× 74.

1.6/1.8,0.8/1.0,2.4/2.6,1.9/2.1,2.3/2.5 #89

27/2019

Test America

Client Name/Address	e/Address				g.	Project.			<u>~</u>	æ	~	~	ð	QRSW Q	QRSW Q	QRSW	ALY			
Haley & Aldrich	drich			ď	eing-SS	Boeing-SSFL NPDES														
5333 Missi	5333 Mission Center Rd Suite 300			Quarterly		Permit 2019 Quarterly Outfall (001, 002, 011, 018)	1,018			(0	8 (r		(1	(80		<del></del> _				
San Diego, CA 92108	CA 92108		T		O	Outfall 002	5			00	60		1 5							
Test America Contr 17461 Derian Ave 1 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055	Test America Contact Urvashı Patel 17461 Derlan Ave Suite #100 Irvine CA 92614 Tel 949-260-3289 Cell 949-333-9055				ď	Comp			eç	31095 Beta(E9	Sr-90 (E905 0) (E903.0 or E9 Unanium (E908	murisen	Mercury (E24	cides+PCBs (I	೯೦೦೪೦	C9CO3				Comments
TestAmerica's t	TestAnnerca's services under this COC shall be performed in accordance with the TACs within Bunifer Services dependent 2015, 1st TestAnnerca by and between Hatey & Adrich, Inc. its subsidiaries and affiliates, and defined as the services and affiliates, and defined to the contractions to the contraction	ance with the T&Cs within Blanket St Inc., its subsidiaries and affiliates, at	a Avice	Project 520.280	Manage AGOS 4	Project Manager: Katherine Miller	Miller 4 (cell)	AletaM	p, Cd, <u>s</u>	(0.00	977 mu		alsteM		SB SSƏ	ess ase				
Sampler, Neal Smith	oorgoves no eal Smith		<del> </del>	Field 1 978.234	lanager 5033	Field Manager. Mark Dominick 978,234,5033, 818,599,0702 (cell)	inick 2 (cell)	penjoss	Cu, Pi	63)sriqi	absЯ b∈		pevioss	-		solved Hardn				
Sample Description	Sample I D	Sampling Date/Time	Sample Matrix	Container Type	Cont of	Preservative	Bottle MS/	MS/MSD Total Di	(E 200 8)	A seoi6	nidmo		iO latoT		7.00S3)	(E200.7)				
	A CONTRACT OF THE PROPERTY OF		N.	1 L Poly	-	None	96 	2		<del>                                     </del>						×			Filter and receipt at 8 018	Filter and preserve win 24hrs of receipt at lab at OF001,002,011, or 018
			WW	500 mi. Poty	-	FNO.3	2 8	2	<u> </u>						×				atOF	at OF001,002,011, or 018
Pa			WW	1L Poly		None	× 002	S	×										Fitter and receipt at 1	Fitter and preserve with 24thrs of receipt at lab at OF001,002,011, or 018
age 15	Oufail002_20191205_Comp_F	12/5/2019	M.W.	1 L Glass Amber	~	None	7 052	2	<del></del>	• • • • • • • • • • • • • • • • • • • •				×					Chlordane detchn, PC OF001,002	Chlordane, DDD, DDE, DDT, dieldrin, PCBs, toxaphene at OF001,002,011, or 018
of 23		8	WW	borosilicate vials	-	None	320	8					×	 					Sample re BAG Bag Prep using	Sample receiving DO NOT OPEN BAG Bag to be opened in Mercury Prep using clean procedures
			WW	500 mL Poty		T	92	92	H	×			H	H	H		$\left  \cdot \right $			
	Comp. 30001000 CONTRACTOR	, commer	-	25 Gai Cube		_		g.			×								Unfiltered analysis S	Unfiltered and unpreserved analysis Separate RAD onto
	disp	 	WW	Amber	-	None	230 N	ę.											duplicate, :	another workproer Analyze duplicate, not MS/MSD
		925	<b>+</b>	400 to 0	+	None	1	1	$\dagger$	+		1	+	+	+	$\dagger$	+	1	Only test events of	Only test if first or second rain events of the year
			7				$\parallel$		$\parallel$	H			H	$\parallel$			H			
			H		+		+	+	$\parallel$	$\frac{1}{1}$			+	$\parallel$	$\  \cdot \ $		$\prod$			
			$\dagger$		+		+	+	+	+		1	+	-	+	+	1			
			H		$\dag \uparrow$		$\prod$	H	H				$\parallel \parallel$	H			$\prod$			
			1		-		-	$\left  \cdot \right $				$\left  \cdot \right $	-		+		4			
Relinquished By	3y Date/Time	Company	¥			ı ı	Received By			Date/Time	me			1	Turn-around time. (Check)	time. (Ch	eck)			
1000	Let Make plaging u							•	0		ĩ	1		77/2	24 Hour.	2 5	72 Hour.	5	10 Day X	necessarily and the second sec
Relinquished By	Inquished By Date/Time	Company Company	2				Scelived By	3	3	Date/Time	ine in	15/	2		48 Hour.	ğ	5 Day:	Ž.	Normal.	waterw
	0		_	727				1	$\int \int dz$	۸ .			`	٨	Sample Integrity (Check)	jrnty (Che	( <del>)</del>	<u> </u>		
Relinquished By	$\mathcal{J}$	Company	· /4	2 2 2		<i>f</i>	Received By	$\sqrt{}$		- Date/Time	a <u>u</u>	757	3	)	Store samples for 6 months	rs for 6 mk	onths.	<u>\$</u>		
12/2										:				రేవ	Data Requirements. (Check) No Level IV:	aments. (C	Sheck)	All Level IV:	×	
7/2019																				

				· · · · · · · · · · · · · · · · · · ·					,														
Client Nam				)		Project:			R	R	R	R	R	R	R	R	R	R			ANA	LYSIS	REQUIRED
Haley & A				В		SSFL NPDE	S		1									E625)	l				
	on Center Rd Suite 300			0		mit 2019	44 04	<b>61</b>	1			1						E6.	_				
San Diego,				Quarterly		[001, 002, 0	n1, U1	pl		1			z	1				చ	155		1	1	1
Test Americ	ca Contact: Urvashi Patel			1		utfall 002			)	1	1	E	2		1			9	E2		Į	1	
	an Ave Suite #100					Comp				8		42	#	=	1			5,0	2		ĺ		
Irvine CA 9										61		18	3			1		器것	2				
Tel 949-26				1						E E	5.1	3	z	13				A. A.	₩ ×				
Cell 949-33	3-9055			1					tals.	13	64	(SM5540C/E4251)	\$	2		1	1	E €	18	iš	1	)	Comments
TestAmerica's s	ervices under this CoC shall be performed in accorda	nce with the T&Cs within E	Hanket	Project	Mana	ger: Katherin	e Mille	er	Cd, S	9110	୍ଦି ହି		曼	3	8			5 Z	let ge	Metals:			
	ent# 2015-18-TestAmerica by and between Haley & A estAmerica Laboratones inc	lidrich, Inc , its subsidianes	and	1		5, 520.904 69			9 0	l G	Sa	AS)	78	NS.	25	6	<b>∞</b>	init late	9	9			
Sampler: N						er: Mark Do		<del></del>	coverable Metals Zn Cu, Pb, Cd, Se	=	E S	8	E3	S	SM	35	E8	4. af	ag a	ag 👗		1	
Campion						3, 818 599.07			528	g	9 8	ıts (	ž g	E	20	P	ç	0, 5	Š	8 %	}	1	1
<b></b>		1			1	1	1	T	8 2 8	TCDD (and all congeners) (E1613B)	BOD5 (20 degrees C) (SM5210B_BODCalc))	Surfactants (MBAS)	Cl., SO4, Nitrate-N, Nitrite-N, NO3+NO2-Perchlorate (E300)	Turbidity, TDS (SM2540C/E180	TSS (160 2 (SM2540D))	Аттопа-N (350.2)	alpha-BHC (E608)	2,4,6 TCP, 2,4 Dinitrotoluene, Bis(2-ethylhexyl)phthalate, NDMA, PCP (SVOCs	Total Recoverable Metals: Mercury (E245.1)	Total Recoverable (E200 7) Fe. Mg			
Sample			Sample		# of	Preservative	Bottle	MS/MSD	Total R (E200 ;	ij	₩ 8	T E	0 5	ě	80	Ě	de l	8.4	豆	<u>1</u> 2 2			JUL :2/5/19
Description	Sample I D	Sampling Date/Time	Matrix	Container Type	Cont				で用用	F	M &	S	200	13	۳	₹	42	4 g	12	유민			
	1		WM	ECO Del	1	HNO <sub>3</sub>	90	No	×			1			1				X	×			Outfall 001 analyze for Fe and Mn Outfalls 002 and 011 analyze
			VVM	500 mL Poly	,	1 11403	90	No	_ ^										1 ^	^			for Fe only
			WM	1 L Glass Amber	2	None	110	No		X									$\overline{}$			1	
						4	-			_^	-	-		_		-			_		1		
			WM	1L Poly	1	None	115	No			X	-	-			-	-				_ \		
			WM	500 mL, Poly	2	None	120	No			-	X	-		-	<b>_</b> _			L.;				1
	Outfall002_20191205_Comp	12/5/2019	WW	500 mL Poly	2	None	130	No					X										48 hours Holding Time NO3 & NO2
			WM	500 mL Poly	1	None	150	No						x					T.				48 hours Holding Time for Tubidity
		1000	WM	500 mL Poly	1	H <sub>2</sub> SO <sub>4</sub>	160	No				1				X			Τ.		₩ 2		
Outfall 002		6950	WM	1 L Glass Amber	2	None	170	No									X		T.		Custody		
			WM	1 L Glass Amber	2	None	180	No				$\vdash$						×			<u>်</u>		
		}	WM	1L Poly	1	None	185	No	<b></b>		1			-	X				1				<del> </del>
			WM	1 L Glass Amber	2	None	110	No		Н									Τ,		C hai		Hold
			WM	500 mL, Poly	2	None	120	No	<del>                                     </del>	_	+	H		_	_				<b>-</b>		<b>2</b> 8		Hold
	0.45-1000 00404005 0 5-4	40/5/0040 3	WM	500 mL Poly	2	None	130	No	<del>                                     </del>	-	+	1	Н	-	_	1			<del>-</del>		56464		Hold
	Outfall002_20191205_Comp_Extra	12/5/2019			-		-	X	<u> </u>	-	+	_		_	<del>                                     </del>	1			Τ.		<b>■</b> 8		
		1950	WM	1 L Glass Amber	2	None	170	No		<u> </u>							н		$\sqcup$		4 4 8-2		Hold
		ه دری	WM	1 L Glass Amber	2	None	180	No										н	i		= 4		Hold
Relinquished i	By Date/Time	e		Company			Receiv	ed By			Da	ate/Tim	e							around tim		*	
0	nice mice	. 0-		2.5			1	,	1	_				1	./.				1	our.			10 Day <sup>,</sup> X
Kache	LHON 12/05	119 484	4 1	310			a	lill	Ke	NO	W		12	15	119	7	13	0	48 H	our:	5 Da	y	Normal
				Company			Receiv	ed By		//	/ Da	ate/Tim	e										
		, ,							10	/	1					, ,			Samp	ole Integrity	(Check)		
11/1	el Reina 12	15/19		1637					Re	_		7	131	KU	/	12/4	-110	16.3	intact	:	_	(	On Ice
Relinquished B	Date/Time	e		Company			Receiv	ed By			Da	ate/Tim	e			1	7-	10.3	Store	samples fo	or 6 mont	hs	
				1.0				5								,				Requireme			
																				evel IV:			evel IV:X/
	2																					7 to 120	
	1.6/1.8,00	8/1.0,	2. 4	/2.6	1.	9/2.	٠, ٠	2.37	2.5	· 7	78	9											10
		•		- /	CO 201	/ ~ .	/ -	~ ~ /	_	-		,											

# **CHAIN OF CUSTODY FORM**

Page 2 of 2

Client Name	/Address:			I		Project.			R	R	R	R		ORSW	QRSW	ORSW		ALY		
Haley & Aldı				1		-SSFL NPDE	s			T	T	T	T	1	T		C	<u> </u>	Т	
5333 Missio	n Center Rd Suite 300					rmit 2019					_ = ~ ₹			_			5			
San Diego, C	A 92108			Quarter		11 [001, 002,	011, 0	18]	1	1	9 Tot 0		=	88		}	1 2			
Test Americ	a Contact Urvashı Patel			1	0	utfall 002 Comp					8668	1	245	E .			Digzi	2	1 1	
	n Ave Suite #100					Comp				5	9 P P P P P P P P P P P P P P P P P P P		1	ő			2	ò		
Irvine CA 92				1						335	98 C F	E	1 8	, <del>,</del>	8	8				
Tel 949-260				1						/E	25 PE C.	astr	Wei	ide	S S	l g	R	5		Comments
Cell 949-333	rvices under this CoC shall be performed in accorda	non with the TS Co within Division	nt Condae						:S S	1 2	26.0	je -	isi Se	stic	lerta as (	as Sk	3	W		Comments
Agreement# 2015	5-18-TestAmerica by and between Haley & Aldrich, Ir			1		ager: Katheri			1 0 0 E	1 8	0.00 0.00 0.00 0.00	3.5	Met	P.P.	S SS	Met	F	$\sim$		
TestAmerica Lab Sampler, Ne						6, 520.904 6 ger. Mark Do	<u> </u>		8 4	55	原品等而5	S €	8	la ta	효율	정투	2	P		
Sampler, Ne	al Situati			t .		3, 818 599.0			CZZ	S	43.3 4.3 5.28 5.28 5.39	18 ac	S S	를	ð₽ Ž	§ ₹	1 =			
		Т	T	570.2.		1	T	T	8 (5)	e g	s Al	5 8	D.S.	4	8 C	Si C.	3			
Sample Description	Sample I D	Sampling Date/Time	Sample Matrix	Container Type	# of Cont	Preservative	Bottle #	MS/MSD	Total Dissolved Metals: (E200.7): Zn , Fe (E200 8): Cu, Pb, Cd, Se	Cyanide (SM4500-CN-E / E335 2)	Gross Alpha(E900.0), Gross Beia(E900.0), Tritum (H-3) (E906.0), Sr-90 (E905.0), Total Combined Radium 226 (E903.0 or E903.1) & Radium 228 (E904.0), Unankum (E908.0), K-40, CS-137 (E901.0 or E901.1)	Chronic Toxicity - Selenastrum (EPA-821-R-02-013)	Total Dissolved Metals: Mercury (E245 1)	Priority Pollutants-Pesticides+PCBs (E608)	Total Recoverable Metals: (E200.7): Hardness as CaCO3	Total Dissolved Metals: (E200.7). Hardness as CaCO3	Chlorpyrifos,			
			WM	1 L Poly	1	None	190	No								х	*			Filter and preserve w/in 24hrs of receipt at lab at OF001,002,011, or 018
			WM	500 mL Poly	1	HNO <sub>3</sub>	80	No							x					at OF001,002,011, or 018
							7							1	1					Fitter and preserve wiin 24hrs of
			WM	1L Poly	1	None	200	No	Х	_										receipt at lab at OF001,002,011, or 018
				1 L Glass																Chlordane, DDD, DDE, DDT,
	Outfall002_20191205_Comp_F	12/5/2019	WM	Amber	2	None	250	No						×						dieldrin,PCBs,toxaphene at OF001,002,011, or 018
							7	•												DOLLOT OFFI
Outfall 002		0950	WM	borosilicate vials	1	None	320	No			1		X							Sample receiving DO NOT OPEN BAG Bag to be opened in Mercury
L		0400					L						-							Prep using clean procedures
			WM	500 mL Poly	1	NaOH	220	No		X					1					
			WM	2 5 Gal Cube	1	None	225	No												Unfiltered and unpreserved analysis Separate RAD onto
	Outfatl002_20191205_Comp	12/5/2019	WM	1 L Glass	1	None	230	No			×		1		ĺ					another workorder Analyze
		long.		Amber								_	_							duplicate, not MS/MSD
		10953	WM-	1-Gal-Gube-	-6	None	235	No		-	+	×-	-							Only test if first or second rain events of the year
			FM																	
																				* From non-ores
																				extra bottle
												1								
										<u> </u>		L			<u> </u>					
elinguished By	Date/Time	Com	pany				Receiv	-10:			Date/Time				-					
, , , , , , , , , , , , , , , , , , , ,			-				Receiv	ed by			Date/ ( ime				1 Urn-ero	and time. (	Sheck,	)		
Rach	of Hohn plosus us	DA 13.14					/	1-00	0		12	151	10	1310	49 Um	'	2 Hou	ır	10	J DayX
Pelinguished Bu	Date/Time	KU ()- 10	nany				A CONTRACT	Jell	· Ke	NO	Date/Time	/3/	14	7570	48 Hour.		b Day:			lormal
	el Hunn 2/05/19 H)  DeterTime  CL Reice  Date/Time	CON					, acolv		) /	2	~~~Q( ) II [II]				Sample to	doords (C	haak)			D DayX
1.1	ne Paison	12/5/10		1637			1	/ /		1	10/	/	/	1/ >	Sample	negrny (C	песк)		0-1	į.
Relinguished Bu	Date/Time	. ~ / C/17	noany:	. 00/			Macor	ad Ry			Date/Time	5/	15	10.3	Ctore -	anlas for A			On Ice.	
	Date: Fane	Cuin	ipully				HOUDIV	ec by			Date/ I (tip	/			Date San	iples for 6	month	15.		
																uirements.				
							L								No Level	IV:		All I	.evel iV:	
	I and the second																			116

Environment Testing TestAmerica

# Chain of Custody Record

Eurofins TestAmerica, Irvine					: eurofins
17461 Derian Ave Suite 100 Irvine, CA 92614-5817 Phone: 949-261-1022 Fax: 949-260-3297	Chain	of Custo	Chain of Custody Record		
Client Information (Sub Contract Lab)	Sampler:		Lab PM: Patel, Urvashi	(Carner Tracking No(s):	COC No: 440-149597.1
Client Contact Shipping/Receiving	Phone:		E-Mail: urvashi.patel@testamericainc.com	State of Origin.	Page: Page 1 of 1
Company. TestAmerica Laboratories, Inc.			Accreditations Required (See note). State Program - California		Job#: 440-256464-1
Address: 880 Riverside Parkway.	Due Date Requested: 12/17/2019		A	Analysis Requested	Code
City: West Sacramento	TAT Requested (days):				A - HCL M - Hexane B - NaOH N - None C - Zn Acetate O - AsNaO2
State, Zip. CA, 95605			sistoT		
Phone: 916-373-5600(Tel) 916-372-1059(Fax)	PO#		Sep.		70
Email.	, MO#;		(0)		I - Ice J - DI Water
Project Name: Boeing NPDES SSFL outfalls	Project #: 44009879		N 10 8		
Site:	:#MOSS		SD (Xe		Other:
Sample Identification - Client ID (Lab ID)	Sample Date Time	Sample (w Type s- (C=comp, o-w	Matrix (Wessell, Wessell, Wess		Number of Special Instructions/Note
	1	(D)	×		_
Outfail002_20191205_Comp (440-256464-1)	12/5/19 09:50	8	Water		See QAS, Boeing_w/u to zero, ug/L; Use
	T accition				Boeing glassware.
Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation out to be subcontract laboratories. This sample shipped to control to be subcontract laboratories. This sample shipped to control to be subcontract laboratories 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.	Laboratones, Inc. places the ownership of risis/lests/matrix being analyzed, the sample current to date, return the signed Chain or	nethod, analyte & acc es must be shipped ba f Custody attesting to	editation compliance upon out subcontra ck to the TestAmerica laboratory or other said complicance to TestAmerica Laborati	ct laboratories. This sample shipment is for instructions will be provided. Any changes ories, Inc.	This sample shipment is forwarded under chain-of-custody. If the laboratory does not the provided. Any changes to accreditation status should be brought to TestAmerica
Possible Hazard Identification			Sample Disposal ( A	fee may be assessed if samples	er than 1 mo
Uncontirmed Deliverable Requested: I, II, III, IV, Other (specify)	Primary Deliverable Rank: 2	2	Special Instructions/QC Requirements:	r Disposal By Lab C Requirements:	Archive For Months
Empty Kit Relinquished by:	Date:		Time:	Method of Shipment:	'A
Relinquished by: A. K. K. Relinquished by:	Date/finds // 9 / 7 / 2 / 2 / 2	Company Company	Received by:	GW2L Date/Time	17/19 - 9:40 Company
Relinquished by:	Date/Time	Company	ny Received by:	Date/Time	Company Company
Custody Seals Intact: Custody Seal No.:			Cooler Temperature(s)	Cooler Temperature(s) <sup>®</sup> C and Other Remarks	

Client: Haley & Aldrich, Inc.

Job Number: 440-256464-2

Login Number: 256464

List Source: Eurofins 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.	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	

Eurofins TestAmerica, Irvine

Client: Haley & Aldrich, Inc.

Job Number: 440-256464-2

Login Number: 256464

List Number: 3

Creator: Kintaudi, Pauline W

List Source: Eurofins TestAmerica, Sacramento

List Creation: 12/09/19 03:11 PM

Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey neter.</td <td>True</td> <td></td>	True	
The cooler's custody seal, if present, is intact.	True	Seal present with no number.
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or ampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	Ob:1.3c Corr:1.7c
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
s 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").	True	
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: Quaterly Outfall 002 Comp

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

**Matrix: Water** Prep Type: Total/NA

			Perc	ent Isotope	Dilution Re	covery (Ac	ceptance L	imits)	
		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)
440-256464-1	Outfall002_20191205_Comp	53	53	48	48	51	54	55	54
MB 320-345993/1-A	Method Blank	53	53	52	53	55	61	62	61
			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)	
440-256464-1	Outfall002_20191205_Comp	53	51	53	50	49	52	52	
MB 320-345993/1-A	Method Blank	62	57	58	53	54	56	51	

#### 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

			Perc	ent Isotope	Dilution Re	ecovery (Ac	ceptance L	imits)	
		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 320-345993/2-A	Lab Control Sample	64	65	61	61	65	70	70	68
			Perc	ent Isotope	Dilution Re	ecovery (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 320-345993/2-A	Lab Control Sample		64	67	62	60	65	60	

#### 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-HxCDF13CHxCF = 13C-2,3,4,6,7,8-HxCDF

HpCDD = 13C-1,2,3,4,6,7,8-HpCDD

Eurofins TestAmerica, Irvine

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Job ID: 440-256464-2

# **Isotope Dilution Summary**

Client: Haley & Aldrich, Inc.
Project/Site: Quaterly Outfall 002 Comp
HpCDF = 13C-1,2,3,4,6,7,8-HpCDF
HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
OCDD = 13C-OCDD

Job ID: 440-256464-2

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Job:



440-256464 Field Sheet

440-255454 Field	Shee

Tracking # :	11	19-	97	14	1-8	950	
Hacking # .	,,	· 1			0	100	

SO / PO / SAT / 2-Day / Ground / UPS / CDO / Courier GSO / OnTrac / Goldstreak / USPS / Other\_\_\_\_\_

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations. File in the job folder with the COC.

lotes:	Therm. ID: <u>/k/-//</u> Corr. Factor: (♣/-) <u>C</u>	1.4°C
	IceV Wet Gel Other_	
	Cooler Custody Seal: Scal	
	Cooler ID:	
	Temp Observed: 1.3 °C Corrected: 1. From: Temp Blank 🕒 Sample 🗅	<u>7</u> _∘c
	During Initial Triage Yes No.	NA
	Cooler compromised/tampered with?	_ 0
	Cooler Temperature is acceptable?	
	CoC is complete w/o discrepancies?	
	Samples received within holding time?	
	Initials: 5 G Date: 12/7/19	
	During Labeling Yes No.	NA
	Samples compromised/tampered with?	
	Sample containers have legible labels?	
	Sample custody seal?	ø
	Containers are not broken or leaking?	
	Containers are not broken or leaking?	0
	Appropriate containers are used?	
		ם
	Appropriate containers are used?	0 0
	Appropriate containers are used?	0 0 0
	Appropriate containers are used?  Sample bottles are completely filled?  Sample preservatives verified?	00000
	Appropriate containers are used?  Sample bottles are completely filled?  Sample preservatives verified?  Samples w/o discrepancies?	00000
	Appropriate containers are used?  Sample bottles are completely filled?  Sample preservatives verified?  Samples w/o discrepancies?  Zero headspace?*	0000
	Appropriate containers are used?  Sample bottles are completely filled?  Sample preservatives verified?  Samples w/o discrepancies?  Zero headspace?*  Alkalinity has no headspace?  Perchlorate has headspace?	4404000
	Appropriate containers are used?  Sample bottles are completely filled?  Sample preservatives verified?  Samples w/o discrepancies?  Zero headspace?*  Alkalinity has no headspace?  Perchlorate has headspace?  (Methods 314, 331, 6850)	

WRIA

#### **DATA VALIDATION REPORT**

# **Boeing SSFL NPDES**

**SAMPLE DELIVERY GROUP:** 440-256464-3

# **Prepared for**

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

21 January 2020







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- 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<sup>x</sup> Project No.:** 1272.003H.01

Sample Delivery Group: 440-256464-3

**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_201912 05_COMP	440-256464-1	N/A	Water	12/5/2019 9:50:00 AM	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) 440-256464-3:

- 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 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**

	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.
A	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<sup>x</sup> reviewed the SDG on January 21, 202020

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 Superfund Inorganic Method Data Review* (2017).

#### **III.1. HOLDING TIMES:**

According to the case narrative, the sample was received properly preserved.

#### III.2. CALIBRATION:

The detector efficiencies for gross alpha and radium-226 were less than 20%; therefore, the detected result for gross alpha and radium-226 were qualified as estimated nondetects (UJ). 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 verified as acceptable for all methods.

#### **III.3. QUALITY CONTROL SAMPLES**

#### III.3.1. METHOD BLANKS

Target isotopes were not detected in the method blanks above the MDC. A comparison of normalized absolute difference of the sample results and the method blank results indicated the method blank and the sample results were significantly different and no qualifications of the data was required.

#### III.3.2. LABORATORY CONTROL SAMPLES:

The recoveries and RPDs were within laboratory-established control limits. RERs, as applicable, were <1.

#### III.3.3. LABORATORY DUPLICATES:

Laboratory duplicates were performed on the sample from this SDG for cesium-137 and tritium. RERs were <1 and DERs were <2.13.

#### 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 IV review was performed on the sample in this data package. Calculations were verified from the raw data and were determined to be accurate within a reasonable margin of error attributable to differences in significant figures. 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:

#### 111.5.1. 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: 4402564643

Analysis Method E900

Sample Name OUTFALL002 20191205 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/5/2019 9:50:00 AM Validation Level: 8

**Lab Sample Name:** 440-256464-1

CAS No Result Total RL**MDC** Result Analyte Lab Validation Validation Value Uncert. Units Qualifier Qualifier Notes \*Ш Gross Alpha Analytes GROSSALPHA 0.868 3.14 3.00 5.64 pCi/L U G UJ 4.77 Gross Beta Analytes GROSSBETA 1.50 4.00 1.85 pCi/L

Analysis Method E901.1

Sample Name OUTFALL002 20191205 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/5/2019 9:50:00 AM Validation Level: 8

**Lab Sample Name:** 440-256464-1

**MDC** Analyte CAS No Result Total RLResult Lab Validation Validation Value Uncert. Units Qualifier **Qualifier** Notes Cesium-137 10045-97-3 3.02 7.82 20.0 9.83 pCi/L U U Potassium-40 13966-00-2 U U -12.285.5 157 157 pCi/L

Analysis Method E903.0

Sample Name OUTFALL002 20191205 COMP Matrix Type: WM Result Type: TRO

Sample Date: 12/5/2019 9:50:00 AM Validation Level: 8

**Lab Sample Name:** 440-256464-1

Total RL**MDC** Analyte CAS No Result Result Lab Validation Validation Value Uncert. Units Qualifier Qualifier Notes 0.129 IJ \*Ш Radium-226 13982-63-3 0.116 0.177 pCi/L 1.00

Analysis Method E904.0

Sample Name OUTFALL002 20191205 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/5/2019 9:50:00 AM Validation Level: 8

**Lab Sample Name:** 440-256464-1

**Analyte** CAS No Result Total RL**MDC** Result Lab Validation Validation Units Qualifier Value Uncert. Qualifier Notes Radium-228 15262-20-1 -0.0217 0.305 1.00 0.546 pCi/L

Tuesday, January 21, 2020 Page 1 of 2

Analysis Method E905.0

Sample Name OUTFALL002 20191205 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/5/2019 9:50:00 AM Validation Level: 8

**Lab Sample Name:** 440-256464-1

**MDC Analyte** CAS No Result Total RLResult Lab Validation Validation Value Uncert. Units Qualifier **Qualifier** Notes Strontium-90 10098-97-2 0.463 0.493 3.00 0.804 pCi/L

Analysis Method E906.0

Sample Name OUTFALL002\_20191205\_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/5/2019 9:50:00 AM Validation Level: 8

**Lab Sample Name:** 440-256464-1

CAS No Result Total RL**MDC Analyte** Result Lab Validation Validation Value Uncert. Units Qualifier Qualifier Notes -207 Tritium 10028-17-8 171 500 338 pCi/L

Analysis Method HASL-300 U Mod

Sample Name OUTFALL002\_20191205\_COMP\_Matrix Type: WM Result Type: TRG

Sample Date: 12/5/2019 9:50:00 AM Validation Level: 8

**Lab Sample Name:** 440-256464-1

Result **Total** RL**MDC** Analyte CAS No Result Lab Validation Validation Value Uncert. Units Qualifier **Qualifier** Notes Total Uranium URANIUM 1.55 0.516 1.00 0.303 pCi/L

Tuesday, January 21, 2020 Page 2 of 2



# **ANALYTICAL REPORT**

Eurofins Calscience Irvine 17461 Derian Ave Suite 100 Irvine, CA 92614-5817 Tel: (949)261-1022

Laboratory Job ID: 440-256464-3

Client Project/Site: Quarterly Outfall 002 Comp

For:

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

Attn: Katherine Miller

Authorized for release by: 1/8/2020 11:21:55 AM

Christian Bondoc, Project Manager I (949)260-3218

christian.bondoc@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.

Christian Bondoc Project Manager I 1/8/2020 11:21:55 AM Laboratory Job ID: 440-256464-3

2

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

Job ID: 440-256464-3

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
440-256464-1	Outfall002 20191205 Comp	Water	12/05/19 09:50	12/05/19 16:37	

# **Case Narrative**

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Comp

Job ID: 440-256464-3

#### Job ID: 440-256464-3

## **Laboratory: Eurofins Calscience Irvine**

#### **Narrative**

Job Narrative 440-256464-3

#### Comments

No additional comments.

#### Receipt

The samples were received on 12/5/2019 4:37 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 5 coolers at receipt time were 1.0° C, 1.8° C, 2.1° C, 2.5° C and 2.6° C.

#### **RAD**

Method 900.0: Gross Alpha Beta Prep Batch 160-453447

The matrix spike (MS) recoveries for 160-453447 were outside control limits. Sample matrix interference is suspected. The associated laboratory control sample (LCS) recovery was within acceptance limits. Samples were also reduced due to high residual mass.

Outfall002 20191205 Comp (440-256464-1), (LCS 160-453447/2-A), (LCSB 160-453447/3-A), (MB 160-453447/1-A), (400-180779-R-2-A), (400-180779-R-2-D DU), (400-180779-R-2-B MS) and (400-180779-R-2-C MSBT)

Method 900.0: Gross Alpha Beta Prep Batch 160-453447

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 20191205 Comp (440-256464-1), (400-180779-R-2-A), (400-180779-R-2-D DU) and (400-180779-R-2-C MSBT). Analytical results are reported with the detection limit achieved.

Method 900.0: Gross Alpha Beta Prep Batch 160-453447

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date. Outfall002\_20191205\_Comp (440-256464-1), (LCS 160-453447/2-A), (LCSB 160-453447/3-A), (MB 160-453447/1-A), (400-180779-R-2-A), (400-180779-R-2-D DU), (400-180779-R-2-B MS) and (400-180779-R-2-C MSBT)

Method 901.1: Gamma Prep Batch 160-453799

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Many isotopes requested for analysis do not have any gamma emissions, or the gamma emissions they do have are very poor. Often, such analytes are reported by gamma spectrometry assuming secular equilibrium with a longer-lived parent. The client should ensure that such interference is acceptable for their sample based upon process knowledge. The following assumptions were made for this report:

Inferred fro	om Rep	orted to	Analyte
Inferred fro	om Rep	orted to	Analyte

		- , -
Th-234	Pa-234	
Th-234	U-238	
Pb-210	Po-210	
Pb-210	Bi-210	
Cs-137	Ba-137m	
Pb-212	Po-216	
Xe-131m	Xe-131	
Sb-125	Te-125m	
Ag-108m	Ag-108	
Rh-106	Ru-106	

Client: Haley & Aldrich, Inc.

Job ID: 440-256464-3 Project/Site: Quarterly Outfall 002 Comp

# Job ID: 440-256464-3 (Continued)

#### **Laboratory: Eurofins Calscience Irvine (Continued)**

Pb-212	Th-228
Pb-212	Ra-224
U-235	Th-231
Ac-228	Th-232
Ac-228	Ra-228
Th-227	Ra-223
Th-227	Ac-227
Th-227	Bi-211
Th-227	Pb-211
Bi-214	Ra-226

Outfall002 20191205 Comp (440-256464-1), (LCS 160-453799/2-A), (MB 160-453799/1-A) and (440-256464-S-1-B DU)

Methods 903.0, 9315: Radium-226 Prep Batch 160-453438

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date. Outfall002 20191205 Comp (440-256464-1), (LCS 160-453438/1-A), (MB 160-453438/18-A), (600-196984-A-9-A), (600-196984-B-9-A MS) and (600-196984-B-9-B MSD)

Methods 904.0, 9320: Ra-228 Prep Batch 160-453444

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Outfall002 20191205 Comp (440-256464-1), (LCS 160-453444/1-A), (MB 160-453444/18-A), (600-196984-A-9-B), (600-196984-B-9-C MS) and (600-196984-B-9-D MSD)

Method 905: Strontium-90 Prep Batch 160-453482

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date. Outfall002 20191205 Comp (440-256464-1), (LCS 160-453482/1-A), (LCSD 160-453482/2-A) and (MB 160-453482/4-A)

Method 906.0: LSC Tritium Prep Batch 160-455437

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Outfall002 20191205 Comp (440-256464-1), (LCS 160-455437/2-A), (MB 160-455437/1-A), (440-256464-S-1-D DU), (440-257193-B-1-A) and (440-257193-B-1-B MS)

Method A-01-R: Isotopic Uranium Prep Batch 160-453442

The tracer resolution (FWHM= 100.7 keV) was greater than 100 keV. The analyte peaks were resolvable within the appropriate region(s) of interest, and no interferent peaks were seen. The laboratory does not believe this excursion adversely affects the data. (LCSD 160-453442/3-A)

Method A-01-R: Isotopic Uranium Prep Batch 160-453442

## **Case Narrative**

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Comp

Job ID: 440-256464-3

# Job ID: 440-256464-3 (Continued)

#### **Laboratory: Eurofins Calscience Irvine (Continued)**

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date. Outfall002\_20191205\_Comp (440-256464-1), (LCS 160-453442/2-A), (LCSD 160-453442/3-A) and (MB 160-453442/1-A)

Method ExtChrom: Uranium Prep Batch 160-453442

The following samples were prepared at a reduced aliquot due to cloudy yellow discoloration: Outfall002\_20191205\_Comp (440-256464-1). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead of a sample duplicate (DUP) to demonstrate batch precision.

Method PrecSep 0: Radium 228 Prep Batch 160-453444:

The following sample was prepared at a reduced aliquot due to brown discoloration: Outfall002\_20191205\_Comp (440-256464-1).

Method PrecSep-21: Radium 226 Prep Batch 160-453438:

The following sample was prepared at a reduced aliquot due to brown discoloration: Outfall002\_20191205\_Comp (440-256464-1).

Method PrecSep-7: Strontium 90 Prep Batch 160-453482:

The following sample was prepared at a reduced aliquot due to a yellow discoloration: Outfall002\_20191205\_Comp (440-256464-1). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead of a sample duplicate (DUP) to demonstrate batch precision.

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

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Comp

Lab Sample ID: 440-256464-1

Job ID: 440-256464-3

Client Sample ID: Outfall002\_20191205\_Comp Date Collected: 12/05/19 09:50 **Matrix: Water** 

Date Received: 12/05/19 16:37

Method: 900.0 - 0	Oross Aipila	and Gros	Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	0.868	UG	3.14	3.14	3.00	5.64	pCi/L	12/09/19 08:33	12/14/19 11:12	1
Gross Beta	4.77		1.42	1.50	4.00	1.85	pCi/L	12/09/19 08:33	12/14/19 11:12	1

Method: 901.1 - Ce	sium 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	3.02	U	7.82	7.82	20.0	9.83	pCi/L	12/10/19 13:10	12/11/19 13:22	1
Potassium-40	-12.2	U	85.4	85.5		157	pCi/L	12/10/19 13:10	12/11/19 13:22	1
_										

Method: 903.0 - Ra	idium-226	(GFPC)	Count Uncert.	Total Uncert.					
Analyte Radium-226	<b>Result</b> 0.129	Qualifier U	(2σ+/-) 0.115	(2σ+/-) 0.116	RL 1.00	<b>MDC</b> 0.177	Prepared 12/09/19 08:03	Analyzed 12/31/19 09:34	Dil Fac
Carrier Ba Carrier	<b>%Yield</b> 75.3	Qualifier	Limits 40 - 110				<b>Prepared</b> 12/09/19 08:03	Analyzed 12/31/19 09:34	Dil Fac

Method: 904.0 -	Radium-228	(GFPC)	Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.0217	U	0.305	0.305	1.00	0.546	pCi/L	12/09/19 08:26	12/13/19 12:50	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	75.3		40 - 110					12/09/19 08:26	12/13/19 12:50	1
Y Carrier	86.3		40 - 110					12/09/19 08:26	12/13/19 12:50	1

Method: 905 - Stro	ntium-90 (	GFPC)								
			Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.463	U	0.491	0.493	3.00	0.804	pCi/L	12/09/19 12:50	12/17/19 11:27	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	72.9		40 - 110					12/09/19 12:50	12/17/19 11:27	1
Y Carrier	93.1		40 - 110					12/09/19 12:50	12/17/19 11:27	1

Method: 906.0 - Tritium, Total (LSC)										
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-207	U	170	171	500	338	pCi/L	12/27/19 10:41	12/30/19 15:36	1

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	1.55		0.509	0.516	1.00	0.303	pCi/L	12/09/19 08:16	12/10/19 22:25	1

**Eurofins Calscience Irvine** 

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# **Client Sample Results**

Client: Haley & Aldrich, Inc.

Job ID: 440-256464-3

Project/Site: Quarterly Outfall 002 Comp

Client Sample ID: Outfall002\_20191205\_Comp Lab Sample ID: 440-256464-1

Date Collected: 12/05/19 09:50 Lab Gample 1D: 440-250404-1

Date Received: 12/05/19 16:37

Tracer	%Yield Qualifier	Limits	Prepared Analyzed	Dil Fac
Uranium-232	74.3	30 - 110	12/09/19 08:16 12/10/19 22:25	1

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## **Method Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Comp

Method **Method Description** Protocol Laboratory TAL SL 900.0 Gross Alpha and Gross Beta Radioactivity EPA TAL SL 901.1 Cesium 137 & Other Gamma Emitters (GS) **EPA** Radium-226 (GFPC) TAL SL 903.0 **EPA** 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 Preparation, Evaporation TAL SL Evaporation None ExtChrom Preparation, Extraction Chromatography Resin Actinide Separation None TAL SL Fill\_Geo-0 Fill Geometry, No In-Growth TAL SL None LSC\_Dist\_Susp Distillation and Suspension (LSC) None TAL SL PrecSep\_0 Preparation, Precipitate Separation None TAL SL TAL SL PrecSep-21 Preparation, Precipitate Separation (21-Day In-Growth) None 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 = Eurofins TestAmerica, St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Job ID: 440-256464-3

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### **Lab Chronicle**

Client: Haley & Aldrich, Inc. Job ID: 440-256464-3

Project/Site: Quarterly Outfall 002 Comp

Client Sample ID: Outfall002\_20191205\_Comp

Lab Sample ID: 440-256464-1 Date Collected: 12/05/19 09:50 **Matrix: Water** 

Date Received: 12/05/19 16:37

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	Evaporation			110.30 mL	1.0 g	453447	12/09/19 08:33	RJD	TAL SL
Total/NA	Analysis	900.0		1			454254	12/14/19 11:12	KLS	TAL SL
Total/NA	Prep	Fill_Geo-0			965.8 mL	1.0 g	453799	12/10/19 13:10	KRS	TAL SL
Total/NA	Analysis	901.1		1			453859	12/11/19 13:22	KLS	TAL SL
Total/NA	Prep	PrecSep-21			750.07 mL	1.0 g	453438	12/09/19 08:03	EJQ	TAL SL
Total/NA	Analysis	903.0		1			455755	12/31/19 09:34	KLS	TAL SL
Total/NA	Prep	PrecSep_0			999.13 mL	1.0 g	453444	12/09/19 08:26	MNH	TAL SL
Total/NA	Analysis	904.0		1			454214	12/13/19 12:50	CJQ	TAL SL
Total/NA	Prep	PrecSep-7			500.8 mL	1.0 g	453482	12/09/19 12:50	RBR	TAL SL
Total/NA	Analysis	905		1			454462	12/17/19 11:27	AJD	TAL SL
Total/NA	Prep	LSC_Dist_Susp			100.5 mL	1.0 g	455437	12/27/19 10:41	KNF	TAL SL
Total/NA	Analysis	906.0		1			455781	12/30/19 15:36	JS	TAL SL
Total/NA	Prep	ExtChrom			250.06 mL	1.0 mL	453442	12/09/19 08:16	KLH	TAL SL
Total/NA	Analysis	A-01-R		1			453883	12/10/19 22:25	KRR	TAL SL

### **Laboratory References:**

TAL SL = Eurofins TestAmerica, St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Client: Haley & Aldrich, Inc.

Job ID: 440-256464-3 Project/Site: Quarterly Outfall 002 Comp

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Lab Sample ID: MB 160-453447/1-A

Analysis Batch: 454254

Client Sample ID: Method Blank

Prep Type: Total/NA

**Prep Batch: 453447** 

Count Total MB MB Uncert. Uncert. Result Qualifier RL **MDC** Unit Dil Fac Analyte  $(2\sigma + / -)$  $(2\sigma + / -)$ Prepared Analyzed Gross Alpha 1.23 pCi/L -0.1496 U 0.601 0.602 3.00 12/09/19 08:33 12/14/19 11:11 Gross Beta -0.4123 U 0.507 0.509 4.00 0.974 pCi/L 12/09/19 08:33 12/14/19 11:11

Lab Sample ID: LCS 160-453447/2-A

**Matrix: Water** 

**Matrix: Water** 

Analysis Batch: 454254

**Client Sample ID: Lab Control Sample** 

Prep Type: Total/NA **Prep Batch: 453447** 

Total LCS LCS Uncert. %Rec. Spike RL Analyte Added Result Qual  $(2\sigma + / -)$ **MDC** Unit Limits %Rec Gross Alpha 49.6 55.92 8.67 3.00 3.09 pCi/L 113 75 - 125

Lab Sample ID: LCSB 160-453447/3-A

**Matrix: Water** 

Analysis Batch: 454254

**Client Sample ID: Lab Control Sample** 

Prep Type: Total/NA

**Prep Batch: 453447** 

Total Spike LCSB LCSB %Rec. Uncert. Added Result Qual  $(2\sigma + / -)$ RL MDC Unit Limits Analyte %Rec **Gross Beta** 85.2 89.03 4.00 105 75 - 125 9.45 0.912 pCi/L

Lab Sample ID: 400-180779-R-2-B MS

**Matrix: Water** 

Analysis Batch: 454254

**Client Sample ID: Matrix Spike** Prep Type: Total/NA

**Prep Batch: 453447** 

Total Spike MS MS %Rec. Sample Sample Uncert. Analyte Result Qual Added Result Qual  $(2\sigma + / -)$ RL MDC Unit %Rec Limits Gross Alpha -1.20 U G 142 133.3 F1 21.4 3.00 8.26 pCi/L -3 60 - 140

Lab Sample ID: 400-180779-R-2-C MSBT

**Matrix: Water** 

Analysis Batch: 454254

**Client Sample ID: Matrix Spike** Prep Type: Total/NA

**Prep Batch: 453447** 

Total MSBT MSBT %Rec. Sample Sample Spike Uncert. RL **MDC** Unit Analyte Result Qual Added Result Qual  $(2\sigma + / -)$ %Rec Limits Gross Beta 8.54 243 249.6 26.5 4.00 2.64 pCi/L 60 - 140

Lab Sample ID: 400-180779-R-2-D DU

**Matrix: Water** 

Analysis Batch: 454254

**Client Sample ID: Duplicate** 

Prep Type: Total/NA

**Prep Batch: 453447** 

Total DU DU Sample Sample **RER** Uncert. Result Qual **MDC** Unit Analyte Result Qual  $(2\sigma + / -)$ RL RER Limit -1.20 U G 8.23 pCi/L Gross Alpha 0.7830 U G 4.43 3.00 0.27 1 **Gross Beta** 8.54 5.328 2.35 4.00 0.68 3.35 pCi/L

**Eurofins Calscience Irvine** 

Job ID: 440-256464-3

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

## Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Lab Sample ID: MB 160-453799/1-A

**Matrix: Water** 

Analysis Batch: 453859

**Client Sample ID: Method Blank** 

**Prep Type: Total/NA** 

**Prep Batch: 453799** 

·	МВ	МВ	Count Uncert.	Total Uncert.					•	
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	-0.9736	U	10.2	10.2	20.0	12.9	pCi/L	12/10/19 13:10	12/11/19 12:20	1
Potassium-40	54.81	U	93.7	93.9		152	pCi/L	12/10/19 13:10	12/11/19 12:20	1

Lab Sample ID: LCS 160-453799/2-A

**Matrix: Water** 

**Analysis Batch: 453997** 

**Client Sample ID: Lab Control Sample** 

Prep Type: Total/NA

**Prep Batch: 453799** 

				Total						
	Spike	LCS	LCS	Uncert.					%Rec.	
Analyte	Added	Result	Qual	(2σ+/-)	RL	MDC	Unit	%Rec	Limits	
Americium-241	136000	132000		15200		420	pCi/L	97	90 - 111	
Cesium-137	44100	43930		4410	20.0	110	pCi/L	100	90 - 111	
Cobalt-60	27500	26810		2660		63.8	pCi/L	98	89 - 110	

Lab Sample ID: 440-256464-1 DU

**Matrix: Water** 

**Analysis Batch: 453858** 

Client Sample ID: Outfall002\_20191205\_Comp

Prep Type: Total/NA

Prep Batch: 453799

					Total					
	Sample	Sample	DU	DU	Uncert.					RER
Analyte	Result	Qual	Result	Qual	(2σ+/-)	RL	MDC	Unit	RER	Limit
Cesium-137	3.02	U	-2.158	U	10.6	20.0	11.8	pCi/L	 0.28	1
Potassium-40	-12.2	U	-57.36	U	182		232	pCi/L	0.17	1

## Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-453438/18-A

**Matrix: Water** 

**Analysis Batch: 455755** 

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L.IIANT San	inia III.	METHON	Blank

Prep Type: Total/NA

Prep Batch: 453438

			Count	Total						
	MB	MB	Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.02144	U	0.0381	0.0381	1.00	0.0893	pCi/L	12/09/19 08:03	12/31/19 11:25	1
	MB	MB								

Carrier %Yield Qualifier Limits Prepared Analyzed Ba Carrier 105 40 - 110 12/09/19 08:03 12/31/19 11:25

1.04

1.00

0.0948 pCi/L

Lab Sample ID: LCS 160-453438/1-A

**Matrix: Water** 

Radium-226

**Analysis Batch: 455755** 

**Client Sample ID: Lab Control Sample** 

90

75 - 125

Total LCS LCS **Spike** Uncert. Analyte Added Result Qual  $(2\sigma + / -)$ RL **MDC** Unit %Rec Limits

10.21

LCS LCS Carrier %Yield Qualifier Ba Carrier

Limits 40 - 110 97.2

11.3

**Eurofins Calscience Irvine** 







Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Comp

Job ID: 440-256464-3

Method: 903.0 - Radium-226 (GFPC) (Continued)

Lab Sample ID: 600-196984-B-9-A MS

**Matrix: Water** 

**Matrix: Water** 

**Analysis Batch: 455755** 

Client Sample ID: Matrix Spike Prep Type: Total/NA

Prep Batch: 453438

Total Sample Sample Spike MS MS Uncert. %Rec. Added RL MDC Unit Limits Analyte Result Qual Result Qual  $(2\sigma + / -)$ %Rec Radium-226 75 - 138 0.142 11.4 11.18 1.15 1.00 0.105 pCi/L 97

MS MS

Carrier %Yield Qualifier Limits Ba Carrier 91.4 40 - 110

Lab Sample ID: 600-196984-B-9-B MSD

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

**Prep Batch: 453438** 

**Analysis Batch: 455755** Total

Sample Sample Spike MSD MSD Uncert. %Rec. **RER** Added RL Analyte Result Qual Result Qual  $(2\sigma + / -)$ MDC Unit %Rec Limits RER Limit Radium-226 0.142 11.92 1.00 0.111 pCi/L 104 0.31 11.3 1.21

MSD MSD

Carrier %Yield Qualifier I imits 88.6 40 - 110 Ba Carrier

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-453444/18-A

**Matrix: Water** 

Analysis Batch: 454213

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

**Prep Batch: 453444** 

Count Total MB MB Uncert. Uncert. Analyte Result Qualifier  $(2\sigma + / -)$  $(2\sigma + / -)$ RL **MDC** Unit Prepared Analyzed Dil Fac Radium-228 0.3185 U 0.252 0.254 1.00 0.402 pCi/L 12/09/19 08:26 12/13/19 12:46

Carrier %Yield Qualifier Limits Prepared Analyzed Dil Fac Ba Carrier 40 - 110 <u>12/09/19 08:26</u> <u>12/13/19 12:46</u> 105 Y Carrier 88.7 40 - 110 12/09/19 08:26 12/13/19 12:46

Lab Sample ID: LCS 160-453444/1-A

MΒ MB

**Matrix: Water** 

Y Carrier

Analysis Batch: 454214

**Client Sample ID: Lab Control Sample** 

Prep Type: Total/NA Prep Batch: 453444

Total **Spike** LCS LCS Uncert.

40 - 110

%Rec. Added RL Analyte Result Qual  $(2\sigma + / -)$ MDC Unit %Rec Limits 1.00 Radium-228 9.31 11.51 1.28 0.400 pCi/L 124 75 - 125

LCS LCS Carrier %Yield Qualifier Limits Ba Carrier 97.2 40 - 110

88.7

**Eurofins Calscience Irvine** 

Client: Haley & Aldrich, Inc. Job ID: 440-256464-3

Project/Site: Quarterly Outfall 002 Comp

Method: 904.0 - Radium-228 (GFPC) (Continued)

Lab Sample ID: 600-196984-B-9-C MS **Client Sample ID: Matrix Spike** 

**Matrix: Water** 

Analysis Batch: 454214

**Prep Type: Total/NA Prep Batch: 453444** Total

Sample Analyte         Sample Result Radium-228         Spike Sample Spike Added Result Qual Point Result Radium-228         MS MS Uncert. Will MS (2σ+/-) RL (2σ+/-) RL MDC Unit Point Result Resul						iotai					
		Sample Sample	Spike	MS	MS	Uncert.					%Rec.
Radium-228 0.768 9.31 11.62 1.31 1.00 0.362 pCi/L 117 45 - 150	Analyte	Result Qual	Added	Result	Qual	(2σ+/-)	RL	MDC	Unit	%Rec	Limits
	Radium-228	0.768	9.31	11.62		1.31	1.00	0.362	pCi/L	117	45 - 150

MS MS Carrier %Yield Qualifier Limits Ba Carrier 40 - 110 91.4 Y Carrier 89.6 40 - 110

Lab Sample ID: 600-196984-B-9-D MSD Client Sample ID: Matrix Spike Duplicate

**Matrix: Water** 

Analysis Batch: 454214

Prep Type: Total/NA

**Prep Batch: 453444** 

					Total						
	Sample Sa	ample Spike	MSD	MSD	Uncert.				%Rec.		RER
Analyte	Result Q	ual Added	Result	Qual	(2σ+/-)	RL	MDC Unit	%Rec	Limits	RER	Limit
Radium-228	0.768	9.30	13.13		1.46	1.00	0.407 pCi/L	133	45 - 150	0.54	1

Total

MSD MSD Carrier %Yield Qualifier Limits Ba Carrier 88.6 40 - 110 Y Carrier 86.3 40 - 110

Method: 905 - Strontium-90 (GFPC)

Lab Sample ID: MB 160-453482/4-A **Client Sample ID: Method Blank Matrix: Water** Prep Type: Total/NA

Analysis Batch: 454462

Analysis Batch: 4	54462							Prep Batch:	453482
			Count	Total				•	
	MB	MB	Uncert.	Uncert.					
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.1907	U	0.218	0.218	3.00	0.409 pCi/L	12/09/19 12:50	12/17/19 11:28	1

	MB	MB				
Carrier	%Yield	Qualifier Li	mits	Prepared	Analyzed	Dil Fac
Sr Carrier	80.9	40	- 110	12/09/19 12:50	12/17/19 11:28	1
Y Carrier	92.0	40	- 110	12/09/19 12:50	12/17/19 11:28	1

Lab Sample ID: LCS 160-453482/1-A **Client Sample ID: Lab Control Sample** 

**Matrix: Water** Prep Type: Total/NA **Analysis Batch: 454462 Prep Batch: 453482** 

				Total					
	Spike	LCS	LCS	Uncert.					%Rec.
Analyte	Added	Result	Qual	(2σ+/-)	RL	MDC	Unit	%Rec	Limits
Strontium-90	7.95	8.150		0.887	3.00	0.393	pCi/L	103	75 - 125

	LCS	LCS	
Carrier	%Yield	Qualifier	Limits
Sr Carrier	77.7		40 - 110
Y Carrier	96.1		40 - 110

**Eurofins Calscience Irvine** 

Client: Haley & Aldrich, Inc.

Job ID: 440-256464-3 Project/Site: Quarterly Outfall 002 Comp

Method: 905 - Strontium-90 (GFPC) (Continued)

Lab Sample ID: LCSD 160-453482/2-A

**Matrix: Water** 

Analysis Batch: 454462

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Type: Total/NA

**Prep Batch: 455437** 

**Client Sample ID: Lab Control Sample** 

**Client Sample ID: Matrix Spike** 

Client Sample ID: Outfall002\_20191205\_Comp

**Prep Batch: 453482** 

Total Spike LCSD LCSD Uncert. %Rec. **RER** Analyte Added RL MDC Unit Limits Result Qual  $(2\sigma + / -)$ %Rec RFR Limit Strontium-90 0.836 3.00 75 - 125 7.95 7.773 0.329 pCi/L 98 0.22

LCSD LCSD

Carrier	%Yield	Qualifier	Limits
Sr Carrier	82.8		40 - 110
Y Carrier	96.4		40 - 110

Method: 906.0 - Tritium, Total (LSC)

Lab Sample ID: MB 160-455437/1-A Client Sample ID: Method Blank

**Matrix: Water** 

Analysis Batch: 455781

Count Total MB MB Uncert. Uncert.

Analyte Result Qualifier  $(2\sigma + / -)$  $(2\sigma + / -)$ RL **MDC** Unit Prepared Analyzed Dil Fac 338 pCi/L 12/27/19 10:41 12/30/19 14:51 Tritium -116.7 U 179 180 500

Lab Sample ID: LCS 160-455437/2-A

**Matrix: Water** 

**Analysis Batch: 455781** 

Total

Spike LCS LCS Uncert.

%Rec. Added %Rec Analyte Result Qual  $(2\sigma + / -)$ RL MDC Unit Limits Tritium 2520 2401 407 500 342 pCi/L 95 75 - 114

Lab Sample ID: 440-257193-B-1-B MS

**Matrix: Water** 

Analysis Batch: 455781

Total Sample Sample Spike MS MS

Uncert. %Rec. Result Qual Added Result Qual  $(2\sigma + / -)$ RL **MDC** Unit %Rec Limits Analyte -214 Ū 67 - 130 Tritium 2510 2405 407 500 339 pCi/L 96

Lab Sample ID: 440-256464-1 DU

**Matrix: Water** 

Analysis Batch: 455781

Total

DU DU Uncert. RFR Sample Sample Analyte Result Qual Result Qual  $(2\sigma + / -)$ RL **MDC** Unit RER Limit -207 Ū -99.10 U 500 Tritium 183 343 pCi/L 0.30

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Lab Sample ID: MB 160-453442/1-A Client Sample ID: Method Blank **Matrix: Water** Prep Type: Total/NA **Analysis Batch: 453880 Prep Batch: 453442** Count Total

MB MB Uncert. Uncert. Result Qualifier  $(2\sigma + / -)$ **MDC** Unit Analyte  $(2\sigma + / -)$ RLPrepared Analyzed Dil Fac **Total Uranium** 0.05852 U 0.150 0.150 1.00 0.252 pCi/L 12/09/19 08:16 12/10/19 22:25

**Eurofins Calscience Irvine** 

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## **QC Sample Results**

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Comp

Job ID: 440-256464-3

## Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

	MB	MB				
Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Uranium-232	67.4		30 - 110	12/09/19 08:16	12/10/19 22:25	1

Lab Sample ID: LCS 160-453442/2-A

**Matrix: Water** 

Analysis Batch: 453881

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

**Prep Batch: 453442** 

				Total						
	Spike	LCS	LCS	Uncert.					%Rec.	
Analyte	Added	Result	Qual	(2σ+/-)	RL	MDC	Unit	%Rec	Limits	
Uranium-234	25.5	26.47		3.17	1.00	0.378	pCi/L	104	75 - 125	
Uranium-238	26.0	23.75		2.92	1.00	0.341	pCi/L	91	75 - 125	

LCS LCS

Tracer %Yield Qualifier Limits Uranium-232 56.7 30 - 110

**Client Sample ID: Lab Control Sample Dup** 

Prep Type: Total/NA

**Prep Batch: 453442** 

Lab Sample ID: LCSD 160-453442/3-A

**Matrix: Water** 

**Analysis Batch: 453882** 

				rotai							
	Spike	LCSD	LCSD	Uncert.					%Rec.		RER
Analyte	Added	Result	Qual	(2σ+/-)	RL	MDC	Unit	%Rec	Limits	RER	Limit
Uranium-234	25.5	24.97		3.11	1.00	0.529	pCi/L	98	75 - 125	0.24	1
Uranium-238	26.0	26.55		3.24	1.00	0.391	pCi/L	102	75 - 125	0.45	1

LCSD LCSD Tracer **%Yield Qualifier** Limits Uranium-232 51.6 30 - 110

## **QC Association Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Comp

Rad

Dron	Ratch:	453438
Preb	Datcii.	400400

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-1	Outfall002_20191205_Comp	Total/NA	Water	PrecSep-21	
MB 160-453438/18-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-453438/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
600-196984-B-9-A MS	Matrix Spike	Total/NA	Water	PrecSep-21	
600-196984-B-9-B MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep-21	

### **Prep Batch: 453442**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-1	Outfall002_20191205_Comp	Total/NA	Water	ExtChrom	
MB 160-453442/1-A	Method Blank	Total/NA	Water	ExtChrom	
LCS 160-453442/2-A	Lab Control Sample	Total/NA	Water	ExtChrom	
LCSD 160-453442/3-A	Lab Control Sample Dup	Total/NA	Water	ExtChrom	

### **Prep Batch: 453444**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-1	Outfall002_20191205_Comp	Total/NA	Water	PrecSep_0	
MB 160-453444/18-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-453444/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
600-196984-B-9-C MS	Matrix Spike	Total/NA	Water	PrecSep_0	
600-196984-B-9-D MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep_0	

### **Prep Batch: 453447**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-1	Outfall002_20191205_Comp	Total/NA	Water	Evaporation	- <u></u>
MB 160-453447/1-A	Method Blank	Total/NA	Water	Evaporation	
LCS 160-453447/2-A	Lab Control Sample	Total/NA	Water	Evaporation	
LCSB 160-453447/3-A	Lab Control Sample	Total/NA	Water	Evaporation	
400-180779-R-2-B MS	Matrix Spike	Total/NA	Water	Evaporation	
400-180779-R-2-C MSBT	Matrix Spike	Total/NA	Water	Evaporation	
400-180779-R-2-D DU	Duplicate	Total/NA	Water	Evaporation	

### **Prep Batch: 453482**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-1	Outfall002_20191205_Comp	Total/NA	Water	PrecSep-7	
MB 160-453482/4-A	Method Blank	Total/NA	Water	PrecSep-7	
LCS 160-453482/1-A	Lab Control Sample	Total/NA	Water	PrecSep-7	
LCSD 160-453482/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-7	

### **Prep Batch: 453799**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method Prej	p Batch
440-256464-1	Outfall002_20191205_Comp	Total/NA	Water	Fill_Geo-0	
MB 160-453799/1-A	Method Blank	Total/NA	Water	Fill_Geo-0	
LCS 160-453799/2-A	Lab Control Sample	Total/NA	Water	Fill_Geo-0	
440-256464-1 DU	Outfall002_20191205_Comp	Total/NA	Water	Fill_Geo-0	

### **Prep Batch: 455437**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-1	Outfall002_20191205_Comp	Total/NA	Water	LSC_Dist_Susp	
MB 160-455437/1-A	Method Blank	Total/NA	Water	LSC_Dist_Susp	
LCS 160-455437/2-A	Lab Control Sample	Total/NA	Water	LSC_Dist_Susp	
440-257193-B-1-B MS	Matrix Spike	Total/NA	Water	LSC_Dist_Susp	

**Eurofins Calscience Irvine** 

Job ID: 440-256464-3

## **QC Association Summary**

Client: Haley & Aldrich, Inc.

Job ID: 440-256464-3

Project/Site: Quarterly Outfall 002 Comp

Rad (Continued)

Prep Batch: 455437 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-256464-1 DU	Outfall002_20191205_Comp	Total/NA	Water	LSC_Dist_Susp	

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## **Definitions/Glossary**

Client: Haley & Aldrich, Inc. Job ID: 440-256464-3

Project/Site: Quarterly Outfall 002 Comp

### Qualifiers

RL

RPD

TEF

TEQ

Qualifier	Qualifier Description	
F1	MS and/or MSD Recovery is outside acceptance limits.	
3	The Sample MDC is greater than the requested RL.	
U	Result is less than the sample detection limit.	

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)

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

**Eurofins Calscience Irvine** 

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## **Accreditation/Certification Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Comp

Job ID: 440-256464-3

### **Laboratory: Eurofins Calscience Irvine**

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	<b>Expiration Date</b>
California	State Program	CA ELAP 2706	06-30-20

## Laboratory: Eurofins TestAmerica, St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
ANAB	Dept. of Defense ELAP	L2305	04-06-22
ANAB	Dept. of Energy	L2305.01	04-06-22
ANAB	ISO/IEC 17025	L2305	04-06-22
Arizona	State	AZ0813	12-08-20
California	Los Angeles County Sanitation Districts	10259	06-30-20
California	State	2886	06-30-20
Connecticut	State	PH-0241	03-31-21
Florida	NELAP	E87689	06-30-20
HI - RadChem Recognition	State	n/a	06-30-20
lowa	State	373	09-17-20
Kansas	NELAP	E-10236	10-31-20
Kentucky (DW)	State	KY90125	12-31-19
Louisiana	NELAP	04080	06-30-20
Louisiana (DW)	State	LA011	12-31-19
Maryland	State	310	09-30-20
MI - RadChem Recognition	State	9005	06-30-20
Missouri	State	780	06-30-22
Nevada	State	MO000542020-1	07-31-20
New Jersey	NELAP	MO002	06-30-20
New York	NELAP	11616	04-01-20
North Dakota	State	R-207	06-30-20
NRC	NRC	24-24817-01	12-31-22
Oklahoma	State	9997	08-31-20
Pennsylvania	NELAP	68-00540	02-28-20
South Carolina	State	85002001	06-30-20
Texas	NELAP	T104704193-19-13	07-31-20
US Fish & Wildlife	US Federal Programs	058448	07-31-20
USDA	US Federal Programs	P330-17-00028	02-02-20
Utah	NELAP	MO000542019-11	07-31-20
Virginia	NELAP	10310	06-14-20
Washington	State	C592	08-30-20
West Virginia DEP	State	381	10-31-20

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Test America

State   Control Cont	Client Name/Address.	e/Address.				O.	Project:		ľ	æ	ж Н	R	2	ж	8	æ	~			ANALY	ANALYSIS REQUIRED	RED
Company   Comp	Haley & A.	Idrich				Seing-S	SFL NPDE										(92					
The CAZENT   Compare Contains and the Caze   Compare Contain	San Diedo	on Center Ra Suite 300 CA 92108			Quarter		[001, 002, 0	11,018]	<del></del>								9 <b>3</b> 8	(F)				
Commence   Part   Commence	Test Ameri 17461 Deri Irvine CA 9 Tel 949-26 Cell 949-33	ca Contact. Unrashi Patel an Ave Suite #100 2614 0-3269				ð	fall 002 Somp						-20N+EON, N-9#				luene, Bis(2- DMA, PCP (SVOC		;sje			Comments
Sample   Neal Smith   Sample   Designation   Desig	TestAmerica's a Service Agreem affiliates, and Te	iervices under this CoC shall be performed in entitle 2015-18-TestAmerica by and between HestAmerica i aboratores inc.	accordance with the T&Cs within Billaley & Aldrich, Inc., its subsidianes	anket	Proje. 520.28	t Manag 9.8606,	er: Katherir 520.904 69	e Miller 14 (cell)	74 -14		) (O see	((olsOC					otoniniC iN ,etsle	<del></del>		••••		
Sumple   Outside   Sumple   Sumple   Outside   Sumple   Sumple   Outside   Ou	Sampler: N	eal Smith			Fiek 978.2:	Manag. 14 5033,	er: Mark Doi 818 599.07	ninick 32 (cell)		uz (	ongeb 09	108 80					1 2 , 9; srtiriq(iv:					
Outside DOZ.    VMM   1, Closes Anthor   1, Norm   100   No   X   X   X   X   X   X   X   X   X	Sample Description	Sample I D	Sampling Date/Time	Sample Matrix			Preservative			(E 500 1)	2) 9008	(SMS21			<del></del>	······································	2,4,6 TC ethylhex			W		61/5/21 775
Conclusion Course   Conc				WM	500 mL Poly		HNO,	8	ę.	×					<u> </u>			×	×		Outfall Mn O for Fe	i 001 analyze for Fe and buffalls 002 and 011 analyze only
Outbillion         12 ACCOUNT         VWM         1.C Boys         1. None         112 ACCOUNT         X <td></td> <td></td> <td></td> <td>×××</td> <td>1 L Glass Ambe.</td> <td></td> <td>None</td> <td>192</td> <td>2</td> <td></td> <td>×</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td> -  -</td> <td></td> <td></td>				×××	1 L Glass Ambe.		None	192	2		×									-  -		
Outside 1022, 2019/1209, Comp. Extra 100 mil. Extra				WW	1L Poly		None	115	£		<u>*</u>			H	H			,				
Outfall/002         Confision 2019/1205_Comp. Extra         VMM         SCO mt, Poly         1         None         153         No				WW	500 mL Poly	2	None	120 🛠	2		$\dashv$	×		-	4				1			
Outfail DOZ         Contraction	~~	Outlali002_20191205_Comp	12/5/2019	ΜÀ	500 mL Paly	~	None	<u>원</u>	2				×	•							48 hor NO2	urs Holding Time NO3 &
Outfall 022         Control 022         Control 022         Control 022         Nome 100         Nome 100<			\	WM	500 mL Poly	-	None	750 X	2		_			×	<u> </u>						48 hor	urs Holding Time for Tubidity
Outfall 1022         Wild State Amber   2 Norme   150 Norm			7000	WW	500 mL Poly	-	H <sub>2</sub> SO <sub>4</sub>	160 X	ę.					-	×					λp		
WWM         1.L Class Amber         2         None         150 %         No         H         H         X <td>Outfall 002</td> <td></td> <td>مر<u>.</u> 0</td> <td></td> <td>1 L Glass Ambe.</td> <td></td> <td>None</td> <td>170</td> <td>2</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>_</td> <td>×</td> <td></td> <td></td> <td></td> <td>ojsn</td> <td></td> <td></td>	Outfall 002		مر <u>.</u> 0		1 L Glass Ambe.		None	170	2						_	×				ojsn		
WWM         11 Class Amber         2         None         110         H				ΝW	1 L Glass Ambe.	ļ	None	± 267 <b>★≯</b>	£		-			-	_		×			O 10		
Outsin000_20181705_Comp_Extra				WW	1L Poly	E	None	185	<u>8</u>		H			Ĥ	Ļ					uje		
Outsil000_20191205_Comp_Extra         12552019 / WM \$500 mL Poly 2   None   1303 mL   None   None   1303 mL   None					1 L Glass Ambe.		Nane	- 10 - X	2	-	I									CPS	PloH	
Outlaskooz_20191205_Comp_Extra         125,5019         WM         1.1 Gless Amber         2         None         1303         No         H				WW	500 mL Poly	2	None	120	o <sub>N</sub>		H	I		H					A PARTY AND A PART	b9t	Hotd	
Company   Comp		Outfall:002_20191205_Comp_Extra		WW	500 mL Poly	2	None	Š	원	1	+	-		+	4	1	1	<b>    </b> 	***************************************	99	Hold	
CDV   WM   1 Class Amber   2   None   1603   None   1603   None   1603   None   1603   None   1603   None   1603   None   None   None   1603   None			John Control	WM	1 L Glass Ambe		None	170 <b>,</b>	2	•						r				Z-01	Hold	
			o CID	WW	1 L Glass Ambei		None	180 X	2								Ι	 ,		7 <del>7</del>	рюн	
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12   15   19   19   19   19   19   19   19	Retinguished t		ate/Time		Company			Received	à			Date/Time	63				-	um-arou	nd time:	Check)		
Date/Time Company Received By Date/Time Store samples for 6 months Date Received By Date/Time Date Requirements. (Check) No Level IV:	ROUM	Hehn			510 510			3	11	Ej	ra	_		_	٥,	/3/		4 Hour. 8 Hour:		72 Hour _ 5 Day	₽ ¥	Day X
Heice 17/5/9 1637  Company Received by Date/Time 12/5/9/6. 3/44ct  Store samples for 6 months Data Requirements. (Check) No Level IV:	Relinquished	ł	ate/Time		Company			Received	Na A	/		Date/Tim	40				ď	r) alame	(C)	Ş		
Company Received By Date-Time / Store samples for 6 months Data Requirements. (Check)	Cale	n Kinca	12/5/19		1637				$\mathbb{V}$		$\forall$	1	131K	e,	1/2/	2/12	6.2	tact:	- CuriRou	(in	On Ice	
	Relinquished		ate/T ime		Company			Received	άĵ			Date/Tim	<b>d</b> u		\	_	υ) <u>()</u>	itore san 'ata Req	nples for 6 uirements.	months (Check)		
																	4	to Level	الخ	,	All Level IV:	-X-

1.6/1.8,0.8/1.0,2.4/2.6,1.9/2.1,2.3/2.5 #89

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GRSW GRSW GRSW

Boeing-SSFL NPDES Permit 2019 Quarterly Outfall (002, 011, 018) Outfall 002

Fitter and preserve with 24hts of receipt at lab at OF001,002,011, or 018

Chtordane, DDD, DDE, DDT, deidrin, PCBs, toxaphene at OF001,002,011, or 018

at OF001,002,011, or 018

×

Filter and preserve with 24hrs of receipt at lab at OF001,002,011, or

Comments

Total Dissolved Metals: (E200,7), Hardness as CaCO3

Total Recoverable Metals: (E200.7): Hardness as CaCO3

Chronic Toxicity - Selenastrum (EPA-821-R-02-013)

Chanide (SM4500-CN-E / E335 2)

Project Manager: Katherine Miller 520.289.8606, 520.904 6944 (cell)

Testiventos's services unter fris CAC strait be performed in scoordance with the TACs within Demiret Services Agrenment 2015: 18-1 fest Unior to ty and between Haley & Adrich, Inc., its subactariess and siffiaties, and Assibuted to Indivations inc.

Sampler, Neal Smith

Cell 949-333-9055 Tel 949-260-3269 Irvine CA 92614

Test America Contact Urvashi Patel 17461 Derian Ave Suite #100

5333 Mission Center Rd Suite 300

Client Name/Address

Haley & Aldrich

San Diego, CA 92108

978.234.5033, 818 599.0702 (cell) Field Manager. Mark Dominick

Total Dissolved Metals: (E200.7): Zn (E200 8): Cu, Pb, Cd, Se

MS/MSD £ 2 운

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Preservative

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Container Type

Sample

Sampling Date/Time

Sample I D

Sample Description

憝 8 8

None

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500 mi. Poly

None

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Priority Pollutants-Pesticides+PCBs (E608)

Lotal Dissolved Metals: Mercury (E245 1)

Gross Alpha(E900.0), Gross Beta(E900.0), Tritum (H-3) (E906.0), St-90 (E905.0), Total Combined Radium 228 (E903.0, or E903.1) & Radium 228 (E904.0), Uranium (E908.0), K-40, CS-137 (E901.0 or E901.1)

Unfiltered and unpreserved analysis Separate RAD onto another workorder Analyze duplicate, not NS/MSD Only test if first or second rain everits of the year.

Sample receiving DO NOT OPEN BAG Bag to be opened in Mercury Prep using clean procedures

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None

1 L Glass

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12/5/2019

Outali002\_20191205\_Comp\_F

Outfall 002

Page 23 of 29

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82 82

NaOH

None

25 Gaf Cube

500 mL Poty

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None

1 L Glass Amber

12/5/2019

Outlail002\_20191205\_Comp

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320

Sole

borosilicate vials

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Reinquished By Date	Date/Time	Сотрапу	Received By	Date/Time		Turn-around time. (Check)	
Rachel Honn Hosing HPR	o HOR (5)	0) :	(1110 River		12/5/19 1310 48 Hour.	24 Hour. 72 Hour.	10 Day X
Relinquished By Date	Date/Time	Company	Received By	Date/Time			
(				\ 1		Sample Integrity (Check)	
Cled Kine	12/5/19	1637	7	/ /	1/2/1/2/	Infract On Ice,	.eo
Relinquished By Date	Date/Time	Company	Received By	Date/Time		Store samples for 6 months.	
						Data Requirements. (Check)	
-4-						No Level IV: Ail Level	All Level IV: X

Test America

3/2020

				·					,														50.4050
Client Nam				,		Project: SSFL NPDE:			R	R	R	R	R	R	R	R	R	R			ANA	LYSIS R	EQUIRED
Haley & Al						mit 2019	0		i									E625)					
	on Center Rd Suite 300			Quarterly		[001, 002, 0	11. 01	81										8	£				
San Diego,	a Contact: Urvashi Patel			1		utfall 002	,.	-1	1	1	1	-	24					ğ	(E245.1)	1	1		1
	an Ave Suite #100					Comp				6		13	ş					- S	Ĭ,				
Irvine CA 9				1						13		E4.	8	5				, Bis(2- , PCP (SVOCs E	Ϋ́				
Tel 949-26										(E1613B)	-	8	Ž	8				. g	Aero				
Cell 949-33	3-9055								100	(8)	(E405.	(SM5540C/E4251)	100	15				MA A	3	iš.		}	Comments
TestAmerica's a	ervices under this CoC shall be performed in accorda	nce with the T&Cs within E	Hanket	Project	Mana	ger: Katherin	ne Mille	r	Recoverable Metals 77: Zn 3.8) : Cu, Pb, Cd, Se	епе	000	SS	E E	55	8			S Z	Aeta	Metals;	ĺ		
Service Agreem	ent# 2015-18-TestAmerica by and between Haley & A estAmerica Laboratories inc			1		5, 520,904 69			e Me	guo	es (	AS)	78	SM2	254	0.2)	8	late	90	9			
Sampler: N						er: Mark Do		<u></u>	erable	100	B D D	WB.	rate (E3(	SS	SM	(35)	E6C	4.4	erat	Far			
				1	•	3, 818 599.07			822	2	080	E SE	Z es	H	0.5	Z-	Ş	J &	8	8 2	}		
		T				ĺ	Bottle	İ		TCDD (and all congeners)	BOD5 (20 degrees C) (SM5210B_BODCalc))	Surfactants (MBAS)	Cl., SO4, Nitrate-N, Nitrite-N, NO3+NO2-N, Perchlorate (E300)	Turbidity, TDS (SM2540C/E1801)	TSS (160 2 (SM2540D))	Ammonia-N (350.2)	alpha-BHC (E608)	2,4,6 TCP, 2,4 Dinitrotoluene, ethylhexyl)phthalate, NDMA, F	Total Recoverable Metals: Mercury	Total Recoverable (E200 7) Fe. Mg			
Sample Description	Sample I D	Sampling Date/Time	Sample Matrix	Container Type	# of Cont	Preservative	#	MS/MSD	ota 200	B	O S	1 15	H. S	a a	SS	m	lph.	th. 4	ota	05a			JUL 12/5/19
Description	Gample 12	Sampling Date Time	Maria	Container Type	COIR		1 3	-	1-66	-	100	100	104	-	-	-	- 69	~ 0		1-5			Outfall 001 analyze for Fe and
1			WM	500 mL Poly	1	HNO2	90	No	X										Х	×	-		Mr Outfalls 002 and 014 analyze
			-	ļ			<del>  ,</del>		<del> </del>	-	┿	-	-	-	_								for Fe only
			WM	1 L Glass Amber	2	None	110	No	L	X										•		٠	
			WM	1L Poly	1	None	115	No			X										_ \		
1			WM	500 mL, Poly	2	None	120	No		_	-	X							-,∤ 📱				
	Outfall002_20191205_Comp	12/5/2019	WW	500 mL Poly	2	None	130	No					X										48 hours Holding Time NO3 & NO2
			WM	500 mL Poly	1	None	150	No						x									48 hours Holding Time for Tubidity
1		FACE	WW	500 mL Poly	1	H <sub>2</sub> SO <sub>4</sub>	160 3	No								Х			_ [		₹		
Outfall 002		6950	WM	1 L Glass Amber	2	None	170	No									X		_; <b>[</b>		<u> </u>		
			WM	1 L Glass Amber	2	None	180	No										×					
			WM	1L Poly	1	None	185	No							Х								
			WM	1 L Glass Amber	2	Nane	110	No		Н	Г								,		<b>8</b> 8		Hold
			WM	500 mL, Poly	2	None	120	No			1	Н							- 1		164		Hold
	Outfall002_20191205_Comp_Extra	12/5/2019 /	WW	500 mL Poly	2	None	130	No		1		1	Н						<u>-</u>		264		Hold
	Oditalio32_23 10 1200_03.11p_EX.lid		WM	1 L Glass Amber	2	None	170	No			1						Н				~		Hold
		1950	-				1 3			-	-	_	-	-					-		4		
		0,0	WM	1 L Glass Amber	2	None	180	No		<u> </u>								н	_ ໍ້				Hold
						J																	
Relinquished 8	Date/Tim	Δ		Company			Receiv	ad By			Da	ite/Tim							Turn	around tim	a: (Chack		
remidulation of	Date Time	•		Company			, cocie				0.0	110							24 Ho	ele integrity	72 Ho		10 Day X
Que be	Maha 12/661	lia uax	1	310			1	1.61	P	~ <b>~</b>	)		12	15	/19	,	13	20	48 Ho	our:	5 Day		Normal
Relinquished F	Hohn 12/05	17 1021	1 1	Company			Receiv	ed By		200	W D	te/Tur	e e	/-/			/-/						
	el Réve 12								//	/									Samo	le Integrity	(Check)		
1.1.	ne Reign 12	15/19		1637						_	7	-	131	KII	1	2/2	-1,0	11 2	mtact:	ie ii iiegini,	(000)	O	n Ice
Relinquished E	By Date/Time	e		Company			Receiv	ed By			Da	te/Tim	e			10	//	76.5	Store	samples fo	r 6 month		
																,				Requireme			
																		- 1		vel IV:	•		rel IV:X//
		/		. 2					-15				**										1/2
	1.6/1.8,00	8/1.0,	2.4	12.6	1.	9/2	, ,	7 2.	6-	. 1	TA	G											10
	•	,		, ~,	•	12.	1-	2.5/	2.5	τ	, 0	ţ											

lient Name	Address			I		Project.			R	R	R	R		QRSW	QRSW	QRSW		ALY		
faley & Aldr 333 Mission an Diego, C est America 7461 Deria vine CA 92	ich Center Rd Suite 300 A 92108 Contact Urvashi Patel n Ave Suite #100	-			Boeing Pe y Outfa	SSFL NPDE rmit 2019 Ill [001, 002, utfall 002 Comp		18)			Gross Apha(E900.0), Gross Beta(E900.0), Trifuum (H-3) (E900.5), St-90 (E905.0), Total Continhed Radium 226 (E903.0 or E903.1) & Radium 228 (E904.0), Unanium (E908.0), K-40, CS-137 (E901.0 or E901.1)		cury (E245 1)	s+PCBs (E608)	8	03	Nigeinon "	(2.52		
el 949-260- cell 949-333 estAmerica's sei greement# 2015 estAmerica Labo ampler. Nec	9055  Vices under this CoC shall be performed in accorde  18-TestAmerice by and between Haley & Aldnch, in rationes inc	ance with the T&Cs within Blank nc , its subsidiaries and affiliate	et Service is, and	520.28	39.860	ager: Katheri 6, 520.904 69 ger. Mark Do	944 (ce	eH)	Total Dissolved Metals: (E200.7): Zn , Fe (E200 8): Cu, Pb, Cd, Se	Cyanide (SM4500-CN-E / E335 2)	a(E900.0), Gross 3) (E906.0), Sr-90 Radium 226 (E90 3 (E904.0), Uran 201.0 or E901.1)	Chronic Toxicity - Selenastrum (EPA-821-R-02-013)	Total Dissolved Metals: Mercury (E245	Priority Pollutants-Pesticides+PCBs (E608)	Total Recoverable Metals: (E200.7): Hardness as CaCO3	Total Dissolved Metals: (E200.7), Hardness as CaCO3	Chlorpyrifos,	53)		Comments
Sample Description	Sample I D	Sampling Date/Time	Sample Matrix	978.23 Container Type	# of Cont	3, 818 599.0 Preservative	702 (ce Bottle	MS/MSD	Total Disso E200.7): Z E200.8): C	Syanide (S	Sross Alph Influm (H-3 Combined 1 Radium 228	Chronic To	rotal Disso	Priority Poll	Fotal Recor E200.7): H	fotal Disso E200.7). H	Chlor			
			wm	1 L Poly	1	None	190	No.			0, 020					х	*			Filter and preserve w/in 24hrs of receipt at lab at OF001,002,011, or 018
			WM	500 mL Poly	1	HNO <sub>3</sub>	80	No							х					at OF001,002,011, or 018
			WM	1L Poly	1	None	200	No	х											Filter and preserve wiin 24hrs of receipt at lab at OF001,002,011, or 018
	Outfall002_20191205_Comp_F	12/5/2019	WM	1 L Glass Amber	2	None	250	No						х						Chlordane, DDD, DDE, DDT, dieldrin, PCBs, toxaphene at OF001,002,011, or 018
tfall 002		0950	WM	borosilicate vials	1	None	320	No					×							Sample receiving DO NOT OPEN BAG Bag to be opened in Mercury Prep using clean procedures
			WM	500 mL Poly 2 5 Gal Cube	1	NaOH	220 225X	No No		X			-	-					-	Unfiltered and unpreserved
	Outfalf002_20191205_Comp	12/5/2019	WM	1 L Glass Amber	1	None	230	No			x									analysis Separate RAD onto another workorder Analyze duplicate, not MS/MSD Only test if first or second rain
		10953	RH	1-Gal-Gube	-	None	235	No				*							_	events of the year
			1														-	$\dashv$	-	* From non-ore
																				extra bott
-+																			_	
quished By			pany				Receive	ed By	Re	iver	oate/Time	15/1	19	1310	Turn-arou 24 Hour: 48 Hour.	nd time. (0	Check) 2 Hou 5 Day:	r	10	DayX
rquished By	el Hunn 2/05/19 H.  Detertine  Reicau  Date/Time	12/5/19	npany	1637		(	Receive	ad By	2	7 °	Date/Time	5/	,	16.3	Sample tr	tegrity (C	heck)		On Ice.	DayX
nquished By	Date/Time	Con	pany				Receive	ed By			Date/Time	/			Store san Data Req No Level I	urements.	(Chec	:k)		x

Client: Haley & Aldrich, Inc.

Job Number: 440-256464-3

Login Number: 256464 List Source: Eurofins Irvine

List Number: 1

Creator: Soderblom, Tim

Creator: Soderbiom, 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.	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	

Client: Haley & Aldrich, Inc. Job Number: 440-256464-3

Login Number: 256464

List Source: Eurofins TestAmerica, St. Louis List Number: 2 List Creation: 12/07/19 10:54 AM

Creator: Harris, Lorin C

Creator: Harris, Lorin C		
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.	True	
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?	False	
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").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

**Eurofins Calscience Irvine** 

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Comp

Method: 903.0 - Radium-226 (GFPC)

Matrix: Water Prep Type: Total/NA

			Percent Yield (Acceptance Limits)
.ab Sample ID	Client Sample ID	Ba Carrier (40-110)	
10-256464-1	Outfall002_20191205_Comp	75.3	
00-196984-B-9-A MS	Matrix Spike	91.4	
600-196984-B-9-B MSD	Matrix Spike Duplicate	88.6	
CS 160-453438/1-A	Lab Control Sample	97.2	
/IB 160-453438/18-A	Method Blank	105	
Tracer/Carrier Legend			
Ba Carrier = Ba Carrier			

Method: 904.0 - Radium-228 (GFPC)

Matrix: Water Prep Type: Total/NA

-		Ba Carrier	Y Carrier	Percent Yield (Acceptance Limits)
Lab Sample ID	Client Sample ID	(40-110)	(40-110)	
440-256464-1	Outfall002_20191205_Comp	75.3	86.3	
600-196984-B-9-C MS	Matrix Spike	91.4	89.6	
600-196984-B-9-D MSD	Matrix Spike Duplicate	88.6	86.3	
LCS 160-453444/1-A	Lab Control Sample	97.2	88.7	
MB 160-453444/18-A	Method Blank	105	88.7	
Tracer/Carrier Legend				
Ba Carrier = Ba Carrier				
Y Carrier = Y Carrier				

Method: 905 - Strontium-90 (GFPC)

Matrix: Water Prep Type: Total/NA

				Percent Yield (Acceptance Limits)
		Sr Carrier	Y Carrier	
₋ab Sample ID	Client Sample ID	(40-110)	(40-110)	
140-256464-1	Outfall002_20191205_Comp	72.9	93.1	
_CS 160-453482/1-A	Lab Control Sample	77.7	96.1	
CSD 160-453482/2-A	Lab Control Sample Dup	82.8	96.4	
/IB 160-453482/4-A	Method Blank	80.9	92.0	

Tracer/Carrier Legend

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)	
440-256464-1	Outfall002_20191205_Comp	74.3	
LCS 160-453442/2-A	Lab Control Sample	56.7	
LCSD 160-453442/3-A	Lab Control Sample Dup	51.6	
MB 160-453442/1-A	Method Blank	67.4	

Uranium-232 = Uranium-232

**Eurofins Calscience Irvine** 

Job ID: 440-256464-3

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Job:

## Environment Testing TestAmerica

## Sacramento Sample Receiving Notes



440-256464 Field Sheet

1	440-256464	Field	Sheet

	Tracking # :	1119-0	1741-	8950	
--	--------------	--------	-------	------	--

SO / PO / SAT / 2-Day / Ground / UPS / CDO / Courier GSO / OnTrac / Goldstreak / USPS / Other\_\_\_\_\_

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations. File in the job folder with the COC.

lotes:	Therm. ID: AK-11 Corr. Factor: (4/-)	
	Ice Wet Gel Other	
	Cooler Custody Seal: Scal	
	Cooler ID:	
	Temp Observed: 1.3 °C Corrected:	1.7 00
	From: Temp Blank Sample D	
	During Initial Triage Yes	No NA
	Cooler compromised/tampered with?	
	Cooler Temperature is acceptable?	0 0
	CoC is complete w/o discrepancies?	
	Samples received within holding time?	
	Initials: 5 1 Date: 12/7/19	
	During Labeling Yes	No NA
Action to the second second	Samples compromised/tampered with?	Ø D
	Sample containers have legible labels?	
	Sample custody seal?	口戶
	Containers are not broken or leaking?	ם ם
	Containers are not broken or leaking?	
	Appropriate containers are used?	
	Sample bottles are completely filled?	
	Sample preservatives verified?	口点
	Samples w/o discrepancies?	
	Zero headspace?*	
	Alkalinity has no headspace? □	
	(Methods 314, 331, 6850)	
	(Methods 314, 331, 6850)  Multiphasic samples are not present?	
	4	

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## **ANALYTICAL REPORT**

Eurofins Irvine 17461 Derian Ave Suite 100 Irvine, CA 92614-5817 Tel: (949)261-1022

Laboratory Job ID: 440-256464-5

Client Project/Site: Quarterly Outfall 002 Comp

For:

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

Attn: Katherine Miller

Authorized for release by: 1/16/2020 10:01:16 AM

Christian Bondoc, Project Manager I

(949)260-3218

christian.bondoc@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.

