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

Subject: First Quarter 2016 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 1 January through 31 March 2016 (First Quarter 2016). This DMR was prepared as required by and in accordance with National Pollutant Discharge Elimination System (NPDES) Permit No. CA0001309 (Permit) and under regulatory oversight of the Los Angeles Regional Water Quality Control Board (Regional Board). Included are summary tables of best management practices (BMPs), stormwater sample analytical results, rainfall quantities, liquid waste shipments, and laboratory analytical reports for stormwater samples.

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

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

FIRST QUARTER 2016 DMR CONTENTS

This DMR includes the following sections and appendices:

- **Discharge Summary:** This section describes the number of rain events, number of samples collected, sample dates, and sample locations during First Quarter 2016. Table I summarizes the First Quarter 2016 sampling record by outfall, location, and sample type collected per the requirements of the NPDES Permit.
- **First Quarter 2016 Summary of Compliance:** This section summarizes the sample results that exceeded NPDES Permit limits in First Quarter 2016.
- **First Quarter 2016 Santa Susana Site Stormwater Pollution Prevention Plan (SWPPP)/BMP Activities:** This section presents the Santa Susana Site SWPPP activities and BMPs related to demolition, Interim Source Removal Actions (ISRA), the BMP Plan, Northern Drainage, and other activities implemented in First Quarter 2016. Table III summarizes specific BMP activities by outfall location.
- **Data Validation and Quality Control:** This section discusses data validation results and any laboratory or field corrective actions.
- **Figure 1** shows the stormwater collection conveyance system and site features and **Figure 2** shows the Arroyo Simi – Frontier Park (RSW-002) sampling location.

- **Appendix A** summarizes measured First Quarter 2016 precipitation at the Santa Susana Site.
- **Appendix B** tabulates liquid waste shipment details.
- **Appendix C** presents chemical analytical results of First Quarter 2016 stormwater and/or receiving water samples in tabular form by outfall location, constituents evaluated (analytes), sample dates, and data validation qualifiers.
- **Appendix D** summarizes the NPDES Permit limit exceedances.
- **Appendix E** contains copies of laboratory analytical reports, chain of custody forms, and data validation reports.
- **Appendix F** tabulates the Reasonable Potential Analysis (RPA).
- **Appendix G** presents laboratory methods and State Water Resources Control Board Environmental and Laboratory Accreditation Program renewal certification.

DISCHARGE SUMMARY

The Santa Susana Site experienced seven qualifying rain events that produced greater than 0.1 inch of rainfall within a 24-hour period and were preceded by at least 72 hours of dry weather during First Quarter 2016 (Appendix A). Automated flow-weighted composite samplers (autosamplers) were set in preparation for all rain events. Three of the seven qualifying rain events produced stormwater discharges. Onsite stormwater samples were collected at Outfall 009.

The stormwater treatment system was enabled during First Quarter 2016, producing discharge at Outfall 002 and 018; one sample was collected at each outfall.

One annual offsite receiving water sample was collected at the Arroyo Simi–Frontier Park location in Simi Valley (RSW 002; see Figure 2). Nine offsite receiving water grab samples were collected at the Arroyo Simi – Frontier Park location to calculate the geometric mean in compliance with Receiving Water Requirements in Attachment E of the NPDES Permit.

The annual sediment sample was also collected at the Arroyo Simi – Frontier Park (RSW-002) location.

Table I summarizes the First Quarter 2016 sampling record by outfall, location and sample type collected, per NPDES Permit requirements.

TABLE I: Sampling Record during First Quarter 2016

Date	Outfall/Location	Sample Frequency	Sample Type
01/05-01/06/2016	Outfall 009	Routine, Toxicity	Grab, Composite
03/07-03/08/2016	Outfall 009	Annual, Semi-annual, Routine, Toxicity	Grab, Composite

Date	Outfall/Location	Sample Frequency	Sample Type
03/11-03/12/2016	Outfall 009	Routine	Grab, Composite
02/04-02/05/2016	Outfall 002	Annual, Quarterly, Routine, Toxicity	Grab, Composite
02/03-02/04/2016	Outfall 018	Annual, Quarterly, Routine, Toxicity	Grab, Composite
03/07/2016	Arroyo Simi Frontier Park (RSW-002)	Annual, Quarterly	Grab
03/13/2016	Arroyo Simi Frontier Park (RSW-002)	Geometric Mean	Grab
03/14/2016	Arroyo Simi Frontier Park (RSW-002)	Geometric Mean	Grab
03/15/2016	Arroyo Simi Frontier Park (RSW-002)	Geometric Mean	Grab
03/16/2016	Arroyo Simi Frontier Park (RSW-002)	Geometric Mean	Grab
03/17/2016	Arroyo Simi Frontier Park (RSW-002)	Geometric Mean	Grab
03/18/2016	Arroyo Simi Frontier Park (RSW-002)	Geometric Mean	Grab
03/19/2016	Arroyo Simi Frontier Park (RSW-002)	Geometric Mean	Grab
03/25/2016	Arroyo Simi Frontier Park (RSW-002)	Geometric Mean	Grab
03/31/2016	Arroyo Simi Frontier Park (RSW-002)	Geometric Mean	Grab
03/19/2016, 03/25/2016	Arroyo Simi Frontier Park (RSW-002)- Sediment	Annual	Grab

Notes:

Routine = 1/discharge

Toxicity is required during the 1st and 2nd Rain or Flow Event.

Geometric mean samples were collected in compliance with Receiving Water Requirements in Attachment E of the NPDES Permit.

The samples were submitted to and analyzed by TestAmerica Laboratories, Inc., a California-certified analytical laboratory in Irvine, per the NPDES Permit requirements.

FIRST QUARTER 2016 ARROYO SIMI OBSERVATIONS

The receiving water location at Arroyo Simi sample location RSW-002 in Simi Valley was observed in First Quarter 2016 for the following:

TABLE II: First Quarter 2016 Arroyo Simi Observations

Arroyo Simi Observations	First Quarter 2016
Weather conditions	Sunny, overcast
Color of water	Brown
Appearance of oil films or grease, or floatable materials	Leaves, twigs, trash
Extent of visible turbidity or color patches	High turbidity
Description of odor, if any	None
Presence or activity of California Least Tern or California Brown Pelican	None

FIRST QUARTER 2016 SUMMARY OF COMPLIANCE

As summarized in Appendix D, the First Quarter 2016 exceedances of Daily Maximum Permit Limit or receiving water limits included:

- *Escherichia coli* (*E. coli*) at Arroyo Simi – Frontier Park (RSW-002); and
- Background dioxins (TCDD) toxic equivalent (TEQ) and lead at Outfall 009.

Arroyo Simi Frontier Park – (RSW-002)

Bacteria

In a sample collected offsite at the Frontier Park location on 7 March 2016, *E. coli* was detected at 35,000 MPN/100mL (most probable number per 100 milliliters) which is above the single sample maximum receiving water limit of 235 MPN/100mL, at Arroyo Simi – Frontier Park (RSW-002). As stated in the NPDES Permit, *E. coli* is part of the water quality objectives for monitoring inland surface waters and includes a geometric mean calculation. Nine samples were collected at Arroyo Simi – Frontier Park (RSW-002) on March 13, 14, 15, 16, 17, 18, 19, 25, and 31 and all ten samples were used to calculate the geometric mean for *E. coli*. The calculated geometric mean for *E. coli* (331 MPN/100mL) was above the geometric mean receiving water limits for *E. coli* (126 MPN/100mL).

On March 07, 2016, *E. coli* was detected in stormwater samples collected from Outfall 009 at 270 MPN/100mL. The Outfall 009 sample was also analyzed for human-specific Bacteroides and the sample results were nondetect.

Boeing collects all sanitary waste generated at the Santa Susana Site and transports it to an offsite facility for treatment and disposal. The discharge at Outfall 009 consists entirely of stormwater. There is no indication that any human waste can be exposed to or enter any stormwater discharges from the Santa Susana Site. The results of the Bacteroides analysis demonstrate that no human-specific markers were detected at Outfall 009 and any bacteria detected must have originated from non-human, natural sources. It follows that the bacteria detected in waters receiving stormwater discharges from the Santa Susana Site sampled at Arroyo Simi – Frontier Park (RSW-002) do not include bacteria originating from human sources at the Santa Susana Site.

Outfall 009

TCDD TEQ

On January 6, 2016, TCDD TEQ was detected above the Daily Max Permit Limit of 2.80E-08 ug/L in a stormwater sample collected from Outfall 009 at 8.71E-08 ug/L.

TCDD congeners have been frequently detected in soils determined by DTSC to have not been impacted by industrial activities and representative of background conditions at the Santa Susana Site (MWH, 2005). The presence of TCDD in both background soils and fire-related materials suggests the TCDD TEQ measured in surface water at the Santa Susana Site could originate primarily from wildfire combustion processes, regional and atmospheric deposition, and other naturally occurring sources (USEPA, 2000; MWH, 2005; MWH and Flow Science, 2006). In 2013, there were several fires in southern California, including the Springs Fire in Ventura County and the adjacent Santa Monica mountains which impacted over 24,000 acres. This fire most likely would have contributed to onsite deposition of ash. The fact that the 2,3,7,8-TCDD congener was not detected in this sample also supports the explanation that the exceedance is not associated with a fresh anthropogenic source.

Boeing believes that the dioxin concentrations in the stormwater runoff in the Outfall 009 watershed were the result of the high intensity rain events causing erosion and total suspended solids (TSS) consisting of native sediments and soils from disturbed areas. TSS loading varies based on rainfall intensity, duration, and erosion characteristics.

Boeing is committed to fulfilling the requirements of the NPDES Permit and actions taken during First Quarter 2016 to control sediment transport and minimize the occurrence of future permit exceedances are described in Table III and the section below describing Outfall 008/009 ISRA and BMP Plan-Related Activities.

Lead

On March 8, 2016, lead was detected above the Daily Max Permit Limit of 5.2 ug/L in a stormwater sample collected from Outfall 009 at 5.9 ug/L.

Since total metals are commonly associated with sediment particles, Boeing believes that the lead concentrations observed in stormwater runoff in the Outfall 009 watershed were the result of erosion and TSS consisting of native sediments and soil from disturbed areas. TSS loading varies based on rainfall intensity, duration, and erosion characteristics. Boeing will continue to work with the Expert Panel to minimize future metals exceedances at Outfall 009 by slowing down run-off and providing pre-treatment. Boeing constructed a biofilter in 2013, bioswales in 2015, and increased the settling time at culvert modification CM-1 which captures water from the repaved road at the recommendation of the Stormwater Expert Panel.

Boeing is committed to fulfilling the requirements of the NPDES Permit and actions taken during First Quarter 2016 to control erosion and sediment transport and minimize the occurrence of future permit exceedances are described in Table III and in the section on Outfall 008/009 ISRA and BMP Plan-Related Activities below.