Project/Site: Quarterly Outfall 002 Comp

Christian Bondoc Project Manager I 1/16/2020 10:01:16 AM Laboratory Job ID: 440-256464-5

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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Page 2 of 16

Client: Haley & Aldrich, Inc. Project/Site: Quarterly Outfall 002 Comp Laboratory Job ID: 440-256464-5

## **Table of Contents**

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## **Sample Summary**

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

Job ID: 440-256464-5

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
					7.0001.2
440-256464-1	Outfall002 20191205 Comp	Water	12/05/19 09:50	12/05/19 16:37	
110 200 101 1	Odilalio02_20101200_0011p	· · · · · · · · · · · · · · · · · · ·	12/00/10 00:00	12/00/10 10:01	

### **Case Narrative**

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Comp

Job ID: 440-256464-5

**Laboratory: Eurofins Irvine** 

**Narrative** 

Job Narrative 440-256464-5

### Comments

No additional comments.

#### Receipt

The samples were received on 12/5/2019 4:37 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 5 coolers at receipt time were 1.0° C, 1.8° C, 2.1° C, 2.5° C and 2.6° C.

### **Subcontract non-Sister**

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

### **Subcontract Work**

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.

Job ID: 440-256464-5

**Eurofins Irvine** 

1/16/2020

## **Method Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Outfall 002 Comp

Method **Method Description** Protocol Laboratory Subcontract Weck-525.2-Diazinon and Chlorpyrifos None Weck Lab

Job ID: 440-256464-5

### **Protocol References:**

None = None

### Laboratory References:

Weck Lab = Weck Laboratories, Inc., 14859 East Clark Avenue, City of Industry, CA 917451396

## **Definitions/Glossary**

Client: Haley & Aldrich, Inc. Job ID: 440-256464-5

Project/Site: Quarterly Outfall 002 Comp

**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.

Job ID: 440-256464-5

Project/Site: Quarterly Outfall 002 Comp

## **Laboratory: Eurofins Irvine**

The accreditations/certifications listed below are applicable to this report.

Authority	Program		<b>Expiration Date</b>
California	State Program	CA ELAP 2706	06-30-20

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Eurofins Irvine



Certificate of Analysis

FINAL REPORT

Work Orders: 9L17025

**Report Date:** 1/08/2020

**Received Date:** 12/17/2019

Turnaround Time: Normal

**Phones:** (949) 261-1022

Fax: (949) 260-3297

P.O. #:

Billing Code:

Attn: TestAmerica, Irvine

**Project:** 440-256464-5

Client: Eurofins Calscience - Irvine

17461 Derian Ave, Suite 100

Irvine, CA 92614

Dear TestAmerica, Irvine,

Enclosed are the results of analyses for samples received 12/17/19 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.

## XX

## Sample Results

Sample:	Outfall002_20191205_Cor	mp (440-256464-1)						Sampled: 12/05/19 9	:50 by Client
	9L17025-01 (Water)								
Analyte			Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Method: EPA	525.2M	Batch ID: W9L1134	Instr: GCMS13		Prepared: 1	2/19/19 10:13		Analyst: EFC	
Chlorpyrifo	s		ND	6.9	10	ng/l	1	01/07/20	
Diazinon			ND	5.2	10	ng/l	1	01/07/20	
Surrogate(s)									
1,3-Dimeth	nyl-2-nitrobenzene		112%		76-128	Conc: (	558	01/07/20	
Triphenyl p	hosphate		203%		40-163	Conc: 1	020	01/07/20	S-GC

9L17025 Page 1 of 3
14859 Clark Avenue, City of Industry CA, 91745 | Phone: (626) 336-2139 | Fax: (626) 336-2634

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# Certificate of Analysis

Quality	Control	Results

Semivolatile Organics - Low Level by Tandem	,,									
					Spike	Source	%REC		RPD	
Analyte	Result	MDL	MRL	Units	Level	Result %REG	Limits	RPD	Limit	Qualifier
Blank (W9L1134-BLK1)				P	repared: 12/19/	19 Analyzed: 01/07/20	)			
Chlorpyrifos	ND	6.9	10	ng/l						
Diazinon	ND	5.2	10	ng/l						
Surrogate(s)										
1,3-Dimethyl-2-nitrobenzene	503			ng/l	500	101	76-128			
Triphenyl phosphate	779			ng/l	500	156	40-163			
LCS (W9L1134-BS1)				Р	repared: 12/19/	19 Analyzed: 01/07/20	)			
Chlorpyrifos	86.7	6.9	10	ng/l	50.0	173				Q-08
Diazinon	63.3	5.2	10	ng/l	50.0	127	43-152			
Surrogate(s)										
1,3-Dimethyl-2-nitrobenzene	549			ng/l	500	110	76-128			
Triphenyl phosphate	804			ng/l	500	161	40-163			
LCS Dup (W9L1134-BSD1)				n	**************************************	19 Analyzed: 01/07/20				
Chlorpyrifos	86.8	6.9	10	ng/l	50.0	174 Analyzed: 01/07/20		0.2	30	Q-08
				· ·						<b>Q</b> -00
Diazinon	65.7	5.2	10	ng/l	50.0	131	43-152	4	30	
Surrogate(s) 1,3-Dimethyl-2-nitrobenzene	504			ng/l	500	101	76-128			
	785			ng/l	500	157				

9L17025 Page 2 of 3 14859 Clark Avenue, City of Industry CA, 91745 | Phone: (626) 336-2139 | Fax: (626) 336-2634



## Certificate of Analysis

FINAL REPORT

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### Notes and Definitions

ltem	Definition
Q-08	High bias in the QC sample does not affect sample result since analyte was not detected or below the reporting limit.
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.
% Rec	Percent Recovery
Dil	Dilution
dry	Sample results reported on a dry weight basis
MDA	Minimum Detectable Activity
MDL	Method Detection Limit
MRL ND	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)  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.
NR	Not Reportable
RPD	Relative Percent Difference
Source	Sample that was matrix spiked or duplicated.
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 MIS002.

### Reviewed by:

Regina Giancola Project Manager









ELAP-CA #1132 • EPA-UCMR #CA00211 • Guam-EPA #17-008R • HW-DOH # • ISO17025 ANAB #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.

9L17025 Page 3 of 3 14859 Clark Avenue, City of Industry CA, 91745 | Phone: (626) 336-2139 | Fax: (626) 336-2634

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Haley & Aldrich	te 200		••	Ē	Permi	Boeing-SSFL NPDES Permit 2019										(929					
San Diego, CA 92108	200 00			Quarterly (	Juffall [4	Quarterly Outfall [001, 002, 011, 018]	1,018]				<del>~~~</del>	'n				)3 E	(1.6				
Test America Contact. Urvashi Patel 17461 Derian Ave Suite #100 Irvine CA 92614	ishi Patel 10	The state of the s			₹ ŏ	uffall 002 Comp					(I 92Þ3/	-ZON+EOI	(† 0			Bis(2- CP (SVOC	cni) (E24			****	
Tel 949-260-3269 Cell 949-333-9055								~10		E405.1	<del></del>	1,1/-eifi		((			ieM: Ne	:sls:			Comments
TestAmenica's services under this CoC shall be performed in accordance with the TaCs within Blanket Worker Agreenerta's CDST-55 restAmentar by and between Haley & Adrich, Inc., its subsidiares and affiliates and "setAmerica Laborationes inc."	shall be performed in accordantica by and between Haley & Alc.	ce with the T&Cs within Bla irich, Inc., its subsidianes a	nket	Project 1 520.289.	Manage 8606, 8	Project Manager: Katherine Miller 520.289.8606, 520.904 6944 (cell)	Miller (cell)			() (See	((oleOC						teM eld	ble Met	*** \		
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		<u></u> l	WW	1L Poly	-	None	115.4	운			×			H	П		 		I		
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16/2020

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QRSW QRSW QRSW

Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108 Test America Confact Urvashı Patel 17461 Derian Ave Suite #100 Ivrine CA 92614 Cell 949-328-9055 Cell 949-328-9055 TestAmerica's services under this CoC shall be performed in accordance with the T&Cs within Bamivet Service TestAmerica's services under this CoC of shall be performed in accordance with the T&Cs within Bamivet Service Advances under this CoC of shall be performed in accordance with the T&Cs within Bamivet Service Advances and soft shall be performed in accordance with the T&Cs within Bamivet Service Advances and soft shall be performed in accordance with the T&Cs within Bamivet Service Advances and soft shall be performed in the T&Cs within Bamivet Service Advances in the T&Cs w			8	eing-SS Perm	Boeing-SSFL NPDES Permit 2019	8			P	,04-5								
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Test America Contact Urvashi Patel 17451 Derian Ave Suite #100 rvine CA 92614 rel 949-260-2389 - 1894-333-9655 - 1894-333-9655 - 1894-333-9655 - 1894-333-9655 - 1894-333-9655 - 1894-333-9655 - 1894-333-9655 - 1894-333-9655			Quarterly Outfall [001, 002, 011, 018]	Outfall	י אטט, יוטא	0.0			,(O (	0) k								
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Sample Description Sample I D Ser	Sampling Date/Time Ma	Sample Contra	Container Type	# # # # # # # # # # # # # # # # # # #	Preservative	Bottle #	MS/M/SD CI lefoT	7.002∃) 8.002∃)	A section	Radium CS-137				Total Di				
	w	WM 1	1 L Poly		None	190	£							×			Filter receip 018	Filter and preserve with 24hrs of receipt at iab at OF001,002,011, or 018
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	*	WW	1L Poly	-	Моне	<b>X</b> 002	S	×									Fither receip 018	Fither and preserve with 24ths of receipt at lab at OF001,002,011, or 018
Outfall002_20191205_Comp_F e	12/5/2019 W	W.W	1 L Glass Amber	~	None	25 25	2					×					Chlor deschr OF00	Chlordane, DDD, DDE, DDT, deskirn, PCBs, boxaphene at OF001,002,011, or 018
Outrail 902	\2000 \2000 \3000	nog WW	borosilicate vials	-	None	322	2					×					Samp BAG Prep	Sample receiving DO NOT OPEN BAG Bag to be opened in Mercury Prep using clean procedures
	M	H	500 mL Poly	-	NaOH	220	No	-	×			-					-	
	<u> </u>	WM 250	25 Gal Cube	-	None	X25X	S.			>							Unfilte	Unfiltered and unpreserved analysis Separate RAD onto
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	ervices under this CoC shall be performed in accorda ent# 2015-18-TestAmerica by and between Haley & A			1		ger: Katherir			overable Metals Zn Cu, Pb, Cd, Se	congeners)	(C) (S)	8	Cl., SO4, Nitrate-N, Nitrite-N, NO3+NO2-N, Perchlorate (E300)	Turbidity, TDS (SM2540C/E180	TSS (160 2 (SM2540D))	2		2,4,6 TCP, 2,4 Dinitrotoluene ethylhexyl)phthalate, NDMA,	Total Recoverable Metals:	Total Recoverable Metals: (E200 7) Fe.Mo			
	stAmerica Laboratories inc	market, trib , to separation				, 520.904 69		1)	Pb, d	8	50	Surfactants (MBAS)	300 to	(S)	MZS	Аттопа-N (350.2)	alpha-BHC (£608)	Din	able	कू के			
ampler: N	eal Smith			t .	_	er: Mark Do			Zh Cu, F	TCDD (and all	BOD5 (20 degree (SM52108_BODC	3	e (E	8	S	5	ii)	2,4 Pht	Ver	\$ 3		-	
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escription	Sample I D	Sampling Date/Time	Matrix	Container Type	Cont	Preservative	#	MONNOD	Total Rec (E200 7): (E200.8)	걸	SN SO	Sur	Per.	Turl	135	Am	alpl	2,4 eth)	100	E To			JUL 12/5/19
							1 2	{															Outfall 001 analyze for Fe and
			WM	500 mL Poly	1	HNO2	90	No	X										Х	X			Mn Outfails 002 and 014 analyz
- 1			-	4.0	_		140			X	1									1			Tion 1 Comp
			WM	1 L Glass Amber	2	None	110	No		_^									_		1		
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			WM	1 L Glass Amber	2	None	180	No										X			<b>≣</b> ℃		
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			WM	1 L Glass Amber	2	None	110	No		-									_ =		<b>■</b> 0		Hold
- 1			WM	500 mL, Poly	2	None	120	No			_	H					_		_		56464		Hold
1	Outfall002_20191205_Comp_Extra	12/5/2019	WW	500 mL Poty	2	None	130	No		<u> </u>	-		Н								<b>≣</b> %		Hold
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Page 14 of 16

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1/16/2020

No Level IV:

All Level IV:\_

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### **CHAIN OF CUSTODY FORM**

Page 2 of 2

ient Name	Address:			T		Project.			R	R	R	R		QRSW	QRSW	QRSW		ALY		
ley & Aldr	1 (1 (1 (1 (1 (1 (1 (1 (1 (1 (1 (1 (1 (1				Boeing	-SSFL NPDE	S			T	T	T	Г	T			S		T	
33 Mission	Center Rd Suite 300			0		ermit 2019	n44 n	4 97		l	Gross Apha(E900.0), Gross Beta(E900.0), Tridum (H-3) (E906.0), Sr-90 (E905.0), Total Combined Radium 226 (E903.0 or E903.1). Radium 228 (E904.0), Urankum (E908.0), K-40, CS-137 (E901.0 or E901.1)			E			Digeino			
n Diego, C				Quarten		all [001, 002, 1 outfall 002	U11, U	18]			90 T S		Total Dissolved Metals: Mercury (E245 1)	Priority Pollutants-Pesticides+PCBs (E608)			100			
	Contact Urvashi Patel				_	Comp					90 (5 g) (6 g)		24	S			ā	2		
	Ave Suite #100			1						52)	D or C	_	2	5	_	_	2	5		
ne CA 92 949-260-										33	S B S B	1	5	# #	g	g	. *	0		1
1 949-200									Se Si	1 5	S 25 8 2 1.	ast	₩ E	Side	Sel	3	B	5		Comments
	vices under this CoC shall be performed in accords	ance with the T&Cs within Blank	et Service	Project	of Man	ager: Katheri	no Mill	0.	Total Dissolved Metals: (E200.7): Zn , Fe (E200 8): Cu, Pb, Cd, Se	Cyanide (SM4500-CN-E / E335 2)	E 9 29 9	Chronic Toxicity - Selenastrum (EPA-821-R-02-013)	SE:	esti	Total Recoverable Metals: (E200.7): Hardness as CaCO3	Total Dissolved Metals: (E200.7), Hardness as CaCO3	Chlorpyrifos,	W		1
ement# 2015 America Labo	18-TestAmerica by and between Haley & Aldrich, I	nc , its subsidiaries and affiliate	s, and	,		6, 520.904 69			No.	lğ	98 4 9 5	- S	Me	0.9	ess es	Mel	-			
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ample	Sample I D	Sampling Date/Time	Sample	Container Type	# of Cont	Preservative	Bottle #	MS/MSD	20 otal	yan	adii adii	PA	ofal	rjori	otal	otal 200	5			1
			-	<b></b>			-		1	0	05050	0.6	F	-	1 - 6	10		-	-	Filter and preserve w/in 24hrs of
			WM	1 L Poly	1	None	190	No	i				1			x	*			receipt at lab at OF001,002,011, or
		-	-				-						-				-			018
			WM	500 mL Poly	1	HNO <sub>3</sub>	80	No							x					at OF001,002,011, or 018
							7			-				]						Filter and preserve win 24hrs of
1			WM	1L Poly	1	None	200	No	X											receipt at lab at OF001,002,011, or 018
							_	<del> </del>		_			-	<del> </del>					_	
			WM	1 L Glass	2	None	250	No						×					1	Chlordane, DDD, DDE, DDT,
	Outfall002_20191205_Comp_F	12/5/2019		Amber	1	Note	250	No						^						dieldrin,PCBs,toxaphene at OF001,002,011, or 018
							-	-		-			-		-		1-1		-+	
1002		1 /000	WM	borosilicate	1	None	320	No				]	×				1 1		- 1	Sample receiving DO NOT OPEN
		0950		vials	'	1	020	1					^							BAG Bag to be opened in Mercury Prep using clean procedures
			WM	500 mL Poly	1	NaOH	220	No		×	<del>                                     </del>	1	-	<del> </del>	-		1	-	_	The standard of the standard o
1			WM	2 5 Gal Cube	1	None	225X	No	<u> </u>	<u> </u>	<del> </del>		-	1	<del>                                     </del>		$\vdash$	-		Unfiltered and unpreserved
- 1	Outfatl002_20191205_Comp	12/5/2019	-	1 L Glass	<u> </u>		,	-			×									analysis Separate RAD onto
	Outlano02_20191205_Comp		WM	Amber	1	None	230	No					1				1 1		- 1	another workorder Analyze duplicate, not MS/MSD
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ынеа ву	el Honn 2/05/19 H.  Detertime  Reicau  Date/Time	Con	pany				WACGIA	ed by	) /	? '	Tare/ ! ILIIe									DayX
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											•				Data Req	urements.	(Chec	k)		
															No Level	V:		All L	evel IV:	x
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## **Login Sample Receipt Checklist**

Client: Haley & Aldrich, Inc. Job Number: 440-256464-5

Login Number: 256464 List Source: Eurofins Irvine

List Number: 1

Creator: Soderblom, Tim

Creator: Soderbiom, 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.	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	

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#### **DATA VALIDATION REPORT**

### **Boeing SSFL NPDES**

SAMPLE DELIVERY GROUP: 440-258020-1

#### **Prepared for**

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

16 January 2020





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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<sup>x</sup> Project No.: 1272.003D.01 002

Sample Delivery Group: 440-258020-1

**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	Matrix	Collection	Method
OUTFALL002_20191223_ GRAB	440-258020-3	WM	12/23/2019 9:30:00 AM	E120.1



#### II. SAMPLE MANAGEMENT

According to the case narrative, Login Sample Receipt Checklist, and the chain-of-custody (COC) provided by the laboratory for sample delivery group (SDG) 440-258020-1:

- The laboratory received the sample in this SDG on ice and within the temperature limits of <6 degrees Celsius (°C) and >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 coolers; however, no evidence of tampering was noted.
- It should be noted that, although marked for validation, no data was submitted for field parameter dissolved oxygen. This parameter was not reviewed for validation.



#### **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. METHOD EPA 120.1 — SPECIFIC CONDUCTANCE

M. Hilchey of MEC<sup>x</sup> reviewed the SDG on January 16, 2020.

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC<sup>x</sup> Data Validation Procedure for General Minerals (DVP-6, Rev. 1), EPA Method 120.1 and the National Functional Guidelines for Inorganic Superfund Method Data Review (2017).

#### **III.1. HOLDING TIMES**

The QAPP holding time, 28 days for specific conductance, was met.

#### III.2. CALIBRATION

Probe calibration data was not provided. The initial and continuing calibration verification recoveries met laboratory control limits.

#### **III.3. QUALITY CONTROL SAMPLES**

#### III.3.1. METHOD BLANKS

The method blank had no detection of specific conductivity.

#### 111.3.2. LABORATORY CONTROL SAMPLES

Laboratory control sample recovery met QAPP control limits.

#### III.3.3. LABORATORY DUPLICATES

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

#### 11.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses are not applicable to this method.

#### III.4. SAMPLE RESULT VERIFICATION

Raw data was not provided; therefore, sample results could not be verified against raw data. Reported nondetects are valid to the MDL.

#### III.5. FIELD QC SAMPLES

MEC<sup>x</sup> 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<sup>x</sup> used the remaining detects to evaluate the associated site sample. 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.

# Validated Sample Result Forms: 4402580201

Analysis Method E120.1

Sample Name OUTFALL002\_20191223\_GRAB Matrix Type: WM Result Type: TRG

Sample Date: 12/23/2019 9:30:00 AM Validation Level: 8

**Lab Sample Name:** 440-258020-3

Fraction: CAS No Result RLMDL Analyte Result Lab Validation Validation Value Units Qualifier Qualifier Notes N 510 1.0 Specific Conductance CONDSPEC 1.0 umhos/c

Tuesday, January 21, 2020 Page 1 of 1

## **ANALYTICAL REPORT**

Eurofins TestAmerica, Irvine 17461 Derian Ave Suite 100 Irvine, CA 92614-5817

Tel: (949)261-1022

Laboratory Job ID: 440-258020-1

Client Project/Site: Boeing-SSFL NPDES Permit 2019

#### For:

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

Attn: Katherine Miller

Authorized for release by: 12/31/2019 4:52:02 PM

Christian Bondoc, Project Manager I

(949)260-3218

christian.bondoc@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.

Christian Bondoc Project Manager I 12/31/2019 4:52:02 PM

attached have been evaluated for completeness and quality control acceptability.

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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12/31/2019

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### **Sample Summary**

Client: Haley & Aldrich, Inc. Project/Site: Boeing-SSFL NPDES Permit 2019

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
440-258020-3	Outfall002_20191223_Grab	Water	12/23/19 09:30	12/23/19 16:05	
440-258020-5	TB-20191223	Water	12/23/19 09:30	12/23/19 16:05	

Job ID: 440-258020-1

#### Case Narrative

Client: Haley & Aldrich, Inc.

Project/Site: Boeing-SSFL NPDES Permit 2019

Job ID: 440-258020-1

Laboratory: Eurofins TestAmerica, Irvine

**Narrative** 

Job Narrative 440-258020-1

#### Comments

No additional comments.

#### Receipt

The samples were received on 12/23/2019 4:05 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 3.0° C and 3.7° C.

#### GC/MS VOA

Method 624.1: The laboratory control sample (LCS) for analytical batch 440-587719 recovered outside control limits for the following analytes: Carbon tetrachloride. These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.

Method 624.1: The following volatile sample was analyzed with significant headspace in the sample container(s): TB-20191223 (440-258020-5). Significant headspace is defined as a bubble greater than 6 mm in diameter. Sample is received with headspace.

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

#### **General Chemistry**

Method SM 2540F: Insufficient sample volume was available to perform a sample duplicate (DUP) associated with analytical batch 440-587847.

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

#### **Organic Prep**

Methods 1664A, 1664B: Analysis for Silica Gel Treated - Hexane Extractable Material (SGT-HEM) was not performed for the following samples: (LCS 440-588629/2-A), (LCSD 440-588629/3-A) and (MB 440-588629/1-A). Since the HEM results for all samples requesting SGT were below the reporting limit (RL), the quality control samples did not undergo silica get treatment. All HEM quality control criteria were met.

Methods 1664A, 1664B: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-588629 and analytical batch 440-588739. 1664 - 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.

#### **VOA Prep**

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

Job ID: 440-258020-1

Client Sample ID: Outfall002\_20191223\_Grab Lab Sample ID: 440-258020-3

Date Collected: 12/23/19 09:30 Date Received: 12/23/19 16:05 Matrix: Water

Job ID: 440-258020-1

Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
ND		0.50	0.25	ug/L			12/24/19 10:40	1
ND		0.50	0.25	ug/L			12/24/19 10:40	1
ND		0.50	0.25	ug/L			12/24/19 10:40	1
%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
108		60 - 140					12/24/19 10:40	1
113		60 - 140					12/24/19 10:40	1
107		60 - 140					12/24/19 10:40	1
	ND ND ND **Recovery 108 113	%Recovery Qualifier 108 113	ND 0.50 ND 0.50 ND 0.50 ND 0.50  **Recovery Qualifier Limits 60 - 140 113 60 - 140	ND       0.50       0.25         ND       0.50       0.25         ND       0.50       0.25         **Recovery       Qualifier       Limits         108       60 - 140         113       60 - 140	ND     0.50     0.25 ug/L       ND     0.50     0.25 ug/L       ND     0.50     0.25 ug/L       **ND     0.50     0.25 ug/L       **Recovery     Qualifier     Limits       108     60 - 140       113     60 - 140	ND     0.50     0.25 ug/L       ND     0.50     0.25 ug/L       ND     0.50     0.25 ug/L       **Recovery     Qualifier     Limits       108     60 - 140       113     60 - 140	ND         0.50         0.25 ug/L           ND         0.50         0.25 ug/L           ND         0.50         0.25 ug/L           **Recovery         Qualifier         Limits         **Prepared           108         60 - 140           113         60 - 140	ND       0.50       0.25 ug/L       12/24/19 10:40         ND       0.50       0.25 ug/L       12/24/19 10:40         ND       0.50       0.25 ug/L       12/24/19 10:40         **Recovery Qualifier Limits       **Prepared Analyzed       4.00         108       60 - 140       12/24/19 10:40         113       60 - 140       12/24/19 10:40

Analyte Result Qualifier RL **MDL** Unit Prepared Analyzed Dil Fac HEM (Oil & Grease) ND 4.8 12/31/19 06:36 12/31/19 12:37 1.3 mg/L Result Qualifier RL D Analyte **RL** Unit Prepared Analyzed Dil Fac 1.0 12/27/19 08:39 **Specific Conductance** 1.0 umhos/cm 510 **Settleable Solids** 0.10 0.10 mL/L/Hr 12/24/19 14:23 0.10

Client Sample ID: TB-20191223 Lab Sample ID: 440-258020-5

Date Collected: 12/23/19 09:30 Matrix: Water

Date Received: 12/23/19 16:05

Method: 624.1 - Volatile Or Analyte	•	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	ND		0.50	0.25	ug/L		-	12/24/19 09:15	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			12/24/19 09:15	1
Trichloroethene	ND		0.50	0.25	ug/L			12/24/19 09:15	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	101	·	60 - 140			-		12/24/19 09:15	1
Dibromofluoromethane (Surr)	109		60 - 140					12/24/19 09:15	1
Toluene-d8 (Surr)	104		60 - 140					12/24/19 09:15	1

### **Method Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Boeing-SSFL NPDES Permit 2019

Method	Method Description	Protocol	Laboratory
624.1	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 = Eurofins TestAmerica, Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

Job ID: 440-258020-1

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#### **Lab Chronicle**

Client: Haley & Aldrich, Inc. Job ID: 440-258020-1

Project/Site: Boeing-SSFL NPDES Permit 2019

Client Sample ID: Outfall002 20191223 Grab Lab Sample ID: 440-258020-3

Date Collected: 12/23/19 09:30 **Matrix: Water** Date Received: 12/23/19 16:05

Batch Dil Initial Final **Batch** Prepared Factor Method Number **Prep Type** Type Run Amount Amount or Analyzed Analyst Lab Total/NA 587719 Analysis 624.1 10 mL 10 mL 12/24/19 10:40

TAL IRV Total/NA 120.1 12/27/19 08:39 XL TAL IRV Analysis 588120 1 Total/NA Prep 1664A 1050 mL 1000 mL 588629 12/31/19 06:36 JC1 TAL IRV Total/NA 1664A 588739 12/31/19 12:37 JC1 TAL IRV Analysis 1 Total/NA Analysis SM 2540F 1000 mL 1 L 587847 12/24/19 14:23 ST TAL IRV

Client Sample ID: TB-20191223 Lab Sample ID: 440-258020-5

Date Collected: 12/23/19 09:30 Date Received: 12/23/19 16:05

Dil Batch Batch Initial Final Batch Prepared **Prep Type** Туре Method Run Factor **Amount Amount** Number or Analyzed Analyst Lab TAL IRV Total/NA Analysis 624.1 10 mL 587719 12/24/19 09:15 AI 10 mL

**Laboratory References:** 

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

**Matrix: Water** 

12/31/2019

Job ID: 440-258020-1

Project/Site: Boeing-SSFL NPDES Permit 2019

Method: 624.1 - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-587719/4

**Matrix: Water** 

Analysis Batch: 587719

Client: Haley & Aldrich, Inc.

Client Sample ID: Method Blank

**Client Sample ID: Lab Control Sample** 

Client Sample ID: Outfall002\_20191223\_Grab

Prep Type: Total/NA

**Prep Type: Total/NA** 

Prep Type: Total/NA

MB MB Analyte Result Qualifier RL **MDL** Unit Prepared Analyzed Dil Fac 1,1-Dichloroethene 0.50 0.25 ug/L 12/24/19 08:29  $\overline{\mathsf{ND}}$ 1,2-Dichloroethane ND 0.50 0.25 ug/L 12/24/19 08:29 Trichloroethene ND 0.50 0.25 ug/L 12/24/19 08:29

MB MB Qualifier Dil Fac Surrogate %Recovery Limits Prepared Analyzed 4-Bromofluorobenzene (Surr) 101 60 - 140 12/24/19 08:29 Dibromofluoromethane (Surr) 112 60 - 140 12/24/19 08:29 Toluene-d8 (Surr) 105 60 - 140 12/24/19 08:29

Lab Sample ID: LCS 440-587719/1002

**Matrix: Water** 

Analysis Batch: 587719

Spike LCS LCS %Rec. Analyte Added Result Qualifier Limits Unit D %Rec 1,1-Dichloroethene 25.0 23.1 92 19 - 212 ug/L 25.0 1.2-Dichloroethane 27.1 ug/L 109 72 - 137Trichloroethene 25.0 26.1 ug/L 105 75 - 138

LCS LCS Surrogate %Recovery Qualifier Limits 60 - 140 4-Bromofluorobenzene (Surr) 103 Dibromofluoromethane (Surr) 105 60 - 140 Toluene-d8 (Surr) 99 60 - 140

Lab Sample ID: 440-258020-3 MS

**Matrix: Water** 

**Analysis Batch: 587719** 

	Sample Sa	ample	Spike	MS	MS				%Rec.	
Analyte	Result Qu	ualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
1,1-Dichloroethene	ND		10.0	10.6		ug/L		106	10 - 234	 
1,2-Dichloroethane	ND		10.0	10.7		ug/L		107	49 - 155	
Trichloroethene	ND		10.0	11.5		ug/L		115	70 - 157	

MS MS Surrogate %Recovery Qualifier Limits 4-Bromofluorobenzene (Surr) 60 - 140 102 Dibromofluoromethane (Surr) 60 - 140 111 Toluene-d8 (Surr) 105 60 - 140

Lab Sample ID: 440-258020-3 MSD

**Matrix: Water** 

**Analysis Batch: 587719** 

8020-3 MSD	Client Sample ID: Outfall002_20191223_Grab
	Prep Type: Total/NA
9	

	Sample	Sample	Spike	MSD	MSD				%Rec.		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
1,1-Dichloroethene	ND		10.0	10.6		ug/L		106	10 - 234	1	32
1,2-Dichloroethane	ND		10.0	10.9		ug/L		109	49 - 155	2	49
Trichloroethene	ND		10.0	11.3		ug/L		113	70 - 157	2	48

12/31/2019

Client: Haley & Aldrich, Inc. Job ID: 440-258020-1

Project/Site: Boeing-SSFL NPDES Permit 2019

Method: 624.1 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-258020-3 MSD Client Sample ID: Outfall002\_20191223\_Grab

Limits

**Matrix: Water** 

Surrogate

**Analysis Batch: 587719** 

Prep Type: Total/NA

MSD MSD %Recovery Qualifier 103

4-Bromofluorobenzene (Surr) 60 - 140 Dibromofluoromethane (Surr) 105 60 - 140 Toluene-d8 (Surr) 105 60 - 140

Method: 120.1 - Conductivity, Specific Conductance

Lab Sample ID: MB 440-588120/3 Client Sample ID: Method Blank Prep Type: Total/NA

**Matrix: Water** 

Analysis Batch: 588120

MB MB

Result Qualifier RL **RL** Unit Prepared Analyzed Dil Fac 1.0 12/27/19 08:39 Specific Conductance  $\overline{\mathsf{ND}}$ 1.0 umhos/cm

Lab Sample ID: LCS 440-588120/4 **Client Sample ID: Lab Control Sample Matrix: Water** Prep Type: Total/NA

**Analysis Batch: 588120** 

LCS LCS Spike %Rec. Added Result Qualifier Analyte Unit %Rec Limits 1030 1000 90 - 110 Specific Conductance 97 umhos/cm

Lab Sample ID: 440-258161-D-1 DU **Client Sample ID: Duplicate** Prep Type: Total/NA

**Matrix: Water** 

**Analysis Batch: 588120** 

Sample Sample DU DU **RPD** Analyte Result Qualifier Result Qualifier Unit RPD Limit D Specific Conductance 1400 1440 umhos/cm 5

Method: 1664A - HEM and SGT-HEM

Lab Sample ID: MB 440-588629/1-A Client Sample ID: Method Blank Prep Type: Total/NA

**Matrix: Water** 

Analysis Batch: 588739

MB MB

Result Qualifier RL **MDL** Unit Dil Fac Analyte Prepared Analyzed 5.0 12/31/19 06:36 12/31/19 12:37 HEM (Oil & Grease)  $\overline{\mathsf{ND}}$ 1.4 mg/L

**Client Sample ID: Lab Control Sample** Lab Sample ID: LCS 440-588629/2-A **Matrix: Water** Prep Type: Total/NA

**Analysis Batch: 588739** 

Spike LCS LCS %Rec. Added Result Qualifier Unit D %Rec Limits

Analyte HEM (Oil & Grease) 40.0 34.0 mg/L 85 78 - 114

Lab Sample ID: LCSD 440-588629/3-A

**Matrix: Water** 

Prep Type: Total/NA **Analysis Batch: 588739 Prep Batch: 588629** LCSD LCSD Spike %Rec. **RPD** Added Result Qualifier Limit Analyte Unit D %Rec Limits **RPD** HEM (Oil & Grease) 40.0 34.2 mg/L 86 78 - 114

Eurofins TestAmerica, Irvine

Page 10 of 21

**Prep Batch: 588629** 

**Prep Batch: 588629** 

12/31/2019

Client Sample ID: Lab Control Sample Dup

### **QC Association Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Boeing-SSFL NPDES Permit 2019

**GC/MS VOA** 

Analysis Batch: 587719

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258020-3	Outfall002_20191223_Grab	Total/NA	Water	624.1	
440-258020-5	TB-20191223	Total/NA	Water	624.1	
MB 440-587719/4	Method Blank	Total/NA	Water	624.1	
LCS 440-587719/1002	Lab Control Sample	Total/NA	Water	624.1	
440-258020-3 MS	Outfall002_20191223_Grab	Total/NA	Water	624.1	
440-258020-3 MSD	Outfall002_20191223_Grab	Total/NA	Water	624.1	

**General Chemistry** 

Analysis Batch: 587847

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258020-3	Outfall002_20191223_Grab	Total/NA	Water	SM 2540F	

**Analysis Batch: 588120** 

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258020-3	Outfall002_20191223_Grab	Total/NA	Water	120.1	
MB 440-588120/3	Method Blank	Total/NA	Water	120.1	
LCS 440-588120/4	Lab Control Sample	Total/NA	Water	120.1	
440-258161-D-1 DU	Duplicate	Total/NA	Water	120.1	

**Prep Batch: 588629** 

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258020-3	Outfall002_20191223_Grab	Total/NA	Water	1664A	
MB 440-588629/1-A	Method Blank	Total/NA	Water	1664A	
LCS 440-588629/2-A	Lab Control Sample	Total/NA	Water	1664A	
LCSD 440-588629/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	

**Analysis Batch: 588739** 

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258020-3	Outfall002_20191223_Grab	Total/NA	Water	1664A	588629
MB 440-588629/1-A	Method Blank	Total/NA	Water	1664A	588629
LCS 440-588629/2-A	Lab Control Sample	Total/NA	Water	1664A	588629
LCSD 440-588629/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	588629

Job ID: 440-258020-1

Eurofins TestAmerica, Irvine

12/31/2019

### **Definitions/Glossary**

Client: Haley & Aldrich, Inc. Job ID: 440-258020-1

Project/Site: Boeing-SSFL NPDES Permit 2019

**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.

Job ID: 440-258020-1

Project/Site: Boeing-SSFL NPDES Permit 2019

### **Laboratory: Eurofins TestAmerica, Irvine**

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	<b>Expiration Date</b>
California	State Program	CA ELAP 2706	06-30-20

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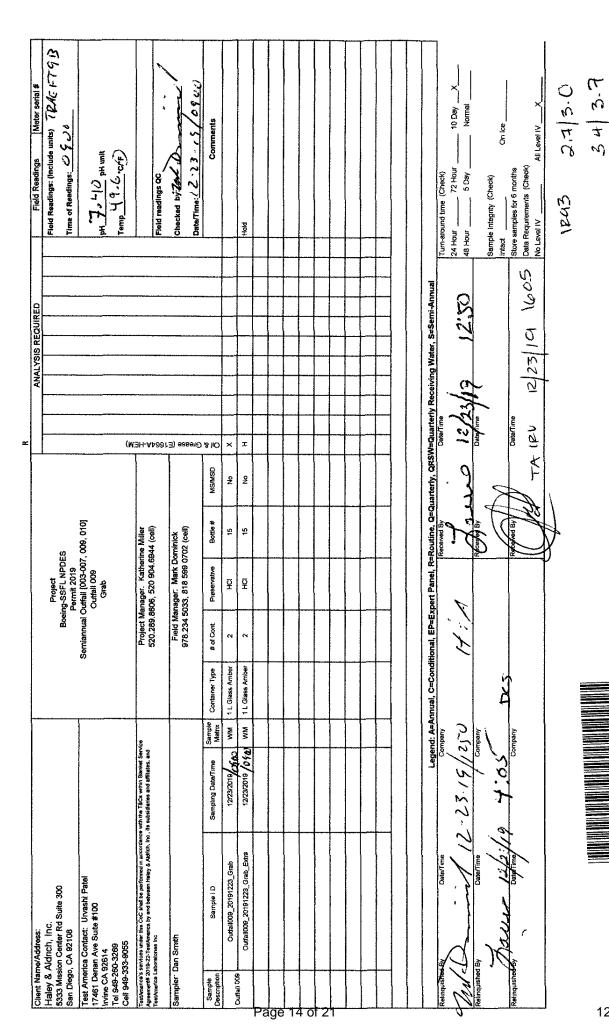
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Test America

440-258020 Chain of Custody



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Haley & Aldrich	Aidrich				à	Project										Field	Field Readings: (include units)	にろんにない
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Test America Cont 17461 Derian Ave Irvine CA 92614 Tel 949-333-9055 Cell 949-333-9055	Test America Contact. Urvashi Patel 17461 Derian Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055			Routir	o Outfall	Routine Outfall (001, 002, 011, 018) Outfall 002 Grab	1, 018]		CA, TCE (E624)	42540F))	(1.00					DO HAT T	00 7. 17 mg/L pH 7. 21 pH unit Temp50, 0.0@	
TestAmerica's Agreement# 2 TestAmerica L	TestAmericals services under this COC shall be performed in accordance with the T&Os within Blanket Service Agreement's 2014-22, TestAmerica by and between Hakey & Adricol, the , its subsidiaries and affiliates, and TestAmerica Laborationes inc	ce with the TACs within Blank to, its subsidiaries and affiliate	set Service is, and	Proj 520	oct Manag 289.8606,	Project Manager. Katherine Miller 520 289.8606, 520.904 6944 (cell)	e Miller 14 (cell)		664A-HEM) CCE, 1,2-DX	(E160.5 (SA	Se108 / E13					Field	eadings QC	
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Sample Description	Sample I D	Sampling Date/Time	Sample Matrix	Container Type	# of Cont.	Preservative	Bottle #	MS/MSD		settles	Condu			······································				
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<del>ige</del>	Ogio Cas (S) Ca Zacono	0669/	WM	1L Poly	-	None	20	8		×								
Courtail 002			MW	500 mL Poly	1	None	75	Ŋ			×							
5-ol			MW	1 L Glass Amber	2	НCI	15	No.	I							Hose	The state of the s	
2	Ouffall002_20191229_Grab_Extra	WW 0 (70/4102162121	mm 0	40 mL VOA	3	HCI	£	ž	I							Hald		
1			WM	500 mt. Poly	*	None	75	Ş.			I					Hold		
Trip Blanks	Trip Blanks TB-20191223	12/23/2019/0475	, wo	40 mL VOA	3	Ä	8	<del>Q</del>	×									
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**CHAIN OF CUSTODY FORM** 

Page 2 of 2

Client: Haley & Aldrich, Inc.

Job Number: 440-258020-1

Login Number: 258020 List Source: Eurofins TestAmerica, Irvine

List Number: 1

Creator: Soderblom, Tim

Creator. Soderbiom, rim		
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	

### Patel, Urvashi

From: Baluran, Dwayne < DBaluran@haleyaldrich.com>

Sent: Tuesday, December 24, 2019 11:54 AM

**To:** Patel, Urvashi **Cc:** Miller, Katherine

Subject: RE: Eurofins TestAmerica sample confirmation files from 440-258020-2 Boeing-SSFL

NPDES Permit 2019

#### -External Email-

Hi Urvashi,

Please see the following notes for 440-258020-2.

Sampling Event	Sample Delivery Group	Samples Included	Work Order or COC Corrections?
OF009 - Semiannual, OF002 - Routine	440-258020-2	Outfall009_20191223_Grab_Extra, Outfall002_20191223_Grab_Extra	Update sample name from "Outfall002_20191223_Grab_Etra" to "Extra". No Settleable solids hold per COC.

Thank you, **Dwayne Baluran, EIT, QSP**Staff Engineer

Haley & Aldrich, Inc.

5850 Canoga Avenue | Suite 400 Woodland Hills, CA 91367

T: (978) 234.5022 C: (818) 224.0704

www.haleyaldrich.com

**From:** Miller, Katherine < <a href="mailto:KMiller@haleyaldrich.com">KMiller@haleyaldrich.com</a>>

Sent: Tuesday, December 24, 2019 10:20 AM

To: Baluran, Dwayne < DBaluran@haleyaldrich.com >

Subject: Fwd: Eurofins TestAmerica sample confirmation files from 440-258020-2 Boeing-SSFL NPDES Permit 2019

Please review today

Sent from my iPhone

Begin forwarded message:

**From:** Mark Christine < <u>mark.christine@testamericainc.com</u>>

Date: December 24, 2019 at 10:41:08 AM MST

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Page 17 of 21

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12/31/2019

< <u>EHernandez@haleyaldrich.com</u>>, Kim Schultz < <u>kim.schultz@mecx.net</u>>, "Miller, Katherine"

< <a href="mailto:KMiller@haleyaldrich.com">"Ms. Urvashi Patel" < urvashi.patel@testamericainc.com">"urvashi.patel@testam

Subject: Eurofins TestAmerica sample confirmation files from 440-258020-2 Boeing-SSFL NPDES Permit 2019

#### **CAUTION: External Email**

Hello,

Attached please find the sample confirmation files for job 440-258020-2; Boeing-SSFL NPDES Permit 2019

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

Thank you.

#### **Mark B Christine**

Project Manager Assistant

Eurofins TestAmerica, Irvine

E-mail: <a href="mailto:mark.christine@testamericainc.com">mark.christine@testamericainc.com</a>
<a href="mailto:www.testamericainc.com">www.testamericainc.com</a>

### Patel, Urvashi

From: Baluran, Dwayne < DBaluran@haleyaldrich.com>

Sent: Tuesday, December 24, 2019 10:59 AM

**To:** Patel, Urvashi; Christine, Mark B. **Cc:** Miller, Katherine; Bondoc, Christian M.

**Subject:** RE: Eurofins TestAmerica sample confirmation files from 440-258020-1 Boeing-SSFL

NPDES Permit 2019

#### -External Email-

Hey,

Sure, whatever you can you do to split these sample locations separately to your fullest capability. I don't believe I've ever seen 2 outfalls in one SDG number. It'll make it easier for our tracking purposes and permit review if they are in different reports.

Thanks, Dwayne

From: Patel, Urvashi < <a href="mailto:Urvashi.Patel@testamericainc.com">Urvashi.Patel@testamericainc.com</a>>

Sent: Tuesday, December 24, 2019 10:52 AM

To: Baluran, Dwayne < DBaluran@haleyaldrich.com >; Christine, Mark B. < Mark.Christine@testamericainc.com > Cc: Miller, Katherine < Miller@haleyaldrich.com >; Bondoc, Christian M. < Christian.Bondoc@testamericainc.com > Subject: RE: Eurofins TestAmerica sample confirmation files from 440-258020-1 Boeing-SSFL NPDES Permit 2019

#### **CAUTION: External Email**

Hi Dwayne

The COC has 1 of 2 and 2 of 2 listed so they were logged in together. We have already logged in under one job so I can split the samples into job series -1 and -2 for the different sample locations. Will that work?

#### **Urvashi Patel**

Phone: 949-333-9055

E-mail: <u>Urvashi.Patel@testamericainc.com</u>

**From:** Baluran, Dwayne [mailto:DBaluran@haleyaldrich.com]

Sent: Tuesday, December 24, 2019 10:46 AM

**To:** Patel, Urvashi **Cc:** Miller, Katherine

Subject: FW: Eurofins TestAmerica sample confirmation files from 440-258020-1 Boeing-SSFL NPDES Permit 2019

### -External Email-

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Hi Urvashi,

Happy Holidays! I'm reviewing the sample receipts for 440-258020-1 and -2. I'm seeing OF002 and OF009 sample data being mixed with each other. I've never seen this before. Typically each outfall is their own SDG. Could this please be revised.

Thanks,

Dwayne Baluran, EIT, QSP

Staff Engineer

Haley & Aldrich, Inc.

5850 Canoga Avenue | Suite 400 Woodland Hills, CA 91367

T: (978) 234.5022 C: (818) 224.0704

www.haleyaldrich.com

**From:** Miller, Katherine < <a href="mailto:KMiller@haleyaldrich.com">KMiller@haleyaldrich.com</a>>

Sent: Tuesday, December 24, 2019 10:20 AM

**To:** Baluran, Dwayne < <u>DBaluran@haleyaldrich.com</u>>

Subject: Fwd: Eurofins TestAmerica sample confirmation files from 440-258020-1 Boeing-SSFL NPDES Permit 2019

Please review today

Sent from my iPhone

Begin forwarded message:

From: Mark Christine <mark.christine@testamericainc.com>

Date: December 24, 2019 at 10:41:07 AM MST

To: "Barr, Anastasia" < ABarr@haleyaldrich.com >, "Hernandez, Elysse"

<<u>EHernandez@haleyaldrich.com</u>>, Kim Schultz <<u>kim.schultz@mecx.net</u>>, "Miller, Katherine"

< <a href="mailto:KMiller@haleyaldrich.com"><a href="mailto:KMiller@hale

Subject: Eurofins TestAmerica sample confirmation files from 440-258020-1 Boeing-SSFL NPDES

Permit 2019

**CAUTION: External Email** 

Hello,

Attached please find the sample confirmation files for job 440-258020-1; Boeing-SSFL NPDES Permit 2019

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

Thank you.

2

12/31/2019

#### **Mark B Christine**

Project Manager Assistant

Eurofins TestAmerica, Irvine

E-mail: mark.christine@testamericainc.com www.eurofinsus.com | www.testamericainc.com

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#### **DATA VALIDATION REPORT**

### **Boeing SSFL NPDES**

SAMPLE DELIVERY GROUP: 440-258085-1

#### **Prepared for**

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

23 January 2020





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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<sup>x</sup> Project No.: 1272.003D.01 002

Sample Delivery Group: 440-258085-1

**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	Matrix	Collection	Method
OUTFALL002_20191224_ COMP	440-258085-1	Water	12/24/19 8:20 AM	E1613B, E200.7, E200.8, E625.1, SM2540D
OUTFALL002_20191224_ COMP_F	440-258085-3	Water	12/24/19 8:20 AM	E200.7, E200.8



#### II. SAMPLE MANAGEMENT

According to the case narrative, Login Sample Receipt Checklists, and the chains-of-custody (COC) provided by the laboratory for sample delivery group (SDG) 440-258085-1:

- 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 and properly preserved, as applicable.
- Field and/or laboratory personnel signed and dated the appropriate original and transfer COCs.
- According to the Login Sample Receipt Checklists, custody seals were absent on the coolers upon receipt at TA-Irvine; however, no evidence of tampering was noted. A custody seal was present on the cooler received at TA-Sacramento.
- The case narrative indicated that the site sample for the 1613B analysis was received in a wide-mouth amber glass bottle, and less sample volume (864 milliliters) was available for extraction.
- It should be noted that, although the COC listed only zinc as a target analyte for Method 200.7, the laboratory analyzed and reported for iron by this method as well. The data was reviewed for both analytes.



# **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 1613B — DIOXIN/FURANS

#### L. Calvin of MEC<sup>x</sup> reviewed the SDG on January 23, 2020

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC<sup>X</sup>* 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

Initial 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, OCDD, OCDF, and for totals HpCDD, HpCDF and HxCDD. The sample results for isomers detected below the RL in the sample were qualified as a nondetect (U) at the level of contamination. The method blank concentrations of 1,2,3,4,6,7,8-HpCDD and OCDD were not sufficient to qualify the sample concentrations above the RL. The reviewer compared peaks comprising the method blank totals to those in the sample totals. Totals HpCDD,



HpCDF and HxCDD were qualified as estimated (J), as only a portion of each total was determined to be method blank contamination.

#### 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<sup>x</sup> 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<sup>x</sup> used the remaining detects to evaluate the associated site samples. 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.

#### 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. Second-column confirmation analysis for isomer 2,3,7,8-TCDF was not performed, as 2,3,7,8-TCDF was not detected in the initial analysis of the sample.

#### 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.

As noted in the case narrative, RLs and EDLs were slightly elevated due to somewhat limited sample volume. Rather than approximately 1000 milliliters (ml), an 864 ml sample volume was available for extraction.

As total HxCDF included one estimated maximum possible concentration (EMPC) peak, the result was qualified as estimated (J).

#### IV. METHODS 200.7 AND 200.8 — METALS

M. Hilchey of MEC<sup>x</sup> reviewed the SDG on January 24, 2020.

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 and 200.8 and the National Functional Guidelines for Inorganic Methods Data Review (2017).

#### **IV.1. HOLDING TIMES**

The analytical holding time, six months for metals, was met. Sample Outfall002\_20191224\_Comp\_F was filtered and preserved approximately 47 hours after receipt. Typically, the COC comments section for this project states that the samples must be filtered for dissolved analysis within 24 hours of receipt at the laboratory. The comments on the COC for the dissolved sample are illegible; however, the reviewer assumed this requirement is in effect. All results for this sample were qualified as estimated (UJ for nondetects, J for detects).

#### **IV.2. CALIBRATION**

QAPP calibration criteria were met. A blank and two to four standards were used for calibration of ICP-AES and ICP-MS target analytes. The initial calibration r values were  $\geq$ 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 90-110% for ICP-MS. Continuing calibration verification recoveries were within QAPP control limits of 90-110%.

#### **IV.3. QUALITY CONTROL SAMPLES**

#### IV.3.1. **METHOD BLANKS**

There were no target analyte detections in the method blanks or calibration blanks with the following exception. Selenium was detected (0.513  $\mu$ g/L) in the method blank for dissolved metals. The dissolved selenium result was a detect below the reporting limit and was qualified as nondetect (U).

#### **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. Interferents were not present in the samples at concentrations comparable to those in the ICSAs; therefore, interference was not suspected.

#### IV.3.3. LABORATORY CONTROL SAMPLES

Laboratory control samples recoveries (total and dissolved) were within the QAPP control limits of 85-115%.

#### **IV.3.4.** LABORATORY DUPLICATES:

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

#### IV.3.5. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

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

### **IV.4.SERIAL DILUTION**

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

#### IV.5. 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.

#### **IV.6. FIELD QC SAMPLES**

MEC<sup>x</sup> 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<sup>x</sup> used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

#### **IV.6.1. FIELD BLANKS AND EQUIPMENT BLANKS**

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

#### IV.6.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

#### V. EPA METHOD 625.1 — N-NITROSODIMETHYLAMINE

L. Calvin of MEC<sup>x</sup> reviewed the SDG on January 23, 2020

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC<sup>X</sup> Data Validation Procedure for Semivolatile Organics (DVP-3, Rev. 1), EPA Method 625.1 and the National Functional Guidelines for Superfund Organic Methods Data Review (2017).

#### V.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.

#### V.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. Initial calibration average relative response factors (RRFs) were within the method control limits, and the %RSDs were  $\leq$ 35% or  $r^2$  values  $\geq$ 0.990. For applicable target compound n-nitrosodimethylamine, ICV and CCV RRFs were within the method control limits. ICV recoveries and CCV %Ds were within method control limits.

#### V.3. QUALITY CONTROL SAMPLES

#### V.3.1. **METHOD BLANKS**

The method blank had a detect above the RL for n-nitrosodimethylamine (6.1  $\mu$ g/L). The sample result below the RL was qualified as a nondetect (U) at the RL.

#### V.3.2. LABORATORY CONTROL SAMPLES

LCS/LCSD recoveries and the RPD were within the laboratory control limits.



#### V.3.3. SURROGATE RECOVERY

Surrogate recoveries were within laboratory control limits.

#### V.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the site sample in this SDG. MEC<sup>X</sup> evaluated method accuracy and precision based on the LCS/LCSD results.

#### V.4. FIELD QC SAMPLES

MEC<sup>x</sup> 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<sup>x</sup> 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. 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.

#### V.6. COMPOUND IDENTIFICATION

Compound identification was verified. The laboratory analyzed for n-nitrosodimethylamine by EPA Method 625.1. Review of the sample chromatogram, retention times, and spectra indicated no issues with target compound identification.

#### V.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. The result reported below the RL was initially qualified as estimated (J) and coded with DNQ to comply with the NPDES permit reporting requirements; however, the result was subsequently qualified as a nondetect (see Method Blanks section). The nondetect is valid to the RL. The sample did not require dilution.

The laboratory's preparation bench sheet indicated the sample extract was light yellow and cloudy.

#### V.8. TENTATIVELY IDENTIFIED COMPOUNDS (TICS)

The laboratory did not report TICs for this SDG.

#### V.9. SYSTEM PERFORMANCE

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



#### VI. METHOD EPA SM2540D—TOTAL SUSPENDED SOLIDS (TSS)

M. Hilchey of MEC<sup>x</sup> reviewed the SDG on January 24, 2020.

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC<sup>x</sup> Data Validation Procedure for General Minerals (DVP-6, Rev. 1), Standard Methods for the Examination of Water and Wastewater 2540D and the National Functional Guidelines for Inorganic Superfund Methods Data Review (2017).

#### VI.1. HOLDING TIMES

The QAPP holding time, seven days for TSS, was met.

#### VI.2. CALIBRATION

Analytical balance calibration logs were provided by the laboratory and found to be correctly calibrated and verified.

#### VI.3. QUALITY CONTROL SAMPLES

#### VI.3.1. METHOD BLANKS

The method blanks had no detects.

#### VI.3.2. LABORATORY CONTROL SAMPLES

Laboratory control sample recovery was within the QAPP control limits.

#### VI.3.3. LABORATORY DUPLICATES

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

#### VI.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses do not apply to this method.

#### 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.

#### VI.5. FIELD QC SAMPLES

MEC<sup>x</sup> 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<sup>x</sup> 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.

# Validated Sample Result Forms: 4402580851

Analysis Method E1613B

Sample Name OUTFALL002\_20191224\_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/24/2019 8:20:00 AM Validation Level: 8

**Lab Sample Name:** 440-258085-1

Analyte I	Fraction	n: CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,2,3,4,6,7,8,9- Octachlorodibenzofuran (OCDF)	N	39001-02-0	0.00011	0.00012	0.0000049	ug/L	J,DXMB	U	В
1,2,3,4,6,7,8,9-Octachlorodibenzo- dioxin (OCDD)	p- N	3268-87-9	0.0013	0.00012	0.0000066	ug/L	MB		
1,2,3,4,6,7,8- Heptachlorodibenzofuran (HpCDF)	N	67562-39-4	0.000037	0.000058	0.0000016	ug/L	J,DXMB	U	В
1,2,3,4,6,7,8-Heptachlorodibenzo-pdioxin (HpCDD)	- N	35822-46-9	0.000099	0.000058	0.0000025	ug/L	MB		
1,2,3,4,7,8,9- Heptachlorodibenzofuran (HpCDF)	N	55673-89-7	ND	0.000058	0.0000018	ug/L	U	U	
1,2,3,4,7,8-Hexachlorodibenzofurar (HxCDF)	n N	70648-26-9	ND	0.000058	0.0000029	ug/L	U	U	
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	39227-28-6	0.0000068	0.000058	0.0000024	ug/L	J,DXMB	U	В
1,2,3,6,7,8-Hexachlorodibenzofurar (HxCDF)	n N	57117-44-9	ND	0.000058	0.0000030	ug/L	U	U	
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	57653-85-7	0.0000065	0.000058	0.0000025	ug/L	J,DXMB	U	В
1,2,3,7,8,9-Hexachlorodibenzofurar (HxCDF)	n N	72918-21-9	ND	0.000058	0.0000023	ug/L	U	U	
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	N	19408-74-3	ND	0.000058	0.0000022	ug/L	U	U	
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-41-6	ND	0.000058	0.0000026	ug/L	U	U	
1,2,3,7,8-Pentachlorodibenzo-p- dioxin (PeCDD)	N	40321-76-4	ND	0.000058	0.0000041	ug/L	U	U	
2,3,4,6,7,8-Hexachlorodibenzofurar (HxCDF)	n N	60851-34-5	ND	0.000058	0.0000023	ug/L	U	U	
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-31-4	ND	0.000058	0.0000026	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	ND	0.000012	0.0000015	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzo-p-dioxi (TCDD)	n N	1746-01-6	ND	0.000012	0.0000017	ug/L	U	U	
Total Heptachlorodibenzofuran (HpCDF)	N	38998-75-3	0.000080	0.000058	0.0000016	ug/L	J,DXMB	J	B, DNQ
Total Heptachlorodibenzo-p-dioxin (HpCDD)	N	37871-00-4	0.00020	0.000058	0.0000025	ug/L	MB	J	В
Total Hexachlorodibenzofuran (HxCDF)	N	55684-94-1	0.000011	0.000058	0.0000023	ug/L	J,DXq	J	DNQ, *III
Total Hexachlorodibenzo-p-dioxin (HxCDD), Mixture	N	34465-46-8	0.000020	0.000058	0.0000022	ug/L	J,DXMB	J	B, DNQ
Total Pentachlorodibenzofuran (PeCDF)	N	30402-15-4	ND	0.000058	0.0000026	ug/L	U	U	

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Analysis Method	E16	13B							
Total Pentachlorodibenzo-p-dioxin (PeCDD)	N	36088-22-9	ND	0.000058	0.0000041	ug/L	U	U	
Total Tetrachlorodibenzofuran (TCDF)	N	55722-27-5	ND	0.000012	0.0000015	ug/L	U	U	
Total Tetrachlorodibenzo-p-dioxin (TCDD)	N	41903-57-5	ND	0.000012	0.0000017	ug/L	U	U	

Analysis Method E200.7

Sample Name OUTFALL002\_20191224\_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/24/2019 8:20:00 AM Validation Level: 8

**Lab Sample Name:** 440-258085-1

Analyte Fraction: CAS No Result RLMDL Result Lab Validation Validation Value Units Qualifier Qualifier Notes Iron 7439-89-6 8700 100 50 ug/L Zinc 31 7440-66-6 20 12 ug/L

Sample Name OUTFALL002\_20191224\_COMP\_F Matrix Type: WM Result Type: TRG

Sample Date: 12/24/2019 8:20:00 AM Validation Level: 8

**Lab Sample Name:** 440-258085-3

Analyte	Fraction	1: CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Iron	D	7439-89-6	61	100	50	ug/L	J,DX	J	H, DNQ
Zinc	D	7440-66-6	27	20	12	ug/L		J	Н

Analysis Method E200.8

Sample Name OUTFALL002 20191224 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/24/2019 8:20:00 AM Validation Level: 8

**Lab Sample Name:** 440-258085-1

Analyte	Fractio	on: CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cadmium	T	7440-43-9	ND	1.0	0.25	ug/L	U	U	
Copper	T	7440-50-8	6.6	2.0	0.50	ug/L			
Lead	T	7439-92-1	3.5	1.0	0.50	ug/L			
Selenium	T	7782-49-2	ND	2.0	0.50	ug/L	U	U	

Sample Name OUTFALL002\_20191224\_COMP\_F Matrix Type: WM Result Type: TRG

Sample Date: 12/24/2019 8:20:00 AM Validation Level: 8

**Lab Sample Name:** 440-258085-3

Analyte	Fracti	on: CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cadmium	D	7440-43-9	ND	1.0	0.25	ug/L	U	UJ	Н
Copper	D	7440-50-8	1.9	2.0	0.50	ug/L	J,DX	J	H, DNQ
Lead	D	7439-92-1	ND	1.0	0.50	ug/L	U	UJ	H
Selenium	D	7782-49-2	0.65	2.0	0.50	ug/L	J,DXMB	UJ	H, B

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Analysis Method E625.1

Sample Name OUTFALL002 20191224 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/24/2019 8:20:00 AM Validation Level: 8

**Lab Sample Name:** 440-258085-1

Fraction: CAS No RLMDL Result Analyte Result Lab Validation Validation Value Units Qualifier Qualifier Notes N-Nitrosodimethylamine ND N 62-75-9 5.1 0.31 ug/L J,DXMB U В

Analysis Method SM2540D

Sample Name OUTFALL002 20191224 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/24/2019 8:20:00 AM Validation Level: 8

**Lab Sample Name:** 440-258085-1

Analyte Fraction: CAS No Result RLMDL Result Lab Validation Validation Value Units Qualifier **Qualifier** Notes Total Suspended Solids (TSS) 110 TSS 20 10 mg/L

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# **ANALYTICAL REPORT**

Eurofins Calscience Irvine 17461 Derian Ave Suite 100 Irvine, CA 92614-5817 Tel: (949)261-1022

Laboratory Job ID: 440-258085-1

Client Project/Site: Routine Outfall 002 Comp

#### For:

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

Attn: Katherine Miller

Authorized for release by: 1/16/2020 9:54:03 AM

Christian Bondoc, Project Manager I (949)260-3218

christian.bondoc@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.

Laboratory Job ID: 440-258085-1

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.

Christian Bondoc

Project Manager I

1/16/2020 9:54:03 AM

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# **Sample Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Routine Outfall 002 Comp

 Lab Sample ID
 Client Sample ID
 Matrix
 Collected
 Received
 Asset ID

 440-258085-1
 Outfall002\_20191224\_Comp
 Water
 12/24/19 08:20
 12/24/19 12:30

 440-258085-3
 Outfall002\_20191224\_Comp\_F
 Water
 12/24/19 08:20
 12/24/19 12:30

Job ID: 440-258085-1

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4 1

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### **Case Narrative**

Client: Haley & Aldrich, Inc.

Project/Site: Routine Outfall 002 Comp

Job ID: 440-258085-1

Job ID: 440-258085-1

**Laboratory: Eurofins Calscience Irvine** 

**Narrative** 

Job Narrative 440-258085-1

#### Comments

No additional comments.

#### Receipt

The samples were received on 12/24/2019 12:30 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 6 coolers at receipt time were 1.0° C, 1.0° C, 1.0° C, 1.1° C, 1.2° C and 1.3° C.

#### GC/MS Semi VOA

Method 625.1: N-Nitrosodimethylamine was detected above the reporting limit (RL) in the method blank associated with preparation batch 440-588303 and analytical batch 440-588422 The affected samples have a concentration for N-Nitrosodimethylamine <RL and >MDL. Samples are reported possible high bias for N-Nitrosodimethylamine. Outfall002 20191224 Comp (440-258085-1) and (MB 440-588303/1-A).

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

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

#### GC Semi VOA

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

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

Method 200.8: The method blank for preparation batch 440-587989 and 440-588020 and analytical batch 440-588414 contained Selenium 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.

#### **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

Methods 625: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-588303. LCS was performed in duplicate to provide precision of data.

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

#### Dioxin Prep

Method 1613B: Elevated reporting limits are provided for the following sample due to insufficient sample provided for 1613B Sox Sep P preparation/analysis: Sample Outfall002 20191224 Comp (440-258085-1) was received in a wide-mouth amber glass bottle.

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

# **Client Sample Results**

Client: Haley & Aldrich, Inc.

Job ID: 440-258085-1

Project/Site: Routine Outfall 002 Comp

Client Sample ID: Outfall002\_20191224\_Comp Lab Sample ID: 440-258085-1

Date Collected: 12/24/19 08:20 Matrix: Water

Date Received: 12/24/19 12:30

Method: 625.1 - Semivolatile Analyte		Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,6-Trichlorophenol	ND		6.2	0.10	ug/L	=	12/28/19 11:45	12/30/19 13:11	1
Bis(2-ethylhexyl) phthalate	ND		5.1	2.1	•		12/28/19 11:45	12/30/19 13:11	1
N-Nitrosodimethylamine	1.0	J,DX MB	5.1	0.31	ug/L		12/28/19 11:45	12/30/19 13:11	1
Pentachlorophenol	ND		5.1		ug/L		12/28/19 11:45	12/30/19 13:11	1
2,4-Dinitrotoluene	ND		5.1	2.1	ug/L		12/28/19 11:45	12/30/19 13:11	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol	103		60 - 140				12/28/19 11:45	12/30/19 13:11	
2-Fluorobiphenyl	87		60 - 140				12/28/19 11:45	12/30/19 13:11	1
2-Fluorophenol	83		60 - 140				12/28/19 11:45	12/30/19 13:11	1
Nitrobenzene-d5	87		15 - 314				12/28/19 11:45	12/30/19 13:11	1
Terphenyl-d14	63		60 - 140				12/28/19 11:45	12/30/19 13:11	1
Phenol-d5	75		8 - 424				12/28/19 11:45	12/30/19 13:11	1
Method: 608.3 - Organochio	orine Pesticide	es in Water	•						
Analyte		Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
alpha-BHC	ND		0.10	0.021	ug/L		12/26/19 05:32	12/26/19 14:23	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	46		10 - 104				12/26/19 05:32	12/26/19 14:23	1
DCB Decachlorobiphenyl (Surr)	68		18 - 13 <del>4</del>				12/26/19 05:32	12/26/19 14:23	1

Method: 300.0 - Anions, Ion Chromatography											
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac		
Nitrate as N	0.63		0.11	0.055	mg/L			12/24/19 22:58	1		
Nitrite as N	0.092	J,DX	0.15	0.025	mg/L			12/24/19 22:58	1		
Method: 300.0 - Anions	s, Ion Chromatogra	phy - DL									

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	18		2.5	1.3	mg/L			12/24/19 23:47	5
Sulfate	130		2.5	1.3	mg/L			12/24/19 23:47	5
Method: 314.0 - Perchlorate (IC) Analyte Perchlorate	Result	Qualifier	RL 4.0	<b>MDL</b> 0.95	Unit ug/L	D	Prepared	Analyzed 12/30/19 15:37	Dil Fac

Method: NO3NO2 Calc - Nitrogen, Nitrate-Nitrite											
	Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac	
	Nitrate Nitrite as N	0.72		0.15	0.055	mg/L			01/03/20 13:18	1	

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000012	0.0000017	ug/L		12/30/19 16:10	01/07/20 01:25	1
2,3,7,8-TCDF	ND		0.000012	0.000015	ug/L		12/30/19 16:10	01/07/20 01:25	1
1,2,3,7,8-PeCDD	ND		0.000058	0.0000041	ug/L		12/30/19 16:10	01/07/20 01:25	1
1,2,3,7,8-PeCDF	ND		0.000058	0.0000026	ug/L		12/30/19 16:10	01/07/20 01:25	1
2,3,4,7,8-PeCDF	ND		0.000058	0.0000026	ug/L		12/30/19 16:10	01/07/20 01:25	1
1,2,3,4,7,8-HxCDD	0.000068	J,DX MB	0.000058	0.0000024	ug/L		12/30/19 16:10	01/07/20 01:25	1
1,2,3,6,7,8-HxCDD	0.0000065	J,DX MB	0.000058	0.0000025	ug/L		12/30/19 16:10	01/07/20 01:25	1
1,2,3,7,8,9-HxCDD	ND		0.000058	0.0000022	ug/L		12/30/19 16:10	01/07/20 01:25	1
1,2,3,4,7,8-HxCDF	ND		0.000058	0.0000029	ug/L		12/30/19 16:10	01/07/20 01:25	1

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# **Client Sample Results**

Client: Haley & Aldrich, Inc. Job ID: 440-258085-1

Project/Site: Routine Outfall 002 Comp

Client Sample ID: Outfall002\_20191224\_Comp Lab Sample ID: 440-258085-1

Date Collected: 12/24/19 08:20 **Matrix: Water** 

Date Received: 12/24/19 12:30

Analyte		Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,6,7,8-HxCDF	ND		0.000058	0.0000030	ug/L		12/30/19 16:10	01/07/20 01:25	1
1,2,3,7,8,9-HxCDF	ND		0.000058	0.0000023	ug/L		12/30/19 16:10	01/07/20 01:25	1
2,3,4,6,7,8-HxCDF	ND		0.000058	0.0000023	ug/L		12/30/19 16:10	01/07/20 01:25	1
1,2,3,4,6,7,8-HpCDD	0.000099	MB	0.000058	0.0000025	ug/L		12/30/19 16:10	01/07/20 01:25	1
1,2,3,4,6,7,8-HpCDF	0.000037	J,DX MB	0.000058	0.0000016	ug/L		12/30/19 16:10	01/07/20 01:25	1
1,2,3,4,7,8,9-HpCDF	ND		0.000058	0.000018	ug/L		12/30/19 16:10	01/07/20 01:25	1
OCDD	0.0013	MB	0.00012	0.0000066	ug/L		12/30/19 16:10	01/07/20 01:25	1
OCDF	0.00011	J,DX MB	0.00012	0.0000049	ug/L		12/30/19 16:10	01/07/20 01:25	1
Total TCDD	ND		0.000012	0.0000017	ug/L		12/30/19 16:10	01/07/20 01:25	1
Total TCDF	ND		0.000012	0.0000015	ug/L		12/30/19 16:10	01/07/20 01:25	1
Total PeCDD	ND		0.000058	0.0000041	ug/L		12/30/19 16:10	01/07/20 01:25	1
Total PeCDF	ND		0.000058	0.0000026	ug/L		12/30/19 16:10	01/07/20 01:25	1
Total HxCDD	0.000020	J,DX MB	0.000058	0.0000022	ug/L		12/30/19 16:10	01/07/20 01:25	1
Total HxCDF	0.000011	J,DX q	0.000058	0.0000023	ug/L		12/30/19 16:10	01/07/20 01:25	1
Total HpCDD	0.00020	MB	0.000058	0.0000025	ug/L		12/30/19 16:10	01/07/20 01:25	1
Total HpCDF	0.000080	J,DX MB	0.000058	0.0000016	ug/L		12/30/19 16:10	01/07/20 01:25	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	59		25 - 164				12/30/19 16:10	01/07/20 01:25	1
13C-2,3,7,8-TCDF	55		24 - 169				12/30/19 16:10	01/07/20 01:25	1
13C-1,2,3,7,8-PeCDD	54		25 - 181				12/30/19 16:10	01/07/20 01:25	1
13C-1,2,3,7,8-PeCDF	52		24 - 185				12/30/19 16:10	01/07/20 01:25	
13C-2,3,4,7,8-PeCDF	58		21 - 178				12/30/19 16:10	01/07/20 01:25	1
13C-1,2,3,4,7,8-HxCDD	55		32 - 141				12/30/19 16:10	01/07/20 01:25	1
13C-1,2,3,6,7,8-HxCDD	48		28 - 130				12/30/19 16:10	01/07/20 01:25	
13C-1,2,3,4,7,8-HxCDF	52		26 - 152				12/30/19 16:10	01/07/20 01:25	1
13C-1,2,3,6,7,8-HxCDF	48		26 - 123				12/30/19 16:10	01/07/20 01:25	1
13C-1,2,3,7,8,9-HxCDF	49		29 - 147				12/30/19 16:10	01/07/20 01:25	1
13C-2,3,4,6,7,8-HxCDF	49		28 - 136				12/30/19 16:10	01/07/20 01:25	1
13C-1,2,3,4,6,7,8-HpCDD	59		23 - 140				12/30/19 16:10	01/07/20 01:25	1
13C-1,2,3,4,6,7,8-HpCDF	53		28 - 143				12/30/19 16:10	01/07/20 01:25	1
13C-1,2,3,4,7,8,9-HpCDF	60		26 - 138				12/30/19 16:10	01/07/20 01:25	1
13C-OCDD	58		17 - 157				12/30/19 16:10	01/07/20 01:25	7
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
37CI4-2,3,7,8-TCDD			35 - 197				12/30/19 16:10	01/07/20 01:25	

Method: 200.7 Rev 4.4 - Metals								
Analyte	Result Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Zinc	31	20	12	ug/L		12/26/19 10:35	12/29/19 15:22	1
Iron	8700	100	50	ug/L		12/26/19 10:35	12/29/19 15:22	1

Method: 200.8 - Metals (ICP/MS) - Total Recoverable												
Analyte	Result Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac				
Cadmium	ND ND	1.0	0.25	ug/L		12/26/19 10:42	12/30/19 13:38	1				
Copper	6.6	2.0	0.50	ug/L		12/26/19 10:42	12/30/19 13:38	1				
Lead	3.5	1.0	0.50	ug/L		12/26/19 10:42	12/30/19 13:38	1				
Selenium	ND	2.0	0.50	ug/L		12/26/19 10:42	12/30/19 13:38	1				

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# **Client Sample Results**

Client: Haley & Aldrich, Inc. Job ID: 440-258085-1

Project/Site: Routine Outfall 002 Comp

Client Sample ID: Outfall002\_20191224\_Comp

Date Collected: 12/24/19 08:20 Date Received: 12/24/19 12:30

Lab Sample ID: 440-258085-1

Lab Sample ID: 440-258085-3

**Matrix: Water** 

Method: 245.1 - Mercury (CVAA) Analyte RL **MDL** Unit Dil Fac Result Qualifier D Prepared Analyzed Mercury 0.20 0.10 ug/L 12/31/19 12:32 01/02/20 13:22 ND

					-9-				•
General Chemistry Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Turbidity	220		2.5	1.0	NTU			12/24/19 14:25	25
Total Dissolved Solids	360		10	5.0	mg/L			12/26/19 10:23	1
Total Suspended Solids	110		20	10	mg/L			12/26/19 15:23	1
Cyanide, Total	ND		5.0	2.5	ug/L		12/27/19 10:46	12/27/19 16:11	1
Ammonia (as N)	ND		0.200	0.100	mg/L			12/30/19 14:30	1
Methylene Blue Active	0.055	J,DX	0.10	0.050	mg/L			12/24/19 15:39	1
Substances									
Biochemical Oxygen Demand	3.6		2.0	0.50	mg/L			12/24/19 19:43	1

Client Sample ID: Outfall002\_20191224\_Comp\_F

Date Collected: 12/24/19 08:20

Date Received: 12/24/19 12:30

Method: 200.7 Rev 4.4 - Metals (ICP) - Dissolved Dil Fac Analyte Result Qualifier RL MDL Unit Prepared Analyzed Zinc 27 20 12 ug/L 12/26/19 14:27 12/27/19 13:57 100 12/26/19 14:27 12/27/19 13:57 Iron 61 J,DX 50 ug/L

Method: 200.8 - Metals (ICP/MS) - Dissolved											
Analyte	Result Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac			
Cadmium	ND -	1.0	0.25	ug/L		12/26/19 14:39	12/29/19 18:15	1			
Copper	1.9 J,DX	2.0	0.50	ug/L		12/26/19 14:39	12/29/19 18:15	1			
Lead	ND	1.0	0.50	ug/L		12/26/19 14:39	12/29/19 18:15	1			
Selenium	0.65 J,DX MB	2.0	0.50	ug/L		12/26/19 14:39	12/29/19 18:15	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		0	1/03/20 08:28	01/06/20 21:16	1

**Eurofins Calscience Irvine** 

**Matrix: Water** 

# **Method Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Routine Outfall 002 Comp

Method	Method Description	Protocol	Laboratory
625.1	Semivolatile Organic Compounds (GC/MS)	40CFR136A	TAL IRV
608.3	Organochlorine Pesticides in Water	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
1613B	Dioxins and Furans (HRGC/HRMS)	40CFR136A	TAL SAC
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
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
Subcontract	Weck- 525.2	None	Weck Lab
1613B	Separatory Funnel (L/L) Extraction with Soxhlet Extraction of Dioxin and Furans	40CFR136A	TAL SAC
200.2	Preparation, Total Recoverable Metals	EPA	TAL IRV
245.1	Preparation, Mercury	EPA	TAL IRV
808	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.

None = None

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

#### **Laboratory References:**

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

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Weck Lab = Weck Laboratories, Inc., 14859 East Clark Avenue, City of Industry, CA 917451396

**Eurofins Calscience Irvine** 

Job ID: 440-258085-1

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# **Lab Chronicle**

Client: Haley & Aldrich, Inc. Job ID: 440-258085-1

Project/Site: Routine Outfall 002 Comp

Client Sample ID: Outfall002\_20191224\_Comp

Date Collected: 12/24/19 08:20 Date Received: 12/24/19 12:30 Lab Sample ID: 440-258085-1

**Matrix: Water** 

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	625			975 mL	2.0 mL	588303	12/28/19 11:45		TAL IRV
Total/NA	Analysis	625.1		1			588422	12/30/19 13:11	JS1	TAL IRV
Total/NA	Prep	608			975 mL	2 mL	587899	12/26/19 05:32	L1H	TAL IRV
Total/NA	Analysis	608.3		1			587976	12/26/19 14:23	D1D	TAL IRV
Total/NA	Analysis	300.0		1			587742	12/24/19 22:58	NN	TAL IRV
Total/NA	Analysis	300.0		1			587743	12/24/19 22:58	NN	TAL IRV
Total/NA	Analysis	300.0	DL	5			587742	12/24/19 23:47	NN	TAL IRV
Total/NA	Analysis	314.0		1			588445	12/30/19 15:37	CTH	TAL IRV
Total/NA	Analysis	NO3NO2 Calc		1			589052	01/03/20 13:18	NN	TAL IRV
Total/NA Total/NA	Prep Analysis	1613B 1613B		1	864.1 mL	20 uL	348645 349278	12/30/19 16:10 01/07/20 01:25		TAL SAC TAL SAC
Total Recoverable	Prep	200.2		'	25 mL	25 mL	587971	12/26/19 10:35		TAL IRV
Total Recoverable	Analysis	200.7 Rev 4.4		1	25 IIIL	25 IIIL	588370	12/29/19 10:33		TAL IRV
Total Recoverable	Prep	200.2			25 mL	25 mL	587974	12/26/19 10:42	EP	TAL IRV
Total Recoverable	Analysis	200.8		1			588549	12/30/19 13:38	B1H	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	588737	12/31/19 12:32		TAL IRV
Total/NA	Analysis	245.1		1			588954	01/02/20 13:22	MEM	TAL IRV
Total/NA	Analysis	180.1		25			587848	12/24/19 14:25	ST	TAL IRV
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	587964	12/26/19 10:23	XL	TAL IRV
Total/NA	Analysis	SM 2540D		1	50 mL	1000 mL	588034	12/26/19 15:23	KL	TAL IRV
Total/NA	Prep	Distill/CN			50 mL	50 mL	588165	12/27/19 10:46	KMY	TAL IRV
Total/NA	Analysis	SM 4500 CN E		1			588222	12/27/19 16:11	KMY	TAL IRV
Total/NA	Analysis	SM 4500 NH3 G		1	0.8 mL	8.0 mL	588582	12/30/19 14:30	KMY	TAL IRV
Total/NA	Analysis	SM 5540C		1	100 mL	100 mL	587868	12/24/19 15:39	KMY	TAL IRV
Total/NA	Analysis	SM5210B		1	300 mL	300 mL	587888	12/24/19 19:43	KYP	TAL IRV

Client Sample ID: Outfall002\_20191224\_Comp\_F

Date Collected: 12/24/19 08:20

Date Received: 12/24/19 12:30

	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	587989	12/26/19 11:45	EP	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	588019	12/26/19 14:27	EP	TAL IRV
Dissolved	Analysis	200.7 Rev 4.4		1			588205	12/27/19 13:57	TQN	TAL IRV
Dissolved	Filtration	FILTRATION			150 mL	150 mL	587989	12/26/19 11:45	EP	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	588020	12/26/19 14:39	EP	TAL IRV
Dissolved	Analysis	200.8		1			588414	12/29/19 18:15	B1H	TAL IRV
Dissolved	Filtration	FILTRATION			100 mL	100 mL	588000	12/26/19 12:39	EP	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	588987	01/03/20 08:28	MEM	TAL IRV
Dissolved	Analysis	245.1		1			589374	01/06/20 21:16	MEM	TAL IRV

Lab Sample ID: 440-258085-3

**Matrix: Water** 

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# **Lab Chronicle**

Client: Haley & Aldrich, Inc.

Project/Site: Routine Outfall 002 Comp

Job ID: 440-258085-1

### **Laboratory References:**

TAL IRV = Eurofins Calscience Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022 TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600 Weck Lab = Weck Laboratories, Inc., 14859 East Clark Avenue, City of Industry, CA 917451396

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Client: Haley & Aldrich, Inc. Job ID: 440-258085-1

Project/Site: Routine Outfall 002 Comp

# Method: 625.1 - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-588303/1-A

**Matrix: Water** 

**Analysis Batch: 588422** 

**Client Sample ID: Method Blank** 

**Prep Type: Total/NA** 

**Prep Batch: 588303** 

	MB	MR							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,6-Trichlorophenol	ND		6.0	0.10	ug/L		12/28/19 11:45	12/30/19 09:32	1
Bis(2-ethylhexyl) phthalate	ND		5.0	2.0	ug/L		12/28/19 11:45	12/30/19 09:32	1
N-Nitrosodimethylamine	6.10		5.0	0.30	ug/L		12/28/19 11:45	12/30/19 09:32	1
Pentachlorophenol	ND		5.0	1.0	ug/L		12/28/19 11:45	12/30/19 09:32	1
2,4-Dinitrotoluene	ND		5.0	2.0	ug/L		12/28/19 11:45	12/30/19 09:32	1

MR MR

	IVID I	VID				
Surrogate	%Recovery (	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol	77		60 - 140	12/28/19 11:45	12/30/19 09:32	1
2-Fluorobiphenyl	85		60 - 140	12/28/19 11:45	12/30/19 09:32	1
2-Fluorophenol	80		60 - 140	12/28/19 11:45	12/30/19 09:32	1
Nitrobenzene-d5	77		15 - 314	12/28/19 11:45	12/30/19 09:32	1
Terphenyl-d14	95		60 - 140	12/28/19 11:45	12/30/19 09:32	1
Phenol-d5	80		8 - 424	12/28/19 11:45	12/30/19 09:32	1

Lab Sample ID: LCS 440-588303/2-A

Lab Sample ID: LCSD 440-588303/3-A

**Matrix: Water** 

**Matrix: Water** 

Analysis Batch: 588422

**Client Sample ID: Lab Control Sample** 

Prep Type: Total/NA **Prep Batch: 588303** 

%Rec.

Spike LCS LCS Analyte Added Result Qualifier Unit %Rec Limits 2,4,6-Trichlorophenol 15.0 14.1 ug/L 94 52 - 129 Bis(2-ethylhexyl) phthalate 15.0 16.5 ug/L 110 29 - 137N-Nitrosodimethylamine 15.0 19.0 127 ug/L 60 - 140Pentachlorophenol 30.0 24.8 ug/L 83 38 - 152

LCS LCS

Surrogate	%Recovery	Qualifier	Limits
2,4,6-Tribromophenol	92		60 - 140
2-Fluorobiphenyl	81		60 - 140
2-Fluorophenol	78		60 - 140
Nitrobenzene-d5	81		15 - 314
Terphenyl-d14	92		60 - 140
Phenol-d5	76		8 - 424

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA **Prep Batch: 588303** 

**Analysis Batch: 588422** Spike LCSD LCSD %Rec. **RPD** Added Result Qualifier %Rec Limits RPD Limit **Analyte** Unit 2,4,6-Trichlorophenol 15.0 35 13.4 ug/L 89 52 - 129 6 Bis(2-ethylhexyl) phthalate 15.0 15.5 29 - 137 35 ug/L 103 6 N-Nitrosodimethylamine 15.0 17.3 ug/L 115 60 - 140 10 35 Pentachlorophenol 30.0 22.8 ug/L 76 38 - 152 35

LCSD LCSD

Surrogate	%Recovery	Qualifier	Limits
2,4,6-Tribromophenol	87		60 - 140
2-Fluorobiphenyl	77		60 - 140
2-Fluorophenol	66		60 - 140
Nitrobenzene-d5	75		15-314

**Eurofins Calscience Irvine** 

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Client: Haley & Aldrich, Inc. Job ID: 440-258085-1

Project/Site: Routine Outfall 002 Comp

Method: 625.1 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 440-588303/3-A **Matrix: Water** 

**Analysis Batch: 588422** 

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

**Prep Batch: 588303** 

LCSD LCSD

Surrogate Limits %Recovery Qualifier Terphenyl-d14 87 60 - 140 Phenol-d5 60 8 - 424

# Method: 608.3 - Organochlorine Pesticides in Water

Lab Sample ID: MB 440-587899/1-A

**Matrix: Water** 

**Analysis Batch: 587976** 

**Client Sample ID: Method Blank** 

Prep Type: Total/NA

**Prep Batch: 587899** 

MB MB Analyte Result Qualifier RL **MDL** Unit Analyzed Dil Fac Prepared alpha-BHC ND 0.10 0.020 ug/L 12/26/19 05:32 12/26/19 12:42

MB MB

Surrogate %Recovery Qualifier Limits Prepared Analyzed Dil Fac 57 10 - 104 12/26/19 05:32 12/26/19 12:42 Tetrachloro-m-xylene DCB Decachlorobiphenyl (Surr) 74 18 - 134 12/26/19 05:32 12/26/19 12:42

LCS LCS

MSD MSD

MS MS

Lab Sample ID: LCS 440-587899/2-A

**Matrix: Water** 

**Analysis Batch: 587976** 

**Client Sample ID: Lab Control Sample** 

Prep Type: Total/NA **Prep Batch: 587899** 

%Rec.

Added Limits Analyte Result Qualifier Unit D %Rec alpha-BHC 0.400 0.301 ug/L 75 37 - 140

Spike

Spike

LCS LCS

Surrogate	%Recovery	Qualifier	Limits
Tetrachloro-m-xylene	61		10 - 104
DCB Decachlorobiphenyl (Surr)	73		18 - 134

Lab Sample ID: 440-258025-B-1-A MSD

**Matrix: Water** 

**Analysis Batch: 587976** 

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

**Prep Batch: 587899 RPD** 

%Rec. Limits RPD Limit

Analyte Result Qualifier Added Result Qualifier Unit %Rec alpha-BHC ND 0.430 0.332 ug/L 37 - 140

MSD MSD

Sample Sample

Surrogate	%Recovery Qualifier	Limits
Tetrachloro-m-xylene	62	10 - 104
DCB Decachlorobiphenyl (Surr)	79	18 - 134

Lab Sample ID: 440-258025-C-1-A MS

**Matrix: Water** 

Analyte

**Analysis Batch: 587976** 

Client Sample ID: Matrix Spike

Prep Type: Total/NA

**Prep Batch: 587899** 

%Rec.

Limits

Added Result Qualifier Result Qualifier Unit D %Rec alpha-BHC ND 0.421 0.325 37 - 140 ug/L

Spike

MS MS

Sample Sample

Surrogate %Recovery Qualifier Limits Tetrachloro-m-xylene 63 10 - 104

**Eurofins Calscience Irvine** 

Job ID: 440-258085-1

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

Method: 608.3 - Organochlorine Pesticides in Water (Continued)

Lab Sample ID: 440-258025-C-1-A MS

**Matrix: Water** 

Analysis Batch: 587976

MS MS

Surrogate Limits %Recovery Qualifier DCB Decachlorobiphenyl (Surr) 78 18 - 134 Client Sample ID: Matrix Spike

**Client Sample ID: Method Blank** 

**Client Sample ID: Lab Control Sample** 

Client Sample ID: Outfall002\_20191224\_Comp

Client Sample ID: Outfall002 20191224 Comp

**Prep Type: Total/NA** 

**Prep Batch: 587899** 

**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** 

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 440-587742/15

**Matrix: Water** 

Analysis Batch: 587742

	МВ	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50	0.25	mg/L			12/24/19 15:00	1
Sulfate	ND		0.50	0.25	mg/L			12/24/19 15:00	1

Lab Sample ID: LCS 440-587742/14

**Matrix: Water** 

Analysis Batch: 587742

	<b>Spike</b>	LUS	LUS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Chloride	5.00	4.80		mg/L		96	90 - 110	
Sulfate	5.00	4.85		mg/L		97	90 - 110	

100 100

Cmiles

Lab Sample ID: 440-258085-1 MS

**Matrix: Water** 

Analysis Ratch: 587742

Allalysis Datcil. 301142									
-	Sample	Sample	Spike	MS	MS				%Rec.
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits
Chloride	21	EY	5.00	26.8	EY BB	mg/L		119	80 - 120
Sulfate	160	EY	5.00	166	EY BB	ma/L		146	80 - 120

Lab Sample ID: 440-258085-1 MSD

**Matrix: Water** 

**Analysis Batch: 587742** 

•	Sample	Sample	Spike	MSD	MSD				%Rec.		RPD	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit	
Chloride	21	EY	5.00	26.6	EY BB	mg/L		116	80 - 120	1	20	
Sulfate	160	EY	5.00	166	EY BB	mg/L		149	80 - 120	0	20	

Lab Sample ID: MB 440-587743/15

**Matrix: Water** 

**Analysis Batch: 587743** 

MD MD

	IVID	IVID							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	ND		0.11	0.055	mg/L			12/24/19 15:00	1
Nitrite as N	ND		0.15	0.025	mg/L			12/24/19 15:00	1

Lab Sample ID: LCS 440-587743/14

**Matrix: Water** 

Analysis Ratch: 587743

Alialysis Batch. 507745							
	Spike	LCS	LCS				%Rec.
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits
Nitrate as N	1.13	1.09		mg/L		96	90 - 110

**Eurofins Calscience Irvine** 

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Client: Haley & Aldrich, Inc. Job ID: 440-258085-1

Project/Site: Routine Outfall 002 Comp

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCS 440-587743/14 **Matrix: Water** 

Analysis Batch: 587743

LCS LCS Spike %Rec. Added Result Qualifier Unit Analyte D %Rec Limits Nitrite as N 1.52 1.47 97 ma/L

Lab Sample ID: 440-258085-1 MS

**Matrix: Water** 

Analysis Batch: 587743

Sample Sample Spike MS MS %Rec. Analyte Result Qualifier Added Result Qualifier Unit %Rec Limits Nitrate as N 0.63 1.13 1.73 mg/L 97 80 - 120 Nitrite as N 0.092 J,DX 1.52 1.58 mg/L 98 80 - 120

Lab Sample ID: 440-258085-1 MSD

**Matrix: Water** 

Analysis Batch: 587743

	, maryolo Batom corrac	Sample	Sample	Spike	MSD	MSD				%Rec.		RPD
1	Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Ī	Nitrate as N	0.63		1.13	1.68		mg/L		93	80 - 120	2	20
L	Nitrite as N	0.092	J,DX	1.52	1.53		mg/L		95	80 - 120	3	20

Method: 314.0 - Perchlorate (IC)

Lab Sample ID: MB 440-588445/6

**Matrix: Water** 

**Analysis Batch: 588445** 

MR MR

Analyte RL Result Qualifier **MDL** Unit Prepared Analyzed Dil Fac Perchlorate 4.0 0.95 ug/L 12/30/19 10:57 ND

Lab Sample ID: LCS 440-588445/5

**Matrix: Water** 

**Analysis Batch: 588445** 

	Spike	LCS LCS			%Rec.	
Analyte	Added	Result Qualifier	Unit D	%Rec	Limits	
Perchlorate	25.0	25.2	ua/l	101	85 - 115	

Lab Sample ID: MRL 440-588445/4

**Matrix: Water** 

**Analysis Batch: 588445** 

l		Spike	MRL	MRL				%Rec.	
l	Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
ı	Perchlorate	1 00	1 04	JDX	ua/l	_	104	75 - 125	

Lab Sample ID: MRL 440-588445/8

**Matrix: Water** 

Analysis Batch: 588445

Analysis Baton: 000440	Spike	MRL	MRL				%Rec.
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits
Perchlorate	4.00	3.96	J,DX	ug/L		99	75 - 125

**Eurofins Calscience Irvine** 

**Client Sample ID: Lab Control Sample** 

Client Sample ID: Outfall002\_20191224\_Comp

Client Sample ID: Outfall002\_20191224\_Comp

Prep Type: Total/NA

**Client Sample ID: Method Blank** 

**Client Sample ID: Lab Control Sample** 

**Client Sample ID: Lab Control Sample** 

**Client Sample ID: Lab Control Sample** 

# **QC Sample Results**

Client: Haley & Aldrich, Inc. Job ID: 440-258085-1

Project/Site: Routine Outfall 002 Comp

Method: 314.0 - Perchlorate (IC) (Continued)

Lab Sample ID: 440-258138-C-1 MS **Matrix: Water** 

**Analysis Batch: 588445** 

Sample Sample Spike MS MS %Rec. Analyte Result Qualifier Added Result Qualifier %Rec Limits Unit Perchlorate 3.3 J,DX 25.0 100 80 - 120 28.2 ug/L

Lab Sample ID: 440-258138-C-1 MSD

**Matrix: Water** 

**Analysis Batch: 588445** 

RPD Spike MSD MSD %Rec. Sample Sample Analyte Result Qualifier Added Result Qualifier Unit D %Rec Limits RPD Limit 25.0 Perchlorate 3.3 J,DX 27.6 ug/L 97 80 - 120 2

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Lab Sample ID: MB 320-348645/1-A

Matrix: Water Analysis Batch: 349278		Prep Type: Tota Prep Batch: 34						
	MB MB			•				

	МВ	MB							
Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000010	0.0000024	ug/L		12/30/19 16:10	01/06/20 19:17	1
2,3,7,8-TCDF	ND		0.000010	0.0000019	ug/L		12/30/19 16:10	01/06/20 19:17	1
1,2,3,7,8-PeCDD	ND		0.000050	0.0000029	ug/L		12/30/19 16:10	01/06/20 19:17	1
1,2,3,7,8-PeCDF	ND		0.000050	0.0000020	ug/L		12/30/19 16:10	01/06/20 19:17	1
2,3,4,7,8-PeCDF	ND		0.000050	0.0000020	ug/L		12/30/19 16:10	01/06/20 19:17	1
1,2,3,4,7,8-HxCDD	0.00000241	J,DX q	0.000050	0.0000013	ug/L		12/30/19 16:10	01/06/20 19:17	1
1,2,3,6,7,8-HxCDD	0.00000154	J,DX	0.000050	0.0000013	ug/L		12/30/19 16:10	01/06/20 19:17	1
1,2,3,7,8,9-HxCDD	ND		0.000050	0.0000012	ug/L		12/30/19 16:10	01/06/20 19:17	1
1,2,3,4,7,8-HxCDF	ND		0.000050	0.0000022	ug/L		12/30/19 16:10	01/06/20 19:17	1
1,2,3,6,7,8-HxCDF	ND		0.000050	0.0000023	ug/L		12/30/19 16:10	01/06/20 19:17	1
1,2,3,7,8,9-HxCDF	ND		0.000050	0.0000017	ug/L		12/30/19 16:10	01/06/20 19:17	1
2,3,4,6,7,8-HxCDF	ND		0.000050	0.0000018	ug/L		12/30/19 16:10	01/06/20 19:17	1
1,2,3,4,6,7,8-HpCDD	0.00000304	J,DX	0.000050	0.0000006	ug/L		12/30/19 16:10	01/06/20 19:17	1
1,2,3,4,6,7,8-HpCDF	0.00000413	J,DX q	0.000050	0.0000005 7	ug/L		12/30/19 16:10	01/06/20 19:17	1
1,2,3,4,7,8,9-HpCDF	0.00000119	J,DX q	0.000050	0.0000006	ug/L		12/30/19 16:10	01/06/20 19:17	1
OCDD	0.0000133	J,DX	0.00010	0.0000025	ug/L		12/30/19 16:10	01/06/20 19:17	1
OCDF	0.00000511	J,DX	0.00010	0.0000024	ug/L		12/30/19 16:10	01/06/20 19:17	1
Total TCDD	ND		0.000010	0.0000024	ug/L		12/30/19 16:10	01/06/20 19:17	1
Total TCDF	ND		0.000010	0.0000019	ug/L		12/30/19 16:10	01/06/20 19:17	1
Total PeCDD	ND		0.000050	0.0000029	ug/L		12/30/19 16:10	01/06/20 19:17	1
Total PeCDF	ND		0.000050	0.0000020	ug/L		12/30/19 16:10	01/06/20 19:17	1
Total HxCDD	0.00000395	J,DX q	0.000050	0.0000012	ug/L		12/30/19 16:10	01/06/20 19:17	1
Total HxCDF	ND		0.000050	0.0000017	ug/L		12/30/19 16:10	01/06/20 19:17	1
Total HpCDD	0.00000495	J,DX	0.000050	0.0000006	ug/L		12/30/19 16:10	01/06/20 19:17	1
Total HpCDF	0.00000533	J,DX q	0.000050	0.0000005	ug/L		12/30/19 16:10	01/06/20 19:17	1
	MB	MB							
		_							

Isotope Dilution %Recovery Qualifier Limits 13C-2,3,7,8-TCDD 62 25 - 164 13C-2,3,7,8-TCDF 61 24 - 169

Dil Fac Prepared Analyzed <u>12/30/19 16:10</u> <u>01/06/20 19:17</u> 12/30/19 16:10 01/06/20 19:17

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**Client Sample ID: Matrix Spike** 

Client Sample ID: Method Blank

**Client Sample ID: Matrix Spike Duplicate** 

**Prep Type: Total/NA** 

Prep Type: Total/NA

# QC Sample Results

Client: Haley & Aldrich, Inc. Job ID: 440-258085-1

Project/Site: Routine Outfall 002 Comp

## Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: MB 320-348645/1-A

**Matrix: Water** 

**Analysis Batch: 349278** 

Client Sample ID: Method Blank

Prep Type: Total/NA

**Prep Batch: 348645** 

	MB	МВ				
Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,7,8-PeCDD	67		25 - 181	12/30/19 16:10	01/06/20 19:17	1
13C-1,2,3,7,8-PeCDF	62		24 - 185	12/30/19 16:10	01/06/20 19:17	1
13C-2,3,4,7,8-PeCDF	69		21 - 178	12/30/19 16:10	01/06/20 19:17	1
13C-1,2,3,4,7,8-HxCDD	70		32 - 141	12/30/19 16:10	01/06/20 19:17	1
13C-1,2,3,6,7,8-HxCDD	58		28 - 130	12/30/19 16:10	01/06/20 19:17	1
13C-1,2,3,4,7,8-HxCDF	62		26 - 152	12/30/19 16:10	01/06/20 19:17	1
13C-1,2,3,6,7,8-HxCDF	56		26 - 123	12/30/19 16:10	01/06/20 19:17	1
13C-1,2,3,7,8,9-HxCDF	60		29 - 147	12/30/19 16:10	01/06/20 19:17	1
13C-2,3,4,6,7,8-HxCDF	60		28 - 136	12/30/19 16:10	01/06/20 19:17	1
13C-1,2,3,4,6,7,8-HpCDD	71		23 - 140	12/30/19 16:10	01/06/20 19:17	1
13C-1,2,3,4,6,7,8-HpCDF	65		28 - 143	12/30/19 16:10	01/06/20 19:17	1
13C-1,2,3,4,7,8,9-HpCDF	72		26 - 138	12/30/19 16:10	01/06/20 19:17	1
13C-OCDD	72		17 - 157	12/30/19 16:10	01/06/20 19:17	1

MB MB

Surrogate %Recovery Qualifier Limits Prepared Analyzed Dil Fac 37CI4-2,3,7,8-TCDD 112 35 - 197 12/30/19 16:10 01/06/20 19:17

Lab Sample ID: LCS 320-348645/2-A

**Matrix: Water** 

**Analysis Batch: 349278** 

**Client Sample ID: Lab Control Sample** 

Prep Type: Total/NA

Prep Batch: 348645

%Rec.

Limits

LCS LCS Spike Added Result Qualifier Unit D %Rec Analyte ug/L 102 67 - 158 2,3,7,8-TCDD 0.000200 0.000205 2,3,7,8-TCDF 0.000200 0.000215 ug/L 107 75 - 158 0.00100 0.00109 ug/L 109 70 - 1421,2,3,7,8-PeCDD 1,2,3,7,8-PeCDF 0.00100 0.00107 ug/L 107 80 - 134 2,3,4,7,8-PeCDF 0.00100 0.000984 ug/L 98 68 - 1601,2,3,4,7,8-HxCDD 0.00100 0.00103 MB ug/L 103 70 - 164 0.00108 MB ug/L 108 76 - 134 1,2,3,6,7,8-HxCDD 0.00100 1,2,3,7,8,9-HxCDD 0.00100 0.00107 ug/L 107 64 - 1621,2,3,4,7,8-HxCDF 0.00100 0.000991 ug/L 99 72 - 134 103 1,2,3,6,7,8-HxCDF 0.00100 0.00103 ug/L 84 - 130 1,2,3,7,8,9-HxCDF 0.00100 0.00102 ug/L 102 78 - 130 2,3,4,6,7,8-HxCDF 0.00100 0.00101 ug/L 101 70 - 156 0.00108 MB 108 70 - 140 1,2,3,4,6,7,8-HpCDD 0.00100 ug/L 1,2,3,4,6,7,8-HpCDF 0.00100 0.00110 MB ug/L 110 82 - 122 1,2,3,4,7,8,9-HpCDF 0.00100 0.00102 MB ug/L 102 78 - 138 0.00223 MB OCDD 0.00200 78 - 144 ug/L 112 **OCDF** 0.00200 0.00221 MB ug/L 111 63 - 170

Isotope Dilution	%Recovery	Qualifier	Limits
13C-2,3,7,8-TCDD	66		20 - 175
13C-2,3,7,8-TCDF	61		22 - 152
13C-1,2,3,7,8-PeCDD	65		21 - 227
13C-1,2,3,7,8-PeCDF	61		21 - 192
13C-2,3,4,7,8-PeCDF	68		13 - 328
13C-1,2,3,4,7,8-HxCDD	63		21 - 193
13C-1,2,3,6,7,8-HxCDD	54		25 - 163

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# **QC Sample Results**

Client: Haley & Aldrich, Inc. Job ID: 440-258085-1

Project/Site: Routine Outfall 002 Comp

# Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCS 320-348645/2-A **Client Sample ID: Lab Control Sample Matrix: Water Prep Type: Total/NA Analysis Batch: 349278 Prep Batch: 348645** 100 100

	LCS	LUS	
Isotope Dilution	%Recovery	Qualifier	Limits
13C-1,2,3,4,7,8-HxCDF	57		19 - 202
13C-1,2,3,6,7,8-HxCDF	53		21 - 159
13C-1,2,3,7,8,9-HxCDF	56		17 - 205
13C-2,3,4,6,7,8-HxCDF	57		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	62		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	57		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	64		20 - 186
13C-OCDD	63		13 - 199

LCS LCS Surrogate %Recovery Qualifier Limits 37CI4-2,3,7,8-TCDD 112 31 - 191

Lab Sample ID: LCSD 320-348645/3-A **Client Sample ID: Lab Control Sample Dup Matrix: Water** Prep Type: Total/NA

Analysis Batch: 349278	Spike	LCSD	LCSD				Prep Ba	atch: 34	48645 RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
2,3,7,8-TCDD	0.000200	0.000211		ug/L		105	67 - 158	3	50
2,3,7,8-TCDF	0.000200	0.000215		ug/L		107	75 - 158	0	50
1,2,3,7,8-PeCDD	0.00100	0.00112		ug/L		112	70 - 142	2	50
1,2,3,7,8-PeCDF	0.00100	0.00109		ug/L		109	80 - 134	2	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	0.00104	MB	ug/L		104	70 - 164	1	50
1,2,3,6,7,8-HxCDD	0.00100	0.00113	MB	ug/L		113	76 - 134	4	50
1,2,3,7,8,9-HxCDD	0.00100	0.00111		ug/L		111	64 - 162	4	50
1,2,3,4,7,8-HxCDF	0.00100	0.00103		ug/L		103	72 - 134	3	50
1,2,3,6,7,8-HxCDF	0.00100	0.00106		ug/L		106	84 - 130	3	50
1,2,3,7,8,9-HxCDF	0.00100	0.00106		ug/L		106	78 - 130	4	50
2,3,4,6,7,8-HxCDF	0.00100	0.00106		ug/L		106	70 - 156	4	50
1,2,3,4,6,7,8-HpCDD	0.00100	0.00109	MB	ug/L		109	70 - 140	1	50
1,2,3,4,6,7,8-HpCDF	0.00100	0.00111	MB	ug/L		111	82 - 122	1	50
1,2,3,4,7,8,9-HpCDF	0.00100	0.00104	MB	ug/L		104	78 - 138	2	50
OCDD	0.00200	0.00217	MB	ug/L		109	78 - 144	3	50
OCDF	0.00200	0.00216	MB	ug/L		108	63 - 170	2	50

	LCSD	LCSD	
Isotope Dilution	%Recovery	Qualifier	Limits
13C-2,3,7,8-TCDD	65		20 - 175
13C-2,3,7,8-TCDF	61		22 - 152
13C-1,2,3,7,8-PeCDD	63		21 - 227
13C-1,2,3,7,8-PeCDF	60		21 - 192
13C-2,3,4,7,8-PeCDF	66		13 - 328
13C-1,2,3,4,7,8-HxCDD	61		21 - 193
13C-1,2,3,6,7,8-HxCDD	56		25 - 163
13C-1,2,3,4,7,8-HxCDF	57		19 - 202
13C-1,2,3,6,7,8-HxCDF	54		21 - 159
13C-1,2,3,7,8,9-HxCDF	56		17 - 205
13C-2,3,4,6,7,8-HxCDF	57		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	66		26 - 166

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Client: Haley & Aldrich, Inc. Job ID: 440-258085-1

Project/Site: Routine Outfall 002 Comp

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCSD 320-348645/3-A **Matrix: Water** 

13C-1.2.3.4.6.7.8-HpCDF

13C-1,2,3,4,7,8,9-HpCDF

Isotope Dilution

13C-OCDD

**Analysis Batch: 349278** 

LCSD LCSD

%Recovery Qualifier Limits 59 21 - 158 20 - 186 68 69 13 - 199

LCSD LCSD

Surrogate %Recovery Qualifier Limits 37CI4-2,3,7,8-TCDD 31 - 191 107

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: MB 440-587971/1-A

**Matrix: Water** 

**Analysis Batch: 588370** 

MB MB

570

Analyte Result Qualifier RL **MDL** Unit D Prepared Dil Fac Analyzed Zinc 20 ND 12 ug/L <u>12/26/19 10:35</u> <u>12/29/19 10:46</u> Iron ND 100 50 ug/L 12/26/19 10:35 12/29/19 10:46

Lab Sample ID: LCS 440-587971/2-A

**Matrix: Water** 

Analysis Batch: 588370

Spike LCS LCS %Rec. Analyte Added Result Qualifier Unit %Rec Limits Zinc 500 494 ug/L 99 85 - 115 Iron 500 456 ug/L 91 85 - 115

Lab Sample ID: 440-258077-D-1-A MS

**Matrix: Water** 

**Analysis Batch: 588370** 

**Prep Batch: 587971** Sample Sample Spike MS MS %Rec. Result Qualifier Added Limits **Analyte** Result Qualifier Unit D %Rec Zinc 27 500 526 ug/L 100 70 - 130 Iron 570 500 1120 ug/L 110 70 - 130

Lab Sample ID: 440-258077-D-1-B MSD

**Matrix: Water** 

**Analysis Batch: 588370** 

**Prep Batch: 587971** Sample Sample Spike MSD MSD %Rec. Analyte Result Qualifier Added Result Qualifier Unit D %Rec Limits RPD Zinc 27 500 515 ug/L 98 70 - 130 2

500

Lab Sample ID: MB 440-587989/1-B

**Matrix: Water** 

Iron

**Analysis Batch: 588205** 

Client Sample ID: Method Blank **Prep Type: Dissolved** Prep Batch: 588019

ug/L

MB MB Analyte Result Qualifier RL **MDL** Unit Prepared Analyzed Dil Fac Zinc  $\overline{\mathsf{ND}}$ 20 12 ug/L 12/26/19 14:27 12/27/19 13:29 ND 100 Iron 50 ug/L 12/26/19 14:27 12/27/19 13:29

1130

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Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

**Prep Batch: 348645** 

**Client Sample ID: Method Blank** 

Client Sample ID: Lab Control Sample

**Prep Type: Total Recoverable** 

**Prep Type: Total Recoverable** 

**Client Sample ID: Matrix Spike** 

**Client Sample ID: Matrix Spike Duplicate** 

111

**Prep Type: Total Recoverable** 

**Prep Type: Total Recoverable** 

70 - 130

**Prep Batch: 587971** 

**Prep Batch: 587971** 

**RPD** 

Limit

Client: Haley & Aldrich, Inc. Job ID: 440-258085-1

Project/Site: Routine Outfall 002 Comp

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

Lab Sample ID: LCS 440-587989/2-B

Matrix: Water Analysis Batch: 588205 Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 588019

LCS LCS Spike %Rec. Added Result Qualifier %Rec Analyte Unit Limits Zinc 500 98 85 - 115 488 ug/L Iron 500 463 ug/L 93 85 - 115

Lab Sample ID: 440-258077-B-2-E MS

Matrix: Water

Analysis Batch: 588205

Sample Sample Spike MS MS

Client Sample ID: Matrix Spike Prep Type: Dissolved Prep Batch: 588019 %Rec.

Result Qualifier Added Result Qualifier D %Rec Limits Analyte Unit Zinc J,DX 500 499 97 70 - 130 15 ug/L Iron 120 500 584 ug/L 93 70 - 130

Lab Sample ID: 440-258077-B-2-F MSD

Matrix: Water

Analysis Batch: 588205

Client Sample ID: Matrix Spike Duplicate
Prep Type: Dissolved
Prep Batch: 588019

MSD MSD Sample Sample Spike %Rec. **RPD** Result Qualifier Added Result Qualifier %Rec Limits RPD Limit Analyte Unit D Zinc 15  $\overline{\mathsf{J}}, \overline{\mathsf{D}}\mathsf{X}$ 500 2 20 511 ug/L 99 70 - 130 500 611 Iron 120 ug/L 98 70 - 1305 20

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 440-587974/1-A

**Matrix: Water** 

Analysis Batch: 588549

Client Sample ID: Method Blank Prep Type: Total Recoverable

**Prep Batch: 587974** 

MB MB Analyte Result Qualifier RL **MDL** Unit Prepared Analyzed Dil Fac 0.25 ug/L 12/26/19 10:42 12/30/19 12:16 Cadmium ND 1.0 Copper ND 2.0 0.50 ug/L 12/26/19 10:42 12/30/19 12:16 ND 12/26/19 10:42 12/30/19 12:16 Lead 1.0 0.50 ug/L ND 2.0 12/26/19 10:42 12/30/19 12:16 Selenium 0.50 ug/L

 Lead
 ND
 1.0
 0.50 ug/L
 12/26/19 10:42 12/30/19 12:16 1
 1

 Selenium
 ND
 2.0
 0.50 ug/L
 12/26/19 10:42 12/30/19 12:16 1
 1

 Lab Sample ID: LCS 440-587974/2-A
 Client Sample ID: Lab Control Sample Matrix: Water

**Analysis Batch: 588549** Prep Batch: 587974 Spike LCS LCS %Rec. Analyte Added Result Qualifier Unit D %Rec Limits 80.0 82.3 Cadmium ug/L 103 85 - 115 Copper 80.0 80.5 ug/L 101 85 - 115 80.0 Lead 82.1 ug/L 103 85 - 115 Selenium 80.0 82.6 ug/L 103 85 - 115

Lab Sample ID: 440-258054-H-10-C MS **Client Sample ID: Matrix Spike Matrix: Water Prep Type: Total Recoverable** Prep Batch: 587974 **Analysis Batch: 588549** MS MS Spike %Rec. Sample Sample Analyte Result Qualifier Added Result Qualifier Unit %Rec Limits ug/L Cadmium 0.65 J.DX 80.0 82.8 103 70 - 130 Copper 30 80.0 102 ug/L 90 70 - 130 Lead 6.6 80.0 85.4 ug/L 98 70 - 130 80.0 100 70 - 130 Selenium 0.95 J,DX 81.1 ug/L

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11 12

13

15

16

Client: Haley & Aldrich, Inc.

Job ID: 440-258085-1 Project/Site: Routine Outfall 002 Comp

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: 440-258054-H-10-D MSD

Matrix: Water									Prep Type: Total Recover Prep Batch: 587					
Analysis Batch: 588549	Sample	Sample	Spike	MSD	MSD				%Rec.	itcn: 58	RPD			
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit			
Cadmium	0.65	J,DX	80.0	82.3		ug/L		102	70 - 130	1	20			
Copper	30		80.0	101		ug/L		89	70 - 130	1	20			
Lead	6.6		80.0	85.9		ug/L		99	70 - 130	1	20			
Selenium	0.95	J,DX	80.0	81.4		ug/L		101	70 - 130	0	20			

Lab Sample ID: MB 440-587989/1-F

**Matrix: Water** 

Analysis Batch: 588414

MB MB

0.513 J,DX

RL Analyte Result Qualifier MDL Unit Prepared Analyzed Dil Fac Cadmium ND 1.0 0.25 ug/L <u>12/26/19 14:39</u> <u>12/29/19 18:03</u> ND 2.0 12/26/19 14:39 12/29/19 18:03 Copper 0.50 ug/L 0.50 ug/L Lead ND 1.0 12/26/19 14:39 12/29/19 18:03

2.0

0.50 ug/L

Lab Sample ID: LCS 440-587989/2-F

**Matrix: Water** 

Selenium

Analysis Batch: 588414

•	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Cadmium	80.0	79.9		ug/L		100	85 - 115	
Copper	80.0	81.3		ug/L		102	85 - 115	
Lead	80.0	80.2		ug/L		100	85 - 115	
Selenium	80.0	76.2		ug/L		95	85 - 115	

Lab Sample ID: 440-258077-B-2-H MS

**Matrix: Water** 

Analysis Batch: 588414

•	Sample	Sample	Spike	MS	MS				%Rec.	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Cadmium	ND		80.0	80.2		ug/L		100	70 - 130	
Copper	3.2		80.0	86.3		ug/L		104	70 - 130	
Lead	ND		80.0	81.7		ug/L		102	70 - 130	
Selenium	ND		80.0	77.1		ug/L		96	70 - 130	

Lab Sample ID: 440-258077-B-2-I MSD

**Matrix: Water** 

Analysis Batch: 588414									Prep Ba	atch: 588020		
_	Sample	Sample	Spike	MSD	MSD				%Rec.		RPD	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit	
Cadmium	ND		80.0	77.5		ug/L		97	70 - 130	3	20	
Copper	3.2		80.0	83.7		ug/L		101	70 - 130	3	20	
Lead	ND		80.0	80.4		ug/L		100	70 - 130	2	20	
Selenium	ND		80.0	74.6		ug/L		93	70 - 130	3	20	

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Client Sample ID: Matrix Spike Duplicate

**Client Sample ID: Method Blank** 

12/26/19 14:39 12/29/19 18:03

**Client Sample ID: Lab Control Sample** 

**Client Sample ID: Matrix Spike** 

**Client Sample ID: Matrix Spike Duplicate** 

**Prep Type: Dissolved Prep Batch: 588020** 

**Prep Type: Dissolved** 

**Prep Type: Dissolved** 

**Prep Type: Dissolved** 

**Prep Batch: 588020** 

Prep Batch: 588020

Job ID: 440-258085-1

89

86

85 - 115

Prep Batch: 588737

Project/Site: Routine Outfall 002 Comp

Client: Haley & Aldrich, Inc.

Method: 245.1 - Mercury (CVAA)

Lab Sample ID: MB 440-588737/1-A Client Sample ID: Method Blank **Matrix: Water** Prep Type: Total/NA

Mercury

Mercury

Analysis Batch: 588954 MR MR

ND

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		12/31/19 12:32	01/02/20 13:12	1

Lab Sample ID: LCS 440-588737/2-A **Client Sample ID: Lab Control Sample Matrix: Water** Prep Type: Total/NA **Prep Batch: 588737 Analysis Batch: 588954** LCS LCS %Rec. Spike Analyte Added Result Qualifier Unit D %Rec Limits

3.55

3.43

ug/L

ug/L

4.00

Lab Sample ID: 440-258077-D-1-H MS Client Sample ID: Matrix Spike **Matrix: Water** Prep Type: Total/NA **Analysis Batch: 588954 Prep Batch: 588737** Sample Sample Spike MS MS %Rec. Analyte Result Qualifier Added Result Qualifier Unit Limits D %Rec 4.00 75 - 125

Lab Sample ID: 440-258077-D-1-I MSD **Client Sample ID: Matrix Spike Duplicate Matrix: Water** Prep Type: Total/NA Analysis Batch: 588954 Prep Batch: 588737 Spike MSD MSD %Rec. Sample Sample **RPD** Added Limits Analyte Result Qualifier Result Qualifier D %Rec RPD Limit Unit Mercury  $\overline{\mathsf{ND}}$ 4.00 3.55 89 75 - 125 20 ug/L

Lab Sample ID: MB 440-588000/1-B Client Sample ID: Method Blank **Matrix: Water Prep Type: Dissolved** Analysis Batch: 589374 **Prep Batch: 588987** 

MB MB RI **MDL** Unit **Analyte** Result Qualifier Prepared Analyzed Dil Fac 0.20 0.10 ug/L 01/03/20 08:28 01/06/20 21:05 Mercury ND

Lab Sample ID: LCS 440-588000/2-B **Client Sample ID: Lab Control Sample Matrix: Water Prep Type: Dissolved** 

Analysis Batch: 589374 **Prep Batch: 588987** Spike LCS LCS %Rec. Analyte Added Result Qualifier Unit D %Rec Limits Mercury 4.00 4.06 ug/L 102 85 - 115

Lab Sample ID: 440-258077-A-2-E MS Client Sample ID: Matrix Spike **Matrix: Water Prep Type: Dissolved Analysis Batch: 589374 Prep Batch: 588987** 

Sample Sample Spike MS MS %Rec. Analyte Result Qualifier Added Result Qualifier Unit %Rec Limits Mercury ND 4 00 4.00 100 75 - 125 ug/L

Lab Sample ID: 440-258077-A-2-F MSD **Client Sample ID: Matrix Spike Duplicate Matrix: Water Prep Type: Dissolved Analysis Batch: 589374 Prep Batch: 588987** Sample Sample Spike MSD MSD %Rec. **RPD** Result Qualifier Added Result Qualifier RPD Limit Analyte Unit %Rec Limits Mercury ND 4.00 3.80 ug/L 95 75 - 125 5 20

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Client: Haley & Aldrich, Inc. Job ID: 440-258085-1

Project/Site: Routine Outfall 002 Comp

Method: 180.1 - Turbidity, Nephelometric

Lab Sample ID: MB 440-587848/5 Client Sample ID: Method Blank

**Matrix: Water** 

Analysis Batch: 587848

MB MB

Analyte Result Qualifier RL **MDL** Unit Analyzed Dil Fac Prepared Turbidity 0.10 0.040 NTU 12/24/19 14:25  $\overline{\mathsf{ND}}$ 

Lab Sample ID: 440-258085-1 DU Client Sample ID: Outfall002\_20191224\_Comp Prep Type: Total/NA

**Matrix: Water** 

**Analysis Batch: 587848** 

RPD DU DU Sample Sample Analyte Result Qualifier Result Qualifier Unit D RPD Limit NTU **Turbidity** 220 248 20

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

Lab Sample ID: MB 440-587964/1 Client Sample ID: Method Blank Prep Type: Total/NA

**Matrix: Water** 

**Analysis Batch: 587964** 

MB MB

Analyte Result Qualifier RL MDL Unit Prepared Analyzed Dil Fac 10 Total Dissolved Solids  $\overline{\mathsf{ND}}$ 5.0 mg/L 12/26/19 10:23

Lab Sample ID: LCS 440-587964/2 **Client Sample ID: Lab Control Sample** Prep Type: Total/NA

**Matrix: Water** 

**Analysis Batch: 587964** 

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

Lab Sample ID: 440-257932-H-5 DU

**Matrix: Water** 

**Analysis Batch: 587964** 

Sample Sample DU DU **RPD** Result Qualifier Analyte Result Qualifier Unit ח RPD Limit **Total Dissolved Solids** 4300 4300 mg/L 0.5

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

Lab Sample ID: MB 440-588034/1 Client Sample ID: Method Blank Prep Type: Total/NA

**Matrix: Water** 

**Analysis Batch: 588034** 

MB MB Analyte Result Qualifier RL **MDL** Unit Prepared Analyzed **Total Suspended Solids**  $\overline{\mathsf{ND}}$ 1.0 0.50 mg/L 12/26/19 15:23

Lab Sample ID: LCS 440-588034/2 **Client Sample ID: Lab Control Sample** 

**Matrix: Water** 

**Analysis Batch: 588034** 

Spike LCS LCS %Rec. Analyte Added Result Qualifier Unit %Rec Limits Total Suspended Solids 1000 951 mg/L 85 - 115

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Prep Type: Total/NA

**Client Sample ID: Duplicate** 

Prep Type: Total/NA

Prep Type: Total/NA

Dil Fac

Client: Haley & Aldrich, Inc. Job ID: 440-258085-1

Project/Site: Routine Outfall 002 Comp

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

Lab Sample ID: 440-258147-A-1 DU **Client Sample ID: Duplicate** Prep Type: Total/NA

**Matrix: Water** 

Analysis Batch: 588034

		Sample	Sample	DU	DU				RPD	
	Analyte	Result	Qualifier	Result	Qualifier	Unit	D	RPD	Limit	
l	Total Suspended Solids	13		 13.3		mg/L		 3	10	

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

Lab Sample ID: MB 440-588165/1-A **Client Sample ID: Method Blank** Prep Type: Total/NA

**Matrix: Water** 

Analysis Batch: 588222

MR MR

Result Qualifier RL **MDL** Unit Prepared Analyzed 5.0 12/27/19 10:46 12/27/19 16:10 Cyanide, Total ND 2.5 ug/L

Lab Sample ID: LCS 440-588165/2-A **Client Sample ID: Lab Control Sample Matrix: Water** Prep Type: Total/NA **Prep Batch: 588165 Analysis Batch: 588222** Spike LCS LCS %Rec. Analyte Added Result Qualifier Unit D %Rec Limits Cyanide, Total 100 98.3 98 80 - 120 ug/L

Lab Sample ID: 440-258077-D-1-E MS **Client Sample ID: Matrix Spike** 

**Matrix: Water** 

Prep Type: Total/NA **Analysis Batch: 588222 Prep Batch: 588165** Sample Sample Spike MS MS %Rec. Added Analyte Result Qualifier Result Qualifier Unit D %Rec Limits 75 <sub>-</sub> 125 Cyanide, Total ND 100 100 ug/L 100

Lab Sample ID: 440-258077-D-1-F MSD

**Matrix: Water** 

**Analysis Batch: 588222** 

**Prep Batch: 588165** Sample Sample Spike MSD MSD %Rec. **RPD** Result Qualifier Analyte Added Result Qualifier Unit D %Rec Limits RPD Limit Cyanide, Total 75 - 125  $\overline{\mathsf{ND}}$ 100 99.2 ug/L 99 20

Method: SM 4500 NH3 G - Ammonia

Lab Sample ID: MB 440-588582/10 Client Sample ID: Method Blank Prep Type: Total/NA

**Matrix: Water** 

**Analysis Batch: 588582** 

MB MB

Analyte Result Qualifier RL **MDL** Unit Prepared Analyzed Dil Fac Ammonia (as N)  $\overline{\mathsf{ND}}$ 0.200 0.100 mg/L 12/30/19 13:17

Lab Sample ID: LCS 440-588582/11 **Client Sample ID: Lab Control Sample** 

**Matrix: Water** 

**Analysis Batch: 588582** 

Spike LCS LCS %Rec. Analyte Added Result Qualifier Unit %Rec Limits 5.00 5.080 Ammonia (as N) mg/L 102 90 - 110

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1/16/2020

Prep Type: Total/NA

**Prep Batch: 588165** 

Prep Type: Total/NA

**Client Sample ID: Matrix Spike Duplicate** 

Client: Haley & Aldrich, Inc. Job ID: 440-258085-1

Project/Site: Routine Outfall 002 Comp

Method: SM 4500 NH3 G - Ammonia (Continued)

Lab Sample ID: MRL 440-588582/9 Client Sample ID: Lab Control Sample

**Matrix: Water** Analysis Batch: 588582

Spike MRL MRL %Rec. Added Result Qualifier %Rec Limits Analyte Unit Ammonia (as N) 0.200 0.1740 J,DX 87 50 - 150 mg/L

Lab Sample ID: 440-258185-K-1 MS

**Matrix: Water** 

**Analysis Batch: 588582** 

%Rec. Sample Sample Spike MS MS Analyte Result Qualifier Added Result Qualifier Unit D %Rec Limits Ammonia (as N) ND 5.00 5.040 mg/L 101 90 - 110

Lab Sample ID: 440-258185-K-1 MSD

**Matrix: Water** 

Analysis Batch: 588582											
-	Sample	Sample	Spike	MSD	MSD				%Rec.		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Ammonia (as N)	ND		5.00	4.890		mg/L		98	90 - 110	3	15

RI

0.10

Spike

Added

0.250

Spike

Added

0.100

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

Lab Sample ID: MB 440-587868/4

**Matrix: Water** 

**Analysis Batch: 587868** 

MB MB

Analyte Result Qualifier

ND

Methylene Blue Active Substances

Lab Sample ID: LCS 440-587868/5

**Matrix: Water** 

**Analysis Batch: 587868** 

Analyte

Methylene Blue Active Substances

Lab Sample ID: LCSD 440-587868/6

**Matrix: Water** 

**Analysis Batch: 587868** 

Analyte Methylene Blue Active

Substances

Lab Sample ID: MRL 440-587868/3

**Matrix: Water** 

Analysis Batch: 587868

Analyte Methylene Blue Active

Substances

Prepared

Client Sample ID: Matrix Spike Duplicate

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Type: Total/NA

Prep Type: Total/NA

Prep Type: Total/NA

**Client Sample ID: Matrix Spike** 

Analyzed

12/24/19 15:37

**Client Sample ID: Lab Control Sample** 

Prep Type: Total/NA

Spike LCS LCS %Rec. Added Result Qualifier Unit %Rec Limits 0.250 0.250 mg/L 100 90 - 110

mg/L

**MDL** Unit

0.050 mg/L

LCSD LCSD

MRL MRL

0.107

Result Qualifier

0.257

Result Qualifier

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Unit D %Rec Limits RPD Limit mg/L 103 90 - 110

%Rec.

**Client Sample ID: Lab Control Sample** 

50 - 150

Prep Type: Total/NA

%Rec. Limits Unit %Rec

107

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1/16/2020

Dil Fac

**RPD** 

Client: Haley & Aldrich, Inc. Job ID: 440-258085-1

Project/Site: Routine Outfall 002 Comp

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

0.68

Client Sample ID: Matrix Spike Lab Sample ID: 320-57305-A-1 MS ^2 Prep Type: Total/NA

**Matrix: Water** 

Methylene Blue Active

Analysis Batch: 587868 Sample Sample Spike MS MS %Rec. Result Qualifier Added Result Qualifier %Rec Analyte Unit Limits

0.250

Substances

Lab Sample ID: 320-57305-A-1 MSD ^2 **Client Sample ID: Matrix Spike Duplicate Matrix: Water** Prep Type: Total/NA

0.916

mg/L

95

50 - 125

**Analysis Batch: 587868** 

Sample Sample Spike MSD MSD %Rec. RPD Result Qualifier Added Result Qualifier Limits **Analyte** Unit D %Rec **RPD** Limit 0.68 0.250 0.966 mg/L 115 50 - 125 5 20 Methylene Blue Active Substances

Method: SM5210B - BOD, 5 Day

Lab Sample ID: USB 440-587888/1 **Client Sample ID: Method Blank** Prep Type: Total/NA

**Matrix: Water** 

**Analysis Batch: 587888** 

USB USB Analyte Result Qualifier RL **MDL** Unit Prepared Analyzed Dil Fac 2.0 12/24/19 19:43 Biochemical Oxygen Demand  $\overline{\mathsf{ND}}$ 0.50 mg/L

Lab Sample ID: LCS 440-587888/5 **Client Sample ID: Lab Control Sample Matrix: Water** Prep Type: Total/NA

**Analysis Batch: 587888** 

LCS LCS Spike %Rec. Added Analyte Result Qualifier Unit %Rec Limits **Biochemical Oxygen Demand** 199 195 98 85 - 115 ma/L

Lab Sample ID: LCSD 440-587888/6 Client Sample ID: Lab Control Sample Dup **Matrix: Water** Prep Type: Total/NA

Analysis Batch: 587888

Spike LCSD LCSD %Rec. **RPD** Added Result Qualifier Unit %Rec Limits RPD Limit Analyte 199 194 98 **Biochemical Oxygen Demand** mg/L 85 - 115

Lab Sample ID: LCSD 440-587888/7 Client Sample ID: Lab Control Sample Dup Prep Type: Total/NA

**Matrix: Water** 

**Analysis Batch: 587888** 

Spike LCSD LCSD %Rec. **RPD** Added Result Qualifier Unit D %Rec Limits **RPD** Limit 199 99 **Biochemical Oxygen Demand** 197 mg/L 85 - 115

Lab Sample ID: 440-258098-A-1 DU **Client Sample ID: Duplicate** Prep Type: Total/NA

**Matrix: Water** 

**Analysis Batch: 587888** 

DU DU Sample Sample **RPD** Result Qualifier Result Qualifier RPD Limit Analyte Unit D **Biochemical Oxygen Demand** 3.0 2.94 mg/L

**Eurofins Calscience Irvine** 

1/16/2020

Client: Haley & Aldrich, Inc.

Project/Site: Routine Outfall 002 Comp

**GC/MS Semi VOA** 

**Prep Batch: 588303** 

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method Prep Batch
440-258085-1	Outfall002_20191224_Comp	Total/NA	Water	625
MB 440-588303/1-A	Method Blank	Total/NA	Water	625
LCS 440-588303/2-A	Lab Control Sample	Total/NA	Water	625
LCSD 440-588303/3-A	Lab Control Sample Dup	Total/NA	Water	625

Analysis Batch: 588422

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-1	Outfall002_20191224_Comp	Total/NA	Water	625.1	588303
MB 440-588303/1-A	Method Blank	Total/NA	Water	625.1	588303
LCS 440-588303/2-A	Lab Control Sample	Total/NA	Water	625.1	588303
LCSD 440-588303/3-A	Lab Control Sample Dup	Total/NA	Water	625.1	588303

**GC Semi VOA** 

**Prep Batch: 587899** 

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-1	Outfall002_20191224_Comp	Total/NA	Water	608	
MB 440-587899/1-A	Method Blank	Total/NA	Water	608	
LCS 440-587899/2-A	Lab Control Sample	Total/NA	Water	608	
440-258025-B-1-A MSD	Matrix Spike Duplicate	Total/NA	Water	608	
440-258025-C-1-A MS	Matrix Spike	Total/NA	Water	608	

**Analysis Batch: 587976** 

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-1	Outfall002_20191224_Comp	Total/NA	Water	608.3	587899
MB 440-587899/1-A	Method Blank	Total/NA	Water	608.3	587899
LCS 440-587899/2-A	Lab Control Sample	Total/NA	Water	608.3	587899
440-258025-B-1-A MSD	Matrix Spike Duplicate	Total/NA	Water	608.3	587899
440-258025-C-1-A MS	Matrix Spike	Total/NA	Water	608.3	587899

HPLC/IC

**Analysis Batch: 587742** 

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-1	Outfall002_20191224_Comp	Total/NA	Water	300.0	
440-258085-1 - DL	Outfall002_20191224_Comp	Total/NA	Water	300.0	
MB 440-587742/15	Method Blank	Total/NA	Water	300.0	
LCS 440-587742/14	Lab Control Sample	Total/NA	Water	300.0	
440-258085-1 MS	Outfall002_20191224_Comp	Total/NA	Water	300.0	
440-258085-1 MSD	Outfall002_20191224_Comp	Total/NA	Water	300.0	

**Analysis Batch: 587743** 

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-1	Outfall002_20191224_Comp	Total/NA	Water	300.0	
MB 440-587743/15	Method Blank	Total/NA	Water	300.0	
LCS 440-587743/14	Lab Control Sample	Total/NA	Water	300.0	
440-258085-1 MS	Outfall002_20191224_Comp	Total/NA	Water	300.0	
440-258085-1 MSD	Outfall002_20191224_Comp	Total/NA	Water	300.0	

Analysis Batch: 588445

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-1	Outfall002_20191224_Comp	Total/NA	Water	314.0	

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Job ID: 440-258085-1

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Client: Haley & Aldrich, Inc.

Project/Site: Routine Outfall 002 Comp

Job ID: 440-258085-1

# **HPLC/IC (Continued)**

# **Analysis Batch: 588445 (Continued)**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 440-588445/6	Method Blank	Total/NA	Water	314.0	
LCS 440-588445/5	Lab Control Sample	Total/NA	Water	314.0	
MRL 440-588445/4	Lab Control Sample	Total/NA	Water	314.0	
MRL 440-588445/8	Lab Control Sample	Total/NA	Water	314.0	
440-258138-C-1 MS	Matrix Spike	Total/NA	Water	314.0	
440-258138-C-1 MSD	Matrix Spike Duplicate	Total/NA	Water	314.0	

# **Analysis Batch: 589052**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-1	Outfall002_20191224_Comp	Total/NA	Water	NO3NO2 Calc	

# **Specialty Organics**

# **Prep Batch: 348645**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-1	Outfall002_20191224_Comp	Total/NA	Water	1613B	
MB 320-348645/1-A	Method Blank	Total/NA	Water	1613B	
LCS 320-348645/2-A	Lab Control Sample	Total/NA	Water	1613B	
LCSD 320-348645/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	

# **Analysis Batch: 349278**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-1	Outfall002_20191224_Comp	Total/NA	Water	1613B	348645
MB 320-348645/1-A	Method Blank	Total/NA	Water	1613B	348645
LCS 320-348645/2-A	Lab Control Sample	Total/NA	Water	1613B	348645
LCSD 320-348645/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	348645

# Metals

# **Prep Batch: 587971**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-1	Outfall002_20191224_Comp	Total Recoverable	Water	200.2	
MB 440-587971/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-587971/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-258077-D-1-A MS	Matrix Spike	Total Recoverable	Water	200.2	
440-258077-D-1-B MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.2	

# Prep Batch: 587974

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-1	Outfall002_20191224_Comp	Total Recoverable	Water	200.2	
MB 440-587974/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-587974/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-258054-H-10-C MS	Matrix Spike	Total Recoverable	Water	200.2	
440-258054-H-10-D MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.2	

#### Filtration Batch: 587989

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-3	Outfall002_20191224_Comp_F	Dissolved	Water	FILTRATION	
MB 440-587989/1-B	Method Blank	Dissolved	Water	FILTRATION	
MB 440-587989/1-F	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-587989/2-B	Lab Control Sample	Dissolved	Water	FILTRATION	
LCS 440-587989/2-F	Lab Control Sample	Dissolved	Water	FILTRATION	

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Client: Haley & Aldrich, Inc.

Project/Site: Routine Outfall 002 Comp

**Metals (Continued)** 

<b>Filtration</b>	Batch:	587989	(Continued)
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Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258077-B-2-E MS	Matrix Spike	Dissolved	Water	FILTRATION	
440-258077-B-2-F MSD	Matrix Spike Duplicate	Dissolved	Water	FILTRATION	
440-258077-B-2-H MS	Matrix Spike	Dissolved	Water	FILTRATION	
440-258077-B-2-I MSD	Matrix Spike Duplicate	Dissolved	Water	FILTRATION	

# Filtration Batch: 588000

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-3	Outfall002_20191224_Comp_F	Dissolved	Water	FILTRATION	
MB 440-588000/1-B	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-588000/2-B	Lab Control Sample	Dissolved	Water	FILTRATION	
440-258077-A-2-E MS	Matrix Spike	Dissolved	Water	FILTRATION	
440-258077-A-2-F MSD	Matrix Spike Duplicate	Dissolved	Water	FILTRATION	

# **Prep Batch: 588019**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-3	Outfall002_20191224_Comp_F	Dissolved	Water	200.2	587989
MB 440-587989/1-B	Method Blank	Dissolved	Water	200.2	587989
LCS 440-587989/2-B	Lab Control Sample	Dissolved	Water	200.2	587989
440-258077-B-2-E MS	Matrix Spike	Dissolved	Water	200.2	587989
440-258077-B-2-F MSD	Matrix Spike Duplicate	Dissolved	Water	200.2	587989

# **Prep Batch: 588020**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-3	Outfall002_20191224_Comp_F	Dissolved	Water	200.2	587989
MB 440-587989/1-F	Method Blank	Dissolved	Water	200.2	587989
LCS 440-587989/2-F	Lab Control Sample	Dissolved	Water	200.2	587989
440-258077-B-2-H MS	Matrix Spike	Dissolved	Water	200.2	587989
440-258077-B-2-I MSD	Matrix Spike Duplicate	Dissolved	Water	200.2	587989

# Analysis Batch: 588205

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-3	Outfall002_20191224_Comp_F	Dissolved	Water	200.7 Rev 4.4	588019
MB 440-587989/1-B	Method Blank	Dissolved	Water	200.7 Rev 4.4	588019
LCS 440-587989/2-B	Lab Control Sample	Dissolved	Water	200.7 Rev 4.4	588019
440-258077-B-2-E MS	Matrix Spike	Dissolved	Water	200.7 Rev 4.4	588019
440-258077-B-2-F MSD	Matrix Spike Duplicate	Dissolved	Water	200.7 Rev 4.4	588019

# **Analysis Batch: 588370**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-1	Outfall002_20191224_Comp	Total Recoverable	Water	200.7 Rev 4.4	587971
MB 440-587971/1-A	Method Blank	Total Recoverable	Water	200.7 Rev 4.4	587971
LCS 440-587971/2-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	587971
440-258077-D-1-A MS	Matrix Spike	Total Recoverable	Water	200.7 Rev 4.4	587971
440-258077-D-1-B MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.7 Rev 4.4	587971

# **Analysis Batch: 588414**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-3	Outfall002_20191224_Comp_F	Dissolved	Water	200.8	588020
MB 440-587989/1-F	Method Blank	Dissolved	Water	200.8	588020
LCS 440-587989/2-F	Lab Control Sample	Dissolved	Water	200.8	588020
440-258077-B-2-H MS	Matrix Spike	Dissolved	Water	200.8	588020

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Job ID: 440-258085-1

Client: Haley & Aldrich, Inc.

Project/Site: Routine Outfall 002 Comp

**Metals (Continued)** 

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258077-B-2-I MSD	Matrix Spike Duplicate	Dissolved	Water	200.8	588020

# Analysis Batch: 588549

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-1	Outfall002_20191224_Comp	Total Recoverable	Water	200.8	587974
MB 440-587974/1-A	Method Blank	Total Recoverable	Water	200.8	587974
LCS 440-587974/2-A	Lab Control Sample	Total Recoverable	Water	200.8	587974
440-258054-H-10-C MS	Matrix Spike	Total Recoverable	Water	200.8	587974
440-258054-H-10-D MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.8	587974

# **Prep Batch: 588737**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-1	Outfall002_20191224_Comp	Total/NA	Water	245.1	
MB 440-588737/1-A	Method Blank	Total/NA	Water	245.1	
LCS 440-588737/2-A	Lab Control Sample	Total/NA	Water	245.1	
440-258077-D-1-H MS	Matrix Spike	Total/NA	Water	245.1	
440-258077-D-1-I MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	

# Analysis Batch: 588954

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-1	Outfall002_20191224_Comp	Total/NA	Water	245.1	588737
MB 440-588737/1-A	Method Blank	Total/NA	Water	245.1	588737
LCS 440-588737/2-A	Lab Control Sample	Total/NA	Water	245.1	588737
440-258077-D-1-H MS	Matrix Spike	Total/NA	Water	245.1	588737
440-258077-D-1-I MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	588737

# **Prep Batch: 588987**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-3	Outfall002_20191224_Comp_F	Dissolved	Water	245.1	588000
MB 440-588000/1-B	Method Blank	Dissolved	Water	245.1	588000
LCS 440-588000/2-B	Lab Control Sample	Dissolved	Water	245.1	588000
440-258077-A-2-E MS	Matrix Spike	Dissolved	Water	245.1	588000
440-258077-A-2-F MSD	Matrix Spike Duplicate	Dissolved	Water	245.1	588000

# Analysis Batch: 589374

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-3	Outfall002_20191224_Comp_F	Dissolved	Water	245.1	588987
MB 440-588000/1-B	Method Blank	Dissolved	Water	245.1	588987
LCS 440-588000/2-B	Lab Control Sample	Dissolved	Water	245.1	588987
440-258077-A-2-E MS	Matrix Spike	Dissolved	Water	245.1	588987
440-258077-A-2-F MSD	Matrix Spike Duplicate	Dissolved	Water	245.1	588987

# **General Chemistry**

# **Analysis Batch: 587848**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-1	Outfall002_20191224_Comp	Total/NA	Water	180.1	
MB 440-587848/5	Method Blank	Total/NA	Water	180.1	
440-258085-1 DU	Outfall002_20191224_Comp	Total/NA	Water	180.1	

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Job ID: 440-258085-1

Client: Haley & Aldrich, Inc. Job ID: 440-258085-1

Project/Site: Routine Outfall 002 Comp

# **General Chemistry**

# Analysis Batch: 587868

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-1	Outfall002_20191224_Comp	Total/NA	Water	SM 5540C	
MB 440-587868/4	Method Blank	Total/NA	Water	SM 5540C	
LCS 440-587868/5	Lab Control Sample	Total/NA	Water	SM 5540C	
LCSD 440-587868/6	Lab Control Sample Dup	Total/NA	Water	SM 5540C	
MRL 440-587868/3	Lab Control Sample	Total/NA	Water	SM 5540C	
320-57305-A-1 MS ^2	Matrix Spike	Total/NA	Water	SM 5540C	
320-57305-A-1 MSD ^2	Matrix Spike Duplicate	Total/NA	Water	SM 5540C	

# **Analysis Batch: 587888**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-1	Outfall002_20191224_Comp	Total/NA	Water	SM5210B	
USB 440-587888/1	Method Blank	Total/NA	Water	SM5210B	
LCS 440-587888/5	Lab Control Sample	Total/NA	Water	SM5210B	
LCSD 440-587888/6	Lab Control Sample Dup	Total/NA	Water	SM5210B	
LCSD 440-587888/7	Lab Control Sample Dup	Total/NA	Water	SM5210B	
440-258098-A-1 DU	Duplicate	Total/NA	Water	SM5210B	

# Analysis Batch: 587964

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-1	Outfall002_20191224_Comp	Total/NA	Water	SM 2540C	
MB 440-587964/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 440-587964/2	Lab Control Sample	Total/NA	Water	SM 2540C	
440-257932-H-5 DU	Duplicate	Total/NA	Water	SM 2540C	

# **Analysis Batch: 588034**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-1	Outfall002_20191224_Comp	Total/NA	Water	SM 2540D	
MB 440-588034/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 440-588034/2	Lab Control Sample	Total/NA	Water	SM 2540D	
440-258147-A-1 DU	Duplicate	Total/NA	Water	SM 2540D	

# **Prep Batch: 588165**

Lab Sample ID 440-258085-1	Client Sample ID Outfall002 20191224 Comp	Prep Type Total/NA	Matrix Water	Method Prep Batc
MB 440-588165/1-A	Method Blank	Total/NA	Water	Distill/CN
LCS 440-588165/2-A	Lab Control Sample	Total/NA	Water	Distill/CN
440-258077-D-1-E MS	Matrix Spike	Total/NA	Water	Distill/CN
440-258077-D-1-F MSD	Matrix Spike Duplicate	Total/NA	Water	Distill/CN

# **Analysis Batch: 588222**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-1	Outfall002_20191224_Comp	Total/NA	Water	SM 4500 CN E	588165
MB 440-588165/1-A	Method Blank	Total/NA	Water	SM 4500 CN E	588165
LCS 440-588165/2-A	Lab Control Sample	Total/NA	Water	SM 4500 CN E	588165
440-258077-D-1-E MS	Matrix Spike	Total/NA	Water	SM 4500 CN E	588165
440-258077-D-1-F MSD	Matrix Spike Duplicate	Total/NA	Water	SM 4500 CN E	588165

# **Analysis Batch: 588582**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-1	Outfall002_20191224_Comp	Total/NA	Water	SM 4500 NH3 G	
MB 440-588582/10	Method Blank	Total/NA	Water	SM 4500 NH3 G	

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Client: Haley & Aldrich, Inc.

Job ID: 440-258085-1

Project/Site: Routine Outfall 002 Comp

# **General Chemistry (Continued)**

# **Analysis Batch: 588582 (Continued)**

La	ab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LC	CS 440-588582/11	Lab Control Sample	Total/NA	Water	SM 4500 NH3 G	
Mi	RL 440-588582/9	Lab Control Sample	Total/NA	Water	SM 4500 NH3 G	
44	10-258185-K-1 MS	Matrix Spike	Total/NA	Water	SM 4500 NH3 G	
44	0-258185-K-1 MSD	Matrix Spike Duplicate	Total/NA	Water	SM 4500 NH3 G	

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# **Definitions/Glossary**

Client: Haley & Aldrich, Inc. Job ID: 440-258085-1

Project/Site: Routine Outfall 002 Comp

#### Qualifiers

	Semi	

Qualifier **Qualifier Description** 

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

MB Analyte present in the method blank

**HPLC/IC** 

Qualifier **Qualifier Description** 

BB Sample > 4X spike concentration

ΕY Result exceeds normal dynamic range; reported as a min. est. J,DX Estimated value; value < lowest standard (MQL), but >than MDL

**Dioxin** 

Qualifier **Qualifier Description** 

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

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.

**Metals** 

Qualifier **Qualifier Description** 

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

MB Analyte present in the method blank

**General Chemistry** 

Qualifier **Qualifier Description** 

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.
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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)

Estimated Detection Limit (Dioxin) **EDL** Limit of Detection (DoD/DOE) LOD Limit of Quantitation (DoD/DOE) LOQ

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** 

**Quality Control** QC

Relative Error Ratio (Radiochemistry) RER

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) Toxicity Equivalent Quotient (Dioxin) **TEQ** 

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# **Accreditation/Certification Summary**

Client: Haley & Aldrich, Inc. Job ID: 440-258085-1

Project/Site: Routine Outfall 002 Comp

# **Laboratory: Eurofins Calscience Irvine**

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

Authority California		ogram ate Program	Identification Number CA ELAP 2706	Expiration Date 06-30-20
The following analytes the agency does not o	•	ort, but the laboratory is r	not certified by the governing authority.	This list may include analytes for which

# Laboratory: Eurofins TestAmerica, Sacramento

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	<b>Expiration Date</b>
Alaska (UST)	State	17-020	01-20-21
ANAB	Dept. of Defense ELAP	L2468	01-20-21
ANAB	Dept. of Energy	L2468.01	01-20-21
ANAB	ISO/IEC 17025	L2468	01-20-21
Arizona	State	AZ0708	08-11-20
Arkansas DEQ	State	19-042-0	06-17-20
California	State	2897	01-31-20 *
Colorado	State	CA0004	08-31-20
Connecticut	State	PH-0691	06-30-21
Florida	NELAP	E87570	06-30-20
Georgia	State	4040	01-29-20 *
Hawaii	State	<cert no.=""></cert>	01-29-20 *
Illinois	NELAP	200060	03-17-20
Kansas	NELAP	E-10375	10-31-20 *
Louisiana	NELAP	01944	06-30-20
Maine	State	2018009	04-14-20
Michigan	State	9947	01-29-20 *
Michigan	State Program	9947	01-31-20
Nevada	State	CA000442020-1	07-31-20
New Hampshire	NELAP	2997	04-18-20
New Jersey	NELAP	CA005	06-30-20
New York	NELAP	11666	04-01-20
Oregon	NELAP	4040	01-29-20 *
Pennsylvania	NELAP	68-01272	03-31-20
Texas	NELAP	T104704399-19-13	05-31-20
US Fish & Wildlife	US Federal Programs	58448	07-31-20
USDA	US Federal Programs	P330-18-00239	07-31-21
Utah	NELAP	CA000442019-01	02-29-20
Vermont	State	VT-4040	04-16-20
Virginia	NELAP	460278	03-14-20
Washington	State	C581	05-05-20
West Virginia (DW)	State	9930C	12-31-19 *
Wyoming	State Program	8TMS-L	01-28-19 *

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<sup>\*</sup> Accreditation/Certification renewal pending - accreditation/certification considered valid.



Certificate of Analysis

FINAL REPORT

Work Orders: 9L24044

**Report Date:** 1/13/2020

**Received Date:** 12/24/2019

Turnaround Time: 1 workday

**Phones:** (949) 261-1022

Fax: (949) 260-3297

P.O. #:

Billing Code:

Client: Eurofins Calscience - Irvine

17461 Derian Ave, Suite 100

Project: Routine Outfall(001, 002, 011, 018

Irvine, CA 92614

TestAmerica, Irvine

Dear TestAmerica, Irvine,

Enclosed are the results of analyses for samples received 12/24/19 with the Chain-of-Custody document. The samples were received in good condition, at 4.4 °C and on ice. All analyses met the method criteria except as noted in the case narrative or in the report with data qualifiers.

# XX

# Sample Results

9L24044-01 (Water)

Sample: Outfall 002\_20191224\_Comp Sampled: 12/24/19 8:20 by Client

Analyte		Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Method: EPA 525.2M	Batch ID: W9L1504	Instr: GCMS13		Prepared: 1	12/27/19 11:09		Analyst: EFC	
Chlorpyrifos		ND	34	50	ng/l	1	01/08/20	M-02
Diazinon		ND	26	50	ng/l	1	01/08/20	M-02
Surrogate(s) 1,3-Dimethyl-2-nitrobenzene		112%		76-128	Conc: 2	790	01/08/20	M-02
Triphenyl phosphate		147%		40-163	Conc: 3	670	01/08/20	M-02

9L24044 Page 1 of 3
14859 Clark Avenue, City of Industry CA, 91745 | Phone: (626) 336-2139 | Fax: (626) 336-2634

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# Certificate of Analysis

1	Quality	Control	Results
	Quality	Control	Results

AND											
Semivolatile Organics - Low Level by Tande	em GC/MS/MS										
					Spike	Source		%REC		RPD	
Analyte	Result	MDL	MRL	Units	Level	Result	%REC	Limits	RPD	Limit	Qualifier
Blank (W9L1504-BLK1)				P	repared: 12/27/	19 Analyzed: (	01/08/20				
Chlorpyrifos	· ND	6.9	10	ng/l							
Diazinon	ND	5.2	10	ng/l							
Surrogate(s)											
1,3-Dimethyl-2-nitrobenzene	533			ng/l	500		107	76-128			
Triphenyl phosphate	513			ng/l	500		103	40-163			
LCS (W9L1504-BS1)				Р	repared: 12/27/	19 Analyzed: (	01/08/20				
Chlorpyrifos		6.9	10	ng/l	50.0		139	37-169			
Diazinon	53.0	5.2	10	ng/l	50.0		106	43-152			
Surrogate(s)											
1,3-Dimethyl-2-nitrobenzene	551			ng/l	500		110	76-128			
Triphenyl phosphate	500			ng/l	500		100	40-163			
Matrix Spike (W9L1504-MS1)	Source	: 9L23123-0	)1	P	repared: 12/27/	19 Analyzed: (	01/08/20				
Chlorpyrifos	452	34	50	ng/l	250	ND	181	37-168			M-02,
Diazinon	315	26	50	ng/l	250	ND	126	36-153			MS-05 M-02
Surrogate(s)											
1,3-Dimethyl-2-nitrobenzene	2750			ng/l	2500		110	76-128			M-02
Triphenyl phosphate	2710			ng/l	2500		109	40-163			M-02
Matrix Spike Dup (W9L1504-MSD1)	Source	: 9L23123-0	)1	P	repared: 12/27/	19 Analyzed: (	01/08/20				
Chlorpyrifos		34	50	ng/l	250	ND	146	37-168	21	30	M-02
Diazinon	268	26	50	ng/l	250	ND	107	36-153	16	30	M-02
Surrogate(s)				<b>.</b> 							
J	2730			ng/l	2500		109	76-128			M-02
Triphenyl phosphate	2700			ng/l	2500		108	40-163			M-02

Page 2 of 3 9L24044 14859 Clark Avenue, City of Industry CA, 91745 | Phone: (626) 336-2139 | Fax: (626) 336-2634



# 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.
% Rec	Percent Recovery
Dil	Dilution
dry	Sample results reported on a dry weight basis
MDA	Minimum Detectable Activity
MDL	Method Detection Limit
MRL ND NR	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)  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.
	Not Reportable
RPD	Relative Percent Difference
Source	Sample that was matrix spiked or duplicated.
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 rema	ining sample(s) will be disposed of one month from the final report date unless other arrangements are made in advance.
An Absen	ice 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 MIS002.

#### Reviewed by:

Water Board







Regina Giancola Project Manager

> ELAP-CA #1132 • EPA-UCMR #CA00211 • Guam-EPA #17-008R • HW-DOH # • ISO17025 ANAB #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.

9L24044 Page 3 of 3 14859 Clark Avenue, City of Industry CA, 91745 | Phone: (626) 336-2139 | Fax: (626) 336-2634

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Crient Namer Address Haley & Aldrich 5333 Mission Center San Diego, CA 92106	Lient Name/Address: Haley & Aldrich 5333 Mission Center Rd Surte 300 San Diego, CA 92108				<b>Š</b>	Project Boeurg-SSFL NPDES Permit 2019	JES			6				(; gtZ=)	(E545 i)		
Test America Contr 17461 Derian Ave i Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055	Test America Contact: Urvashi Patei 17461 Derian Ave Sulte #100 Irvine CA 92614 Tel 499-260-3269 Cell 949,333-9055			<b></b>	Routine C	Routine Outfall (001, 002, 011, 019) Outfall 002 Comp	2, 011, 018 <u>9</u>		els als es ,bx	BODCs(c)) C) Beneral (E1613E	) (SM5640C/E4;	ISQ40CNE180 4)		trataluene, Bis(;	Metals Mercury	1 ***	Comments
estAmenca's ser 018-22-TestAme nc	Tredumente & sevrons under this GOC thail be parformed in accordance with the TBCs within Barrieri Genore Agreements Tredumente by and between hillsy & Adatoh, Inc. its subaldanes and affiliates, and Tredumenta Laborifores Inc.	the T&Cs within Blanket Serviced the affiliates, and TestAmenca t.	aboratones		Project Manag 520 289 8606,	Project Manager Katherine Miller 520 289 8606, 520.904.6944 (cel	erine Miller :6944 (cell)					(E300)	(380 S	(E608) 2,4 Onni Athalat		472	
Sampler:	The state of the s				Field Manage 978.234.5033.	Field Manager: Mark Dominick 78.234.5033, 818.599.0702 (cell)	er: Mark Dominick 818.599.0702 (cell)					ikwate				ð	
Sampte	Sample 1 D	Sampling Date/Time	Sample	Contamer Type	# of Cont	Preservative	Bottle #	GSW/SW				ioreq				. 472	
			WW	500 mL Paiy	*	HNO	8	£	×						×	×	A second of the
			WW	1 L Glass Amber	2	None	110	ş		×	-	1		-	-		
			WM	11. Poly	-	None	115	Š		×	$\vdash$		-				
		_	WW	500 mL Poty	2	None	120	No			×		-				
	Outfall002_20191224_Comp	12/24/2019	WW	500 mL Poty	2	None	130	οN				×					48 hours Holding Time NO <sub>3</sub> & NO <sub>2</sub>
		520 <b>2</b>	1 1	500 mL Poly	+	None	150	οN				×					48 hour holding time for turbidity
Outfall 002			WW	500 mL Poly	+	"OS"H	160	2					×				
			WW	1 L Glass Amber	2	None	170	Š						×			
			WW	1 L Glass Amber	2	None	180	S.						×			
			MAN	11. Poly	-	None	185	£			<u> </u>		×				
	The state of the s		WW	1 L Glass Amber	7	None	150	S		I			-				Hoid
			MW	500 mL Poly	2	None	120	S.			r						рюн
	Outfall002_20191224_Comp_Extra	12/24/2019	WM	500 mL Poly	2	None	130	SN.				r					ноід
		105.50	WM	1 L Glass Amber	2	None	170	NG						I			Hold
			WW	1 L Glass Amber	2	None	180	No						1			Нон
			A=A	man C=Condis	E P	G land	O=O outline	Wed Virginia	Viretretion	Receiving	Water	ESemi-A	faring				
Refinquished By	y Date/Time	0	упядто.	Company Date Time Received by Date Time		1	Received By /		Date/Time			,		Tum	around tin	Turn-around time (Check)	()
12/2	21.11.19	310/51	H	4				17	15/12	1	124	1113	2	24 Hour	Set	72 Hour 5 Day	ur 10 DayX y Normal
inguisned B	THE STATE OF THE S	7	たべい の	د.	3	30	5	\		1				Sampl	ole Integrit	Sample Integrity (Check)	On toe
Reinquished By	y Date/Time	>	Sompany				Received By	$\mathcal{I}_{\mathcal{I}_{\mathcal{I}_{\mathcal{I}_{\mathcal{I}}}}}$	Date May		7	11/4	123	7	Store samples I Data Requiremi	Store samples for 6 months Data Requirements (Check) No Level IV	ns sck) Ali Level IV X
							:5/1	w./.	7	$\sigma_{_{_{_{_{_{_{_{_{_{_{_{_{_{_{_{_{_{_{$		(					
	6/20					~	1/1/2	7)	$\frac{\omega}{-}$		12	1239					
J19-2020 K ersion 1	ainy season					_				• (			•	440-25	085 Ch	440-258085 Chain of Custody	Custody
						•	1://	<u>`</u>	-	<b>)</b>						!	

Test America

					Street of Street	BAG		g i	nder	עפיז'יסיל אפיז'ווריי	7.					-				
	Comments				And the second s	Sample receiving DO NOT OPEN BAG Bag to be opened in Mercury Prep using clean procedures		Unfiltered and unpreserved analysis	Separate RAD onto another worko Analyze duplicate, not MS/MSD	full, but littist of section law events of the year supports ARS, Labs in Vanilier, ca	ではない かけばん					ur 10 Day X		<u> </u>		
REQUIRED															Change of the control	24 Hour 72 Hour 5 Day	-	Sample Integrity (Check)	Store samples for 6 months	
ANALYSIS REQUIRED	7417 327 M 224.22 21 G 5 2 23	ייי איי איי איי איי אייי איי אייי	a) (i) 1€1	45 corsi	×						×					· ×	Ţ	<u>₩</u> <u>1</u>	- To (	
	lenastrum 15 Mercury (E245 1)					×				35					3≈Semi-Annu	11 8/15			11 152/	
	or E801 1) 20, Gross Beta(E808 0), K- 21, 31-90 (E905 0), F- 31, 31-90 (E905 0), K- 31, 31-90 (E900 0), K- 31, 31-	E900 0 (E904 0 (E904 0	)sriq!A (E-H) n SA bən; 8SS m () \Cf-2	Gross Comb Radiu 40, Ct				,	<del></del>						iving Water, S	14	1010		2)	
	N-E \ E339 S)	O-0099		Cyani	×		×								Panel, R=Routine, Q=Quarterty, QRSW=Quarterty Receiving Water, S=Semi-Annual Dataffirms	470	Sate/Time		Date/Time	
	I			MS/MSD	Š.	<del>Q</del>	8	Ş	ž	2	11/2				erfy, QRSW=Q	()   		7		
	S 111, 018]	ne Miller 344 (cell)	minick 702 (cell)	Bottle #	500	320	23	225	982	235	275				rtine, Q≈Quari	12	Received By	K	Codefeed By	
	Project. Boeing-SSFL NPDES Permit 2019 Routine Outfall (001, 002, 011, 018) Comp	Project Manager Katherine Miller 520,289,8606,520,904,6944 (cell)	Fleid Manager: Mark Dominick 978,234,5033, 818,599,0702 (cell)	Preservative	None	None	HOEN	None	None	None	HCI									-
	Boeir 	Project Mi 520,289.86	Field Mai 978.234.50	# of Cont.	-	-	1	-	-	æ	۲				al, EP=Exper			298		
				Container Type	1L Poly	borosilicate vials	500 mL Poly	2 5 Gal Cube	1 L Glass Amber	1 Gal Cube	1. 50 W M 1 L 4 WAST				Legend: A=Annual, C=Conditional, EP=Exper				,	
		sinerate ries inc		Sample	××××××××××××××××××××××××××××××××××××××	W.W.	WW		¥ ¥	WW	<u>آ</u> 3	/sz.			=Annua		eny		any	
		TSCs within Blanket Service Agree ifficates, and TestAmenca Laborato		Sampling Date/Time	12/24/2019	7230y		•	12/24/2019	0380	12/24/2019	39 ,			Legend: A	1 81.		12/20/19	Company	
desso.	Haley & Aldrich Haley & Aldrich Haley & Aldrich San Diego, CA 92108 Test America Contact: Unvash Patel 17461 Denan Ave Surte #100 Invine CA 92614 Tel 949-260-3269	Teskhernics services under this CoC shall be performed in accordance with the 160s within Bannel Service Agreements 2019-22-Teskhernics by and between Haley & Adench, Inc., its subsidiance and affisies and Teskhernics Laboralcities in		Sample I D	Outtall002_20191224_Comp_F				Outail002_20191224_Comp		Out tell on Traisent Livel				Dode (E. e. e.	Dates lime	Date/Time	John J.		
Client Name/Address	Haley & Aldrin Haley & Aldrin San Diego, CA 92108 Test America Contact 17461 Denan Ave Su Ilvine CA 82614 Tel 949-260-389	TestAmenca's service 2019-22-TestAmenca	Sampler.	Sample			Outfail 002			f 45						Refinquished by	Relinquished By		Relinquished By	

1/16/50 07 2019-2020 Rainy Season Version 1

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**Environment Testing** 

TestAmerica

# Chain of Custody Record

Eurofins TestAmerica, Irvine

17461 Derian Ave Suite 100

Irvine, CA 92614-5817

Phone: 949-261-1022 Fax: 949-260-3297

M - Hexane
N - None
O - AsN302
P - Na2045
Q - Na2045
R - Na2203
S - H2504
T - TSP Dodecahydrate
U - Acetone
U - Acetone
W - PH 4-5
Z - other (specify) See QAS, Boeing\_w/u to zero, ug/L; Use Vote: Since aboratories are subject to change, Eurofins TestAmerica 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 mention according to a according to a according to be brought to Eurofins attentions will be provided. Any changes to according to a brought to Eurofins Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attention to said complicance to Eurofins TestAmerica. Company Ral Special Instructions/Note: Ver: 01/16/2019 Months Company Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)

Return To Client Disposal By Lab Archive For Mon Special Instructions/QC Requirements: Preservation Codes: A - HCL
B - NaOH
C - Zn Acetate
D - Nitric Acid
F - MaOH
G - Amchlor
H - Ascorbic Acid Boeing glassware 440-150583.1 440-258085-1 Page 1 of 1 I - Ice J - DI Water K - EDTA 940 EDTA Car 6-8 12/27/19 Total Number of containers Date/Time: fethod of Shipment Carrier Tracking No(s): State of Ongin California Analysis Requested Cooler Temperature(s) °C and Other Remarks: urvashi.patel@testamericainc.com Accreditations Required (See note): State Program - California ceived by: Received by: Received by × Lab PM: Patel, Urvashi etaB/1613B\_Sox\_Sep\_P Standard List w/ Totals Perform MS/MSD (Yes or No) Time: IRU Preservation Code: Water Matrix Company Company Company (C=comb, 17:00 Sample G=grab) Type Primary Deliverable Rank: 2 Sample 08:20 Time Date: TAT Requested (days): Due Date Requested: 1/7/2020 Sample Date 12/24/19 Project #: 44009879 SSOW#: Date/Time: Date/Time: 54 Deliverable Requested: I, II, III, IV, Other (specify) Client Information (Sub Contract Lab) Outfall002\_20191224\_Comp (440-258085-1) Custody Seal No.: Sample Identification - Client ID (Lab ID) 916-373-5600(Tel) 916-372-1059(Fax) Possible Hazard Identification TestAmerica Laboratories, Inc. Boeing NPDES SSFL outfalls Empty Kit Relinquished by Custody Seals Intact: 880 Riverside Parkway Shipping/Receiving West Sacramento :d paysinbu quished by: Jnconfirmed iquished by CA. 95605

# **Login Sample Receipt Checklist**

Client: Haley & Aldrich, Inc.

Job Number: 440-258085-1

SDG Number:

Login Number: 258085 List Source: Eurofins 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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# **Login Sample Receipt Checklist**

Client: Haley & Aldrich, Inc. Job Number: 440-258085-1

SDG Number:

1/16/2020

Login Number: 258085 List Source: Eurofins TestAmerica, Sacramento List Number: 3

List Creation: 12/27/19 11:33 AM

Creator: Thompson, Sarah W

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	Seal present with no number.
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	Ob:1.0c Corr:0.8c
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").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	

**Eurofins Calscience Irvine** 

Residual Chlorine Checked.

N/A

# **Isotope Dilution Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Routine Outfall 002 Comp

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

**Matrix: Water** Prep Type: Total/NA

Γ			Perc	ent Isotope	Dilution Re	covery (Ac	ceptance L	imits)	
		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)
440-258085-1	Outfall002_20191224_Comp	59	55	54	52	58	55	48	52
MB 320-348645/1-A	Method Blank	62	61	67	62	69	70	58	62
			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)	
440-258085-1	Outfall002_20191224_Comp	48	49	49	59	53	60	58	
MB 320-348645/1-A	Method Blank	56	60	60	71	65	72	72	

#### 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

			Perc	ent Isotope	Dilution Re	covery (Ac	ceptance L	imits)	
		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 320-348645/2-A	Lab Control Sample	66	61	65	61	68	63	54	57
LCSD 320-348645/3-A	Lab Control Sample Dup	65	61	63	60	66	61	56	57
			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 320-348645/2-A	Lab Control Sample	53	56	57	62	57	64	63	-
LCSD 320-348645/3-A	Lab Control Sample Dup	54	56	57	66	59	68	69	

# **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

**Eurofins Calscience Irvine** 

1/16/2020

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Job ID: 440-258085-1

# **Isotope Dilution Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Routine Outfall 002 Comp

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

Job ID: 440-258085-1

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# Environment Testing TestAmerica

# Sacramento Sample Receiving Notes

		Tracking #: 1119 9742 9500
	440-258085 Field Sheet	SO(PØ / FO / SAT / 2-Day / Ground / UPS / CDO / Courie
Job:		GSO / OnTrac / Goldstreak / USPS / Other

lotes:	Therm. ID: Mus Corr. Factor: (+ 12) 0.2	
	Ice Wet Gel Other	
	Cooler Custody Seal: Scal	
-	Cooler ID:	
	Temp Observed: 10 °C Corrected: 6.8	_°c
	From: Temp Blank, Sample D	
	During Initial Triage Yes No	NA
	Cooler compromised/tampered with?	
	Cooler Temperature is acceptable?	ם
	CoC is complete w/o discrepancies?  □	
	Samples received within holding time?	
	Initials: 57 Date: 12/27/14	
	During Labeling  Samples compromised/tampered with?	NA
	A CONTRACTOR OF THE CONTRACTOR	
	Sample containers have legible labels?	
	Sample custody seal?	P
	Containers are not broken or leaking?	
	Sample date/times are provided?	
	Appropriate containers are used?	
	Sample bottles are completely filled?	
	Sample preservatives verified?	DO
	Samples w/o discrepancies?	D
	Alkalinity has no headspace? DDD  Perchlorate has headspace? DDD	DD
	(Methods 314, 331, 6850)	7
	Multiphasic samples are not present?	
	NCM Filed	Ø



# **ANALYTICAL REPORT**

Eurofins Calscience Irvine 17461 Derian Ave Suite 100 Irvine, CA 92614-5817

Tel: (949)261-1022

Laboratory Job ID: 440-258085-3

Client Project/Site: Routine Outfall 002 Comp

# For:

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

Attn: Katherine Miller

Authorized for release by: 1/24/2020 5:21:20 PM

Christian Bondoc, Project Manager I (949)260-3218

christian.bondoc@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.

Project/Site: Routine Outfall 002 Comp

Laboratory Job ID: 440-258085-3

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.

Christian Bondoc

Project Manager I

1/24/2020 5:21:20 PM

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Laboratory Job ID: 440-258085-3

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

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# **Sample Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Routine Outfall 002 Comp

 Lab Sample ID
 Client Sample ID
 Matrix
 Collected
 Received
 Asset ID

 440-258085-1
 Outfall002\_20191224\_Comp
 Water
 12/24/19 08:20
 12/24/19 12:30

Job ID: 440-258085-3

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# **Case Narrative**

Client: Haley & Aldrich, Inc.

Job ID: 440-258085-3 Project/Site: Routine Outfall 002 Comp

Job ID: 440-258085-3

**Laboratory: Eurofins Calscience Irvine** 

Narrative

Job Narrative 440-258085-3

#### Comments

No additional comments.

#### Receipt

The samples were received on 12/24/2019 12:30 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 6 coolers at receipt time were 1.0° C, 1.0° C, 1.0° C, 1.1° C, 1.2° C and 1.3° C.

#### Receipt Exceptions

The reference method requires samples to be preserved to a pH of <2. The sample was received with insufficient preservation at a pH of 7. The sample was preserved to the appropriate pH in the laboratory, by adding approx. 24mL of HNO3 to each 2.5Gal cubicontainer. For a final pH of <2.

Requested Method: RAD

pH strip: HC902937

HNO3 lot: 1848535

Preserved on 12/27/2019 at 13:00

#### RAD

Method 900.0: Gross Alpha Beta Prep Batch 160-455777

The detection goal was not met for the following sample due to a reduction of the sample size attributed to high residual mass: Outfall002 20191224 Comp (440-258085-1). Analytical results are reported with the detection limit achieved.

Method 900.0: Gross Alpha Beta Prep Batch 160-455777

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date. Outfall002 20191224 Comp (440-258085-1), (LCS 160-455777/2-A), (LCSB 160-455777/3-A), (MB 160-455777/1-A), (440-258077-J-1-F), (440-258077-J-1-G MS), (440-258077-J-1-I MSBT), (440-258077-J-1-J MSBTD) and (440-258077-J-1-H MSD)

Method 901.1: Gamma Prep Batch 160-455492

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Many isotopes requested for analysis do not have any gamma emissions, or the gamma emissions they do have are very poor. Often, such analytes are reported by gamma spectrometry assuming secular equilibrium with a longer-lived parent. The client should ensure that such inference is acceptable for their sample based upon process knowledge. The following assumptions were made for this report:

Inferred from Reported to Analyte Th-234 Pa-234 U-238 Th-234

Te-125m

Pb-210 Po-210 Pb-210 Bi-210 Cs-137 Ba-137m Pb-212 Po-216 Xe-131 Xe-131m

Sb-125

1/24/2020

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Client: Haley & Aldrich, Inc.

Job ID: 440-258085-3 Project/Site: Routine Outfall 002 Comp

# Job ID: 440-258085-3 (Continued)

#### **Laboratory: Eurofins Calscience Irvine (Continued)**

Ag-108m	Ag-108
Rh-106	Ru-106
Pb-212	Th-228
Pb-212	Ra-224
U-235	Th-231
Ac-228	Th-232
Ac-228	Ra-228
Th-227	Ra-223
Th-227	Ac-227
Th-227	Bi-211
Th-227	Pb-211
Bi-214	Ra-226

Outfall002 20191224 Comp (440-258085-1), (LCS 160-455492/2-A), (MB 160-455492/1-A), (440-258077-J-1-A) and (440-258077-J-1-B) DU)

Methods 903.0, 9315: Radium-226 Prep Batch 160-455637

The following sample (240-124138-F-1-C) has a high carrier recovery, outside the upper control limit of 110% (676%), due to high concentrations of that analyte. The data have been reported with this narrative.

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Outfall002\_20191224\_Comp (440-258085-1), (LCS 160-455637/1-A), (MB 160-455637/21-A), (400-181761-A-1-A), (400-181761-B-1-A DU), (440-258077-J-1-C), (440-258077-F-1-A MS) and (440-258077-F-1-B MSD)

Methods 904.0, 9320: Radium-228 Prep Batch 160-455646

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Outfall002 20191224 Comp (440-258085-1), (LCS 160-455646/1-A), (MB 160-455646/21-A), (400-181761-A-1-B), (400-181761-B-1-B DU), (440-258077-J-1-D), (440-258077-F-1-C MS) and (440-258077-F-1-D MSD)

Method 905: Strontium-90 Prep Batch 160-455843

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date. Outfall002 20191224 Comp (440-258085-1), (LCS 160-455843/1-A), (MB 160-455843/10-A), (440-258077-J-1-K), (440-258077-F-1-G MS) and (440-258077-F-1-H MSD)

Method 906.0: LSC Tritium Prep Batch 160-455651

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Outfall002 20191224 Comp (440-258085-1), (LCS 160-455651/2-A), (MB 160-455651/1-A), (440-258077-I-1-A), (440-258077-I-1-B MS) and (440-258077-I-1-C MSD)

# **Case Narrative**

Client: Haley & Aldrich, Inc.

Project/Site: Routine Outfall 002 Comp

Job ID: 440-258085-3

# Job ID: 440-258085-3 (Continued)

#### **Laboratory: Eurofins Calscience Irvine (Continued)**

Method A-01-R: Isotopic Uranium Prep Batch 160-455686

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date. Outfall002\_20191224\_Comp (440-258085-1), (LCS 160-455686/2-A), (MB 160-455686/1-A), (440-258077-J-1-E), (440-258077-F-1-E MS) and (440-258077-F-1-F MSD)

Method ExtChrom: Uranium Prep Batch 160-455686

The following samples were prepared at a reduced aliquot due to a yellow discoloration. Outfall002 20191224 Comp (440-258085-1). Samples 440-258085-1 and 440-258219-1 was a darker yellow than the other samples and had suspended solids. Sample 440-258227-1 also had suspended solids present.

Method PrecSep 0: Radium 228 Prep Batch 160-455646:

The following samples were prepared at a reduced aliquot due to discoloration and cloudy appearance: Outfall002\_20191224\_Comp (440-258085-1). Samples 240-124138-1 and 280-132306-1 both have a cloudy appearance. Samples 440-258077-1, 440-258077-1MS, 440-258077-1MSD and 440-258085-1 all have a yellow discoloration.

Method PrecSep-21: Radium 226 Prep Batch 160-455637:

The following samples were prepared at a reduced aliquot due to discoloration and cloudy appearance: Outfall002\_20191224\_Comp (440-258085-1). Samples 240-124138-1 and 280-132306-1 both have a cloudy appearance. Samples 440-258077-1, 440-258077-1MS, 440-258077-1MSD and 440-258085-1 all have a yellow discoloration.

Method PrecSep-7: Strontium 90 Prep Batch 160-445843:

Sample 258227-1 and samples 258077-1, 1MS, and 1MSD were reduced due to yellow discoloration. Samples 258085-1 and 258219-1 were reduced due to brown discoloration and a cloudy appearance: Outfall002 20191224 Comp (440-258085-1).

1/8/2020- Samples 440-258077-1,440-258077-1MS, 440-258077-1MSD, 110-258227-1, 440-258085-1 all had 1-2x smaller pellets than the QC samples at the end of the into-ingrowth process. While decanting the presence of matrix interference was seen in the amount of sediment at the bottom of the beaker.