STORMWATER TREATMENT SYSTEM (SWTS) AT OUTFALL 018 ACTIVITIES

The Stormwater Treatment System (SWTS), which is located at Silvernale Pond and discharges through Outfall 018, operated during the First Quarter 2016. In order to operate, the following major maintenance items were completed:

- Silica sand media was replaced at Sand Filter Banks 1 and 2;
- Granular Activated Carbon media was replaced in four of the eight carbon vessels;
- Pump belts were replaced on both system intake pumps;
- Created new 3" drain line for Sand Filters;
- Communication system between ACTIFLO and polymer chemical pump was repaired to facilitate control through the ACTIFLO Programmable Logic Controller;
- ACTIFLO influent flow meter was repaired; and
- Polymer chemical skid was reconfigured to allow chemical operation to switch between the two chemical feed pumps.

Discharge:

- On February 3-5, 2016, the system at Outfall 018 was operated and discharged for approximately 45 hours. All constituents met permit effluent limits;
- All field measured parameters at the SWTS system outlet were in compliance for the full discharge duration;
- Total amount of water discharged from Silvernale Pond was 2,503,400 gallons;
- Total amount of water transferred to Silvernale Pond from R2A pond was 524,000 gallons; and
- Total amount of solids produced by the screw press was 15 cubic yards (refer to Appendix B).

FIRST QUARTER 2016 SANTA SUSANA SITE SWPPP/BMP ACTIVITIES

Boeing implemented significant SWPPP- and BMP-related activities to assist in improving stormwater quality and compliance at the Santa Susana Site. Table III summarizes the activities that were completed during First Quarter 2016 by outfall number. In addition to SWPPP-related activities, specific BMP projects included: demolition-related BMPs; Outfall 008/009 ISRA BMPs; BMP Plan-related BMPs; and Northern Drainage BMPs.

TABLE III: Boeing's First Quarter 2016 BMP Activities

OUTFALL (Location)	BMP ACTIVITIES DURING FIRST QUARTER 2016
001 (South Slope)	Conducted erosion and sediment control inspections and performed maintenance around the perimeter of the outfall, the drainage/watershed, and areas of disturbance or sparse vegetation. Inspected outfall and flume for sediment/debris. Checked sample box and flow meter control box for the presence of debris and/or animals. Cleaned sample box and the outfall area and performed weed abatement as needed. Reset flow meter and replaced tape on a monthly basis.
002 (South Slope)	Conducted erosion and sediment control inspections and performed maintenance around the perimeter of the outfall, the drainage/watershed, and areas of disturbance or sparse vegetation. Inspected outfall and flume for sediment/debris. Checked sample box and flow meter control box for the presence of debris and/or animals. Cleaned sample box and the outfall area and performed weed abatement as needed. Reset flow meter and replaced tape on a monthly basis.

OUTFALL (Location)	BMP ACTIVITIES DURING FIRST QUARTER 2016
<p>003 (Radioactive Material Handling Facility)</p>	<p>Conducted erosion and sediment control inspections and performed maintenance around the perimeter of the outfall, the drainage/watershed, and areas of disturbance or sparse vegetation. Inspected outfall and flume for sediment/debris. Checked sample box and flow meter control box for the presence of debris and/or animals. Cleaned sample box and the outfall area and performed weed abatement as needed. Reset flow meter and replaced tape on a monthly basis. Conducted maintenance inspections of structural BMPs, including the flow-through structure and stormwater conveyance and retention systems. Installed an automatic switch (fail-close actuator valve) to force water through the media bed in the event of a power failure.</p>
<p>004 (Sodium Reactor Experiment Area)</p>	<p>Conducted erosion and sediment control inspections and performed maintenance around the perimeter of the outfall, the drainage/watershed, and areas of disturbance or sparse vegetation. Inspected the outfall and flume for sediment/debris. Checked sample box and flow meter control box for the presence of debris and/or animals. Cleaned sample box and the outfall area and performed weed abatement as needed. Reset flow meter and replaced tape on a monthly basis. Conducted maintenance inspections of the structural BMPs, including the flow-through structure and stormwater conveyance system. Installed an anti-slip mat.</p>
<p>005 (Sodium Burn Pit 1)</p>	<p>Conducted erosion and sediment control inspections and performed maintenance around the perimeter of the outfall, the drainage/watershed, and areas of disturbance or sparse vegetation. Inspected the outfall for sediment/debris. Checked sample box for the presence of debris and/or animals. Cleaned sample box and the outfall area and performed weed abatement as needed. Conducted maintenance inspections of the stormwater conveyance and retention systems. Installed fiber rolls and rip rap check dams on the road above the 5-7 pad.</p>
<p>006 (Sodium Burn Pit 2)</p>	<p>Conducted erosion and sediment control inspections and performed maintenance around the perimeter of the outfall, the drainage/watershed, and areas of disturbance or sparse vegetation. Inspected outfall and flume for sediment/debris. Checked sample box and flow meter control box for the presence of debris and/or animals. Cleaned sample box and the outfall area and performed weed abatement as needed. Reset flow meter and replaced tape on a monthly basis. Conducted maintenance inspections of the structural BMPs, including the flow-through structure and stormwater conveyance system. Installed an anti-slip mat. Installed an automatic switch (fail-close actuator valve) to force water through the media bed in the event of a power failure. Installed fiber rolls and rip rap check dams on the road above the 5-7 pad.</p>
<p>007 (Building 100)</p>	<p>Conducted erosion and sediment control inspections and performed maintenance around the perimeter of the outfall, the drainage/watershed, and areas of disturbance or sparse vegetation. Inspected the outfall for sediment/debris. Checked sample box for the presence of debris and/or animals. Cleaned sample box and the outfall area and performed weed abatement as needed. Conducted maintenance inspections of the stormwater conveyance and retention systems. Removed two dead oak trees, repaired HDPE liner cover, and removed felt. Installed fiber rolls and rip rap check dams on the road above the 5-7 pad.</p>

OUTFALL (Location)	BMP ACTIVITIES DURING FIRST QUARTER 2016
<p>008 (Happy Valley)</p>	<p>Conducted erosion and sediment control inspections and performed maintenance around the perimeter of the outfall, the drainage/watershed, and areas of disturbance or sparse vegetation. Inspected the outfall and flume for sediment/debris. Checked sample box and flow meter control box for the presence of debris and/or animals. Cleaned sample box and the outfall area and performed weed abatement as needed. Reset flow meter and replaced tape on a monthly basis.</p>
<p>009 (WS-13 Drainage)</p>	<p>Outfall BMPs: Conducted erosion and sediment control inspections and performed maintenance around the perimeter of the outfall, the drainage/watershed, and areas of disturbance or sparse vegetation. Inspected outfall and flume for sediment/debris. Checked sample box and flow meter control box for the presence of debris and/or animals. Cleaned sample box and the outfall area and performed weed abatement as needed. Reset flow meter and replaced tape on a monthly basis. Cleared rock and sediment from culvert inlet and constructed a sandbag berm at the downslope side of the inlet along Well 13 road leading to outfall.</p> <p>Restoration, Monitoring and Mitigation Plan (RMMP) BMPs: Performed a quarterly biological monitoring inspection on February 19 and a quarterly geomorphic monitoring inspection on March 29.</p> <p><u>Lower Lot BMP (Biofilter):</u> Inspected sedimentation basin, biofilter, and cistern areas. Swept sediment on road leading to Lower Lot parking area. Cleaned out spillway trench. Installed HDPE liner and gravel. Swept sediment washed out onto pavement near the Lower Lot Wooden Retaining Wall and placed rip rap over exposed soil near the corner.</p> <p>Former Building 1436 (B1436) Detention Bioswales: Performed maintenance inspection of bioswale surface area, including hydroseeded area and fiber rolls. Removed sediment from concrete swales. Moved fiber rolls closer to the edge of concrete swale inlets. Relocated check dam between the B407 Yard gate and southeastern concrete swale inlet farther downstream. Added fiber rolls to address turbid water coming from the B407 Yard and from behind the Fire Station upstream of the bioswales. Removed sediment from the B407 Yard paved area.</p> <p>B-1 Area: Performed maintenance inspection of BMPs along slope and within drainage. Implemented fiber rolls and sandbags at the intersection of Black Canyon and Woolsey Canyon Roads to reduce sediment transport prior to rain events. Fiber rolls and sandbags were removed from intersection once rain event was complete.</p> <p>Culvert Modifications: Performed maintenance inspection of BMPs. Cleaned culvert inlets and rip rap check dams of debris prior to and after rain events. Added rip rap and gravel to check dam at CM-1. Replaced the weir board fabric and replaced fiber rolls on the slope above the culvert basin at CM-4.</p> <p>Helipad: Removed accumulated sediment at lower dam, removed carbon and zeolite bags from the northwest end of the Helipad, and installed 7 additional tanks.</p> <p>NASA-led Activities: Installed fiber rolls in the lower Delta area.</p>

OUTFALL (Location)	BMP ACTIVITIES DURING FIRST QUARTER 2016
010 (Building 203)	Conducted erosion and sediment control inspections and performed maintenance around the perimeter of the outfall, the drainage/watershed, and areas of disturbance or sparse vegetation. Inspected the outfall and flume for sediment/debris. Checked sample box and flow meter control box for the presence of debris and/or animals. Cleaned sample box and the outfall area and performed weed abatement as needed. Reset flow meter and replaced tape on a monthly basis. Conducted maintenance inspections of structural BMPs, including the flow-through structure and stormwater conveyance and retention systems. Removed spent zeolite and carbon bags.
011 (Perimeter Pond)	Conducted erosion and sediment control inspections and performed maintenance around the perimeter of the outfall, the drainage/watershed, and areas of disturbance or sparse vegetation. Inspected outfall and weir for sediment/debris. Checked sample box and flow meter control box for the presence of debris and/or animals. Cleaned sample box and the outfall area and performed weed abatement as needed. Reset flow meter and replaced tape on a monthly basis. Conducted maintenance inspections of structural BMPs, including the flow-through structure and stormwater conveyance system. Cleaned a clogged culvert, installed check dams, repaired swale, fabricated an inlet structure for the conveyance line pump, installed a new check valve, modified the existing suction line at a 45-degree angle, and installed sandbag and cinderblock berms along the access road.
018 (R-2 Pond Spillway)	Conducted erosion and sediment control inspections and performed maintenance around the perimeter of the outfall, the drainage/watershed, and areas of disturbance or sparse vegetation. Inspected outfall and flume for sediment/debris. Checked sample box and flow meter control box for the presence of debris and/or animals. Cleaned sample box and the outfall area and performed weed abatement as needed. Reset flow meter and replaced tape on a monthly basis. Conducted maintenance inspections of the structural BMPs, including the flow-through structure and conveyance system.
019 (Area I Groundwater Extraction and Treatment [GET] System)	The GET system has not been in operation since April 2013 and no pumping or discharge has occurred. Therefore, no NPDES sampling was performed in First Quarter 2016 at the Area I GET System. Conducted maintenance inspections of the structural BMPs.
RSW-002 (Arroyo Simi – Frontier Park)	Collected the annual and quarterly rain event receiving water and annual sediment sample at the Arroyo Simi – Frontier Park location. Conducted receiving water inspections.