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

# **Client Sample Results**

Client: Haley & Aldrich, Inc. Job ID: 440-258085-3

Project/Site: Routine Outfall 002 Comp

Client Sample ID: Outfall002\_20191224\_Comp Lab Sample ID: 440-258085-1

Date Collected: 12/24/19 08:20 Matrix: Water

Date Received: 12/24/19 12:30

			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	3.41	G	2.29	2.32	3.00	3.29	pCi/L	01/06/20 07:22	01/12/20 17:32	1
Gross Beta	5.02		1.03	1.14	4.00	1.14	pCi/L	01/06/20 07:22	01/12/20 17:32	1

Method: 901.1 - Ce	esium 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	0.725	U	8.27	8.27	20.0	14.8	pCi/L	12/27/19 17:33	12/30/19 16:59	1
Potassium-40	-19.5	U	165	165		214	pCi/L	12/27/19 17:33	12/30/19 16:59	1

Method: 903.0 - Rac	11um-226	(GFPC)	Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.302	U	0.211	0.213	1.00	0.303	pCi/L	12/30/19 12:05	01/21/20 13:51	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	82.7		40 - 110					12/30/19 12:05	01/21/20 13:51	1

Method: 904.0 - I	Radium-228	(GFPC)	Count	Total						
Analyte	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.48		0.626	0.641	1.00	0.882	pCi/L	12/30/19 13:15	01/14/20 16:56	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	82.7		40 - 110					12/30/19 13:15	01/14/20 16:56	1
Y Carrier	88.7		40 - 110					12/30/19 13:15	01/14/20 16:56	1

Method: 905 - St	trontium-90 (	GFPC)	Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0221	Ū	0.345	0.345	3.00	0.618	pCi/L	01/07/20 06:20	01/15/20 10:01	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	75.0		40 - 110					01/07/20 06:20	01/15/20 10:01	1
Y Carrier	94.2		40 - 110					01/07/20 06:20	01/15/20 10:01	1

Method: 90	06.0 - Tri	tium, Tota	I (LSC)								
				Count	Total						
				Uncert.	Uncert.						
Analyte		Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium		34.7	U	159	159	500	281	pCi/L	12/30/19 13:27	12/31/19 11:11	1

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	1.31		0.500	0.507	1.00	0.395	pCi/L	12/30/19 16:10	01/16/20 09:32	1

**Eurofins Calscience Irvine** 

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# **Client Sample Results**

Client: Haley & Aldrich, Inc. Job ID: 440-258085-3

Project/Site: Routine Outfall 002 Comp

Client Sample ID: Outfall002\_20191224\_Comp Lab Sample ID: 440-258085-1

Date Collected: 12/24/19 08:20 Matrix: Water

Date Received: 12/24/19 12:30

Tracer	%Yield Qualifier	Limits	Prepared Analyzed	Dil Fac
Uranium-232	96.1	30 - 110	12/30/19 16:10 01/16/20 09:32	1

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# **Method Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Routine Outfall 002 Comp

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 = Eurofins TestAmerica, St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Job ID: 440-258085-3

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# **Lab Chronicle**

Client: Haley & Aldrich, Inc. Job ID: 440-258085-3

Project/Site: Routine Outfall 002 Comp

Client Sample ID: Outfall002\_20191224\_Comp

Lab Sample ID: 440-258085-1 Date Collected: 12/24/19 08:20 **Matrix: Water** 

Date Received: 12/24/19 12:30

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	Evaporation			178.67 mL	1.0 g	455777	01/06/20 07:22	RJD	TAL SL
Total/NA	Analysis	900.0		1	1.0 mL	1.0 mL	456563	01/12/20 17:32	AJD	TAL SL
Total/NA	Prep	Fill_Geo-0			1000 mL	1.0 g	455492	12/27/19 17:33	KLH	TAL SL
Total/NA	Analysis	901.1		1			455612	12/30/19 16:59	KLS	TAL SL
Total/NA	Prep	PrecSep-21			500.85 mL	1.0 g	455637	12/30/19 12:05	RBR	TAL SL
Total/NA	Analysis	903.0		1			457426	01/21/20 13:51	KLS	TAL SL
Total/NA	Prep	PrecSep_0			500.85 mL	1.0 g	455646	12/30/19 13:15	RBR	TAL SL
Total/NA	Analysis	904.0		1			456741	01/14/20 16:56	AJD	TAL SL
Total/NA	Prep	PrecSep-7			500.6 mL	1.0 g	455843	01/07/20 06:20	MNH	TAL SL
Total/NA	Analysis	905		1			456913	01/15/20 10:01	AJD	TAL SL
Total/NA	Prep	LSC_Dist_Susp			100.0 mL	1.0 g	455651	12/30/19 13:27	KNF	TAL SL
Total/NA	Analysis	906.0		1			456022	12/31/19 11:11	JS	TAL SL
Total/NA	Prep	ExtChrom			250.00 mL	1.0 mL	455686	12/30/19 16:10	KLH	TAL SL
Total/NA	Analysis	A-01-R		1			457044	01/16/20 09:32	KRR	TAL SL

#### **Laboratory References:**

TAL SL = Eurofins TestAmerica, St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Client: Haley & Aldrich, Inc. Job ID: 440-258085-3

Project/Site: Routine Outfall 002 Comp

# Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Lab Sample ID: MB 160-455777/1-A Client Sample ID: Method Blank **Matrix: Water** Prep Type: Total/NA **Prep Batch: 455777** 

Analysis Batch: 456563

			Count	Total						
	MB	MB	Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	0.01239	U	0.607	0.607	3.00	1.18	pCi/L	01/06/20 07:19	01/12/20 12:20	1
Gross Beta	-0.2482	U	0.440	0.440	4.00	0.843	pCi/L	01/06/20 07:19	01/12/20 12:20	1

Lab Sample ID: LCS 160-455777/2-A **Client Sample ID: Lab Control Sample Matrix: Water** Prep Type: Total/NA **Prep Batch: 455777** 

**Analysis Batch: 456563** 

Total LCS LCS %Rec. Spike Uncert. RL Analyte Added  $(2\sigma + / -)$ **MDC** Unit %Rec Limits Result Qual Gross Alpha 49.6 48.74 7.33 3.00 1.85 pCi/L 98 75 - 125

Lab Sample ID: LCSB 160-455777/3-A **Client Sample ID: Lab Control Sample Matrix: Water** Prep Type: Total/NA **Prep Batch: 455777 Analysis Batch: 456567** Total

Spike LCSB LCSB %Rec. Uncert. Analyte Added Result Qual  $(2\sigma + / -)$ RL MDC Unit Limits %Rec **Gross Beta** 85.0 4.00 0.814 pCi/L 94 75 - 125 79.96 8.53

Lab Sample ID: 440-258077-J-1-G MS **Client Sample ID: Matrix Spike Matrix: Water** Prep Type: Total/NA **Prep Batch: 455777** 

**Analysis Batch: 456567** 

Total MS MS %Rec. Sample Sample **Spike** Uncert. Analyte Result Qual Added Result Qual  $(2\sigma + / -)$ RL MDC Unit %Rec Limits Gross Alpha 1.38 49.6 41.94 6.03 3.00 1.42 pCi/L 82 60 - 140

Lab Sample ID: 440-258077-J-1-H MSD **Client Sample ID: Matrix Spike Duplicate Matrix: Water** Prep Type: Total/NA **Prep Batch: 455777** 

**Analysis Batch: 456563** 

Total MSD MSD %Rec. Sample Sample Spike Uncert. **RER** RL **MDC** Unit Analyte Result Qual Added Result Qual  $(2\sigma + / -)$ %Rec Limits RER Limit Gross Alpha 1.38 49.6 47.24 6.58 3.00 1.16 pCi/L 60 - 140 0.42

Lab Sample ID: 440-258077-J-1-I MSBT **Client Sample ID: Matrix Spike Matrix: Water** Prep Type: Total/NA

**Analysis Batch: 456563** 

Total Sample Sample Spike MSBT MSBT %Rec. Uncert. Added **MDC** Unit Analyte Result Qual Result Qual  $(2\sigma + / -)$ RL %Rec Limits 85.0 Gross Beta 1.56 84.01 8.91 4.00 0.935 pCi/L 97 60 - 140

**Eurofins Calscience Irvine** 

**Prep Batch: 455777** 

Client: Haley & Aldrich, Inc.

Job ID: 440-258085-3 Project/Site: Routine Outfall 002 Comp

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity (Continued)

Lab Sample ID: 440-258077-J-1-J MSBTD

**Matrix: Water** 

Analysis Batch: 456563

**Client Sample ID: Matrix Spike Duplicate** 

Prep Type: Total/NA

**Prep Batch: 455777** 

						Total							
	Sample	Sample	Spike	MSBTD	MSBTD	Uncert.					%Rec.		RER
Analyte	Result	Qual	Added	Result	Qual	(2σ+/-)	RL	MDC	Unit	%Rec	Limits	RER	Limit
Gross Beta	1.56		84.9	82.77		8.79	4.00	0.852	pCi/L	96	60 - 140	0.07	1
Gross Beta	1.56		84.9	82.77		8.79	4.00	0.852	pCı/L	96	60 - 140	0.07	

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Lab Sample ID: MB 160-455492/1-A

**Matrix: Water** 

**Analysis Batch: 455513** 

**Client Sample ID: Method Blank** 

Prep Type: Total/NA **Prep Batch: 455492** 

Count Total MR MR Uncert. Uncert. Analyte Result Qualifier  $(2\sigma + / -)$  $(2\sigma + / -)$ RL MDC Unit Prepared Analyzed Dil Fac Cesium-137 -1.425 U 8.05 8.05 20.0 15.0 pCi/L 12/27/19 17:33 12/28/19 11:08 Potassium-40 -28.97 U 114 114 177 pCi/L 12/27/19 17:33 12/28/19 11:08

Lab Sample ID: LCS 160-455492/2-A

**Matrix: Water** 

Analysis Batch: 455514

**Client Sample ID: Lab Control Sample** 

Prep Type: Total/NA

**Prep Batch: 455492** 

Total LCS LCS Spike Uncert. %Rec. Analyte Added Result Qual  $(2\sigma + / -)$ RL**MDC** Unit %Rec Limits Americium-241 136000 128000 14800 429 pCi/L 94 90 - 111 Cesium-137 44000 43390 4350 20.0 114 pCi/L 99 90 - 111 72.8 pCi/L Cobalt-60 27300 26900 2670 89 - 110 99

Lab Sample ID: 440-258077-J-1-B DU

**Matrix: Water** 

**Analysis Batch: 455510** 

**Client Sample ID: Duplicate** 

Prep Type: Total/NA **Prep Batch: 455492** 

Total DU DU Sample Sample Uncert. **RER** Result Qual Result Qual RL **MDC** Unit Analyte  $(2\sigma + / -)$ RER Limit -5.64 U Cesium-137 -7.121 UG 13.5 20.0 22.8 pCi/L 0.06 Potassium-40 -1.92 U -13.29 U 122 173 pCi/L 0.05

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-455637/21-A

**Matrix: Water** 

**Analysis Batch: 457426** 

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

**Prep Batch: 455637** 

Count Total MB MB Uncert. Uncert. Analyte Result Qualifier  $(2\sigma + / -)$  $(2\sigma + / -)$ RLMDC Unit Prepared Analyzed Dil Fac Radium-226 -0.03724 U 0.0515 0.0516 1.00 0.124 pCi/L 12/30/19 12:05 01/21/20 15:47

MB MB

Qualifier Carrier Limits Prepared %Yield Analyzed Dil Fac 40 - 110 12/30/19 12:05 01/21/20 15:47 Ba Carrier 97.0

**Eurofins Calscience Irvine** 

Job ID: 440-258085-3

Prep Type: Total/NA

Prep Type: Total/NA

**Prep Batch: 455637** 

Prep Type: Total/NA

**Prep Batch: 455637** 

Client Sample ID: Lab Control Sample

**Client Sample ID: Matrix Spike** 

%Rec.

Limits

75 <sub>-</sub> 138

%Rec

92

**Client Sample ID: Matrix Spike Duplicate** 

MDC Unit

0.219 pCi/L

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

Method: 903.0 - Radium-226 (GFPC) (Continued)

Lab Sample ID: LCS 160-455637/1-A

**Matrix: Water** 

Analysis Batch: 457426

**Prep Batch: 455637** Total Spike LCS LCS %Rec. Uncert. Added RL MDC Unit Limits Analyte Result Qual  $(2\sigma + / -)$ %Rec Radium-226 75 - 125 11.3 10.03 1.05 1.00 0.112 pCi/L 88

1.50

1.00

LCS LCS

Carrier %Yield Qualifier Limits Ba Carrier 99.7 40 - 110

Lab Sample ID: 440-258077-F-1-A MS

**Analysis Batch: 457426** 

**Matrix: Water** 

Total Sample Sample Spike MS MS Uncert. Result Qual Added RL Analyte Result Qual  $(2\sigma + / -)$ 

15.1

40 - 110

13.95

MS MS Carrier %Yield Qualifier I imits

0.0339 U

Lab Sample ID: 440-258077-F-1-B MSD

79.1

**Matrix: Water** 

Radium-226

Ba Carrier

**Analysis Batch: 457426** 

Total MSD MSD Sample Sample **Spike** Uncert. %Rec. Analyte Result Qual Added Result Qual  $(2\sigma + / -)$ RL**MDC** Unit %Rec Limits RER Radium-226 0.0339 U 15.1 14.42 1.54 1.00 0.160 pCi/L 95 75 - 138 0.15

MSD MSD Carrier %Yield Qualifier Limits Ba Carrier 87.0 40 - 110

Lab Sample ID: 400-181761-B-1-A DU

**Matrix: Water** 

**Analysis Batch: 457426** 

Total DU DU **RER** Sample Sample Uncert.

Analyte RL **MDC** Unit Result Qual Result Qual  $(2\sigma + / -)$ RER Limit Radium-226 0.854 0.9704 0.228 1.00 0.160 pCi/L 0.26

DU DU Carrier **%Yield Qualifier** 

Limits 102 Ba Carrier 40 - 110

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-455646/21-A

**Matrix: Water** 

**Prep Batch: 455646** Analysis Batch: 456741 Count Total MB MB Uncert. Uncert.  $(2\sigma + / -)$ Analyte Result Qualifier  $(2\sigma + / -)$ RL **MDC** Unit Prepared Dil Fac Analyzed Radium-228 0.04520 U 0.223 0.223 <u>12/30/19 13:15</u> <u>01/14/20 16:58</u> 1.00 0.394 pCi/L

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RER

Limit

**Client Sample ID: Duplicate** Prep Type: Total/NA

**Prep Batch: 455637** 

-

Client: Haley & Aldrich, Inc.

Project/Site: Routine Outfall 002 Comp

Job ID: 440-258085-3

# Method: 904.0 - Radium-228 (GFPC) (Continued)

	MB M	1B		
Carrier	%Yield Q	ualifier Limits	Prepared Analyzed	Dil Fac
Ba Carrier	97.0	40 - 110	12/30/19 13:15 01/14/20 16:58	1
Y Carrier	87.8	40 - 110	12/30/19 13:15 01/14/20 16:58	1

Lab Sample ID: LCS 160-455646/1-A

**Matrix: Water** 

Analysis Batch: 456749

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

Prep Batch: 455646

				ı otal					
	Spike	LCS	LCS	Uncert.				%Rec.	
Analyte	Added	Result	Qual	(2σ+/-)	RL	MDC Unit	%Rec	Limits	
Radium-228	9.20	9.211		1.07	1.00	0.396 pCi/L	100	75 - 125	

LCS LCS

Carrier	%Yield	Qualifier	Limits
Ba Carrier	99.7		40 - 110
Y Carrier	89.3		40 - 110

Lab Sample ID: 440-258077-F-1-C MS

**Matrix: Water** 

**Analysis Batch: 456749** 

Client Sample ID: Matrix Spike

Prep Type: Total/NA Prep Batch: 455646

Total Sample Sample Spike MS MS Uncert. %Rec. Analyte Result Qual Added (2σ+/-) %Rec Limits Result Qual RL **MDC** Unit 0.0271 U Radium-228 12.3 11.90 1.48 1.00 0.619 pCi/L 97 45 - 150

 MS MS

 Carrier
 %Yield Plant
 Qualifier Qualifier
 Limits 40 - 110

 Ba Carrier
 79.1
 40 - 110

 Y Carrier
 87.5
 40 - 110

Lab Sample ID: 440-258077-F-1-D MSD

**Matrix: Water** 

Analysis Batch: 456749

**Client Sample ID: Matrix Spike Duplicate** 

Prop Patch: 455646

**Prep Batch: 455646** 

						Total						
	Sample	Sample	Spike	MSD	MSD	Uncert.				%Rec.		RER
Analyte	Result	Qual	Added	Result	Qual	(2σ+/-)	RL	MDC Unit	%Rec	Limits	RER	Limit
Radium-228	0.0271	U	12.3	12.10		1.47	1.00	0.623 pCi/L	98	45 - 150	0.07	1
		Analyte Result		Analyte Result Qual Added	Analyte Result Qual Added Result	Analyte Result Qual Added Result Qual	Sample Sample Spike MSD MSD Uncert. Analyte Result Qual Added Result Qual (2σ+/-)	Sample Sample Spike MSD MSD Uncert.  Analyte Result Qual Added Result Qual (2σ+/-) RL	Sample Sample Spike MSD MSD Uncert.  Analyte Result Qual Added Result Qual (2σ+/-) RL MDC Unit	Sample Sample Spike MSD MSD Uncert.  Analyte Result Qual Added Result Qual (2σ+/-) RL MDC Unit %Rec	Sample Sample Spike MSD MSD Uncert. %Rec. Analyte Result Qual Added Result Qual (2σ+/-) RL MDC Unit %Rec Limits	Sample Sample Spike MSD MSD Uncert. %Rec.  Analyte Result Qual Added Result Qual (2σ+/-) RL MDC Unit %Rec Limits RER

 MSD MSD

 Carrier
 %Yield Qualifier
 Limits

 Ba Carrier
 87.0
 40 - 110

 Y Carrier
 87.5
 40 - 110

Lab Sample ID: 400-181761-B-1-B DU

**Matrix: Water** 

Y Carrier

Analysis Batch: 456749

**Client Sample ID: Duplicate** 

Prep Type: Total/NA

**Prep Batch: 455646** 

					Total						
	Sample	Sample	DU	DU	Uncert.					R	RER
Analyte	Result	Qual	Result	Qual	(2σ+/-)	RL	MDC Un	it	REI	R Li	imit
Radium-228	0.584	-	1.003		0.398	1.00	0.548 pC	i/L	0.5	6	1

 DU DU

 Carrier
 %Yield Ba Carrier
 Qualifier 40 - 110
 Limits 40 - 110

40 - 110

88.7

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3

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Client: Haley & Aldrich, Inc. Job ID: 440-258085-3

Total

Count

Project/Site: Routine Outfall 002 Comp

Method: 905 - Strontium-90 (GFPC)

Lab Sample ID: MB 160-455843/10-A

**Matrix: Water** 

Analysis Batch: 456913

Client Sample ID: Method Blank

Prep Type: Total/NA

**Prep Batch: 455843** 

MB MB Uncert. Uncert. Result Qualifier **MDC** Unit Analyte  $(2\sigma + / -)$  $(2\sigma + / -)$ RI Prepared Analyzed Dil Fac Strontium-90 -0.05834 U 01/07/20 06:20 01/15/20 10:02 0.268 0.268 3.00 0.482 pCi/L

MB MB

Carrier Qualifier Limits Prepared Dil Fac %Yield Analyzed 40 - 110 01/07/20 06:20 01/15/20 10:02 Sr Carrier 85.9 Y Carrier 91.2 40 - 110 01/07/20 06:20 01/15/20 10:02

Lab Sample ID: LCS 160-455843/1-A

**Matrix: Water** 

**Analysis Batch: 456913** 

**Client Sample ID: Lab Control Sample** 

Prep Type: Total/NA

**Prep Batch: 455843** 

Total LCS LCS %Rec. Spike Uncert. Analyte Added RL **MDC** Unit %Rec Limits Result Qual  $(2\sigma + / -)$ Strontium-90 10.6 0.945 3.00 0.327 pCi/L 84 75 - 125 8.906

LCS LCS Carrier %Yield Qualifier Limits Sr Carrier 96.9 40 - 110 Y Carrier 96.8 40 - 110

Lab Sample ID: 440-258077-F-1-G MS

**Matrix: Water** 

**Analysis Batch: 456913** 

**Client Sample ID: Matrix Spike** 

Prep Type: Total/NA **Prep Batch: 455843** 

Sample Sample Spike MS MS

Uncert. %Rec. Analyte Result Qual Added Result Qual  $(2\sigma + / -)$ RL MDC Unit %Rec Limits Strontium-90 0.147 U 10.6 3.00 0.501 pCi/L 10.38 1.21 19 - 150

Total

MS MS Carrier %Yield Qualifier Limits Sr Carrier 59.4 40 - 110 Y Carrier 92.3 40 - 110

Lab Sample ID: 440-258077-F-1-H MSD

**Matrix: Water** 

**Analysis Batch: 456913** 

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

**Prep Batch: 455843** 

Sample Sample Spike MSD MSD Uncert.

%Rec. **RER** Result Qual Added Result Qual  $(2\sigma + / -)$ RL **MDC** Unit %Rec Limits Limit **Analyte** RER Strontium-90 0.147 U 10.6 10.34 1.15 3.00 0.477 pCi/L 96 19 - 150 0.02

Total

MSD MSD

Carrier %Yield Qualifier Limits Sr Carrier 40 - 110 70.6 Y Carrier 95.3 40 - 110

**Eurofins Calscience Irvine** 

Client: Haley & Aldrich, Inc.

Project/Site: Routine Outfall 002 Comp

Job ID: 440-258085-3

### Method: 906.0 - Tritium, Total (LSC)

Lab Sample ID: MB 160-455651/1-A

**Matrix: Water** 

Analysis Batch: 456022

Client Sample ID: Method Blank

Prep Type: Total/NA **Prep Batch: 455651** 

Count Total мв мв Uncert. Uncert. Result Qualifier  $(2\sigma + / -)$ **MDC** Unit Analyte  $(2\sigma + / -)$ RI Prepared Analyzed Dil Fac -49.55 U 280 pCi/L <u>12/30/19 13:27</u> <u>12/31/19 09:18</u> Tritium 149 149 500

Lab Sample ID: LCS 160-455651/2-A

**Matrix: Water** 

Analysis Batch: 456022

**Client Sample ID: Lab Control Sample** 

Prep Type: Total/NA **Prep Batch: 455651** 

Total Spike LCS LCS %Rec. Uncert. Added Analyte Result Qual  $(2\sigma + / -)$ RL MDC Unit %Rec Limits Tritium 2510 2646 413 500 286 pCi/L 105 75 - 114

Lab Sample ID: 440-258077-I-1-B MS

**Matrix: Water** 

Analysis Batch: 456022

**Client Sample ID: Matrix Spike** 

Prep Type: Total/NA

**Prep Batch: 455651** 

Total Spike Sample Sample MS MS Uncert. %Rec. Added Analyte Result Qual Result Qual  $(2\sigma + / -)$ RL MDC Unit %Rec Limits Tritium 40.5 U 2510 2556 410 500 294 pCi/L 100 67 - 130

Lab Sample ID: 440-258077-I-1-C MSD

**Matrix: Water** 

Analysis Batch: 456022

Client Sample ID: Matrix Spike Duplicate Prep Type: Total/NA

**Prep Batch: 455651** 

Total Sample Sample Spike MSD MSD Uncert. %Rec. **RER MDC** Unit Result Qual Added RL Analyte Result Qual  $(2\sigma + / -)$ %Rec Limits RFR Limit 40.5 U Tritium 2500 2430 391 500 279 pCi/L 95 67 - 130 0.16

#### Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Lab Sample ID: MB 160-455686/1-A

**Matrix: Water** 

**Analysis Batch: 457035** 

**Client Sample ID: Method Blank** 

Prep Type: Total/NA

**Prep Batch: 455686** 

Count Total MB MB Uncert. Uncert. Analyte Result Qualifier  $(2\sigma + / -)$  $(2\sigma + / -)$ RL **MDC** Unit Prepared Analyzed Dil Fac 12/30/19 16:10 01/16/20 09:32 **Total Uranium** 0.2103 0.180 0.181 1.00 0.182 pCi/L MB MB

**%Yield Qualifier** Limits Dil Fac Tracer Prepared Analyzed <u>12/30/19 16:10</u> <u>01/16/20 09:32</u> Uranium-232 83.2 30 - 110

Lab Sample ID: LCS 160-455686/2-A

**Matrix: Water** 

**Analysis Batch: 457036** 

**Client Sample ID: Lab Control Sample** 

Prep Type: Total/NA

**Prep Batch: 455686** 

				Total					
	Spike	LCS	LCS	Uncert.					%Rec.
Analyte	Added	Result	Qual	(2σ+/-)	RL	MDC	Unit	%Rec	Limits
Uranium-234	25.5	24.59		2.97	1.00	0.329	pCi/L	97	75 - 125
Uranium-238	26.0	25.84		3.08	1.00	0.309	pCi/L	99	75 <sub>-</sub> 125

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# QC Sample Results

Client: Haley & Aldrich, Inc. Job ID: 440-258085-3

Project/Site: Routine Outfall 002 Comp

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Lab Sample ID: LCS 160-455686/2-A **Matrix: Water** 

**Analysis Batch: 457036** 

LCS LCS

Tracer **%Yield Qualifier** Limits Uranium-232 60.6 30 - 110

Lab Sample ID: 440-258077-F-1-E MS

**Matrix: Water** 

Analysis Batch: 457038

**Client Sample ID: Matrix Spike** Prep Type: Total/NA

Prep Type: Total/NA

**Prep Batch: 455686** 

**Prep Batch: 455686** 

Total Sample Sample Spike MS MS Uncert. %Rec. RL Analyte Result Qual Added **MDC** Unit %Rec Limits Result Qual  $(2\sigma + / -)$ Uranium-234 0.128 U 25.5 23.28 2.86 1.00 0.424 pCi/L 91 65 - 146 Uranium-238 0.0960 U 26.0 25.85 3.09 1.00 0.349 pCi/L 99 68 - 143

MS MS

Tracer %Yield Qualifier Limits Uranium-232 61.7 30 - 110

Lab Sample ID: 440-258077-F-1-F MSD

**Matrix: Water** 

Analysis Batch: 457042

Client Sample ID: Matrix Spike Duplicate

**Client Sample ID: Lab Control Sample** 

Prep Type: Total/NA

**Prep Batch: 455686** 

Total Sample Sample **Spike** MSD MSD Uncert. %Rec. **RER** Analyte Result Qual Added  $(2\sigma + / -)$ RL MDC Unit %Rec Limits RER Limit Result Qual Uranium-234 0.128 U 25.5 1.00 0.446 pCi/L 65 - 146 23.64 2.93 92 0.06 Uranium-238 0.0960 U 26.0 24.68 3.02 1.00 68 - 143 0.367 pCi/L 94 0.19

MSD MSD

%Yield Qualifier Tracer Limits 68.1 30 - 110 Uranium-232

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# **QC Association Summary**

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

Rad

<b>D</b>	Dordalis .	455400
Preb	Batch:	455492

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-1	Outfall002_20191224_Comp	Total/NA	Water	Fill_Geo-0	
MB 160-455492/1-A	Method Blank	Total/NA	Water	Fill_Geo-0	
LCS 160-455492/2-	A Lab Control Sample	Total/NA	Water	Fill_Geo-0	
440-258077-J-1-В [	OU Duplicate	Total/NA	Water	Fill_Geo-0	

#### **Prep Batch: 455637**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-1	Outfall002_20191224_Comp	Total/NA	Water	PrecSep-21	
MB 160-455637/21-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-455637/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
440-258077-F-1-A MS	Matrix Spike	Total/NA	Water	PrecSep-21	
440-258077-F-1-B MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep-21	
400-181761-B-1-A DU	Duplicate	Total/NA	Water	PrecSep-21	

#### **Prep Batch: 455646**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-1	Outfall002_20191224_Comp	Total/NA	Water	PrecSep_0	
MB 160-455646/21-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-455646/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
440-258077-F-1-C MS	Matrix Spike	Total/NA	Water	PrecSep_0	
440-258077-F-1-D MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep_0	
400-181761-B-1-B DU	Duplicate	Total/NA	Water	PrecSep_0	

#### **Prep Batch: 455651**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-1	Outfall002_20191224_Comp	Total/NA	Water	LSC_Dist_Susp	
MB 160-455651/1-A	Method Blank	Total/NA	Water	LSC_Dist_Susp	
LCS 160-455651/2-A	Lab Control Sample	Total/NA	Water	LSC_Dist_Susp	
440-258077-I-1-B MS	Matrix Spike	Total/NA	Water	LSC_Dist_Susp	
440-258077-I-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	LSC_Dist_Susp	

#### **Prep Batch: 455686**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-1	Outfall002_20191224_Comp	Total/NA	Water	ExtChrom	
MB 160-455686/1-A	Method Blank	Total/NA	Water	ExtChrom	
LCS 160-455686/2-A	Lab Control Sample	Total/NA	Water	ExtChrom	
440-258077-F-1-E MS	Matrix Spike	Total/NA	Water	ExtChrom	
440-258077-F-1-F MSD	Matrix Spike Duplicate	Total/NA	Water	ExtChrom	

#### **Prep Batch: 455777**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-1	Outfall002_20191224_Comp	Total/NA	Water	Evaporation	
MB 160-455777/1-A	Method Blank	Total/NA	Water	Evaporation	
LCS 160-455777/2-A	Lab Control Sample	Total/NA	Water	Evaporation	
LCSB 160-455777/3-A	Lab Control Sample	Total/NA	Water	Evaporation	
440-258077-J-1-G MS	Matrix Spike	Total/NA	Water	Evaporation	
440-258077-J-1-H MSD	Matrix Spike Duplicate	Total/NA	Water	Evaporation	
440-258077-J-1-I MSBT	Matrix Spike	Total/NA	Water	Evaporation	
440-258077-J-1-J MSBTD	Matrix Spike Duplicate	Total/NA	Water	Evaporation	

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Job ID: 440-258085-3

# **QC Association Summary**

Client: Haley & Aldrich, Inc.

Job ID: 440-258085-3

Project/Site: Routine Outfall 002 Comp

Rad

**Prep Batch: 455843** 

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258085-1	Outfall002_20191224_Comp	Total/NA	Water	PrecSep-7	
MB 160-455843/10-A	Method Blank	Total/NA	Water	PrecSep-7	
LCS 160-455843/1-A	Lab Control Sample	Total/NA	Water	PrecSep-7	
440-258077-F-1-G MS	Matrix Spike	Total/NA	Water	PrecSep-7	
440-258077-F-1-H MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep-7	

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# **Definitions/Glossary**

Client: Haley & Aldrich, Inc.

Job ID: 440-258085-3

Project/Site: Routine Outfall 002 Comp

#### **Qualifiers**

RPD

TEF

**TEQ** 

Rad Qualifier	Qualifier Description
G	The Sample MDC is greater than the requested RL.
U	Result is less than the sample detection limit.

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)

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

Toxicity Equivalent Factor (Dioxin)
Toxicity Equivalent Quotient (Dioxin)

# **Accreditation/Certification Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Routine Outfall 002 Comp

Job ID: 440-258085-3

## **Laboratory: Eurofins Calscience Irvine**

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	<b>Expiration Date</b>
California	State Program	CA ELAP 2706	06-30-20

## Laboratory: Eurofins TestAmerica, St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
ANAB	Dept. of Defense ELAP	L2305	04-06-22
ANAB	Dept. of Energy	L2305.01	04-06-22
ANAB	ISO/IEC 17025	L2305	04-06-22
Arizona	State	AZ0813	12-08-20
California	Los Angeles County Sanitation Districts	10259	06-30-20
California	State	2886	06-30-20
Connecticut	State	PH-0241	03-31-21
Florida	NELAP	E87689	06-30-20
HI - RadChem Recognition	State	n/a	06-30-20
Illinois	NELAP	004553	11-30-19 *
lowa	State	373	09-17-20
Kansas	NELAP	E-10236	10-31-20
Kentucky (DW)	State	KY90125	12-31-20
Louisiana	NELAP	04080	06-30-20
Louisiana (DW)	State	LA011	12-31-20
Maryland	State	310	09-30-20
MI - RadChem Recognition	State	9005	06-30-20
Missouri	State	780	06-30-22
Nevada	State	MO000542020-1	07-31-20
New Jersey	NELAP	MO002	06-30-20
New York	NELAP	11616	04-01-20
North Dakota	State	R-207	06-30-20
NRC	NRC	24-24817-01	12-31-22
Oklahoma	State	9997	08-31-20
Pennsylvania	NELAP	68-00540	02-28-20
South Carolina	State	85002001	06-30-20
Texas	NELAP	T104704193-19-13	07-31-20
US Fish & Wildlife	US Federal Programs	058448	07-31-20
USDA	US Federal Programs	P330-17-00028	02-02-20
Utah	NELAP	MO000542019-11	07-31-20
Virginia	NELAP	10310	06-14-20
Washington	State	C592	08-30-20
West Virginia DEP	State	381	10-31-20

**Eurofins Calscience Irvine** 

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<sup>\*</sup> Accreditation/Certification renewal pending - accreditation/certification considered valid.

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Sampler	ALL THE PROPERTY OF THE PROPER				Field Ma 978.234.50	Field Manager: Mark Dominick 978.234.5033. 818.599.0702 (cell)	Dominick 0702 (cell)					iorate				0	
Sample	Sample 1 D	Sampling Date/Time	Sample	Container Type	# of Cont	Preservative	Bottle #	GSW/SW				Юетсі				. 12	
	THE PROPERTY OF THE PROPERTY O		MW	500 mL Paiy	<b>V</b>	NH QNH	8	Ŷ.	×						×	×	A List of the state of the stat
		-	MM	1 L Glass Amber	2	None	110	Š		×						L	
			WW	11, Poly	-	None	115	Š		×						L	
<del></del>		`	MAN	500 mL Poly	2	None	120	No.			×						
	Outfall002_20191224_Comp	12/24/2019	WW.	500 mL Poly	2	None	98	Š				×					48 hours Holding Time NO <sub>3</sub> & NO <sub>2</sub>
		5%%	MW	500 mL Poly	-	None	150	No				×					48 hour holding time for turbidity
Outfall 002			WW	500 mL Poly	+	νος:Ή	82	Ñ					×				
			WW	1 Ł Glass Amber	2	None	1,00	o <sub>X</sub>						×			
			WW	1 L Glass Amber	2	None	180	ON.						_	×		
			MAN	1L Poly	-	None	185	ફ		_			×			_	
4	**************************************		WW	1 L Glass Amber	67	None	ŝ	ž		I							Hoid
			MW	500 mL Poly	2	None	120	No			r						Hold
	Outfall002_20191224_Comp_Extra	12/24/2019	WW	500 mL Poly	2	None	130	No				r					нои
		15.50V	WW (	1 L Glass Amber	2	None	170	NC						I			Hold
			MAM	1 L Glass Amber	2	None	180	No						±			Hold
		Legel	end: A=Ann	Legend: A=Annual, C=Conditional, EP=Exper	onal, EP=Exp	ert Panel, R=	Routine, O=Qu	t Panel, R=Routine, Q=Qyarterly, QRSW=Quarterly Receiving Water, S=Semi-Annual	/=Quarterly	/ Receivin	g Water,	S=Semi-	Annual			State and the state of the stat	
1/2/	Y1.71 /	16/6/5/	7	4				13	2118	1	100	6/11	ć	4 8	24 Hour	72 Hour	.r 10 Day x Normal
elinguished By	Date/Time	3	тралу				Received By		Date	9	1			T			
	May I	カイン	7) 6		66	Q	7	\						Sample	pie Integrit	Sample Integrity (Check) Intact	On foe
Reinquished By	Date/Time	Ö	отралу				Received By	7/	Date		refer	1/1/	1133	7	Store samples Data Requirem	Store samples for 6 months (Data Requirements (Check) No Level IV	A
						_	:5/1	w 1./.	7	G'							
119-2020 Ra	24/202 24/202					· - (	21/18	~ ~	$\frac{\omega}{\omega}$	_	(2)	17239					
ersion 1						`	, '.' '.'	_	-	· C				440-25	8085 CF	440-258085 Chain of Custody	ustody
							(		1 / 0	)							***************************************

Test America

										۲		1				Γ
Client Nan	Client Name/Address											₹	ANALYSIS RE	KEQUIRED		<b>T</b>
Haley & Aldrich 5333 Mission Cer San Diego, CA 92	Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108				Boe	Project. Boeing-SSFL NPDES Permit 2019	S			,(0 009 1507, (0 15093	08 0) K-	(1 95	741-			
Test America Contr 17461 Denan Ave 8 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055	Test America Contact: Urvasin Patel 17461 Denan Ave Surte #100 Invine CA 92614 1949-260-3269 Cell 949-333-9055				Koutine O	uffall (001, 002, Outfall 002 Comp	011, 018 <u>j</u>		q, Se	3/4E / E335 2) (Cross Beta(E) (C), Sr-90 (E905 (C), Uranium (E9	9), Uranium (E9 1 or E901 1) elenastrum 1) = "   Lenere	als Mercury (E2	23.6 ; J		Comments	
TestAmenca's ( 2019-22-TestAn	TestAmenta's services under this CAC shall be performed in accordance with the 15cD within Blankel Service Agresments 2016-22. TestAmenta by and between Haley & Adnich, inc. its subsidiance and affisials and TestAmenta Laboratories inc.	he TSCs within Blanket Service Agree d afficates, and TestAmenca Laborato	ment#		Project II 520.289.8	Project Manager Katherine Miller 520,289,8606, 520 904,6944 (cell)	rine Miller 3944 (cell)		o '4a '				Z' ()		<del>- ,</del>	
Sampler.	Table 1 and				Field M 978.234.5	Field Manager: Mark Dominick 978.234,5033, 818.599.0702 (cell)	Xorninick 1702 (cell)		Dissolv D) (S) Cu			4005 <u>2</u>			41	
Sample Description	Sample I D	Sampling Date/Time	Sample Matrix	Container Type	# af Cont.	Preservative	Bottle #	MS/MSD	(ES00			IstoT.	ود			
	Outtall002_20191224_Comp_F	, 610242021	W <sub>N</sub>	1L Poly		None	200	ON.	×		***************************************	×			A 2. A Sept of the first of the september of the septembe	<b>\$</b>
Pa		250	WW	borosilicate vials	-	None	320	οχ				×			Sample receiving DO NOT OPEN BAG Bag to be opened in Mercury Prep using clean procedures	
Outfail 002			WW	500 mL Poly	-	HOEN	220	2		×						
		•	N.V.	2 5 Gal Cube	-	None	225	Νο		*					Unfiltered and unpreserved analysis Separate RAD onto another workorder	
	Outfall002_20191224_Comp	12/24/2019		1 L Glass Amber	-	None	230	No							Analyze duplicate, not MSMISD	
		48:0	WW	1 Gal Cube	æ	None	235	2			1/2	Q <sub>Q</sub>			ال به بال ولا به ولايا " بكم ويا به بالوام المهم والمراز الماع والمراز الماع ويا بديم والمار الماع ويا المال ولا به ولايا " بكافر ويا به بالماء بالمهم الماية ويا	
	Out tell OC 2 noight - Coal	12/21	<u>ر</u> ک	1 5/W M 1 1 4 WAST	۲	HCI	275	2,7					×		ためない ずれい イン	1 1
			3													<del></del>
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	***************************************															
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Refinduished By	d By Date/Time	`	any	Legend: A=Annual, C=Conditional, EP=Expert Correny	nai, EP=Expe		Panel, ReRoutine, G#Guarterty, QRSW=Quarterty Receiving Water, S#Semi-Annual Received By Datefine	terfy, QRSW=	Quarterly F	Receiving W	ater, S=Sem	Annual	Turn-aro	Turn-around time (Check) 24 Hour 72 Hou	(Check) 10 Day X	T
Relinguished By	18y Datestine	4-19 /1015 Company	any				Received By		Date/Time	7	1/2/	9	A Hour	cour	5 Day Normal	
	Jana 1,000	12/24			12.90		1					•	Samp	Sample Integrity (Check) Intact	Check) On loe	
Relinquished By		i i	any				Rede/fed By	M	Date/Time	室	2/27	30	Store	Store samples for 6 months Data Requirements (Check) No Level IV		
1/2							7	\								

Carrier Tracking No(s):

# Chain of Custody Record

Eurofins TestAmerica, Irvine

17461 Derian Ave Suite 100

Irvine, CA 92614-5817

Phone: 949-261-1022 Fax: 949-260-3297

M - Hexane
N - None
O - AsNaC2
P - Na2C4S
Q - Na2S2C3
R - Na2S2C3
S - H2SC4
T - TSP Dodecahydrate Boeing SSFL; DO NOT FILTER; use prep Interestive acceptations are subject to change, Eurofins TestAmerica 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 an acceptation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins sestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins TestAmerica. Special Instructions/Note: Ver: 01/16/2019 Z - other (specify) EN4ST U - Acetone V - MCAA W - pH 4-5 Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)

Return To Client Disposal By Lab Archive For Mon date from preservation Preservation Codes: A - HCL
B - NaOH
C - Zn Acetate
C - Nitro Acid
E - NaHSO4
F - MeOH
G - Amchlor
H - Ascorbic Acid 440-150576.1 440-258085-1 SIN N Page: Page 1 of 1 I - Ice J - DI Water K - EDTA L - EDA Total Number of containers Date/Time: 17-279 Method of Shipment: State of Origin: California Analysis Requested Sooler Temperature(s) °C and Other Remarks Special Instructions/QC Requirements: × 906.0/LSC\_Dist\_Susp Tritium 305\_Sr90/PrecSep\_7 Strontium-90 × urvashl.patel@testamericainc.com Accreditations Required (See note): State Program - California × 904.0/PrecSep\_0 Radium-228 × 903.0/PrecSep\_21 Radium-226 × 900.0/Evaporation Gross Alpha/Beta Received by: A01R\_U/ExtChrom\_Actin Total Uranium × × 127\_Cs/Fill\_Geo\_0 K-40 and Cesium-137 Patel, Urvashi Perform MS/MSD (Yes or No) ime: 181 E-Mail: BT=Tissue, A=Air S=solid, O=waste/oil, Matrix Preservation Code: Water to company Company Sample (C=comp, G=grab) Type 17.0 Primary Deliverable Rank: 2 Sample Pacific Time 08:20 Date: (days) Due Date Requested: 1/7/2020 Sample Date 12/24/19 Project #: 44009879 SSOW#: Date/Time: Phone: WO# Client Information (Sub Contract Lab) Deliverable Requested: I, III, IV, Other (specify) Outfall002\_20191224\_Comp (440-258085-1) Custody Seal No.: Sample Identification - Client ID (Lab ID) 314-298-8566(Tel) 314-298-8757(Fax) Possible Hazard Identification TestAmerica Laboratories, Inc. **Boeing NPDES SSFL outfalls** Empty Kit Relinquished by: Custody Seals Intact: 13715 Rider Trail North A Yes A No Shipping/Receiving ò. rquished by: Inconfirmed Inquished by: State, Zip: MO, 63045 Earth City Tail

# **Login Sample Receipt Checklist**

Client: Haley & Aldrich, Inc.

Job Number: 440-258085-3

SDG Number:

Login Number: 258085 List Source: Eurofins Irvine

List Number: 1

Creator: Soderblom. Tim

Answer	Comment
True	
N/A	Not present
N/A	Not Present
True	
N/A	
True	
True	
True	
True	
N/A	
	True N/A N/A True True True True True True True True

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# Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc. Job Number: 440-258085-3

SDG Number:

Login Number: 258085 List Source: Eurofins TestAmerica, St. Louis List Number: 2

List Creation: 12/27/19 12:57 PM

Creator: Hellm, Michael

Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td> <td>23</td>	True	23
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	0.1
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").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Client: Haley & Aldrich, Inc.

Project/Site: Routine Outfall 002 Comp

Job ID: 440-258085-3

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)	
400-181761-B-1-A DU	Duplicate	102	
440-258077-F-1-A MS	Matrix Spike	79.1	
440-258077-F-1-B MSD	Matrix Spike Duplicate	87.0	
440-258085-1	Outfall002_20191224_Comp	82.7	
LCS 160-455637/1-A	Lab Control Sample	99.7	
MB 160-455637/21-A	Method Blank	97.0	
Tracer/Carrier Legend			
Ba Carrier = Ba Carrier			

Method: 904.0 - Radium-228 (GFPC)

Matrix: Water Prep Type: Total/NA

		Ba Carrier	Y Carrier	
Lab Sample ID	Client Sample ID	(40-110)	(40-110)	
400-181761-B-1-B DU	Duplicate	102	88.7	
440-258077-F-1-C MS	Matrix Spike	79.1	87.5	
440-258077-F-1-D MSD	Matrix Spike Duplicate	87.0	87.5	
440-258085-1	Outfall002_20191224_Comp	82.7	88.7	
LCS 160-455646/1-A	Lab Control Sample	99.7	89.3	
MB 160-455646/21-A	Method Blank	97.0	87.8	

Ba Carrier = Ba 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)	
440-258077-F-1-G MS	Matrix Spike	59.4	92.3	
440-258077-F-1-H MSD	Matrix Spike Duplicate	70.6	95.3	
440-258085-1	Outfall002_20191224_Comp	75.0	94.2	
LCS 160-455843/1-A	Lab Control Sample	96.9	96.8	
MB 160-455843/10-A	Method Blank	85.9	91.2	
Tracer/Carrier Legend				
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)	
440-258077-F-1-E MS	Matrix Spike	61.7	
440-258077-F-1-F MSD	Matrix Spike Duplicate	68.1	
440-258085-1	Outfall002_20191224_Comp	96.1	

**Eurofins Calscience Irvine** 

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# **Tracer/Carrier Summary**

Client: Haley & Aldrich, Inc.

Job ID: 440-258085-3

Project/Site: Routine Outfall 002 Comp

Uranium-232 = Uranium-232

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 160-455686/2-A	Lab Control Sample	60.6	
MB 160-455686/1-A	Method Blank	83.2	

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# **Environment Testing** TestAmerica

# Sacramento Sample Receiving Notes

	Track
440-258085 Field Sheet	so

SO PO / FO / SAT / 2-Day / Ground / UPS / CDO / Courie
GSO / OnTrac / Goldstreak / USPS / Other ody Seal, Temperature & corrected Temperature & other observations.
Therm. ID: Corr. Factor: (+ 12) 0.2 °C  Ice Wet Gel Other  Cooler Custody Seal: Seal

lce	Net Gel	Other_	
Cooler Custo	dy Seal: Seal		
	-		
Temp Observ	ed: 1-0 °C Correct	ted:	8_°C
Froi	m: Temp Blank,⊅ Samp	ole 🗅	
During Initial	Triage	Yes N	o NA
Cooler compr	omised/tampered with?		
Cooler Tempe	erature is acceptable?	pr D	
CoC is compl	ete w/o discrepancies?	Þ 🗅	
Samples rece	ived within holding time?	D D	
Initials: \$7	Date:	27/14	
During Label		Yes N	o NA
Samples com	promised/tampered with?	DØ	
Sample conta	iners have legible labels?	D D	
Sample custo	dy seal?		P
Containers ar	e not broken or leaking?	p D	
Sample date/	times are provided?	Ø D	
Appropriate c	ontainers are used?	P D	
Sample bottle	s are completely filled?	ø D	
Sample prese	ervatives verified?		Ø
Samples w/o	discrepancies?	p' D	0
Zero headspa	ice?*		回
Alkalinity has	no headspace?		P
Perchlorate h	as headspace? , 331, 6850)	ם ם	Þ
Multiphasic sa	amples are not present?	p D	
NCM Filed			Ø
Initials:	'K Date: 12/	27/19	
*Containers requiring	zero headspace have no headspace,	or bubble < 6	mm (1/4")



# **ANALYTICAL REPORT**

Eurofins Calscience Irvine 17461 Derian Ave Suite 100 Irvine, CA 92614-5817

Tel: (949)261-1022

Laboratory Job ID: 440-258164-1

Client Project/Site: Routine Outfall 008 Grab

#### For:

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

Attn: Katherine Miller

Authorized for release by: 1/10/2020 10:07:29 AM

Christian Bondoc, Project Manager I (949)260-3218

christian.bondoc@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.

Project/Site: Routine Outfall 008 Grab

Christian Bondoc Project Manager I 1/10/2020 10:07:29 AM Laboratory Job ID: 440-258164-1

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

Client: Haley & Aldrich, Inc. Project/Site: Routine Outfall 008 Grab Laboratory Job ID: 440-258164-1

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# **Sample Summary**

Client: Haley & Aldrich, Inc. Project/Site: Routine Outfall 008 Grab

Job ID: 440-258164-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
440-258164-1	Outfall008_20191226_Grab	Water	12/26/19 08:10	12/26/19 11:45	

#### **Case Narrative**

Client: Haley & Aldrich, Inc.

Project/Site: Routine Outfall 008 Grab

Job ID: 440-258164-1

Job ID: 440-258164-1

**Laboratory: Eurofins Calscience Irvine** 

Narrative

Job Narrative 440-258164-1

#### Comments

No additional comments.

#### Receipt

The samples were received on 12/26/2019 11:45 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.6° C.

#### **Organic Prep**

Methods 1664A: Lowered reporting limits are provided for the following samples due to excess sample provided for preparation/analysis: (440-258344-A-4-A) and (440-258344-A-4-B MS). Note that these samples are composites: there were 2 full liters for each composite. Method 1664A.

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. Job ID: 440-258164-1

Project/Site: Routine Outfall 008 Grab

Client Sample ID: Outfall008\_20191226\_Grab Lab Sample ID: 440-258164-1

Date Collected: 12/26/19 08:10 Matrix: Water

Date Received: 12/26/19 11:45

General Chemistry										
Analyte	Result	Qualifier	RL	MDL	Unit	D	)	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		4.9	1.4	mg/L		-	01/03/20 15:57	01/03/20 18:27	1

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# **Method Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Routine Outfall 008 Grab

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 = Eurofins Calscience Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

Eurofins Calscience Irvine

Job ID: 440-258164-1

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#### **Lab Chronicle**

Client: Haley & Aldrich, Inc.

Job ID: 440-258164-1

Project/Site: Routine Outfall 008 Grab

Client Sample ID: Outfall008\_20191226\_Grab Lab Sample ID: 440-258164-1

Date Collected: 12/26/19 08:10 Matrix: Water

Date Received: 12/26/19 11:45

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	1664A			1030 mL	1000 mL	589086	01/03/20 15:57	AJH	TAL IRV
Total/NA	Analysis	1664A		1			589113	01/03/20 18:27	AJH	TAL IRV

#### **Laboratory References:**

TAL IRV = Eurofins Calscience 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. Job ID: 440-258164-1

RL

5.0

Spike

Added

40.0

Spike

Added

40.0

**MDL** Unit

LCS LCS

LCSD LCSD

37.2

Result Qualifier

38.3

Result Qualifier

1.4 mg/L

Unit

mg/L

Unit

mg/L

Project/Site: Routine Outfall 008 Grab

Method: 1664A - HEM and SGT-HEM

Lab Sample ID: MB 440-589086/1-A

**Matrix: Water Analysis Batch: 589113** 

MB MB Analyte Result Qualifier

HEM (Oil & Grease) ND Lab Sample ID: LCS 440-589086/2-A

**Matrix: Water Analysis Batch: 589113** 

HEM (Oil & Grease)

Lab Sample ID: LCSD 440-589086/3-A **Matrix: Water** 

**Analysis Batch: 589113** 

Analyte

HEM (Oil & Grease)

Lab Sample ID: 440-258344-A-4-B MS

**Matrix: Water** 

**Analysis Batch: 589113** 

Analyte HEM (Oil & Grease) Sample Sample Result Qualifier

6.3

Spike Added 20.5

MS MS Result Qualifier 26.0

Unit mg/L

D %Rec 96

Prepared

D %Rec

D %Rec

93

96

**Client Sample ID: Lab Control Sample** 

Dil Fac

Prep Type: Total/NA **Prep Batch: 589086** 

Prep Type: Total/NA

Prep Batch: 589086

%Rec. Limits

78 - 114

Analyzed

Client Sample ID: Method Blank

01/03/20 15:57 01/03/20 18:27

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

**Prep Batch: 589086** 

%Rec. **RPD** Limits RPD Limit 78 - 114

**Client Sample ID: Matrix Spike** Prep Type: Total/NA

**Prep Batch: 589086** %Rec.

Limits 78 - 114

1/10/2020

# **QC Association Summary**

Client: Haley & Aldrich, Inc. Job ID: 440-258164-1

Project/Site: Routine Outfall 008 Grab

# **General Chemistry**

#### Prep Batch: 589086

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258164-1	Outfall008_20191226_Grab	Total/NA	Water	1664A	
MB 440-589086/1-A	Method Blank	Total/NA	Water	1664A	
LCS 440-589086/2-A	Lab Control Sample	Total/NA	Water	1664A	
LCSD 440-589086/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	
440-258344-A-4-B MS	Matrix Spike	Total/NA	Water	1664A	

#### **Analysis Batch: 589113**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258164-1	Outfall008_20191226_Grab	Total/NA	Water	1664A	589086
MB 440-589086/1-A	Method Blank	Total/NA	Water	1664A	589086
LCS 440-589086/2-A	Lab Control Sample	Total/NA	Water	1664A	589086
LCSD 440-589086/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	589086
440-258344-A-4-B MS	Matrix Spike	Total/NA	Water	1664A	589086

## **Definitions/Glossary**

Client: Haley & Aldrich, Inc. Job ID: 440-258164-1

Project/Site: Routine Outfall 008 Grab

Glossary

DL

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, RA, RE, IN Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample DLC Decision Level Concentration (Radiochemistry)

Detection Limit (DoD/DOE)

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. Job ID: 440-258164-1

Project/Site: Routine Outfall 008 Grab

## **Laboratory: Eurofins Calscience Irvine**

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	<b>Expiration Date</b>
California	State Program	CA ELAP 2706	06-30-20

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Time of Readings: 0805 Meter serial # Date/Time: 12.26-19/0810 12/26/19 LD 50 Day 9 5 6 All Level IV Checked by: 22-22-Por 45. 9 -C/E Field Readings PH 7.45 pH unit 1881 Field readings QC Store samples for 6 months Data Requirements (Check) 72 Hour 5 Day (Urn-around time (Check) Sample Integrity (Check) Extra Bottles 용 24 Hour \_\_\_\_ 48 Hour nfact 2.8/2.6 145 01:01 Legend: A=Annua; C=Conditional, EP=Expert Panel, R=Routine, Q=Quarterly, QRSW=Quarterly Receiving Water, S=Semi-Annual Company / Date: Internal By 440-258164 Chain of Custody 12/26/19 Recover By CEVBIS 12/26/14 TAIR Oil & Grease (E1664A-HEM) MS/MSD 2 £ Bottle # Project Manager: Katherine Miller 520,289 8606, 520,904.6944 (cell) ħ tō Field Manager Mark Dominick 978 234.5033, 818.599.0702 (cell) Project:
Boeing-SSFI NPDES
Permit 2019
Routine Outfall (008)
Outfall 008
Grab Preservative Ş Ÿ # of Cont 1 L Glass Amber Contamer Type 11. Glass Amber 0/0/ 54:11 Sample 12/26/2019/05:0 WM MW 0180/ 610202221 Testaments's services under this COC shall be performed in accordance with the T80s within Blanket Service Agreem 2019-22-Testaments by and between Helley & Aldrich, Inc. its subsidiaries and affiliates, and Testamenta Laboratione Sampling Date/Time 12-26-19 Date-Time Outfall008\_20191226\_Grab\_Extra Outfall008\_20191226\_Grab Test America Contact. Unvash Patel 17461 Dentan Ave Suite #100 10me CA 92614 Tel 949-328-329 Cell 949-333-9055 Sample I D

CHAIN OF CUSTODY FORM

Test America

5333 Mission Center Rd Suite 300

San Diego, CA 92108 Haley & Aldrich

1/1 | 0/0 | 2019-2020 Rainy Season | 0 Version 1

Sample Description Outfall 008

Sampler

Robaire Gerbas

Client: Haley & Aldrich, Inc.

Job Number: 440-258164-1

Login Number: 258164 List Source: Eurofins Irvine

List Number: 1

Creator: Soderblom, Tim

Creator. Societioni, Tilli		
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	

**Eurofins Calscience Irvine** 

#### **DATA VALIDATION REPORT**

# **Boeing SSFL NPDES**

SAMPLE DELIVERY GROUP: 440-258227-1

#### **Prepared for**

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

24 January 2020





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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<sup>x</sup> Project No.: 1272.003D.01 002

Sample Delivery Group: 440-258227-1

**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	Matrix	Collection	Method
OUTFALL008_20191227_ COMP	440-258227-1	Water	12/27/19 8:25 AM	E1613B, E200.7, E200.8, SM4500-NH3G
OUTFALL008_20191227_ COMP_F	440-258227-2	Water	12/27/19 8:25 AM	E200.7, E200.8



#### II. SAMPLE MANAGEMENT

According to the case narrative, Login Sample Receipt Checklist, and the chain-of-custody (COC) provided by the laboratory for sample delivery group (SDG) 440-258227-1:

- The laboratory received the samples in this SDG on ice and within the temperature limits of <6 degrees Celsius (°C) and >0°C.
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Field and/or laboratory personnel signed and dated the appropriate original and transfer COCs.
- According to the Login Sample Receipt Checklists, custody seals were absent on the coolers upon receipt at TA-Irvine; however, no evidence of tampering was noted. A custody seal was present on the cooler received at TA-Sacramento.
- The case narrative indicated that the site sample for the 1613B analysis was received in a narrow-mouth amber glass bottle, and slightly less sample volume (974 milliliters) was available for extraction.



#### **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<sup>x</sup> reviewed the SDG on January 24, 2020

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC<sup>X</sup> 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

Initial 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-HpCDD, 1,2,3,4,6,7,8-HxCDD, 1,2,3,4,6,7,8-HxCDD, 1,2,3,7,8,9-HxCDD, 1,2,3,7,8,9-HxCDF, 2,3,4,6,7,8-HxCDF, 2,3,4,6,7,8-HxCDF, OCDD and OCDF, and for totals HpCDD, HpCDF HxCDD, HxCDF and total TCDF. The sample results for isomers detected below the RL in the sample were qualified as nondetects (U) at the level of contamination. The sum of HxCDD isomers qualified as method blank contamination matched the total result; therefore total HxCDD was also qualified as a nondetect (U). The reviewer compared peaks comprising the method blank totals to those in the sample totals. The total HpCDD, HpCDF and TCDF results



in the sample were the same peaks at similar concentrations to the blank and were therefore qualified as nondetects (U) at the level of contamination. Total HxCDF was qualified as estimated (J), as only a portion of the total was determined to be method blank contamination.

#### 11.4.2. LABORATORY CONTROL SAMPLES

Recoveries were within the acceptance criteria listed in Table 6 of Method 1613B.

#### III.5. FIELD QC SAMPLES

MEC<sup>x</sup> 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<sup>x</sup> 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. 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.

Second-column confirmation analysis was performed for isomer 2,3,7,8-TCDF detected in the initial analyses of the sample and its method blank. Neither result was confirmed. Both initial and confirmation results were reported for the sample. As the confirmation column is more specific for the detection of 2,3,7,8-TCDF, the nondetect confirmation result was retained and the initial result rejected (R) as duplicate data.

#### 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.

As noted in the case narrative, RLs and EDLs were slightly elevated due to somewhat limited sample volume. Rather than approximately 1000 milliliters (ml), a 974 ml sample volume was available for extraction.

Isomers and totals previously qualified as method blank contamination nondetects were not further qualified as EMPCs. Isomer results reported as EMPCs were qualified as estimated nondetects (UJ). The concentration of total PeCDD matched the associated isomer result qualified as an EMPC and was therefore also qualified as an estimated nondetect (UJ).



#### IV. METHODS 200.7 AND 200.8 — METALS

M. Hilchey of MEC<sup>X</sup> reviewed the SDG on January 27, 2020.

The samples listed in Table 1 for these analyses were validated based on the guidelines outlined in the MEC<sup>X</sup> Data Validation Procedure for Metals (DVP-5, Rev. 2), EPA Methods 200.7 and 200.8 and the National Functional Guidelines for Inorganic Methods Data Review (2017).

#### **IV.1. HOLDING TIMES**

The analytical holding time, six months for metals, was met. Sample Outfall008\_20191227\_Comp\_F was filtered and preserved within 24 hours after receipt.

#### **IV.2. CALIBRATION**

QAPP calibration criteria were met. A blank and two to four standards were used for calibration of ICP-AES and ICP-MS target analytes. The initial calibration r values were  $\geq$ 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 90-110% for ICP-MS. Continuing calibration verification recoveries were within QAPP control limits of 90-110%.

#### **IV.3. QUALITY CONTROL SAMPLES**

#### IV.3.1. **METHOD BLANKS**

There were no target analyte detections in the method blanks or calibration blanks of sufficient concentration to warrant qualification of associated site sample results with the following exception. Selenium was detected (0.940  $\mu$ g/L) in a calibration blank bracketing sample OUTFALL008\_20191227\_COMP. The selenium result for this sample was a detect below the reporting limit and was qualified as nondetect (U).

#### **IV.3.2. INTERFERENCE CHECK SAMPLES:**

ICP-AES and ICP-MS ICSAB recoveries were within the control limits of 80-120% or  $\pm 2 \times$  the reporting limit, whichever is greater. Interferents were not present in the samples at concentrations comparable to those in the ICSAs; therefore, interference was not suspected.

#### IV.3.3. LABORATORY CONTROL SAMPLES

Laboratory control samples recoveries (total and dissolved) 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 OUTFALL008\_20191227\_COMP-F for Method 200.8. 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%.

The laboratory did not perform post-digestion spike analyses as there were no MS/MSD outliers.



#### **IV.4.SERIAL DILUTION**

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

#### **IV.5. 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.

#### **IV.6. FIELD QC SAMPLES**

MEC<sup>X</sup> 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<sup>X</sup> used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

#### IV.6.1. FIELD BLANKS AND EQUIPMENT BLANKS

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

#### IV.6.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

#### V. METHOD SM4500-NH3G—AMMONIA

M. Hilchey of MEC<sup>x</sup> reviewed the SDG on January 27, 2020.

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC<sup>x</sup> Data Validation Procedure for General Minerals (DVP-6, Rev. 1), Standard Methods for the Examination of Water and Wastewater 4500-NH3G and the National Functional Guidelines for Inorganic Superfund Methods Data Review (2017).

#### V.1. HOLDING TIMES

The QAPP holding time, 28 days for ammonia, was met.

#### V.2. CALIBRATION

Calibration criteria were met. The initial calibration  $r^2$  value was  $\geq 0.995$  and the initial calibration verification recovery met QAPP requirements. All continuing calibration verification recoveries were within 90-110%.

#### V.3. QUALITY CONTROL SAMPLES

#### V.3.1. **METHOD BLANKS**

The method blank and calibration blanks had no detects.



#### V.3.2. LABORATORY CONTROL SAMPLES

Laboratory control sample recovery was within the QAPP control limits.

The laboratory performed an MRL QC sample, which met laboratory recovery control limits.

#### 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 in this SDG. QAPP recovery control limits of 90-110% were not met. The MSD recovery was 88%; therefore, the sample result was qualified as estimated with potential low bias (J-).

#### V.4. SAMPLE RESULT VERIFICATION

Calculations were verified, and the 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. Results reported between the MDL and RL are qualified as estimated (J) and coded with a DNQ to comply with the NPDES permit reporting requirements.

#### V.5. FIELD QC SAMPLES

MEC<sup>x</sup> 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<sup>x</sup> 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: 4402582271

Analysis Method E1613B

Sample Name OUTFALL008\_20191227\_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/27/2019 8:25:00 AM Validation Level: 8

**Lab Sample Name:** 440-258227-1

Analyte I	Fraction	: CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,2,3,4,6,7,8,9- Octachlorodibenzofuran (OCDF)	N	39001-02-0	0.0000094	0.00010	0.00000061	ug/L	J,DXMB	U	В
1,2,3,4,6,7,8,9-Octachlorodibenzo- dioxin (OCDD)	p- N	3268-87-9	0.000034	0.00010	0.00000072	ug/L	J,DXMB	U	В
1,2,3,4,6,7,8- Heptachlorodibenzofuran (HpCDF)	N	67562-39-4	0.0000034	0.000051	0.00000048	ug/L	J,DXMB	U	В
1,2,3,4,6,7,8-Heptachlorodibenzo-pdioxin (HpCDD)	- N	35822-46-9	0.0000050	0.000051	0.00000042	ug/L	J,DXMB	U	В
1,2,3,4,7,8,9- Heptachlorodibenzofuran (HpCDF)	N	55673-89-7	0.0000012	0.000051	0.00000057	ug/L	J,DXq	UJ	*Ш
1,2,3,4,7,8-Hexachlorodibenzofura (HxCDF)	n N	70648-26-9	0.00000093	0.000051	0.00000055	ug/L	J,DX	J	DNQ
1,2,3,4,7,8-Hexachlorodibenzo-p- dioxin (HxCDD)	N	39227-28-6	0.0000021	0.000051	0.00000047	ug/L	J,DXMB	U	В
1,2,3,6,7,8-Hexachlorodibenzofura (HxCDF)	n N	57117-44-9	0.00000093	0.000051	0.00000057	ug/L	J,DX	J	DNQ
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	57653-85-7	0.0000011	0.000051	0.00000051	ug/L	J,DXMB	U	В
1,2,3,7,8,9-Hexachlorodibenzofura (HxCDF)	n N	72918-21-9	0.0000012	0.000051	0.00000040	ug/L	J,DXMB	U	В
1,2,3,7,8,9-Hexachlorodibenzo-p- dioxin (HxCDD)	N	19408-74-3	0.0000010	0.000051	0.00000044	ug/L	J,DXMBq	U	В
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-41-6	0.00000089	0.000051	0.00000048	ug/L	J,DX	J	DNQ
1,2,3,7,8-Pentachlorodibenzo-p- dioxin (PeCDD)	N	40321-76-4	0.00000082	0.000051	0.00000064	ug/L	J,DXq	UJ	*Ш
2,3,4,6,7,8-Hexachlorodibenzofura (HxCDF)	n N	60851-34-5	0.00000081	0.000051	0.00000041	ug/L	J,DXMB	U	В
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-31-4	0.00000084	0.000051	0.00000048	ug/L	J,DX	J	DNQ
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	0.00000052	0.000010	0.00000025	ug/L	J,DXMBq	R	D
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	ND	0.000010	0.00000076	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzo-p-dioxi (TCDD)	n N	1746-01-6	ND	0.000010	0.00000046	ug/L	U	U	
Total Heptachlorodibenzofuran (HpCDF)	N	38998-75-3	0.0000060	0.000051	0.00000048	ug/L	J,DXMBq	U	В
Total Heptachlorodibenzo-p-dioxin (HpCDD)	N	37871-00-4	0.0000088	0.000051	0.00000042	ug/L	J,DXMBq	U	В
Total Hexachlorodibenzofuran (HxCDF)	N	55684-94-1	0.0000038	0.000051	0.00000040	ug/L	J,DXMB	J	B, DNQ
Total Hexachlorodibenzo-p-dioxin (HxCDD), Mixture	N	34465-46-8	0.0000043	0.000051	0.00000044	ug/L	J,DXMBq	U	В

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Analysis Method	E16	13B						
Total Pentachlorodibenzofuran (PeCDF)	N	30402-15-4	0.0000017	0.000051	0.00000048 ug/L	J,DX	J	DNQ
Total Pentachlorodibenzo-p-dioxin (PeCDD)	N	36088-22-9	0.00000082	0.000051	0.00000064 ug/L	J,DXq	UJ	*Ш
Total Tetrachlorodibenzofuran (TCDF)	N	55722-27-5	0.0000011	0.000010	0.00000025 ug/L	J,DXMBq	U	В
Total Tetrachlorodibenzo-p-dioxin (TCDD)	N	41903-57-5	ND	0.000010	0.00000046 ug/L	U	U	

Analysis Method E200.7

Sample Name OUTFALL008\_20191227\_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/27/2019 8:25:00 AM Validation Level: 8

**Lab Sample Name:** 440-258227-1

Fraction: CAS No Result RL**MDL** Result Analyte Lab Validation Validation Value Units Qualifier Qualifier Notes Nickel ND 7440-02-0 10 5.0 ug/L U U Zinc 12 12 T 7440-66-6 20 ug/L J,DX DNQ

Sample Name OUTFALL008\_20191227\_COMP\_F Matrix Type: WM Result Type: TRG

Sample Date: 12/27/2019 8:25:00 AM Validation Level: 8

**Lab Sample Name:** 440-258227-2

Analyte	Fraction	n: CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Nickel	D	7440-02-0	ND	10	5.0	ug/L	U	U	
Zinc	D	7440-66-6	ND	20	12	ug/L	U	U	

Analysis Method E200.8

Sample Name OUTFALL008\_20191227\_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/27/2019 8:25:00 AM Validation Level: 8

**Lab Sample Name:** 440-258227-1

Analyte	Fractio	on: CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Antimony	T	7440-36-0	ND	2.0	0.50	ug/L	U	U	
Cadmium	T	7440-43-9	ND	1.0	0.25	ug/L	U	U	
Copper	T	7440-50-8	3.0	2.0	0.50	ug/L			
Lead	T	7439-92-1	0.77	1.0	0.50	ug/L	J,DX	J	DNQ
Selenium	T	7782-49-2	1.2	2.0	0.50	ug/L	J,DX	U	В
Silver	T	7440-22-4	ND	1.0	0.50	ug/L	ULQ	U	
Thallium	T	7440-28-0	ND	1.0	0.20	ug/L	U	U	

Sample Name OUTFALL008\_20191227\_COMP\_F Matrix Type: WM Result Type: TRG

Sample Date: 12/27/2019 8:25:00 AM Validation Level: 8

**Lab Sample Name:** 440-258227-2

Analyte	Fractio	n: CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Antimony	D	7440-36-0	ND	2.0	0.50	ug/L	U	U	
Cadmium	D	7440-43-9	ND	1.0	0.25	ug/L	U	U	

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Analysis Method	E20	00.8							
Copper	D	7440-50-8	5.0	2.0	0.50	ug/L			
Lead	D	7439-92-1	ND	1.0	0.50	ug/L	U	U	
Selenium	D	7782-49-2	ND	2.0	0.50	ug/L	U	U	
Silver	D	7440-22-4	ND	1.0	0.50	ug/L	U	U	
Thallium	D	7440-28-0	ND	1.0	0.20	ug/L	U	U	

Analysis Method SM4500-NH3G

Sample Name OUTFALL008\_20191227\_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/27/2019 8:25:00 AM Validation Level: 8

**Lab Sample Name:** 440-258227-1

Analyte	Fractio	on: CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes	
Ammonia (as N)	N	7664-41-7N	0.183	0.200	0.100	mg/L	J,DX	J-	Q, DNQ	

Monday, January 27, 2020 Page 3 of 3



## **ANALYTICAL REPORT**

Eurofins Calscience Irvine 17461 Derian Ave Suite 100 Irvine, CA 92614-5817 Tel: (949)261-1022

Laboratory Job ID: 440-258227-1

Client Project/Site: Routine Outfall 008 Comp

#### For:

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

Attn: Katherine Miller

Authorized for release by: 1/20/2020 4:58:25 PM

Christian Bondoc, Project Manager I (949)260-3218

christian.bondoc@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.

Laboratory Job ID: 440-258227-1

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.

Christian Bondoc

Project Manager I

1/20/2020 4:58:25 PM

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Laboratory Job ID: 440-258227-1

Client: Haley & Aldrich, Inc. Project/Site: Routine Outfall 008 Comp

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### **Sample Summary**

Client: Haley & Aldrich, Inc. Project/Site: Routine Outfall 008 Comp

Job ID: 440-258227-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
440-258227-1	Outfall008_20191227_Comp	Water	12/27/19 08:25	12/27/19 11:20	
440-258227-2	Outfall008_20191227_Comp_F	Water	12/27/19 08:25	12/27/19 11:20	

### **Case Narrative**

Client: Haley & Aldrich, Inc.

Job ID: 440-258227-1 Project/Site: Routine Outfall 008 Comp

Job ID: 440-258227-1

**Laboratory: Eurofins Calscience Irvine** 

**Narrative** 

Job Narrative 440-258227-1

#### Comments

No additional comments.

#### Receipt

The samples were received on 12/27/2019 11:20 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 1.1° C and 1.2° C.

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

#### Dioxin

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

Method 200.8: The laboratory control sample (LCS) for preparation batch 440-588198 and analytical batch 440-588597 recovered outside control limits for the following analytes: Silver. These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.

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.

#### **Dioxin Prep**

Method 1613B: Elevated reporting limits are provided for the following sample due to insufficient sample provided for 1613B\_Sox\_Sep\_P preparation/analysis: Sample Outfall008 20191227 Comp (440-258227-1) was received in a narrow-mouth amber glass bottle.

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

### **Client Sample Results**

Client: Haley & Aldrich, Inc. Job ID: 440-258227-1

Project/Site: Routine Outfall 008 Comp

Client Sample ID: Outfall008\_20191227\_Comp

Lab Sample ID: 440-258227-1 Date Collected: 12/27/19 08:25 **Matrix: Water** 

Date Received: 12/27/19 11:20

Method: 300.0 - Anions, Ion C Analyte	_	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	5.1		0.50		mg/L			12/27/19 15:40	1
Nitrate as N	2.8		0.11	0.055	-			12/27/19 15:40	1
Nitrite as N	0.049	J,DX	0.15	0.025	mg/L mg/L			12/27/19 15:40 12/27/19 15:40	1 1
Sulfate	4.9		0.50	0.23	IIIg/L			12/2//19 15.40	ı
Method: 314.0 - Perchlorate (	•					_			
Analyte Perchlorate	- Result ND	Qualifier	4.0	MDL	ug/L	D	Prepared	Analyzed 12/30/19 16:17	Dil Fac
reichiorate -	ND		4.0	0.95	ug/L			12/30/19 10.17	ı
Method: NO3NO2 Calc - Nitro	•								
Analyte		Qualifier	RL	MDL		D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	2.8		0.15	0.055	mg/L			01/09/20 13:03	1
Method: 1613B - Dioxins and	Furans (HR	GC/HRMS)							
Analyte		Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000010	0.0000004	ug/L		01/08/20 11:27	01/13/20 21:46	1
1,2,3,7,8-PeCDD	0.00000082	J,DX q	0.000051	0.0000006	ug/L		01/08/20 11:27	01/13/20 21:46	1
40070 0-005	0.0000000	LDV	0.0000E1	4	/1		04/09/20 44:27	04/42/20 24:46	4
1,2,3,7,8-PeCDF	0.00000089	J,DX	0.000051	0.0000004	ug/L		01/06/20 11.27	01/13/20 21:46	1
2,3,4,7,8-PeCDF	0.00000084	J,DX	0.000051	0.0000004	ug/L		01/08/20 11:27	01/13/20 21:46	1
1,2,3,4,7,8-HxCDD	0.0000021	J DX MB	0.000051	0.0000004	ua/l		01/08/20 11:27	01/13/20 21:46	1
1,2,0,-,1,0 110000	0.0000021	O,DX IIID	0.00000.	7	-		0.700720 1.1.27	0 17 107 20 2 11 10	
1,2,3,6,7,8-HxCDD	0.0000011	J,DX MB	0.000051	0.0000005	ug/L		01/08/20 11:27	01/13/20 21:46	1
1,2,3,7,8,9-HxCDD	0.0000010	J,DX MB q	0.000051	0.0000004	ug/L		01/08/20 11:27	01/13/20 21:46	1
			0.000054	4			04/00/00 44:07	04/40/00 04:40	
1,2,3,4,7,8-HxCDF	0.0000093	J,DX	0.000051	0.0000005 5	ug/L		01/08/20 11:27	01/13/20 21:46	1
1,2,3,6,7,8-HxCDF	0.00000093	J,DX	0.000051	0.0000005	ug/L		01/08/20 11:27	01/13/20 21:46	1
1,2,3,7,8,9-HxCDF	0.0000012	I DY MR	0.000051	7 0.0000004	ua/l		01/08/20 11:27	01/13/20 21:46	1
1,2,3,7,0,3-11X0D1	0.0000012	J,DX IIID	0.000001	0.0000004	ug/L		01/00/20 11.27	01/10/20 21.40	
2,3,4,6,7,8-HxCDF	0.00000081	J,DX MB	0.000051	0.0000004	ug/L		01/08/20 11:27	01/13/20 21:46	1
1,2,3,4,6,7,8-HpCDD	0.0000050	J,DX MB	0.000051	0.0000004	ug/L		01/08/20 11:27	01/13/20 21:46	1
410.004.004.0111.0005			0.000054	2			04/00/00 44:07	04/40/00 04:40	
1,2,3,4,6,7,8-HpCDF	0.0000034	J,DX MB	0.000051	0.0000004	ug/L		01/08/20 11:27	01/13/20 21:46	1
1,2,3,4,7,8,9-HpCDF	0.0000012	J,DX q	0.000051	0.0000005	ug/L		01/08/20 11:27	01/13/20 21:46	1
OCDD	0.000034	J,DX MB	0.00010	7 0.0000007	ua/L		01/08/20 11:27	01/13/20 21:46	1
		•		2					
OCDF	0.0000094	J,DX MB	0.00010	0.0000006	ug/L		01/08/20 11:27	01/13/20 21:46	1
Total TCDD	ND		0.000010	0.0000004	ug/L		01/08/20 11:27	01/13/20 21:46	1
T-4-LTODE	0.0000044	LDVIID	0.000040	6	/1		04/00/00 44:07	04/49/90 04:40	4
Total TCDF	0.0000011	J,DX MB q	0.000010	0.0000002	ug/L		01/08/20 11:27	01/13/20 21:46	1
Total PeCDD	0.00000082	J,DX q	0.000051	0.0000006	ug/L		01/08/20 11:27	01/13/20 21:46	1
Total PeCDF	0.0000017	LDY	0.000051	4 0.0000004	ua/I		01/08/20 11·27	01/13/20 21:46	1
I Otal F CODE	0.0000017	3,DX	0.000001	0.0000004	ug/L		01/00/20 11.27	01/10/20 21.40	ı

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### **Client Sample Results**

Client: Haley & Aldrich, Inc. Job ID: 440-258227-1

Project/Site: Routine Outfall 008 Comp

Client Sample ID: Outfall008\_20191227\_Comp Lab Sample ID: 440-258227-1

Date Collected: 12/27/19 08:25

Lab Sample 1D. 440-236227-1

Matrix: Water

Date Received: 12/27/19 11:20

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fa
Total HxCDD	0.0000043	J,DX MB q	0.000051	0.0000004	ug/L		01/08/20 11:27	01/13/20 21:46	
Total HxCDF	0.0000038	J,DX MB	0.000051	0.0000004	ug/L		01/08/20 11:27	01/13/20 21:46	
Total HpCDD	0.000088	J,DX MB q	0.000051	0.0000004	ug/L		01/08/20 11:27	01/13/20 21:46	
Total HpCDF	0.0000060	J,DX MB q	0.000051	0.0000004	ug/L		01/08/20 11:27	01/13/20 21:46	
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
13C-2,3,7,8-TCDD	56		25 - 164				01/08/20 11:27	01/13/20 21:46	
13C-2,3,7,8-TCDF	58		24 - 169				01/08/20 11:27	01/13/20 21:46	
13C-1,2,3,7,8-PeCDD	57		25 - 181				01/08/20 11:27	01/13/20 21:46	
13C-1,2,3,7,8-PeCDF	58		24 - 185				01/08/20 11:27	01/13/20 21:46	
13C-2,3,4,7,8-PeCDF	63		21 - 178				01/08/20 11:27	01/13/20 21:46	
13C-1,2,3,4,7,8-HxCDD	62		32 - 141				01/08/20 11:27	01/13/20 21:46	
13C-1,2,3,6,7,8-HxCDD	52		28 - 130					01/13/20 21:46	
13C-1,2,3,4,7,8-HxCDF	59		26 - 152					01/13/20 21:46	
13C-1,2,3,6,7,8-HxCDF	51		26 - 123					01/13/20 21:46	
13C-1,2,3,7,8,9-HxCDF	54		29 - 147					01/13/20 21:46	
	54 54		29 - 147 28 - 136					01/13/20 21:46	
13C-2,3,4,6,7,8-HxCDF									
13C-1,2,3,4,6,7,8-HpCDD	53		23 - 140					01/13/20 21:46	
13C-1,2,3,4,6,7,8-HpCDF	54		28 - 143					01/13/20 21:46	
13C-1,2,3,4,7,8,9-HpCDF	59		26 - 138					01/13/20 21:46	
13C-OCDD	51		17 - 157				01/08/20 11:27	01/13/20 21:46	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
37CI4-2,3,7,8-TCDD	96		35 - 197				01/08/20 11:27	01/13/20 21:46	
Method: 1613B - Dioxins a	and Furans (HR	GC/HRMS)	- RA						
Analyte		Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fa
2,3,7,8-TCDF	ND		0.000010	0.0000007	ug/L		01/08/20 11:27	01/16/20 17:09	
sotope Dilution	%Recovery	Qualifier	Limits	_			Prepared	Analyzed	Dil Fa
13C-2,3,7,8-TCDF		- Qualifier	24 - 169				•	01/16/20 17:09	
							000.20		
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil F
37CI4-2,3,7,8-TCDD	97		35 - 197				01/08/20 11:27	01/16/20 17:09	
Method: 200.7 Rev 4.4 - M									
Analyte		Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fa
Nickel	ND		10		ug/L			12/30/19 17:57	
Zinc	12	J,DX	20	12	ug/L		12/30/19 08:35	12/30/19 17:57	
Method: 200.8 - Metals (IC									
Analyte		Qualifier	RL		Unit	D	Prepared	Analyzed	Dil F
Silver	ND	LQ	1.0	0.50	ug/L		12/28/19 09:46	12/30/19 18:32	
Cadmium	ND		1.0	0.25	ug/L		12/28/19 09:46	12/30/19 18:32	
Copper	3.0		2.0	0.50	ug/L		12/28/19 09:46	12/30/19 18:32	
Lead		J,DX	1.0	0.50	ug/L		12/28/19 09:46	12/30/19 18:32	
Antimony	ND	·	2.0	0.50	ug/L		12/28/19 09:46	12/30/19 18:32	

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### **Client Sample Results**

Client: Haley & Aldrich, Inc.

Project/Site: Routine Outfall 008 Comp

Client Sample ID: Outfall008\_20191227\_Comp

Date Collected: 12/27/19 08:25 Date Received: 12/27/19 11:20

Lab Sample ID: 440-258227-1

Lab Sample ID: 440-258227-2

**Matrix: Water** 

Job ID: 440-258227-1

Method: 200.8 - Metals (ICP/ Analyte	•	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Thallium	ND		1.0	0.20	ug/L		12/28/19 09:46	12/30/19 18:32	1
Method: 245.1 - Mercury (CV	'AA)								
Analyte	•	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		12/31/19 12:32	01/02/20 13:30	1
General Chemistry									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	130		10	5.0	mg/L			12/30/19 08:49	1
<b>Total Suspended Solids</b>	12		4.4	2.2	mg/L			12/27/19 16:12	1
Cyanide, Total	ND		5.0	2.5	ug/L		01/02/20 10:20	01/02/20 12:53	1
Ammonia (as N)	0.183	J.DX	0.200	0.100	ma/L			12/31/19 11:29	1

Client Sample ID: Outfall008\_20191227\_Comp\_F

Date Collected: 12/27/19 08:25

Date Received: 12/27/19 11:20

Method: 200.7 Rev 4.4 - Metals	(ICP) - Dissolved							
Analyte	Result Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nickel	ND	10	5.0	ug/L		12/28/19 11:55	01/02/20 18:36	1
Zinc	ND	20	12	ug/L		12/28/19 11:55	01/02/20 18:36	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	ND		1.0	0.50	ug/L		12/30/19 11:16	12/30/19 20:17	1
Cadmium	ND		1.0	0.25	ug/L		12/30/19 11:16	12/30/19 20:17	1
Copper	5.0		2.0	0.50	ug/L		12/30/19 11:16	12/30/19 20:17	1
Lead	ND		1.0	0.50	ug/L		12/30/19 11:16	12/30/19 20:17	1
Antimony	ND		2.0	0.50	ug/L		12/30/19 11:16	12/30/19 20:17	1
Selenium	ND		2.0	0.50	ug/L		12/30/19 11:16	12/30/19 20:17	1
Thallium	ND		1.0	0.20	ug/L		12/30/19 11:16	12/30/19 20:17	1

Method: 245.1 - Mercury (CVAA) - Dissolved											
	Analyte	Result Qualifier	RL	MDL (	Unit	D	Prepared	Analyzed	Dil Fac		
	Mercury	ND	0.20	0.10 i	ug/L		01/15/20 11:35	01/16/20 11:14	1		

**Matrix: Water** 

### **Method Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Routine Outfall 008 Comp

Method **Method Description Protocol** Laboratory 300.0 Anions, Ion Chromatography **MCAWW TAL IRV** Perchlorate (IC) **EPA** TAL IRV 314.0 NO3NO2 Calc Nitrogen, Nitrate-Nitrite **EPA** TAL IRV 1613B Dioxins and Furans (HRGC/HRMS) 40CFR136A TAL SAC 200.7 Rev 4.4 Metals (ICP) **EPA** TAL IRV 200.8 Metals (ICP/MS) **EPA** TAL IRV 245.1 Mercury (CVAA) TAL IRV EPA 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 TAL IRV 1613B Separatory Funnel (L/L) Extraction with Soxhlet Extraction of Dioxin and Furans 40CFR136A TAL SAC 200.2 Preparation, Total Recoverable Metals EPA TAL IRV 245.1 Preparation, Mercury **EPA** TAL IRV Distill/CN TAL IRV Distillation, Cyanide None **FILTRATION** TAL IRV Sample Filtration None

#### **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.

None = None

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

#### Laboratory References:

TAL IRV = Eurofins Calscience Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022 TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

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Job ID: 440-258227-1

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### **Lab Chronicle**

Client: Haley & Aldrich, Inc. Job ID: 440-258227-1

Project/Site: Routine Outfall 008 Comp

Client Sample ID: Outfall008\_20191227\_Comp

Lab Sample ID: 440-258227-1 Date Collected: 12/27/19 08:25 **Matrix: Water** 

Date Received: 12/27/19 11:20

Bron Tuno	Batch	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Prep Type Total/NA	Type Analysis	300.0	Kuii	1	Alliount	Amount	588133	12/27/19 15:40	Analyst NTN	TAL IRV
Total/NA	Analysis	300.0		1			588134	12/27/19 15:40	NTN	TAL IRV
Total/NA	Analysis	314.0		1			588445	12/30/19 16:17	CTH	TAL IRV
Total/NA	Analysis	NO3NO2 Calc		1			589802	01/09/20 13:03	TLN	TAL IRV
Total/NA Total/NA	Prep Analysis	1613B 1613B		1	973.9 mL	20 uL	349535 350522	01/08/20 11:27 01/13/20 21:46		TAL SAC TAL SAC
Total/NA Total/NA	Prep Analysis	1613B 1613B	RA RA	1	973.9 mL	20 uL	349535 351318	01/08/20 11:27 01/16/20 17:09		TAL SAC TAL SAC
Total Recoverable Total Recoverable	Prep Analysis	200.2 200.7 Rev 4.4		1	25 mL	25 mL	588241 588599	12/30/19 08:35 12/30/19 17:57		TAL IRV TAL IRV
Total Recoverable Total Recoverable	Prep Analysis	200.2 200.8		1	25 mL	25 mL	588198 588597	12/28/19 09:46 12/30/19 18:32		TAL IRV TAL IRV
Total/NA Total/NA	Prep Analysis	245.1 245.1		1	20 mL	20 mL	588737 588954	12/31/19 12:32 01/02/20 13:30		TAL IRV TAL IRV
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	588438	12/30/19 08:49	XL	TAL IRV
Total/NA	Analysis	SM 2540D		1	225 mL	1000 mL	588223	12/27/19 16:12	KL	TAL IRV
Total/NA Total/NA	Prep Analysis	Distill/CN SM 4500 CN E		1	50 mL	50 mL	588874 588897	01/02/20 10:20 01/02/20 12:53		TAL IRV TAL IRV
Total/NA	Analysis	SM 4500 NH3 G		1	0.8 mL	8.0 mL	588750	12/31/19 11:29	KMY	TAL IRV

Client Sample ID: Outfall008\_20191227\_Comp\_F

Lab Sample ID: 440-258227-2 Date Collected: 12/27/19 08:25 **Matrix: Water** 

Date Received: 12/27/19 11:20

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			200 mL	200 mL	588288	12/28/19 09:35	EP	TAL IR\
Dissolved	Prep	200.2			25 mL	25 mL	588307	12/28/19 11:55	EP	TAL IR\
Dissolved	Analysis	200.7 Rev 4.4		1			588962	01/02/20 18:36	KE	TAL IR\
Dissolved	Filtration	FILTRATION			200 mL	200 mL	588288	12/28/19 09:35	EP	TAL IR\
Dissolved	Prep	200.2			25 mL	25 mL	588503	12/30/19 11:16	EP	TAL IR\
Dissolved	Analysis	200.8		1			588634	12/30/19 20:17	B1H	TAL IRV
Dissolved	Filtration	FILTRATION			100 mL	100 mL	589977	01/10/20 11:30	EP	TAL IR\
Dissolved	Prep	245.1			20 mL	20 mL	590663	01/15/20 11:35	MEM	TAL IR\
Dissolved	Analysis	245.1		1			590948	01/16/20 11:14	MEM	TAL IR

#### **Laboratory References:**

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

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Job ID: 440-258227-1

Prep Type: Total/NA

Prep Type: Total/NA

Prep Type: Total/NA

**Client Sample ID: Lab Control Sample** 

**Client Sample ID: Matrix Spike** 

Client Sample ID: Matrix Spike Duplicate

Project/Site: Routine Outfall 008 Comp

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 440-588133/6

**Matrix: Water** 

**Analysis Batch: 588133** 

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

MB MB Analyte Result Qualifier RL **MDL** Unit Prepared Analyzed Dil Fac Nitrate as N 0.11 0.055 mg/L 12/27/19 12:01  $\overline{\mathsf{ND}}$ 0.15 Nitrite as N ND 0.025 mg/L 12/27/19 12:01

Lab Sample ID: LCS 440-588133/5

**Matrix: Water** 

**Analysis Batch: 588133** 

Spike LCS LCS %Rec. Added Result Qualifier D %Rec Limits Analyte Unit Nitrate as N 1.13 1.10 97 90 - 110 mg/L Nitrite as N 1 52 1.51 mg/L 99 90 - 110

Lab Sample ID: 440-258197-G-1 MS

**Matrix: Water** 

**Analysis Batch: 588133** 

MS MS Sample Sample Spike %Rec. Result Qualifier Added Result Qualifier D %Rec Limits Analyte Unit 1.13 Nitrate as N 0.60 1.70 mg/L 98 80 - 120 Nitrite as N 0.094 J.DX 1.52 1.53 mg/L 80 - 120

Lab Sample ID: 440-258197-G-1 MSD

**Matrix: Water** 

**Analysis Batch: 588133** 

Sample Sample MSD MSD **RPD** Spike %Rec. Analyte Result Qualifier Added Result Qualifier Unit %Rec Limits RPD Limit Nitrate as N 0.60 1.13 1.74 101 80 - 120 20 mg/L Nitrite as N 0.094 J,DX 1.52 1.55 mg/L 96 80 - 120 20

Lab Sample ID: MB 440-588134/6

**Matrix: Water** 

**Analysis Batch: 588134** 

MB MB

**MDL** Unit Analyte Result Qualifier RL Dil Fac D Prepared Analyzed Chloride  $\overline{\mathsf{ND}}$ 0.50 0.25 mg/L 12/27/19 12:01 ND 0.50 0.25 mg/L 12/27/19 12:01 Sulfate

Lab Sample ID: LCS 440-588134/5 **Client Sample ID: Lab Control Sample Matrix: Water** Prep Type: Total/NA Analysis Batch: 588134

LCS LCS Spike %Rec. Analyte Added Result Qualifier %Rec Unit D Limits Chloride 5.00 4.85 mg/L 97 90 - 110 Sulfate 5.00 5.04 mg/L 101 90 - 110

Lab Sample ID: 440-258197-G-1 MS

**Matrix: Water** 

Analysis Batch: 588134

7 <b>,</b> 0.0	Sample	Sample	Spike	MS	MS				%Rec.	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Chloride	5.3		5.00	10.4		mg/L		102	80 - 120	
Sulfate	700	EY	5.00	702	EY BB	mg/L		44	80 - 120	

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Prep Type: Total/NA

**Client Sample ID: Method Blank** 

Client: Haley & Aldrich, Inc. Job ID: 440-258227-1

Project/Site: Routine Outfall 008 Comp

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: 440-258197-G-1 MSD Client Sample ID: Matrix Spike Duplicate

**Matrix: Water** 

Analysis Databy 500124

Analysis Batch: 588134	Sample	Sample	Spike	MSD	MSD				%Rec.		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Chloride	5.3		5.00	10.5		mg/L		104	80 - 120	1	20
Sulfate	700	EY	5.00	702	EY BB	mg/L		51	80 - 120	0	20

Method: 314.0 - Perchlorate (IC)

Lab Sample ID: MB 440-588445/6 **Client Sample ID: Method Blank** Prep Type: Total/NA

**Matrix: Water** 

**Analysis Batch: 588445** 

MB MB

**MDL** Unit Result Qualifier RL Prepared Analyte Analyzed Dil Fac 4.0 12/30/19 10:57 Perchlorate  $\overline{\sf ND}$ 0.95 ug/L

Lab Sample ID: LCS 440-588445/5 **Client Sample ID: Lab Control Sample Matrix: Water** Prep Type: Total/NA

**Analysis Batch: 588445** 

LCS LCS Spike %Rec. Analyte Added Result Qualifier Limits Unit %Rec Perchlorate 25.0 25.2 101 85 - 115 ug/L

Lab Sample ID: MRL 440-588445/4 **Client Sample ID: Lab Control Sample** Prep Type: Total/NA

**Matrix: Water** 

**Analysis Batch: 588445** 

Spike MRL MRL %Rec. Analyte Added Result Qualifier Unit D %Rec Limits Perchlorate 1.00 1.04 J,DX ug/L 104 75 - 125

Lab Sample ID: MRL 440-588445/8 Client Sample ID: Lab Control Sample Prep Type: Total/NA

**Matrix: Water** 

**Analysis Batch: 588445** 

Spike MRI MRI %Rec. Analyte Added Result Qualifier Unit D %Rec Limits Perchlorate 4.00 3.96 J.DX 99 ug/L 75 - 125

Lab Sample ID: 440-258138-C-1 MS **Client Sample ID: Matrix Spike** Prep Type: Total/NA

**Matrix: Water** 

**Analysis Batch: 588445** 

Sample Sample Spike MS MS %Rec. Analyte Result Qualifier Added Result Qualifier Unit %Rec Limits Perchlorate 25.0 28.2 3.3 J,DX 100 80 - 120 ug/L

Lab Sample ID: 440-258138-C-1 MSD **Client Sample ID: Matrix Spike Duplicate** Prep Type: Total/NA

**Matrix: Water** 

**Analysis Batch: 588445** 

Sample Sample Spike MSD MSD %Rec. **RPD Result Qualifier** Added Result Qualifier Limits RPD Limit **Analyte** Unit D %Rec Perchlorate 3.3 J,DX 25.0 27.6 ug/L 97 80 - 120

**Eurofins Calscience Irvine** 

1/20/2020

Prep Type: Total/NA

### **QC Sample Results**

Client: Haley & Aldrich, Inc. Job ID: 440-258227-1

Project/Site: Routine Outfall 008 Comp

### Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Lab Sample	ID: MB	320-349535	/1-A
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**Matrix: Water** 

Analysis Batch: 350522

Client Sample ID: Method Blank

Prep Type: Total/NA Prep Batch: 349535

Analysis Batch: 350522		МВ						Prep Batch:	349535
Analyte		Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000010	0.0000007	ug/L		01/08/20 11:27	01/13/20 14:52	1
1,2,3,7,8-PeCDD	ND		0.000050	0.0000007	ug/L		01/08/20 11:27	01/13/20 14:52	1
1,2,3,7,8-PeCDF	ND		0.000050	0.0000005	ug/L		01/08/20 11:27	01/13/20 14:52	1
2,3,4,7,8-PeCDF	ND		0.000050	0.0000005	ug/L		01/08/20 11:27	01/13/20 14:52	1
1,2,3,4,7,8-HxCDD	0.00000175	J,DX	0.000050	0.0000004	ug/L		01/08/20 11:27	01/13/20 14:52	1
1,2,3,6,7,8-HxCDD	0.000000762	J,DX	0.000050	0.0000005	ug/L		01/08/20 11:27	01/13/20 14:52	1
1,2,3,7,8,9-HxCDD	0.00000109	J,DX	0.000050	0.0000004	ug/L		01/08/20 11:27	01/13/20 14:52	1
1,2,3,4,7,8-HxCDF	ND		0.000050	0.0000007	ug/L		01/08/20 11:27	01/13/20 14:52	1
1,2,3,6,7,8-HxCDF	ND		0.000050	0.0000008	ug/L		01/08/20 11:27	01/13/20 14:52	1
1,2,3,7,8,9-HxCDF	0.00000119	J,DX	0.000050	0.0000005	ug/L		01/08/20 11:27	01/13/20 14:52	1
2,3,4,6,7,8-HxCDF	0.000000647	J,DX	0.000050	0.0000005	ug/L		01/08/20 11:27	01/13/20 14:52	1
1,2,3,4,6,7,8-HpCDD	0.00000175	J,DX	0.000050	0.0000004	ug/L		01/08/20 11:27	01/13/20 14:52	1
1,2,3,4,6,7,8-HpCDF	0.00000215	J,DX	0.000050	0.0000004	ug/L		01/08/20 11:27	01/13/20 14:52	1
1,2,3,4,7,8,9-HpCDF	ND		0.000050	0.0000005	ug/L		01/08/20 11:27	01/13/20 14:52	1
OCDD	0.0000115	J,DX	0.00010	0.0000007	ug/L		01/08/20 11:27	01/13/20 14:52	1
OCDF	0.00000502	J,DX	0.00010	0.0000007	ug/L		01/08/20 11:27	01/13/20 14:52	1
Total TCDD	ND		0.000010	0.0000007	ug/L		01/08/20 11:27	01/13/20 14:52	1
Total TCDF	0.000000535	J,DX	0.000010	0.0000004	ug/L		01/08/20 11:27	01/13/20 14:52	1
Total PeCDD	ND		0.000050	0.0000007	ug/L		01/08/20 11:27	01/13/20 14:52	1
Total PeCDF	ND		0.000050	0.0000005	ug/L		01/08/20 11:27	01/13/20 14:52	1
Total HxCDD	0.00000360	J,DX	0.000050	0.0000004	ug/L		01/08/20 11:27	01/13/20 14:52	1
Total HxCDF	0.00000184	J,DX	0.000050	0.0000005	ug/L		01/08/20 11:27	01/13/20 14:52	1
Total HpCDD	0.00000357	J,DX	0.000050	0.0000004	ug/L		01/08/20 11:27	01/13/20 14:52	1
Total HpCDF	0.00000309	J,DX	0.000050	0.0000004	ug/L		01/08/20 11:27	01/13/20 14:52	1
	МВ	MB		,					
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	63		25 - 164				01/08/20 11:27	01/13/20 14:52	1
13C-2,3,7,8-TCDF	65		24 - 169				01/08/20 11:27	01/13/20 14:52	1
13C-1,2,3,7,8-PeCDD	69		25 - 181				01/08/20 11:27	01/13/20 14:52	1
13C-1,2,3,7,8-PeCDF	68		24 - 185					01/13/20 14:52	1

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Client: Haley & Aldrich, Inc.