OTHER BMP ACTIVITIES

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

No significant changes were made to the SWPPP, Best Management Practices Plan (BMPP), and Spill Contingency Plan during 2015.

During one storm event, stormwater runoff from Area I Road was diverted to the Bowl area to preserve storage capacity in R-1 Pond.

Mudflow was observed in Area 4 at the G-Street asphalt swale between the 5-7 pad and B4020 driveway as well as from the culvert distribution box and storm drains during First Quarter 2016 and this sediment was removed. Additionally, cocoa mat and rip rap were installed in the earthen swale in front of B4020, a 60-foot long by 18-inch diameter culvert was installed from the culvert box to the end of the road to direct water to the original flow path, clogged storm drains near B4055 were cleared, and rip rap check dams were installed along the road leading to the former Area IV water tank as well as at B4055.

NASA-RELATED ACTIVITIES

Demolition activities covered by NASA's Construction SWPPP (dated March 4, 2015) are inspected in accordance with the Construction General Permit (CGP). During the First Quarter 2016, no soil disturbance activities associated with NASA demolition occurred. Activities included placing BMPs in advance of demolition activities planned to occur in Second Quarter 2016 in the Skyline Area. Previously installed wattles, sandbags, and silt fencing were inspected in the Service Area and Former Employee Parking Lot. During the First Quarter 2016, NASA began removing concrete at the lower Delta area. BMPs, including wattles, have been placed in the lower Delta area.

Additionally, during First Quarter 2016, NASA inspected temporary BMPs (sandbags and wattles) at Liquid Oxygen Plant (LOX) ISRA areas and discharge points to Northern Drainage, inspected ELV BMP storage tanks, and placed sandbags.

OUTFALL 008/009 ISRA AND BMP PLAN-RELATED ACTIVITIES

ISRA soil removal within the Outfall 008 watershed was completed in 2009, and ISRA soil removal conducted within the Outfall 009 watershed was completed in Fourth Quarter 2013. Following ISRA remedial activities, performance monitoring up- and downstream of completed ISRA areas was performed. ISRA performance monitoring is considered complete based on data collected through the 2014/2015 rainy season, signifying the completion of the ISRA program (MWH *et al.*, 2015).

The Expert Panel prepared BMP plans and submittals on behalf of NASA and Boeing to meet Outfall 008/009 permit limits/benchmarks established in the NPDES Permit (Order No. R4-2004-0090)¹. The 2010 BMP Plan outlined a strategy for subarea sampling, statistical analysis of lab results, and ranking of locations for treatment control prioritization. Annual reports have been submitted including summary and evaluation of the previous year's monitoring results, and development of new general BMP recommendations. Annual BMP Plan addenda have also been submitted to provide conceptual design details and proposed implementation schedules for the following year. The following list identifies the BMP Plans and addenda that have been submitted to the Regional Board, with each document currently located on Boeing's Santa Susana Site web page under Outfall 008/009 ISRA- and BMP-related activities²:

- 2010 BMP Plan Outfalls 008 and 009 BMP Watersheds (MWH *et al.*, 2010);
- 2011 BMP Plan Addendum (Geosyntec and the Expert Panel, 2011);

¹ Available at: <http://www.boeing.com/principles/environment/santa-susana/permits.page>

² Available at: <http://www.boeing.com/principles/environment/santa-susana/interim-source-removal.page>

- 2012 BMP Plan Addendum (Geosyntec and the Expert Panel, 2012);
- 2013 BMP Plan Addendum (Geosyntec and the Expert Panel, 2013); and
- 2014 BMP Plan Addendum (Geosyntec and the Expert Panel, 2014).

Completed Expert Panel-recommended BMPs are discussed in the ISRA Performance Monitoring and BMP Monitoring Report for Outfalls 008 and 009 Watersheds submitted to the Regional Board for each rainy season (MWH, 2010; MWH *et al.*, 2011; MWH *et al.*, 2012; MWH *et al.*, 2013; MWH *et al.*, 2014, and MWH *et al.*, 2015). The final annual rainy season report under the 2010 BMP Plan was submitted in August 2015 (MWH *et al.*, 2015). Future BMP-related activities will be performed and reported as specified in the Site-Wide Stormwater Work Plan and 2014/15 Annual Report (Geosyntec and the Expert Panel, 2015).

The BMP activities discussed below were performed, commenced, or completed during First Quarter 2016 in coordination with the Expert Panel.

Former Building 1436 Detention Bioswales

Two detention bioswales were constructed at former B1436 following its removal in Third Quarter 2014. The graded surface was hydroseeded and more than 2,900 native plantings were installed in December 2014. The bioswales were designed to capture, pretreat and detain runoff from the adjacent parking lot and from approximately 13.9 acres of drainage area east and upgradient, prior to releasing this stormwater to the former Instrument and Equipment Laboratories (IEL) storm drain where flow is diverted to the lower lot biofilter for treatment. First Quarter 2016 activities included inspections of the bioswales and hydroseeded areas and as-needed BMP maintenance activities/upgrades.

Lower Lot Biofilter

The lower lot biofilter is a stormwater treatment BMP designed and built to capture, convey, and treat stormwater runoff from the lower parking lot and former IEL watershed. A treatment BMP at the lower parking lot was first proposed in the 2010 BMP Plan (MWH *et al.*, 2010). The lower lot biofilter consists of a 30,000-gallon cistern, a stormwater conveyance line, a sedimentation basin, and a media biofilter. Construction activities were completed on March 15, 2013; a Regional Board and public tour of the completed biofilter was conducted on March 20, 2013.

First Quarter 2016 activities included inspections to verify that the sedimentation basin and biofilter were free of sediment and debris, checks of the cistern area and pump, and inspections of surrounding BMPs. A total of approximately 852,300 gallons of stormwater were pumped from the cistern to the sedimentation basin during First Quarter 2016 rain events.

NASA Expendable Launch Vehicle (ELV) Area BMPs

BMPs and drainage improvements were installed between June and October 2013 at NASA ELV to improve the quality of stormwater from the ELV area before it is conveyed to Outfall 009. 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.

First Quarter 2016 activities included inspections of the BMPs.

NASA and Boeing BMP Monitoring and Maintenance Activities

In addition to activities performed in coordination with the Expert Panel described above, the BMP Plan-related activities performed for Outfalls 008/009 during First Quarter 2016 included the following:

- Collected BMP performance monitoring samples at the following locations. These samples will be reported by the Expert Panel in the 2015/16 Annual Report.
 - Detention Bioswales at former B1436;
 - Lower Lot BMP (Cistern, Sediment Basin Outlet Box, and Biofilter);
 - B-1 Media Filter;
 - B-1 Culvert Inlet near Upper Parking Lot;
 - Downstream of B-1 Storm Drain Culvert Outlet;
 - CM-9 Area;
 - IEL Storm Drain Outlet;
 - CM-1 Area;
 - Well 13 Road Culverts;
 - ELV Treatment BMP;
 - Helipad BMP;
 - LOX Area;
 - Area II Road Culverts near CM-1 and CM-9; and
 - Area II Road Asphalt Swale.
- Collected Expert Panel Special Monitoring Studies (Santa Susana Surface Water Expert Panel and Geosyntec Consultants, 2016) samples at the following locations in or near the Northern Drainage:
 - Along the Northern Drainage above the confluence with Area II drainage (sediment and storm water);
 - Along the Area II drainage before the confluence with Northern Drainage (sediment only);
 - Along the Northern Drainage west of the LOX Area and near the Well 52B/52C cluster (sediment and storm water);
 - Along the Northern Drainage east of the LOX Area and downstream of the box culvert (sediment and storm water);
 - Along a tributary drainage upstream of CM-5 (sediment only);
 - Along the Northern Drainage downstream of 24" storm drain outlet discharge (sediment and storm water); and
 - Along a tributary stream north of the B-1 Site (sediment only).

- Installed special studies atmospheric deposition sampling pans on the Boeing-owned stormwater tank near the helipad and the Boeing fire station;
- Inspected BMPs at BMP monitoring locations and surrounding areas;
- Near the Lower Lot Biofilter, swept sediment on road leading to Lower Lot parking area, cleaned the spillway trench, and installed an HDPE liner and gravel;
- At the Lower Lot Wooden Retaining Wall, swept sediment washed out onto the pavement, replaced sandbags, and placed rip rap over exposed soil area near the corner;
- At the B1436 detention bioswales, removed accumulated sediment from culverts, moved fiber rolls closer to the edge of the concrete swale inlets, relocated the check dam between the B407 Yard gate and the southeastern concrete swale inlet farther downstream, and implemented erosion controls (fiber rolls) to address turbid water coming from the B407 Yard and from behind the Fire Station upstream of the bioswales;
- At the B407 Yard north, removed sediment from the paved area;
- At the B-1 area, added fiber rolls and sandbags around the storm drains at the intersection of Black Canyon and Woolsey Canyon Roads to reduce sediment transport during rain events;
- At CM-1, installed rip rap and gravel to check dam;
- At CM-4, replaced the weir board fabric and replaced fiber rolls on the slope above the culvert basin;
- At the Helipad, added 7 tanks to increase capacity, removed accumulated sediment at the lower dam, and removed carbon and zeolite bags from the northwest end of the Helipad;
- At the lower Delta area, installed fiber rolls in anticipation of demolition activities in Second Quarter 2016; and
- The Expert Panel proceeded on the development of new treatment BMP concepts along the Service Area Road.

SITE-WIDE WORKPLAN AND ANNUAL REPORT

The Expert Panel submitted a Site-Wide Stormwater Work Plan and 2014/15 Annual Report (2015 Work Plan) in September 2015 (Geosyntec and the Expert Panel, 2015) on behalf of Boeing to meet the requirements of the NPDES Permit (Order No. R4-2015-0033)³. This Work Plan is applicable to all outfalls. The 2015 Work Plan is designed to assess the effectiveness of BMPs/treatment control implementation measures based on surface water samples collected at outfalls and supplemented by monitoring data. The 2015 Work Plan also includes recommended special studies, intended to help identify sources of lead and dioxins within the Outfall 009 watershed. The special studies involve vacuum sampling of pavement solids, pan sampling of atmospheric deposition solids, soil sampling around treated wood poles, and sediment and stormwater sampling at multiple locations along the Northern Drainage. The Expert Panel will review the special study sampling results to determine implications for future stormwater treatment BMPs.