Job ID: 440-258227-1 Project/Site: Routine Outfall 008 Comp

### Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: MB 320-349535/1-A

**Matrix: Water** 

**Analysis Batch: 350522** 

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

**Prep Batch: 349535** 

MB MB Isotope Dilution %Recovery Qualifier Limits Prepared Analyzed Dil Fac 13C-2,3,4,7,8-PeCDF 01/08/20 11:27 01/13/20 14:52 74 21 - 178 13C-1,2,3,4,7,8-HxCDD 75 32 - 141 01/08/20 11:27 01/13/20 14:52 13C-1,2,3,6,7,8-HxCDD 64 28 - 130 01/08/20 11:27 01/13/20 14:52 73 13C-1,2,3,4,7,8-HxCDF 26 - 152 62 26 - 123 01/08/20 11:27 01/13/20 14:52 13C-1,2,3,6,7,8-HxCDF 67 29 - 147 01/08/20 11:27 01/13/20 14:52 13C-1,2,3,7,8,9-HxCDF 28 - 136 13C-2.3.4.6.7.8-HxCDF 66 13C-1,2,3,4,6,7,8-HpCDD 64 23 - 140 01/08/20 11:27 01/13/20 14:52 13C-1,2,3,4,6,7,8-HpCDF 64 28 - 143 01/08/20 11:27 01/13/20 14:52 13C-1,2,3,4,7,8,9-HpCDF 71 26 - 138 01/08/20 11:27 01/13/20 14:52 13C-OCDD 63 17 - 157 01/08/20 11:27 01/13/20 14:52

MB MB

Surrogate %Recovery Qualifier Limits Prepared Analyzed Dil Fac 37CI4-2,3,7,8-TCDD 96 35 - 197 01/08/20 11:27 01/13/20 14:52

**Client Sample ID: Lab Control Sample** 

**Prep Type: Total/NA Prep Batch: 349535** 

Lab Sample ID: LCS 320-349535/2-A **Matrix: Water** 

**Analysis Batch: 350522** 

	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
2,3,7,8-TCDD	0.000200	0.000194		ug/L		97	67 - 158	
2,3,7,8-TCDF	0.000200	0.000184	MB	ug/L		92	75 <sub>-</sub> 158	
1,2,3,7,8-PeCDD	0.00100	0.000970		ug/L		97	70 - 142	
1,2,3,7,8-PeCDF	0.00100	0.000964		ug/L		96	80 - 134	
2,3,4,7,8-PeCDF	0.00100	0.000876		ug/L		88	68 <sub>-</sub> 160	
1,2,3,4,7,8-HxCDD	0.00100	0.000883	MB	ug/L		88	70 - 164	
1,2,3,6,7,8-HxCDD	0.00100	0.000966	MB	ug/L		97	76 - 134	
1,2,3,7,8,9-HxCDD	0.00100	0.000917	MB	ug/L		92	64 - 162	
1,2,3,4,7,8-HxCDF	0.00100	0.000860		ug/L		86	72 - 134	
1,2,3,6,7,8-HxCDF	0.00100	0.000900		ug/L		90	84 - 130	
1,2,3,7,8,9-HxCDF	0.00100	0.000917	MB	ug/L		92	78 <sub>-</sub> 130	
2,3,4,6,7,8-HxCDF	0.00100	0.000914	MB	ug/L		91	70 <sub>-</sub> 156	
1,2,3,4,6,7,8-HpCDD	0.00100	0.000990	MB	ug/L		99	70 - 140	
1,2,3,4,6,7,8-HpCDF	0.00100	0.000972	MB	ug/L		97	82 - 122	
1,2,3,4,7,8,9-HpCDF	0.00100	0.000900		ug/L		90	78 <sub>-</sub> 138	
OCDD	0.00200	0.00194	MB	ug/L		97	78 - 144	
OCDF	0.00200	0.00199	MB	ug/L		99	63 - 170	

LCS LCS

Isotope Dilution	%Recovery	Qualifier	Limits
13C-2,3,7,8-TCDD	64		20 - 175
13C-2,3,7,8-TCDF	65		22 - 152
13C-1,2,3,7,8-PeCDD	69		21 - 227
13C-1,2,3,7,8-PeCDF	66		21 - 192
13C-2,3,4,7,8-PeCDF	73		13 - 328
13C-1,2,3,4,7,8-HxCDD	74		21 - 193
13C-1,2,3,6,7,8-HxCDD	60		25 - 163
13C-1,2,3,4,7,8-HxCDF	69		19 - 202
13C-1,2,3,6,7,8-HxCDF	61		21 - 159

Job ID: 440-258227-1

Project/Site: Routine Outfall 008 Comp

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCS 320-349535/2-A **Client Sample ID: Lab Control Sample** 

**Matrix: Water** 

Client: Haley & Aldrich, Inc.

**Analysis Batch: 350522** 

Prep Type: Total/NA

**Prep Batch: 349535** LCS LCS

Isotope Dilution %Recovery Qualifier Limits 13C-1.2.3.7.8.9-HxCDF 17 - 205 65 13C-2,3,4,6,7,8-HxCDF 64 22 - 176 13C-1,2,3,4,6,7,8-HpCDD 62 26 - 166 63 21 - 158 13C-1,2,3,4,6,7,8-HpCDF 13C-1,2,3,4,7,8,9-HpCDF 71 20 - 186 13 - 199 13C-OCDD 62

LCS LCS

%Recovery Qualifier Limits Surrogate 37CI4-2,3,7,8-TCDD 97 31 - 191

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Lab Sample ID: MB 320-349535/1-A

**Matrix: Water** 

**Analysis Batch: 351071** 

**Client Sample ID: Method Blank** 

Prep Type: Total/NA Prep Batch: 349535

MB MB **EDL** Unit Analyte Result Qualifier RL D Prepared Analyzed Dil Fac

2,3,7,8-TCDF - RA  $\overline{\mathsf{ND}}$ 0.000010 0.0000005 ug/L 01/08/20 11:27 01/15/20 15:46

MB MB

Isotope Dilution Qualifier %Recovery I imits Prepared Analyzed Dil Fac 13C-2,3,7,8-TCDF - RA 70 24 - 169 01/08/20 11:27 01/15/20 15:46

MR MR

MR MR

ND

Qualifier Surrogate %Recovery Limits Prepared Analyzed Dil Fac 37CI4-2,3,7,8-TCDD - RA 96 35 - 197 01/08/20 11:27 01/15/20 15:46

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: MB 440-588241/1-A

**Matrix: Water** 

**Analysis Batch: 588599** 

Client Sample ID: Method Blank **Prep Type: Total Recoverable** 

**Prep Batch: 588241** 

Analyte Result Qualifier RL **MDL** Unit Prepared Analyzed Dil Fac Nickel  $\overline{\mathsf{ND}}$ 10 5.0 ug/L 12/30/19 08:35 12/30/19 17:25

20

12 ug/L

Lab Sample ID: LCS 440-588241/2-A

**Matrix: Water** 

Zinc

Analysis Batch: 588599

**Client Sample ID: Lab Control Sample Prep Type: Total Recoverable** 

12/30/19 08:35 12/30/19 17:25

**Prep Batch: 588241** 

LCS LCS Spike %Rec. **Analyte** Added Result Qualifier Unit %Rec Limits Nickel 500 506 101 85 - 115 ug/L 500 504 85 - 115 Zinc ug/L 101

1/20/2020

Client: Haley & Aldrich, Inc. Job ID: 440-258227-1

Spike

Added

500

500

MS MS

503

516

Result Qualifier

Unit

ug/L

ug/L

Project/Site: Routine Outfall 008 Comp

Lab Sample ID: 440-257890-E-6-C MS

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

Sample Sample

ND

ND

Result Qualifier

**Matrix: Water** 

Analysis Batch: 588599

Client Sample ID: Matrix Spike **Prep Type: Total Recoverable** 

**Prep Batch: 588241** %Rec. %Rec Limits 70 - 130 101 103 70 - 130

Lab Sample ID: 440-257890-E-6-D MSD

**Matrix: Water** 

Analyte

Nickel

Zinc

**Analysis Batch: 588599** 

**Client Sample ID: Matrix Spike Duplicate Prep Type: Total Recoverable** 

**Prep Batch: 588241** %Rec. **RPD** Limits RPD Limit

Sample Sample Spike MSD MSD Result Qualifier Added Result Qualifier %Rec Analyte Unit D Nickel ND 500 489 98 70 - 130 20 ug/L Zinc ND 500 501 ug/L 100 70 - 130 20 3

Lab Sample ID: MB 440-588288/1-C

**Matrix: Water** 

Analysis Batch: 588962

**Client Sample ID: Method Blank** 

**Prep Type: Dissolved** Prep Batch: 588307

MB MB Result Qualifier RL **MDL** Unit D Analyte Prepared Analyzed Dil Fac 10 Nickel 5.0 ug/L ND 12/28/19 11:55 01/02/20 18:11 Zinc ND 20 12/28/19 11:55 01/02/20 18:11 12 ua/L

Lab Sample ID: LCS 440-588288/2-C

**Matrix: Water** 

Analysis Batch: 588962

Client Sample ID: Lab Control Sample **Prep Type: Dissolved** 

Prep Batch: 588307

LCS LCS Spike %Rec. Analyte Added Result Qualifier Unit %Rec Limits Nickel 500 465 93 85 - 115 ug/L Zinc 500 459 ug/L 92 85 - 115

Lab Sample ID: 440-258219-A-3-D MS

**Matrix: Water** 

**Analysis Batch: 588962** 

**Client Sample ID: Matrix Spike** 

**Prep Type: Dissolved Prep Batch: 588307** 

Sample Sample Spike MS MS %Rec. Limits Result Qualifier Added Result Qualifier D %Rec Analyte Unit Nickel ND 500 458 92 70 - 130 ug/L Zinc ND 500 458 ug/L 92 70 - 130

Lab Sample ID: 440-258219-A-3-E MSD

**Matrix: Water** 

**Analysis Batch: 588962** 

**Client Sample ID: Matrix Spike Duplicate Prep Type: Dissolved** 

**Prep Batch: 588307** 

	Sample	Sample	Spike	MSD	MSD				%Rec.		RPD	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit	
Nickel	ND		500	461		ug/L		92	70 - 130	1	20	
Zinc	ND		500	460		ug/L		92	70 - 130	0	20	

Client: Haley & Aldrich, Inc.

Project/Site: Routine Outfall 008 Comp

Job ID: 440-258227-1

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 440-588198/1-A

**Matrix: Water** 

Analysis Batch: 588597

**Client Sample ID: Method Blank Prep Type: Total Recoverable Prep Batch: 588198** 

**Client Sample ID: Lab Control Sample** 

	MB MB						•	
Analyte	Result Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	ND	1.0	0.50	ug/L		12/28/19 09:46	12/30/19 17:42	1
Cadmium	ND	1.0	0.25	ug/L		12/28/19 09:46	12/30/19 17:42	1
Copper	ND	2.0	0.50	ug/L		12/28/19 09:46	12/30/19 17:42	1
Lead	ND	1.0	0.50	ug/L		12/28/19 09:46	12/30/19 17:42	1
Antimony	ND	2.0	0.50	ug/L		12/28/19 09:46	12/30/19 17:42	1
Selenium	ND	2.0	0.50	ug/L		12/28/19 09:46	12/30/19 17:42	1
Thallium	ND	1.0	0.20	ug/L		12/28/19 09:46	12/30/19 17:42	1

Lab Sample ID: LCS 440-588198/2-A

**Matrix: Water Prep Type: Total Recoverable** Analysis Batch: 588597 Prep Batch: 588198

Analysis Batch. 500597	Spike	LCS	LCS				%Rec.
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits
Silver	80.0	92.9	LQ	ug/L		116	85 - 115
Cadmium	80.0	85.7		ug/L		107	85 - 115
Copper	80.0	88.0		ug/L		110	85 - 115
Lead	80.0	83.1		ug/L		104	85 - 115
Antimony	80.0	92.4		ug/L		115	85 - 115
Selenium	80.0	84.9		ug/L		106	85 - 115
Thallium	80.0	85.1		ua/L		106	85 - 115

Lab Sample ID: 440-258216-B-4-B MS

**Matrix: Water** 

Analysis Batch: 588597

Client Sample ID: Matrix Spike **Prep Type: Total Recoverable Prep Batch: 588198** 

Tanan <b>,</b> Caronii Cocco.	Sample	Sample	Spike	MS	MS				%Rec.
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits
Silver	ND	LQ	80.0	83.7		ug/L		105	70 - 130
Cadmium	ND		80.0	79.1		ug/L		99	70 - 130
Copper	1.4	J,DX	80.0	77.5		ug/L		95	70 - 130
Lead	ND		80.0	77.3		ug/L		97	70 - 130
Antimony	ND		80.0	85.5		ug/L		107	70 - 130
Selenium	0.80	J,DX	80.0	83.6		ug/L		103	70 - 130
Thallium	ND		80.0	78.5		ug/L		98	70 <sub>-</sub> 130

Lab Sample ID: 440-258216-B-4-C MSD

**Matrix: Water** 

Analysis Batch: 588597

Client Sample ID: Matrix Spike Duplicate **Prep Type: Total Recoverable** Prep Batch: 588198

Alialysis Dalcii. 500551							Prep Batch.			. 200   20		
	Sample	Sample	Spike	MSD	MSD				%Rec.		RPD	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit	
Silver	ND	LQ	80.0	83.7		ug/L		105	70 - 130	0	20	
Cadmium	ND		80.0	79.2		ug/L		99	70 - 130	0	20	
Copper	1.4	J,DX	80.0	78.8		ug/L		97	70 - 130	2	20	
Lead	ND		80.0	76.9		ug/L		96	70 - 130	1	20	
Antimony	ND		80.0	84.8		ug/L		106	70 - 130	1	20	
Selenium	0.80	J,DX	80.0	81.5		ug/L		101	70 - 130	3	20	
Thallium	ND		80.0	77.9		ug/L		97	70 - 130	1	20	

Client: Haley & Aldrich, Inc.

Project/Site: Routine Outfall 008 Comp

Job ID: 440-258227-1

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

Lab Sample ID: MB 440-588288/1-D

**Matrix: Water** 

**Analysis Batch: 588634** 

Client Sample ID: Method Blank
Prep Type: Dissolved
Drop Potoby 500502

**Prep Batch: 588503** 

MB	MB						•	
Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
ND		1.0	0.50	ug/L		12/30/19 11:16	12/30/19 20:12	1
ND		1.0	0.25	ug/L		12/30/19 11:16	12/30/19 20:12	1
ND		2.0	0.50	ug/L		12/30/19 11:16	12/30/19 20:12	1
ND		1.0	0.50	ug/L		12/30/19 11:16	12/30/19 20:12	1
ND		2.0	0.50	ug/L		12/30/19 11:16	12/30/19 20:12	1
ND		2.0	0.50	ug/L		12/30/19 11:16	12/30/19 20:12	1
ND		1.0	0.20	ug/L		12/30/19 11:16	12/30/19 20:12	1
	Result ND ND ND ND ND ND ND ND	ND ND ND ND ND	Result         Qualifier         RL           ND         1.0           ND         1.0           ND         2.0           ND         1.0           ND         2.0           ND         2.0           ND         2.0           ND         2.0	Result         Qualifier         RL         MDL           ND         1.0         0.50           ND         1.0         0.25           ND         2.0         0.50           ND         1.0         0.50           ND         2.0         0.50           ND         2.0         0.50           ND         2.0         0.50	Result         Qualifier         RL         MDL         Unit           ND         1.0         0.50         ug/L           ND         1.0         0.25         ug/L           ND         2.0         0.50         ug/L           ND         1.0         0.50         ug/L           ND         2.0         0.50         ug/L           ND         2.0         0.50         ug/L	Result         Qualifier         RL         MDL         Unit         D           ND         1.0         0.50         ug/L           ND         1.0         0.25         ug/L           ND         2.0         0.50         ug/L           ND         1.0         0.50         ug/L           ND         2.0         0.50         ug/L           ND         2.0         0.50         ug/L	Result         Qualifier         RL         MDL         Unit         D         Prepared           ND         1.0         0.50         ug/L         12/30/19 11:16           ND         1.0         0.25         ug/L         12/30/19 11:16           ND         2.0         0.50         ug/L         12/30/19 11:16           ND         1.0         0.50         ug/L         12/30/19 11:16           ND         2.0         0.50         ug/L         12/30/19 11:16           ND         2.0         0.50         ug/L         12/30/19 11:16           ND         2.0         0.50         ug/L         12/30/19 11:16	Result         Qualifier         RL         MDL         Unit         D         Prepared         Analyzed           ND         1.0         0.50         ug/L         12/30/19 11:16         12/30/19 20:12           ND         1.0         0.25         ug/L         12/30/19 11:16         12/30/19 20:12           ND         2.0         0.50         ug/L         12/30/19 11:16         12/30/19 20:12           ND         1.0         0.50         ug/L         12/30/19 11:16         12/30/19 20:12           ND         2.0         0.50         ug/L         12/30/19 11:16         12/30/19 20:12           ND         2.0         0.50         ug/L         12/30/19 11:16         12/30/19 20:12           ND         2.0         0.50         ug/L         12/30/19 11:16         12/30/19 20:12

**Client Sample ID: Lab Control Sample** 

**Matrix: Water** 

Lab Sample ID: LCS 440-588288/2-D

Analysis Batch: 588634

**Prep Type: Dissolved** 

**Prep Batch: 588503** 

	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Silver	80.0	81.5		ug/L		102	85 - 115	
Cadmium	80.0	79.6		ug/L		100	85 - 115	
Copper	80.0	77.1		ug/L		96	85 - 115	
Lead	80.0	79.5		ug/L		99	85 - 115	
Antimony	80.0	89.1		ug/L		111	85 - 115	
Selenium	80.0	80.7		ug/L		101	85 - 115	
Thallium	80.0	80.9		ug/L		101	85 - 115	

Client Sample ID: Outfall008\_20191227\_Comp\_F

**Matrix: Water** 

Analysis Batch: 588634

Lab Sample ID: 440-258227-2 MS

**Prep Type: Dissolved** Prep Batch: 588503

Analysis Daton. 000004	Sample	Sample	Spike	MS	MS				%Rec.	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Silver	ND		80.0	80.6		ug/L		101	70 - 130	
Cadmium	ND		80.0	78.9		ug/L		99	70 - 130	
Copper	5.0		80.0	80.9		ug/L		95	70 - 130	
Lead	ND		80.0	79.3		ug/L		99	70 - 130	
Antimony	ND		80.0	88.7		ug/L		111	70 - 130	
Selenium	ND		80.0	80.8		ug/L		101	70 - 130	
Thallium	ND		80.0	80.3		ug/L		100	70 - 130	

Lab Sample ID: 440-258227-2 MSD

**Matrix: Water** 

Analysis Batch: 599624

Client Sample ID: Outfall008\_20191227\_Comp\_F

**Prep Type: Dissolved** 

Analysis Batch: 588634									Prep Batch: 58		8503	
		Sample	Sample	Spike	MSD	MSD				%Rec.		RPD
	Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
	Silver	ND		80.0	82.6		ug/L		103	70 - 130	2	20
	Cadmium	ND		80.0	80.6		ug/L		101	70 - 130	2	20
	Copper	5.0		80.0	81.4		ug/L		96	70 - 130	1	20
	Lead	ND		80.0	81.1		ug/L		101	70 - 130	2	20
	Antimony	ND		80.0	90.2		ug/L		113	70 - 130	2	20
	Selenium	ND		80.0	81.2		ug/L		102	70 - 130	0	20
	Thallium	ND		80.0	81.3		ug/L		102	70 - 130	1	20

RL

0.20

Spike

Added

Sample Sample

Sample Sample

 $\overline{\mathsf{ND}}$ 

Result Qualifier

MB MB

ND

Sample Sample

ND

Result Qualifier

Result Qualifier

ND

Result Qualifier

4.00

Spike

Added

4.00

Spike

Added

4.00

Spike

Added

4.00

Spike

Added

4 00

Spike

Added

4.00

RI

0.20

**MDL** Unit

0.10 ug/L

LCS LCS

MS MS

MSD MSD

3.55

Result Qualifier

**MDL** Unit

0.10 ug/L

LCS LCS

MS MS

MSD MSD

3.97

Result Qualifier

4.11

Result Qualifier

3.98

Result Qualifier

3.43

Result Qualifier

3.55

Result Qualifier

Unit

ug/L

Unit

ug/L

Unit

ug/L

Unit

ug/L

Unit

ug/L

Unit

ug/L

Job ID: 440-258227-1

Client: Haley & Aldrich, Inc.

Project/Site: Routine Outfall 008 Comp

Method: 245.1 - Mercury (CVAA)

Lab Sample ID: MB 440-588737/1-A

**Matrix: Water** Analysis Batch: 588954

MB MB

Result Qualifier Analyte

Mercury ND

Lab Sample ID: LCS 440-588737/2-A **Matrix: Water** 

**Analysis Batch: 588954** 

Analyte

Mercury

Lab Sample ID: 440-258077-D-1-H MS **Matrix: Water** 

**Analysis Batch: 588954** 

Analyte

Mercury

Mercury

Lab Sample ID: 440-258077-D-1-I MSD

**Matrix: Water** 

Analysis Batch: 588954

Analyte

Lab Sample ID: MB 440-589977/1-C

**Matrix: Water** 

Analysis Batch: 590948

**Analyte** Mercury

Lab Sample ID: LCS 440-589977/2-C

**Matrix: Water** 

**Analysis Batch: 590948** 

Analyte

Mercury

Lab Sample ID: 440-258718-A-2-H MS

**Matrix: Water** 

**Analysis Batch: 590948** 

Mercury

Analyte

Lab Sample ID: 440-258718-A-2-I MSD

**Matrix: Water** 

**Analysis Batch: 590948** 

Sample Sample

Analyte Mercury

Result Qualifier ND

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 588737

Analyzed Dil Fac Prepared

12/31/19 12:32 01/02/20 13:12 **Client Sample ID: Lab Control Sample** 

Prep Type: Total/NA **Prep Batch: 588737** 

%Rec.

D %Rec Limits

89

85 - 115

Client Sample ID: Matrix Spike

Prep Type: Total/NA **Prep Batch: 588737** 

%Rec.

Limits D %Rec 86

75 - 125

**Client Sample ID: Matrix Spike Duplicate** 

Prep Type: Total/NA

Prep Batch: 588737 %Rec. **RPD** 

D %Rec Limits **RPD** Limit 89 75 - 125

Client Sample ID: Method Blank **Prep Type: Dissolved** 

Prep Batch: 590663

Analyzed Dil Fac

01/15/20 11:35 01/16/20 11:00 **Client Sample ID: Lab Control Sample** 

Prepared

**Prep Type: Dissolved** 

**Prep Batch: 590663** %Rec.

%Rec Limits

85 - 115

Client Sample ID: Matrix Spike **Prep Type: Dissolved** 

**Prep Batch: 590663** 

%Rec. Limits

%Rec 103 75 - 125

%Rec

99

**Client Sample ID: Matrix Spike Duplicate** 

**Prep Type: Dissolved** 

**Eurofins Calscience Irvine** 

**Prep Batch: 590663** 

%Rec. **RPD** RPD Limit Limits

75 - 125 3 20

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1/20/2020

Client: Haley & Aldrich, Inc. Job ID: 440-258227-1

Project/Site: Routine Outfall 008 Comp

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

Lab Sample ID: MB 440-588438/1

Analysis Batch: 588438

**Matrix: Water** 

MB MB

Analyte Result Qualifier RL **MDL** Unit Analyzed Dil Fac Prepared Total Dissolved Solids 10 5.0 mg/L 12/30/19 08:49 ND

Lab Sample ID: LCS 440-588438/2

**Matrix: Water** 

**Analysis Batch: 588438** 

LCS LCS Spike Analyte Added Result Qualifier Unit D %Rec

Total Dissolved Solids

Lab Sample ID: 440-258195-E-2 DU

**Matrix: Water** 

**Analysis Batch: 588438** 

Sample Sample DU DU **RPD** Analyte Result Qualifier Result Qualifier Unit ח RPD Limit Total Dissolved Solids 8600 5 8370 mg/L

RI

1.0

**MDL** Unit

0.50 mg/L

996

mg/L

1000

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

Lab Sample ID: MB 440-588223/1

**Matrix: Water** 

**Analysis Batch: 588223** 

MB MB

Analyte Result Qualifier

**Total Suspended Solids** ND

Lab Sample ID: LCS 440-588223/2

**Matrix: Water** 

**Analysis Batch: 588223** 

Spike LCS LCS %Rec. Added Limits Analyte Result Qualifier Unit %Rec **Total Suspended Solids** 1000 969 mg/L 97 85 - 115

Lab Sample ID: 440-258219-D-1 DU

**Matrix: Water** 

**Analysis Batch: 588223** 

Sample Sample DU DU **RPD** RPD Analyte Result Qualifier Result Qualifier Unit D Limit 184 **Total Suspended Solids** 190 mg/L

RL

5.0

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

Lab Sample ID: MB 440-588874/1-A

**Matrix: Water** 

**Analysis Batch: 588897** 

MB MB

Analyte Result Qualifier

Cyanide, Total  $\overline{\mathsf{ND}}$  **MDL** Unit 2.5 ua/L

Prepared Analyzed 01/02/20 10:20 01/02/20 12:52

**Client Sample ID: Method Blank** 

Dil Fac

Prep Type: Total/NA

Prep Batch: 588874

Client Sample ID: Method Blank

**Client Sample ID: Lab Control Sample** 

%Rec.

Limits

90 - 110

Client Sample ID: Method Blank

**Client Sample ID: Lab Control Sample** 

Analyzed

12/27/19 16:12

**Client Sample ID: Duplicate** 

**Client Sample ID: Duplicate** 

100

Prepared

Prep Type: Total/NA

Dil Fac

Client: Haley & Aldrich, Inc. Job ID: 440-258227-1

Project/Site: Routine Outfall 008 Comp

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

Lab Sample ID: LCS 440-588874/2-A				Clie	nt Sai	mple ID	: Lab Control Sample
Matrix: Water							Prep Type: Total/NA
Analysis Batch: 588897							<b>Prep Batch: 588874</b>
	Spike	LCS	LCS				%Rec.
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits

95.1

ug/L

95

80 - 120

100

Lab Sample ID: 440-258219-P-1-A MS **Client Sample ID: Matrix Spike Matrix: Water** Prep Type: Total/NA **Prep Batch: 588874 Analysis Batch: 588897** MS MS %Rec. Sample Sample Spike Analyte Result Qualifier Added Result Qualifier Unit D %Rec Limits 100 Cyanide, Total ND 96.8 ug/L 97 75 - 125

Lab Sample ID: 440-258219-P-1-B MSD **Client Sample ID: Matrix Spike Duplicate Matrix: Water** Prep Type: Total/NA **Analysis Batch: 588897 Prep Batch: 588874** Sample Sample Spike MSD MSD %Rec. **RPD** Analyte Result Qualifier Added Result Qualifier Unit Limits RPD Limit D %Rec Cyanide, Total ND 100 95.3 2 20 ug/L 95 75 - 125

Method: SM 4500 NH3 G - Ammonia

Lab Sample ID: MB 440-588750/10 Client Sample ID: Method Blank **Matrix: Water** Prep Type: Total/NA

Cyanide, Total

**Analysis Batch: 588750** 

MB MB Analyte Result Qualifier RI **MDL** Unit Prepared Analyzed Dil Fac 0.200 Ammonia (as N)  $\overline{\mathsf{ND}}$ 0.100 mg/L 12/31/19 11:19

Lab Sample ID: LCS 440-588750/11 **Client Sample ID: Lab Control Sample Matrix: Water** Prep Type: Total/NA

**Analysis Batch: 588750** 

Spike LCS LCS %Rec. Added Limits Analyte Result Qualifier Unit %Rec Ammonia (as N) 5.00 4.750 mg/L 95 90 - 110

Lab Sample ID: MRL 440-588750/9 **Client Sample ID: Lab Control Sample Matrix: Water** Prep Type: Total/NA

Analysis Batch: 588750

Spike MRL MRL %Rec. Added Analyte Result Qualifier Unit D %Rec Limits 0.200 0.2030 Ammonia (as N) mg/L 102 50 - 150

Lab Sample ID: 440-258227-1 MS Client Sample ID: Outfall008 20191227 Comp **Matrix: Water** Prep Type: Total/NA

**Analysis Batch: 588750** 

MS MS Sample Sample Spike %Rec. Result Qualifier Added Result Qualifier Unit Limits %Rec Ammonia (as N) 0.183 J,DX 5.00 4.830 mg/L 93 90 - 110

**Eurofins Calscience Irvine** 

1/20/2020

### **QC Sample Results**

Client: Haley & Aldrich, Inc. Job ID: 440-258227-1

Project/Site: Routine Outfall 008 Comp

### Method: SM 4500 NH3 G - Ammonia (Continued)

Lab Sample ID: 440-258227-1 MSD Client Sample ID: Outfall008\_20191227\_Comp **Matrix: Water Prep Type: Total/NA** 

**Analysis Batch: 588750** 

	Sample	Sample	Spike	MSD	MSD				%Rec.		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Ammonia (as N)	0.183	J,DX	5.00	4.560	LN	mg/L		88	90 - 110	6	15

Client: Haley & Aldrich, Inc.

Project/Site: Routine Outfall 008 Comp

HPLC/IC

Ana	weie	Batc	h• 5	QQ,	122

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258227-1	Outfall008_20191227_Comp	Total/NA	Water	300.0	
MB 440-588133/6	Method Blank	Total/NA	Water	300.0	
LCS 440-588133/5	Lab Control Sample	Total/NA	Water	300.0	
440-258197-G-1 MS	Matrix Spike	Total/NA	Water	300.0	
440-258197-G-1 MSD	Matrix Spike Duplicate	Total/NA	Water	300.0	

#### **Analysis Batch: 588134**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258227-1	Outfall008_20191227_Comp	Total/NA	Water	300.0	
MB 440-588134/6	Method Blank	Total/NA	Water	300.0	
LCS 440-588134/5	Lab Control Sample	Total/NA	Water	300.0	
440-258197-G-1 MS	Matrix Spike	Total/NA	Water	300.0	
440-258197-G-1 MSD	Matrix Spike Duplicate	Total/NA	Water	300.0	

#### **Analysis Batch: 588445**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258227-1	Outfall008_20191227_Comp	Total/NA	Water	314.0	
MB 440-588445/6	Method Blank	Total/NA	Water	314.0	
LCS 440-588445/5	Lab Control Sample	Total/NA	Water	314.0	
MRL 440-588445/4	Lab Control Sample	Total/NA	Water	314.0	
MRL 440-588445/8	Lab Control Sample	Total/NA	Water	314.0	
440-258138-C-1 MS	Matrix Spike	Total/NA	Water	314.0	
440-258138-C-1 MSD	Matrix Spike Duplicate	Total/NA	Water	314.0	

### **Analysis Batch: 589802**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258227-1	Outfall008_20191227_Comp	Total/NA	Water	NO3NO2 Calc	

### **Specialty Organics**

### **Prep Batch: 349535**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258227-1	Outfall008_20191227_Comp	Total/NA	Water	1613B	
440-258227-1 - RA	Outfall008_20191227_Comp	Total/NA	Water	1613B	
MB 320-349535/1-A	Method Blank	Total/NA	Water	1613B	
MB 320-349535/1-A - RA	Method Blank	Total/NA	Water	1613B	
LCS 320-349535/2-A	Lab Control Sample	Total/NA	Water	1613B	

### Analysis Batch: 350522

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258227-1	Outfall008_20191227_Comp	Total/NA	Water	1613B	349535
MB 320-349535/1-A	Method Blank	Total/NA	Water	1613B	349535
LCS 320-349535/2-A	Lab Control Sample	Total/NA	Water	1613B	349535

### Analysis Batch: 351071

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 320-349535/1-A - RA	Method Blank	Total/NA	Water	1613B	349535

### **Analysis Batch: 351318**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258227-1 - RA	Outfall008_20191227_Comp	Total/NA	Water	1613B	349535

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Job ID: 440-258227-1

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Client: Haley & Aldrich, Inc.

Project/Site: Routine Outfall 008 Comp

Metals

**Prep Batch: 588198** 

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258227-1	Outfall008_20191227_Comp	Total Recoverable	Water	200.2	
MB 440-588198/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-588198/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-258216-B-4-B MS	Matrix Spike	Total Recoverable	Water	200.2	
440-258216-B-4-C MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.2	

**Prep Batch: 588241** 

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258227-1	Outfall008_20191227_Comp	Total Recoverable	Water	200.2	
MB 440-588241/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-588241/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-257890-E-6-C MS	Matrix Spike	Total Recoverable	Water	200.2	
440-257890-E-6-D MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.2	

Filtration Batch: 588288

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258227-2	Outfall008_20191227_Comp_F	Dissolved	Water	FILTRATION	-
MB 440-588288/1-C	Method Blank	Dissolved	Water	FILTRATION	
MB 440-588288/1-D	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-588288/2-C	Lab Control Sample	Dissolved	Water	FILTRATION	
LCS 440-588288/2-D	Lab Control Sample	Dissolved	Water	FILTRATION	
440-258219-A-3-D MS	Matrix Spike	Dissolved	Water	FILTRATION	
440-258219-A-3-E MSD	Matrix Spike Duplicate	Dissolved	Water	FILTRATION	
440-258227-2 MS	Outfall008_20191227_Comp_F	Dissolved	Water	FILTRATION	
440-258227-2 MSD	Outfall008_20191227_Comp_F	Dissolved	Water	FILTRATION	

**Prep Batch: 588307** 

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258227-2	Outfall008_20191227_Comp_F	Dissolved	Water	200.2	588288
MB 440-588288/1-C	Method Blank	Dissolved	Water	200.2	588288
LCS 440-588288/2-C	Lab Control Sample	Dissolved	Water	200.2	588288
440-258219-A-3-D MS	Matrix Spike	Dissolved	Water	200.2	588288
440-258219-A-3-E MSD	Matrix Spike Duplicate	Dissolved	Water	200.2	588288

**Prep Batch: 588503** 

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258227-2	Outfall008_20191227_Comp_F	Dissolved	Water	200.2	588288
MB 440-588288/1-D	Method Blank	Dissolved	Water	200.2	588288
LCS 440-588288/2-D	Lab Control Sample	Dissolved	Water	200.2	588288
440-258227-2 MS	Outfall008_20191227_Comp_F	Dissolved	Water	200.2	588288
440-258227-2 MSD	Outfall008_20191227_Comp_F	Dissolved	Water	200.2	588288

Analysis Batch: 588597

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258227-1	Outfall008_20191227_Comp	Total Recoverable	Water	200.8	588198
MB 440-588198/1-A	Method Blank	Total Recoverable	Water	200.8	588198
LCS 440-588198/2-A	Lab Control Sample	Total Recoverable	Water	200.8	588198
440-258216-B-4-B MS	Matrix Spike	Total Recoverable	Water	200.8	588198
440-258216-B-4-C MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.8	588198

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Client: Haley & Aldrich, Inc.

Project/Site: Routine Outfall 008 Comp

**Metals** 

Analysis Batch: 588599

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258227-1	Outfall008_20191227_Comp	Total Recoverable	Water	200.7 Rev 4.4	588241
MB 440-588241/1-A	Method Blank	Total Recoverable	Water	200.7 Rev 4.4	588241
LCS 440-588241/2-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	588241
440-257890-E-6-C MS	Matrix Spike	Total Recoverable	Water	200.7 Rev 4.4	588241
440-257890-E-6-D MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.7 Rev 4.4	588241

Analysis Batch: 588634

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258227-2	Outfall008_20191227_Comp_F	Dissolved	Water	200.8	588503
MB 440-588288/1-D	Method Blank	Dissolved	Water	200.8	588503
LCS 440-588288/2-D	Lab Control Sample	Dissolved	Water	200.8	588503
440-258227-2 MS	Outfall008_20191227_Comp_F	Dissolved	Water	200.8	588503
440-258227-2 MSD	Outfall008_20191227_Comp_F	Dissolved	Water	200.8	588503

**Prep Batch: 588737** 

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258227-1	Outfall008_20191227_Comp	Total/NA	Water	245.1	
MB 440-588737/1-A	Method Blank	Total/NA	Water	245.1	
LCS 440-588737/2-A	Lab Control Sample	Total/NA	Water	245.1	
440-258077-D-1-H MS	Matrix Spike	Total/NA	Water	245.1	
440-258077-D-1-I MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	

Analysis Batch: 588954

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258227-1	Outfall008_20191227_Comp	Total/NA	Water	245.1	588737
MB 440-588737/1-A	Method Blank	Total/NA	Water	245.1	588737
LCS 440-588737/2-A	Lab Control Sample	Total/NA	Water	245.1	588737
440-258077-D-1-H MS	Matrix Spike	Total/NA	Water	245.1	588737
440-258077-D-1-I MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	588737

**Analysis Batch: 588962** 

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258227-2	Outfall008_20191227_Comp_F	Dissolved	Water	200.7 Rev 4.4	588307
MB 440-588288/1-C	Method Blank	Dissolved	Water	200.7 Rev 4.4	588307
LCS 440-588288/2-C	Lab Control Sample	Dissolved	Water	200.7 Rev 4.4	588307
440-258219-A-3-D MS	Matrix Spike	Dissolved	Water	200.7 Rev 4.4	588307
440-258219-A-3-E MSD	Matrix Spike Duplicate	Dissolved	Water	200.7 Rev 4.4	588307

Filtration Batch: 589977

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258227-2	Outfall008_20191227_Comp_F	Dissolved	Water	FILTRATION	
MB 440-589977/1-C	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-589977/2-C	Lab Control Sample	Dissolved	Water	FILTRATION	
440-258718-A-2-H MS	Matrix Spike	Dissolved	Water	FILTRATION	
440-258718-A-2-I MSD	Matrix Spike Duplicate	Dissolved	Water	FILTRATION	

**Prep Batch: 590663** 

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258227-2	Outfall008_20191227_Comp_F	Dissolved	Water	245.1	589977
MB 440-589977/1-C	Method Blank	Dissolved	Water	245.1	589977
LCS 440-589977/2-C	Lab Control Sample	Dissolved	Water	245.1	589977

**Eurofins Calscience Irvine** 

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Job ID: 440-258227-1

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Client: Haley & Aldrich, Inc.

Project/Site: Routine Outfall 008 Comp

**Metals (Continued)** 

Pren	Batch:	590663	(Continued)
1 1 6 10	Dateii.	00000	1 Outlinea

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258718-A-2-H MS	Matrix Spike	Dissolved	Water	245.1	589977
440-258718-A-2-I MSD	Matrix Spike Duplicate	Dissolved	Water	245.1	589977

### **Analysis Batch: 590948**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258227-2	Outfall008_20191227_Comp_F	Dissolved	Water	245.1	590663
MB 440-589977/1-C	Method Blank	Dissolved	Water	245.1	590663
LCS 440-589977/2-C	Lab Control Sample	Dissolved	Water	245.1	590663
440-258718-A-2-H MS	Matrix Spike	Dissolved	Water	245.1	590663
440-258718-A-2-I MSD	Matrix Spike Duplicate	Dissolved	Water	245.1	590663

### **General Chemistry**

### **Analysis Batch: 588223**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258227-1	Outfall008_20191227_Comp	Total/NA	Water	SM 2540D	
MB 440-588223/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 440-588223/2	Lab Control Sample	Total/NA	Water	SM 2540D	
440-258219-D-1 DU	Duplicate	Total/NA	Water	SM 2540D	

### **Analysis Batch: 588438**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258227-1	Outfall008_20191227_Comp	Total/NA	Water	SM 2540C	
MB 440-588438/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 440-588438/2	Lab Control Sample	Total/NA	Water	SM 2540C	
440-258195-E-2 DU	Duplicate	Total/NA	Water	SM 2540C	

### **Analysis Batch: 588750**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258227-1	Outfall008_20191227_Comp	Total/NA	Water	SM 4500 NH3 G	
MB 440-588750/10	Method Blank	Total/NA	Water	SM 4500 NH3 G	
LCS 440-588750/11	Lab Control Sample	Total/NA	Water	SM 4500 NH3 G	
MRL 440-588750/9	Lab Control Sample	Total/NA	Water	SM 4500 NH3 G	
440-258227-1 MS	Outfall008_20191227_Comp	Total/NA	Water	SM 4500 NH3 G	
440-258227-1 MSD	Outfall008_20191227_Comp	Total/NA	Water	SM 4500 NH3 G	

### **Prep Batch: 588874**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method Prep Batc
440-258227-1	Outfall008_20191227_Comp	Total/NA	Water	Distill/CN
MB 440-588874/1-A	Method Blank	Total/NA	Water	Distill/CN
LCS 440-588874/2-A	Lab Control Sample	Total/NA	Water	Distill/CN
440-258219-P-1-A MS	Matrix Spike	Total/NA	Water	Distill/CN
440-258219-P-1-B MSD	Matrix Spike Duplicate	Total/NA	Water	Distill/CN

### Analysis Batch: 588897

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258227-1	Outfall008_20191227_Comp	Total/NA	Water	SM 4500 CN E	588874
MB 440-588874/1-A	Method Blank	Total/NA	Water	SM 4500 CN E	588874
LCS 440-588874/2-A	Lab Control Sample	Total/NA	Water	SM 4500 CN E	588874
440-258219-P-1-A MS	Matrix Spike	Total/NA	Water	SM 4500 CN E	588874
440-258219-P-1-B MSD	Matrix Spike Duplicate	Total/NA	Water	SM 4500 CN E	588874

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### **Definitions/Glossary**

Client: Haley & Aldrich, Inc. Job ID: 440-258227-1

Project/Site: Routine Outfall 008 Comp

#### Qualifiers

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Qualifier **Qualifier Description** BB Sample > 4X spike concentration

ΕY

Result exceeds normal dynamic range; reported as a min. est. J,DX Estimated value; value < lowest standard (MQL), but >than MDL

**Dioxin** 

Qualifier **Qualifier Description** 

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.

**Metals** 

Qualifier **Qualifier Description** 

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

LCS/LCSD recovery above method control limits IΩ

**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)

**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)

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

MDI Method Detection Limit Minimum Level (Dioxin) ML

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)

Reporting Limit or Requested Limit (Radiochemistry) RL

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

TFF Toxicity Equivalent Factor (Dioxin) **TEQ** Toxicity Equivalent Quotient (Dioxin)

**Eurofins Calscience Irvine** 

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#### **Accreditation/Certification Summary**

Client: Haley & Aldrich, Inc. Job ID: 440-258227-1

Project/Site: Routine Outfall 008 Comp

#### **Laboratory: Eurofins Calscience Irvine**

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

Authority	Program	Identification Number Expiration Date
California	State Program	CA ELAP 2706 06-30-20
The following analytes the agency does not on		not certified by the governing authority. This list may include analytes for wh

#### Laboratory: Eurofins TestAmerica, Sacramento

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	<b>Expiration Date</b>
Alaska (UST)	State	17-020	01-20-21
ANAB	Dept. of Defense ELAP	L2468	01-20-21
ANAB	Dept. of Energy	L2468.01	01-20-21
ANAB	ISO/IEC 17025	L2468	01-20-21
Arizona	State	AZ0708	08-11-20
Arkansas DEQ	State	19-042-0	06-17-20
California	State	2897	01-31-20 *
Colorado	State	CA0004	08-31-20
Connecticut	State	PH-0691	06-30-21
Florida	NELAP	E87570	06-30-20
Georgia	State	4040	01-29-20 *
Hawaii	State	<cert no.=""></cert>	01-29-20 *
Illinois	NELAP	200060	03-17-20
Kansas	NELAP	E-10375	10-31-20 *
Louisiana	NELAP	01944	06-30-20
Maine	State	2018009	04-14-20
Michigan	State	9947	01-29-20 *
Michigan	State Program	9947	01-31-20
Nevada	State	CA000442020-1	07-31-20
New Hampshire	NELAP	2997	04-18-20
New Jersey	NELAP	CA005	06-30-20
New York	NELAP	11666	04-01-20
Oregon	NELAP	4040	01-29-20 *
Pennsylvania	NELAP	68-01272	03-31-20
Texas	NELAP	T104704399-19-13	05-31-20
US Fish & Wildlife	US Federal Programs	58448	07-31-20
USDA	US Federal Programs	P330-18-00239	07-31-21
Utah	NELAP	CA000442019-01	02-29-20
Vermont	State	VT-4040	04-16-20
Virginia	NELAP	460278	03-14-20
Washington	State	C581	05-05-20
West Virginia (DW)	State	9930C	12-31-19 *
Wyoming	State Program	8TMS-L	01-28-19 *

<sup>\*</sup> Accreditation/Certification renewal pending - accreditation/certification considered valid.

Field Readings

ppe

Comments

Total Recoverable Metals: Mercury (E245.1)

Total Dissolved Metals: Mercury (E245.1)

Gross Alpha(E900.0), Gross Beta(E900.0), Trial (E902.0), Total (E903.0), E908.0), Total (E903.0), E908.0), Total (E903.0), E908.0), Trial (E909.0), Trial (E90

Total Dissolved Metals: (E200.7); Ni, Zn (E200.8); Ag, Cd, Cu, Pb, Sb, Se, Ti

7:, SO4, Ninate-N, Nimite-N, NO3+NO2-N, Perchlorate (390)

TCDD (and all congeners) (E1613B)

Total Recoverable Metals: (E200.7); VII, Zn (E200.8); Ag, Cd, Cu, Pb, Sb, Se, Ti

LDS (SMS240C/E18011)

Project Manager: Katherine Miller 520.289.8606, 520.904.6944 (cell) Field Manager: Mark Dominick 978.234.5033, 818.599.0702 (cell)

Fest-America's services under this CAC shall be performed in accordance with the TACS, within Banket Sonvice Agraement 2018-22. Test-America by and between Haley & Addish inc., its subsidiaries and effiliates, and Test-America Laboratories inc.

Project:
Boeing-SSFL NPDES
Permit 2019
Routine Cutfall (008)
Outfall 008
Comp

MSMASD

Bottle #

Preservative HNO<sub>1</sub>

# of Cont.

Container Type

Sample Matrix VVM

Sampling Data/Time

Sample I.D.

Sample Description

Sampler:

500 mt. Poty

(COPSCMS) 2:091) SS.

(3.03£) N-sinomm

440-258227 Chain of Custody

Filter and preserve win 24hrs of receipt at lab Sample receiving DO NOT OPEN BAGS, Bag to be opened in Mercury Prepusing clean mby teat If thist or secured rain events in weat Dollvai to ABC Labe is Ventor Untitlered and unpreserved analysis, Separate RAD onto another workorder, Analyze dupkcate, not MS/MSD. 10 Day: X 1011 48 hours Holding Time NO, & NO, Normal All Level IV Data Requirements: (Check) 72 Hour. Store samples for 6 months um-around time: (Check) Sample integrity: (Check) 무 몽우 No Level IV: 24 Hour 48 Hour ntact 0 VS Legend: A=Annual, C=Conditional, EP=Expert Panel, R=Routine, Q=Quarterly, QRSW=Quarterly Receiving Water, S=Semt-Annual PI F2 12127119 0948 7 I r ž ž £ ž 2 ŝ ž 운 2 ŝ ટ્ટ ટ્ટ ŝ TA 10V Received By 10 8 155 160 220 225 230 235 135 205 330 10 130 H,SO None None NaOH None None None None None None None None None 9 HALPID PRISIL 1 L Glass Amber borosilicate vials 500 mL Paly 1 L Glass Amber 11. Glass Amber 500 mL Poly 500 mL Paty 500 mL. Poly 500 mL Poly 2.5 Gal Cube 1 Gal Cube 11. Poly 1t. Poly 1 R132V N 19 ( 1.8.) WW 122712019 5 5 5 WIN NA. - Wall Š WIK N Ž Š X. M the w 122722019 12/27/2019 12/27/19 0940 3112718 Ouffeli008\_20191227\_Comp\_Extra Outfalt008\_20191227\_Comp\_F Outfall008\_20191227\_Comp Outfall 008

G7 61/62/21

0205/05/10 022019-2020 Rainy Season Version 1

Citent Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108

Test America Contact: Urvashi Patel 17461 Derian Ave Suite #100 Irvine CA 92614

Tel 949-260-3269 Cell 949-333-9055 Carrier Tracking No(s):

Eurofins TestAmerica, Irvine

17461 Derian Ave Suite 100

Irvine, CA 92614-5817

Phone: 949-261-1022 Fax: 949-260-3297

Cooler Temperature(s) °C and Other Remarks

eceived by:

Company

# Chain of Custody Record

🔆 eurofins

Environment Testing TestAmerica Eurofins TestAmerica, Irvine 17461 Derian Ave Suite 100 Irvine, CA 92614-5817 Phone: 949-261-1022 Fax: 949-260-3297

Client Information (Sub Contract Lab)	Sampler:		Lab PM Patel,	Lab PM. Patel, Urvashi			Carrier Tracking No(s):	:(s	COC No: 440-150636.1	
Slient Contact: Shipping/Receiving	Phone:		E-Mail urvas	hi.patel@t	E-Mail: urvashi.patel@testamericainc.com	com	State of Origin: California		Page 1 of 1	
Dompany: FestAmerica Laboratories, Inc.				Accreditations State Prog	Accreditations Required (See note) State Program - California	ote): a			Job #: 440-258227-1	
kddress: 380 Riverside Parkway,	Due Date Requested: 1/9/2020				A	Analysis Requested	quested		Preservation Codes:	des:
Jity. West Sacramento	TAT Requested (days):			sle					B - NaOH C - Zn Acetate D - Nitric Acid	N - None O - AsnaO2 P - Na2O4S
2A, 95605	#Od			IoT \w					E - NaHSO4 F - MeOH	Q - Na2SO3 R - Na2S2O3
316-373-5600(Tel) 916-372-1059(Fax)				29					H - Ascorbic Acid	5 - H2SO4 T - TSP Dodecahydrate
:mail;	WO#			(0)						U - Acetone V - MCAA
roject Name: Boeing NPDES SSFL outfalls	Project #: 44009879			10 88					K-EDA	W - pH 4-5 Z - other (specify)
Site:	SSOW#.			Y) as					of cor	
ample Identification - Client ID (Lab ID)	Sample Date Tir	Sample Type C=comp, Time G=crab)	Matrix (wewater, Sesolid, Owwate/oil,	Field Filtered S Perform MS/M: 1613B/1613B_Sd				1 200	Total Number on Number o	Special Instructions/Note:
	1	Preserva	-	X			1			
Outfall008_20191227_Comp (440-258227-1)	12/27/19 08:25 Pacific	08:25 Pacific	Water	×					2 See QAS, Boeing Boeing glassware	See QAS, Boeing_wlu to zero, ug/L. Use Boeing glassware.
									1 1000	
									1 130	
tour size abbratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins testAmerica abbratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins restAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins TestAmerica.	America places the ownership of mei matrix being analyzed, the samples i rent to date, return the signed Chain	hod, analyte & accred must be shipped back of Custody attesting to	tation complian to the Eurofins I said complican	se upon out s estAmerica I se to Eurofins	ubconfract laborate aboratory or other TestAmerica	ories. This sam	ple shipment is forward be provided. Any chan	ed under chain ges to accredit	-of-custody. If the labor ation status should be b	atory does not currently ought to Eurofins
Possible Hazard Identification				Sample	Disposal (A	fee may be	assessed if samp	les are reta	Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)	month)
Incontirmed Deliverable Requested: I, II, III, IV, Other (specify)	Primary Deliverable Rank: 2	ank: 2		Special	Special Instructions/QC Requirements	2 Requireme	Disposal by Lab	₹	Archive For	Months

Ver: 01/16/2019

Company Sa(

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Date/Time: 04/(A

ridnished by: nquished by.

Empty Kit Relinquished by Fry effinquished by. Custody Seals Intact: Custody Seal No.:

Job Number: 440-258227-1

Login Number: 258227 List Source: Eurofins Irvine

List Number: 1

Creator: Dolidze, Lado

Answer	Comment
True	
N/A	Not present
N/A	Not Present
True	
N/A	
True	
True	
True	
True	
N/A	
	True N/A N/A True True True True True True True True

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#### **Login Sample Receipt Checklist**

Client: Haley & Aldrich, Inc.

Job Number: 440-258227-1

Login Number: 258227 List Source: Eurofins TestAmerica, Sacramento

List Number: 3 List Creation: 12/28/19 11:10 AM

Answer	Comment
True	
True	Seal present with no number.
N/A	
True	
True	
True	
True	1.3c
True	
True	
True	
False	Received project as a subcontract.
True	
N/A	
True	
True	
True	
True	
N/A	
	True N/A True True True True True True True True

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#### **Isotope Dilution Summary**

Client: Haley & Aldrich, Inc. Job ID: 440-258227-1

Project/Site: Routine Outfall 008 Comp

#### Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Method Blank

Matrix: Water Prep Type: Total/NA

**TCDF** 

**PeCDD** 

**TCDD** 

Percent Isotope Dilution Recovery (Acceptance Limits)

**PeCF** 

**HxCDD** 

**PeCDF** 

Lab Sample ID	Client Sample ID	(25-164)	(24-169)	(25-181)	(24-185)	(21-178)	(32-141)	(28-130)	(26-152)
440-258227-1	Outfall008_20191227_Comp	56	58	57	58	63	62	52	59
440-258227-1 - RA	Outfall008_20191227_Comp		62						
MB 320-349535/1-A	Method Blank	63	65	69	68	74	75	64	73
MB 320-349535/1-A - RA	Method Blank		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)	
440-258227-1	Outfall008_20191227_Comp	51	54	54	53	54	59	51	
440-258227-1 - RA	Outfall008_20191227_Comp								
MB 320-349535/1-A	Method Blank	62	67	66	64	64	71	63	

## MB 320-349535/1-A - RA 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

			Perc	ent Isotope	Dilution Re	covery (Ac	ceptance L	imits)	
		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 320-349535/2-A	Lab Control Sample	64	65	69	66	73	74	60	69
			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 320-349535/2-A	Lab Control Sample	61	65	64	62	63	71	62	

#### **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

**Eurofins Calscience Irvine** 

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**HxCDF** 

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#### **Isotope Dilution Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Routine Outfall 008 Comp

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

Job ID: 440-258227-1

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Job:

#### Environment Testing TestAmerica

# Sacramento Sample Receiving Notes



440 DESCRIPTION Chart

Tracking #:_	111	9-9	74	2 -	5	32	2
	110		_	-	_	-	_

SO / PØ / FO / SAT / 2-Day / Ground / UPS / CDO / Courier GSO / OnTrac / Goldstreak / USPS / Other\_\_\_\_\_

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations. File in the job folder with the GOC.

Notes:	Therm. ID:Corr. Factor: (+/-)C°C
	Ice Wet Gel Other
	Cooler Custody Seal: Scal
	Cooler ID: 20 F Z
	Temp Observed: 1-3 °C Corrected: 1-3 °C
	From: Temp Blank D Sample D
	During Initial Triage Yes No NA
	During Initial Triage  Cooler compromised/tampered with?  No NA  D
	Cooler Temperature is acceptable?
	CoC is complete w/o discrepancies?
	Samples received within holding time?
	camples (essived willim helding time.
	Initials: 30 Date: 12/28/19
	During Labeling Yes No NA
	Samples compromised/tampered with?
	Sample containers have legible labels?
	Sample custody seal?
	Containers are not broken or leaking?
	Sample date/times are provided?
	Appropriate containers are used?
	Sample bottles are completely filled?
	Sample preservatives verified?
	Samples w/o discrepancies?
	Zero headspace?*
	Alkalinity has no headspace?
	Perchlorate has headspace?
	Multiphasic samples are not present?
	NCM Filed
	Initials: JUT Date: 12/28/19
	*Containers requiring zero headspace have no headspace, or bubble < 6 mm (1/4")

W18-A

# Environment Testing TestAmerica

#### Sacramento Sample Receiving Notes

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Tracking #:	1119	9742	4311	

SO / PO / FO / SAT / 2-Day / Ground / UPS / CDO / Courier GSO / OnTrac / Goldstreak / USPS / Other\_

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations. File in the job folder with the COC.

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W18-A



#### **ANALYTICAL REPORT**

**Eurofins Calscience Irvine** 17461 Derian Ave Suite 100 Irvine, CA 92614-5817

Tel: (949)261-1022

Laboratory Job ID: 440-258227-2

Client Project/Site: Routine Outfall 008 Comp

#### For:

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

Attn: Katherine Miller

Authorized for release by: 1/28/2020 9:46:25 AM

Christian Bondoc, Project Manager I (949)260-3218

christian.bondoc@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.

Project/Site: Routine Outfall 008 Comp

Laboratory Job ID: 440-258227-2

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.

Christian Bondoc

Project Manager I

1/28/2020 9:46:25 AM

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Laboratory Job ID: 440-258227-2

Client: Haley & Aldrich, Inc. Project/Site: Routine Outfall 008 Comp

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#### **Sample Summary**

Client: Haley & Aldrich, Inc. Project/Site: Routine Outfall 008 Comp

Job ID: 440-258227-2

Client Sample ID	Matrix	Collected	Received	Asset ID
Outfall008 20191227 Comp	Water	12/27/19 08:25	12/27/19 11:20	

#### **Case Narrative**

Client: Haley & Aldrich, Inc.

Project/Site: Routine Outfall 008 Comp

rojectrone. Routine outian coo comp

#### Job ID: 440-258227-2

#### **Laboratory: Eurofins Calscience Irvine**

#### **Narrative**

Job Narrative 440-258227-2

#### Comments

No additional comments.

#### Receipt

The samples were received on 12/27/2019 11:20 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 1.1° C and 1.2° C.

#### **RAD**

Method 900.0: Gross Alpha Beta Prep Batch 160-455777

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Outfall008\_20191227\_Comp (440-258227-1), (LCS 160-455777/2-A), (LCSB 160-455777/3-A), (MB 160-455777/1-A), (440-258077-J-1-F), (440-258077-J-1-G MS), (440-258077-J-1-I MSBT), (440-258077-J-1-J MSBTD) and (440-258077-J-1-H MSD)

Method 901.1: Gamma Prep Batch: 160-455659

The cesium-137 MDC (20.8 pCi/L) for the method blank (MB) is above the requested limit of 20 pCi/L. Cesium-137 activity was not observed in the MB above the MDC or RL. The MDC for the associated samples is less than the requested limit. The data have been reported with the MDC achieved. Outfall008\_20191227\_Comp (440-258227-1), (LCS 160-455659/2-A), (MB 160-455659/1-A), (440-258219-Q-1-B) DU).

#### Method 901.1: Gamma Prep Batch 160-455659

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Many isotopes requested for analysis do not have any gamma emissions, or the gamma emissions they do have are very poor. Often, such analytes are reported by gamma spectrometry assuming secular equilibrium with a longer-lived parent. The client should ensure that such inference is acceptable for their sample based upon process knowledge. The following assumptions were made for this report: Inferred from Reported to Analyte

Th-234	Pa-234
Th-234	U-238
Pb-210	Po-210
Pb-210	Bi-210
Cs-137	Ba-137m
Pb-212	Po-216
Xe-131m	Xe-131
Sb-125	Te-125m
Ag-108m	Ag-108
Rh-106	Ru-106
Pb-212	Th-228
Pb-212	Ra-224
U-235	Th-231
Ac-228	Th-232
Ac-228	Ra-228
Th-227	Ra-223
Th-227	Ac-227
Th-227	Bi-211
Th-227	Pb-211

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Job ID: 440-258227-2

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#### **Case Narrative**

Client: Haley & Aldrich, Inc.

Project/Site: Routine Outfall 008 Comp

Job ID: 440-258227-2

#### Job ID: 440-258227-2 (Continued)

#### **Laboratory: Eurofins Calscience Irvine (Continued)**

Bi-214

Outfall008 20191227 Comp (440-258227-1), (LCS 160-455659/2-A), (MB 160-455659/1-A), (440-258219-Q-1-A) and (440-258219-Q-1-B) DU)

Methods 903.0, 9315: Radium-226 Prep Batch 160-455705

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date. Outfall008\_20191227\_Comp (440-258227-1), (LCS 160-455705/1-A), (MB 160-455705/22-B), (160-36828-B-23-A) and (160-36828-B-23-B DU)

Methods 904.0, 9320: Radium-228 Prep Batch 160-455727

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Outfall008 20191227 Comp (440-258227-1), (LCS 160-455727/1-A), (MB 160-455727/22-A), (160-36828-B-23-C) and (160-36828-B-23-D DU)

Method 905: Strontium-90 Prep Batch 160-455843

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date. Outfall008\_20191227\_Comp (440-258227-1), (LCS 160-455843/1-A), (MB 160-455843/10-A), (440-258077-J-1-K), (440-258077-F-1-G MS) and (440-258077-F-1-H MSD)

Method 906.0: LSC Tritium Prep Batch 160-455651

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Outfall008 20191227 Comp (440-258227-1), (LCS 160-455651/2-A), (MB 160-455651/1-A), (440-258077-I-1-A), (440-258077-I-1-B MS) and (440-258077-I-1-C MSD)

Method A-01-R: Isotopic Uranium Prep Batch 160-455686

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date. Outfall008 20191227 Comp (440-258227-1), (LCS 160-455686/2-A), (MB 160-455686/1-A), (440-258077-J-1-E), (440-258077-F-1-E MS) and (440-258077-F-1-F MSD)

Method ExtChrom: Uranium Prep Batch 160-455686

The following samples were prepared at a reduced aliquot due to a yellow discoloration. Outfall008 20191227 Comp (440-258227-1). Samples 440-258085-1 and 440-258219-1 was a darker yellow than the other samples and had suspended solids. Sample 440-258227-1 also had suspended solids present.

Method PrecSep 0: Radium 228 Prep Batch 160-455727:

#### **Case Narrative**

Client: Haley & Aldrich, Inc.

Project/Site: Routine Outfall 008 Comp

Job ID: 440-258227-2

#### Job ID: 440-258227-2 (Continued)

#### **Laboratory: Eurofins Calscience Irvine (Continued)**

The following sample was prepared at a reduced aliquot due to possible matrix interference: Outfall008\_20191227\_Comp (440-258227-1). Sample 440-258219-1 was reduced due to brown discoloration and heavy sediment levels. Sample 440-258227-1 was reduced due to yellow discoloration. Sample 280-132316-9 was reduced due to sample containing white floating particulates.

Method PrecSep-21: Radium 226 Prep Batch 160-455705:

The following sample was prepared at a reduced aliquot due to possible matrix interference: Outfall008\_20191227\_Comp (440-258227-1). Sample 440-258219-1 was reduced due to brown discoloration and heavy sediment levels. Sample 440-258227-1 was reduced due to yellow discoloration. Sample 280-132316-9 was reduced due to sample containing white floating particulates.

Method PrecSep-7: Strontium 90 Prep Batch 160-445843:

Sample 258227-1 and samples 258077-1, 1MS, and 1MSD were reduced due to yellow discoloration. Samples 258085-1 and 258219-1 were reduced due to brown discoloration and a cloudy appearance: Outfall008\_20191227\_Comp (440-258227-1).

1/8/2020- Samples 440-258077-1,440-258077-1MS, 440-258077-1MSD, 110-258227-1, 440-258085-1 all had 1-2x smaller pellets than the QC samples at the end of the into-ingrowth process. While decanting the presence of matrix interference was seen in the amount of sediment at the bottom of the beaker.

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: Routine Outfall 008 Comp

Client Sample ID: Outfall008\_20191227\_Comp

Date Collected: 12/27/19 08:25
Date Received: 12/27/19 11:20

Lab Sample ID: 440-258227-1

Matrix: Water

Job ID: 440-258227-2

Method: 900.0 - Gross Alpha and Gross	<b>Beta Radio</b>	pactivity
	Count	Total

			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	1.62	U	1.16	1.18	3.00	1.71	pCi/L	01/06/20 07:19	01/12/20 12:25	1
Gross Beta	2.78		0.772	0.820	4.00	0.968	pCi/L	01/06/20 07:19	01/12/20 12:25	1

#### Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

			Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	2.85	U	6.80	6.80	20.0	11.7	pCi/L	12/30/19 13:52	12/30/19 20:13	1
Potassium-40	-82.1	U	191	191		238	pCi/L	12/30/19 13:52	12/30/19 20:13	1

#### Method: 903.0 - Radium-226 (GFPC)

			Uncert.	l otal Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.0363	U	0.0714	0.0715	1.00	0.160	pCi/L	12/31/19 09:06	01/27/20 11:12	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	93.3		40 - 110					12/31/19 09:06	01/27/20 11:12	1

#### Method: 904.0 - Radium-228 (GFPC)

			Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.228	Ū	0.361	0.362	1.00	0.609	pCi/L	12/31/19 11:01	01/14/20 17:00	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	93.3		40 - 110					12/31/19 11:01	01/14/20 17:00	1
Y Carrier	87.2		40 110					12/31/19 11:01	01/14/20 17:00	1

#### Method: 905 - Strontium-90 (GFPC)

Analyte Strontium-90	Result Qualifier 0.0203 U	Count Uncert. (2σ+/-) 0.325	Total Uncert. (2σ+/-) 0.325	RL 3.00	MDC 0.582	 Prepared 01/07/20 06:20	Analyzed 01/15/20 10:01	Dil Fac
Carrier	%Yield Qualifier	Limits				Prepared	Analyzed	Dil Fac
Sr Carrier	55.6	40 - 110				01/07/20 06:20	01/15/20 10:01	1
Y Carrier	92.0	40 - 110				01/07/20 06:20	01/15/20 10:01	1

#### Method: 906.0 - Tritium, Total (LSC)

	•	, ,	Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	32.9	U	156	156	500	276	pCi/L	12/30/19 13:27	12/31/19 11:56	

#### Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

			Count	Total					
			Uncert.	Uncert.					
Analyte	Result C	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC Unit	Prepared	Analyzed	Dil Fac
Total Uranium	0.465		0.268	0.270	1.00	0.222 pCi/L	12/30/19 16:10	01/17/20 09:05	1

**Eurofins Calscience Irvine** 

1/28/2020

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#### **Client Sample Results**

Client: Haley & Aldrich, Inc. Job ID: 440-258227-2

Project/Site: Routine Outfall 008 Comp

Client Sample ID: Outfall008\_20191227\_Comp Lab Sample ID: 440-258227-1

Date Collected: 12/27/19 08:25

Matrix: Water

Date Received: 12/27/19 11:20

Tr	acer	%Yield	Qualifier	Limits	Prepared Analyzed	Dil Fac
Ur	anium-232	47.8		30 - 110	12/30/19 16:10 01/17/20 09:05	1

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#### **Method Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Routine Outfall 008 Comp

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
06.0	Tritium, Total (LSC)	EPA	TAL SL
∖-01-R	Isotopic Uranium (Alpha Spectrometry)	DOE	TAL SL
vaporation	Preparation, Evaporation	None	TAL SL
xtChrom	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 = Eurofins TestAmerica, St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Job ID: 440-258227-2

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#### **Lab Chronicle**

Client: Haley & Aldrich, Inc.

Job ID: 440-258227-2

Project/Site: Routine Outfall 008 Comp

Client Sample ID: Outfall008\_20191227\_Comp Lab Sample ID: 440-258227-1

Date Collected: 12/27/19 08:25

Date Received: 12/27/19 11:20

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	Evaporation			200.14 mL	1.0 g	455777	01/06/20 07:19	RJD	TAL SL
Total/NA	Analysis	900.0		1	1.0 mL	1.0 mL	456563	01/12/20 12:25	AJD	TAL SL
Total/NA	Prep	Fill_Geo-0			1000 mL	1.0 g	455659	12/30/19 13:52	SCB	TAL SL
Total/NA	Analysis	901.1		1			455611	12/30/19 20:13	KLS	TAL SL
Total/NA	Prep	PrecSep-21			750.49 mL	1.0 g	455705	12/31/19 09:06	JLC	TAL SL
Total/NA	Analysis	903.0		1			458192	01/27/20 11:12	AJD	TAL SL
Total/NA	Prep	PrecSep_0			750.49 mL	1.0 g	455727	12/31/19 11:01	JLC	TAL SL
Total/NA	Analysis	904.0		1			456741	01/14/20 17:00	AJD	TAL SL
Total/NA	Prep	PrecSep-7			750.6 mL	1.0 g	455843	01/07/20 06:20	MNH	TAL SL
Total/NA	Analysis	905		1			456913	01/15/20 10:01	AJD	TAL SL
Total/NA	Prep	LSC_Dist_Susp			100.2 mL	1.0 g	455651	12/30/19 13:27	KNF	TAL SL
Total/NA	Analysis	906.0		1			456022	12/31/19 11:56	JS	TAL SL
Total/NA	Prep	ExtChrom			250.02 mL	1.0 mL	455686	12/30/19 16:10	KLH	TAL SL
Total/NA	Analysis	A-01-R		1			457129	01/17/20 09:05	KRR	TAL SL

#### **Laboratory References:**

TAL SL = Eurofins TestAmerica, St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

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A A

Client: Haley & Aldrich, Inc. Job ID: 440-258227-2

Project/Site: Routine Outfall 008 Comp

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Lab Sample ID: MB 160-455777/1-A **Matrix: Water** 

Analysis Batch: 456563

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

**Prep Batch: 455777** 

Count Total мв мв Uncert. Uncert. Result Qualifier RL **MDC** Unit Dil Fac Analyte  $(2\sigma + / -)$  $(2\sigma + / -)$ Prepared Analyzed Gross Alpha 01/06/20 07:19 01/12/20 12:20 0.01239 U 0.607 0.607 3.00 1.18 pCi/L Gross Beta -0.2482 U 0.440 0.440 4.00 0.843 pCi/L 01/06/20 07:19 01/12/20 12:20

Lab Sample ID: LCS 160-455777/2-A

**Matrix: Water** 

**Analysis Batch: 456563** 

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

**Prep Batch: 455777** 

Total LCS LCS %Rec. Spike Uncert. RL Analyte Added Result Qual  $(2\sigma + / -)$ **MDC** Unit %Rec Limits Gross Alpha 49.6 48.74 7.33 3.00 1.85 pCi/L 98 75 - 125

Lab Sample ID: LCSB 160-455777/3-A

**Matrix: Water** 

**Analysis Batch: 456567** 

**Client Sample ID: Lab Control Sample** 

Prep Type: Total/NA

**Prep Batch: 455777** 

Total Spike LCSB LCSB %Rec. Uncert. Added Result Qual  $(2\sigma + / -)$ RL MDC Unit Limits Analyte %Rec 4.00 85.0 94 75 - 125 **Gross Beta** 79.96 8.53 0.814 pCi/L

Lab Sample ID: 440-258077-J-1-G MS

**Matrix: Water** 

**Analysis Batch: 456567** 

**Client Sample ID: Matrix Spike** 

Prep Type: Total/NA

**Prep Batch: 455777** 

Total MS MS %Rec. Sample Sample **Spike** Uncert. Analyte Result Qual Added Result Qual  $(2\sigma + / -)$ RL MDC Unit %Rec Limits Gross Alpha 1.38 49.6 41.94 6.03 3.00 1.42 pCi/L 82 60 - 140

Lab Sample ID: 440-258077-J-1-H MSD

**Matrix: Water** 

Analysis Batch: 456563

**Client Sample ID: Matrix Spike Duplicate** 

Prep Type: Total/NA **Prep Batch: 455777** 

Total MSD MSD %Rec. Sample Sample Spike Uncert. **RER** RL Analyte Result Qual Added Result Qual  $(2\sigma + / -)$ **MDC** Unit %Rec Limits RER Limit Gross Alpha 1.38 49.6 47.24 6.58 3.00 1.16 pCi/L 60 - 140 0.42

Lab Sample ID: 440-258077-J-1-I MSBT

**Matrix: Water** 

**Analysis Batch: 456563** 

**Client Sample ID: Matrix Spike** 

Prep Type: Total/NA

**Prep Batch: 455777** 

Total Sample Sample Spike MSBT MSBT %Rec. Uncert. Added Analyte Result Qual Result Qual  $(2\sigma + / -)$ RL **MDC** Unit %Rec Limits 85.0 Gross Beta 1.56 84.01 8.91 4.00 0.935 pCi/L 97 60 - 140

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1/28/2020

Project/Site: Routine Outfall 008 Comp

Lab Sample ID: 440-258077-J-1-J MSBTD

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity (Continued)

**Matrix: Water** 

Analysis Batch: 456563

**Client Sample ID: Matrix Spike Duplicate** Prep Type: Total/NA

**Prep Batch: 455777** 

Job ID: 440-258227-2

Total Spike MSBTD MSBTD %Rec. **RER** Sample Sample Uncert. Added RL MDC Unit Analyte Result Qual Result Qual %Rec Limits RFR Limit  $(2\sigma + / -)$ Gross Beta 1.56 84.9 82.77 8.79 4.00 0.852 pCi/L 96 60 - 140 0.07

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

27300

26580

Lab Sample ID: MB 160-455659/1-A

**Matrix: Water** 

**Analysis Batch: 455610** 

**Client Sample ID: Method Blank** 

Prep Type: Total/NA **Prep Batch: 455659** 

Count Total MR MR Uncert. Uncert. Analyte Result Qualifier  $(2\sigma + / -)$  $(2\sigma + / -)$ RL MDC Unit Prepared Analyzed Dil Fac Cesium-137 0.0000 U G 5.31 5.31 20.0 20.8 pCi/L 12/30/19 13:52 12/30/19 18:47 Potassium-40 -41.44 U 118 118 173 pCi/L 12/30/19 13:52 12/30/19 18:47

Lab Sample ID: LCS 160-455659/2-A

**Matrix: Water** 

Analysis Batch: 455611

**Client Sample ID: Lab Control Sample** 

64.0 pCi/L

Prep Type: Total/NA

**Prep Batch: 455659** 

Total LCS LCS Spike Uncert. %Rec. Analyte Added Result Qual  $(2\sigma + / -)$ RL**MDC** Unit %Rec Limits Americium-241 136000 129800 15000 pCi/L 96 90 - 111 400 Cesium-137 44000 43660 4380 20.0 99.2 pCi/L 99 90 - 111

Lab Sample ID: 440-258219-Q-1-B DU

**Matrix: Water** 

Cobalt-60

Analysis Batch: 455610

**Client Sample ID: Duplicate** 

89 - 110

97

Prep Type: Total/NA **Prep Batch: 455659** 

Total DU DU Sample Sample Uncert. **RER** Result Qual Result Qual RL MDC Unit **Analyte**  $(2\sigma + / -)$ RER Limit Cesium-137 5.01 U 3.919 U 8.21 20.0 14.2 pCi/L 0.06 Potassium-40 32.7 U -100.9 U 92.3 234 pCi/L 0.73

2630

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-455705/22-B

**Matrix: Water** 

**Analysis Batch: 458192** 

**Client Sample ID: Method Blank** 

Prep Type: Total/NA

**Prep Batch: 455705** 

-			Count	Total					
	MB	MB	Uncert.	Uncert.					
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.3893		0.114	0.119	1.00	0.109 pCi/L	12/31/19 09:06	01/27/20 13:04	1

MB MB

Qualifier Carrier %Yield Limits 40 - 110 Ba Carrier 105

Prepared Analyzed

Dil Fac 12/31/19 09:06 01/27/20 13:04

Project/Site: Routine Outfall 008 Comp

Job ID: 440-258227-2

Method: 903.0 - Radium-226 (GFPC) (Continued)

Lab Sample ID: LCS 160-455705/1-A

**Matrix: Water** 

Analysis Batch: 458192

**Client Sample ID: Lab Control Sample** 

Prep Type: Total/NA

**Prep Batch: 455705** 

Total

Spike LCS LCS Uncert. %Rec. Analyte Added RL **MDC** Unit Limits Result Qual  $(2\sigma + / -)$ %Rec Radium-226 75 - 125 11.3 9.173 0.960 1.00 0.0876 pCi/L 81

LCS LCS

Carrier %Yield Qualifier Limits Ba Carrier 105 40 - 110

**Client Sample ID: Duplicate** 

Prep Type: Total/NA

**Prep Batch: 455705** 

Lab Sample ID: 160-36828-B-23-B DU

**Matrix: Water** 

Analysis Batch: 458192

Total

DU DU Sample Sample Uncert. **RER** Result Qual RL**MDC** Unit Limit Analyte Result Qual  $(2\sigma + / -)$ RER Radium-226 0.620 0.4687 0.127 1.00 0.102 pCi/L 0.56

DU DU

Carrier %Yield Qualifier Limits Ba Carrier 108 40 - 110

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-455727/22-A

**Matrix: Water** 

Analysis Batch: 456742

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 455727

		Count	Total						
MB	MB	Uncert.	Uncert.						
Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
0.09351	U	0.211	0.211	1.00	0.362	pCi/L	12/31/19 11:01	01/14/20 16:49	1
	Result	Result Qualifier	MB MB Uncert. Result Qualifier (2σ+/-)	MB MB Uncert. Uncert. Result Qualifier $(2\sigma+/-)$ $(2\sigma+/-)$	MB MB Uncert. Uncert. Result Qualifier (2σ+/-) (2σ+/-) RL	MB MB Uncert. Uncert. Result Qualifier (2σ+/-) (2σ+/-) RL MDC	MB MB Uncert. Uncert. Result Qualifier (2σ+/-) (2σ+/-) RL MDC Unit	MB MB Uncert. Uncert.  Result Qualifier (2σ+/-) (2σ+/-) RL MDC Unit Prepared	MB MB Uncert. Uncert.  Result Qualifier (2σ+/-) (2σ+/-) RL MDC Unit Prepared Analyzed

Carrier	%Yield Qualifier	Limits	Prepared Analyzed	Dil Fac
Ba Carrier	105	40 - 110	12/31/19 11:01 01/14/20 16:49	1
Y Carrier	88.7	40 - 110	12/31/19 11:01 01/14/20 16:49	1

Lab Sample ID: LCS 160-455727/1-A

**Matrix: Water** 

Analysis Batch: 456741

**Client Sample ID: Lab Control Sample** 

Prep Type: Total/NA

**Prep Batch: 455727** 

Total **Spike** LCS LCS Uncert.

MB MB

%Rec. Added  $(2\sigma + / -)$ RL Limits Analyte Result Qual MDC Unit %Rec Radium-228 1.00 75 - 125 9.20 9.320 1.08 0.346 pCi/L 101

LCS LCS

Carrier %Yield Qualifier Limits Ba Carrier 105 40 - 110 Y Carrier 86.6 40 - 110

Project/Site: Routine Outfall 008 Comp

Job ID: 440-258227-2

Method: 904.0 - Radium-228 (GFPC) (Continued)

Lab Sample ID: 160-36828-B-23-D DU Client Sample ID: Duplicate

**Matrix: Water** 

Analysis Batch: 456742

Prep Type: Total/NA

**Prep Batch: 455727** 

Total Sample Sample DU DU Uncert. **RER** RL **MDC** Unit Analyte Result Qual Result Qual  $(2\sigma + / -)$ RER Limit Radium-228 0.265 1.14 0.7430 1.00 0.340 pCi/L 0.64

DU DU

Carrier %Yield Qualifier Limits Ba Carrier 108 40 - 110 Y Carrier 85.7 40 - 110

Method: 905 - Strontium-90 (GFPC)

Lab Sample ID: MB 160-455843/10-A **Client Sample ID: Method Blank** 

**Matrix: Water** 

Analysis Batch: 456913

Count Total Prep Type: Total/NA

**Prep Batch: 455843** 

MB MB Uncert. Uncert. Analyte Result Qualifier  $(2\sigma + / -)$  $(2\sigma + / -)$ RL **MDC** Unit Prepared Analyzed Dil Fac 01/07/20 06:20 01/15/20 10:02 Strontium-90 -0.05834 Ū 0.268 0.268 3.00 0.482 pCi/L

ΜB

Dil Fac Carrier %Yield Qualifier Limits Prepared Analyzed Sr Carrier 85.9 40 - 110 01/07/20 06:20 01/15/20 10:02 Y Carrier 91.2 40 - 110 01/07/20 06:20 01/15/20 10:02

Lab Sample ID: LCS 160-455843/1-A

**Matrix: Water** 

**Analysis Batch: 456913** 

**Client Sample ID: Lab Control Sample** 

Prep Type: Total/NA

**Prep Batch: 455843** 

**Spike** LCS LCS Uncert. %Rec. **MDC** Unit Analyte Added Result Qual  $(2\sigma + / -)$ RL %Rec Limits Strontium-90 10.6 8.906 0.945 3.00 0.327 pCi/L 84 75 - 125

Total

LCS LCS

Carrier %Yield Qualifier Limits Sr Carrier 96.9 40 - 110 96.8 40 - 110 Y Carrier

Lab Sample ID: 440-258077-F-1-G MS

**Matrix: Water** 

**Analysis Batch: 456913** 

**Client Sample ID: Matrix Spike** 

Prep Type: Total/NA

**Prep Batch: 455843** 

Total

Sample Sample Spike MS MS Uncert. %Rec. Result Qual Added Result Qual  $(2\sigma + / -)$ MDC Unit Limits Analyte RL %Rec Strontium-90 0.147 U 10.6 10.38 1.21 3.00 0.501 pCi/L 97 19 - 150

MS MS

Carrier %Yield Qualifier Limits Sr Carrier 59.4 40 - 110 Y Carrier 92.3 40 - 110

Job ID: 440-258227-2

Client: Haley & Aldrich, Inc.