³ Available at: <http://www.boeing.com/principles/environment/santa-susana/permits.page>

NORTHERN DRAINAGE BMPS

Boeing has actively worked to restore the Northern Drainage following cleanup activities performed under the oversight of the DTSC and in accordance with the requirements of Regional Board Cleanup and Abatement Order No. R4-2007-0054 (RWQCB, 2007). The restoration and mitigation activities proposed in the Northern Drainage Restoration, Mitigation, and Monitoring Plan (RMMP)⁴ were implemented beginning in 2012. In accordance with the RMMP, regular maintenance, monitoring, and reporting have been implemented in the Northern Drainage since 2012 for the stream's plant biology and geomorphology. Biological activities include botanical and California Rapid Assessment Method surveys, plant watering only during periods of excessive heat, and weeding of non-native species. Geomorphic activities include stabilization measure inspections, physical surveying, facies mapping, photographic surveying, annual stream walks, as-needed maintenance, and annual geomorphic monitoring reports. Biological activities performed in First Quarter 2016 included a quarterly monitoring inspection on February 19. Weeding of non-native species is planned for the Second Quarter of 2016 based on the results of the inspection. Geomorphic activities performed in First Quarter 2016 included a stabilization measure inspection, stream walk, and photographic survey on March 29, 2016.

REASONABLE POTENTIAL ANALYSIS

Stormwater discharges from the Santa Susana Site occurred at Outfalls 002, 009, and 018 during First Quarter 2016. Analytical results from this quarter were added to the Reasonable Potential Analysis (RPA) dataset following the MWH and Flow Science RPA procedures for outfall monitoring group 009-010 (MWH and Flow Science, 2006). As shown in Appendix F, the analytical results for First Quarter 2016 did not trigger reasonable potential for any other constituent not already regulated under the current NPDES Permit.

Bis (2-ethylhexyl) Phthalate

On March 08, 2016, bis (2-ethylhexyl) phthalate was detected in stormwater samples collected from Outfall 009 at 10.6 ug/L. Bis (2-ethylhexyl) phthalate has never been detected in previous stormwater samples collected from Outfall 009. Although not detected in quality control samples associated with this analysis, bis (2-ethylhexyl) phthalate contamination could have been introduced via plastics from other field or laboratory sources (ATSDR, 2002). Therefore, Boeing does not believe that reasonable potential has been demonstrated for bis (2-ethylhexyl) phthalate at Outfall 009, but will continue to monitor.

Bacteria

On March 07, 2016, *E. coli* was detected in stormwater samples collected from Outfall 009 at 270 MPN/100mL. Boeing collects all sanitary waste generated at the Santa Susana Site and transports it to an offsite facility for treatment and disposal. The discharges at these outfalls consist entirely of stormwater. The Outfall 009 sample was also analyzed for human-specific Bacteroides to confirm that the bacteria present in the Outfall 009 samples were not from human sources. The results of the Bacteroides analysis demonstrated that no human-specific markers were detected, and that any bacteria detected in stormwater discharges from the site therefore must have originated from non-human, natural sources. Therefore, Boeing does not believe that reasonable potential has been demonstrated for bacteria at Outfall 009.

⁴ Available at: <http://www.boeing.com/principles/environment/santa-susana/technical-reports.page>

DATA VALIDATION AND QUALITY CONTROL

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

Attachment H of the NPDES Permit presents the State Board's minimum levels (MLs) for use in reporting and determining compliance with NPDES Permit limits. The analytical laboratory achieved these MLs in the First Quarter 2016 when technically possible. In cases where the NPDES Permit limit is less than the reporting limit (RL) and ML, the RL was used to determine compliance.

CONCLUSIONS

Boeing continues to improve water quality at stormwater discharge locations at the Santa Susana Site through methods designed to preserve the natural conditions in the watershed to the maximum extent feasible by implementing sustainable erosion control/restoration measures and continuing our collaboration with the Expert Panel.

FACILITY CONTACT

If there are any questions regarding this report or its enclosures, you may contact Mr. Paul Costa of Boeing at (818) 466-8778.

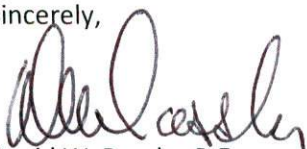
CERTIFICATION

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 May 2016 at The Boeing Company, Santa Susana Site.

Sincerely,



David W. Dassler P.E.
Southwest Remediation Manager
The Boeing Company

Enclosures:

References

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

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

Appendix A - First Quarter 2016 Rainfall Data Summary

Appendix B - First Quarter 2016 Liquid Waste Shipment Summary Table

Appendix C - First Quarter 2016 Discharge Monitoring Data Summary Tables

Appendix D - First Quarter 2016 Summary of Permit Limit Exceedances

Appendix E – (on CD) First Quarter 2016 Analytical Laboratory Report, Chain of Custody, and Validation Report

Appendix F – First Quarter 2016 Reasonable Potential Analysis (RPA) Summary Tables

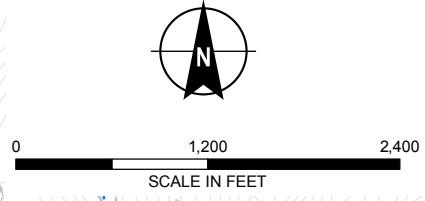
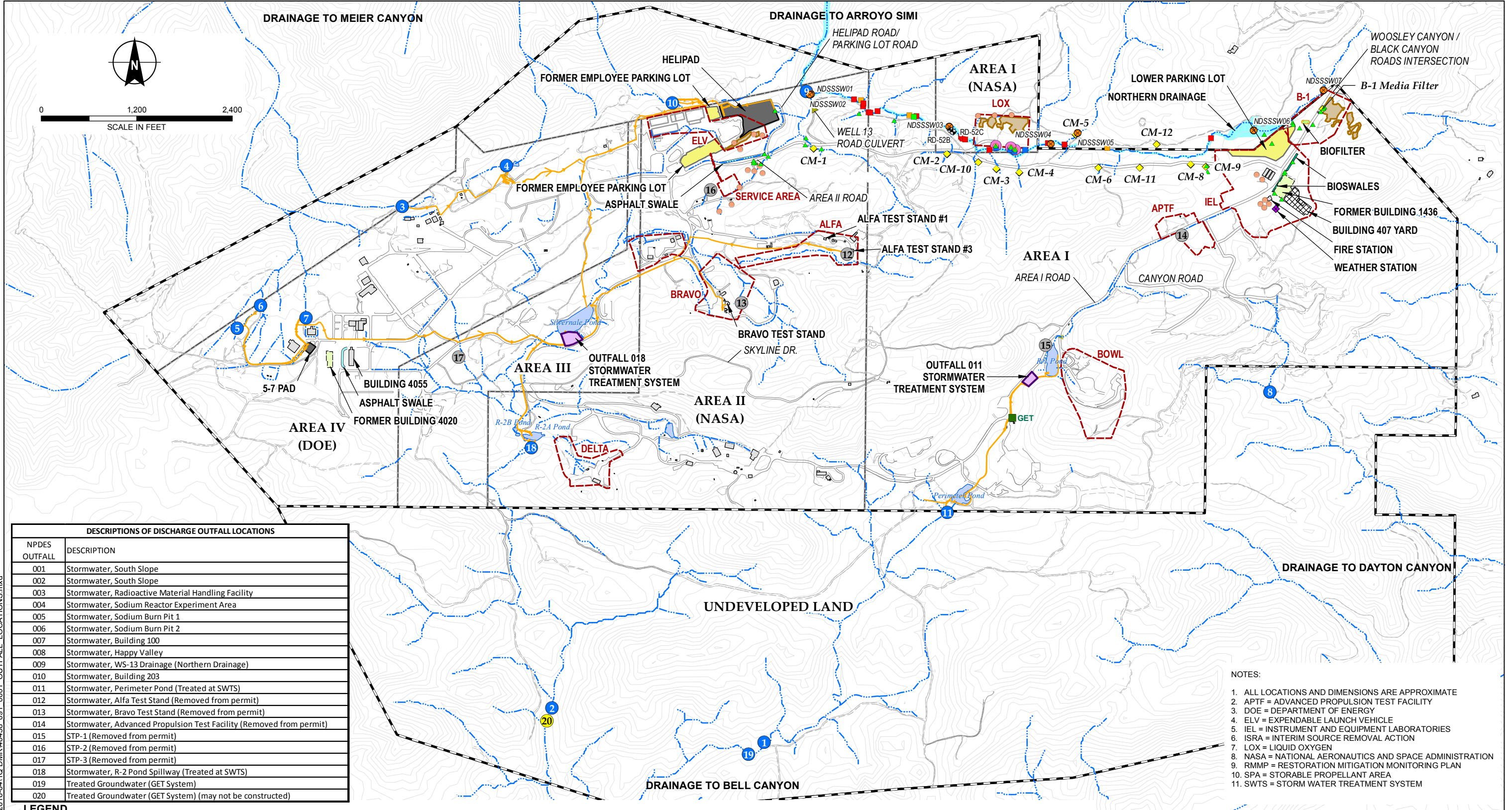
Appendix G – (on CD) First Quarter 2016 Analytical Laboratory Methods, Method Detection Limits, Reporting Limits, QA/QC Procedures, and ELAP Certifications

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

REFERENCES

1. California Regional Water Quality Control Board, 2007. Cleanup and Abatement Order No. R4-2007-0054. November 6.
2. Geosyntec and the Expert Panel, 2011. 2011 BMP Plan Addendum, The Boeing Company, Santa Susana Field Laboratory, Canoga Park, California (Order No. R4-2010-0090; NPDES No. CA0001309, CI No. 6027). September 28.
3. Geosyntec and the Expert Panel, 2012. 2012 BMP Plan Addendum, The Boeing Company, Santa Susana Field Laboratory, Canoga Park, California (Order No. R4-2010-0090; NPDES No. CA0001309, CI No.6027). September 28.
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6. Geosyntec and the Expert Panel, 2015. Site-Wide Stormwater Work Plan and 2014/15 Annual Report, Santa Susana Field Laboratory, Ventura County, California (NPDES No. CA0001309, CI No.6027). October 07.
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9. MWH Americas, Inc., and Flow Science, 2006. Reasonable Potential Analysis Methodology Technical Memo- Version 1, Final, Santa Susana Field Laboratory, Ventura County, California. April 28.
10. MWH Americas, Inc., Santa Susana Field Laboratory Stormwater Expert Panel, Geosyntec Consultants, Haley & Aldrich, Inc., and CH2M Hill, 2010. Best Management Practices (BMP) Plan, Outfalls 008 and 009 Watersheds, The Boeing Company, Santa Susana Field Laboratory, Canoga Park, California (Order No. R4-2010-0090; NPDES No. CA0001309, CI No. 6027). October 14.