Project/Site: Routine Outfall 008 Comp

Method: 905 - Strontium-90 (GFPC) (Continued)

Lab Sample ID: 440-258077-F-1-H MSD

MSD MSD

10.34

Spike

Added

10.6

**Matrix: Water** 

Analyte

Strontium-90

Analysis Batch: 456913

Client Sample ID: Matrix Spike Duplicate Prep Type: Total/NA

96

**Prep Batch: 455843** 

0.02

Total %Rec. **RER** Uncert. RL MDC Unit Limits Result Qual  $(2\sigma + / -)$ %Rec RFR Limit

0.477 pCi/L

0.147 Ū MSD MSD

Sample Sample

Result Qual

Carrier %Yield Qualifier Limits 70.6 Sr Carrier 40 - 110 Y Carrier 95.3 40 - 110

Method: 906.0 - Tritium, Total (LSC)

Lab Sample ID: MB 160-455651/1-A **Client Sample ID: Method Blank** 

1.15

3.00

**Matrix: Water** 

Analysis Batch: 456022

Count

19 - 150

Prep Type: Total/NA **Prep Batch: 455651** 

MB MB Uncert. Uncert. Analyte Result Qualifier  $(2\sigma + / -)$  $(2\sigma + / -)$ RL **MDC** Unit Prepared Analyzed Dil Fac 12/30/19 13:27 12/31/19 09:18 Tritium -49.55 U 149 149 500 280 pCi/L

Total

Lab Sample ID: LCS 160-455651/2-A

**Matrix: Water** 

**Analysis Batch: 456022** 

**Client Sample ID: Lab Control Sample** 

Prep Type: Total/NA

**Prep Batch: 455651** 

Total Spike LCS LCS Uncert. %Rec. Added Analyte Result Qual  $(2\sigma + / -)$ RL MDC Unit %Rec Limits Tritium 2510 2646 413 500 286 pCi/L 105 75 - 114

Lab Sample ID: 440-258077-I-1-B MS

**Matrix: Water** 

Analysis Batch: 456022

**Client Sample ID: Matrix Spike** 

Prep Type: Total/NA

**Prep Batch: 455651** 

Total

Sample Sample Spike MS MS Uncert. %Rec. Result Qual Added Result Qual  $(2\sigma + / -)$ RL **MDC** Unit %Rec Limits Analyte 40.5 U 67 - 130 Tritium 2510 410 500 294 pCi/L 100 2556

Lab Sample ID: 440-258077-I-1-C MSD

**Matrix: Water** 

Analysis Batch: 456022

**Client Sample ID: Matrix Spike Duplicate** Prep Type: Total/NA

**Prep Batch: 455651** 

Total Spike MSD MSD Uncert. %Rec. RFR Sample Sample Analyte Result Qual Added Result Qual  $(2\sigma + / -)$ RL **MDC** Unit %Rec Limits RER Limit 40.5 U 2500 500 Tritium 2430 391 279 pCi/L 95 67 - 130 0.16

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Lab Sample ID: MB 160-455686/1-A

**Matrix: Water** 

**Analysis Batch: 457035** 

Client Sample ID: Method Blank Prep Type: Total/NA **Prep Batch: 455686** 

Count Total MB MB Uncert. Uncert. **MDC** Unit Analyte Result Qualifier  $(2\sigma + / -)$  $(2\sigma + / -)$ RLPrepared Analyzed Dil Fac **Total Uranium** 0.2103 0.180 0.181 1.00 0.182 pCi/L 12/30/19 16:10 01/16/20 09:32

#### QC Sample Results

Client: Haley & Aldrich, Inc.

Project/Site: Routine Outfall 008 Comp

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

MB MB Tracer %Yield Qualifier Limits Prepared Analyzed Dil Fac Uranium-232 83.2 30 - 110 12/30/19 16:10 01/16/20 09:32

Lab Sample ID: LCS 160-455686/2-A

**Matrix: Water** 

Analysis Batch: 457036

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

**Prep Batch: 455686** 

Job ID: 440-258227-2

Total LCS LCS %Rec. Spike Uncert. Analyte Added  $(2\sigma + / -)$ RL **MDC** Unit Limits Result Qual %Rec Uranium-234 25.5 24.59 2.97 1.00 0.329 pCi/L 97 75 - 125 Uranium-238 26.0 3.08 75 - 125 25.84 1.00 0.309 pCi/L 99

> LCS LCS %Yield Qualifier

Limits Tracer 30 - 110 Uranium-232 60.6

Lab Sample ID: 440-258077-F-1-E MS **Client Sample ID: Matrix Spike** 

**Matrix: Water** 

**Analysis Batch: 457038** 

Total

Prep Type: Total/NA **Prep Batch: 455686** 

Sample Sample **Spike** MS MS Uncert. %Rec. Analyte Result Qual Added Result Qual  $(2\sigma + / -)$ RL **MDC** Unit %Rec Limits Uranium-234 0.128 U 25.5 23.28 2.86 1.00 0.424 pCi/L 91 65 - 146 0.0960 U Uranium-238 26.0 25.85 3.09 1.00 0.349 pCi/L 99 68 - 143

MS MS Tracer %Yield Qualifier Limits 61.7 Uranium-232 30 - 110

Lab Sample ID: 440-258077-F-1-F MSD

**Matrix: Water** 

Analysis Batch: 457042

**Client Sample ID: Matrix Spike Duplicate** Prep Type: Total/NA

**Prep Batch: 455686** 

						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	0.128	U	25.5	23.64		2.93	1.00	0.446 pCi/L	92	65 - 146	0.06	1	
Uranium-238	0.0960	U	26.0	24.68		3.02	1.00	0.367 pCi/L	94	68 - 143	0.19	1	

MSD MSD Tracer %Yield Qualifier Limits 30 - 110 Uranium-232 68.1

**Eurofins Calscience Irvine** 

1/28/2020

#### **QC Association Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Routine Outfall 008 Comp

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Prep	Ratc	h∙ ⊿	55	651
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Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method Prep Batcl	h
440-258227-1	Outfall008_20191227_Comp	Total/NA	Water	LSC_Dist_Susp	_
MB 160-455651/1-A	Method Blank	Total/NA	Water	LSC_Dist_Susp	
LCS 160-455651/2-A	Lab Control Sample	Total/NA	Water	LSC_Dist_Susp	
440-258077-I-1-B MS	Matrix Spike	Total/NA	Water	LSC_Dist_Susp	
440-258077-I-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	LSC_Dist_Susp	

#### **Prep Batch: 455659**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258227-1	Outfall008_20191227_Comp	Total/NA	Water	Fill_Geo-0	
MB 160-455659/1-A	Method Blank	Total/NA	Water	Fill_Geo-0	
LCS 160-455659/2-A	Lab Control Sample	Total/NA	Water	Fill_Geo-0	
440-258219-Q-1-B DU	Duplicate	Total/NA	Water	Fill_Geo-0	

#### **Prep Batch: 455686**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258227-1	Outfall008_20191227_Comp	Total/NA	Water	ExtChrom	
MB 160-455686/1-A	Method Blank	Total/NA	Water	ExtChrom	
LCS 160-455686/2-A	Lab Control Sample	Total/NA	Water	ExtChrom	
440-258077-F-1-E MS	Matrix Spike	Total/NA	Water	ExtChrom	
440-258077-F-1-F MSD	Matrix Spike Duplicate	Total/NA	Water	ExtChrom	

#### **Prep Batch: 455705**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258227-1	Outfall008_20191227_Comp	Total/NA	Water	PrecSep-21	
MB 160-455705/22-B	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-455705/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
160-36828-B-23-B DU	Duplicate	Total/NA	Water	PrecSep-21	

#### **Prep Batch: 455727**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method Prep Batch
440-258227-1	Outfall008_20191227_Comp	Total/NA	Water	PrecSep_0
MB 160-455727/22-A	Method Blank	Total/NA	Water	PrecSep_0
LCS 160-455727/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0
160-36828-B-23-D DU	Duplicate	Total/NA	Water	PrecSep_0

#### **Prep Batch: 455777**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258227-1	Outfall008_20191227_Comp	Total/NA	Water	Evaporation	
MB 160-455777/1-A	Method Blank	Total/NA	Water	Evaporation	
LCS 160-455777/2-A	Lab Control Sample	Total/NA	Water	Evaporation	
LCSB 160-455777/3-A	Lab Control Sample	Total/NA	Water	Evaporation	
440-258077-J-1-G MS	Matrix Spike	Total/NA	Water	Evaporation	
440-258077-J-1-H MSD	Matrix Spike Duplicate	Total/NA	Water	Evaporation	
440-258077-J-1-I MSBT	Matrix Spike	Total/NA	Water	Evaporation	
440-258077-J-1-J MSBTD	Matrix Spike Duplicate	Total/NA	Water	Evaporation	

#### **Prep Batch: 455843**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258227-1	Outfall008_20191227_Comp	Total/NA	Water	PrecSep-7	
MB 160-455843/10-A	Method Blank	Total/NA	Water	PrecSep-7	
LCS 160-455843/1-A	Lab Control Sample	Total/NA	Water	PrecSep-7	

**Eurofins Calscience Irvine** 

1/28/2020

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Job ID: 440-258227-2

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#### **QC Association Summary**

Client: Haley & Aldrich, Inc.

Job ID: 440-258227-2

Project/Site: Routine Outfall 008 Comp

#### Rad (Continued)

#### Prep Batch: 455843 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258077-F-1-G MS	Matrix Spike	Total/NA	Water	PrecSep-7	
440-258077-F-1-H MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep-7	

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#### **Definitions/Glossary**

Client: Haley & Aldrich, Inc.

Job ID: 440-258227-2

Project/Site: Routine Outfall 008 Comp

#### **Qualifiers**

RL RPD

TEF

**TEQ** 

Rad	
Qualifier	Qualifier Description
G	The Sample MDC is greater than the requested RL.
U	Result is less than the sample detection limit.

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)

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

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#### **Accreditation/Certification Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Routine Outfall 008 Comp

Job ID: 440-258227-2

#### **Laboratory: Eurofins Calscience Irvine**

The accreditations/certifications listed below are applicable to this report.

	Authority	Program	Identification Number	<b>Expiration Date</b>
	California	State Program	CA ELAP 2706	06-30-20

#### Laboratory: Eurofins TestAmerica, St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
ANAB	Dept. of Defense ELAP	L2305	04-06-22
ANAB	Dept. of Energy	L2305.01	04-06-22
ANAB	ISO/IEC 17025	L2305	04-06-22
Arizona	State	AZ0813	12-08-20
California	Los Angeles County Sanitation Districts	10259	06-30-20
California	State	2886	06-30-20
Connecticut	State	PH-0241	03-31-21
Florida	NELAP	E87689	06-30-20
HI - RadChem Recognition	State	n/a	06-30-20
Illinois	NELAP	004553	11-30-19 *
lowa	State	373	09-17-20
Kansas	NELAP	E-10236	10-31-20
Kentucky (DW)	State	KY90125	12-31-20
Louisiana	NELAP	04080	06-30-20
Louisiana (DW)	State	LA011	12-31-20
Maryland	State	310	09-30-20
MI - RadChem Recognition	State	9005	06-30-20
Missouri	State	780	06-30-22
Nevada	State	MO000542020-1	07-31-20
New Jersey	NELAP	MO002	06-30-20
New York	NELAP	11616	04-01-20
North Dakota	State	R-207	06-30-20
NRC	NRC	24-24817-01	12-31-22
Oklahoma	State	9997	08-31-20
Pennsylvania	NELAP	68-00540	02-28-20
South Carolina	State	85002001	06-30-20
Texas	NELAP	T104704193-19-13	07-31-20
US Fish & Wildlife	US Federal Programs	058448	07-31-20
USDA	US Federal Programs	P330-17-00028	02-02-20
Utah	NELAP	MO000542019-11	07-31-20
Virginia	NELAP	10310	06-14-20
Washington	State	C592	08-30-20
West Virginia DEP	State	381	10-31-20

Eurofins Calscience Irvine

1/28/2020

Page 21 of 25

2

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12

<sup>\*</sup> Accreditation/Certification renewal pending - accreditation/certification considered valid.

Test America

Cienti Nameraudi	den variethouless;											ANALY	ANALYSIS REQUIRED	ŒD					Field Readings	
5333 Mission Center I San Diego, CA 92108	natey & Autricit 5333 Mission Center Rd Suite 300 San Dieno, CA 92108				ω	Project: Boeing-SSFL NPDES	≭: . NPOES			'N-		,(0	)), K-40							····
2801	20.25.00			•		Permit 2019	019			70		1 (	0.8							
Test America Cont 17461 Derian Ave Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055	Test America Contact: Urvashi Patel HVAG1 Dorian Ave Suite #100 HVINE CA 92614 Tel 949-260-3269 Cell 949-333-9055			· · · · ·	u.	Routine Outfail [008] Outfail 608 Comp	fail [008] 008 p		:etiste : Tr., 66, d9, d9	nere) (E1613B) intite-N, NO3+N		it , 98, 58, 59, 19, 19, 58, 58, 59, 19, 19, 19, 19, 19, 19, 19, 19, 19, 1	063) muinsiÚ (() 1,106 muisee	A0.	N-E \ E332'S)	is: Mercury (E24)	• • • • • • • • • • • • • • • • • • • •		Comments	
TestAmerica's 91 2019-22-TestAm	TestAntrica's services under this CoC diable to performed in accordance with the TACs within Bushet Sorvice Agreement 2018-22 TestAments by and between falley & Aldrich, five, its subsidiaries and difflates, and TestAments	he T&Cs within Blanket Service d stillates, and TestAmerica La	Agreement		Project	Manager:	Project Manager: Katherine Miller	er	sble Me (n Cd, Cu,	conge	C/E160			'earjas	200-CI					
Sampler:	The state of the s		:		Field 97823	%anager: ₹4,5033, 818	Field Manager: Mark Dominick 978,234, 5033, 818, 599, 0702 (cell)		nevooe۶ Σ ,ii/h :(↑. P ,gA :(8.	lie bns)	OF9ZWS			V n ede	AMS) et		IS) 2.09	*******		
Sample Description	Sample I.D.	Sampling Data/Time	Sample	Container Type	_	Preservative	rative Bottle#	GSW/SM # # BI	Т	CCDD CL_SC	DS (			ARC (	)yanic		-			
			WW	500 mL Poty	,	MNO	2,	No No	×	-		·	<del>_</del>	+		-	+-	_		1
			N.	1 L Glass Amber	ber 2	None	110	o <sub>N</sub>		×				<u> </u>		$\vdash$		-		Ţ
			WIR	500 ml. Poly	y 2	None		130 No		×				<u> </u>			ļ	£.	48 hours Holding Time NO, & NO,	$\overline{}$
			WIK	500 mL Paly	٠.	None		155 No			×							-		1
			WM	500 mL Poty	y 1	H,SO,	J. 160	ON.						×		-				Т
	Outfalk008_20191227_Comp	12/27/2019	W	500 mL Poly	, ,	NaOH	FH 220	ο. No						_	×	-		ļ		1
		3	S. D. Wall	2.5 Gal Cube	-	None	e 225	5 No					.,			_		5.	Untitlered and unpreserved analysis,	ī
Outfall 008			N/M	11. Glass Amber	- *	Nome	re 230	ON No		_		· [	Ĺ	_				\$ <del>\$</del>	Separate MALD onto another workorder, Analyze duplicate, not MS/MSD.	
			WW	1 Gal Cube	9	None	. 235	Š.					17	93				10 H Z	Only test if that is mained rain greats in the year, Dottver to ABC Labe is Vertura, CA	I
			WM	11 Poly	1	None	185	S No						-		_	×			T
	Outfail08 20191227 Comp F	120272019	\$	1L Poly	-	None	e 205	S No				×						FIF.	Filter and preserve w/n 24hrs of receipt at lab	Te
		15.33	MW ( 7	borosilicate vials	els 1	None	e 320	O No		-						×		18.0 19.0 19.0	Sample receiving DO NOT OPEN BAG. Bag to be opened in Mercury Prep using clean	
	Outfel(006, 20191227, Comp. Extra	12272019	- 1	1 L Glass Amber	Der 2	None	110	ON.		x								Hold	p	1
		16:30	MM.	500 mL Poly	2	None	130	ON No		н								용	P	ЭТ
			_		_	_							7	-						1 6
			Legend:	Legend: A=Annual, C=Conditional,		P=Expert J	Panel, R=Rou	EP=Expert Panel, R=Routine, Q=Quarterly, QRSW=Quarterly Receiving Water S=Semi-Annual	C. ORSW=O	uarterly P	eceiving	Water, S=Ser	ni-Annual							
Reim	Date/Time	Company	2	2	1		Received By	Ng.	Date/Time:							Tur	-around	Turn-around time: (Check)		1
Refragished	127 14 WHO	Company	至	FLT 10 12/21/21	1212		Perdinal Res		A lost	23	12	2460	19	12		48 48	24 Hour	22	72 Hour: 10 Day: X	
7			Ć,	<u>(</u>		0		,		7						Sample	ple integ f.	Sample Integrity. (Check) Intact:	ock) On loe:	
Refinquished By					•		Received By  A IDV	) \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\	Date		7	b 11 tz		711		\$ 25 E	Store sample Data Require	Store samples for 6 months.  Data Requirements: (Check)	1	
						-		7	H			-			-		2 2		Y ALLEANING	
									//						*	ì			-	

G7 61/62/21

440-258227 Chain of Custody

1/58/50/82/00/00/2019-2020 Rainy Season Version 1

Job Number: 440-258227-2

Login Number: 258227 List Source: Eurofins Irvine

List Number: 1

Creator: Dolidze, Lado

Creator. Dolluze, Lauo		
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	

Client: Haley & Aldrich, Inc. Job Number: 440-258227-2

Login Number: 258227

258227 List Source: Eurofins TestAmerica, St. Louis
List Creation: 12/28/19 12:04 PM

List Number: 2 Creator: Harris, Lorin C

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.	True	
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?	False	
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").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Project/Site: Routine Outfall 008 Comp

Job ID: 440-258227-2

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)	
160-36828-B-23-B DU	Duplicate	108	
440-258227-1	Outfall008_20191227_Comp	93.3	
LCS 160-455705/1-A	Lab Control Sample	105	
MB 160-455705/22-B	Method Blank	105	
Tracer/Carrier Legend			
Ba Carrier = Ba Carrier			

Method: 904.0 - Radium-228 (GFPC)

Matrix: Water Prep Type: Total/NA

		Percent Yield (Acceptance Limits)			
		Ba Carrier			
Lab Sample ID	Client Sample ID	(40-110)	(40-110)		
160-36828-B-23-D DU	Duplicate	108	85.7		
440-258227-1	Outfall008_20191227_Comp	93.3	87.2		
LCS 160-455727/1-A	Lab Control Sample	105	86.6		
MB 160-455727/22-A	Method Blank	105	88.7		
Tracer/Carrier Legend					
Ba Carrier = Ba 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)	
440-258077-F-1-G MS	Matrix Spike	59.4	92.3	
440-258077-F-1-H MSD	Matrix Spike Duplicate	70.6	95.3	
440-258227-1	Outfall008_20191227_Comp	55.6	92.0	
LCS 160-455843/1-A	Lab Control Sample	96.9	96.8	
MB 160-455843/10-A	Method Blank	85.9	91.2	
Tracer/Carrier Legend				
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)		
440-258077-F-1-E MS	Matrix Spike	61.7		
440-258077-F-1-F MSD	Matrix Spike Duplicate	68.1		
440-258227-1	Outfall008_20191227_Comp	47.8		
LCS 160-455686/2-A	Lab Control Sample	60.6		
MB 160-455686/1-A	Method Blank	83.2		
Tracer/Carrier Legend				
Uranium-232 = Uranium	1-232			

**Eurofins Calscience Irvine** 

Page 25 of 25 1/28/2020



#### **ANALYTICAL REPORT**

**Eurofins Calscience Irvine** 17461 Derian Ave Suite 100 Irvine, CA 92614-5817

Tel: (949)261-1022

Laboratory Job ID: 440-258020-3

Client Project/Site: Semiannual Outfall 009 Grab

#### For:

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

Attn: Katherine Miller

Authorized for release by: 1/8/2020 11:26:43 AM

Christian Bondoc, Project Manager I (949)260-3218

christian.bondoc@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.

Christian Bondoc Project Manager I 1/8/2020 11:26:43 AM Laboratory Job ID: 440-258020-3

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.

Client: Haley & Aldrich, Inc. Project/Site: Semiannual Outfall 009 Grab Laboratory Job ID: 440-258020-3

# **Table of Contents**

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# **Sample Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Grab

 Lab Sample ID
 Client Sample ID
 Matrix
 Collected
 Received
 Asset ID

 440-258020-1
 Outfall009\_20191223\_Grab
 Water
 12/23/19 09:00
 12/23/19 16:05

Job ID: 440-258020-3

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4.0

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# **Case Narrative**

Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Grab

Job ID: 440-258020-3

Job ID: 440-258020-3

**Laboratory: Eurofins Calscience Irvine** 

**Narrative** 

**Job Narrative** 440-258020-3

#### Comments

No additional comments.

#### Receipt

The samples were received on 12/23/2019 4:05 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 3.0° C and 3.7° C.

#### **Organic Prep**

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

# **Client Sample Results**

Client: Haley & Aldrich, Inc.

Job ID: 440-258020-3

Project/Site: Semiannual Outfall 009 Grab

Client Sample ID: Outfall009\_20191223\_Grab Lab Sample ID: 440-258020-1

Date Collected: 12/23/19 09:00 Matrix: Water

Date Received: 12/23/19 16:05

General Chemistry									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		5.3	1.5	mg/L		01/02/20 16:35	01/02/20 19:08	1

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Δ

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# **Method Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Grab

 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 = Eurofins Calscience Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

Job ID: 440-258020-3

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# **Lab Chronicle**

Client: Haley & Aldrich, Inc. Job ID: 440-258020-3

Project/Site: Semiannual Outfall 009 Grab

Client Sample ID: Outfall009\_20191223\_Grab Lab Sample ID: 440-258020-1

Date Collected: 12/23/19 09:00 **Matrix: Water** 

Date Received: 12/23/19 16:05

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	1664A			945 mL	1000 mL	588932	01/02/20 16:35	AJH	TAL IRV
Total/NA	Analysis	1664A		1			588958	01/02/20 19:08	AJH	TAL IRV

#### **Laboratory References:**

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

**Eurofins Calscience Irvine** 

# QC Sample Results

Client: Haley & Aldrich, Inc. Job ID: 440-258020-3

RL

5.0

Spike

Added

40.0

Spike

Added

40.0

**MDL** Unit

LCS LCS

LCSD LCSD

MS MS

34.6

Result Qualifier

34.3

Result Qualifier

1.4 mg/L

Unit

mg/L

Unit

mg/L

Project/Site: Semiannual Outfall 009 Grab

Method: 1664A - HEM and SGT-HEM

Lab Sample ID: MB 440-588932/1-A **Matrix: Water** 

Analysis Batch: 588958

MB MB Analyte Result Qualifier

Lab Sample ID: LCS 440-588932/2-A **Matrix: Water** 

**Analysis Batch: 588958** 

HEM (Oil & Grease)

HEM (Oil & Grease)

Lab Sample ID: LCSD 440-588932/3-A **Matrix: Water** 

**Analysis Batch: 588958** 

Analyte HEM (Oil & Grease)

Lab Sample ID: 440-258396-B-1-B MS

**Matrix: Water** 

**Analysis Batch: 588958** 

Analyte

HEM (Oil & Grease)

Sample Sample **Result Qualifier** ND

ND

Spike Added 42.8

37.0

Result Qualifier Unit mg/L

D %Rec 86 78 - 114

Prep Type: Total/NA

Dil Fac

**Prep Batch: 588932** %Rec. **RPD** 

Limits RPD Limit 78 - 114

**Client Sample ID: Matrix Spike** 

Prep Type: Total/NA **Prep Batch: 588932** 

%Rec. Limits

Client Sample ID: Method Blank

01/02/20 16:35 01/02/20 19:08

**Client Sample ID: Lab Control Sample** 

%Rec.

Limits

78 - 114

Prepared

D %Rec

D %Rec

87

86

Client Sample ID: Lab Control Sample Dup

**Prep Type: Total/NA** 

**Prep Batch: 588932** 

Prep Type: Total/NA **Prep Batch: 588932** 

Analyzed

**Eurofins Calscience Irvine** 

1/8/2020

# **QC Association Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Grab

Job ID: 440-258020-3

# **General Chemistry**

## **Prep Batch: 588932**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258020-1	Outfall009_20191223_Grab	Total/NA	Water	1664A	
MB 440-588932/1-A	Method Blank	Total/NA	Water	1664A	
LCS 440-588932/2-A	Lab Control Sample	Total/NA	Water	1664A	
LCSD 440-588932/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	
440-258396-B-1-B MS	Matrix Spike	Total/NA	Water	1664A	

## **Analysis Batch: 588958**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258020-1	Outfall009_20191223_Grab	Total/NA	Water	1664A	588932
MB 440-588932/1-A	Method Blank	Total/NA	Water	1664A	588932
LCS 440-588932/2-A	Lab Control Sample	Total/NA	Water	1664A	588932
LCSD 440-588932/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	588932
440-258396-B-1-B MS	Matrix Spike	Total/NA	Water	1664A	588932

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# **Definitions/Glossary**

Client: Haley & Aldrich, Inc. Job ID: 440-258020-3

Project/Site: Semiannual Outfall 009 Grab

# 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

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)

**Eurofins Calscience Irvine** 

# **Accreditation/Certification Summary**

Client: Haley & Aldrich, Inc.

Job ID: 440-258020-3

Project/Site: Semiannual Outfall 009 Grab

# **Laboratory: Eurofins Calscience Irvine**

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	<b>Expiration Date</b>
California	State Program	CA ELAP 2706	06-30-20

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Test America

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Client Na	Client Name/Address:										ANALYSIS REQUIRED	REGUIF	ED		Field Readings	Meter serial #
Haley 8 5333 Mis	Haley & Aldrich, Inc. 5333 Mission Certer Rd Suite 300				G rie	Project Bosing-SSFI NPDES	ç.								Field Readings: (Includ	Fleid Readings: (Include units) TRAC FT9 13
San Dieg	San Diego, CA 92108					Permit 2019	2		•						Time of Readings: 0706	1200
Test America Coi 17461 Denan Avv Irvine CA 92614 Tel 949-260-3266 Celi 949-333-905	Test America Contact: Urvashi Patel 17461 Denan Ave Sute #100 Irvine CA 92614 Tel 948-260-3289 Cell 949-333-9055				Semiannual O	Outfall (003-007, 009, 010) Outfall 009 Grab	,009, 010]		(M				······································		PH 7 10 pH unit	MA (S)
TestAmence Agreement# . TestAmence	Treshannoù s'ashviors under tra CoC shall be performed in ancocrianne with the T&Cs within Banket Service Agreement 2016-22-TestAmenta by and bekween Haley & Addich, Inc., its eubsidiaries and affiliates, and TestAmelica Laboratones inc.	ros with the T&Cs within Blanket Service. Its subsidiaries and affiliates, and	foe		Project Ma 520.289.86	Manager. Katherine Miller 8606, 520 904.6944 (cell)	ne Miller 944 (cell)		(3H-A488						Field readings QC	
Sampler	Sampler Dan Smith				Field Mar 978.234 50	Field Manager: Mark Dominick 78.234 5033, 818 599 0702 (cell)	vminick 702 (cell)		F∃) əssər€				····		Checked by Zac Date/Time: (2.23. / 5	15/08/01/
Sample	Sample ! D	Sampling Date/Time	Sample	Container Type	# of Cont.	Preservative	Bottle #	MS/MSD	Ol & C							H E
	Outfail009_20191223_Grab	12723/2019/FA	WM	11. Glass Amber	2	면	15	Š	×							
	Ouffailt009_20191223_Grab_Extra	122352019 /01@	MW	1 L Glass Amber	2	모	15	S.	I			-		-	Hold	
Pa														-		
age									-				-			
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8																
		Feder	A=A:ba	Legend: A≃Annuai, C≃Conditional, EP≖l	tional. EP=Ex	pert Panel. R=	Expert Panel, R=Routine, Q=Quarterly, QRSW=Quarterly Receiving Water, S=Semi-Annual	narterily, ORS	N≅Quart	erly Rece	iving Wat	SeSer	i-Annual			
Relinquished B	Afty Date/Firne	S.	Company		,		Received By		Date/Time	90				2	nd time (	
July		2-23-19/25-0	5		7	1	) }	9	13	77.7	(II	7	P	24 84	24 Hour 72 Hour 48 Hour 5 Day	10 Day X
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f-18	Outfall002_20191223_Grab_Extra	WW 0 (30/8102/82/21	D WM	40 mL VOA	3	HCI	86	Š	I							Haid		
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Page 2 of 2

# **Login Sample Receipt Checklist**

Client: Haley & Aldrich, Inc.

Job Number: 440-258020-3

Login Number: 258020 List Source: Eurofins 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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## Patel, Urvashi

From: Baluran, Dwayne < DBaluran@haleyaldrich.com>

Sent: Tuesday, December 24, 2019 10:59 AM

**To:** Patel, Urvashi; Christine, Mark B. **Cc:** Miller, Katherine; Bondoc, Christian M.

**Subject:** RE: Eurofins TestAmerica sample confirmation files from 440-258020-1 Boeing-SSFL

NPDES Permit 2019

### -External Email-

Hey,

Sure, whatever you can you do to split these sample locations separately to your fullest capability. I don't believe I've ever seen 2 outfalls in one SDG number. It'll make it easier for our tracking purposes and permit review if they are in different reports.

Thanks, Dwayne

From: Patel, Urvashi < <a href="mailto:Urvashi.Patel@testamericainc.com">Urvashi.Patel@testamericainc.com</a>>

Sent: Tuesday, December 24, 2019 10:52 AM

To: Baluran, Dwayne < DBaluran@haleyaldrich.com >; Christine, Mark B. < Mark.Christine@testamericainc.com > Cc: Miller, Katherine < Miller@haleyaldrich.com >; Bondoc, Christian M. < Christian.Bondoc@testamericainc.com > Subject: RE: Eurofins TestAmerica sample confirmation files from 440-258020-1 Boeing-SSFL NPDES Permit 2019

### **CAUTION: External Email**

Hi Dwayne

The COC has 1 of 2 and 2 of 2 listed so they were logged in together. We have already logged in under one job so I can split the samples into job series -1 and -2 for the different sample locations. Will that work?

#### **Urvashi Patel**

Phone: 949-333-9055

E-mail: <u>Urvashi.Patel@testamericainc.com</u>

**From:** Baluran, Dwayne [mailto:DBaluran@haleyaldrich.com]

Sent: Tuesday, December 24, 2019 10:46 AM

**To:** Patel, Urvashi **Cc:** Miller, Katherine

Subject: FW: Eurofins TestAmerica sample confirmation files from 440-258020-1 Boeing-SSFL NPDES Permit 2019

## -External Email-

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Hi Urvashi,

Happy Holidays! I'm reviewing the sample receipts for 440-258020-1 and -2. I'm seeing OF002 and OF009 sample data being mixed with each other. I've never seen this before. Typically each outfall is their own SDG. Could this please be revised.

Thanks,

Dwayne Baluran, EIT, QSP

Staff Engineer

Haley & Aldrich, Inc.

5850 Canoga Avenue | Suite 400 Woodland Hills, CA 91367

T: (978) 234.5022 C: (818) 224.0704

www.haleyaldrich.com

**From:** Miller, Katherine < <a href="mailto:KMiller@haleyaldrich.com">KMiller@haleyaldrich.com</a>>

Sent: Tuesday, December 24, 2019 10:20 AM

**To:** Baluran, Dwayne < <u>DBaluran@haleyaldrich.com</u>>

Subject: Fwd: Eurofins TestAmerica sample confirmation files from 440-258020-1 Boeing-SSFL NPDES Permit 2019

Please review today

Sent from my iPhone

Begin forwarded message:

From: Mark Christine <mark.christine@testamericainc.com>

Date: December 24, 2019 at 10:41:07 AM MST

To: "Barr, Anastasia" < ABarr@haleyaldrich.com >, "Hernandez, Elysse"

<<u>EHernandez@haleyaldrich.com</u>>, Kim Schultz <<u>kim.schultz@mecx.net</u>>, "Miller, Katherine"

< <a href="mailto:KMiller@haleyaldrich.com"><a href="mailto:KMiller@hale

Subject: Eurofins TestAmerica sample confirmation files from 440-258020-1 Boeing-SSFL NPDES

Permit 2019

**CAUTION: External Email** 

Hello,

Attached please find the sample confirmation files for job 440-258020-1; Boeing-SSFL NPDES Permit 2019

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

Thank you.

## **Mark B Christine**

Project Manager Assistant

Eurofins TestAmerica, Irvine

E-mail: mark.christine@testamericainc.com www.eurofinsus.com | www.testamericainc.com

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#### **DATA VALIDATION REPORT**

# **Boeing SSFL NPDES**

SAMPLE DELIVERY GROUP: 440-258077-1

## **Prepared for**

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

15 January 2020





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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<sup>x</sup> Project No.: 1272.003D.01 002
Sample Delivery Group: 440-258077-1

**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	Matrix	Collection	Method
OUTFALL009_20191224_	440-258077-1	WM	12/24/2019	E1613B, E200.7, E200.8,
COMP	440-236077-1	VVIVI	7:35:00 AM	E300, SM2540D
OUTFALL009_20191224_	440 250077 2	WM	12/24/2019	F200 7 F200 8
COMP F	440-258077-2	VVIVI	7:35:00 AM	E200.7, E200.8



### II. SAMPLE MANAGEMENT

According to the case narrative, Login Sample Receipt Checklist, and the chain-of-custody (COC) provided by the laboratory for sample delivery group (SDG) 440-258077-1:

- The laboratory received the samples in this SDG on ice and within the temperature limits of <6 degrees Celsius (°C) and >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 coolers; however, no evidence of tampering was noted.
- The case narrative indicated that the site sample was received in a wide-mouth amber glass bottle, and slightly less sample volume (932 milliliters) was available for extraction.



### **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.
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. EPA METHOD 1613B — DIOXIN/FURANS

#### L. Calvin of MEC<sup>x</sup> reviewed the SDG on January 15, 2020

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC<sup>X</sup> 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

Initial 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, OCDD, OCDF, and for totals HpCDD, HpCDF and HxCDD. The sample results for isomers detected below the RL in the sample were qualified as a nondetect (U) at the level of contamination. The method blank concentration of OCDD was not sufficient to qualify the sample concentration above the RL. The reviewer compared peaks comprising the method blank totals to those in the sample totals. Totals HpCDD, HpCDF and HxCDD were



qualified as estimated (J), as only a portion of each total was determined to be method blank contamination.

#### 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<sup>x</sup> 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<sup>x</sup> 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. 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. Second-column confirmation analysis for isomer 2,3,7,8-TCDF was not performed, as 2,3,7,8-TCDF was not detected in the initial analysis of the sample.

#### **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.

As noted in the case narrative, RLs and EDLs were slightly elevated due to somewhat limited sample volume. Rather than approximately 1000 milliliters (ml), a 932 ml sample volume was available for extraction.

Isomers previously qualified as method blank contamination were not further qualified as EMPCs. The isomer 2,3,7,8-TCDD and total TCDD EMPC concentrations were the same; therefore, both were qualified as estimated nondetects (UJ). As totals HpCDF and HxCDD included one or more EMPC peaks, both were qualified as estimated (J).



#### IV. METHODS 200.7 AND 200.8 — METALS

M. Hilchey of MEC<sup>x</sup> reviewed the SDG on January 15, 2020.

The samples listed in Table 1 for this analysis were validated based on the guidelines outlined in the MEC<sup>X</sup> Data Validation Procedure for Metals (DVP-5, Rev. 2), EPA Methods 200.7 and 200.8 and the National Functional Guidelines for Inorganic Methods Data Review (2017).

#### **IV.1. HOLDING TIMES**

The analytical holding time, six months for metals, was met. Sample Outfall006\_20190215\_Comp\_F was filtered and preserved approximately 48 hours after receipt, exceeding the requirement listed on the COC of filtration and preservation within 24 hours of receipt. All results for this sample were qualified as estimated (UJ for nondetects, J for detects).

#### IV.2. CALIBRATION

QAPP calibration criteria were met. A blank and two to four standards were used for calibration of ICP-AES and ICP-MS target analytes. The initial calibration r values were  $\geq$ 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 90-110% for ICP-MS. Continuing calibration verification recoveries were within QAPP control limits of 90-110%.

#### **IV.3. QUALITY CONTROL SAMPLES**

#### IV.3.1. METHOD BLANKS

There were no target analyte detections in the method blanks or calibration blanks of sufficient concentration to warrant qualification of associated site sample results with the following exception. Antimony was detected (0.860  $\mu g/L$ ) in a calibration blank bracketing sample OUTFALL009\_20191224\_COMP. The antimony result for this sample was a detect below the reporting limit and was qualified as nondetect (U).

#### 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 non-spiked target analytes were detected in the ICSAs; therefore, interference was not evaluated.

#### IV.3.3. LABORATORY CONTROL SAMPLES

Laboratory control samples recoveries (total and dissolved) were within the QAPP control limits of 85-115%. It should be noted that the LCS for ICP-MS (dissolved) was not filtered prior to analysis.

#### **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 samples OUTFALL009\_20191224\_COMP and OUTFALL009\_20191224\_COMP-F for both 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%.

The laboratory did not perform post-digestion spike analyses as there were no MS/MSD outliers.

#### **IV.4. SERIAL DILUTION**

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

#### IV.5. 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.

#### **IV.6. FIELD QC SAMPLES**

MEC<sup>x</sup> 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<sup>x</sup> used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

#### **IV.6.1. FIELD BLANKS AND EQUIPMENT BLANKS**

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

#### IV.6.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

#### V. METHODS EPA 300.0 AND SM2540C— ANIONS AND TOTAL SUSPENDED SOLIDS (TSS)

M. Hilchey of MEC<sup>x</sup> reviewed the SDG on January 15, 2020.

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC<sup>X</sup> Data Validation Procedure for General Minerals (DVP-6, Rev. 1), EPA Method 300.0, Standard Methods for the Examination of Water and Wastewater 2540D and the National Functional Guidelines for Inorganic Superfund Methods Data Review (2017).

#### V.1. HOLDING TIMES

The QAPP holding times, 28 days for chloride and sulfate, 48 hours for nitrate as N and nitrite as N and seven (7) days for TSS were met.

#### V.2. CALIBRATION

Calibration criteria were met. The Method 300.0 initial calibration  $r^2$  values were  $\geq$ 0.995 and all initial calibration verification recoveries met QAPP requirements. All TOC continuing calibration verification recoveries were within 90-110%. Analytical balance calibration logs were provided by the laboratory and found to be correctly calibrated and verified.



#### V.3. QUALITY CONTROL SAMPLES

#### V.3.1. **METHOD BLANKS**

The method blanks and calibration blanks had no detects.

#### V.3.2. LABORATORY CONTROL SAMPLES

Laboratory control sample recoveries were within the QAPP control limits.

#### 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 sample OUTFALL009\_20191224\_COMP for Method 300.0. QAPP control limits for recovery and RPD were met.

#### 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.

The laboratory analyzed the sample by Method 300.0 undiluted and at a 5× dilution and reported both sets of data. All QC for both sets of data were acceptable, the diluted and undiluted results were comparable, and the laboratory offered no explanation for the dilution. The results for the diluted analysis were rejected (qualified R) and the undiluted results were accepted for review.

#### V.5. FIELD QC SAMPLES

MEC<sup>x</sup> 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<sup>x</sup> 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: 4402580771

# Analysis Method E1613B

Sample Name OUTFALL009\_20191224\_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/24/2019 7:35:00 AM Validation Level: 8

**Lab Sample Name:** 440-258077-1

Analyte I	Fraction	n: CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,2,3,4,6,7,8,9- Octachlorodibenzofuran (OCDF)	N	39001-02-0	0.000013	0.00011	0.0000026	ug/L	J,DXMBq	U	В
1,2,3,4,6,7,8,9-Octachlorodibenzo-dioxin (OCDD)	p- N	3268-87-9	0.00020	0.00011	0.0000033	ug/L	MB		
1,2,3,4,6,7,8- Heptachlorodibenzofuran (HpCDF)	N	67562-39-4	0.0000052	0.000054	0.0000015	ug/L	J,DXMBq	U	В
1,2,3,4,6,7,8-Heptachlorodibenzo-p dioxin (HpCDD)	- N	35822-46-9	0.000018	0.000054	0.0000017	ug/L	J,DXMB	U	В
1,2,3,4,7,8,9- Heptachlorodibenzofuran (HpCDF)	N	55673-89-7	0.0000018	0.000054	0.0000017	ug/L	J,DXMB	U	В
1,2,3,4,7,8-Hexachlorodibenzofurar (HxCDF)	n N	70648-26-9	ND	0.000054	0.0000027	ug/L	U	U	
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	39227-28-6	0.0000024	0.000054	0.0000014	ug/L	J,DXMBq	U	В
1,2,3,6,7,8-Hexachlorodibenzofurar (HxCDF)	n N	57117-44-9	ND	0.000054	0.0000028	ug/L	U	U	
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	57653-85-7	ND	0.000054	0.0000015	ug/L	U	U	
1,2,3,7,8,9-Hexachlorodibenzofurar (HxCDF)	n N	72918-21-9	ND	0.000054	0.0000022	ug/L	U	U	
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	N	19408-74-3	ND	0.000054	0.0000013	ug/L	U	U	
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-41-6	ND	0.000054	0.0000017	ug/L	U	U	
1,2,3,7,8-Pentachlorodibenzo-p- dioxin (PeCDD)	N	40321-76-4	ND	0.000054	0.0000022	ug/L	U	U	
2,3,4,6,7,8-Hexachlorodibenzofurar (HxCDF)	n N	60851-34-5	ND	0.000054	0.0000021	ug/L	U	U	
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-31-4	ND	0.000054	0.0000016	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	ND	0.000011	0.0000020	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzo-p-dioxid (TCDD)	n N	1746-01-6	0.0000033	0.000011	0.0000022	ug/L	J,DXq	UJ	*III
Total Heptachlorodibenzofuran (HpCDF)	N	38998-75-3	0.000012	0.000054	0.0000015	ug/L	J,DXMBq	J	B, DNQ, *III
Total Heptachlorodibenzo-p-dioxin (HpCDD)	N	37871-00-4	0.000037	0.000054	0.0000017	ug/L	J,DXMB	J	B, DNQ
Total Hexachlorodibenzofuran (HxCDF)	N	55684-94-1	ND	0.000054	0.0000021	ug/L	U	U	
Total Hexachlorodibenzo-p-dioxin (HxCDD), Mixture	N	34465-46-8	0.0000055	0.000054	0.0000013	ug/L	J,DXMBq	J	B, DNQ, *III
Total Pentachlorodibenzofuran (PeCDF)	N	30402-15-4	ND	0.000054	0.0000016	ug/L	U	U	

Tuesday, January 21, 2020

E1613B Analysis Method 36088-22-9 U Total Pentachlorodibenzo-p-dioxin ND 0.000054 0.0000022 U ug/L (PeCDD) Total Tetrachlorodibenzofuran Ν 55722-27-5 ND 0.0000110.0000020 ug/L U U (TCDF) Total Tetrachlorodibenzo-p-dioxin N 41903-57-5 0.0000033 0.000011 J,DXq UJ \*Ш 0.0000022ug/L (TCDD)

Analysis Method E200.7

Sample Name OUTFALL009\_20191224\_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/24/2019 7:35:00 AM Validation Level: 8

**Lab Sample Name:** 440-258077-1

Fraction: CAS No Result RLMDL Result **Analyte** Lab Validation Validation Value Units **Oualifier** Qualifier Notes Nickel 7440-02-0 ND 10 5.0 ug/L Zinc 27 T 7440-66-6 20 12 ug/L

Sample Name OUTFALL009\_20191224\_COMP\_F Matrix Type: WM Result Type: TRG

Sample Date: 12/24/2019 7:35:00 AM Validation Level: 8

**Lab Sample Name:** 440-258077-2

**Analyte** Fraction: CAS No Result RL**MDL** Result Lab Validation Validation Value Units Qualifier Qualifier Notes U Nickel D 7440-02-0 ND 10 5.0 ug/L UJ н Zinc D 7440-66-6 15 20 12 J.DX H, DNQ ug/L J

Analysis Method E200.8

Sample Name OUTFALL009 20191224 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/24/2019 7:35:00 AM Validation Level: 8

**Lab Sample Name:** 440-258077-1

Analyte	Fractio	on: CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Antimony	T	7440-36-0	0.78	2.0	0.50	ug/L	J,DX	U	В
Cadmium	T	7440-43-9	ND	1.0	0.25	ug/L	U	U	
Copper	T	7440-50-8	3.7	2.0	0.50	ug/L			
Lead	T	7439-92-1	1.3	1.0	0.50	ug/L			
Selenium	T	7782-49-2	ND	2.0	0.50	ug/L	U	U	
Silver	T	7440-22-4	ND	1.0	0.50	ug/L	U	U	
Thallium	T	7440-28-0	ND	1.0	0.20	ug/L	U	U	

Sample Name OUTFALL009\_20191224\_COMP\_F Matrix Type: WM Result Type: TRG

Sample Date: 12/24/2019 7:35:00 AM Validation Level: 8

**Lab Sample Name:** 440-258077-2

**Analyte** Fraction: CAS No Result RLMDL Result Lab Validation Validation Value Units Qualifier Qualifier Notes D 7440-36-0 0.62 0.50 J,DX J H, DNQ Antimony 2.0 ug/L D 7440-43-9 ND 1.0 0.25 U UJ Н Cadmium ug/L 7440-50-8 3.2 J н Copper D 2.0 0.50 ug/L

Tuesday, January 21, 2020 Page 2 of 3

Analysis Method	E20	00.8								
Lead	D	7439-92-1	ND	1.0	0.50	ug/L	U	UJ	H	
Selenium	D	7782-49-2	ND	2.0	0.50	ug/L	U	UJ	H	
Silver	D	7440-22-4	ND	1.0	0.50	ug/L	U	UJ	H	
Thallium	D	7440-28-0	ND	1.0	0.20	ug/L	U	UJ	H	
Analysis Method	E30	20								

Sample Name OUTFALL009\_20191224\_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/24/2019 7:35:00 AM Validation Level: 8

**Lab Sample Name:** 440-258077-1

Analyte	Fractio	on: CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chloride	N	16887-00-6	3.2	0.50	0.25	mg/L			
Chloride	N	16887-00-6	3.1	2.5	1.3	mg/L		R	D
Nitrate (as N)	N	14797-55-8	1.1	0.55	0.28	mg/L		R	D
Nitrate (as N)	N	14797-55-8	1.1	0.11	0.055	mg/L			
Nitrite (as N)	N	14797-65-0	ND	0.15	0.025	mg/L	U	U	
Nitrite (as N)	N	14797-65-0	ND	0.75	0.13	mg/L	U	R	D
Nitrite/Nitrate	N	NO2NO3	1.1	0.15	0.055	mg/L			
Sulfate	N	14808-79-8	3.0	0.50	0.25	mg/L			
Sulfate	N	14808-79-8	2.9	2.5	1.3	mg/L		R	D

Analysis Method SM2540D

Sample Name OUTFALL009\_20191224\_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/24/2019 7:35:00 AM Validation Level: 8

**Lab Sample Name:** 440-258077-1

Analyte	Fraction	: CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes	
Total Suspended Solids (TSS)	N	TSS	11	4.0	2.0	mg/L	<u> </u>	<u> </u>	<u> </u>	

Tuesday, January 21, 2020 Page 3 of 3

# ANALYTICAL REPORT

Eurofins Calscience Irvine 17461 Derian Ave Suite 100 Irvine, CA 92614-5817

Tel: (949)261-1022

Laboratory Job ID: 440-258077-1

Client Project/Site: Semiannual Outfall 009 Comp

Revision: 1

For:

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

Attn: Katherine Miller

Authorized for release by:

1/30/2020 4:13:55 PM

Lena Davidkova, Project Manager II (949)260-3229

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Designee for

Christian Bondoc, Project Manager I (949)260-3218

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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.

Project/Site: Semiannual Outfall 009 Comp

Lena Davidkova Project Manager II 1/30/2020 4:13:55 PM Laboratory Job ID: 440-258077-1

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: Semiannual Outfall 009 Comp

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
440-258077-1	Outfall009_20191224_Comp	Water	12/24/19 07:35		
440-258077-2	Outfall009_20191224_Comp_F	Water	12/24/19 07:35	12/24/19 12:30	

#### **Case Narrative**

Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Comp

Job ID: 440-258077-1

**Laboratory: Eurofins Calscience Irvine** 

**Narrative** 

Job Narrative 440-258077-1

#### Comments

This report was revised to exclude results for individual anlaytes Nitrate-N and Nitrite-N and report only Nitrate Nitrite as N

The samples were received on 12/24/2019 12:30 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 6 coolers at receipt time were 1.0° C, 1.0° C, 1.0° C, 1.1° C, 1.2° C and 1.3° C.

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

#### Dioxin

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

#### Metals

Method FILTRATION: The following samples requested dissolved metals and were not filtered in the field: Outfall009 20191224 Comp F (440-258077-2), Outfall009 20191224 Comp F (440-258077-2[MS]) and Outfall009 20191224 Comp F (440-258077-2[MSD]). These samples were filtered and preserved upon receipt to the laboratory.

12/26/19

150mL of sample

2.5mL of HNO3 lot: 0000234822

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.

#### Dioxin Prep

Method 1613B: Elevated reporting limits are provided for the following sample due to insufficient sample provided for 1613B Sox Sep P preparation/analysis: Sample Outfall009 20191224 Comp (440-258077-1) was received in a wide-mouth amber glass bottle.

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

Job ID: 440-258077-1

**Eurofins Calscience Irvine** 1/30/2020 (Rev. 1)

# **Client Sample Results**

Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Comp

Client Sample ID: Outfall009\_20191224\_Comp

Date Collected: 12/24/19 07:35

Date Received: 12/24/19 12:30

Nitrate Nitrite as N

Lab Sample ID: 440-258077-1

Matrix: Water

01/03/20 13:10

Job ID: 440-258077-1

Method: 300.0 - Anion Analyte		Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	3.2		0.50	0.25	mg/L			12/24/19 19:43	1
Sulfate	3.0		0.50	0.25	mg/L			12/24/19 19:43	1
	lorate (IC)								
Analyte		Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		4.0	0.95	ug/L			12/26/19 11:35	1
Perchlorate  Method: NO3NO2 Cald		-Nitrite	4.0	0.95	ug/L			12/26/19 11:35	1

0.15

0.055 mg/L

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	0.0000033	J,DX q	0.000011	0.0000022	ug/L		12/30/19 16:10	01/07/20 00:39	1
2,3,7,8-TCDF	ND		0.000011	0.0000020	ug/L		12/30/19 16:10	01/07/20 00:39	1
1,2,3,7,8-PeCDD	ND		0.000054	0.0000022	ug/L		12/30/19 16:10	01/07/20 00:39	1
1,2,3,7,8-PeCDF	ND		0.000054	0.0000017	ug/L		12/30/19 16:10	01/07/20 00:39	1
2,3,4,7,8-PeCDF	ND		0.000054	0.0000016	ug/L		12/30/19 16:10	01/07/20 00:39	1
1,2,3,4,7,8-HxCDD	0.0000024	J,DX MB q	0.000054	0.0000014	ug/L		12/30/19 16:10	01/07/20 00:39	1
1,2,3,6,7,8-HxCDD	ND		0.000054	0.0000015	ug/L		12/30/19 16:10	01/07/20 00:39	1
1,2,3,7,8,9-HxCDD	ND		0.000054	0.0000013	ug/L		12/30/19 16:10	01/07/20 00:39	1
1,2,3,4,7,8-HxCDF	ND		0.000054	0.0000027	ug/L		12/30/19 16:10	01/07/20 00:39	1
1,2,3,6,7,8-HxCDF	ND		0.000054	0.0000028	ug/L		12/30/19 16:10	01/07/20 00:39	1
1,2,3,7,8,9-HxCDF	ND		0.000054	0.0000022	ug/L		12/30/19 16:10	01/07/20 00:39	1
2,3,4,6,7,8-HxCDF	ND		0.000054	0.0000021	ug/L		12/30/19 16:10	01/07/20 00:39	1
1,2,3,4,6,7,8-HpCDD	0.000018	J,DX MB	0.000054	0.0000017	ug/L		12/30/19 16:10	01/07/20 00:39	1
1,2,3,4,6,7,8-HpCDF	0.0000052	J,DX MB q	0.000054	0.0000015	ug/L		12/30/19 16:10	01/07/20 00:39	1
1,2,3,4,7,8,9-HpCDF	0.000018	J,DX MB	0.000054	0.0000017	ug/L		12/30/19 16:10	01/07/20 00:39	1
OCDD	0.00020	MB	0.00011	0.0000033	ug/L		12/30/19 16:10	01/07/20 00:39	1
OCDF	0.000013	J,DX MB q	0.00011	0.0000026	ug/L		12/30/19 16:10	01/07/20 00:39	1
Total TCDD	0.0000033	J,DX q	0.000011	0.0000022	ug/L		12/30/19 16:10	01/07/20 00:39	1
Total TCDF	ND		0.000011	0.0000020	ug/L		12/30/19 16:10	01/07/20 00:39	1
Total PeCDD	ND		0.000054	0.0000022	ug/L		12/30/19 16:10	01/07/20 00:39	1
Total PeCDF	ND		0.000054	0.0000016	ug/L		12/30/19 16:10	01/07/20 00:39	1
Total HxCDD	0.0000055	J,DX MB q	0.000054	0.0000013	ug/L		12/30/19 16:10	01/07/20 00:39	1
Total HxCDF	ND		0.000054	0.0000021	ug/L		12/30/19 16:10	01/07/20 00:39	1
Total HpCDD	0.000037	J,DX MB	0.000054	0.0000017	ug/L		12/30/19 16:10	01/07/20 00:39	1
Total HpCDF	0.000012	J,DX MB q	0.000054	0.0000015	ug/L		12/30/19 16:10	01/07/20 00:39	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD			25 - 164				12/30/19 16:10	01/07/20 00:39	

13C-2,3,7,8-TCDD		05 101			
	00	25 - 164	12/30/19 16:10	01/07/20 00:39	1
13C-2,3,7,8-TCDF	52	24 - 169	12/30/19 16:10	01/07/20 00:39	1
13C-1,2,3,7,8-PeCDD	54	25 - 181	12/30/19 16:10	01/07/20 00:39	1
13C-1,2,3,7,8-PeCDF	52	24 - 185	12/30/19 16:10	01/07/20 00:39	1
13C-2,3,4,7,8-PeCDF	55	21 - 178	12/30/19 16:10	01/07/20 00:39	1
13C-1,2,3,4,7,8-HxCDD	53	32 - 141	12/30/19 16:10	01/07/20 00:39	1
13C-1,2,3,6,7,8-HxCDD	48	28 - 130	12/30/19 16:10	01/07/20 00:39	1
13C-1,2,3,4,7,8-HxCDF	51	26 - 152	12/30/19 16:10	01/07/20 00:39	1
13C-1,2,3,6,7,8-HxCDF	46	26 - 123	12/30/19 16:10	01/07/20 00:39	1
13C-1,2,3,7,8,9-HxCDF	48	29 - 147	12/30/19 16:10	01/07/20 00:39	1
13C-2,3,4,6,7,8-HxCDF	48	28 - 136	12/30/19 16:10	01/07/20 00:39	1
	13C-1,2,3,7,8-PeCDF 13C-2,3,4,7,8-PeCDF 13C-1,2,3,4,7,8-HxCDD 13C-1,2,3,6,7,8-HxCDD 13C-1,2,3,4,7,8-HxCDF 13C-1,2,3,6,7,8-HxCDF 13C-1,2,3,7,8,9-HxCDF	13C-1,2,3,7,8-PeCDF       52         13C-2,3,4,7,8-PeCDF       55         13C-1,2,3,4,7,8-HxCDD       53         13C-1,2,3,6,7,8-HxCDD       48         13C-1,2,3,4,7,8-HxCDF       51         13C-1,2,3,6,7,8-HxCDF       46         13C-1,2,3,7,8,9-HxCDF       48	13C-1,2,3,7,8-PeCDF       52       24 - 185         13C-2,3,4,7,8-PeCDF       55       21 - 178         13C-1,2,3,4,7,8-HxCDD       53       32 - 141         13C-1,2,3,6,7,8-HxCDD       48       28 - 130         13C-1,2,3,4,7,8-HxCDF       51       26 - 152         13C-1,2,3,6,7,8-HxCDF       46       26 - 123         13C-1,2,3,7,8,9-HxCDF       48       29 - 147	13C-1,2,3,7,8-PeCDF       52       24 - 185       12/30/19 16:10         13C-2,3,4,7,8-PeCDF       55       21 - 178       12/30/19 16:10         13C-1,2,3,4,7,8-HxCDD       53       32 - 141       12/30/19 16:10         13C-1,2,3,6,7,8-HxCDD       48       28 - 130       12/30/19 16:10         13C-1,2,3,4,7,8-HxCDF       51       26 - 152       12/30/19 16:10         13C-1,2,3,6,7,8-HxCDF       46       26 - 123       12/30/19 16:10         13C-1,2,3,7,8,9-HxCDF       48       29 - 147       12/30/19 16:10	13C-1,2,3,7,8-PeCDF       52       24 - 185       12/30/19 16:10       01/07/20 00:39         13C-2,3,4,7,8-PeCDF       55       21 - 178       12/30/19 16:10       01/07/20 00:39         13C-1,2,3,4,7,8-HxCDD       53       32 - 141       12/30/19 16:10       01/07/20 00:39         13C-1,2,3,6,7,8-HxCDD       48       28 - 130       12/30/19 16:10       01/07/20 00:39         13C-1,2,3,4,7,8-HxCDF       51       26 - 152       12/30/19 16:10       01/07/20 00:39         13C-1,2,3,6,7,8-HxCDF       46       26 - 123       12/30/19 16:10       01/07/20 00:39         13C-1,2,3,7,8,9-HxCDF       48       29 - 147       12/30/19 16:10       01/07/20 00:39

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Job ID: 440-258077-1

Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Comp

Client Sample ID: Outfall009\_20191224\_Comp

Lab Sample ID: 440-258077-1 Date Collected: 12/24/19 07:35 **Matrix: Water** 

Date Received: 12/24/19 12:30

Method: 1613B - Dioxins	and Furans (HRGC/HRMS)	(Continued)			
Isotope Dilution	%Recovery Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,6,7,8-HpCDD	57	23 - 140	12/30/19 16:10	01/07/20 00:39	1
13C-1,2,3,4,6,7,8-HpCDF	52	28 - 143	12/30/19 16:10	01/07/20 00:39	1
13C-1,2,3,4,7,8,9-HpCDF	58	26 - 138	12/30/19 16:10	01/07/20 00:39	1
13C-OCDD	56	17 - 157	12/30/19 16:10	01/07/20 00:39	1
Surrogate	%Recovery Qualifier	Limits	Prepared	Analyzed	Dil Fac
37CI4-2,3,7,8-TCDD	111	35 - 197	12/30/19 16:10	01/07/20 00:39	1

Method: 200.7 Rev 4.4 - Metals	s (ICP) - Total Recovera	ble						
Analyte	Result Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nickel	ND	10	5.0	ug/L		12/26/19 10:35	12/29/19 11:24	1
Zinc	27	20	12	ug/L		12/26/19 10:35	12/29/19 11:24	1

Method: 200.8 - Metal: Analyte	s (ICP/MS) - Total Recoverable Result Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	ND ND	1.0	0.50	ug/L		12/26/19 10:42	12/30/19 12:21	1
Cadmium	ND	1.0	0.25	ug/L		12/26/19 10:42	12/30/19 12:21	1
Copper	3.7	2.0	0.50	ug/L		12/26/19 10:42	12/30/19 12:21	1
Lead	1.3	1.0	0.50	ug/L		12/26/19 10:42	12/30/19 12:21	1
Antimony	0.78 J,DX	2.0	0.50	ug/L		12/26/19 10:42	12/30/19 12:21	1
Selenium	ND	2.0	0.50	ug/L		12/26/19 10:42	12/30/19 12:21	1
Thallium	ND	1.0	0.20	ug/L		12/26/19 10:42	12/30/19 12:21	1

Method: 245.1 - Mercury (CVAA)									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		12/31/19 12:32	01/02/20 13:16	1
Γ									

	Analyte	Result Qu	ualifier RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Total Dissolved Solids	62	10	5.0	mg/L			12/26/19 10:23	1
١	Total Suspended Solids	11	4.0	2.0	mg/L			12/26/19 15:23	1
l	Cyanide, Total	ND	5.0	2.5	ug/L		12/27/19 10:46	12/27/19 16:11	1

Client Sample ID: Outfall009\_20191224\_Comp\_F Lab Sample ID: 440-258077-2

Date Collected: 12/24/19 07:35 Date Received: 12/24/19 12:30

Method: 200.7 Rev 4.4 - Metal	s (ICP) - Dissolved							
Analyte	Result Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nickel	ND	10	5.0	ug/L		12/26/19 14:27	12/27/19 13:33	1
Zinc	15 J,DX	20	12	ug/L		12/26/19 14:27	12/27/19 13:33	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	ND		1.0	0.50	ug/L		12/26/19 14:39	12/29/19 18:08	1
Cadmium	ND		1.0	0.25	ug/L		12/26/19 14:39	12/29/19 18:08	1
Copper	3.2		2.0	0.50	ug/L		12/26/19 14:39	12/29/19 18:08	1
Lead	ND		1.0	0.50	ug/L		12/26/19 14:39	12/29/19 18:08	1
Antimony	0.62	J,DX	2.0	0.50	ug/L		12/26/19 14:39	12/29/19 18:08	1
Selenium	ND		2.0	0.50	ug/L		12/26/19 14:39	12/29/19 18:08	1
Thallium	ND		1.0	0.20	ug/L		12/26/19 14:39	12/29/19 18:08	1

**Eurofins Calscience Irvine** 

**Matrix: Water** 

# **Client Sample Results**

Client: Haley & Aldrich, Inc. Job ID: 440-258077-1

Project/Site: Semiannual Outfall 009 Comp

Client Sample ID: Outfall009\_20191224\_Comp\_F Lab Sample ID: 440-258077-2

Date Collected: 12/24/19 07:35

Matrix: Water

Date Received: 12/24/19 12:30

Method: 245.1 - Mercury (CVAA) - Dissolved

 Analyte
 Result
 Qualifier
 RL
 MDL ug/L
 Unit
 D ug/L
 Prepared 01/03/20 08:28
 Analyzed 01/06/20 21:09
 Dil Fac 01/03/20 08:28

viercury ND 0.20 0.10 ug/L 01/03/20 08:28 01/06/20 21:09 1

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# **Method Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Comp

Method	Method Description	Protocol	Laboratory
300.0	Anions, Ion Chromatography	MCAWW	TAL IRV
314.0	Perchlorate (IC)	EPA	TAL IRV
NO3NO2 Calc	Nitrogen, Nitrate-Nitrite	EPA	TAL IRV
613B	Dioxins and Furans (HRGC/HRMS)	40CFR136A	TAL SAC
00.7 Rev 4.4	Metals (ICP)	EPA	TAL IRV
00.8	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
613B	Separatory Funnel (L/L) Extraction with Soxhlet Extraction of Dioxin and Furans	40CFR136A	TAL SAC
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:**

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.

None = None

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

#### **Laboratory References:**

TAL IRV = Eurofins Calscience Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022 TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Job ID: 440-258077-1

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Client Sample ID: Outfall009\_20191224\_Comp

Date Collected: 12/24/19 07:35

Date Received: 12/24/19 12:30

Lab Sample ID: 440-258077-1

**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			587735	12/24/19 19:43	NTN	TAL IRV
Total/NA	Analysis	300.0	DL	5			587735	12/24/19 20:00	NTN	TAL IRV
Total/NA	Analysis	314.0		1			587948	12/26/19 11:35	PS	TAL IRV
Total/NA	Analysis	NO3NO2 Calc		1			589051	01/03/20 13:10	NN	TAL IRV
Total/NA	Prep	1613B			931.9 mL	20 uL	348645	12/30/19 16:10	NIR	TAL SAC
Total/NA	Analysis	1613B		1			349278	01/07/20 00:39	KSS	TAL SAC
Total Recoverable	Prep	200.2			25 mL	25 mL	587971	12/26/19 10:35	EP	TAL IRV
Total Recoverable	Analysis	200.7 Rev 4.4		1			588370	12/29/19 11:24	KE	TAL IRV
Total Recoverable	Prep	200.2			25 mL	25 mL	587974	12/26/19 10:42	EP	TAL IRV
Total Recoverable	Analysis	200.8		1			588549	12/30/19 12:21	B1H	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	588737	12/31/19 12:32	MEM	TAL IRV
Total/NA	Analysis	245.1		1			588954	01/02/20 13:16	MEM	TAL IRV
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	587964	12/26/19 10:23	XL	TAL IRV
Total/NA	Analysis	SM 2540D		1	250 mL	1000 mL	588034	12/26/19 15:23	KL	TAL IRV
Total/NA	Prep	Distill/CN			50 mL	50 mL	588165	12/27/19 10:46	KMY	TAL IRV
Total/NA	Analysis	SM 4500 CN E		1			588222	12/27/19 16:11	KMY	TAL IRV

Client Sample ID: Outfall009\_20191224\_Comp\_F

Date Collected: 12/24/19 07:35 Date Received: 12/24/19 12:30

Lab Sample ID: 440-258077-2

**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	587989	12/26/19 11:45	EP	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	588019	12/26/19 14:27	EP	TAL IRV
Dissolved	Analysis	200.7 Rev 4.4		1			588205	12/27/19 13:33	TQN	TAL IRV
Dissolved	Filtration	FILTRATION			150 mL	150 mL	587989	12/26/19 11:45	EP	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	588020	12/26/19 14:39	EP	TAL IRV
Dissolved	Analysis	200.8		1			588414	12/29/19 18:08	B1H	TAL IRV
Dissolved	Filtration	FILTRATION			100 mL	100 mL	588000	12/26/19 12:39	EP	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	588987	01/03/20 08:28	MEM	TAL IRV
Dissolved	Analysis	245.1		1			589374	01/06/20 21:09	MEM	TAL IRV

#### **Laboratory References:**

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

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Job ID: 440-258077-1

# Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 440-587735/6 **Client Sample ID: Method Blank** Prep Type: Total/NA

**Matrix: Water** 

**Analysis Batch: 587735** 

	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50	0.25	mg/L			12/24/19 11:14	1
Sulfate	ND		0.50	0.25	mg/L			12/24/19 11:14	1

Lab Sample ID: LCS 440-587735/7 **Client Sample ID: Lab Control Sample Matrix: Water Prep Type: Total/NA** 

**Analysis Batch: 587735** 

	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Chloride	 5.00	4.62		mg/L		92	90 - 110	
Sulfate	5.00	4.87		mg/L		97	90 - 110	

# Method: 300.0 - Anions, Ion Chromatography - DL

Lab Sample ID: 440-258077-1 MS Client Sample ID: Outfall009\_20191224\_Comp **Matrix: Water** Prep Type: Total/NA

Analysis Batch: 587735

_	Sample	Sample	Spike	MS	MS				%Rec.	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Chloride - DL	3.1		25.0	27.0		mg/L		96	80 - 120	
Sulfate - DL	2.9		25.0	28.2		mg/L		101	80 - 120	

Lab Sample ID: 440-258077-1 MSD Client Sample ID: Outfall009 20191224 Comp **Matrix: Water** Prep Type: Total/NA

Analysis Batch: 587735

	Sample	Sample	Spike	MSD	MSD				%Rec.		RPD	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit	
Chloride - DL	3.1		25.0	26.2		mg/L		92	80 - 120	3	20	
Sulfate - DL	2.9		25.0	27.2		mg/L		97	80 - 120	4	20	

#### Method: 314.0 - Perchlorate (IC)

Lab Sample ID: MB 440-587948/6 **Client Sample ID: Method Blank Matrix: Water** Prep Type: Total/NA

**Analysis Batch: 587948** 

-	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		4.0	0.95	ua/L			12/26/19 10:14	<del></del> 1

Lab Sample ID: LCS 440-587948/5 **Client Sample ID: Lab Control Sample Matrix: Water** Prep Type: Total/NA

Analysis Batch: 587948

Spike LCS LCS %Rec. Added Result Qualifier Unit Limits Analyte D %Rec Perchlorate 25.0 93 85 - 115 23.2 ug/L

Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Comp

Job ID: 440-258077-1

Method: 314.0 - Perchlorate (IC) (Continued)

Lab Sample ID: MRL 440-587948/8

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

**Matrix: Water** Analysis Batch: 587948

Spike MRL MRL %Rec. Analyte Added Result Qualifier Unit D %Rec Limits Perchlorate 4.00 3.52 J,DX 88 75 - 125 ug/L

Lab Sample ID: 440-258077-1 MS

Client Sample ID: Outfall009\_20191224\_Comp

Prep Type: Total/NA

**Matrix: Water** 

**Analysis Batch: 587948** 

%Rec. Sample Sample Spike MS MS Analyte Result Qualifier Added Result Qualifier Unit D %Rec Limits Perchlorate ND 25.0 24.4 ug/L 98 80 - 120

Spike

Lab Sample ID: 440-258077-1 MSD

Client Sample ID: Outfall009\_20191224\_Comp

Prep Type: Total/NA

**Matrix: Water** 

**Analysis Batch: 587948** 

MSD MSD %Rec. **RPD** 

Analyte Result Qualifier Added Result Qualifier Unit Limits RPD Limit D %Rec Perchlorate ND 25.0 24.3 ug/L 97 80 - 120 n 15

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Sample Sample

Lab Sample ID: MB 320-348645/1-A

**Matrix: Water** 

**Client Sample ID: Method Blank** 

Prep Type: Total/NA

Analysis Batch: 349278								Prep Batch:	348645
	MB	MB							
Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000010	0.0000024	ug/L		12/30/19 16:10	01/06/20 19:17	1
2,3,7,8-TCDF	ND		0.000010	0.0000019	ug/L		12/30/19 16:10	01/06/20 19:17	1
1,2,3,7,8-PeCDD	ND		0.000050	0.0000029	ug/L		12/30/19 16:10	01/06/20 19:17	1
1,2,3,7,8-PeCDF	ND		0.000050	0.0000020	ug/L		12/30/19 16:10	01/06/20 19:17	1
2,3,4,7,8-PeCDF	ND		0.000050	0.0000020	ug/L		12/30/19 16:10	01/06/20 19:17	1
1,2,3,4,7,8-HxCDD	0.00000241	J,DX q	0.000050	0.0000013	ug/L		12/30/19 16:10	01/06/20 19:17	1
1,2,3,6,7,8-HxCDD	0.00000154	J,DX	0.000050	0.0000013	ug/L		12/30/19 16:10	01/06/20 19:17	1
1,2,3,7,8,9-HxCDD	ND		0.000050	0.0000012	ug/L		12/30/19 16:10	01/06/20 19:17	1
1,2,3,4,7,8-HxCDF	ND		0.000050	0.0000022	ug/L		12/30/19 16:10	01/06/20 19:17	1
1,2,3,6,7,8-HxCDF	ND		0.000050	0.0000023	ug/L		12/30/19 16:10	01/06/20 19:17	1
1,2,3,7,8,9-HxCDF	ND		0.000050	0.0000017	ug/L		12/30/19 16:10	01/06/20 19:17	1
2,3,4,6,7,8-HxCDF	ND		0.000050	0.000018	ug/L		12/30/19 16:10	01/06/20 19:17	1
1,2,3,4,6,7,8-HpCDD	0.00000304	J,DX	0.000050	0.0000006	ug/L		12/30/19 16:10	01/06/20 19:17	1
1,2,3,4,6,7,8-HpCDF	0.00000413	J,DX q	0.000050	0.0000005 7	ug/L		12/30/19 16:10	01/06/20 19:17	1
1,2,3,4,7,8,9-HpCDF	0.00000119	J,DX q	0.000050	0.0000006	ug/L		12/30/19 16:10	01/06/20 19:17	1
OCDD	0.0000133	J,DX	0.00010	0.0000025	ug/L		12/30/19 16:10	01/06/20 19:17	1
OCDF	0.00000511	J,DX	0.00010	0.0000024	ug/L		12/30/19 16:10	01/06/20 19:17	1
Total TCDD	ND		0.000010	0.0000024	ug/L		12/30/19 16:10	01/06/20 19:17	1
Total TCDF	ND		0.000010	0.0000019	ug/L		12/30/19 16:10	01/06/20 19:17	1
Total PeCDD	ND		0.000050	0.0000029	ug/L		12/30/19 16:10	01/06/20 19:17	1
Total PeCDF	ND		0.000050	0.0000020	ug/L		12/30/19 16:10	01/06/20 19:17	1
Total HxCDD	0.00000395	J,DX q	0.000050	0.0000012	ug/L		12/30/19 16:10	01/06/20 19:17	1
Total HxCDF	ND		0.000050	0.0000017	ug/L		12/30/19 16:10	01/06/20 19:17	1

Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Comp

Job ID: 440-258077-1

# Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: MB 320-348645/1-A Client Sample ID: Method Blank **Matrix: Water** Prep Type: Total/NA **Analysis Batch: 349278 Prep Batch: 348645** MB MB

Analyte Result Qualifier RL **EDL** Unit Prepared Analyzed Dil Fac Total HpCDD 0.00000495 J.DX 0.000050 12/30/19 16:10 01/06/20 19:17 0.0000006 ug/L Total HpCDF 0.00000533 J,DX q 0.000050 12/30/19 16:10 01/06/20 19:17 0.0000005 ug/L MB MB

Isotope Dilution %Recovery Qualifier Limits Prepared Dil Fac Analyzed 13C-2,3,7,8-TCDD 62 25 - 164 12/30/19 16:10 01/06/20 19:17 13C-2,3,7,8-TCDF 61 24 - 169 12/30/19 16:10 01/06/20 19:17 67 12/30/19 16:10 01/06/20 19:17 13C-1,2,3,7,8-PeCDD 25 - 181 13C-1,2,3,7,8-PeCDF 62 24 - 185 12/30/19 16:10 01/06/20 19:17 13C-2,3,4,7,8-PeCDF 69 21 - 178 12/30/19 16:10 01/06/20 19:17 70 12/30/19 16:10 01/06/20 19:17 13C-1,2,3,4,7,8-HxCDD 32 - 141 13C-1,2,3,6,7,8-HxCDD 58 28 - 130 12/30/19 16:10 01/06/20 19:17 62 12/30/19 16:10 01/06/20 19:17 13C-1,2,3,4,7,8-HxCDF 26 - 152 56 26 - 123 12/30/19 16:10 01/06/20 19:17 13C-1,2,3,6,7,8-HxCDF 13C-1,2,3,7,8,9-HxCDF 60 29 - 147 12/30/19 16:10 01/06/20 19:17 13C-2,3,4,6,7,8-HxCDF 60 28 - 136 12/30/19 16:10 01/06/20 19:17 13C-1,2,3,4,6,7,8-HpCDD 71 23 - 140 12/30/19 16:10 01/06/20 19:17 65 28 - 143 12/30/19 16:10 01/06/20 19:17 13C-1,2,3,4,6,7,8-HpCDF 13C-1,2,3,4,7,8,9-HpCDF 72 26 - 138 12/30/19 16:10 01/06/20 19:17 13C-OCDD 72 17 - 157 12/30/19 16:10 01/06/20 19:17

MB MB %Recovery Qualifier Surrogate Limits Prepared Dil Fac Analyzed 37CI4-2,3,7,8-TCDD 112 35 - 197 12/30/19 16:10 01/06/20 19:17

Lab Sample ID: LCS 320-348645/2-A **Client Sample ID: Lab Control Sample** 

**Matrix: Water** Prep Type: Total/NA

Analysis Batch: 349278	Spike	LCS	LCS				Prep Batch: 348645 %Rec.
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits
2,3,7,8-TCDD	0.000200	0.000205		ug/L		102	67 - 158
2,3,7,8-TCDF	0.000200	0.000215		ug/L		107	75 <sub>-</sub> 158
1,2,3,7,8-PeCDD	0.00100	0.00109		ug/L		109	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	0.000984		ug/L		98	68 - 160
1,2,3,4,7,8-HxCDD	0.00100	0.00103	MB	ug/L		103	70 - 164
1,2,3,6,7,8-HxCDD	0.00100	0.00108	MB	ug/L		108	76 - 134
1,2,3,7,8,9-HxCDD	0.00100	0.00107		ug/L		107	64 - 162
1,2,3,4,7,8-HxCDF	0.00100	0.000991		ug/L		99	72 - 134
1,2,3,6,7,8-HxCDF	0.00100	0.00103		ug/L		103	84 - 130
1,2,3,7,8,9-HxCDF	0.00100	0.00102		ug/L		102	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	0.00108	MB	ug/L		108	70 - 140
1,2,3,4,6,7,8-HpCDF	0.00100	0.00110	MB	ug/L		110	82 - 122
1,2,3,4,7,8,9-HpCDF	0.00100	0.00102	MB	ug/L		102	78 - 138
OCDD	0.00200	0.00223	MB	ug/L		112	78 - 144
OCDF	0.00200	0.00221	MB	ug/L		111	63 - 170

# Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

	LCS	LCS	
Isotope Dilution	%Recovery	Qualifier	Limits
13C-2,3,7,8-TCDD	66		20 - 175
13C-2,3,7,8-TCDF	61		22 - 152
13C-1,2,3,7,8-PeCDD	65		21 - 227
13C-1,2,3,7,8-PeCDF	61		21 - 192
13C-2,3,4,7,8-PeCDF	68		13 - 328
13C-1,2,3,4,7,8-HxCDD	63		21 - 193
13C-1,2,3,6,7,8-HxCDD	54		25 - 163
13C-1,2,3,4,7,8-HxCDF	57		19 - 202
13C-1,2,3,6,7,8-HxCDF	53		21 - 159
13C-1,2,3,7,8,9-HxCDF	56		17 - 205
13C-2,3,4,6,7,8-HxCDF	57		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	62		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	57		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	64		20 - 186
13C-OCDD	63		13 - 199
	LCS	LCS	
Surrogate	%Recovery	Qualifier	Limits
37CI4-2,3,7,8-TCDD	112		31 - 191

Lab Sample ID: LCSD 320-348645/3-A

**Matrix: Water** 

**Analysis Batch: 349278** 

**Client Sample ID: Lab Control Sample Dup** 

Prep Type: Total/NA Prep Batch: 348645

LCSD LCSD Spike %Rec. **RPD** Result Qualifier RPD Analyte Added Unit D %Rec Limits Limit 2,3,7,8-TCDD 0.000200 0.000211 105 67 - 158 3 50 ug/L 50 2,3,7,8-TCDF 0.000200 0.000215 ug/L 107 75 - 158 0 1,2,3,7,8-PeCDD 0.00100 0.00112 ug/L 112 70 - 142 50 0.00100 0.00109 109 80 - 134 50 1,2,3,7,8-PeCDF ug/L ug/L 2,3,4,7,8-PeCDF 0.00100 0.00102 102 68 - 160 50 1,2,3,4,7,8-HxCDD 0.00100 0.00104 MB ug/L 104 70 - 164 50 1,2,3,6,7,8-HxCDD 0.00100 0.00113 MB ug/L 113 76 - 134 50 0.00111 64 - 162 50 1,2,3,7,8,9-HxCDD 0.00100 ug/L 111 1,2,3,4,7,8-HxCDF 0.00100 0.00103 ug/L 103 72 - 134 50 1,2,3,6,7,8-HxCDF 0.00100 0.00106 ug/L 106 84 - 130 50 50 1,2,3,7,8,9-HxCDF 0.00100 0.00106 ug/L 106 78 - 130 106 50 2,3,4,6,7,8-HxCDF 0.00100 0.00106 ug/L 70 - 156 1,2,3,4,6,7,8-HpCDD 0.00100 0.00109 MB ug/L 109 70 - 140 50 0.00100 0.00111 MB 111 82 - 122 50 1,2,3,4,6,7,8-HpCDF ug/L 2 50 1,2,3,4,7,8,9-HpCDF 0.00100 0.00104 MB ug/L 104 78 - 138 OCDD 0.00200 0.00217 MB ug/L 109 78 - 144 50 OCDF 0.00200 0.00216 MB 63 - 170 ug/L 108 50

	LCSD	LCSD	
Isotope Dilution	%Recovery	Qualifier	Limits
13C-2,3,7,8-TCDD	65		20 - 175
13C-2,3,7,8-TCDF	61		22 - 152
13C-1,2,3,7,8-PeCDD	63		21 - 227
13C-1,2,3,7,8-PeCDF	60		21 - 192
13C-2,3,4,7,8-PeCDF	66		13 - 328
13C-1,2,3,4,7,8-HxCDD	61		21 - 193
13C-1,2,3,6,7,8-HxCDD	56		25 - 163
13C-1,2,3,4,7,8-HxCDF	57		19 - 202

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Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Comp

Job ID: 440-258077-1

**Prep Batch: 587971** 

# Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCSD 320-348645/3-A

Matrix: Water

Analysis Batch: 349278

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 348645

	LCSD	LCSD	
Isotope Dilution	%Recovery	Qualifier	Limits
13C-1,2,3,6,7,8-HxCDF	54		21 - 159
13C-1,2,3,7,8,9-HxCDF	56		17 - 205
13C-2,3,4,6,7,8-HxCDF	57		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	66		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	59		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	68		20 - 186
13C-OCDD	69		13 - 199
	LCSD	LCSD	
Surrogate	%Recovery	Qualifier	Limits

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: MB 440-587971/1-A

Client Sample ID: Method Blank

Matrix: Water

Prep Type: Total Recoverable

31 - 191

Analysis Batch: 588370

37CI4-2,3,7,8-TCDD

мв мв

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Analyte	Result Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nickel	ND ND	10	5.0	ug/L		12/26/19 10:35	12/29/19 10:46	1
Zinc	ND	20	12	ug/L		12/26/19 10:35	12/29/19 10:46	1

Lab Sample ID: LCS 440-587971/2-A

Matrix: Water

Analysis Batch: 588370

Spike
LCS LCS
Analyte
Added
Nickel

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 587971
%Rec.
%Rec.
Unit
Ug/L
D %Rec Limits
100 85-115

Analyte	Added	Result	Qualifier	Unit	ט	%Rec	Limits
Nickel	500	499		ug/L	_	100	85 - 115
Zinc	500	494		ug/L		99	85 <sub>-</sub> 115
Lab Sample ID: 440-258077-1 MS			Clier	nt Sample	ID:	Outfall	009 20191224 Comp
Matrix: Water				•	P	rep Typ	oe: Total Recoverable

Analysis Batch: 588370	Sample	Sample	Spike	MS	MS				Prep Ba %Rec.	atch: 587971
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Nickel	ND		500	522		ug/L		104	70 - 130	
Zinc	27		500	526		ug/L		100	70 - 130	

Lab Sample ID: 440-258077	7-1 MSD				Clie	nt Samp	ole ID:	Outfall	009_2019	1224_0	Comp
Matrix: Water							P	rep Ty	oe: Total I	Recove	erable
Analysis Batch: 588370									Prep Ba	itch: 5	37971
_	Sample	Sample	Spike	MSD	MSD				%Rec.		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Nickel	ND		500	512		ug/L		102	70 - 130	2	20
Zinc	27		500	515		ug/L		98	70 - 130	2	20

**Eurofins Calscience Irvine** 

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Project/Site: Semiannual Outfall 009 Comp

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

MR MR

Sample Sample

ND

Result Qualifier

15 J.DX

Lab Sample ID: MB 440-587989/1-B

**Matrix: Water** 

**Analysis Batch: 588205** 

Client Sample ID: Method Blank

**Prep Type: Dissolved** 

Job ID: 440-258077-1

Prep Batch: 588019

	1410	IVID							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nickel	ND		10	5.0	ug/L		12/26/19 14:27	12/27/19 13:29	1
Zinc	ND		20	12	ug/L		12/26/19 14:27	12/27/19 13:29	1

Lab Sample ID: LCS 440-587989/2-B

**Matrix: Water** 

Analyte

Analyte

Nickel

Zinc

Nickel

Zinc

**Analysis Batch: 588205** 

**Client Sample ID: Lab Control Sample Prep Type: Dissolved** 

**Prep Batch: 588019** 

Spike LCS LCS %Rec. Added Result Qualifier Limits Unit D %Rec 500 498 100 85 - 115 ug/L 500 488 ug/L 98 85 - 115

MS MS

501

499

Result Qualifier

Unit

ug/L

ug/L

Lab Sample ID: 440-258077-2 MS

**Matrix: Water** 

**Analysis Batch: 588205** 

Client Sample ID: Outfall009\_20191224\_Comp\_F

D

**Prep Type: Dissolved Prep Batch: 588019** 

%Rec.