11. MWH Americas, Inc., Santa Susana Site Surface Water Expert Panel, Geosyntec Consultants, and Haley & Aldrich, Inc., 2011. ISRA Performance Monitoring and Potential BMP Subarea Monitoring for the Outfalls 008 and 009 Watersheds, 2010/2011 Rainy Season, The Boeing Company, Santa Susana Field Laboratory, Ventura County, California (Order No. R4-2010-0090; NPDES No. CA0001309, CI No. 6027; and California Water Code §13304 Order; No. CA0001309, CI No. 1111, Site ID No. 2040109). July 29.
12. MWH Americas, Inc., Santa Susana Site Surface Water Expert Panel, and Geosyntec Consultants, 2012. ISRA Performance Monitoring and Potential BMP Subarea Monitoring for the Outfalls 008 and 009 Watersheds, 2011/2012 Rainy Season, The Boeing Company, Santa Susana Field Laboratory, Ventura County, California (Order No. R4-2010-0090; NPDES No. CA0001309, CI No. 6027; and California Water Code §13304 Order; No. CA0001309, CI No. 1111, Site ID No. 2040109). August 31.
13. MWH Americas, Inc., Santa Susana Site Surface Water Expert Panel, and Geosyntec Consultants, 2013. ISRA Performance Monitoring and BMP Monitoring for the Outfalls 008 and 009 Watersheds, 2012/2013 Rainy Season, The Boeing Company, Santa Susana Field Laboratory, Ventura County, California (Order No. R4-2010-0090; NPDES No. CA0001309, CI No. 6027; and California Water Code §13304 Order; No. CA0001309, CI No. 1111, Site ID No. 2040109). August 30.
14. MWH Americas, Inc., Santa Susana Site Surface Water Expert Panel, and Geosyntec Consultants, 2014. ISRA Performance Monitoring and BMP Monitoring for the Outfalls 008 and 009 Watersheds, 2013/2014 Rainy Season, Santa Susana Field Laboratory, Ventura County, California (Order No. R4-2010-0090; NPDES No. CA0001309, CI No. 6027; and California Water Code Section 13304 Order; NPDES No. CA0001309, CI No. 1111, Site ID No. 2040109). August 29.
15. MWH Americas, Inc., Santa Susana Site Surface Water Expert Panel, and Geosyntec Consultants, 2015. ISRA Performance Monitoring and BMP Monitoring for the Outfalls 008 and 009 Watersheds, 2014/2015 Rainy Season, Santa Susana Field Laboratory, Ventura County, California (Order No. R4-2010-0090; NPDES No. CA0001309, CI No. 6027; and California Water Code Section 13304 Order; NPDES No. CA0001309, CI No. 1111, Site ID No. 2040109). August 28.
16. United States Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry (ATSDR), 2002. Toxicological Profile for Di(2-ethylhexyl)phthalate. September.



DESCRIPTIONS OF DISCHARGE OUTFALL LOCATIONS	
NPDES OUTFALL	DESCRIPTION
001	Stormwater, South Slope
002	Stormwater, South Slope
003	Stormwater, Radioactive Material Handling Facility
004	Stormwater, Sodium Reactor Experiment Area
005	Stormwater, Sodium Burn Pit 1
006	Stormwater, Sodium Burn Pit 2
007	Stormwater, Building 100
008	Stormwater, Happy Valley
009	Stormwater, WS-13 Drainage (Northern Drainage)
010	Stormwater, Building 203
011	Stormwater, Perimeter Pond (Treated at SWTS)
012	Stormwater, Alfa Test Stand (Removed from permit)
013	Stormwater, Bravo Test Stand (Removed from permit)
014	Stormwater, Advanced Propulsion Test Facility (Removed from permit)
015	STP-1 (Removed from permit)
016	STP-2 (Removed from permit)
017	STP-3 (Removed from permit)
018	Stormwater, R-2 Pond Spillway (Treated at SWTS)
019	Treated Groundwater (GET System)
020	Treated Groundwater (GET System) (may not be constructed)

- NOTES:
1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE
 2. APTF = ADVANCED PROPULSION TEST FACILITY
 3. DOE = DEPARTMENT OF ENERGY
 4. ELV = EXPENDABLE LAUNCH VEHICLE
 5. IEL = INSTRUMENT AND EQUIPMENT LABORATORIES
 6. ISRA = INTERIM SOURCE REMOVAL ACTION
 7. LOX = LIQUID OXYGEN
 8. NASA = NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
 9. RMMP = RESTORATION MITIGATION MONITORING PLAN
 10. SPA = STORABLE PROPELLANT AREA
 11. SWTS = STORM WATER TREATMENT SYSTEM

LEGEND

19	ACTIVE NPDES OUTFALL LOCATION	●	ISRA PERFORMANCE MONITORING LOCATION	■	CHECK STRUCTURE - MOSTLY NATURAL SANDSTONE, SOME RIP RAP	---	DRAINAGE	■	ISRA EXCAVATION BOUNDARY	■	EXISTING BUILDING/STRUCTURE
17	FORMER NPDES OUTFALL LOCATION	▲	BMP MONITORING LOCATION	■	CHECK STRUCTURE - RIP RAP	---	ASPHALT SWALE	■	VEHICLE PARKING AREA	■	FORMER BUILDING FOOTPRINT
20	POSSIBLE FUTURE NPDES OUTFALL LOCATION	●	SPECIAL STUDIES LOCATION	■	CHECK STRUCTURE - VEGETATED RIP RAP	---	PAVED ROAD	■	BIOFILTER	■	CONCRETE SLAB IN PLACE
●	SLOPE DRAIN DISCHARGE POINT TO NORTHERN DRAINAGE	■	GROUNDWATER EXTRACTION AND TREATMENT (GET) SYSTEM	■	SLOPE DRAIN WITH UNDERLYING CHECK STRUCTURE AND ENERGY DISSIPATING GRAVEL AT INFLUENT END	---	DIRT ROAD	■	BIOSWALE	■	SANTA SUSANA SITE PROPERTY BOUNDARY
CM-12	CULVERT MODIFICATION	■	STORMWATER TREATMENT SYSTEM	■	25' ELEVATION CONTOUR	---	STORMWATER CONVEYANCE PIPELINE WITH FLOW DIRECTION	■	NORTHERN DRAINAGE	■	ADMINISTRATIVE AREA BOUNDARY
◆	GROUNDWATER MONITORING WELL	■	STUDY AREA			---	SURFACE WATER POND				

HALEY ALDRICH

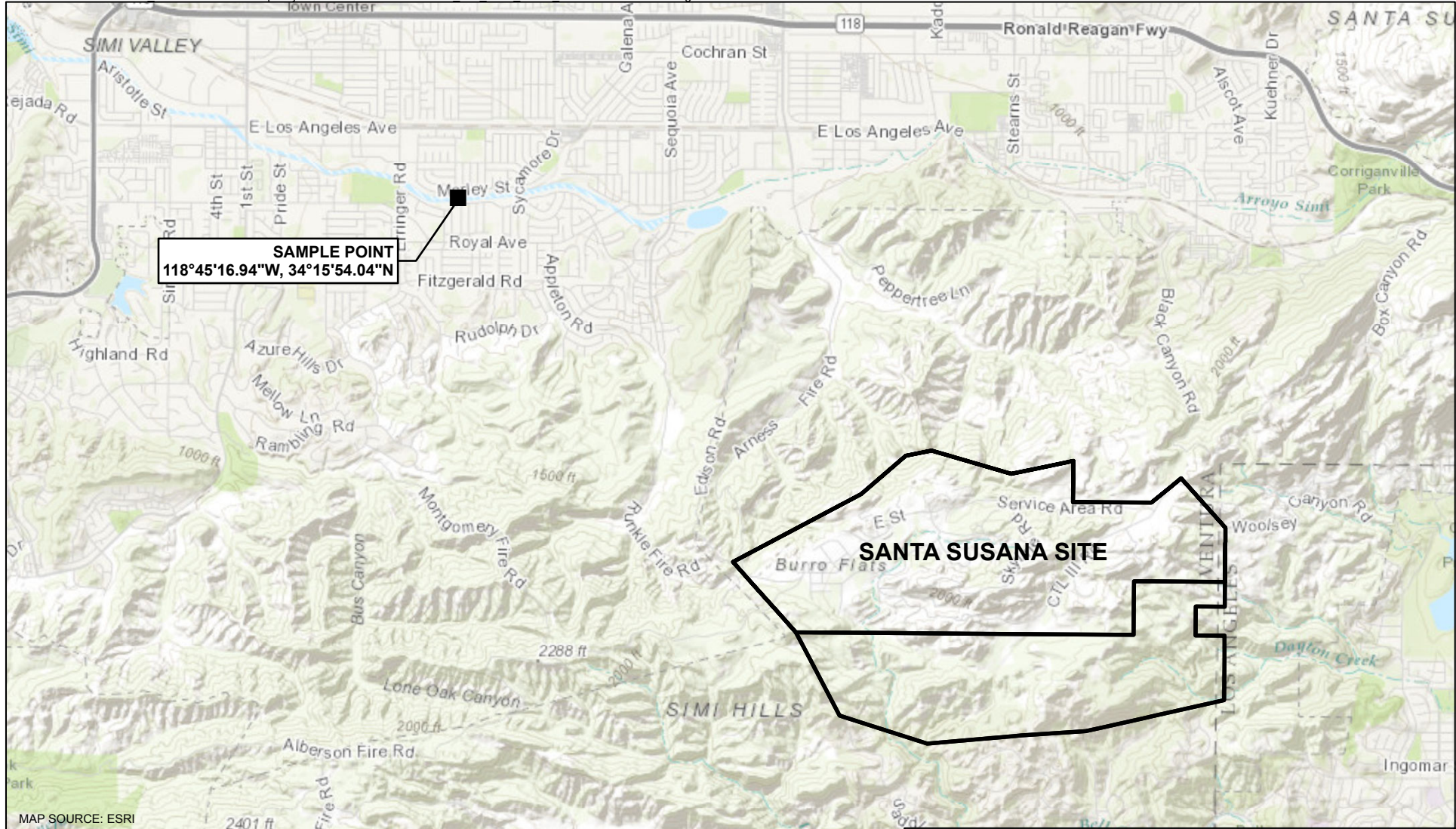
NPDES PERMIT COMPLIANCE FIRST QUARTER 2016 DISCHARGE MONITORING REPORT THE BOEING COMPANY VENTURA COUNTY, CALIFORNIA

SITE MAP WITH STORMWATER COLLECTION AND CONVEYANCE SYSTEM AND SITE FEATURES

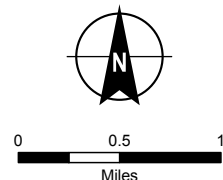
SCALE: AS SHOWN
MAY 2016

FIGURE 1

G:\40458_SSF\GIS\MapProjects\2016-04\10_DM\40458_091_0001_OUTFALL_LOCATIONS.mxd



MAP SOURCE: ESRI



**HALEY
ALDRICH**

NPDES PERMIT COMPLIANCE FIRST QUARTER 2016
DISCHARGE MONITORING REPORT
THE BOEING COMPANY
VENTURA COUNTY, CALIFORNIA

ARROYO SIMI-FRONTIER PARK
(RSW-002) SAMPLING LOCATION

MAY 2016

FIGURE 2

APPENDIX A

First Quarter 2016 Rainfall Data Summary

**TABLE A
DAILY RAINFALL SUMMARY**

**THE BOEING COMPANY
NPDES PERMIT CA0001309**

Station: AREA 1
Parameter: Rain
Month/Year: January 2016

HOOR OF THE DAY

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	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
	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
	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
	4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5	0.00	0.00	0.00	0.00	0.00	0.01	0.06	0.16	0.22	0.40	0.18	0.50	0.10	0.07	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.72
	6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.07	0.13	0.50	0.60	0.06	0.06	0.01	0.10	0.17	0.00	0.00	0.00	0.00	0.00	0.02	1.73
	7	0.09	0.09	0.02	0.03	0.10	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.39
	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
	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	0.01	0.00	0.00	0.00	0.00	0.01
	10	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
	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
	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
	13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00p	0.00p	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	0.00p	0.00p	0.00p	0.00p	0.00p	0.00p	0.00p	0.00p	0.00p	0.00p	0.00p	0.00p	0.00p	0.00p	0.00p	0.00
	15	0.00p	0.00p	0.00p	0.00p	0.00p	0.00p	0.00p	0.00p	0.01p	0.01p	0.00p	0.00p	0.00p	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
	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
	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
	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	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
	19	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.08	0.02	0.00	0.00	0.01	0.00	0.01	0.01	0.00	0.01	0.16
	20	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
	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
	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
	23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	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
	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
	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
	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
	31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.10	0.12	0.11	0.22	0.27	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.86

Flags: p = Power failure, invalid hour. The onsite B1436 rain gauge confirmed that 0.01" of rainfall was recorded during hours 9 and 10 for a total of 0.02" on January 15, 2016.