Limits

%Rec 100 70 - 130 97 70 - 130

Lab Sample ID: 440-258077-2 MSD

**Matrix: Water** 

**Analysis Batch: 588205** 

Client Sample ID: Outfall009\_20191224\_Comp\_F

**Prep Type: Dissolved** 

**Prep Batch: 588019** 

**RPD** %Rec. Limits RPD Limit

MSD MSD Sample Sample Spike Result Qualifier Added Result Qualifier %Rec Analyte Unit Nickel 500 512 70 - 130 2 20 ND ug/L 102 Zinc 15 J,DX 500 511 ug/L 99 70 - 130 2 20

Spike

Added

500

500

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 440-587974/1-A

**Matrix: Water** 

**Analysis Batch: 588549** 

**Client Sample ID: Method Blank Prep Type: Total Recoverable** 

Prep Batch: 587974

MB MB Result Qualifier RL **MDL** Unit D Dil Fac **Analyte** Prepared Analyzed 1.0 Silver  $\overline{\mathsf{ND}}$ 0.50 ug/L 12/26/19 10:42 12/30/19 12:16 Cadmium ND 1.0 0.25 ug/L 12/26/19 10:42 12/30/19 12:16 ND 12/26/19 10:42 12/30/19 12:16 Copper 20 0.50 ug/L Lead ND 1.0 0.50 ug/L 12/26/19 10:42 12/30/19 12:16 ND 0.50 ug/L 12/26/19 10:42 12/30/19 12:16 Antimony 2.0 ND 12/26/19 10:42 12/30/19 12:16 Selenium 2.0 0.50 ug/L ND 12/26/19 10:42 12/30/19 12:16 Thallium 1.0 0.20 ug/L

Lab Sample ID: LCS 440-587974/2-A

**Matrix: Water** 

**Analysis Batch: 588549** 

**Client Sample ID: Lab Control Sample Prep Type: Total Recoverable** 

Prep Batch: 587974

Spike LCS LCS %Rec. Added Analyte Result Qualifier Unit %Rec Limits Silver 80.0 87 1 ug/L 109 85 - 115 Cadmium 80.0 82.3 ug/L 103 85 - 115 80.0 85 - 115 Copper 80.5 ug/L 101

Job ID: 440-258077-1

Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Comp

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

Lab Sample ID: LCS 440-587974/2-A

**Matrix: Water** 

**Analysis Batch: 588549** 

**Client Sample ID: Lab Control Sample Prep Type: Total Recoverable** Prep Batch: 587974

Spike LCS LCS %Rec. Added Result Qualifier Unit D %Rec Limits Lead 80.0 82.1 ug/L 103 85 - 115 80.0 92.3 ug/L 85 - 115 Antimony 115 Selenium 80.0 82.6 ug/L 103 85 - 115 Thallium 80.0 82.3 ug/L 103 85 - 115

Lab Sample ID: 440-258077-1 MS

**Matrix: Water** 

**Analysis Batch: 588549** 

Client Sample ID: Outfall009\_20191224\_Comp **Prep Type: Total Recoverable** 

**Prep Batch: 587974** 

	Sample 3	Sample	Spike	MS	MS				%Rec.	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Silver	ND		80.0	88.0		ug/L		110	70 - 130	
Cadmium	ND		80.0	83.4		ug/L		104	70 - 130	
Copper	3.7		80.0	84.7		ug/L		101	70 - 130	
Lead	1.3		80.0	85.1		ug/L		105	70 - 130	
Antimony	0.78	J,DX	80.0	92.7		ug/L		115	70 - 130	
Selenium	ND		80.0	85.1		ug/L		106	70 - 130	
Thallium	ND		80.0	64.3		ug/L		80	70 - 130	

Lab Sample ID: 440-258077-1 MSD

**Matrix: Water** 

Analysis Batch: 588549

Client Sample ID: Outfall009\_20191224\_Comp

**Prep Type: Total Recoverable Prep Batch: 587974** 

Sample Sample Spike MSD MSD %Rec. **RPD** Unit **Result Qualifier** Added Result Qualifier Limits **RPD** Limit **Analyte** D %Rec Silver ND 80.0 89.6 ug/L 112 70 - 130 2 20 Cadmium ND 80.0 85.3 ug/L 107 70 - 130 2 20 Copper 3.7 80.0 86.7 ug/L 104 70 - 130 2 20 Lead 1.3 80.0 86.5 ug/L 106 70 - 130 20 0.78 J,DX 80.0 94.3 ug/L 70 - 130 20 **Antimony** 117 Selenium 80.0 85.5 107 70 - 130 20 ND ug/L Thallium ND 80.0 20 71.5 ug/L 70 - 130

Lab Sample ID: MB 440-587989/1-F

**Matrix: Water** 

Analysis Batch: 588414

Client Sample ID: Method Blank **Prep Type: Dissolved** 

Prep Batch: 588020

	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	ND		1.0	0.50	ug/L		12/26/19 14:39	12/29/19 18:03	1
Cadmium	ND		1.0	0.25	ug/L		12/26/19 14:39	12/29/19 18:03	1
Copper	ND		2.0	0.50	ug/L		12/26/19 14:39	12/29/19 18:03	1
Lead	ND		1.0	0.50	ug/L		12/26/19 14:39	12/29/19 18:03	1
Antimony	ND		2.0	0.50	ug/L		12/26/19 14:39	12/29/19 18:03	1
Selenium	0.513	J,DX	2.0	0.50	ug/L		12/26/19 14:39	12/29/19 18:03	1
Thallium	ND		1.0	0.20	ug/L		12/26/19 14:39	12/29/19 18:03	1

Lab Sample ID: LCS 440-587989/2-F

**Matrix: Water** 

**Analysis Batch: 588414** 

**Client Sample ID: Lab Control Sample Prep Type: Dissolved Prep Batch: 588020** %Rec.

LCS LCS Spike Unit Analyte Added Result Qualifier Limits D %Rec Silver 80.0 84.8 ug/L 106 85 - 115

Lab Sample ID: 440-258077-2 MS

Job ID: 440-258077-1

Client Sample ID: Outfall009\_20191224\_Comp\_F

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

Lab Sample ID: LCS 440-587989/2-F Matrix: Water Analysis Batch: 588414				Clie	ent Sa	•	D: Lab Control Sample Prep Type: Dissolved Prep Batch: 588020
	Spike	LCS	LCS				%Rec.
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits
Cadmium	80.0	79.9	-	ug/L		100	85 - 115
Copper	80.0	81.3		ug/L		102	85 - 115
Lead	80.0	80.2		ug/L		100	85 - 115
Antimony	80.0	90.2		ug/L		113	85 - 115
Selenium	80.0	76.2		ug/L		95	85 - 115
Thallium	80.0	79.6		ug/L		100	85 - 115

Matrix: Water Analysis Batch: 588414									Prep Type: Prep Bato	Dissolved h: 588020
	Sample	Sample	Spike	MS	MS				%Rec.	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Silver	ND		80.0	85.6		ug/L		107	70 - 130	
Cadmium	ND		80.0	80.2		ug/L		100	70 - 130	
Copper	3.2		80.0	86.3		ug/L		104	70 - 130	
Lead	ND		80.0	81.7		ug/L		102	70 - 130	
Antimony	0.62	J,DX	80.0	91.7		ug/L		114	70 - 130	
Selenium	ND		80.0	77.1		ug/L		96	70 - 130	
Thallium	ND		80.0	80.2		ua/l		100	70 130	

Lab Sample ID: 440-258077 Matrix: Water Analysis Batch: 588414	7-2 MSD				Client	Sample	ID: O		D9_20191224_Comp_F Prep Type: Dissolved Prep Batch: 588020		
	Sample	Sample	Spike	MSD	MSD				%Rec.		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Silver	ND		80.0	83.0		ug/L		104	70 - 130	3	20
Cadmium	ND		80.0	77.5		ug/L		97	70 - 130	3	20
Copper	3.2		80.0	83.7		ug/L		101	70 - 130	3	20
Lead	ND		80.0	80.4		ug/L		100	70 - 130	2	20
Antimony	0.62	J,DX	80.0	89.2		ug/L		111	70 - 130	3	20
Selenium	ND		80.0	74.6		ug/L		93	70 - 130	3	20
Thallium	ND		80.0	79.0		ug/L		99	70 - 130	1	20

#### Method: 245.1 - Mercury (CVAA)

Mercury

Lab Sample ID: MB 440-588737/1-	A						Client Sam	ple ID: Metho	d Blank
Matrix: Water								<b>Prep Type: T</b>	otal/NA
Analysis Batch: 588954								Prep Batch:	588737
	MB	MB						•	
Analyto	Pocult	Qualifier	DI	MDI	Unit	n	Droparod	Analyzod	Dil Fac

0.20

0.10 ug/L

ND

Lab Sample ID: LCS 440-588737/2-A Matrix: Water				Clie	nt Sar	mple ID	Prep Type: Total/NA
Analysis Batch: 588954							Prep Batch: 588737
	Spike	LCS	LCS				%Rec.
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits
Mercury	 4.00	3.55		ug/L		89	85 - 115

**Eurofins Calscience Irvine** 

<u>12/31/19 12:32</u> <u>01/02/20 13:12</u>

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Client: Haley & Aldrich, Inc.

Mercury

Project/Site: Semiannual Outfall 009 Comp

Job ID: 440-258077-1

Method: 245.1 - Mercury (CVAA) (Continued)

Lab Sample ID: 440-258077-1 MS Client Sample ID: Outfall009\_20191224\_Comp **Matrix: Water** Prep Type: Total/NA

Analysis Batch: 588954 Prep Batch: 588737 Sample Sample Spike MS MS %Rec. Result Qualifier Added Result Qualifier Limits Analyte Unit %Rec ND 4.00 75 - 125 Mercury 3.43 ug/L 86

Lab Sample ID: 440-258077-1 MSD Client Sample ID: Outfall009\_20191224\_Comp **Matrix: Water** Prep Type: Total/NA Analysis Batch: 588954 **Prep Batch: 588737** MSD MSD Sample Sample Spike %Rec. **RPD** Analyte Result Qualifier Added Result Qualifier Unit D %Rec Limits RPD Limit 4.00

3.55

ug/L

89

75 - 125

3

**Prep Batch: 588987** 

Lab Sample ID: MB 440-588000/1-B Client Sample ID: Method Blank **Matrix: Water Prep Type: Dissolved** 

**Analysis Batch: 589374** 

ND

MB MB **Analyte** Result Qualifier RL MDL Unit Analyzed Dil Fac Prepared

0.20 0.10 ug/L 01/03/20 08:28 01/06/20 21:05 Mercury  $\overline{\mathsf{ND}}$ 

Lab Sample ID: LCS 440-588000/2-B **Client Sample ID: Lab Control Sample Matrix: Water Prep Type: Dissolved** Analysis Batch: 589374 **Prep Batch: 588987** Spike LCS LCS %Rec.

Added Result Qualifier Limits Analyte Unit D %Rec Mercury 4.00 4.06 ug/L 102 85 - 115

Lab Sample ID: 440-258077-2 MS Client Sample ID: Outfall009 20191224 Comp F **Matrix: Water Prep Type: Dissolved** 

Analysis Batch: 589374

**Prep Batch: 588987** Sample Sample Spike MS MS %Rec. Added **Analyte** Result Qualifier Result Qualifier Unit %Rec Limits 4.00 4.00 100 75 <sub>-</sub> 125 Mercury ND ug/L

Lab Sample ID: 440-258077-2 MSD Client Sample ID: Outfall009\_20191224\_Comp\_F

**Matrix: Water Prep Type: Dissolved** Analysis Batch: 589374 **Prep Batch: 588987** MSD MSD Sample Sample Spike %Rec. **RPD** Analyte Result Qualifier Added Result Qualifier Unit %Rec Limits **RPD** Limit ug/L Mercury ND 4.00 3.80 75 - 125 20

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

Lab Sample ID: MB 440-587964/1 Client Sample ID: Method Blank Prep Type: Total/NA

**Matrix: Water** 

**Analysis Batch: 587964** 

MR MR Result Qualifier RL MDL Unit Prepared Analyzed Dil Fac **Total Dissolved Solids**  $\overline{\mathsf{ND}}$ 10 5.0 mg/L 12/26/19 10:23

Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Comp

Job ID: 440-258077-1

Prep Type: Total/NA

**Client Sample ID: Duplicate** 

**Client Sample ID: Duplicate** 

Client Sample ID: Method Blank

**Client Sample ID: Lab Control Sample** 

**Client Sample ID: Lab Control Sample** 

%Rec.

Limits

80 - 120

Client Sample ID: Lab Control Sample

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

Lab Sample ID: LCS 440-587964/2

**Matrix: Water** 

Analysis Batch: 587964

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

Lab Sample ID: 440-257932-H-5 DU

**Matrix: Water** 

**Analysis Batch: 587964** 

RPD DU DU Sample Sample Analyte Result Qualifier Result Qualifier Unit D RPD Limit **Total Dissolved Solids** 4300 4300 mg/L 0.5

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

Lab Sample ID: MB 440-588034/1

**Matrix: Water** 

**Analysis Batch: 588034** 

MB MB

Analyte Result Qualifier

RL MDL Unit D Prepared Analyzed Dil Fac **Total Suspended Solids** 1.0 0.50 mg/L 12/26/19 15:23  $\overline{ND}$ 

Lab Sample ID: LCS 440-588034/2

**Matrix: Water** 

**Analysis Batch: 588034** 

Spike LCS LCS %Rec. Added Analyte Result Qualifier Unit D %Rec Limits **Total Suspended Solids** 1000 951 mg/L 95 85 - 115

Lab Sample ID: 440-258147-A-1 DU

**Matrix: Water** 

**Analysis Batch: 588034** 

Sample Sample DU DU **RPD** Result Qualifier Analyte Result Qualifier Unit ח RPD Limit **Total Suspended Solids** 13 13.3 mg/L

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

Lab Sample ID: MB 440-588165/1-A

**Matrix: Water** 

**Analysis Batch: 588222** 

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

**Prep Batch: 588165** 

Analyte Result Qualifier RL **MDL** Unit Prepared Analyzed Dil Fac 5.0 Cyanide, Total  $\overline{\mathsf{ND}}$ 2.5 ug/L <u>12/27/19 10:46</u> <u>12/27/19 16:10</u>

Lab Sample ID: LCS 440-588165/2-A

**Matrix: Water** 

**Analysis Batch: 588222** 

Analyte

Spike LCS LCS Added Result Qualifier Unit %Rec 100 98.3 Cyanide, Total ua/L

MB MB

**Eurofins Calscience Irvine** 

Prep Type: Total/NA

**Prep Batch: 588165** 

# **QC Sample Results**

Client: Haley & Aldrich, Inc.

Job ID: 440-258077-1

Project/Site: Semiannual Outfall 009 Comp

Cyanide, Total

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

ND

Lab Sample ID: 440-258077-1 MS Client Sample ID: Outfall009_201912					009_20191224_Comp				
Matrix: Water									Prep Type: Total/NA
Analysis Batch: 588222									<b>Prep Batch: 588165</b>
-	Sample	Sample	Spike	MS	MS				%Rec.
Analyto	Regult	Qualifier	habbΔ	Regult	Qualifier	Unit	ח	%Rec	l imite

100

ug/L

100

75 - 125

Lab Sample ID: 440-25807 Matrix: Water	1				Clie	nt Sam	ple ID:	Outfal	1009_2019 Prep Ty	_	
Analysis Batch: 588222	Sample	Sample	Spike	MSD	MSD				Prep Ba %Rec.	atch: 58	88165 RPD
Analyte Cyanide, Total	Result ND	Qualifier	Added 100	Result 99.2	Qualifier	Unit ug/L	<u>D</u>	<b>%Rec</b> 99	Limits 75 - 125	<b>RPD</b> 1	Limit 20

100

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# **QC Association Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Comp

# HPLC/IC

#### **Analysis Batch: 587735**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258077-1	Outfall009_20191224_Comp	Total/NA	Water	300.0	
440-258077-1 - DL	Outfall009_20191224_Comp	Total/NA	Water	300.0	
MB 440-587735/6	Method Blank	Total/NA	Water	300.0	
LCS 440-587735/7	Lab Control Sample	Total/NA	Water	300.0	
440-258077-1 MS - DL	Outfall009_20191224_Comp	Total/NA	Water	300.0	
440-258077-1 MSD - DL	Outfall009_20191224_Comp	Total/NA	Water	300.0	

#### Analysis Batch: 587948

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258077-1	Outfall009_20191224_Comp	Total/NA	Water	314.0	
MB 440-587948/6	Method Blank	Total/NA	Water	314.0	
LCS 440-587948/5	Lab Control Sample	Total/NA	Water	314.0	
MRL 440-587948/8	Lab Control Sample	Total/NA	Water	314.0	
440-258077-1 MS	Outfall009_20191224_Comp	Total/NA	Water	314.0	
440-258077-1 MSD	Outfall009_20191224_Comp	Total/NA	Water	314.0	

# **Analysis Batch: 589051**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258077-1	Outfall009_20191224_Comp	Total/NA	Water	NO3NO2 Calc	

# **Specialty Organics**

#### **Prep Batch: 348645**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258077-1	Outfall009_20191224_Comp	Total/NA	Water	1613B	
MB 320-348645/1-A	Method Blank	Total/NA	Water	1613B	
LCS 320-348645/2-A	Lab Control Sample	Total/NA	Water	1613B	
LCSD 320-348645/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	

#### **Analysis Batch: 349278**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258077-1	Outfall009_20191224_Comp	Total/NA	Water	1613B	348645
MB 320-348645/1-A	Method Blank	Total/NA	Water	1613B	348645
LCS 320-348645/2-A	Lab Control Sample	Total/NA	Water	1613B	348645
LCSD 320-348645/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	348645

#### Metals

# **Prep Batch: 587971**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258077-1	Outfall009_20191224_Comp	Total Recoverable	Water	200.2	
MB 440-587971/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-587971/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-258077-1 MS	Outfall009_20191224_Comp	Total Recoverable	Water	200.2	
440-258077-1 MSD	Outfall009_20191224_Comp	Total Recoverable	Water	200.2	

#### **Prep Batch: 587974**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258077-1	Outfall009_20191224_Comp	Total Recoverable	Water	200.2	
MB 440-587974/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-587974/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-258077-1 MS	Outfall009_20191224_Comp	Total Recoverable	Water	200.2	

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# **QC Association Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Comp

**Metals (Continued)** 

Pren	Ratch:	587974	(Conti	nued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258077-1 MSD	Outfall009 20191224 Comp	Total Recoverable	Water	200.2	

#### Filtration Batch: 587989

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258077-2	Outfall009_20191224_Comp_F	Dissolved	Water	FILTRATION	
MB 440-587989/1-B	Method Blank	Dissolved	Water	FILTRATION	
MB 440-587989/1-F	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-587989/2-B	Lab Control Sample	Dissolved	Water	FILTRATION	
LCS 440-587989/2-F	Lab Control Sample	Dissolved	Water	FILTRATION	
440-258077-2 MS	Outfall009_20191224_Comp_F	Dissolved	Water	FILTRATION	
440-258077-2 MSD	Outfall009_20191224_Comp_F	Dissolved	Water	FILTRATION	

#### Filtration Batch: 588000

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258077-2	Outfall009_20191224_Comp_F	Dissolved	Water	FILTRATION	
MB 440-588000/1-B	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-588000/2-B	Lab Control Sample	Dissolved	Water	FILTRATION	
440-258077-2 MS	Outfall009_20191224_Comp_F	Dissolved	Water	FILTRATION	
440-258077-2 MSD	Outfall009_20191224_Comp_F	Dissolved	Water	FILTRATION	

#### **Prep Batch: 588019**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258077-2	Outfall009_20191224_Comp_F	Dissolved	Water	200.2	587989
MB 440-587989/1-B	Method Blank	Dissolved	Water	200.2	587989
LCS 440-587989/2-B	Lab Control Sample	Dissolved	Water	200.2	587989
440-258077-2 MS	Outfall009_20191224_Comp_F	Dissolved	Water	200.2	587989
440-258077-2 MSD	Outfall009_20191224_Comp_F	Dissolved	Water	200.2	587989

#### **Prep Batch: 588020**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258077-2	Outfall009_20191224_Comp_F	Dissolved	Water	200.2	587989
MB 440-587989/1-F	Method Blank	Dissolved	Water	200.2	587989
LCS 440-587989/2-F	Lab Control Sample	Dissolved	Water	200.2	587989
440-258077-2 MS	Outfall009_20191224_Comp_F	Dissolved	Water	200.2	587989
440-258077-2 MSD	Outfall009_20191224_Comp_F	Dissolved	Water	200.2	587989

#### **Analysis Batch: 588205**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258077-2	Outfall009_20191224_Comp_F	Dissolved	Water	200.7 Rev 4.4	588019
MB 440-587989/1-B	Method Blank	Dissolved	Water	200.7 Rev 4.4	588019
LCS 440-587989/2-B	Lab Control Sample	Dissolved	Water	200.7 Rev 4.4	588019
440-258077-2 MS	Outfall009_20191224_Comp_F	Dissolved	Water	200.7 Rev 4.4	588019
440-258077-2 MSD	Outfall009_20191224_Comp_F	Dissolved	Water	200.7 Rev 4.4	588019

#### Analysis Batch: 588370

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258077-1	Outfall009_20191224_Comp	Total Recoverable	Water	200.7 Rev 4.4	587971
MB 440-587971/1-A	Method Blank	Total Recoverable	Water	200.7 Rev 4.4	587971
LCS 440-587971/2-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	587971
440-258077-1 MS	Outfall009_20191224_Comp	Total Recoverable	Water	200.7 Rev 4.4	587971
440-258077-1 MSD	Outfall009_20191224_Comp	Total Recoverable	Water	200.7 Rev 4.4	587971

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Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Comp

#### **Metals**

#### Analysis Batch: 588414

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258077-2	Outfall009_20191224_Comp_F	Dissolved	Water	200.8	588020
MB 440-587989/1-F	Method Blank	Dissolved	Water	200.8	588020
LCS 440-587989/2-F	Lab Control Sample	Dissolved	Water	200.8	588020
440-258077-2 MS	Outfall009_20191224_Comp_F	Dissolved	Water	200.8	588020
440-258077-2 MSD	Outfall009_20191224_Comp_F	Dissolved	Water	200.8	588020

#### Analysis Batch: 588549

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258077-1	Outfall009_20191224_Comp	Total Recoverable	Water	200.8	587974
MB 440-587974/1-A	Method Blank	Total Recoverable	Water	200.8	587974
LCS 440-587974/2-A	Lab Control Sample	Total Recoverable	Water	200.8	587974
440-258077-1 MS	Outfall009_20191224_Comp	Total Recoverable	Water	200.8	587974
440-258077-1 MSD	Outfall009_20191224_Comp	Total Recoverable	Water	200.8	587974

#### **Prep Batch: 588737**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258077-1	Outfall009_20191224_Comp	Total/NA	Water	245.1	<del>_</del> <del></del>
MB 440-588737/1-A	Method Blank	Total/NA	Water	245.1	
LCS 440-588737/2-A	Lab Control Sample	Total/NA	Water	245.1	
440-258077-1 MS	Outfall009_20191224_Comp	Total/NA	Water	245.1	
440-258077-1 MSD	Outfall009_20191224_Comp	Total/NA	Water	245.1	

#### Analysis Batch: 588954

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258077-1	Outfall009_20191224_Comp	Total/NA	Water	245.1	588737
MB 440-588737/1-A	Method Blank	Total/NA	Water	245.1	588737
LCS 440-588737/2-A	Lab Control Sample	Total/NA	Water	245.1	588737
440-258077-1 MS	Outfall009_20191224_Comp	Total/NA	Water	245.1	588737
440-258077-1 MSD	Outfall009_20191224_Comp	Total/NA	Water	245.1	588737

#### **Prep Batch: 588987**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258077-2	Outfall009_20191224_Comp_F	Dissolved	Water	245.1	588000
MB 440-588000/1-B	Method Blank	Dissolved	Water	245.1	588000
LCS 440-588000/2-B	Lab Control Sample	Dissolved	Water	245.1	588000
440-258077-2 MS	Outfall009_20191224_Comp_F	Dissolved	Water	245.1	588000
440-258077-2 MSD	Outfall009_20191224_Comp_F	Dissolved	Water	245.1	588000

#### Analysis Batch: 589374

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258077-2	Outfall009_20191224_Comp_F	Dissolved	Water	245.1	588987
MB 440-588000/1-B	Method Blank	Dissolved	Water	245.1	588987
LCS 440-588000/2-B	Lab Control Sample	Dissolved	Water	245.1	588987
440-258077-2 MS	Outfall009_20191224_Comp_F	Dissolved	Water	245.1	588987
440-258077-2 MSD	Outfall009_20191224_Comp_F	Dissolved	Water	245.1	588987

# **General Chemistry**

#### Analysis Batch: 587964

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258077-1	Outfall009_20191224_Comp	Total/NA	Water	SM 2540C	<u> </u>

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# **QC Association Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Comp

# **General Chemistry (Continued)**

#### **Analysis Batch: 587964 (Continued)**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 440-587964/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 440-587964/2	Lab Control Sample	Total/NA	Water	SM 2540C	
440-257932-H-5 DU	Duplicate	Total/NA	Water	SM 2540C	

# Analysis Batch: 588034

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258077-1	Outfall009_20191224_Comp	Total/NA	Water	SM 2540D	
MB 440-588034/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 440-588034/2	Lab Control Sample	Total/NA	Water	SM 2540D	
440-258147-A-1 DU	Duplicate	Total/NA	Water	SM 2540D	

#### **Prep Batch: 588165**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258077-1	Outfall009_20191224_Comp	Total/NA	Water	Distill/CN	<u> </u>
MB 440-588165/1-A	Method Blank	Total/NA	Water	Distill/CN	
LCS 440-588165/2-A	Lab Control Sample	Total/NA	Water	Distill/CN	
440-258077-1 MS	Outfall009_20191224_Comp	Total/NA	Water	Distill/CN	
440-258077-1 MSD	Outfall009_20191224_Comp	Total/NA	Water	Distill/CN	

#### **Analysis Batch: 588222**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258077-1	Outfall009_20191224_Comp	Total/NA	Water	SM 4500 CN E	588165
MB 440-588165/1-A	Method Blank	Total/NA	Water	SM 4500 CN E	588165
LCS 440-588165/2-A	Lab Control Sample	Total/NA	Water	SM 4500 CN E	588165
440-258077-1 MS	Outfall009_20191224_Comp	Total/NA	Water	SM 4500 CN E	588165
440-258077-1 MSD	Outfall009_20191224_Comp	Total/NA	Water	SM 4500 CN E	588165

Job ID: 440-258077-1

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# **Definitions/Glossary**

Client: Haley & Aldrich, Inc. Job ID: 440-258077-1

Project/Site: Semiannual Outfall 009 Comp

#### Qualifiers

Qualifier Qualifier Description

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

**Dioxin** 

Qualifier Qualifier Description

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.

**Metals** 

Qualifier Qualifier Description

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.

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.

Project/Site: Semiannual Outfall 009 Comp

Job ID: 440-258077-1

# **Laboratory: Eurofins Calscience Irvine**

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

Authority	Program	Identification Number Expiration Date
California	State Program	CA ELAP 2706 06-30-20
The following analytes the agency does not on		not certified by the governing authority. This list may include analytes for wh

#### Laboratory: Eurofins TestAmerica, Sacramento

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	01-20-21
ANAB	Dept. of Defense ELAP	L2468	01-20-21
ANAB	Dept. of Energy	L2468.01	01-20-21
ANAB	ISO/IEC 17025	L2468	01-20-21
Arizona	State	AZ0708	08-11-20
Arkansas DEQ	State	19-042-0	06-17-20
California	State	2897	01-31-20 *
Colorado	State	CA0004	08-31-20
Connecticut	State	PH-0691	06-30-21
Florida	NELAP	E87570	06-30-20
Hawaii	State	<cert no.=""></cert>	01-29-20 *
Illinois	NELAP	200060	03-17-20
Kansas	NELAP	E-10375	10-31-20 *
Louisiana	NELAP	01944	06-30-20
Maine	State	2018009	04-14-20
Michigan	State	9947	01-29-20 *
Michigan	State Program	9947	01-31-20
Nevada	State	CA000442020-1	07-31-20
New Hampshire	NELAP	2997	04-18-20
New Jersey	NELAP	CA005	06-30-20
New York	NELAP	11666	04-01-20
Oregon	NELAP	4040	01-29-20
Pennsylvania	NELAP	68-01272	03-31-20
Texas	NELAP	T104704399-19-13	05-31-20
US Fish & Wildlife	US Federal Programs	58448	07-31-20
USDA	US Federal Programs	P330-18-00239	07-31-21
Utah	NELAP	CA000442019-01	02-29-20
Vermont	State	VT-4040	04-16-20
Virginia	NELAP	460278	03-14-20
Washington	State	C581	05-05-20
West Virginia (DW)	State	9930C	12-31-19 *
West Virginia (DW)	State	9930C	12-31-20
Wyoming	State Program	8TMS-L	01-28-19 *

**Eurofins Calscience Irvine** 

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<sup>\*</sup> Accreditation/Certification renewal pending - accreditation/certification considered valid.

Test America

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			Comments					48 hours Holding Time NO <sub>3</sub> & NO;			Unfiltered and unpreserved analysis Separate RAD onto	another workorder. Analyze dupécate, not MS/MSD	Or by the state of the four standing and the result of the period of the		Fitter and preserve with 24hrs of receipt at lab	Sampa Tacerum DO NOT OFEN BAG Bag to be openion in Mercury Prep using dean procedures	Hold	Hok					7 Turn-around time (Check) 24 Hour 10 Day X 48 Hour 6 Day Normal	Semple integrity (Check) On ice	Store samples for 6 months Data Requirements (Check) No Level IV X	4
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2019-2020 Rainy Season Version 1

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Cooler Temperature(s) °C and Other Remarks

eceived by:

# Chain of Custody Record

Eurofins TestAmerica, Irvine

Environment Testing TestAmerica

eurofins 17461 Derian Ave Suite 100 Irvine, CA 92614-5817 Phone: 949-261-1022 Fax: 949-260-3297

Client Information (Sub Contract Lab)	Sampler			Lab PM: Patel,	Lab PM: Patel, Urvashi	Ŧ		Carrier Tracking No(s):		440-150582.1	
	Phone:			E-Mail	ili:	E-Mail:	mos	State of Origin:	g 0	Page: Page 1 of 1	
Company	-				Accredita	Accreditations Required (See note)	note):		or	lob #	
TestAmerica Laboratories, Inc.					State P	State Program - California	ia		44	440-258077-1	
Address: 880 Riverside Parkway,	Due Date Requested: 1/7/2020	:pe				ď	Analysis Requested	uested	ā. «	Preservation Codes:	es:
City. West Sacramento	TAT Requested (days):	ıys):				s			0 0 0	B - NaOH C - Zn Acetate	N - None O - AsNaO2
State, Zip: CA, 95605						letoT \			0 1111		P - Na204S Q - Na2SO3
Phone: 916-373-5600(Tel) 916-372-1059(Fax)	# Od				(0	w tei l			U	G - Amchior H - Assorbic Acid	S - H2SO4 T - TSP Dodecahydrate
Email:	;#OM					brabn					U - Acetone V - MCAA
Project Name: Boeing NPDES SSFL outfalls	Project #: 44009879					ists q_c			SHEAT.	K - EDTA L - EDA	W - pH 4-5 Z - other (specify)
Site:	SSOW#:					leg x				Other:	
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Sample Identification - Chem ID (can ID)		X		Preservation Code:	X				X		
		07:35							*	ee QAS, Boeing	See QAS, Boeing w/u to zero, ug/L: Use
Outfall009_20191224_Comp (440-258077-1)	12/24/19	Pacific		Water		×			2 8 8	Boeing glassware.	
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					F						
Note: Since laboratory accreditations are subject to change. Eurofins TestAmerica 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 mantain accreditation in the State of Origin listed above for analysis/lasts/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica aboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica.	Memorica places the connershi s/matrix being analyzed, the se irrent to date, return the signer	p of method, a amples must b d Chain of Cus	nalyte & accret e shipped back tody attesting t	ditation complicate to the Eurofin o said complicate	ance upon s TestAme ance to Eu	out subcontract laboratica laboratica laboratory or other rofins. TestAmerica.	atories. This samp	le shipment is forward e provided. Any chan	ded under chain-of-cu	stody. If the labora status should be bro	tory does not currently ought to Eurofins
Possible Hazard Identification					San	nple Disposal ( A	I fee may be a	Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)	les are retained	longer than 1	month)
Unconfirmed					1	Return To Client	nt [	Disposal By Lab	Archive For	e For	Months
Deliverable Requested: I, II, III, IV, Other (specify)	Primary Deliverable Rank: 2	able Rank:	2		Spe	Special Instructions/QC Requirements:	2C Requiremen	ıts:			
Fmoty Kit Relinquished by:		Date:			Time:		,	Method of Shipment	ment:		

nquished by:

Custody Seal No .:

# **Login Sample Receipt Checklist**

Client: Haley & Aldrich, Inc.

Job Number: 440-258077-1

SDG Number:

Login Number: 258077 List Source: Eurofins 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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# **Login Sample Receipt Checklist**

Client: Haley & Aldrich, Inc. Job Number: 440-258077-1

SDG Number:

Login Number: 258077 List Source: Eurofins TestAmerica, Sacramento List Number: 4

List Creation: 12/27/19 11:33 AM

Creator: Thompson, Sarah W

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	Seal present with no number.
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	Ob:1.0c Corr:0.8c
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").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Comp

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

**Matrix: Water** Prep Type: Total/NA

			Perc	ent Isotope	Dilution Re	covery (Ac	ceptance L	imits)	
		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)
440-258077-1	Outfall009_20191224_Comp	55	52	54	52	55	53	48	51
MB 320-348645/1-A	Method Blank	62	61	67	62	69	70	58	62
			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)	
440-258077-1	Outfall009_20191224_Comp	46	48	48	57	52	58	56	-
MB 320-348645/1-A	Method Blank	56	60	60	71	65	72	72	

#### 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 320-348645/2-A	Lab Control Sample	66	61	65	61	68	63	54	57
LCSD 320-348645/3-A	Lab Control Sample Dup	65	61	63	60	66	61	56	57
		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 320-348645/2-A	Lab Control Sample	53	56	57	62	57	64	63	
LCSD 320-348645/3-A	Lab Control Sample Dup	54	56	57	66	59	68	69	

#### **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

**Eurofins Calscience Irvine** 

# **Isotope Dilution Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Comp

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

Job ID: 440-258077-1

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# **Environment Testing**

# Sacramento Sample Receiving Notes

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440-258077 Field Sheet

Fracking # :_	1110	9742	4500	
racking "				

SO(PO / FO / SAT / 2-Day / Ground / UPS / CDO / Courier GSO / OnTrac / Goldstreak / USPS / Other\_

e this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations.

lotes:	Therm. ID: Mc Corr. Factor: (+ 12) 0-2 °C
lotes	
	Cooler Custody Seal: Scal
	Cooler ID:
	Temp Observed:°C Corrected:°C From: Temp Blank, □ Sample □
	During Initial Triage Yes No NA
	Cooler compromised/tampered with?
	Cooler Temperature is acceptable?
	CoC is complete w/o discrepancies?
	Samples received within holding time?
	Initials: 57 Date: 12/27/14
	During Labeling Yes No NA
	Samples compromised/tampered with? 🗅 🗹 🗅
	Sample containers have legible labels?
	Sample custody seal?
	Containers are not broken or leaking?
	Sample date/times are provided?
	Appropriate containers are used?
	Sample bottles are completely filled?
	Sample preservatives verified?
	Samples w/o discrepancies?
	Zero headspace?*
	Alkalinity has no headspace?
	Perchlorate has headspace? D D D (Methods 314, 331, 6850)
	Multiphasic samples are not present?
	NCM Filed
	Initials: Pk Date: 12/27/19

#### **DATA VALIDATION REPORT**

# **Boeing SSFL NPDES**

SAMPLE DELIVERY GROUP: 440-258077-3, 440-258085-3, and 440-258227-2

#### **Prepared for**

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

31 January 2020







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- 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<sup>x</sup> Project No.:** 1272.003H.01

Sample Delivery Group: 440-258077-3, 440-258085-3, 440-258227-2

**Project Manager:** Katherine Miller

Matrix: Water
QC Level: IV

No. of Samples: 3

**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_201912 24_COMP	440-258085-1	N/A	Water	12/24/19 8:20 AM	E900, E901.1, E903.0, E904.0, E905.0, E906.0, HASL-300 U Mod
OUTFALL008_201912 27_COMP	440-258227-1	N/A	Water	12/27/19 8:25 AM	E900, E901.1, E903.0, E904.0, E905.0, E906.0, HASL-300 U Mod
OUTFALL009_201912 24_COMP	440-258077-1	N/A	Water	12/24/19 7:35 AM	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 groups (SDGs) 440-258077-3, 440-258085-3 and 440-258227-2:

- 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.
- Field and laboratory personnel signed and dated the COCs.
- Some corrections to the original COCs were initialed but not dated. The cross-outs did not affect data quality.
- Sample containers were transferred to TestAmerica St. Louis laboratory for all radionuclide analyses. Sample condition upon receipt information was taken from the case narrative.



#### **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	TELLENCE
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.
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. VARIOUS EPA METHODS — RADIONUCLIDES

#### E. Wessling of MEC<sup>x</sup> reviewed these SDGs on January 31, 2020

The samples 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* (2017).

#### **III.1. HOLDING TIMES:**

The samples were received with proper preservation according the laboratory case narrative.

#### III.2. CALIBRATION:

The daily calibrations were acceptable with the following exceptions. The daily calibration for gross alpha noted with a warning for alpha emitters; therefore, gross alpha OUTFALL009 20191224 COMP was qualified as an estimated nondetect (UJ). The daily calibration for Ra-226 was noted with a DOEF for alpha emitters; therefore, Ra-226 in sample OUTFALL002 20191224 COMP was qualified as an estimated nondetect (UJ). The daily calibration for gross alpha and Ra-226 were noted with a warning for alpha emitters; therefore, results for gross alpha and Ra-226 in sample OUTFALL008 20191227 COMP were qualified as an estimated nondetects (UJ). The detector efficiencies for gross alpha (7.018%) and radium-226 (19.214%) were <20%; therefore, the results for gross alpha and radium-226 were qualified as estimated with a potential negative bias (UJ) in sample OUTFALL002 20191224 COMP. The detector efficiency for gross alpha (15.466) was <20%; therefore, the result for gross alpha was qualified as estimated with a potential negative bias (UJ) in sample OUTFALL009 20191224 COMP. The detector efficiencies for gross alpha (12.393%) and radium-226 (18.625%) were <20%; therefore, the results for gross alpha and radium-226 were qualified as estimated with a potential negative bias (UJ) in sample OUTFALL002 20191224 COMPAll other detector efficiencies were >20% and no further qualifications were required. Carrier/tracer recoveries were within the laboratory control limits.

#### **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 gross alpha in samples OUTFALL002 20191224 COMP and OUTFALL009 20191224 COMP. and total uranium in sample OUTFALL008 20191227 COMP. The detected sample results for gross alpha, Ra-226 and total uranium were qualified as nondetects (U). 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 5% level of confidence for Ra-228 in sample OUTFALL002 20191224 COMP. in sample OUTFALL002\_20191224\_COMP and gross beta in sample OUTFALL009 20191224 COMP. The detected sample results for Ra-228 and total uranium were qualified as estimated (J+) in sample OUTFALL002\_20191224\_COMP. The detect for gross beta in sample OUTFALL009 20191224 was qualified as an estimated detect with a potential negative bias (J-) due to the method blank negative result. No further qualifications were required.



#### III.3.2. LABORATORY CONTROL SAMPLES:

The recoveries were within laboratory-established control limits.

#### III.3.3. LABORATORY DUPLICATES:

Laboratory duplicates were performed on sample OUTFALL009\_20191224\_COMP from this SDG for potassium-40 and cesium-137. The DER was <1 and therefore acceptable.

#### III.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE:

Matrix spike (MS)/MSD analyses were performed on sample OUTFALL009\_20191224\_COMP from this SDG for gross alpha, gross beta, Ra-226, Ra-228, strontium-90, tritium and total uranium. All recoveries and DER were acceptable.

#### **III.4. SAMPLE RESULT VERIFICATION:**

An EPA Level IV review was performed on the sample in this data package. Detected sample results were 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: 4402580773

Analysis Method E900

Sample Name OUTFALL009 20191224 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/24/2019 7:35:00 AM Validation Level: 8

**Lab Sample Name:** 440-258077-1

RL**MDC** Analyte CAS No Result **Total** Result Lab Validation Validation Value Uncert. Units **Oualifier Qualifier** Notes Gross Alpha Analytes GROSSALPHA 1.38 0.871 3.00 1.16 pCi/L B, \*III, C Gross Beta Analytes GROSSBETA 1.56 0.741 4.00 1.04 pCi/L

Analysis Method E901.1

Sample Name OUTFALL009\_20191224\_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/24/2019 7:35:00 AM Validation Level: 8

**Lab Sample Name:** 440-258077-1

CAS No Result **Total** RL**MDC** Result Analyte Lab Validation Validation Value Uncert. Units **Qualifier Oualifier** Notes Cesium-137 10045-97-3 -5.64 10.7 20.0 18.1 U U pCi/L Potassium-40 -1.92 U U 13966-00-2 118 176 176 pCi/L

Analysis Method E903.0

Sample Name OUTFALL009 20191224 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/24/2019 7:35:00 AM Validation Level: 8

**Lab Sample Name:** 440-258077-1

Analyte CAS No Result **Total** RL**MDC** Result Lab Validation Validation Value Uncert. Units Qualifier Qualifier Notes Radium-226 13982-63-3 0.0339 0.0881 1.00 0.163 pCi/L

Analysis Method E904.0

Sample Name OUTFALL009 20191224 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/24/2019 7:35:00 AM Validation Level: 8

**Lab Sample Name:** 440-258077-1

RL**MDC** Analyte CAS No Result Total Result Lab Validation Validation Value Uncert. Units Qualifier Qualifier Notes Radium-228 15262-20-1 0.0271 0.294 1.00 0.529 pCi/L U U

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Analysis Method E905.0

Sample Name OUTFALL009 20191224 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/24/2019 7:35:00 AM Validation Level: 8

**Lab Sample Name:** 440-258077-1

Analyte CAS No Result Total RL**MDC** Result Lab Validation Validation Value Uncert. Units Qualifier **Qualifier** Notes Strontium-90 10098-97-2 0.147 0.251 3.00 0.426 pCi/L

Analysis Method E906.0

Sample Name OUTFALL009 20191224 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/24/2019 7:35:00 AM Validation Level: 8

**Lab Sample Name:** 440-258077-1

Analyte CAS No Result Total RL**MDC** Result Lab Validation Validation Value Uncert. Units **Qualifier** Qualifier Notes Tritium 10028-17-8 40.5 157 500 276 pCi/L

Analysis Method HASL-300 U Mod

Sample Name OUTFALL009 20191224 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/24/2019 7:35:00 AM Validation Level: 8

**Lab Sample Name:** 440-258077-1

**MDC** Analyte CAS No Result **Total** RLResult Lab Validation Validation Value Uncert. Units **Qualifier Oualifier** Notes Total Uranium 0.158 U URANIUM 0.322 1.00 0.432 pCi/L U

Analysis Method RADIUM

Sample Name OUTFALL009 20191224 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/24/2019 7:35:00 AM Validation Level: 8

**Lab Sample Name:** 440-258077-1

Analyte CAS No Result Total RL**MDC** Result Lab Validation Validation Value Uncert. Units Qualifier **Oualifier** Notes Radium-226 & 228 13982-63-3 0.529 0.307 1.00 0.163 pCi/L

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# Validated Sample Result Forms: 4402580853

Analysis Method E900

Sample Name OUTFALL002 20191224 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/24/2019 8:20:00 AM Validation Level: 8

**Lab Sample Name:** 440-258085-1

RL**MDC** Result Analyte CAS No Result **Total** Lab Validation Validation Value Uncert. Units **Oualifier Qualifier** Notes Gross Alpha Analytes GROSSALPHA 3.41 2.32 3.00 3.29 pCi/L В, \*Ш Gross Beta Analytes GROSSBETA 5.02 4.00 1.14 pCi/L

Analysis Method E901.1

Sample Name OUTFALL002\_20191224\_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/24/2019 8:20:00 AM Validation Level: 8

**Lab Sample Name:** 440-258085-1

CAS No Result **Total** RL**MDC** Result Analyte Lab Validation Validation Value Uncert. Units **Qualifier Oualifier** Notes Cesium-137 10045-97-3 0.725 8.27 20.0 14.8 U U pCi/L Potassium-40 -19.5 U U 13966-00-2 165 214 214 pCi/L

Analysis Method E903.0

Sample Name OUTFALL002 20191224 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/24/2019 8:20:00 AM Validation Level: 8

**Lab Sample Name:** 440-258085-1

Analyte CAS No Result **Total** RL**MDC** Result Lab Validation Validation Value Uncert. Units Qualifier Qualifier Notes Radium-226 \*Ш, С 13982-63-3 0.302 0.213 1.00 0.303 pCi/L

Analysis Method E904.0

Sample Name OUTFALL002 20191224 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/24/2019 8:20:00 AM Validation Level: 8

**Lab Sample Name:** 440-258085-1

RL**MDC** Analyte CAS No Result **Total** Result Lab Validation Validation Value Uncert. Units Qualifier Qualifier Notes Radium-228 15262-20-1 1.48 0.641 1.00 0.882 pCi/L J+ В

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Analysis Method E905.0

Sample Name OUTFALL002 20191224 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/24/2019 8:20:00 AM Validation Level: 8

**Lab Sample Name:** 440-258085-1

Analyte CAS No Result Total RL**MDC** Result Lab Validation Validation Value Uncert. Units Qualifier **Qualifier** Notes Strontium-90 10098-97-2 0.0221 0.345 3.00 0.618 pCi/L

Analysis Method E906.0

Sample Name OUTFALL002 20191224 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/24/2019 8:20:00 AM Validation Level: 8

**Lab Sample Name:** 440-258085-1

Analyte CAS No Result Total RL**MDC** Result Lab Validation Validation Value Uncert. Units **Qualifier** Qualifier Notes Tritium 10028-17-8 34.7 159 500 281 pCi/L

Analysis Method HASL-300 U Mod

Sample Name OUTFALL002 20191224 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/24/2019 8:20:00 AM Validation Level: 8

**Lab Sample Name:** 440-258085-1

Analyte CAS No Result **Total** RL**MDC** Result Lab Validation Validation Value Uncert. Units **Qualifier** Qualifier Notes Total Uranium URANIUM 1.31 0.507 1.00 0.395 pCi/L J+ В

Analysis Method RADIUM

Sample Name OUTFALL002 20191224 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/24/2019 8:20:00 AM Validation Level: 8

**Lab Sample Name:** 440-258085-1

Analyte CAS No Result Total RL**MDC** Result Lab Validation Validation Value Uncert. Units Qualifier **Oualifier** Notes Radium-226 & 228 13982-63-3 1.48 0.661 1.00 0.303 pCi/L

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# Validated Sample Result Forms: 4402582272

Analysis Method E900

Sample Name OUTFALL008 20191227 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/27/2019 8:25:00 AM Validation Level: 8

**Lab Sample Name:** 440-258227-1

RL**MDC** Analyte CAS No Result **Total** Result Lab Validation Validation Value Uncert. Units **Oualifier Qualifier** Notes Gross Alpha Analytes GROSSALPHA 1.62 1.18 3.00 1.71 pCi/L U \*Ш. С Gross Beta Analytes GROSSBETA 2.78 0.820 4.00 0.968 pCi/L

Analysis Method E901.1

Sample Name OUTFALL008\_20191227\_COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/27/2019 8:25:00 AM Validation Level: 8

**Lab Sample Name:** 440-258227-1

Result CAS No **Total** RL**MDC** Result Analyte Lab Validation Validation Value Uncert. Units **Qualifier Oualifier** Notes Cesium-137 10045-97-3 2.85 6.80 20.0 11.7 U U pCi/L Potassium-40 U U 13966-00-2 -82.1 191 238 238 pCi/L

Analysis Method E903.0

Sample Name OUTFALL008 20191227 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/27/2019 8:25:00 AM Validation Level: 8

**Lab Sample Name:** 440-258227-1

Analyte CAS No Result **Total** RL**MDC** Result Lab Validation Validation Value Uncert. Units Qualifier Qualifier Notes Radium-226 \*Ш, С 13982-63-3 -0.0363 0.0715 1.00 0.160 pCi/L

Analysis Method E904.0

Sample Name OUTFALL008 20191227 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/27/2019 8:25:00 AM Validation Level: 8

**Lab Sample Name:** 440-258227-1

RL**MDC** Analyte CAS No Result **Total** Result Lab Validation Validation Value Uncert. Units Qualifier Qualifier Notes Radium-228 15262-20-1 0.228 0.362 1.00 0.609 pCi/L U U

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Analysis Method E905.0

Sample Name OUTFALL008 20191227 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/27/2019 8:25:00 AM Validation Level: 8

**Lab Sample Name:** 440-258227-1

Analyte CAS No Result Total RL**MDC** Result Lab Validation Validation Value Uncert. Units Qualifier **Qualifier** Notes Strontium-90 10098-97-2 0.0203 0.325 3.00 0.582 pCi/L

Analysis Method E906.0

Sample Name OUTFALL008 20191227 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/27/2019 8:25:00 AM Validation Level: 8

**Lab Sample Name:** 440-258227-1

Analyte CAS No Result Total RL**MDC** Result Lab Validation Validation Value Uncert. Units **Qualifier** Qualifier Notes Tritium 10028-17-8 32.9 156 500 276 pCi/L

Analysis Method HASL-300 U Mod

Sample Name OUTFALL008 20191227 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/27/2019 8:25:00 AM Validation Level: 8

**Lab Sample Name:** 440-258227-1

Analyte CAS No Result **Total** RL**MDC** Result Lab Validation Validation Value Uncert. Units **Qualifier** Qualifier Notes Total Uranium URANIUM 0.465 0.270 1.00 0.222 pCi/L U В

Analysis Method RADIUM

Sample Name OUTFALL008 20191227 COMP Matrix Type: WM Result Type: TRG

Sample Date: 12/27/2019 8:25:00 AM Validation Level: 8

**Lab Sample Name:** 440-258227-1

Analyte CAS No Result **Total** RL**MDC** Result Lab Validation Validation Value Uncert. Units Qualifier **Oualifier** Notes Radium-226 & 228 13982-63-3 0.609 0.368 1.00 0.160 pCi/L

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## **ANALYTICAL REPORT**

Eurofins Calscience Irvine 17461 Derian Ave Suite 100 Irvine, CA 92614-5817 Tel: (949)261-1022

Laboratory Job ID: 440-258077-3

Client Project/Site: Semiannual Outfall 009 Comp

#### For:

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

Attn: Katherine Miller

Authorized for release by: 1/23/2020 4:54:57 PM

Christian Bondoc, Project Manager I (949)260-3218

christian.bondoc@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.

Christian Bondoc Project Manager I 1/23/2020 4:54:57 PM Laboratory Job ID: 440-258077-3

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.

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## **Sample Summary**

Client: Haley & Aldrich, Inc. Project/Site: Semiannual Outfall 009 Comp

Job ID: 440-258077-3

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
440-258077-1	Outfall009 20191224 Comp	Water	12/24/19 07:35	12/24/19 12:30	
110 200011 1	Odiidii000_20101221_00iiip	· · ato	12/2 1/10 01 .00	12/2 1/10 12:00	

#### **Case Narrative**

Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Comp

Job ID: 440-258077-3

**Laboratory: Eurofins Calscience Irvine** 

**Narrative** 

Job Narrative 440-258077-3

Comments

No additional comments.

Receipt

The samples were received on 12/24/2019 12:30 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 6 coolers at receipt time were 1.0° C, 1.0° C, 1.0° C, 1.1° C, 1.2° C and 1.3° C.

Receipt Exceptions

The reference method requires samples to be preserved to a pH of <2. The following sample(s) was received with insufficient preservation at a pH of 7. The sample(s) was preserved to the appropriate pH in the laboratory, by adding approx. 24mL of HNO3 to each 2.5Gal cubicontainer. For a final pH of <2.

Requested Method: RAD

pH strip: HC902937

HNO3 lot: 1848535

Preserved on 12/27/2019 at 13:00

#### RAD

Method 900.0: Gross Alpha Beta Prep Batch 160-455777

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date. Outfall009\_20191224\_Comp (440-258077-1), Outfall009\_20191224\_Comp (440-258077-1[MS]), Outfall009\_20191224\_Comp (440-258077-1[MSD]), (LCS 160-455777/2-A), (LCSB 160-455777/3-A), (MB 160-455777/1-A), (440-258077-J-1-I MSBT) and (440-258077-J-1-J MSBTD)

Method 901.1: Gamma Prep Batch 160-455492

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Many isotopes requested for analysis do not have any gamma emissions, or the gamma emissions they do have are very poor. Often, such analytes are reported by gamma spectrometry assuming secular equilibrium with a longer-lived parent. The client should ensure that such inference is acceptable for their sample based upon process knowledge. The following assumptions were made for this report: Inferred from Reported to Analyte

Th-234	Pa-234
Th-234	U-238
Pb-210	Po-210
Pb-210	Bi-210
Cs-137	Ba-137m
Pb-212	Po-216
Xe-131m	Xe-131
Sb-125	Te-125m
Ag-108m	Ag-108
Rh-106	Ru-106
Pb-212	Th-228
Pb-212	Ra-224

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Job ID: 440-258077-3

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Eurofins Calscience Irvine 1/23/2020

Client: Haley & Aldrich, Inc.

Job ID: 440-258077-3 Project/Site: Semiannual Outfall 009 Comp

#### Job ID: 440-258077-3 (Continued)

#### **Laboratory: Eurofins Calscience Irvine (Continued)**

U-235	Th-231
Ac-228	Th-232
Ac-228	Ra-228
Th-227	Ra-223
Th-227	Ac-227
Th-227	Bi-211
Th-227	Pb-211
Bi-214	Ra-226

Outfall009\_20191224\_Comp (440-258077-1), (LCS 160-455492/2-A), (MB 160-455492/1-A) and (440-258077-J-1-B DU)

Methods 903.0, 9315: Radium-226 Prep Batch 160-455637

The following sample (240-124138-F-1-C) has a high carrier recovery, outside the upper control limit of 110% (676%), due to high concentrations of that analyte. The data have been reported with this narrative.

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Outfall009\_20191224\_Comp (440-258077-1), Outfall009\_20191224\_Comp (440-258077-1[MS]), Outfall009\_20191224\_Comp (440-258077-1[MSD]), (LCS 160-455637/1-A), (MB 160-455637/21-A), (400-181761-A-1-A) and (400-181761-B-1-A DU)

Methods 904.0, 9320: Radium-228 Prep Batch 160-455646

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Outfall009 20191224 Comp (440-258077-1), Outfall009 20191224 Comp (440-258077-1[MS]), Outfall009 20191224 Comp (440-258077-1[MSD]), (LCS 160-455646/1-A), (MB 160-455646/21-A), (400-181761-A-1-B) and (400-181761-B-1-B DU)

Method 905: Strontium-90 Prep Batch 160-455843

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date. Outfall009 20191224 Comp (440-258077-1), Outfall009 20191224 Comp (440-258077-1[MS]), Outfall009 20191224 Comp (440-258077-1[MSD]), (LCS 160-455843/1-A) and (MB 160-455843/10-A)

Method 906.0: LSC Tritium Prep Batch 160-455651

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Outfall009 20191224 Comp (440-258077-1), Outfall009 20191224 Comp (440-258077-1[MS]), Outfall009 20191224 Comp (440-258077-1[MSD]), (LCS 160-455651/2-A) and (MB 160-455651/1-A)

Method A-01-R: Isotopic Uranium Prep Batch 160-455686

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

#### **Case Narrative**

Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Comp

Job ID: 440-258077-3

#### Job ID: 440-258077-3 (Continued)

#### **Laboratory: Eurofins Calscience Irvine (Continued)**

Outfall009\_20191224\_Comp (440-258077-1), Outfall009\_20191224\_Comp (440-258077-1[MS]), Outfall009\_20191224\_Comp (440-258077-1[MSD]), (LCS 160-455686/2-A) and (MB 160-455686/1-A)

Method ExtChrom: Uranium Prep Batch 160-455686

The following samples were prepared at a reduced aliquot due to a yellow discoloration. Outfall009\_20191224\_Comp (440-258077-1), Outfall009\_20191224\_Comp (440-258077-1[MS]) and Outfall009\_20191224\_Comp (440-258077-1[MSD]). Samples 440-258085-1 and 440-258219-1 was a darker yellow than the other samples and had suspended solids. Sample 440-258227-1 also had suspended solids present.

Method PrecSep\_0: Radium 228 Prep Batch 160-455646:

The following samples were prepared at a reduced aliquot due to discoloration and cloudy appearance: Outfall009\_20191224\_Comp (440-258077-1), Outfall009\_20191224\_Comp (440-258077-1[MS]) and Outfall009\_20191224\_Comp (440-258077-1[MSD]). Samples 240-124138-1 and 280-132306-1 both have a cloudy appearance. Samples 440-258077-1, 440-258077-1MS, 440-258077-1MSD and 440-258085-1 all have a yellow discoloration.

Method PrecSep-21: Radium 226 Prep Batch 160-455637:

The following samples were prepared at a reduced aliquot due to discoloration and cloudy appearance: Outfall009\_20191224\_Comp (440-258077-1), Outfall009\_20191224\_Comp (440-258077-1[MS]) and Outfall009\_20191224\_Comp (440-258077-1[MSD]). Samples 240-124138-1 and 280-132306-1 both have a cloudy appearance. Samples 440-258077-1, 440-258077-1MS, 440-258077-1MSD and 440-258085-1 all have a yellow discoloration.

Method PrecSep-7: Strontium 90 Prep Batch 160-445843:

Sample 258227-1 and samples 258077-1, 1MS, and 1MSD were reduced due to yellow discoloration. Samples 258085-1 and 258219-1 were reduced due to brown discoloration and a cloudy appearance: Outfall009\_20191224\_Comp (440-258077-1), Outfall009\_20191224\_Comp (440-258077-1[MS]) and Outfall009\_20191224\_Comp (440-258077-1[MSD]).

1/8/2020- Samples 440-258077-1,440-258077-1MS, 440-258077-1MSD, 110-258227-1, 440-258085-1 all had 1-2x smaller pellets than the QC samples at the end of the into-ingrowth process. While decanting the presence of matrix interference was seen in the amount of sediment at the bottom of the beaker.

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: Semiannual Outfall 009 Comp

Client Sample ID: Outfall009\_20191224\_Comp

Date Collected: 12/24/19 07:35

Date Received: 12/24/19 12:30

Lab Sample ID: 440-258077-1

**Matrix: Water** 

Job ID: 440-258077-3

Method: 900.0 - G	ross Alpha	and Gros	s Beta Rac	lioactivity						
	•		Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	1.38		0.857	0.871	3.00	1.16	pCi/L	01/06/20 07:19	01/12/20 12:23	1
Gross Beta	1.56		0.724	0.741	4.00	1.04	pCi/L	01/06/20 07:19	01/12/20 12:23	1

Method: 901.1 - C	esium 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	-5.64	U	10.7	10.7	20.0	18.1	pCi/L	12/27/19 17:33	12/28/19 12:36	1
Potassium-40	-1.92	U	118	118		176	pCi/L	12/27/19 17:33	12/28/19 12:36	1

Method: 903.0 - Ra	alum-226	(GFPC)	<u>.</u> .							
			Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0339	Ū	0.0881	0.0881	1.00	0.163	pCi/L	12/30/19 12:05	01/21/20 13:51	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	86.4		40 - 110					12/30/19 12:05	01/21/20 13:51	1

Method: 904.0 -	Radium-228	(GFPC)								
			Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0271	U	0.294	0.294	1.00	0.529	pCi/L	12/30/19 13:15	01/14/20 16:54	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	86.4		40 - 110					12/30/19 13:15	01/14/20 16:54	1
Y Carrier	90.8		40 - 110					12/30/19 13:15	01/14/20 16:54	1

Method: 905 - St	rontium-90 (	GFPC)								
			Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.147	U	0.251	0.251	3.00	0.426	pCi/L	01/07/20 06:20	01/15/20 10:01	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	66.7		40 - 110					01/07/20 06:20	01/15/20 10:01	1
Y Carrier	95.0		40 - 110					01/07/20 06:20	01/15/20 10:01	1

Metho	d: 906.0 - Tritium, Tot	al (LSC)								
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	40.5	U	157	157	500	276	pCi/L	12/30/19 13:27	12/31/19 10:03	1

 Method: A-01-R - Is	otopic Ur	anium (A	lpha Spectr	ometry)						
		•	Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Total Uranium	0.158	U	0.322	0.322	1.00	0.432	pCi/L	12/30/19 16:10	01/16/20 09:32	1

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## **Client Sample Results**

Client: Haley & Aldrich, Inc. Job ID: 440-258077-3

Project/Site: Semiannual Outfall 009 Comp

Client Sample ID: Outfall009\_20191224\_Comp Lab Sample ID: 440-258077-1

Date Collected: 12/24/19 07:35

Matrix: Water

Date Received: 12/24/19 12:30

Tracer	%Yield 0	Qualifier Limits	Prepared Analyzed	Dil Fac
Uranium-232	69.4	30 - 110	12/30/19 16:10 01/16/20 09:32	1

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12

4 /

## **Method Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Comp

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
04.0	Radium-228 (GFPC)	EPA	TAL SL
005	Strontium-90 (GFPC)	EPA	TAL SL
06.0	Tritium, Total (LSC)	EPA	TAL SL
-01-R	Isotopic Uranium (Alpha Spectrometry)	DOE	TAL SL
vaporation	Preparation, Evaporation	None	TAL SL
xtChrom	Preparation, Extraction Chromatography Resin Actinide Separation	None	TAL SL
II_Geo-0	Fill Geometry, No In-Growth	None	TAL SL
SC_Dist_Susp	Distillation and Suspension (LSC)	None	TAL SL
recSep_0	Preparation, Precipitate Separation	None	TAL SL
recSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	TAL SL
recSep-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 = Eurofins TestAmerica, St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Job ID: 440-258077-3

3

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14

14

#### **Lab Chronicle**

Client: Haley & Aldrich, Inc. Job ID: 440-258077-3

Project/Site: Semiannual Outfall 009 Comp

Client Sample ID: Outfall009\_20191224\_Comp

Lab Sample ID: 440-258077-1 Date Collected: 12/24/19 07:35 **Matrix: Water** 

Date Received: 12/24/19 12:30

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	Evaporation			199.94 mL	1.0 g	455777	01/06/20 07:19	RJD	TAL SL
Total/NA	Analysis	900.0		1	1.0 mL	1.0 mL	456563	01/12/20 12:23	AJD	TAL SL
Total/NA	Prep	Fill_Geo-0			1000 mL	1.0 g	455492	12/27/19 17:33	KLH	TAL SL
Total/NA	Analysis	901.1		1			455514	12/28/19 12:36	KLS	TAL SL
Total/NA	Prep	PrecSep-21			750.37 mL	1.0 g	455637	12/30/19 12:05	RBR	TAL SL
Total/NA	Analysis	903.0		1			457426	01/21/20 13:51	KLS	TAL SL
Total/NA	Prep	PrecSep_0			750.37 mL	1.0 g	455646	12/30/19 13:15	RBR	TAL SL
Total/NA	Analysis	904.0		1			456749	01/14/20 16:54	CJQ	TAL SL
Total/NA	Prep	PrecSep-7			749.7 mL	1.0 g	455843	01/07/20 06:20	MNH	TAL SL
Total/NA	Analysis	905		1			456913	01/15/20 10:01	AJD	TAL SL
Total/NA	Prep	LSC_Dist_Susp			100.5 mL	1.0 g	455651	12/30/19 13:27	KNF	TAL SL
Total/NA	Analysis	906.0		1			456022	12/31/19 10:03	JS	TAL SL
Total/NA	Prep	ExtChrom			250.04 mL	1.0 mL	455686	12/30/19 16:10	KLH	TAL SL
Total/NA	Analysis	A-01-R		1			457037	01/16/20 09:32	KRR	TAL SL

#### **Laboratory References:**

TAL SL = Eurofins TestAmerica, St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Client: Haley & Aldrich, Inc. Job ID: 440-258077-3

Project/Site: Semiannual Outfall 009 Comp

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Lab Sample ID: MB 160-455777/1-A **Matrix: Water** 

Analysis Batch: 456563

Client Sample ID: Method Blank

Prep Type: Total/NA **Prep Batch: 455777** 

Count Total MB MB Uncert. Uncert. **MDC** Unit Analyte Result Qualifier  $(2\sigma + / -)$  $(2\sigma + / -)$ RI Prepared Analyzed Dil Fac 01/06/20 07:19 01/12/20 12:20 Gross Alpha 0.01239 U 0.607 0.607 3.00 1.18 pCi/L Gross Beta -0.2482 U 0.440 0.440 4.00 0.843 pCi/L 01/06/20 07:19 01/12/20 12:20

Lab Sample ID: LCS 160-455777/2-A

**Matrix: Water** 

**Analysis Batch: 456563** 

**Client Sample ID: Lab Control Sample** 

Prep Type: Total/NA **Prep Batch: 455777** 

Total LCS LCS %Rec. Spike Uncert. RL Analyte Added  $(2\sigma + / -)$ **MDC** Unit Limits Result Qual %Rec Gross Alpha 49.6 48.74 7.33 3.00 1.85 pCi/L 98 75 - 125

Lab Sample ID: LCSB 160-455777/3-A

**Matrix: Water** 

**Analysis Batch: 456567** 

**Client Sample ID: Lab Control Sample** 

Prep Type: Total/NA

**Prep Batch: 455777** 

Total Spike LCSB LCSB %Rec. Uncert. Added Result Qual  $(2\sigma + / -)$ RL MDC Unit Limits Analyte %Rec 85.0 4.00 75 - 125 **Gross Beta** 79.96 8.53 0.814 pCi/L 94

Lab Sample ID: 440-258077-1 MS

**Matrix: Water** 

**Analysis Batch: 456567** 

Client Sample ID: Outfall009\_20191224\_Comp

Prep Type: Total/NA

**Prep Batch: 455777** 

Total Sample Sample **Spike** MS MS Uncert. %Rec. Analyte Result Qual Added Result Qual  $(2\sigma + / -)$ RL MDC Unit %Rec Limits Gross Alpha 1.38 49.6 41.94 6.03 3.00 1.42 pCi/L 82 60 - 140

Lab Sample ID: 440-258077-1 MSBT

**Matrix: Water** 

Analysis Batch: 456563

Client Sample ID: Outfall009 20191224 Comp

Prep Type: Total/NA

**Prep Batch: 455777** 

Total MSBT MSBT %Rec. Sample Sample Spike Uncert. Added (2σ+/-) RL **MDC** Unit Analyte Result Qual Result Qual %Rec Limits **Gross Beta** 1.56 85.0 84.01 8.91 4.00 0.935 pCi/L 97 60 - 140

Lab Sample ID: 440-258077-1 MSBTD

**Matrix: Water** 

**Analysis Batch: 456563** 

Client Sample ID: Outfall009\_20191224\_Comp

Prep Type: Total/NA

**Prep Batch: 455777** 

MSBTD MSBTD %Rec. **RER** Sample Sample Spike Uncert. Added **MDC** Unit Analyte Result Qual Result Qual  $(2\sigma + / -)$ RL %Rec Limits RER Limit 84.9 Gross Beta 1.56 82.77 8.79 4.00 0.852 pCi/L 96 60 - 140 0.07

Total

Client: Haley & Aldrich, Inc.

Analysis Batch: 456563

**Matrix: Water** 

Project/Site: Semiannual Outfall 009 Comp

Lab Sample ID: 440-258077-1 MSD

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity (Continued)

Client Sample ID: Outfall009\_20191224\_Comp

Prep Type: Total/NA

**Prep Batch: 455777** 

Job ID: 440-258077-3

Total

Spike MSD MSD %Rec. **RER** Sample Sample Uncert. Added RL MDC Unit Analyte Result Qual Result Qual  $(2\sigma + / -)$ %Rec I imits RFR Limit Gross Alpha 1.38 49.6 47.24 6.58 3.00 1.16 pCi/L 93 60 - 140 0.42

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Lab Sample ID: MB 160-455492/1-A

**Matrix: Water** 

**Analysis Batch: 455513** 

**Client Sample ID: Method Blank** 

Prep Type: Total/NA **Prep Batch: 455492** 

Count Total MR MR Uncert. Uncert. Analyte Result Qualifier  $(2\sigma + / -)$  $(2\sigma + / -)$ RL MDC Unit Prepared Analyzed Dil Fac Cesium-137 -1.425 U 8.05 8.05 20.0 15.0 pCi/L 12/27/19 17:33 12/28/19 11:08 Potassium-40 -28.97 U 114 114 177 pCi/L 12/27/19 17:33 12/28/19 11:08

Lab Sample ID: LCS 160-455492/2-A

**Matrix: Water** 

Analysis Batch: 455514

**Client Sample ID: Lab Control Sample** 

Prep Type: Total/NA

**Prep Batch: 455492** 

Total Spike LCS LCS

Uncert. %Rec. Analyte Added Result Qual  $(2\sigma + / -)$ RL**MDC** Unit %Rec Limits Americium-241 136000 128000 14800 429 pCi/L 94 90 - 111 Cesium-137 44000 43390 4350 20.0 114 pCi/L 99 90 - 111 Cobalt-60 27300 26900 2670 89 - 110 72.8 pCi/L 99

Lab Sample ID: 440-258077-1 DU

**Matrix: Water** 

**Analysis Batch: 455510** 

Client Sample ID: Outfall009 20191224 Comp

Prep Type: Total/NA

**Prep Batch: 455492** 

Total DU DU Sample Sample Uncert. **RER** Result Qual Result Qual RL **MDC** Unit **Analyte**  $(2\sigma + / -)$ RER Limit Cesium-137 -5.64 Ū -7.121 UG 13.5 20.0 22.8 pCi/L 0.06 Potassium-40 -1.92 U -13.29 U 122 173 pCi/L 0.05

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-455637/21-A

**Matrix: Water** 

**Analysis Batch: 457426** 

**Client Sample ID: Method Blank** 

Prep Type: Total/NA

**Prep Batch: 455637** 

Total Count MB MB Uncert. Uncert. Analyte Result Qualifier  $(2\sigma + / -)$  $(2\sigma + / -)$ RLMDC Unit Prepared Analyzed Dil Fac Radium-226 -0.03724 U 0.0515 0.0516 1.00 0.124 pCi/L 12/30/19 12:05 01/21/20 15:47

MB MB

Carrier Qualifier Limits Prepared %Yield Analyzed Dil Fac 40 - 110 12/30/19 12:05 01/21/20 15:47 Ba Carrier 97.0

Job ID: 440-258077-3

Client: Haley & Aldrich, Inc. Project/Site: Semiannual Outfall 009 Comp

Method: 903.0 - Radium-226 (GFPC) (Continued)

Lab Sample ID: LCS 160-455637/1-A

**Matrix: Water** Analysis Batch: 457426 Client Sample ID: Lab Control Sample

Prep Type: Total/NA

**Prep Batch: 455637** 

Total Spike LCS LCS %Rec. Uncert. Added RL MDC Unit Limits Analyte Result Qual  $(2\sigma + / -)$ %Rec

Radium-226 75 - 125 11.3 10.03 1.05 1.00 0.112 pCi/L 88

LCS LCS

Carrier %Yield Qualifier Limits Ba Carrier 99.7 40 - 110

Lab Sample ID: 440-258077-1 MS

Client Sample ID: Outfall009\_20191224\_Comp

Prep Type: Total/NA

**Matrix: Water Analysis Batch: 457426 Prep Batch: 455637** Total

Sample Sample Spike MS MS Uncert. %Rec. Result Qual Added RL Limits Analyte Result Qual  $(2\sigma + / -)$ MDC Unit %Rec Radium-226 0.0339 U 15.1 13.95 1.50 1.00 0.219 pCi/L 92 75 <sub>-</sub> 138

MS MS

Carrier %Yield Qualifier I imits Ba Carrier 79.1 40 - 110

Lab Sample ID: 440-258077-1 MSD Client Sample ID: Outfall009\_20191224\_Comp

**Matrix: Water** 

**Analysis Batch: 457426** 

Prep Type: Total/NA **Prep Batch: 455637** 

MSD MSD RER Sample Sample **Spike** Uncert. %Rec. Analyte Result Qual Added  $(2\sigma + / -)$ RL**MDC** Unit %Rec Limits Result Qual RER

Limit Radium-226 0.0339 U 15.1 14.42 1.54 1.00 0.160 pCi/L 95 75 - 138 0.15

Total

MSD MSD Carrier %Yield Qualifier

Limits Ba Carrier 87.0 40 - 110

Lab Sample ID: 400-181761-B-1-A DU **Client Sample ID: Duplicate** Prep Type: Total/NA

**Matrix: Water** 

**Analysis Batch: 457426 Prep Batch: 455637** Total

DU DU Sample Sample Uncert. **RER** Analyte RL **MDC** Unit Result Qual Result Qual  $(2\sigma + / -)$ RER Limit

0.9704 Radium-226 0.854 0.228 1.00 0.160 pCi/L 0.26

DU DU

Carrier **%Yield Qualifier** Limits Ba Carrier 102 40 - 110

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-455646/21-A Client Sample ID: Method Blank **Matrix: Water** Prep Type: Total/NA **Prep Batch: 455646** Analysis Batch: 456741

Count Total MB MB Uncert. Uncert.  $(2\sigma + / -)$ Analyte Result Qualifier  $(2\sigma + / -)$ RL **MDC** Unit Prepared Dil Fac Analyzed 0.04520 U 0.223 0.223 <u>12/30/19 13:15</u> <u>01/14/20 16:58</u> Radium-228 1.00 0.394 pCi/L

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Job ID: 440-258077-3

Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Comp

## Method: 904.0 - Radium-228 (GFPC) (Continued)

	MB MB			
Carrier	%Yield Qualifier	Limits	Prepared Ana	alyzed Dil Fac
Ba Carrier	97.0	40 - 110	12/30/19 13:15 01/14/	<u>/20 16:58</u> 1
Y Carrier	87.8	40 - 110	12/30/19 13:15 01/14/	′20 16:58

Lab Sample ID: LCS 160-455646/1-A

**Matrix: Water** 

Analysis Batch: 456749

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

**Prep Batch: 455646** 

				I otal						
	Spike	LCS	LCS	Uncert.					%Rec.	
Analyte	Added	Result	Qual	(2σ+/-)	RL	MDC	Unit	%Rec	Limits	
Radium-228	9.20	9.211		1.07	1.00	0.396	pCi/L	100	75 - 125	

LCS LCS Carrier %Yield Qualifier Limits Ba Carrier 40 - 110 99.7 Y Carrier 89.3 40 - 110

Lab Sample ID: 440-258077-1 MS Client Sample ID: Outfall009\_20191224\_Comp

**Matrix: Water** 

Analysis Batch: 456749

Prep Type: Total/NA **Prep Batch: 455646** 

						Total					
	Sample	Sample	Spike	MS	MS	Uncert.					%Rec.
Analyte	Result	Qual	Added	Result	Qual	(2σ+/-)	RL	MDC	Unit	%Rec	Limits
Radium-228	0.0271	U	12.3	11.90		1.48	1.00	0.619	pCi/L	97	45 - 150

MS MS Carrier %Yield Qualifier Limits Ba Carrier 79.1 40 - 110 Y Carrier 87.5 40 - 110

Lab Sample ID: 440-258077-1 MSD

**Matrix: Water** 

Analysis Batch: 456749

Client Sample ID: Outfall009\_20191224\_Comp

Prep Type: Total/NA

**Prep Batch: 455646** 

-						Total						
	Sample	Sample	Spike	MSD	MSD	Uncert.				%Rec.		RER
Analyte	Result	Qual	Added	Result	Qual	(2σ+/-)	RL	MDC Unit	%Rec	Limits	RER	Limit
Radium-228	0.0271	U	12.3	12.10		1.47	1.00	0.623 pCi/L	98	45 - 150	0.07	1

MSD MSD Carrier %Yield Qualifier Limits Ba Carrier 40 - 110 87.0 Y Carrier 40 - 110 87.5

Lab Sample ID: 400-181761-B-1-B DU

**Matrix: Water** 

Analysis Batch: 456749

**Client Sample ID: Duplicate** 

Prep Type: Total/NA

**Prep Batch: 455646** 

				Total						
Sampl	e Sample	DU	DU	Uncert.						RER
Analyte Resu	lt Qual	Result	Qual	(2σ+/-)	RL	MDC	Unit	RI	ΞR	Limit
Radium-228 0.58	4	1.003		0.398	1.00	0.548	pCi/L	- <u> </u>	56	

	DU	DU	
Carrier	%Yield	Qualifier	Limits
Ba Carrier	102		40 - 110
Y Carrier	88.7		40 - 110

Client: Haley & Aldrich, Inc.

Count

Job ID: 440-258077-3 Project/Site: Semiannual Outfall 009 Comp

Method: 905 - Strontium-90 (GFPC)

Lab Sample ID: MB 160-455843/10-A

**Matrix: Water** 

Analysis Batch: 456913

Client Sample ID: Method Blank

Prep Type: Total/NA

**Prep Batch: 455843** 

MB MB Uncert. Uncert. Result Qualifier **MDC** Unit Analyte  $(2\sigma + / -)$  $(2\sigma + / -)$ RI Prepared Analyzed Dil Fac -0.05834 U 01/07/20 06:20 01/15/20 10:02 Strontium-90 0.268 0.268 3.00 0.482 pCi/L

Total

MB MB

Carrier Qualifier Limits Prepared %Yield Analyzed Dil Fac 40 - 110 01/07/20 06:20 01/15/20 10:02 Sr Carrier 85.9 Y Carrier 91.2 40 - 110 01/07/20 06:20 01/15/20 10:02

Lab Sample ID: LCS 160-455843/1-A

**Matrix: Water** 

**Analysis Batch: 456913** 

**Client Sample ID: Lab Control Sample** 

Prep Type: Total/NA

**Prep Batch: 455843** 

Total LCS LCS %Rec. Spike Uncert. Analyte Added RL **MDC** Unit %Rec Result Qual  $(2\sigma + / -)$ Limits Strontium-90 10.6 0.945 3.00 0.327 pCi/L 84 75 - 125 8.906

LCS LCS Carrier %Yield Qualifier Limits Sr Carrier 96.9 40 - 110 Y Carrier 96.8 40 - 110

Lab Sample ID: 440-258077-1 MS

**Matrix: Water** 

**Analysis Batch: 456913** 

Client Sample ID: Outfall009\_20191224\_Comp

Prep Type: Total/NA

**Prep Batch: 455843** 

Total

Uncert. %Rec. Sample Sample Spike MS MS Analyte Result Qual Added Result Qual  $(2\sigma + / -)$ RL **MDC** Unit %Rec Limits Strontium-90 0.147 U 10.6 3.00 0.501 pCi/L 10.38 1.21 19 - 150

MS MS Carrier %Yield Qualifier Limits Sr Carrier 59.4 40 - 110 Y Carrier 92.3 40 - 110

Lab Sample ID: 440-258077-1 MSD

**Matrix: Water** 

**Analysis Batch: 456913** 

Client Sample ID: Outfall009\_20191224\_Comp

Prep Type: Total/NA

**Prep Batch: 455843** 

Total Spike MSD MSD Sample Sample

%Rec. Uncert. **RER** Result Qual Added Result Qual  $(2\sigma + / -)$ RL **MDC** Unit %Rec Limits Limit **Analyte** RER Strontium-90 0.147 U 10.6 10.34 1.15 3.00 0.477 pCi/L 96 19 - 150 0.02

MSD MSD

Carrier %Yield Qualifier Limits Sr Carrier 40 - 110 70.6 Y Carrier 95.3 40 - 110

Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Comp

Job ID: 440-258077-3

## Method: 906.0 - Tritium, Total (LSC)

Lab Sample ID: MB 160-455651/1-A

**Matrix: Water** 

Analysis Batch: 456022

Client Sample ID: Method Blank

Prep Type: Total/NA **Prep Batch: 455651** 

Count Total мв мв Uncert. Uncert.  $(2\sigma + / -)$ **MDC** Unit Analyte Result Qualifier  $(2\sigma + / -)$ RI Prepared Analyzed Dil Fac -49.55 U 280 pCi/L <u>12/30/19 13:27</u> <u>12/31/19 09:18</u> Tritium 149 149 500

Lab Sample ID: LCS 160-455651/2-A

**Matrix: Water** 

Analysis Batch: 456022

**Client Sample ID: Lab Control Sample** 

Prep Type: Total/NA

**Prep Batch: 455651** 

Total Spike LCS LCS %Rec. Uncert. Added Result Qual Analyte  $(2\sigma + / -)$ RL MDC Unit %Rec Limits Tritium 2510 2646 413 500 286 pCi/L 105 75 - 114

Lab Sample ID: 440-258077-1 MS

**Matrix: Water** 

Analysis Batch: 456022

Client Sample ID: Outfall009\_20191224\_Comp

Prep Type: Total/NA

**Prep Batch: 455651** 

Total Spike Sample Sample MS MS Uncert. %Rec. Added Analyte Result Qual Result Qual  $(2\sigma + / -)$ RL MDC Unit %Rec Limits Tritium 40.5 U 2510 2556 410 500 294 pCi/L 100 67 - 130

Lab Sample ID: 440-258077-1 MSD

**Matrix: Water** 

Analysis Batch: 456022

Client Sample ID: Outfall009\_20191224\_Comp

Prep Type: Total/NA

**Prep Batch: 455651** 

Total Sample Sample Spike MSD MSD Uncert. %Rec. **RER** Result Qual Added RL **MDC** Unit Analyte Result Qual  $(2\sigma + / -)$ %Rec Limits RFR Limit 40.5 U Tritium 2500 2430 391 500 279 pCi/L 95 67 - 130 0.16

### Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Lab Sample ID: MB 160-455686/1-A

**Matrix: Water** 

**Matrix: Water** 

**Analysis Batch: 457036** 

**Analysis Batch: 457035** 

**Client Sample ID: Method Blank** 

Prep Type: Total/NA

**Prep Batch: 455686** 

Count Total MB MB Uncert. Uncert. Analyte Result Qualifier  $(2\sigma + / -)$  $(2\sigma + / -)$ RL **MDC** Unit Prepared Analyzed Dil Fac 12/30/19 16:10 01/16/20 09:32 **Total Uranium** 0.2103 0.180 0.181 1.00 0.182 pCi/L

MB MB **%Yield Qualifier** Tracer

Lab Sample ID: LCS 160-455686/2-A

Limits Uranium-232 83.2 30 - 110

Analyzed

**Client Sample ID: Lab Control Sample** 

<u>12/30/19 16:10</u> <u>01/16/20 09:32</u>

Prepared

Prep Type: Total/NA

Dil Fac

**Prep Batch: 455686** 

				Total					
	Spike	LCS	LCS	Uncert.				%Rec.	
Analyte	Added	Result	Qual	(2σ+/-)	RL	MDC Unit	%Rec	Limits	
Uranium-234	25.5	24.59		2.97	1.00	0.329 pCi/L	97	75 - 125	
Uranium-238	26.0	25.84		3.08	1.00	0.309 pCi/L	99	75 - 125	

## QC Sample Results

Client: Haley & Aldrich, Inc.

MS MS

Result Qual

23.28

25.85

Spike

Added

30 - 110

25.5

Project/Site: Semiannual Outfall 009 Comp

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

**Client Sample ID: Lab Control Sample** 

Prep Type: Total/NA

Job ID: 440-258077-3

**Prep Batch: 455686** 

Lab Sample ID: LCS 160-455686/2-A **Matrix: Water** 

**Analysis Batch: 457036** 

LCS LCS

Tracer **%Yield Qualifier** Limits Uranium-232 60.6 30 - 110

Client Sample ID: Outfall009\_20191224\_Comp

Prep Type: Total/NA

**Prep Batch: 455686** 

68 - 143

Lab Sample ID: 440-258077-1 MS **Matrix: Water** 

Analysis Batch: 457038

Total Uncert. %Rec. RL**MDC** Unit Limits  $(2\sigma + / -)$ %Rec 2.86 1.00 0.424 pCi/L 91 65 - 146

0.349 pCi/L

Uranium-238 0.0960 U 26.0 MS MS Tracer **%Yield Qualifier** Limits

61.7

Sample Sample

Result Qual

0.128 U

Lab Sample ID: 440-258077-1 MSD

**Matrix: Water** 

Analyte

Uranium-234

Uranium-232

Analysis Batch: 457042

Client Sample ID: Outfall009\_20191224\_Comp

99

Prep Type: Total/NA

**Prep Batch: 455686** 

Total Sample Sample **Spike** MSD MSD Uncert. %Rec. **RER** Analyte Result Qual Added  $(2\sigma + / -)$ RL MDC Unit %Rec Limits RER Limit Result Qual Uranium-234 0.128 U 25.5 1.00 0.446 pCi/L 65 - 146 23.64 2.93 92 0.06 Uranium-238 0.0960 U 26.0 24.68 3.02 68 - 143 1.00 0.367 pCi/L 94 0.19

3.09

1.00

MSD MSD %Yield Qualifier Tracer

Limits 68.1 30 - 110 Uranium-232

## **QC Association Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Comp

Rad

**Prep Batch: 455492** 

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258077-1	Outfall009_20191224_Comp	Total/NA	Water	Fill_Geo-0	
MB 160-455492/1-A	Method Blank	Total/NA	Water	Fill_Geo-0	
LCS 160-455492/2-A	Lab Control Sample	Total/NA	Water	Fill_Geo-0	
440-258077-1 DU	Outfall009_20191224_Comp	Total/NA	Water	Fill_Geo-0	

**Prep Batch: 455637** 

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258077-1	Outfall009_20191224_Comp	Total/NA	Water	PrecSep-21	
MB 160-455637/21-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-455637/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
440-258077-1 MS	Outfall009_20191224_Comp	Total/NA	Water	PrecSep-21	
440-258077-1 MSD	Outfall009_20191224_Comp	Total/NA	Water	PrecSep-21	
400-181761-B-1-A DU	Duplicate	Total/NA	Water	PrecSep-21	

**Prep Batch: 455646** 

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258077-1	Outfall009_20191224_Comp	Total/NA	Water	PrecSep_0	
MB 160-455646/21-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-455646/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
440-258077-1 MS	Outfall009_20191224_Comp	Total/NA	Water	PrecSep_0	
440-258077-1 MSD	Outfall009_20191224_Comp	Total/NA	Water	PrecSep_0	
400-181761-B-1-B DU	Duplicate	Total/NA	Water	PrecSep_0	

**Prep Batch: 455651** 

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258077-1	Outfall009_20191224_Comp	Total/NA	Water	LSC_Dist_Susp	
MB 160-455651/1-A	Method Blank	Total/NA	Water	LSC_Dist_Susp	
LCS 160-455651/2-A	Lab Control Sample	Total/NA	Water	LSC_Dist_Susp	
440-258077-1 MS	Outfall009_20191224_Comp	Total/NA	Water	LSC_Dist_Susp	
440-258077-1 MSD	Outfall009_20191224_Comp	Total/NA	Water	LSC_Dist_Susp	

**Prep Batch: 455686** 

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258077-1	Outfall009_20191224_Comp	Total/NA	Water	ExtChrom	
MB 160-455686/1-A	Method Blank	Total/NA	Water	ExtChrom	
LCS 160-455686/2-A	Lab Control Sample	Total/NA	Water	ExtChrom	
440-258077-1 MS	Outfall009_20191224_Comp	Total/NA	Water	ExtChrom	
440-258077-1 MSD	Outfall009_20191224_Comp	Total/NA	Water	ExtChrom	

**Prep Batch: 455777** 

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258077-1	Outfall009_20191224_Comp	Total/NA	Water	Evaporation	
MB 160-455777/1-A	Method Blank	Total/NA	Water	Evaporation	
LCS 160-455777/2-A	Lab Control Sample	Total/NA	Water	Evaporation	
LCSB 160-455777/3-A	Lab Control Sample	Total/NA	Water	Evaporation	
440-258077-1 MS	Outfall009_20191224_Comp	Total/NA	Water	Evaporation	
440-258077-1 MSBT	Outfall009_20191224_Comp	Total/NA	Water	Evaporation	
440-258077-1 MSBTD	Outfall009_20191224_Comp	Total/NA	Water	Evaporation	
440-258077-1 MSD	Outfall009_20191224_Comp	Total/NA	Water	Evaporation	

**Eurofins Calscience Irvine** 

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Job ID: 440-258077-3

## **QC Association Summary**

Client: Haley & Aldrich, Inc.

Job ID: 440-258077-3

Project/Site: Semiannual Outfall 009 Comp

Rad

**Prep Batch: 455843** 

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258077-1	Outfall009_20191224_Comp	Total/NA	Water	PrecSep-7	
MB 160-455843/10-A	Method Blank	Total/NA	Water	PrecSep-7	
LCS 160-455843/1-A	Lab Control Sample	Total/NA	Water	PrecSep-7	
440-258077-1 MS	Outfall009_20191224_Comp	Total/NA	Water	PrecSep-7	
440-258077-1 MSD	Outfall009_20191224_Comp	Total/NA	Water	PrecSep-7	

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## **Definitions/Glossary**

Client: Haley & Aldrich, Inc.

Job ID: 440-258077-3

Project/Site: Semiannual Outfall 009 Comp

## **Qualifiers**

RPD

TEF

**TEQ** 

Rad	
Qualifier	Qualifier Description
G	The Sample MDC is greater than the requested RL.
U	Result is less than the sample detection limit.

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)

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

Toxicity Equivalent Factor (Dioxin)
Toxicity Equivalent Quotient (Dioxin)

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## **Accreditation/Certification Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Semiannual Outfall 009 Comp

Job ID: 440-258077-3

## **Laboratory: Eurofins Calscience Irvine**

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	<b>Expiration Date</b>
California	State Program	CA ELAP 2706	06-30-20

## Laboratory: Eurofins TestAmerica, St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	<b>Expiration Date</b>
ANAB	Dept. of Defense ELAP	L2305	04-06-22
ANAB	Dept. of Energy	L2305.01	04-06-22
ANAB	ISO/IEC 17025	L2305	04-06-22
Arizona	State	AZ0813	12-08-20
California	Los Angeles County Sanitation Districts	10259	06-30-20
California	State	2886	06-30-20
Connecticut	State	PH-0241	03-31-21
Florida	NELAP	E87689	06-30-20
HI - RadChem Recognition	State	n/a	06-30-20
Illinois	NELAP	004553	11-30-19 *
lowa	State	373	09-17-20
Kansas	NELAP	E-10236	10-31-20
Kentucky (DW)	State	KY90125	12-31-20
Louisiana	NELAP	04080	06-30-20
Louisiana (DW)	State	LA011	12-31-20
Maryland	State	310	09-30-20
MI - RadChem Recognition	State	9005	06-30-20
Missouri	State	780	06-30-22
Nevada	State	MO000542020-1	07-31-20
New Jersey	NELAP	MO002	06-30-20
New York	NELAP	11616	04-01-20
North Dakota	State	R-207	06-30-20
NRC	NRC	24-24817-01	12-31-22
Oklahoma	State	9997	08-31-20
Pennsylvania	NELAP	68-00540	02-28-20
South Carolina	State	85002001	06-30-20
Texas	NELAP	T104704193-19-13	07-31-20
US Fish & Wildlife	US Federal Programs	058448	07-31-20
USDA	US Federal Programs	P330-17-00028	02-02-20
Utah	NELAP	MO000542019-11	07-31-20
Virginia	NELAP	10310	06-14-20
Washington	State	C592	08-30-20
West Virginia DEP	State	381	10-31-20

Eurofins Calscience Irvine

1/23/2020

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<sup>\*</sup> Accreditation/Certification renewal pending - accreditation/certification considered valid.