**TABLE A
DAILY RAINFALL SUMMARY**

**THE BOEING COMPANY
NPDES PERMIT CA0001309**

Station: AREA 1
Parameter: Rain
Month/Year: February 2016

HOUR OF THE DAY

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Total	
D A Y O F T H E M O N T H	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
	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
	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
	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
	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
	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
	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
	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
	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	0.02	0.01	0.06	0.04	0.07	0.08	0.10	0.02	0.00	0.00	0.02	0.42
	18	0.01	0.01	0.00	0.01	0.04	0.07	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	0.15
	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
	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
	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
	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
	23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

**TABLE A
DAILY RAINFALL SUMMARY**

**THE BOEING COMPANY
NPDES PERMIT CA0001309**

Station: AREA 1
Parameter: Rain
Month/Year: March 2016

HOURLY OF THE DAY

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Total
D	1	0.00p	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
A	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.21d	0.00p	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Y	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
O	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
F	5	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.04	0.02	0.04	0.16
T	6	0.08	0.09	0.19	0.27	0.29	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	0.92
H	7	0.00	0.00	0.00	0.00	0.00	0.22	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	0.49
E	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
M	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
O	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
N	11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.34	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.44
T	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
H	13	0.00	0.00	0.00p	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E	14	0.00	0.00	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	0.01
M	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
O	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
N	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
T	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
H	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
M	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
O	21	0.00	0.00	0.00	0.00	0.00	0.00p	0.00	0.00	0.00	0.00	0.00	0.00	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	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
T	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
H	24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18d	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	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
	28	0.00	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	0.00	0.02
	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
	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	0.07	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08
	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

Flags: d = Marked down, invalid hour
p = Power failure, invalid hour

APPENDIX B

First Quarter 2016 Liquid Waste Shipment Summary Table

**TABLE B
LIQUID WASTE SHIPMENTS**

**FIRST QUARTER 2016 REPORTING SUMMARY
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY
NPDES PERMIT CA0001309**

DATE SHIPPED	MANIFEST OR JOB TRACKING NUMBER	TYPE OF LIQUID	QTY.	UNITS	TRANSPORTER 1	TRANSPORTER 2	DESTINATION
1/8/2016	009041527FLE	NON RCRA HAZARDOUS WASTE LIQUIDS (OIL, WATER)	5	P	Clean Harbors Environmental Services, Inc. 42 Longwater Drive Norwell, MA 02061	Safety-Kleen Systems, Inc. 2600 N Central Expressway, Ste. 400 Richardson, TX 75080	Clean Harbors Wilmington LLC 1737 East Denni Street Wilmington, CA 90744
	AA0092	NON HAZARDOUS, NON D.O.T. REGULATED (WATER)	251	P		SLT Express Way Incorporated 17235 N 75th Avenue, Ste. D175 Glendale, AZ 85308-8588	Clean Harbors - Grassy Mountain LLC 3 Miles East 7 Miles North of Knotts Grantsville, UT 34029
2/4/2016	AA0326	NON HAZARDOUS, NON D.O.T. REGULATED (WATER)	31	P			
2/18/2016	014500306JJK	HAZARDOUS WASTE LIQUID (TRICHLOROETHYLENE)	5800	G	USA Waste of California, Inc. dba ENVIROSERV 15902 S Main Street Gardena, CA 90248-2551	n/a	Evoqua Water Technologies LLC 5375 South Boyle Avenue Los Angeles, CA 90058
2/24/2016	009513122FLE	WASTE CORROSIVE LIQUID (NITRIC ACID (HNO3))	5	P	Clean Harbors Environmental Services, Inc. 42 Longwater Drive Norwell, MA 02061	Safety-Kleen Systems, Inc. 2600 N Central Expressway, Ste. 400 Richardson, TX 75080	Clean Harbors Wilmington LLC 1737 East Denni Street Wilmington, CA 90744
		WASTE CORROSIVE LIQUID (HYDROCHLORIC ACID)	13	P			
3/3/2016	009513194FLE	HAZARDOUS WASTE LIQUID (TRICHLOROETHYLENE)	110	P		SLT Express Way Incorporated 17235 N 75th Avenue, Ste. D175 Glendale, AZ 85308-8588	Clean Harbors - Aragonite LLC 11600 North Aptus Road Grantsville, UT 34029
		HAZARDOUS WASTE LIQUID (TRICHLOROETHYLENE)	2132	P			
	009513196FLE	NON RCRA HAZARDOUS WASTE LIQUID (OIL, WATER)	5	P		n/a	Clean Harbors Wilmington LLC 1737 East Denni Street Wilmington, CA 90744
	AA0549	NON HAZARDOUS, NON D.O.T. REGULATED (WATER)	2335	P		SLT Express Way Incorporated 17235 N 75th Avenue, Ste. D175 Glendale, AZ 85308-8588	Clean Harbors - Grassy Mountain LLC 3 Miles East 7 Miles North of Knotts Grantsville, UT 34029
NON HAZARDOUS, NON D.O.T. REGULATED (WATER)		5	P				
3/9/2016	015447657JJK	WASTE CORROSIVE LIQUID (LIMESTONE, WATER)	75	G	USA Waste of California, Inc. dba ENVIROSERV 15902 S Main Street Gardena, CA 90248-2551		DeMenno/Kerdoon 2000 N. Alameda Street Compton, CA 90222
3/30/2016	009512504FLE	NON RCRA HAZARDOUS WASTE LIQUIDS (WATER TREATMENT CHEMICAL AND MINERAL OIL)	171	P	Clean Harbors Environmental Services, Inc. 42 Longwater Drive Norwell, MA 02061	n/a	Clean Harbors Wilmington LLC 1737 East Denni Street Wilmington, CA 90744
	009512505FLE	CORROSIVE LIQUIDS, TOXIC (SODIUM HYDROXIDE, SODIUM CYANIDE)	125	P			Clean Harbors - Aragonite LLC 11600 North Aptus Road Grantsville, UT 34029
		HAZARDOUS WASTE LIQUID (TRICHLOROETHYLENE)	929	P			
	AA0771	NON HAZARDOUS, NON D.O.T. REGULATED (WATER)	14	P			
NON HAZARDOUS, NON D.O.T. REGULATED (WATER)		651	P		Clean Harbors - Grassy Mountain LLC 3 Miles East 7 Miles North of Knotts Grantsville, UT 34029		

**TABLE B
LIQUID WASTE SHIPMENTS**

**FIRST QUARTER 2016 REPORTING SUMMARY
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY
NPDES PERMIT CA0001309**

DATE SHIPPED	MANIFEST OR JOB TRACKING NUMBER	TYPE OF LIQUID	QTY.	UNITS	TRANSPORTER 1	TRANSPORTER 2	DESTINATION
1/5/2016	13161	FLUSH WATER W/ TRACE SEWAGE	5000	G	Southwest Processors, Inc. 4120 Bandini Boulevard Vernon, CA 90058	n/a	Southwest Processors, Inc. 4120 Bandini Boulevard Vernon, CA 90058
	13162	FLUSH WATER W/ TRACE SEWAGE	5000	G			
1/12/2016	13218	FLUSH WATER W/ TRACE SEWAGE	5000	G			
	13219	FLUSH WATER W/ TRACE SEWAGE	5000	G			
1/26/2016	13296	FLUSH WATER W/ TRACE SEWAGE	5000	G			
	13297	FLUSH WATER W/ TRACE SEWAGE	5000	G			
2/10/2016	13369	FLUSH WATER W/ TRACE SEWAGE	5000	G			
	13370	FLUSH WATER W/ TRACE SEWAGE	5000	G			
2/24/2016	13443	FLUSH WATER W/ TRACE SEWAGE	5000	G			
	13444	FLUSH WATER W/ TRACE SEWAGE	5000	G			
3/8/2016	13524	FLUSH WATER W/ TRACE SEWAGE	5000	G			
	13525	FLUSH WATER W/ TRACE SEWAGE	5000	G			
3/22/2016	14102	FLUSH WATER W/ TRACE SEWAGE	5000	G			
	14103	FLUSH WATER W/ TRACE SEWAGE	5000	G			

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

**TABLE B
SOLID WASTE SHIPMENTS**

**FIRST QUARTER 2016 REPORTING SUMMARY
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY
NPDES PERMIT CA0001309**

DATE SHIPPED	MANIFEST OR JOB TRACKING NUMBER	TYPE OF SOLID	QTY.	UNITS	TRANSPORTER 1	TRANSPORTER 2	TRANSPORTER 3	DESTINATION
01/08/2016	009041527FLE	NON-RCRA HAZARDOUS WASTE, SOLID (DEBRIS/OIL)	5	P	Clean Harbors Environmental Services, Inc. 42 Longwater Drive Norwell, MA 02061	Safety-Kleen Systems, Inc. 2600 N Central Expressway, Ste. 400 Richardson, TX 75080	n/a	Clean Harbors Wilmington LLC 1737 East Denni Street Wilmington, CA 90744
02/24/2016	009513124FLE	CORROSIVE, BASIC, INORGANIC (POTASSIUM HYDROXIDE, SODIUM HYDROXIDE)	42	P		SLT Express Way Incorporated 17235 N 75th Avenue, Ste. D175 Glendale, AZ 85308-8588	Clean Harbors Environmental Services, Inc. 42 Longwater Drive Norwell, MA 02061	Clean Harbors - Grassy Mountain LLC 3 Miles East 7 Miles North of Knotts Grantsville, UT 34029
	009513124FLE	NON-RCRA HAZARDOUS WASTE (DEBRIS, OIL)	29	P		Safety-Kleen Systems, Inc. 2600 N Central Expressway, Ste. 400 Richardson, TX 75080	n/a	Clean Harbors Wilmington LLC 1737 East Denni Street Wilmington, CA 90744
	009513122FLE	CORROSIVE, ACIDIC, INORGANIC (DEBRIS, HYDROCHLORIC ACID)	64	P				
03/03/2016	009513194FLE	WASTE ENVIRONMENTALLY HAZARDOUS SUBSTANCES (TRICHLOROETHYLENE, PERCHLOROETHYLENE)	165	P		SLT Express Way Incorporated 17235 N 75th Avenue, Ste. D175 Glendale, AZ 85308-8588	Clean Harbors Environmental Services, Inc. 42 Longwater Drive Norwell, MA 02061	Clean Harbors - Aragonite LLC 11600 North Aptus Road Grantsville, UT 34029
		WASTE ENVIRONMENTALLY HAZARDOUS SUBSTANCES (TRICHLOROETHYLENE, PERCHLOROETHYLENE)	5	P				
		NON-RCRA HAZARDOUS WASTE (ALUMINUM SULFATE SOLID)	370	P				
		NON-RCRA HAZARDOUS WASTE (ALUMINUM SULFATE SOLID)	3328	P				
		NON-RCRA HAZARDOUS WASTE (ALUMINUM SULFATE SOLID)	466	G				
03/30/2016	009512504FLE	CORROSIVE, BASIC (POTASSIUM HYDROXIDE, SODIUM HYDROXIDE)	60	P		n/a	n/a	Clean Harbors Wilmington LLC 1737 East Denni Street Wilmington, CA 90744
		CORROSIVE, ACIDIC, INORGANIC (DEBRIS, HYDROCHLORIC ACID)	106	P				

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

APPENDIX C

First Quarter 2016 Discharge Monitoring Data Summary Tables

**FIRST QUARTER 2016
REPORTING SUMMARY NOTES
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY
NPDES PERMIT CA0001309**

Notes:

1. TCDD 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 DNQ, as specified on Page 26 of the NPDES permit.
2. Temperature, total residual chlorine (TRC), dissolved oxygen (DO), and pH are measured in the field and are not validated.
3. All of the following abbreviations and/or notes may not occur on every table.
4. 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.

-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 counting 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 permit limit established for daily maximum or monthly average
<(value)	Analyte not detected at a concentration greater than or equal to the DL, MDL, or 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 permit.
*1	Improper preservation of sample
*2	The ICP/MS 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

**FIRST QUARTER 2016
REPORTING SUMMARY NOTES
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY
NPDES PERMIT CA0001309**

*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)
* II *III	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 permit to be sampled and analyzed over the reporting period (annual, semi-annual, etc.)
Avg	Average
B	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
C	Calibration %RSD or %D were noncompliant
Comp	Composite sample type
C5	Calibration verification %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
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample

**FIRST QUARTER 2016
REPORTING SUMMARY NOTES
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY
NPDES PERMIT CA0001309**

F1	MS and/or MSD Recovery is outside acceptance limits
ft/sec	Feet per second
G	Gallons
gpd	Gallons per day
H	Holding time was exceeded
I	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 (MQL), but > than MDL
K	The sample dilution's set-up did not meet the oxygen depletion criteria of at least 2 mg/l. Therefore, the reported result is an estimated value only.
L	Laboratory control sample %R was outside control limits
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit
L2	The laboratory control sample %R was below the method control limits
LBS/DAY	Pounds per day
LCS	Laboratory control standard
LCSD	Laboratory control standard duplicate
LQ	LCS/LCSD recovery above method control limits
M1	Matrix spike (MS) and/or MS duplicate were above the acceptance limits due to sample matrix interference
M2	The MS and/or MS duplicate were below the acceptance limits due to sample matrix interference
Max	Maximum
MB	Analyte present in the method blank
MDA/MDC	Minimum detectable activity/ minimum detectable concentration
MDL	Method Detection Limit
Meas	Measure sample type
MFL	Million fibers per liter
MGD	Million gallons per day
MHA	Due to high level of analyte in the sample, the MS/MSD calculation does not provide useful spike recovery information.
mg/L	Milligrams per liter
mg/kg	Milligrams per kilogram
ml/L/hr	Milliliters per liter per hour

**FIRST QUARTER 2016
REPORTING SUMMARY NOTES
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY
NPDES PERMIT CA0001309**

MPN/100 ml	Most probable number per 100 milliliters
MQL	Method quantitation limit
MS	Matrix spike
MSD	Matrix spike duplicate
NA	Not applicable; no permit limit established for the constituent and/or outfall
ND	Analyte not detected
NM	Not measured or determined or MDAs are not calculated as there is no statistical method for combining MDAs
NTU	Nephelometric turbidity unit
P	Pounds
pCi/L	PicoCuries per liter
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 recovery outside of control limits
Q1	MS/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	(reason code in parentheses) %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
% survival	Percent survival
S	Surrogate recovery was outside control limits
s.u.	Standard Unit
TCDD	2,3,7,8-tetrachlorodibenzo-p-dioxin
TEQ	Toxic equivalent
T	Presumed contamination, as indicated by a detect in the trip blank
TU _c	Toxicity units (chronic)

**FIRST QUARTER 2016
REPORTING SUMMARY NOTES
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY
NPDES PERMIT CA0001309**

U	Result not detected
µg/L	Micrograms per liter
µg/kg	Micrograms per kilogram
UJ	Result not detected at the estimated reporting limit
umhos/cm	Micromhos per centimeter
WHO TEF	World Health Organization toxic equivalency factor
w/out	Without
^	Analysis not completed due to hold time exceedence 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 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 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 ug/L is for the dioxin congener 2,3,7,8-TCDD. TCDD TEQ w/out DNQ Values is 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). There are 17 dioxin congeners.

OUTFALL 002 (SOUTH SLOPE)

FIRST QUARTER 2016 REPORTING SUMMARY
 THE BOEING COMPANY
 SANTA SUSANA FIELD LABORATORY
 NPDES PERMIT CA0001309

January 1 through March 31, 2016

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	SAMPLE FREQUENCY	02/04/2016 (Grab) - 02/05/2016 (Composite)		
				SAMPLE TYPE	RESULT	VALIDATION QUALIFIER
Flow	MGD	117.83/-	1/Discharge	Meas	0.809444	*
CONVENTIONAL POLLUTANTS						
Biochemical Oxygen Demand (BOD)(5-day@20 Deg. C)	mg/L	30/-	1/Discharge	Composite	1.5	J (DNQ)
Oil & Grease	mg/L	15/-	1/Discharge	Grab	ND < 1.3	UJ (L1)
pH (Field)	s.u.	6.5-8.5/-	1/Discharge	Grab	6.98	*
Total Suspended Solids	mg/L	45/-	1/Discharge	Composite	1.1	--
PRIORITY POLLUTANTS						
1,1-Dichloroethene	ug/L	6.0/-	1/Discharge	Grab	ND < 0.25	U
1,2-Dichloroethane	ug/L	0.5/-	1/Discharge	Grab	ND < 0.25	U
2,4-Dinitrotoluene	ug/L	18/-	1/Discharge	Composite	ND < 1.89	UJ (C)
2,4,6-Trichlorophenol	ug/L	13/-	1/Discharge	Composite	ND < 0.472	U
alpha-BHC	ug/L	0.03/-	1/Discharge	Composite	ND < 0.0024	U
Antimony	ug/L	6.0-	1/Year	Composite	ND < 0.51	U (B)
Arsenic	ug/L	10.0/-	1/Year	Composite	ND < 5.0	U
Beryllium	ug/L	4.0/-	1/Year	Composite	ND < 1.0	U
Bis (2-Ethylhexyl) Phthalate	ug/L	4.0/-	1/Discharge	Composite	ND < 1.89	U
Cadmium	ug/L	(4.0) 3.1/- ^(a)	1/Discharge	Composite	ND < 0.25	U
Chromium VI	ug/L	16/-	1/Year	Composite	ND < 0.25	U
Copper	ug/L	14/-	1/Discharge	Composite	1.3	J (DNQ)
Cyanide	ug/L	8.5/-	1/Discharge	Composite	ND < 2.5	U
Lead	ug/L	5.2/-	1/Discharge	Composite	ND < 0.50	U
Mercury	ug/L	0.1/-	1/Discharge	Composite	ND < 0.10	U
Nickel	ug/L	94/-	1/Year	Composite	ND < 5.0	U
N-Nitrosodimethylamine	ug/L	16/-	1/Discharge	Composite	ND < 0.943	U
Pentachlorophenol	ug/L	16.5/-	1/Discharge	Composite	ND < 0.943	U
Selenium	ug/L	(5) 8.2/- ^(a)	1/Discharge	Composite	ND < 0.50	U
Silver	ug/L	4.1/-	1/Year	Composite	ND < 0.50	*
Thallium	ug/L	2.0/-	1/Year	Composite	ND < 0.50	U
Trichloroethene	ug/L	5.0/-	1/Discharge	Grab	ND < 0.25	U
Zinc	ug/L	119/-	1/Discharge	Composite	ND < 10	U
NON-CONVENTIONAL POLLUTANTS						
Ammonia	mg/L	10.1/-	1/Discharge	Composite	ND < 0.100	U
Barium	mg/L	1.0/-	1/Year	Composite	0.051	--
Chloride	mg/L	150/-	1/Discharge	Composite	19	J- (Q)
Chlorine, Total Residual	mg/L	0.1/-	1/Year	Grab	0.01	*
Chronic Toxicity	Pass or % Effect	Pass or % Effect <50	1st & 2nd rain event/Year	Composite	Pass	*
Detergents (as MBAS)	mg/L	0.5/-	1/Discharge	Composite	0.1	--
Fluoride	mg/L	1.6/-	1/Year	Composite	0.25	J (DNQ)
Iron	mg/L	0.3/-	1/Year	Composite	0.021	J (DNQ)
Manganese	ug/L	50/-	1/Year	Composite	ND < 10	U
Nitrate	mg/L	8/-	1/Discharge	Composite	0.36	--
Nitrate + Nitrite as Nitrogen (N)	mg/L	8/-	1/Discharge	Composite	0.46	--
Nitrite	mg/L	1/-	1/Discharge	Composite	0.10	J (DNQ)
Perchlorate	ug/L	6.0/-	1/Discharge	Composite	ND < 0.95	U
Settleable Solids	ml/L	0.3/-	1/Discharge	Grab	ND < 0.10	U
Sulfate	mg/L	300/-	1/Discharge	Composite	240	J- (Q)
Temperature (Field)	deg. F	86/-	1/Discharge	Grab	51.1	*
Total Dissolved Solids	mg/L	950/-	1/Discharge	Composite	550	--
REMAINING PRIORITY POLLUTANTS						
1,1,1-Trichloroethane	ug/L	-/-	1/Year	Grab	ND < 0.25	U
1,1,2,2-Tetrachloroethane	ug/L	-/-	1/Year	Grab	ND < 0.25	U
1,1,2-Trichloroethane	ug/L	-/-	1/Year	Grab	ND < 0.25	U
1,1-Dichloroethane	ug/L	-/-	1/Year	Grab	ND < 0.25	U
1,2-Dichlorobenzene	ug/L	-/-	1/Year	Composite	ND < 0.189	U
1,2-Dichlorobenzene	ug/L	-/-	1/Year	Grab	ND < 0.25	U
1,2-Dichloropropane	ug/L	-/-	1/Year	Grab	ND < 0.25	U
1,2-Diphenylhydrazine/Azobenzene	ug/L	-/-	1/Year	Composite	ND < 0.472	U
1,2,4-Trichlorobenzene	ug/L	-/-	1/Year	Composite	ND < 0.472	U
1,3-Dichlorobenzene	ug/L	-/-	1/Year	Composite	ND < 0.189	U

See attached notes for abbreviations, definitions, and other explanations for the data presented.