Test America

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Note: Since laboratory accreditations are subject to change. Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract blocrations. This sample shipment is forwarded under chain-of-custory. If the laboratory does not currently maintain accreditations are subject to change the samples must be shipped back to the Eurofins TestAmerica.  Sample Disposal (A fee may be assessed if samples are criterior to date, rotum the signed Chain of Custody attesting to said compliance upon out subcontract blocrations will be provided. Any changes to be conclusions will be provided. Any changes to be conclusions are current to date, rotum the signed Chain of Custody attesting to said compliance upon out subcontract the company of the Eurofins TestAmerica.  Sample Disposal (A fee may be assessed if samples are criterior to date, rotum the signed Chain of Custody Seal No.)  Empty Kit Relinquished by:  Relinquished by:    Date:   Third   Date:   T							-			+		+	1	-				
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A fee may be assessed if samples are retained longer than 1 moent  OC Requirements:    Method of Shipment:	Note: Since laboratory accreditations are subject to change, Eurofins TestA maintain accreditation in the State of Origin listed above for analysis/testain TestAmerica attention immediately. If all requested accreditations are curre	America places the ownersh matrix being analyzed, the sent to date, return the signe	p of method, ar amples must be d Chain of Cust	ralyte & accredii shipped back to	ation compliance to the Eurofins Te said complicance	upon ou stAmeric to Euro	ut subco sa labora fins Tes	atory or	aboraton other ins	ies. Thi	s sample	shipmer provided	I s forward Any ch	rded und	er chain-o	Fcustody. If the la on status should b	boratory does not currently e brought to Eurofins	
tequested: I. II. III. IV. Other (specify) Primary Deliverable Rank: 2 Special Instructions/QC Requirements:  Inquished by:    Date:	Possible Hazard Identification					Sami	ole Dis	sposal	/(A fe	e ma	be as	sessec	l if san	ples ar	e retain	ed longer tha	n 1 month)	T
linquished by:    Primary Deliverable Rank: 2   Special Instructions/QC Requirements:   Inquished by:	Unconfirmed						] Retur	n To C	Slient			sposal	Bv Lab		☐ Arc	hive For	Months	
linquished by:       Date:       Time:       Method of Shipment:         Image:       Date/Time:       Company       Received by:       Date/Time:       Date/Time:         Date/Time:       Date/Time:       Company       Received by:       Date/Time:       Date/Time:         A No       A No       Cooler Temperature(s) *C and Other Remarks:       Date/Time:       Date/Time:	Deliverable Requested: I, II, III, IV, Other (specify)	Primary Deliver	able Rank: 2			Speci	ial Inst	ruction	18/QC	Requi	remen	is:						Τ
Date/Time:    Company   Received by:   Date/Time:   Date/Time:   Company   Received by:   Date/Time:   Date/Date/Date/Date/Date/Date/Date/Date/	Empty Kit Relinquished by:		Date:		_	me:		(				Met	hod of Sh	ipment	l			T
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Custody Seal No∴	Relinquished by:	Date/Time:		0	ompany	œ	eceived	py:						ate/Time:			Company	T
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## **Login Sample Receipt Checklist**

Client: Haley & Aldrich, Inc. Job Number: 440-258077-3

SDG Number:

Login Number: 258077 List Source: Eurofins Irvine

List Number: 1

Creator: Soderblom, Tim

Creator: Soderbiom, 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: 440-258077-3

SDG Number:

Login Number: 258077 List Source: Eurofins TestAmerica, St. Louis List Number: 2

List Creation: 12/27/19 12:57 PM

Creator: Hellm, Michael

ordator: fromin, imonator		
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	0.1
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").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

# **Login Sample Receipt Checklist**

Client: Haley & Aldrich, Inc. Job Number: 440-258077-3

SDG Number:

Login Number: 258077 List Source: Eurofins TestAmerica, St. Louis
List Number: 3 List Creation: 12/27/19 01:02 PM

Creator: Hellm, Michael

Creator: Hellm, Michael		
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	0.1
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").	N/A	
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

Job ID: 440-258077-3

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)	
400-181761-B-1-A DU	Duplicate	102	
440-258077-1	Outfall009_20191224_Comp	86.4	
440-258077-1 MS	Outfall009_20191224_Comp	79.1	
440-258077-1 MSD	Outfall009_20191224_Comp	87.0	
LCS 160-455637/1-A	Lab Control Sample	99.7	
MB 160-455637/21-A	Method Blank	97.0	
Tracer/Carrier Legend			
Ba Carrier = Ba Carrier			

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)	
400-181761-B-1-B DU	Duplicate	102	88.7	
440-258077-1	Outfall009_20191224_Comp	86.4	90.8	
440-258077-1 MS	Outfall009_20191224_Comp	79.1	87.5	
440-258077-1 MSD	Outfall009_20191224_Comp	87.0	87.5	
LCS 160-455646/1-A	Lab Control Sample	99.7	89.3	
MB 160-455646/21-A	Method Blank	97.0	87.8	
Tracer/Carrier Legend	i			
Ba Carrier = Ba Carrier	•			

Method: 905 - Strontium-90 (GFPC)

Y Carrier = Y Carrier

Y Carrier = Y Carrier

Matrix: Water Prep Type: Total/NA

				Percent Yield (Acceptance Limits)
		Sr Carrier	Y Carrier	
Lab Sample ID	Client Sample ID	(40-110)	(40-110)	
440-258077-1	Outfall009_20191224_Comp	66.7	95.0	
440-258077-1 MS	Outfall009_20191224_Comp	59.4	92.3	
440-258077-1 MSD	Outfall009_20191224_Comp	70.6	95.3	
LCS 160-455843/1-A	Lab Control Sample	96.9	96.8	
MB 160-455843/10-A	Method Blank	85.9	91.2	
Tracer/Carrier Legend				

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Matrix: Water Prep Type: Total/NA

-		
		ranium-23
Lab Sample ID	Client Sample ID	(30-110)
440-258077-1	Outfall009_20191224_Comp	69.4
440-258077-1 MS	Outfall009_20191224_Comp	61.7
440-258077-1 MSD	Outfall009_20191224_Comp	68.1

Eurofins Calscience Irvine

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# **Tracer/Carrier Summary**

Client: Haley & Aldrich, Inc.

Job ID: 440-258077-3

Project/Site: Semiannual Outfall 009 Comp

Uranium-232 = Uranium-232

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 160-455686/2-A	Lab Control Sample	60.6	
MB 160-455686/1-A	Method Blank	83.2	

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# Environment Testing

### Sacramento Sample Receiving Notes

11111111111	DECEMBER OF THE PARTY OF THE PA	HOUSE HOUSE

440-258077 Field Sheet

Tracking # :_	1119	9742	4500	
-				

SO (PØ / FO / SAT / 2-Day / Ground / UPS / CDO / Courier GSO / OnTrac / Goldstreak / USPS / Other\_\_\_\_\_

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations. File in the job folder with the COC.

Notes:	Therm. ID: MC Corr. Factor: (+12) 0-2 °C
otes.	Ice Wet Gel Other
	Cooler Custody Seal: Seal
	Cooler ID:
	Temp Observed:°C Corrected:°C From: Temp Blank, Sample D
	During Initial Triage <u>Yes No NA</u>
	Cooler compromised/tampered with?
	Cooler Temperature is acceptable?
	CoC is complete w/o discrepancies?
	Samples received within holding time?
	Initials: 57 Date: 12/27/14
	During Labeling Yes No NA
	Samples compromised/tampered with? D D
	Sample containers have legible labels?
	Sample custody seal?
	Containers are not broken or leaking?
	Sample date/times are provided?
	Sample bottles are completely filled?
	Sample preservatives verified?
	Samples w/o discrepancies?
	Zero headspace?*
	Alkalinity has no headspace?
	Perchlorate has headspace? D D D (Methods 314, 331, 6850)
	Multiphasic samples are not present?
	NCM Filed
	Initials: PK Date:



# ANALYTICAL REPORT

Eurofins Calscience Irvine 17461 Derian Ave Suite 100 Irvine, CA 92614-5817 Tel: (949)261-1022

Laboratory Job ID: 440-258025-1

Client Project/Site: Quarterly Arroyo Simi-Frontier Park Dry

Revision: 3

For:

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

Attn: Katherine Miller

Authorized for release by: 1/29/2020 12:19:11 PM

Christian Bondoc, Project Manager I

(949)260-3218

christian.bondoc@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.

Christian Bondoc Project Manager I 1/29/2020 12:19:11 PM

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 Arroyo Simi-Frontier Park Dry

 Lab Sample ID
 Client Sample ID
 Matrix
 Collected
 Received
 Asset ID

 440-258025-1
 Arroyo\_Simi\_20191223\_Grab
 Water
 12/23/19 08:00
 12/23/19 16:05

Job ID: 440-258025-1

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#### **Case Narrative**

Client: Haley & Aldrich, Inc.

Job ID: 440-258025-1 Project/Site: Quarterly Arroyo Simi-Frontier Park Dry

Job ID: 440-258025-1

**Laboratory: Eurofins Calscience Irvine** 

**Narrative** 

Job Narrative 440-258025-1

#### Comments

No additional comments.

#### Receipt

The samples were received on 12/23/2019 4:05 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 3.8° C and 4.1° 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: This method was subcontracted to Weck Laboratories, Inc.. The subcontract laboratory certification is different from that of the facility issuing the final report.

# **Client Sample Results**

Client: Haley & Aldrich, Inc. Job ID: 440-258025-1

Project/Site: Quarterly Arroyo Simi-Frontier Park Dry

Client Sample ID: Arroyo\_Simi\_20191223\_Grab Lab Sample ID: 440-258025-1

Date Collected: 12/23/19 08:00 Matrix: Water

Date Received: 12/23/19 16:05

Method: 608.3 - Organo Analyte	Result Qualif		MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlordane (technical)	ND	0.11	0.089	ug/L		12/26/19 05:32	12/26/19 13:50	1
4,4'-DDD	ND	0.0056	0.0044	ug/L		12/26/19 05:32	12/26/19 13:50	1
4,4'-DDE	ND	0.0056	0.0033	ug/L		12/26/19 05:32	12/26/19 13:50	1
4,4'-DDT	ND	0.011	0.0044	ug/L		12/26/19 05:32	12/26/19 13:50	1
Dieldrin	ND	0.0056	0.0022	ug/L		12/26/19 05:32	12/26/19 13:50	1
Toxaphene	ND	0.56	0.27	ug/L		12/26/19 05:32	12/26/19 13:50	1
Surrogate	%Recovery Qualif	ier Limits				Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	56	10 - 104				12/26/19 05:32	12/26/19 13:50	

Method: SM 2340B - Total Hardness (as CaCO3) by calculation - Total Recoverable									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hardness, as CaCO3	100		0.33	0.17	mg/L			01/06/20 11:28	1

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### **Method Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Arroyo Simi-Frontier Park Dry

Method	Method Description	Protocol	Laboratory
608.3	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	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 = Eurofins Calscience 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

Job ID: 440-258025-1

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#### **Lab Chronicle**

Client: Haley & Aldrich, Inc. Job ID: 440-258025-1

Project/Site: Quarterly Arroyo Simi-Frontier Park Dry

Client Sample ID: Arroyo\_Simi\_20191223\_Grab Lab Sample ID: 440-258025-1

Date Collected: 12/23/19 08:00 **Matrix: Water** Date Received: 12/23/19 16:05

_	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	608			900 mL	2 mL	587899	12/26/19 05:32	L1H	TAL IRV
Total/NA	Analysis	608.3		1			587976	12/26/19 13:50	D1D	TAL IRV
Total Recoverable	Analysis	SM 2340B		1			587445	01/06/20 11:28	P1R	TAL IRV

#### **Laboratory References:**

SC0103 = Eurofins Lancaster Laboratories Env LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300 TAL IRV = Eurofins Calscience 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

**Eurofins Calscience Irvine** 

Client: Haley & Aldrich, Inc. Job ID: 440-258025-1

Project/Site: Quarterly Arroyo Simi-Frontier Park Dry

#### Method: 608.3 - Organochlorine Pesticides in Water

Lab Sample ID: MB 440-587899/1-A

**Matrix: Water Analysis Batch: 587976** 

**Client Sample ID: Method Blank** 

**Prep Type: Total/NA Prep Batch: 587899** 

MB	МВ						•	
Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
ND		0.10	0.080	ug/L		12/26/19 05:32	12/26/19 12:42	1
ND		0.0050	0.0040	ug/L		12/26/19 05:32	12/26/19 12:42	1
ND		0.0050	0.0030	ug/L		12/26/19 05:32	12/26/19 12:42	1
ND		0.010	0.0040	ug/L		12/26/19 05:32	12/26/19 12:42	1
ND		0.0050	0.0020	ug/L		12/26/19 05:32	12/26/19 12:42	1
ND		0.50	0.24	ug/L		12/26/19 05:32	12/26/19 12:42	1
	Result ND ND ND ND ND ND	ND ND ND ND	Result         Qualifier         RL           ND         0.10           ND         0.0050           ND         0.0050           ND         0.010           ND         0.0050	Result         Qualifier         RL         MDL           ND         0.10         0.080           ND         0.0050         0.0040           ND         0.0050         0.0030           ND         0.010         0.0040           ND         0.0050         0.0020	Result         Qualifier         RL         MDL         Unit           ND         0.10         0.080         ug/L           ND         0.0050         0.0040         ug/L           ND         0.0050         0.0030         ug/L           ND         0.010         0.0040         ug/L           ND         0.0050         0.0020         ug/L	Result         Qualifier         RL         MDL         Unit         D           ND         0.10         0.080         ug/L         ug/L           ND         0.0050         0.0040         ug/L           ND         0.010         0.0040         ug/L           ND         0.0050         0.0020         ug/L	Result         Qualifier         RL         MDL         Unit         D         Prepared           ND         0.10         0.080         ug/L         12/26/19 05:32           ND         0.0050         0.0040         ug/L         12/26/19 05:32           ND         0.0050         0.0030         ug/L         12/26/19 05:32           ND         0.010         0.0040         ug/L         12/26/19 05:32           ND         0.0050         0.0020         ug/L         12/26/19 05:32           ND         0.0050         0.0020         ug/L         12/26/19 05:32	Result         Qualifier         RL         MDL         Unit         D         Prepared         Analyzed           ND         0.10         0.080         ug/L         12/26/19 05:32         12/26/19 12:42           ND         0.0050         0.0040         ug/L         12/26/19 05:32         12/26/19 12:42           ND         0.0050         0.0030         ug/L         12/26/19 05:32         12/26/19 12:42           ND         0.010         0.0040         ug/L         12/26/19 05:32         12/26/19 12:42           ND         0.0050         0.0020         ug/L         12/26/19 05:32         12/26/19 12:42

MB MB

Surrogate %Recovery Qualifier Limits Prepared Analyzed Dil Fac 10 - 104 12/26/19 05:32 12/26/19 12:42 Tetrachloro-m-xylene 57

Lab Sample ID: LCS 440-587899/2-A

**Matrix: Water** 

**Analysis Batch: 587976** 

**Client Sample ID: Lab Control Sample** 

Prep Type: Total/NA **Prep Batch: 587899** 

%Rec.

LCS LCS Spike Analyte Added Result Qualifier %Rec Limits Unit 4,4'-DDD 0.400 0.348 ug/L 87 31 - 141 4,4'-DDE 0.400 0.300 ug/L 75 30 - 145 4,4'-DDT 0.400 79 0.314 ug/L 25 - 160 Dieldrin 0.400 0.320 ug/L 80 36 - 146

LCS LCS

Surrogate %Recovery Qualifier Limits Tetrachloro-m-xylene 61 10 - 104

Lab Sample ID: 440-258025-1 MS

**Matrix: Water** 

**Analysis Batch: 587976** 

Client Sample ID: Arroyo\_Simi\_20191223\_Grab

Prep Type: Total/NA

**Prep Batch: 587899** 

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MS MS %Recovery Qualifier Limits Surrogate 10 - 104 Tetrachloro-m-xylene 63

Lab Sample ID: 440-258025-1 MSD

**Matrix: Water** 

**Analysis Batch: 587976** 

Client Sample ID: Arroyo	_Simi_	_20191223_	_Grab
	<b>—</b>		- 1/N I A

Prep Type: Total/NA **Prep Batch: 587899** 

Allalysis Batoli. 001010									i icp be	ton. ot	,, 000
-	Sample	Sample	Spike	MSD	MSD				%Rec.		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
4,4'-DDD	ND		0.430	0.381		ug/L		89	31 - 141	8	39
4,4'-DDE	ND		0.430	0.336		ug/L		78	30 - 145	2	35
4,4'-DDT	ND		0.430	0.378		ug/L		88	25 - 160	4	42
Dieldrin	ND		0.430	0.372		ug/L		87	36 - 146	2	49

**Eurofins Calscience Irvine** 

# **QC Sample Results**

Client: Haley & Aldrich, Inc. Job ID: 440-258025-1

Project/Site: Quarterly Arroyo Simi-Frontier Park Dry

Method: 608.3 - Organochlorine Pesticides in Water (Continued)

Lab Sample ID: 440-258025-1 MSD **Matrix: Water** 

**Analysis Batch: 587976** 

Client Sample ID: Arroyo\_Simi\_20191223\_Grab

**Prep Type: Total/NA** 

**Prep Batch: 587899** 

MSD MSD

Surrogate %Recovery Qualifier Limits 10 - 104 Tetrachloro-m-xylene 62

# **QC Association Summary**

Client: Haley & Aldrich, Inc.

Project/Site: Quarterly Arroyo Simi-Frontier Park Dry

#### **GC Semi VOA**

#### **Prep Batch: 587899**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258025-1	Arroyo_Simi_20191223_Grab	Total/NA	Water	608	
MB 440-587899/1-A	Method Blank	Total/NA	Water	608	
LCS 440-587899/2-A	Lab Control Sample	Total/NA	Water	608	
440-258025-1 MS	Arroyo_Simi_20191223_Grab	Total/NA	Water	608	
440-258025-1 MSD	Arroyo_Simi_20191223_Grab	Total/NA	Water	608	

#### **Analysis Batch: 587976**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258025-1	Arroyo_Simi_20191223_Grab	Total/NA	Water	608.3	587899
MB 440-587899/1-A	Method Blank	Total/NA	Water	608.3	587899
LCS 440-587899/2-A	Lab Control Sample	Total/NA	Water	608.3	587899
440-258025-1 MS	Arroyo_Simi_20191223_Grab	Total/NA	Water	608.3	587899
440-258025-1 MSD	Arroyo_Simi_20191223_Grab	Total/NA	Water	608.3	587899

#### **Metals**

#### **Analysis Batch: 587445**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-258025-1	Arroyo_Simi_20191223_Grab	Total Recoverable	Water	SM 2340B	

Job ID: 440-258025-1

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### **Definitions/Glossary**

Client: Haley & Aldrich, Inc. Job ID: 440-258025-1

Project/Site: Quarterly Arroyo Simi-Frontier Park Dry

**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)				

,,,	,,
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
100	Limit of Quantitation (DoD/DOF)

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

DL, RA, RE, IN Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample

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

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# **Accreditation/Certification Summary**

Client: Haley & Aldrich, Inc.

Job ID: 440-258025-1

Project/Site: Quarterly Arroyo Simi-Frontier Park Dry

### **Laboratory: Eurofins Calscience Irvine**

The accreditations/certifications listed below are applicable to this report.

	Authority	Program	Identification Number	<b>Expiration Date</b>
ı	California	State Program	CA ELAP 2706	06-30-20

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Certificate of Analysis

**FINAL REPORT** 

Work Orders: 9L23123 1/13/2020 **Report Date:** 

> 12/23/2019 **Received Date:**

1 workday **Turnaround Time:** 

> (949) 261-1022 **Phones:**

> > (949) 260-3297 Fax:

P.O. #:

**Billing Code:** 

TestAmerica, Irvine

Client: Eurofins Calscience - Irvine

17461 Derian Ave, Suite 100

Project: Quarterly Arroyo Simi-Fronter Park Dry Weather

Irvine, CA 92614

Dear TestAmerica, Irvine,

Enclosed are the results of analyses for samples received 12/23/19 with the Chain-of-Custody document. The samples were received in good condition, at 5.1 °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:	Arroyo_Simi_20191223_Grab							Sampled: 12/23/19 8	:00 by Client
	9L23123-01 (Water)								
Analyte			Result	MDL	MRL	Units	Dil	Analyzed	Qualifier
Method: EPA	A 525.2M	Batch ID: W9L1504	Instr: GCMS13		Prepared: 1	12/27/19 11:09		Analyst: EFC	
Chlorpyrife	os		ND	34	50	ng/l	1	01/08/20	M-02
Diazinon			ND	26	50	ng/l	1	01/08/20	M-02
Surrogate(s)									
1,3-Dimet	hyl-2-nitrobenzene		8%		76-128	Conc: 2	209	01/08/20	M-02, S-GC
Triphenyl	phosphate		112%		40-163	Conc: 2	790	01/08/20	M-02

9L23123 Page 1 of 3 14859 Clark Avenue, City of Industry CA, 91745 | Phone: (626) 336-2139 | Fax: (626) 336-2634



# Certificate of Analysis

ABORATORIES, INC.		
Quality Control Results		

Semivolatile Organics - Low Level by Tandem	GC/MS/MS										
					Spike	Source		%REC		RPD	
Analyte	Result	MDL	MRL	Units	Level	Result	%REC	Limits	RPD	Limit	Qualifie
Blank (W9L1504-BLK1)					repared: 12/27/1	9 Analyzed:	01/08/20				
Chlorpyrifos	ND	6.9	10	ng/l							
Diazinon		5.2	10	ng/l							
Surrogate(s) 1,3-Dimethyl-2-nitrobenzene	533			ng/l	500		107	76-128			
Triphenyl phosphate	513			ng/l	500		103	40-163			
LCS (W9L1504-BS1)				Р	repared: 12/27/1	9 Analyzed:	01/08/20				
Chlorpyrifos	69.4	6.9	10	ng/l	50.0	-	139	37-169			
Diazinon	53.0	5.2	10	ng/l	50.0		106	43-152			
Surrogate(s) 1,3-Dimethyl-2-nitrobenzene				ng/l	500		110	76-128			
Triphenyl phosphate				ng/l	500		100	40-163			
		: 9L23123-0				10. 4					
Matrix Spike (W9L1504-MS1)  Chlorpyrifos		: 9L23123-0 34	50	ng/l	repared: 12/27/1 250	ND ND	181	37-168			M-02
Ciliorpyrilos	432	34	30	rig/i	230	ND	101	37-100			MS-0
Diazinon	315	26	50	ng/l	250	ND	126	36-153			M-0
Surrogate(s) 1,3-Dimethyl-2-nitrobenzene				ng/l	2500		110	76-128			М-C
•				•	2500		109	40-163			
Triphenyl phosphate	2710			ng/l				40-163			M-0
Matrix Spike Dup (W9L1504-MSD1)		: 9L23123-0			repared: 12/27/1	=					
Chlorpyrifos	365	34	50	ng/l	250	ND	146	37-168	21	30	M-0
Diazinon		26	50	ng/l	250	ND	107	36-153	16	30	M-C
Surrogate(s) 1,3-Dimethyl-2-nitrobenzene	2730			ng/l	2500		109	76-128			M-0
Triphenyl phosphate	2700			na/l	2500		108	40-163			M-C

Page 2 of 3 9L23123



# Certificate of Analysis

FINAL REPORT

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#### **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.
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.
% Rec	Percent Recovery
Dil	Dilution
dry	Sample results reported on a dry weight basis
MDA	Minimum Detectable Activity
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)
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.
NR	Not Reportable
RPD	Relative Percent Difference
Source	Sample that was matrix spiked or duplicated.
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 rema	ining 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 MIS002.

#### Reviewed by:

Regina Giancola Project Manager









ELAP-CA #1132 • EPA-UCMR #CA00211 • Guam-EPA #17-008R • HW-DOH # • ISO17025 ANAB #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.

9L23123 Page 3 of 3 14859 Clark Avenue, City of Industry CA, 91745 | Phone: (626) 336-2139 | Fax: (626) 336-2634

#### Lancaster Laboratories Environmental







2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-6766 • www.EurofinsUS.com/LancLabsEnv

#### **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: January 06, 2020 21:19

Project: Boeing-SSFL NPDES Permit 2015

Account #: 41440 Group Number: 2080938 SDG: SSF16 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 <a href="https://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/certifications-and-accreditations-eurofins-lancaster-laboratories-environmental/">https://www.eurofinsus.com/environment-testing/laboratories-environmental/certifications-and-accreditations-eurofins-lancaster-laboratories-environmental/</a>. 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_20191223_Grab (440-258025-1) Grab	12/23/2019 08:00	1231035
Arroyo_Simi_20191223_Grab (440-258025-1MS) Grab	12/23/2019 08:00	1231036
Arroyo_Simi_20191223_Grab (440-258025-1MSD) Grab	12/23/2019 08:00	1231037

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

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# Analysis Report

**Sample Description:** Arroyo\_Simi\_20191223\_Grab (440-258025-1) Grab

**Boeing-SSFL NPDES Permit 2015** 

**Boeing-SSFL NPDES Permit 2015** 

**Test America** 

**ELLE Sample #:** WW 1231035 **ELLE Group #:** 

2080938

Matrix: Water

Submittal Date/Time: 12/27/2019 09:58 Collection Date/Time: 12/23/2019 08:00 SDG#: SSF16-01BKG

**Project Name:** 

CAT No.	Analysis Name		CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
<b>PCBs</b>		<b>EPA 608</b>		ug/l	ug/l	ug/l	
06030	PCB-1016		12674-11-2	N.D. D1	0.10	0.50	1
06030	PCB-1221		11104-28-2	N.D. D1	0.10	0.50	1
06030	PCB-1232		11141-16-5	N.D. D1	0.10	0.50	1
06030	PCB-1242		53469-21-9	N.D. D1	0.10	0.50	1
06030	PCB-1248		12672-29-6	N.D. D1	0.10	0.50	1
06030	PCB-1254		11097-69-1	N.D. D1	0.10	0.50	1
06030	PCB-1260		11096-82-5	N.D. D1	0.15	0.50	1
06030	Total PCBs		1336-36-3	N.D.	0.10	0.50	1

#### **Sample Comments**

CA ELAP Lab Certification No. 2792

			Laboratory S	Sample Analysi	is Record		
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06030	PCBs in Water by 608	EPA 608	1	193640006A	01/02/2020 17:44	Jessica L Miller	1
11960	Method 608 PCB Water Ext.	EPA 608	1	193640006A	12/30/2019 16:52	Osvaldo R Sanchez	1

<sup>\*=</sup>This limit was used in the evaluation of the final result

# Analysis Report

**Sample Description:** Arroyo\_Simi\_20191223\_Grab (440-258025-1MS) Grab

**Boeing-SSFL NPDES Permit 2015** 

**Boeing-SSFL NPDES Permit 2015** 

**Test America** 

**ELLE Sample #:** WW 1231036 **ELLE Group #:** 

Matrix: Water

2080938

Submittal Date/Time: 12/27/2019 09:58 Collection Date/Time: 12/23/2019 08:00

SDG#: SSF16-01MS

**Project Name:** 

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
<b>PCBs</b>		EPA 608	ug/l	ug/l	ug/l	
06030	PCB-1016	12674-11-2	4.6 D2	0.10	0.50	1
06030	PCB-1221	11104-28-2	N.D. D1	0.10	0.50	1
06030	PCB-1232	11141-16-5	N.D. D1	0.10	0.50	1
06030	PCB-1242	53469-21-9	N.D. D1	0.10	0.50	1
06030	PCB-1248	12672-29-6	N.D. D1	0.10	0.50	1
06030	PCB-1254	11097-69-1	N.D. D1	0.10	0.50	1
06030	PCB-1260	11096-82-5	3.7 D1	0.15	0.50	1
06030	Total PCBs	1336-36-3	8.3	0.10	0.50	1

#### **Sample Comments**

CA ELAP Lab Certification No. 2792

			Laboratory S	Sample Analys	is Record		
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06030	PCBs in Water by 608	EPA 608	1	193640006A	01/02/2020 17:55	Jessica L Miller	1
11960	Method 608 PCB Water Ext.	EPA 608	1	193640006A	12/30/2019 16:52	Osvaldo R Sanchez	1

<sup>\*=</sup>This limit was used in the evaluation of the final result



**Project Name:** 

**Lancaster Laboratories Environmental** 

# Analysis Report

**Sample Description:** Arroyo\_Simi\_20191223\_Grab (440-258025-1MSD) Grab

**Boeing-SSFL NPDES Permit 2015** 

**Boeing-SSFL NPDES Permit 2015** 

**Test America** 

**ELLE Sample #:** WW 1231037 **ELLE Group #:** 

2080938

Matrix: Water

Submittal Date/Time: 12/27/2019 09:58 Collection Date/Time: 12/23/2019 08:00 SDG#: SSF16-01MSD

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
<b>PCBs</b>	E	EPA 608	ug/l	ug/l	ug/l	
06030	PCB-1016	12674-11-2	4.4 D2	0.10	0.50	1
06030	PCB-1221	11104-28-2	N.D. D1	0.10	0.50	1
06030	PCB-1232	11141-16-5	N.D. D1	0.10	0.50	1
06030	PCB-1242	53469-21-9	N.D. D1	0.10	0.50	1
06030	PCB-1248	12672-29-6	N.D. D1	0.10	0.50	1
06030	PCB-1254	11097-69-1	N.D. D1	0.10	0.50	1
06030	PCB-1260	11096-82-5	3.4 D1	0.15	0.50	1
06030	Total PCBs	1336-36-3	7.8	0.10	0.50	1

#### **Sample Comments**

CA ELAP Lab Certification No. 2792

Laboratory	Sample Analy	isis Record	
T-!-14	D-1-1-#	Amaluaia	A I 4

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06030	PCBs in Water by 608	EPA 608	1	193640006A	01/02/2020 18:05	Jessica L Miller	1
11960	Method 608 PCB Water Ext.	EPA 608	1	193640006A	12/30/2019 16:52	Osvaldo R Sanchez	1

<sup>\*=</sup>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: 2080938

Reported: 01/06/2020 21:19

eurofins

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): 1231035-	-1231037
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): 1231035-         N.D.           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: 193640006A	Sample number(	s): 1231035-1	1231037						
PCB-1016	5.02	4.30			86		60-117		
PCB-1260	5.05	4.11			81		57-134		

#### MS/MSD

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike

Analysis Name	Unspiked Conc ug/l	MS Spike Added ug/l	MS Conc ug/l	MSD Spike Added ug/l	MSD Conc ug/l	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
Batch number: 193640006A PCB-1016	Sample numbe N.D.	r(s): 1231035- 5.02	1231037 U 4.59	INSPK: 1231035 5.02	4.43	91	88	60-117	4	30
PCB-1260	N.D.	5.05	3.66	5.05	3.39	73	67	57-134	8	30

<sup>\*-</sup> Outside of specification

<sup>\*\*-</sup>This limit was used in the evaluation of the final result for the blank

<sup>(1)</sup> The result for one or both determinations was less than five times the LOQ.

<sup>(2)</sup> The unspiked result was more than four times the spike added.

Lancaster Laboratories Environmental

# Analysis Report

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### **Quality Control Summary**

Client Name: Test America Group Number: 2080938 Reported: 01/06/2020 21:19

#### **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: 193640006A

	Tetrachloro-m-xylene-D1	Decachlorobiphenyl-D1	Tetrachloro-m-xylene-D2	Decachlorobiphenyl-D2
1231035	71	49	69	51
1231036	76	50	72	51
1231037	69	47	69	47
Blank	56	56	55	58
LCS	69	39	67	43
MS	76	50	72	51
MSD	69	47	69	47
Limits:	18-115	10-127	18-115	10-127

Page 230fr131

1/29/2020 (Rev. 3)

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<sup>\*-</sup> Outside of specification

<sup>\*\*-</sup>This limit was used in the evaluation of the final result for the blank

<sup>(1)</sup> The result for one or both determinations was less than five times the LOQ.

<sup>(2)</sup> The unspiked result was more than four times the spike added.

#### **Eurofins TestAmerica, Irvine**

પાપાપા પાતા ૧૩8 Chain of Custody Record



**Environment Testing** TestAmerica

17461 Derian Ave Suite 100 Irvine, CA 92614-5817

Phone: 949-261-1022 Fax: 949-260-3297																											
Client Information (Sub Contract Lab)													Ca	rrier Tr	acking	No(s)	:			COC No: 440-150592.1							
Client Contact: Shipping/Receiving	Phone:				Mail: vashi	i.pate	l@te	estam	erica	ainc.c	om			te of Californ						Page: Page 1 of 1							
Company: Eurofins Lancaster Laboratories Env LLC	•					creditations Required (See note): cate Program - California										Job #: 440-258025-1											
Address: 2425 New Holland Pike, ,	Due Date Request 1/6/2020	ed:								An	alys	is R	equ	este	t				- 1	Preservation Cod A - HCL	es: M - Hexane						
City: Lancaster	TAT Requested (d	ays):					nó.													B - NaOH C - Zn Acetate	N - None O - AsNaO2						
State, Zip: PA, 17601							ă,													D - Nitric Acid E - NaHSO4 F - MeOH	P - Na2O4S Q - Na2SO3 R - Na2S2O3						
Phone: 717-656-2300(Tel)	PO#:				<u> </u>		s)/ 608													G - Amchlor H - Ascorbic Acid	S - H2SO4 T - TSP Dodecahydrate						
Email:	WO#:				is or N	(ô)	er Lab													I - Ice J - DI Water K - EDTA	U - Acetone V - MCAA W - pH 4-5						
Project Name: Boeing-SSFL NPDES Permit 2015	Project #: 44009879				ole (Ye	MS/MSD (Yes or No)	ancast												ntair	L - EDA	Z - other (specify)						
Site:	SSOW#:				Samp	) asv	S CB-L												ا ة'	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, T=Tissue, A=A		Perform MS/A	SUB (608_LL-F Lancaster Lab												Total Number	Special In	structions/Note:						
		><	Preservati	on Code:		X													X								
Arroyo_Simi_20191223_Grab (440-258025-1)	12/23/19	08:00 Pacific		Water			Х												1	Level IV package r	needed						
Arroyo_Simi_20191223_Grab (440-258025-1MS)	12/23/19	08:00 Pacific	MS	Water			Х													Level IV package r							
Arroyo_Simi_20191223_Grab (440-258025-1MSD)	12/23/19	08:00 Pacific	MSD	Water			Х												1	Level IV package i	needed						
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Note: Since laboratory accreditations are subject to change, Eurofins TestAmeri maintain accreditation in the State of Origin listed above for analysis/tests/matrix TestAmerica attention immediately. If all requested accreditations are current to	k being analyzed, the	samples mus	t be shipped bac	k to the Eu	ırofins	TestA	merio	ca labo	ratory	or oth	ner ins	tructio	ns will	oe bro/	ided.	Any ch	nanges	s to ac	credi	itation status should	be brought to Eurofins						
Possible Hazard Identification						Sar	_					nay b					es ar			ed longer than 1							
Unconfirmed	Primary Deliver	rabio Panki	2			Sne		eturn Instru				quire		osal	By La	ab		- A	rchiv	ve For	Months						
Deliverable Requested: I, II, III, IV, Other (specify)	Filliary Deliver				1=	<u>L</u>	Joian	moure	2000	107 00	J 1101	quilo	morne		ibad a	f Shipr	mont										
Empty Kit Relinquished by:	Theta/Tides	Date:	10	omnony		ıme:	Door	nived b						IME	uiou o		/Time:				Company						
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Relinquished by:	Daţe/Hmé:							eived b	7	_										<i>i</i> .							
Relinquished by:	Date/Time:			ompany				eived to	<u>)</u>	-	-					Date		مالا	1	428	Company						
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# Sample Administration Receipt Documentation Log

Doc Log ID: 270938

Group Number(s): 2080938

Client: EUROFINS TESTAMERICA

**Delivery and Receipt Information** 

Delivery Method: Fed Ex Arrival Date: 12/27/2019

Number of Packages:  $\underline{1}$  Number of Projects:  $\underline{1}$ 

State/Province of Origin: <u>California</u>

**Arrival Condition Summary** 

Shipping Container Sealed: Yes Sample IDs on COC match Containers: Yes

Custody Seal Present: Yes Sample Date/Times match COC: Yes

Custody Seal Intact: Yes Total Trip Blank Qty: 0

Samples Chilled: Yes Air Quality Samples Present: No

Paperwork Enclosed: Yes

Samples Intact: Yes

Missing Samples: No

Extra Samples: No

Discrepancy in Container Qty on COC: No

Unpacked by Julissa Rivera-Santa

Samples Chilled Details

Thermometer Types: DT = Digital (Temp. Bottle) IR = Infrared (Surface Temp) All Temperatures in °C.

 Cooler #
 Thermometer ID
 Corrected Temp
 Therm. Type
 Ice Type
 Ice Present?
 Ice Container
 Elevated Temp?

 1
 192050133
 2.1
 IR
 Wet
 Y
 Loose
 N

3

4

5

0

8

12

IR

ppb

basis

Dry weight

parts per billion

as-received basis.

Lancaster Laboratories Environmental

# **Explanation of Symbols and Abbreviations**

The following defines common symbols and abbreviations used in reporting technical data:

Dalau Minimum Oventitation Lavel

BMQL	Below Minimum Quantitation Level	mL	milliliter(s)
С	degrees Celsius	MPN	Most Probable Number
cfu	colony forming units	N.D.	non-detect
<b>CP Units</b>	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		be equivalent to milli	kilogram (mg/kg) or one gram per million grams. For igrams per liter (mg/l), because one liter of water has a weigluivalent to one microliter per liter of gas.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

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.

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.

Test America

	TRAVETER																				1293	- 17	- <del>1</del>	35/3.8	
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Project.	Boeing-SSFL NPDES Permit 2015 Quarterly Arroyo Simi-Frontier Park	Dry Weather	Project Manager Katherine Miller 520,289,8606, 520,904 6944 (cell)	Field Manager Mark Dominick 978.234.5033, 818.599.0702 (cell)	Preservative	HNO.	후	Ξ̈́	None																
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			ance with the Inc , its subs		Samp		<del></del>	<u> </u>				-				Date/Time	151.57	Date/Time	<i>i</i> !	#Timb					
	0	ate.	TestAmerica's services under this CoC shall be performed in accordance with the T&Cs within Blanker Service Agreements 2019-22. TestAmerica by and between Haley & Adrich, inc., its subsidiaries and stifliates, and TestAmerica Laboratories inc.		٥		11223_Grab		23_Grab_Extra							Date	12-21	Date	1.7.3	Dail					
35;	r Rd Suite 30 38	rct: Urvashi P Suite #100	er this CoC shall be merica by and bety ic		Sample i D		Arroyo_Sim_20191223_Grab	0.00	Arroyo_Simi_20191223_Grab_Extra								· h		744						ason
Client Name/Address:	Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108	Test America Contact: Urvashi Patel 17461 Derian Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055	perca's services und vent# 2019-22-TestA erica Laboratories ir	pler:	Sample											Relinguished By	A	furshed By	JE 1	Reinquished By				20 (Re	-2020 Rainy Se
Clien	Hak 5333	Test 1746 Irvine Tel 9 Cell S	TestAr. Agreer TestArr	Sampler	SS	1	Pa	ge Selection	<del>2</del> 8	of :	31					Relin	1/2	Relin		Reim	1/	29/	202	:0 (Re	\$2019-202

# **Login Sample Receipt Checklist**

Client: Haley & Aldrich, Inc.

Job Number: 440-258025-1

SDG Number:

Login Number: 258025 List Source: Eurofins Irvine

List Number: 1

Creator: Soderblom, Tim

Creator: Soderbiom, 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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#### Patel, Urvashi

From: Baluran, Dwayne < DBaluran@haleyaldrich.com>

Sent: Tuesday, December 24, 2019 1:00 PM

To: Patel, Urvashi
Cc: Miller, Katherine

**Subject:** FW: Eurofins TestAmerica sample confirmation files from 440-258025-1 Boeing-SSFL

NPDES Permit 2015

**Attachments:** mime-attachment.jpg; ATT00001.htm; mime-attachment.jpg; ATT00002.htm;

SmpLoginAckLimits\_440-258025-1 [Std\_Tal\_Login\_Limits].pdf; ATT00003.htm; COC 440-258025 (201912231929).pdf; ATT00004.htm; SampleLoginAck\_440-258025-1

[Std\_Tal\_Login\_Ack].pdf; ATT00005.htm

### -External Email-

Hi Urvashi,

Please see the following notes for 440-258025-1.

Sampling Event	Sample Delivery Group	Samples Included	Work Order or COC Corrections?
Arroyo Simi - Qtrly	440-258025-1	Arroyo_Simi_20191223_Grab	Work order is missing "Pesticides: Chlordane, 4,4-DDD, 4,4-DDE, 4,4-DDT, Dieldrin, Toxaphene, + PCBs only (E608)". Both regular sample and MS/MSD

Thanks,

Dwayne Baluran, EIT, QSP

Staff Engineer

Haley & Aldrich, Inc.

5850 Canoga Avenue | Suite 400 Woodland Hills, CA 91367

T: (978) 234.5022

C: (818) 224.0704

www.haleyaldrich.com

**From:** Miller, Katherine < <a href="mailto:KMiller@haleyaldrich.com">KMiller@haleyaldrich.com</a>>

Sent: Tuesday, December 24, 2019 11:33 AM

**To:** Baluran, Dwayne < DBaluran@haleyaldrich.com>

Subject: Fwd: Eurofins TestAmerica sample confirmation files from 440-258025-1 Boeing-SSFL NPDES Permit 2015

Sent from my iPhone

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From: Mark Christine < mark.christine@testamericainc.com >

Date: December 24, 2019 at 12:21:49 PM MST

**To:** "Barr, Anastasia" < <u>ABarr@haleyaldrich.com</u>>, "Hernandez, Elysse"

<EHernandez@haleyaldrich.com>, Kim Schultz <kim.schultz@mecx.net>, "Miller, Katherine"

<<u>KMiller@haleyaldrich.com</u>>, "Ms. Urvashi Patel" <urvashi.patel@testamericainc.com>

Subject: Eurofins TestAmerica sample confirmation files from 440-258025-1 Boeing-SSFL NPDES

Permit 2015

#### **CAUTION: External Email**

Hello,

Attached please find the sample confirmation files for job 440-258025-1; Boeing-SSFL NPDES Permit 2015

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

Thank you.

#### **Mark B Christine**

Project Manager Assistant

Eurofins TestAmerica, Irvine

E-mail: mark.christine@testamericainc.com www.eurofinsus.com | www.testamericainc.com

# **APPENDIX F**

Fourth Quarter 2019 Reasonable Potential Analysis Tables

#### **APPENDIX F**

#### **TABLE OF CONTENTS**

Reasonable Potential Analysis Summary notes

- Table F1 Reasonable Potential Analysis Priority Pollutants (Outfalls 001, 002, 011 and 018)
- Table F2 Reasonable Potential Analysis Priority Pollutants (Outfalls 003-007, 009, and 010)
- Table F3 Reasonable Potential Analysis Non-priority Pollutants (Outfalls 003-007, 009, and 010)
- Table F4 Reasonable Potential Analysis Priority Pollutants (Outfall 008)
- Table F5 Reasonable Potential Analysis Non-priority Pollutants (Outfall 008)

#### 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.
‡	Available data are below detection limits; detection limit is assigned for maximum effluent concentration (MEC) and is not applicable to compare against lowest water quality criteria concentration (C)
μg/L	Concentration units, micrograms per liter
All Data Qualified	All available monitoring data are qualified and no statistical analysis is performed.
Annual	The 2015 NPDES Permit requires annual monitoring.
ANR	Analysis not required; e.g., constituent or outfall was not required by the NPDES permit to be sampled and analyzed.
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).

### <u>Definition of Acronyms, Abbreviations, and Terminology Used (Continued)</u>

Fibers/L	Units for asbestos concentration, fibers per liter
HH O	Human Health criteria for consumption of Organisms only
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) UJ- The analyte was not detected in the sample at the detection limit /estimated detection limit (EDL), (c) Nondetect U with blank qualifier(B, F, T) - Analyte found in sample and associated blank, and (d) DNQ- Detected Not Quantified (sample results less than the RL, but great than or equal to the laboratory's MDL)
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

OUTEALL	Coutful (an angular of coutfulls) with a counting a data was dis DDA								
OUTFALL	Outfall (or group of outfalls) with sampling data used in RPA.								
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 applica	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.								

#### Priority Pollutant RPA Column Explanation (Continued)

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 application	ble data set.							
Is Effluent Data	If all data is qualified, then NO. If not, then YES.							
Available								
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

Provides the Non-Priority Pollutant constituent common name
Provides the 2015 NPDES Permit directed monitoring frequency
Provides the data set's concentration units
Provides the number of available samples that are not qualified
Provides the outfall monitoring group's maximum value from the applicable
data set
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
D.6.
Jtilizes 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)
Jtilizes the product of the multiplier and the MEC as an estimate for the
projected maximum effluent concentration.
Statistical technique used in the Environmental Protection Agency's
Fechnical Support Document RPA to compute the upper 99th confidence
range of the 99th % value of the log normal distribution of monitoring data.
The Regional Board allocates no dilution ratio to the Santa Susana Site
NA).
The Regional Board allocates no background concentration to the Santa
Susana Site (NA).
The Regional Board estimates the projected maximum receiving water
concentration as equal to the projected maximum effluent concentration.
· · ·

### Non-priority Pollutant RPA Column Explanation (Continued)

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 Criteria, Determine C				С		Step 2		Step 3	Step 4	
						CTR C	RITERIA				-				
					Fres	hwater	Human	Health		C = Lowest	Is Effluent	Was Constituent	Are all	If DL > C,	
Outfall CTR Constituent	Unit	s M	EC	cv	CMC = Acute	CCC = Chronic	HH W&O (Not App)	нн о = нн	Basin Plan	Criteria	Data Available	Detected in Effluent Data	Detection Limits > C	MEC = Min (DL)	MEC >= C
1, 2, 11, 18 15 Asbestos	Fibers	/L Not A	nalyzed	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	. An	nual	0.6	NONE	NONE	320	780	NONE	780	No	NA	NA	NA	NA
1, 2, 11, 18 18 Acrylonitrile	μg/L	. An	nual	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 Tetrachlo	ride 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 Dibromochlorome	ethane 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 viny	yl ether μg/L		nual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
1, 2, 11, 18 26 Chloroform (Trich	, 10		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 Chlorodibromome	10		Data <dl< td=""><td>0.6</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<>	0.6	NONE	NONE	0.56	46	NONE	46	Yes	No	No	NA	No
1, 2, 11, 18 28 1,1-Dichloroethar	1.0		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-Dichloropropa			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-Dichloropi			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-Dichlord			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		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		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 NA</td><td>No</td></dl<>	0.6	NONE	NONE	48	4,000	NONE	4,000	Yes	No	No	NA NA	No
1, 2, 11, 18 35 Chloromethane (I	, , ,		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 NA</td><td>No</td></dl<>	0.6	NONE	NONE	Narrative	Narrative	NONE	NONE	Yes	No	No	NA NA	No
1, 2, 11, 18 36 Methylene chlorid			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 NA</td><td>No</td></dl<>	0.6	NONE	NONE	4.7	1,600	NONE	1,600	Yes	No	No	NA NA	No
1, 2, 11, 18 37 1,1,2,2-Tetrachlo			Data <dl< td=""><td>0.6</td><td>NONE</td><td>NONE</td><td>0.17 0.8</td><td>11 8.85</td><td>1</td><td>1</td><td>Yes</td><td>No</td><td>No</td><td>NA NA</td><td>No</td></dl<>	0.6	NONE	NONE	0.17 0.8	11 8.85	1	1	Yes	No	No	NA NA	No
1, 2, 11, 18 38 Tetrachloroethen	10		Data <dl< td=""><td>0.6</td><td>NONE NONE</td><td>NONE</td><td>6.800</td><td>200.000</td><td>5</td><td>5</td><td>Yes Yes</td><td>No No</td><td>No</td><td>NA NA</td><td>No</td></dl<>	0.6	NONE NONE	NONE	6.800	200.000	5	5	Yes Yes	No No	No	NA NA	No
1, 2, 11, 18 39 Toluene	µg/L		Data <dl< td=""><td>0.6</td><td></td><td>NONE</td><td>-,</td><td>,</td><td>150</td><td>150</td><td></td><td>No No</td><td>No</td><td>NA NA</td><td>No</td></dl<>	0.6		NONE	-,	,	150	150		No No	No	NA NA	No
1, 2, 11, 18 40 trans-1,2-Dichloro 1, 2, 11, 18 41 1,1,1-Trichloroeth	- 10		Data <dl Data <dl< td=""><td>0.6</td><td>NONE NONE</td><td>NONE NONE</td><td>700 Narrative</td><td>140,000 Narrative</td><td>10 200</td><td>10 200</td><td>Yes Yes</td><td>No No</td><td>No No</td><td>NA NA</td><td>No No</td></dl<></dl 	0.6	NONE NONE	NONE NONE	700 Narrative	140,000 Narrative	10 200	10 200	Yes Yes	No No	No No	NA NA	No No
1, 2, 11, 18 42 1,1,2-Trichloroeth			: Data <dl : 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 NA</td><td>No</td></dl<></dl 	0.6	NONE	NONE	0.60	42	5	5	Yes	No	No	NA NA	No
1, 2, 11, 18 44 Vinyl chloride	nane µg/L µg/L		: 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 NA</td><td>No</td></dl<>	0.6	NONE	NONE	2	525	0.5	0.5	Yes	No	No	NA NA	No
1, 2, 11, 18 45 2-Chlorophenol	μg/L μg/L		nual	0.6	NONE	NONE	120	400	NONE	400	No	NA NA	NA NA	NA NA	NA NA
1, 2, 11, 18 46 2,4-Dichlorophen			nual	0.6	NONE	NONE	93	790	NONE	790	No	NA NA	NA NA	NA NA	NA NA
1, 2, 11, 18 47 2,4-Dimethylpher	10		nual	0.6	NONE	NONE	540	2,300	NONE	2,300	No	NA NA	NA NA	NA NA	NA NA
1, 2, 11, 18 48 2-Methyl-4,6-dinit			nual	0.6	NONE	NONE	13.4	765	NONE	765	No	NA NA	NA NA	NA NA	NA NA
1, 2, 11, 18 49 2,4-Dinitrophenol			nual	0.6	NONE	NONE	70	14,000	NONE	14,000	No	NA NA	NA NA	NA NA	NA NA
1, 2, 11, 18 50 2-Nitrophenol	μg/L		nual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
1, 2, 11, 18 51 4-Nitrophenol	μg/L		nual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
1, 2, 11, 18 52 4-Chloro-3-methy			nual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
1, 2, 11, 18 54 Phenol	μg/L		nual	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		nual	0.6	NONE	NONE	1,200	2,700	NONE	2,700	No	NA	NA	NA	NA
1, 2, 11, 18 57 Acenaphthylene	μg/L	. An	nual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
1, 2, 11, 18 58 Anthracene	μg/L		nual	0.6	NONE	NONE	9,600	110,000	NONE	110,000	No	NA	NA	NA	NA
1, 2, 11, 18 59 Benzidine	μg/L		nual	0.6	NONE	NONE	0.00012	0.00054	NONE	0.00054	No	NA	NA	NA	NA
1, 2, 11, 18 60 Benzo(a)Anthrace	ene µg/L	. An	nual	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		nual	0.6	NONE	NONE	0.0044	0.049	0.2	0.049	No	NA	NA	NA	NA
1, 2, 11, 18 62 Benzo(b)Fluorant	hene μg/L	. An	nual	0.6	NONE	NONE	0.0044	0.049	NONE	0.049	No	NA	NA	NA	NA
1, 2, 11, 18 63 Benzo(g,h,i)Peryl			nual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
1, 2, 11, 18 64 Benzo(k)Fluorant	hene µg/L	. An	nual	0.6	NONE	NONE	0.0044	0.049	NONE	0.049	No	NA	NA	NA	NA
1, 2, 11, 18 65 Bis (2-Chloroetho	oxy) methane µg/L	An	nual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
1, 2, 11, 18 66 Bis (2-Chloroethy	l) ether μg/L	. An	nual	0.6	NONE	NONE	0.0310	1.4	NONE	1.4	No	NA	NA	NA	NA
1, 2, 11, 18 67 Bis (2-Chloroisop	ropyl) Ether µg/L	. An	nual	0.6	NONE	NONE	1,400	170,000	NONE	170,000	No	NA	NA	NA	NA
1, 2, 11, 18 69 4-Bromophenyl p	henyl ether µg/L	An	nual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
1, 2, 11, 18 70 Butyl benzylphtha	ılate μg/L	. An	nual	0.6	NONE	NONE	3,000	5,200	NONE	5,200	No	NA	NA	NA	NA
1, 2, 11, 18 71 2-Chloronaphthal	ene µg/L	An	nual	0.6	NONE	NONE	1,700	4,300	NONE	4,300	No	NA	NA	NA	NA
1, 2, 11, 18 72 4-Chlorophenyl p	henyl ether µg/L	. An	nual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
1, 2, 11, 18 73 Chrysene	μg/L	An	nual	0.6	NONE	NONE	0.0044	0.049	NONE	0.049	No	NA	NA	NA	NA
1, 2, 11, 18 74 Dibenz(a,h)anthra	acene µg/L	An	nual	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 Criteria, Determine				С		Step 2		Step 3		Step 4
							CTR (	CRITERIA								
						Fresi	hwater	Human H	lealth	Basin Plan	C = Lowest	Is Effluent	Was Constituent Detected in	Are all	If DL > C,	MEC >= C
Outfall	CTR	Constituent	Units	MEC	cv	CMC = Acute	CCC = Chronic	HH W&O (Not App)	нн о = нн	Dasiii Fiaii	Criteria	Data Available	Effluent Data	Detection Limits > C	MEC = Min (DL)	MEC >= C
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		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		2,6-Dinitrotoluene	μg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
1, 2, 11, 18		Di-n-octyl phthalate	μg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
1, 2, 11, 18	_	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		Fluoranthene	μg/L	Annual	0.6	NONE	NONE	300	370	NONE	370	No	NA	NA	NA	NA
1, 2, 11, 18		Fluorene	μg/L	Annual	0.6	NONE	NONE	1,300	14,000	NONE	14,000	No	NA NA	NA NA	NA	NA
1, 2, 11, 18		Hexachlorobenzene	μg/L	Annual	0.6	NONE	NONE	0.00075	0.00077	1	0.00077	No	NA NA	NA 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	_	Hexachlorocyclopentadiene	μg/L	Annual	0.6	NONE	NONE	240	17,000	50	50	No	NA NA	NA NA	NA	NA
1, 2, 11, 18		Hexachloroethane	μg/L	Annual	0.6	NONE	NONE	1.9	8.9	NONE	8.9	No	NA NA	NA NA	NA NA	NA NA
1, 2, 11, 18		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	NA NA	NA NA
1, 2, 11, 18		Isophorone	μg/L	Annual	0.6	NONE	NONE	8.4	600 NONE	NONE	600	No	NA Na	NA Na	NA NA	NA No
1, 2, 11, 18		Naphthalene	μg/L	Available Data <dl< td=""><td>0.6</td><td>NONE NONE</td><td>NONE</td><td>NONE</td><td>NONE</td><td>NONE NONE</td><td>NONE 1,900</td><td>Yes</td><td>No</td><td>No NA</td><td>NA NA</td><td></td></dl<>	0.6	NONE NONE	NONE	NONE	NONE	NONE NONE	NONE 1,900	Yes	No	No NA	NA NA	
1, 2, 11, 18	_	Nitrobenzene	μg/L	Annual Annual	0.6	NONE	NONE NONE	17 0.005	1,900 1.4	NONE	1,900	No No	NA NA	NA NA	NA NA	NA NA
1, 2, 11, 18 1, 2, 11, 18		n-Nitroso-di-n-propylamine N-Nitrosodiphenylamine	μg/L	Annual	0.6	NONE	NONE	5.0	1.4	NONE	1.4	No	NA NA	NA NA	NA NA	NA NA
1, 2, 11, 18		Phenanthrene	μg/L μg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA NA	NA NA	NA NA	NA NA
1, 2, 11, 18	1			Annual	0.6	NONE	NONE	960	11,000	NONE	11,000	No	NA NA	NA NA	NA NA	NA NA
1, 2, 11, 18		1,2,4-Trichlorobenzene	μg/L μg/L	Annual	0.6	NONE	NONE	NONE	NONE	70	70	No	NA NA	NA NA	NA NA	NA NA
1, 2, 11, 18		Aldrin	μg/L μg/L	Available Data <dl< td=""><td>0.6</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>NA<sup>‡</sup></td></dl<>	0.6	3	NONE	0.00013	0.00014	NONE	0.00014	Yes	No	Yes	0.00014	NA <sup>‡</sup>
1, 2, 11, 18		beta-BHC	μg/L μg/L	Available Data <dl< td=""><td>0.6</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<>	0.6	NONE	NONE	0.014	0.046	NONE	0.046	Yes	No	No	NA	No
1, 2, 11, 18	+		μg/L	Available Data <dl< td=""><td>0.6</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 NA</td><td>No</td></dl<>	0.6	0.95	NONE	0.019	0.063	0.2	0.063	Yes	No	No	NA NA	No
1, 2, 11, 18		delta-BHC	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 NA</td><td>No</td></dl<>	0.6	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA NA	No
1, 2, 11, 18		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>NA<sup>‡</sup></td></dl<>	0.6	2.4	0.0043	0.00057	0.00059	0.1	0.00059	Yes	No	Yes	0.00059	NA <sup>‡</sup>
1, 2, 11, 18		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>NA<sup>‡</sup></td></dl<>	0.6	1.1	0.001	0.00059	0.00059	NONE	0.00059	Yes	No	Yes	0.00059	NA <sup>‡</sup>
1, 2, 11, 18		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>NA<sup>‡</sup></td></dl<>	0.6	NONE	NONE	0.00059	0.00059	NONE	0.00059	Yes	No	Yes	0.00059	NA <sup>‡</sup>
1, 2, 11, 18		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>NA<sup>‡</sup></td></dl<>	0.6	NONE	NONE	0.00083	0.00084	NONE	0.00084	Yes	No	Yes	0.00084	NA <sup>‡</sup>
1, 2, 11, 18		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>NA<sup>‡</sup></td></dl<>	0.6	0.24	0.056	0.00014	0.00014	NONE	0.00014	Yes	No	Yes	0.00014	NA <sup>‡</sup>
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	Available Data <dl< td=""><td>0.6</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<>	0.6	NONE	NONE	110	240	NONE	240	Yes	No	No	NA	No
1, 2, 11, 18	115	Endrin	μg/L	Available Data <dl< td=""><td>0.6</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<>	0.6	0.086	0.036	0.76	0.81	2	0.036	Yes	No	No	NA	No
1, 2, 11, 18	116	Endrin Aldehyde	μg/L	Available Data <dl< td=""><td>0.6</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<>	0.6	NONE	NONE	0.76	0.81	NONE	0.81	Yes	No	No	NA	No
1, 2, 11, 18	117	Heptachlor	μg/L	Available Data <dl< td=""><td>0.6</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>No</td><td>NA</td><td>No</td></dl<>	0.6	0.52	0.0038	0.00021	0.00021	0.01	0.00021	Yes	No	No	NA	No
1, 2, 11, 18	118	Heptachlor Epoxide	μg/L	Available Data <dl< td=""><td>0.6</td><td>0.52</td><td>0.0038</td><td>0.00010</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>NA<sup>‡</sup></td></dl<>	0.6	0.52	0.0038	0.00010	0.00011	0.01	0.00011	Yes	No	Yes	0.00011	NA <sup>‡</sup>
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>NA<sup>‡</sup></td></dl<>	0.6	NONE	0.014	0.00017	0.00017	0.5	0.00017	Yes	No	Yes	0.00017	NA <sup>‡</sup>
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>NA<sup>‡</sup></td></dl<>	0.6	NONE	0.014	0.00017	0.00017	0.5	0.00017	Yes	No	Yes	0.00017	NA <sup>‡</sup>
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>NA<sup>‡</sup></td></dl<>	0.6	NONE	0.014	0.00017	0.00017	0.5	0.00017	Yes	No	Yes	0.00017	NA <sup>‡</sup>
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>NA<sup>‡</sup></td></dl<>	0.6	NONE	0.014	0.00017	0.00017	0.5	0.00017	Yes	No	Yes	0.00017	NA <sup>‡</sup>
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>NA<sup>‡</sup></td></dl<>	0.6	NONE	0.014	0.00017	0.00017	0.5	0.00017	Yes	No	Yes	0.00017	NA <sup>‡</sup>
1, 2, 11, 18		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>NA<sup>‡</sup></td></dl<>	0.6	NONE	0.014	0.00017	0.00017	0.5	0.00017	Yes	No	Yes	0.00017	NA <sup>‡</sup>
1, 2, 11, 18		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>NA<sup>‡</sup></td></dl<>	0.6	NONE	0.014	0.00017	0.00017	0.5	0.00017	Yes	No	Yes	0.00017	NA <sup>‡</sup>
1, 2, 11, 18		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>NA<sup>‡</sup></td></dl<>	0.6	0.73	0.0002	0.00073	0.00075	3	0.0002	Yes	No	Yes	0.0002	NA <sup>‡</sup>
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 0	Criteria, Determine	С		Step 2		Step 3		Step 4
						CTR C	RITERIA								
					Fresi	nwater	Human H	lealth		C = Lowest	Is Effluent	Was Constituent	Are all	If DL > C,	
Outfall	CTR Constituent	Units	MEC	cv	CMC = Acute	CCC = Chronic	HH W&O (Not App)	нн о = нн	Basin Plan	Criteria	Data Available	Detected in Effluent Data	Detection Limits > C	MEC = Min (DL)	MEC >= C
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	Available Data <dl< td=""><td>0.6</td><td>Reserved</td><td>5</td><td>Narrative</td><td>Narrative</td><td>50</td><td>5</td><td>Yes</td><td>No</td><td>No</td><td>NA</td><td>No</td></dl<>	0.6	Reserved	5	Narrative	Narrative	50	5	Yes	No	No	NA	No
3-7, 9, 10	11 Silver	μg/L	Available Data <dl< td=""><td>0.6</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<>	0.6	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	7,000,000	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	NA NA	NA NA
3-7, 9, 10	23 Dibromochloromethane	μg/L	Annual	0.6	NONE	NONE	0.401	34	NONE	34 NONE	No	NA	NA NA	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	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	NA NA	NA NA
3-7, 9, 10 3-7, 9, 10	26 Chloroform 27 Chlorodibromomethane	μg/L	Annual Annual	0.6 0.6	NONE	NONE NONE	Reserved 0.56	Reserved 46	NONE NONE	NONE 46	No No	NA NA	NA NA	NA NA	NA NA
		μg/L			NONE NONE	NONE	NONE	NONE		·			+		NA NA
3-7, 9, 10 3-7, 9, 10	28 1,1-Dichloroethane 29 1,2-Dichloroethane	μg/L μg/L	Annual Annual	0.6 0.6	NONE	NONE	0.38	99	5 0.5	5 0.5	No No	NA NA	NA NA	NA NA	NA NA
3-7, 9, 10	30 1,1-Dichloroethene	μg/L μg/L	Annual	0.6	NONE	NONE	0.057	3.2	6	3.2	No	NA NA	NA NA	NA NA	NA NA
3-7, 9, 10	31 1,2-Dichloropropane	μg/L μg/L	Annual	0.6	NONE	NONE	0.52	39	5	5.2	No	NA NA	NA NA	NA NA	NA NA
3-7, 9, 10	32 cis-1.3-Dichloropropene	μg/L μg/L	Annual	0.6	NONE	NONE	10	1,700	0.5	0.5	No	NA NA	NA NA	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	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	NA NA	NA NA
3-7, 9, 10	34 Bromomethane	μg/L	Annual	0.6	NONE	NONE	48	4,000	NONE	4,000	No	NA NA	NA NA	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	NA NA	NA NA
3-7, 9, 10	36 Methylene chloride	µg/L	Annual	0.6	NONE	NONE	4.7	1,600	NONE	1,600	No	NA	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 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	2,300	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	14,000	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
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	4,600,000	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	2,700	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	110,000	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

## TABLE F-2 REASONABLE POTENTIAL ANALYSIS - PRIORITY POLLUTANTS (OUTFALLS 003-007, 009, AND 010)

					Step 1: Water Quality Criteria, Determine C Step 2								Step 3		Step 4
						CTR C	RITERIA								
					Fresi	hwater	Human H	lealth	1	C = Lowest	Is Effluent	Was Constituent	Are all	If DL > C,	
Outfall	CTR Constituent	Units	MEC	cv	CMC = Acute	CCC = Chronic	HH W&O (Not App)	нн о = нн	Basin Plan	Criteria	Data Available	Detected in Effluent Data	Detection Limits > C	MEC = Min (DL)	MEC >= C
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	170,000	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	5,200	No	NA	NA	NA	NA
3-7, 9, 10	71 2-Chloronaphthalene	μg/L	Annual	0.6	NONE	NONE	1,700	4,300	NONE	4,300	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	NA NA	NA NA
3-7, 9, 10	76 1,3-Dichlorobenzene	μg/L	Annual	0.6	NONE	NONE	400	2,600	NONE	2,600	No	NA NA	NA NA	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	NA NA	NA NA
3-7, 9, 10	78 3,3'-Dichlorobenzidine	μg/L	Annual	0.6	NONE	NONE	0.04	0.077 120,000	NONE	0.077 120,000	No	NA NA	NA NA	NA NA	NA NA
3-7, 9, 10 3-7, 9, 10	79 Diethyl phthalate	μg/L	Annual Annual	0.6	NONE	NONE NONE	23,000 313,000	2,900,000	NONE NONE	2,900,000	No No	NA NA	NA NA	NA NA	NA NA
3-7, 9, 10	80 Dimethyl phthalate 81 Di-n-butyl phthalate	μg/L	Annual	0.6	NONE NONE	NONE	2,700	12,000	NONE	12,000	No	NA NA	NA NA	NA NA	NA NA
3-7, 9, 10	82 2,4-Dinitrotoluene	μg/L μg/L	Annual	0.6	NONE	NONE	0.11	9.1	NONE	9.1	No	NA NA	NA NA	NA NA	NA NA
3-7, 9, 10	83 2,6-Dinitrotoluene	μg/L μg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No No	NA NA	NA NA	NA NA	NA NA
3-7, 9, 10	84 Di-n-octyl phthalate	μg/L μg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No No	NA NA	NA NA	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	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	NA NA	NA NA
3-7, 9, 10	87 Fluorene	μg/L	Annual	0.6	NONE	NONE	1,300	14.000	NONE	14,000	No	NA NA	NA NA	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	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	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 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	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
3-7, 9, 10	95 Nitrobenzene	μg/L	Annual	0.6	NONE	NONE	17	1,900	NONE	1,900	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	11,000	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
	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	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

## TABLE F-2 REASONABLE POTENTIAL ANALYSIS - PRIORITY POLLUTANTS (OUTFALLS 003-007, 009, AND 010)

								Step 1: Water Quality C	Criteria, Determine	С		Step 2		Step 4		
							CTR C	RITERIA								
						Fresi	nwater	Human Health		Basin Plan	C = Lowest	Is Effluent Data	Was Constituent Detected in	Are all	If DL > C,	MEC >= C
Outfall	CTR	Constituent	Units	MEC	cv	CMC = Acute	CCC = Chronic	HH W&O (Not App)	HH O = HH	Dasiii Fiaii	Criteria	Available	Effluent Data	Detection Limits > C	MEC = Min (DL)	WILC >= C
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	Discharge	mg/L	1	11.0	0.6	13.20	145.17	NA	NA	145.17	45	BU

## TABLE F-4 REASONABLE POTENTIAL ANALYSIS - PRIORITY POLLUTANTS (OUTFALL 008)

					Step 1: Water Quality Criteria, Determine C			Step 2 Step 3				Step 4			
					CTR CRITERIA Pagin Plan										
					Fresi	hwater	Human H	lealth	Basin Plan	C = Lowest	Is Effluent	Was Constituent	Are all	If DL > C,	
Outfall	CTR Constituent	Units	MEC	cv	CMC = Acute	CCC = Chronic	HH W&O (Not App)	нн о = нн	Title 22 GWR	Criteria	Data Available	Detected in Effluent Data	Detection Limits > C	MEC = Min (DL)	MEC >= C
8	002 Arsenic	μg/L	Annual	0.6	340	150	NONE	NONE	50	50	No	NA	NA	NA	NA
8	003 Beryllium	μg/L	Annual	0.6	NONE	NONE	Narrative	Narrative	4	4	No	NA	NA	NA	NA
8	005a Chromium	μg/L	Annual	0.6	550	180	Narrative	Narrative	50	50	No	NA	NA	NA	NA
8	005b Chromium VI	μg/L	Annual	0.6	16	11	Narrative	Narrative	NONE	11	No	NA	NA	NA	NA
8	011 Silver	μg/L	Available Data <dl< td=""><td>0.6</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<>	0.6	3.4	NONE	NONE	NONE	NONE	3.4	Yes	No	No	NA	No
8	015 Asbestos	Fibers/L	Annual	0.6	NONE	NONE	7,000,000	NONE	7,000,000	7,000,000	No	NA	NA	NA	NA
8	017 Acrolein	μg/L	Annual	0.6	NONE	NONE	320	780	NONE	780	No	NA	NA	NA	NA
8	018 Acrylonitrile	μg/L	Annual	0.6	NONE	NONE	0.059	0.66	NONE	0.66	No	NA	NA	NA	NA
8	019 Benzene	μg/L	Annual	0.6	NONE	NONE	1.2	71	1	1	No	NA	NA	NA	NA
8	020 Bromoform	μg/L	Annual	0.6	NONE	NONE	4.3	360	NONE	360	No	NA	NA	NA	NA
8	021 Carbon Tetrachloride	μg/L	Annual	0.6	NONE	NONE	0.25	4.4	0.5	0.5	No	NA	NA	NA	NA
8	022 Chlorobenzene	μg/L	Annual	0.6	NONE	NONE	680	21,000	70	70	No	NA	NA	NA	NA
8	023 Dibromochloromethane	μg/L	Annual	0.6	NONE	NONE	0.401	34	NONE	34	No	NA	NA	NA NA	NA NA
8	024 Chloroethane	μg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA NA	NA NA	NA	NA NA
8	025 2-Chloroethylvinylether	μg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA NA	NA NA	NA	NA NA
8	026 Chloroform	μg/L	Annual	0.6	NONE	NONE	Reserved	Reserved	NONE	NONE	No	NA NA	NA NA	NA NA	NA NA
8	027 Bromodichloromethane	μg/L	Annual	0.6	NONE	NONE	0.56	46 NONE	NONE	46	No	NA NA	NA NA	NA NA	NA NA
8	028 1,1-Dichloroethane 029 1,2-Dichloroethane	μg/L	Annual	0.6	NONE	NONE	NONE	NONE	5	5 0.5	No	NA NA			NA NA
8	030 1.1-Dichloroethene	μg/L	Annual Annual	0.6	NONE NONE	NONE NONE	0.38 0.057	99 3.2	0.5 6	3.2	No No	NA NA	NA NA	NA NA	NA NA
8	031 1,2-Dichloropropane	μg/L μg/L	Annual	0.6	NONE	NONE	0.057	3.2	5	 5.∠	No	NA NA	NA NA	NA NA	NA NA
8	032 cis-1,3-Dichloropropene	μg/L μg/L	Annual	0.6	NONE	NONE	10	1,700	0.5	0.5	No	NA NA	NA NA	NA NA	NA NA
8	032 trans-1,3-Dichloropropene	μg/L μg/L	Annual	0.6	NONE	NONE	10	1,700	0.5	0.5	No	NA NA	NA NA	NA NA	NA NA
8	033 Ethylbenzene	μg/L	Annual	0.6	NONE	NONE	3,100	29,000	700	700	No	NA NA	NA NA	NA NA	NA NA
8	034 Bromomethane	μg/L	Annual	0.6	NONE	NONE	48	4.000	NONE	4.000	No	NA NA	NA NA	NA NA	NA NA
8	035 Chloromethane	μg/L	Annual	0.6	NONE	NONE	Narrative	Narrative	NONE	NONE	No	NA NA	NA NA	NA NA	NA NA
8	036 Methylene chloride	µg/L	Annual	0.6	NONE	NONE	4.7	1,600	NONE	1,600	No	NA NA	NA NA	NA NA	NA NA
8	037 1,1,2,2-Tetrachloroethane	µg/L	Annual	0.6	NONE	NONE	0.17	11	1	1	No	NA	NA NA	NA NA	NA
8	038 Tetrachloroethene	µg/L	Annual	0.6	NONE	NONE	0.8	8.85	5	5	No	NA	NA	NA NA	NA
8	039 Toluene	µg/L	Annual	0.6	NONE	NONE	6.800	200.000	150	150	No	NA	NA	NA	NA
8	040 trans-1,2-Dichloroethene	µg/L	Annual	0.6	NONE	NONE	700	140,000	10	10	No	NA	NA	NA	NA
8	041 1,1,1-Trichloroethane	µg/L	Annual	0.6	NONE	NONE	Narrative	Narrative	200	200	No	NA	NA	NA	NA
8	042 1,1,2-trichloroethane	μg/L	Annual	0.6	NONE	NONE	0.6	42	5	5	No	NA	NA	NA	NA
8	043 Trichloroethene	μg/L	Annual	0.6	NONE	NONE	2.7	81	5	5	No	NA	NA	NA	NA
8	044 Vinyl chloride	μg/L	Annual	0.6	NONE	NONE	2	525	0.5	0.5	No	NA	NA	NA	NA
8	045 2-chlorophenol	µg/L	Annual	0.6	NONE	NONE	120	400	NONE	400	No	NA	NA	NA	NA
8	046 2,4-Dichlorophenol	μg/L	Annual	0.6	NONE	NONE	93	790	NONE	790	No	NA	NA	NA	NA
8	047 2,4-dimethylphenol	μg/L	Annual	0.6	NONE	NONE	540	2,300	NONE	2,300	No	NA	NA	NA	NA
8	048 2-Methyl-4,6-dinitrophenol	μg/L	Annual	0.6	NONE	NONE	13.4	765	NONE	765	No	NA	NA	NA	NA
8	049 2,4-dinitrophenol	μg/L	Annual	0.6	NONE	NONE	70	14,000	NONE	14,000	No	NA	NA	NA	NA
8	050 2-nitrophenol	μg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
8	051 4-nitrophenol	μg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
8	052 4-Chloro-3-methylphenol	μg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
8	053 Pentachlorophenol	μg/L	Annual	0.6	pH dependent	pH dependent	0.28	8.2	1	1	No	NA	NA	NA	NA
8	054 Phenol	μg/L	Annual	0.6	NONE	NONE	21,000	4,600,000	NONE	4,600,000	No	NA	NA	NA	NA
8	055 2,4,6-Trichlorophenol	μg/L	Annual	0.6	NONE	NONE	2.1	6.5	NONE	6.5	No	NA	NA	NA	NA
8	056 Acenaphthene	μg/L	Annual	0.6	NONE	NONE	1,200	2,700	NONE	2,700	No	NA	NA	NA	NA
8	057 Acenaphthylene	μg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
8	058 Anthracene	μg/L	Annual	0.6	NONE	NONE	9,600	110,000	NONE	110,000	No	NA	NA	NA	NA
8	059 Benzidine	μg/L	Annual	0.6	NONE	NONE	0.00012	0.00054	NONE	0.00054	No	NA	NA	NA	NA
8	060 Benzo(a)Anthracene	μg/L	Annual	0.6	NONE	NONE	0.0044	0.049	NONE	0.049	No	NA	NA	NA	NA NA
8	061 Benzo(a)Pyrene	μg/L	Annual	0.6	NONE	NONE	0.0044	0.049	0.2	0.049	No	NA	NA	NA NA	NA NA
8	062 Benzo(b)Fluoranthene	μg/L	Annual	0.6	NONE	NONE	0.0044	0.049	NONE	0.049	No	NA NA	NA NA	NA NA	NA NA
8	063 Benzo(g,h,i)Perylene	μg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA

## TABLE F-4 REASONABLE POTENTIAL ANALYSIS - PRIORITY POLLUTANTS (OUTFALL 008)

						Step 1: Water Quality Criteria, Determine C				Step 2		Step 3		Step 4		
							CTD (	CRITERIA	Thoma, Dotomino	ī		0.00 2				Otop 4
						F			1 141-	Basin Plan			Was Constituent		1	1
	1	1				Fres	hwater	Human F	leaith		C = Lowest	Is Effluent	Detected in	Are all	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	Data Available	Effluent Data	Detection Limits > C	MEC = Min (DL)	
8	064	Benzo(k)Fluoranthene	μg/L	Annual	0.6	NONE	NONE	0.0044	0.049	NONE	0.049	No	NA	NA	NA	NA
8	065	Bis(2-Chloroethoxy) methane	μg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
8	066	bis (2-Chloroethyl) ether	μg/L	Annual	0.6	NONE	NONE	0.031	1.4	NONE	1.4	No	NA	NA	NA	NA
8	067	Bis(2-Chloroisopropyl) Ether	μg/L	Annual	0.6	NONE	NONE	1,400	170,000	NONE	170,000	No	NA	NA	NA	NA
8	068	bis (2-ethylhexyl) Phthalate	μg/L	Annual	0.6	NONE	NONE	1.8	5.9	4	4	No	NA	NA	NA	NA
8	069	4-Bromophenylphenylether	μg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
8	070	Butylbenzylphthalate	μg/L	Annual	0.6	NONE	NONE	3,000	5,200	NONE	5,200	No	NA	NA	NA	NA
8	071	2-Chloronaphthalene	μg/L	Annual	0.6	NONE	NONE	1,700	4,300	NONE	4,300	No	NA	NA	NA	NA
8	072	4-Chlorophenylphenylether	μg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
8	073	Chrysene	μg/L	Annual	0.6	NONE	NONE	0.0044	0.049	NONE	0.049	No	NA	NA	NA	NA
8	074	Dibenzo(a,h)Anthracene	μg/L	Annual	0.6	NONE	NONE	0.0044	0.049	NONE	0.049	No	NA	NA	NA	NA
8	075	1,2-Dichlorobenzene	μg/L	Annual	0.6	NONE	NONE	2,700	17,000	600	600	No	NA	NA	NA	NA
8	076	1,3-Dichlorobenzene	μg/L	Annual	0.6	NONE	NONE	400	2,600	NONE	2,600	No	NA	NA	NA	NA
8	077	1,4-Dichlorobenzene	μg/L	Annual	0.6	NONE	NONE	400	2,600	5	5	No	NA	NA	NA	NA
8	078	3,3'-Dichlorobenzidine	μg/L	Annual	0.6	NONE	NONE	0.04	0.077	NONE	0.077	No	NA	NA	NA	NA
8	079	Diethylphthalate	μg/L	Annual	0.6	NONE	NONE	23,000	120,000	NONE	120,000	No	NA	NA	NA	NA
8		Dimethylphthalate	μg/L	Annual	0.6	NONE	NONE	313,000	2,900,000	NONE	2,900,000	No	NA	NA	NA	NA
8		Di-n-butylphthalate	μg/L	Annual	0.6	NONE	NONE	2,700	12,000	NONE	12,000	No	NA	NA	NA	NA
8	082	,	μg/L	Annual	0.6	NONE	NONE	0.11	9.1	NONE	9.1	No	NA	NA	NA	NA
8		2,6-Dinitrotoluene	μg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
8	_	Di-n-octylphthalate	μg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
8	+	1,2-Diphenylhydrazine	μg/L	Annual	0.6	NONE	NONE	0.04	0.54	NONE	0.54	No	NA	NA	NA	NA
8	086	Fluoranthene	μg/L	Annual	0.6	NONE	NONE	300	370	NONE	370	No	NA	NA	NA	NA
8	087	Fluorene	μg/L	Annual	0.6	NONE	NONE	1,300	14,000	NONE	14,000	No	NA	NA	NA	NA
8	088	Hexachlorobenzene	μg/L	Annual	0.6	NONE	NONE	0.00075	0.00077	1	0.00077	No	NA	NA	NA	NA
8	089	Hexachlorobutadiene	μg/L	Annual	0.6	NONE	NONE	0.44	50	NONE	50	No	NA NA	NA NA	NA	NA
8	090	<b>,</b> ,	μg/L	Annual	0.6	NONE	NONE	240	17,000	50	50	No	NA NA	NA NA	NA	NA
8	091	Hexachloroethane	μg/L	Annual	0.6	NONE	NONE	1.9	8.9	NONE	8.9	No	NA NA	NA NA	NA NA	NA NA
8	092	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	NA NA	NA NA
8	093	Isophorone	μg/L	Annual	0.6	NONE	NONE	8.4 NONE	600	NONE	600	No	NA NA	NA NA	NA NA	NA NA
8	094	Naphthalene	μg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No No	NA NA	NA NA	NA NA	NA NA
8	095		μg/L	Annual Annual	0.6	NONE NONE	NONE NONE	17 0.00069	1,900 8.1	NONE NONE	1,900 8.1	No No	NA NA	NA NA	NA NA	NA NA
8	096	· · · · · · · · · · · · · · · · · · ·	μg/L	Annual	0.6	NONE	NONE	0.0005	1.4	NONE	1.4	No	NA NA	NA NA	NA NA	NA NA
8	097	n-Nitroso-di-n-propylamine	μg/L	Annual	0.6		NONE	0.005	1.4	NONE	1.4	No	NA NA	NA NA	NA NA	NA NA
	098	N-Nitrosodiphenylamine	μg/L	Annual	0.6	NONE NONE	NONE	NONE	NONE	NONE	NONE	No	NA NA	NA NA	NA NA	NA NA
8	100	Phenanthrene Pyrene	μg/L μg/L	Annual	0.6	NONE	NONE	960	11,000	NONE	11,000	No	NA NA	NA NA	NA NA	NA NA
8	100	1,2,4-Trichlorobenzene	μg/L μg/L	Annual	0.6	NONE	NONE	NONE	NONE	70	70	No	NA NA	NA NA	NA NA	NA NA
8	101	Aldrin	μg/L μg/L	Annual	0.6	NONE 3	NONE	0.00013	0.00014	NONE	0.00014	No	NA NA	NA NA	NA NA	NA NA
8	102	alpha-BHC	μg/L μα/L	Annual	0.6	NONE	NONE	0.00013	0.00014	NONE	0.00014	No	NA NA	NA NA	NA NA	NA NA
8		beta-BHC	μg/L μg/L	Annual	0.6	NONE	NONE	0.0039	0.013	NONE	0.046	No	NA NA	NA NA	NA NA	NA NA
8		Lindane (gamma-BHC)	μg/L	Annual	0.6	0.95	NONE	0.014	0.040	0.2	0.063	No	NA NA	NA NA	NA NA	NA NA
8		delta-BHC	μg/L	Annual	0.6	NONE	NONE	NONE	NONE	NONE	NONE	No	NA NA	NA NA	NA NA	NA NA
8	_	Chlordane	μg/L	Annual	0.6	2.4	0.0043	0.00057	0.00059	0.1	0.00059	No	NA NA	NA NA	NA NA	NA NA
8		4,4'-DDT	μg/L	Annual	0.6	1.1	0.001	0.00059	0.00059	NONE	0.00059	No	NA NA	NA NA	NA NA	NA NA
8	_	4,4'-DDE	μg/L	Annual	0.6	NONE	NONE	0.00059	0.00059	NONE	0.00059	No	NA NA	NA NA	NA NA	NA NA
8	_	4,4'-DDD	μg/L	Annual	0.6	NONE	NONE	0.00083	0.00084	NONE	0.00084	No	NA NA	NA NA	NA NA	NA NA
8	_	Dieldrin	μg/L	Annual	0.6	0.24	0.056	0.00014	0.00014	NONE	0.00014	No	NA NA	NA NA	NA	NA NA
8	_	Endosulfan I	μg/L	Annual	0.6	0.22	0.056	110	240	NONE	0.056	No	NA	NA NA	NA	NA NA
8		Endosulfan II	μg/L	Annual	0.6	0.22	0.056	110	240	NONE	0.056	No	NA NA	NA NA	NA	NA NA
8	_	Endosulfan Sulfate	μg/L	Annual	0.6	NONE	NONE	110	240	NONE	240	No	NA	NA NA	NA	NA NA
8	_	Endrin	μg/L	Annual	0.6	0.086	0.036	0.76	0.81	2	0.036	No	NA	NA	NA	NA
8	_	Endrin Aldehyde	μg/L	Annual	0.6	NONE	NONE	0.76	0.81	NONE	0.81	No	NA	NA	NA	NA
8		Heptachlor	μg/L	Annual	0.6	0.52	0.0038	0.00021	0.00021	0.01	0.00021	No	NA	NA	NA	NA
		1 1 ==:::=:	r3'-							2.0.		· · · · · · · · · · · · · · · · · · ·			-	·

## TABLE F-4 REASONABLE POTENTIAL ANALYSIS - PRIORITY POLLUTANTS (OUTFALL 008)

						Step 1: Water Quality Criteria, Determine C				C	Step 2			Step 3			
							CTR CRITERIA			Danie Blass		Lowest Is Effluent	Was Constituent Are all				
						Freshwater		Human Health		Basin Plan	C = Lowest			Are all	If DL > C,	MEONE	
Outfall	CTR	Constituent	Units	MEC	cv	CMC = Acute	CCC = Chronic	HH W&O (Not App)	нн о = нн	Title 22 GWR	Title 22 GWR	Data Available	Detected in Effluent Data	Detection Limits > C	MEC = Min (DL)	MEC >= C	
8	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	
8	119	Aroclor-1016	μg/L	Annual	0.6	NONE	0.014	0.00017	0.00017	0.5	0.00017	No	NA	NA	NA	NA	
8	120	Aroclor-1221	μg/L	Annual	0.6	NONE	0.014	0.00017	0.00017	0.5	0.00017	No	NA	NA	NA	NA	
8	121	Aroclor-1232	μg/L	Annual	0.6	NONE	0.014	0.00017	0.00017	0.5	0.00017	No	NA	NA	NA	NA	
8	122	Aroclor-1242	μg/L	Annual	0.6	NONE	0.014	0.00017	0.00017	0.5	0.00017	No	NA	NA	NA	NA	
8	123	Aroclor-1248	μg/L	Annual	0.6	NONE	0.014	0.00017	0.00017	0.5	0.00017	No	NA	NA	NA	NA	
8	124	Aroclor-1254	μg/L	Annual	0.6	NONE	0.014	0.00017	0.00017	0.5	0.00017	No	NA	NA	NA	NA	
8	125	Aroclor-1260	μg/L	Annual	0.6	NONE	0.014	0.00017	0.00017	0.5	0.00017	No	NA	NA	NA	NA	
8	126	Toxaphene	μg/L	Annual	0.6	0.73	0.0002	0.00073	0.00075	3	0.0002	No	NA	NA	NA	NA	
8	127	E. Coli	MPN/100ml	Annual	0.6	NA	NA	NA	NA	235	235	No	NA	NA	NA	NA	

## TABLE F-5 REASONABLE POTENTIAL ANALYSIS - NONPRIORITY POLLUTANTS (OUTFALL 008)

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
8	Total Suspended Solids	Discharge	mg/L	1	12	0.60	13.20	158.36	0	0	158.36	45	BU

### **APPENDIX G**

**Fourth Quarter 2019 Receiving Water Surveys** 

### **APPENDIX G**

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Table G - Receiving Water Surveys

#### TABLE G RECEIVING WATER SURVEYS

## FOURTH QUARTER 2019 THE BOEING COMPANY SANTA SUSANA FIELD LABORATORY NPDES PERMIT CA0001309

October 1 through December 31, 2019

Observation Requirements: Observations are only made during discharge on a monthly basis when Outfall 002 (Bell Creek), Outfall 008 (Dayton Creek), and Outfall 009 (Arroyo Simi) are flowing. Outfalls 002, 008, and 009 discharged in December during the Fourth Quarter 2019.

FOURTH QUARTER 2019 ARROYO SIMI OBSERVATIONS at Arroyo Simi								
ARROYO SIMI OBSERVATIONS	OCTOBER	NOVEMBER	DECEMBER					
Date and time of inspection	N/A	N/A	12/23/2019, 07:55					
Weather conditions	N/A	N/A	Partly cloudy, cool, 54°F					
Color of water	N/A	N/A	Brown					
Appearance of oil films or grease, or floatable materials	N/A	N/A	Leaves, foam, bubbles					
Extent of visible turbidity or color patches	N/A	N/A	Uniform, opaque					
Description of odor, if any	N/A	N/A	None					
Presence or activity of California Least Tern or California Brown Pelican	N/A	N/A	No					
Upstream Surface Water Temperature*	N/A	N/A	50.8°CF					
Upstream Surface Water pH*	N/A	N/A	7.09 pH Units					

#### Notes:

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

<sup>\* =</sup> These data were collected to assist in determining compliance with receiving water limitations during the quarterly. 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.

FOURTH QUARTER 2019 BELL CREEK OBSERVATIONS at Outfall 002								
BELL CREEK OBSERVATIONS	OCTOBER	NOVEMBER	DECEMBER					
Date and time of inspection	N/A	N/A	12/4/2019, 13:30					
Weather conditions	N/A	N/A	Partly cloudy, cool, wet, ground surface					
Color of water	N/A	N/A	Brown					
Appearance of oil films or grease, or floatable materials	N/A	N/A	None					
Extent of visible turbidity or color patches	N/A	N/A	Uniform, opaque					
Description of odor, if any	N/A	N/A	None					
Presence or activity of California Least Tern or California Brown Pelican	N/A	N/A	No					

#### Notes:

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

FOURTH QUARTER 2019 DAYTON CANYON CREEK OBSERVATIONS at Outfall 008									
DAYTON CANYON CREEK OBSERVATIONS	OCTOBER	NOVEMBER	DECEMBER						
Date and time of inspection	N/A	N/A	12/26/2019, 08:10						
Weather conditions	N/A	N/A	Drizzling, cold, slight breeze						
Color of water	N/A	N/A	Pale brown						
Appearance of oil films or grease, or floatable materials	N/A	N/A	None						
Extent of visible turbidity or color patches	N/A	N/A	Uniform translucent						
Description of odor, if any	N/A	N/A	None						
Presence or activity of California Least Tern or California Brown Pelican	N/A	N/A	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.