^(a)Based on peak LA River flow, sampling event is a dry discharge.

OUTFALL 002 (SOUTH SLOPE)

FIRST QUARTER 2016 REPORTING SUMMARY
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY
NPDES PERMIT CA0001309

January 1 through March 31, 2016

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	SAMPLE FREQUENCY	02/04/2016 (Grab) - 02/05/2016 (Composite)		
				SAMPLE TYPE	RESULT	VALIDATION QUALIFIER
1,3-Dichlorobenzene	ug/L	-/-	1/Year	Grab	ND < 0.25	U
1,4-Dichlorobenzene	ug/L	-/-	1/Year	Composite	ND < 0.189	U
1,4-Dichlorobenzene	ug/L	-/-	1/Year	Grab	ND < 0.25	U
2,4-Dichlorophenol	ug/L	-/-	1/Year	Composite	ND < 0.943	U
2,4-Dimethylphenol	ug/L	-/-	1/Year	Composite	ND < 0.943	U
2,4-Dinitrophenol	ug/L	-/-	1/Year	Composite	ND < 1.89	UJ (C)
2,6-Dinitrotoluene	ug/L	-/-	1/Year	Composite	ND < 1.89	U
2-Chloroethylvinylether	ug/L	-/-	1/Year	Grab	ND < 1.0	U
2-Chloronaphthalene	ug/L	-/-	1/Year	Composite	ND < 0.189	U
2-Chlorophenol	ug/L	-/-	1/Year	Composite	ND < 0.472	U
2-Methyl-4,6-Dinitrophenol	ug/L	-/-	1/Year	Composite	ND < 1.89	UJ (C)
2-Nitrophenol	ug/L	-/-	1/Year	Composite	ND < 0.943	U
3,3'-Dichlorobenzidine	ug/L	-/-	1/Year	Composite	1.89	R (Q)
4,4'-DDD	ug/L	-/-	1/Year	Composite	ND < 0.0038	U
4,4'-DDE	ug/L	-/-	1/Year	Composite	ND < 0.0029	U
4,4'-DDT	ug/L	-/-	1/Year	Composite	ND < 0.0038	U
4-Bromophenylphenylether	ug/L	-/-	1/Year	Composite	ND < 0.472	U
4-Chloro-3-methylphenol	ug/L	-/-	1/Year	Composite	ND < 0.189	U
4-Chlorophenylphenylether	ug/L	-/-	1/Year	Composite	ND < 0.189	U
4-Nitrophenol	ug/L	-/-	1/Year	Composite	ND < 1.89	UJ (C)
Acenaphthene	ug/L	-/-	1/Year	Composite	ND < 0.189	U
Acenaphthylene	ug/L	-/-	1/Year	Composite	ND < 0.189	U
Acrolein	ug/L	-/-	1/Year	Grab	ND < 2.5	U
Acrylonitrile	ug/L	-/-	1/Year	Grab	ND < 1.0	U
Aldrin	ug/L	-/-	1/Year	Composite	ND < 0.0014	U
Anthracene	ug/L	-/-	1/Year	Composite	ND < 0.189	U
Aroclor 1016	ug/L	-/-	1/Year	Composite	ND < 0.24	U
Aroclor 1221	ug/L	-/-	1/Year	Composite	ND < 0.24	U
Aroclor 1232	ug/L	-/-	1/Year	Composite	ND < 0.24	U
Aroclor 1242	ug/L	-/-	1/Year	Composite	ND < 0.24	U
Aroclor 1248	ug/L	-/-	1/Year	Composite	ND < 0.24	U
Aroclor 1254	ug/L	-/-	1/Year	Composite	ND < 0.24	U
Aroclor 1260	ug/L	-/-	1/Year	Composite	ND < 0.24	U
Benzene	ug/L	-/-	1/Year	Grab	ND < 0.25	U
Ben-zidine	ug/L	-/-	1/Year	Composite	ND < 4.72	R (Q)
Benzo(a)anthracene	ug/L	-/-	1/Year	Composite	ND < 1.89	U
Benzo(a)pyrene	ug/L	-/-	1/Year	Composite	ND < 0.472	U
Benzo(b)fluoranthene	ug/L	-/-	1/Year	Composite	ND < 0.943	U
Benzo(g,h,i)Perylene	ug/L	-/-	1/Year	Composite	ND < 1.89	U
Benzo(k)fluoranthene	ug/L	-/-	1/Year	Composite	ND < 0.236	U
beta-BHC	ug/L	-/-	1/Year	Composite	ND < 0.0038	U
Bis (2-Chloroethoxy) Methane	ug/L	-/-	1/Year	Composite	ND < 0.189	U
Bis (2-Chloroethyl) Ether	ug/L	-/-	1/Year	Composite	ND < 0.189	U
Bis (2-Chloroisopropyl) Ether	ug/L	-/-	1/Year	Composite	ND < 0.189	U
Bromodichloromethane	ug/L	-/-	1/Year	Grab	ND < 0.25	U
Bromoform	ug/L	-/-	1/Year	Grab	ND < 0.40	U
Bromomethane	ug/L	-/-	1/Year	Grab	ND < 0.25	U
Butylbenzylphthalate	ug/L	-/-	1/Year	Composite	ND < 1.89	U
Carbon Tetrachloride	ug/L	-/-	1/Year	Grab	ND < 0.25	U
Chlordane	ug/L	-/-	1/Year	Composite	ND < 0.077	U
Chlorobenzene	ug/L	-/-	1/Year	Grab	ND < 0.25	U
Chloroethane	ug/L	-/-	1/Year	Grab	ND < 0.40	U
Chloroform	ug/L	-/-	1/Year	Grab	ND < 0.25	U
Chloromethane	ug/L	-/-	1/Year	Grab	ND < 0.25	U
Chromium	ug/L	-/-	1/Year	Composite	ND < 2.5	U
Chrysene	ug/L	-/-	1/Year	Composite	ND < 0.189	U
cis-1,3-Dichloropropene	ug/L	-/-	1/Year	Grab	ND < 0.25	U
delta-BHC	ug/L	-/-	1/Year	Composite	ND < 0.0033	U
Dibenzo(a,h)anthracene	ug/L	-/-	1/Year	Composite	ND < 0.236	U
Dibromochloromethane	ug/L	-/-	1/Year	Grab	ND < 0.25	U
Dieldrin	ug/L	-/-	1/Year	Composite	ND < 0.0019	U

See attached notes for abbreviations, definitions, and other explanations for the data presented.

^(a)Based on peak LA River flow, sampling event is a dry discharge.

OUTFALL 002 (SOUTH SLOPE)

FIRST QUARTER 2016 REPORTING SUMMARY
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY
NPDES PERMIT CA0001309

January 1 through March 31, 2016

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	SAMPLE FREQUENCY	02/04/2016 (Grab) - 02/05/2016 (Composite)		
				SAMPLE TYPE	RESULT	VALIDATION QUALIFIER
Diethylphthalate	ug/L	-/-	1/Year	Composite	ND < 0.472	U
Dimethylphthalate	ug/L	-/-	1/Year	Composite	ND < 0.236	U
Di-n-butylphthalate	ug/L	-/-	1/Year	Composite	ND < 0.943	U
Di-n-octylphthalate	ug/L	-/-	1/Year	Composite	ND < 1.89	U
Endosulfan I	ug/L	-/-	1/Year	Composite	ND < 0.0029	U
Endosulfan II	ug/L	-/-	1/Year	Composite	ND < 0.0019	U
Endosulfan Sulfate	ug/L	-/-	1/Year	Composite	ND < 0.0029	U
Endrin	ug/L	-/-	1/Year	Composite	ND < 0.0019	U
Endrin Aldehyde	ug/L	-/-	1/Year	Composite	ND < 0.0019	U
Ethylbenzene	ug/L	-/-	1/Year	Grab	ND < 0.25	U
Fluoranthene	ug/L	-/-	1/Year	Composite	ND < 0.189	U
Fluorene	ug/L	-/-	1/Year	Composite	ND < 0.189	U
Heptachlor	ug/L	-/-	1/Year	Composite	ND < 0.0029	UJ (C)
Heptachlor Epoxide	ug/L	-/-	1/Year	Composite	ND < 0.0024	U
Hexachlorobenzene	ug/L	-/-	1/Year	Composite	ND < 0.472	U
Hexachlorobutadiene	ug/L	-/-	1/Year	Composite	ND < 0.472	U
Hexachlorocyclopentadiene	ug/L	-/-	1/Year	Composite	ND < 1.89	U
Hexachloroethane	ug/L	-/-	1/Year	Composite	ND < 0.472	U
Indeno(1,2,3-cd)pyrene	ug/L	-/-	1/Year	Composite	ND < 0.943	U
Isophorone	ug/L	-/-	1/Year	Composite	ND < 0.472	U
Lindane (gamma-BHC)	ug/L	-/-	1/Year	Composite	ND < 0.0029	U
Methylene chloride	ug/L	-/-	1/Year	Grab	ND < 0.88	U
m,p-Xylenes	ug/L	-/-	1/Year	Grab	ND < 0.50	U
Naphthalene	ug/L	-/-	1/Year	Composite	ND < 0.472	UJ (C)
Naphthalene	ug/L	-/-	1/Year	Grab	ND < 0.40	U
Nitrobenzene	ug/L	-/-	1/Year	Composite	ND < 0.472	U
N-Nitroso-di-n-propylamine	ug/L	-/-	1/Year	Composite	ND < 0.943	U
N-Nitrosodiphenylamine	ug/L	-/-	1/Year	Composite	ND < 0.472	U
o-Xylene	ug/L	-/-	1/Year	Grab	ND < 0.25	U
Phenanthrene	ug/L	-/-	1/Year	Composite	ND < 0.189	U
Phenol	ug/L	-/-	1/Year	Composite	ND < 0.472	U
Pyrene	ug/L	-/-	1/Year	Composite	ND < 0.189	U
Tetrachloroethene	ug/L	-/-	1/Year	Grab	ND < 0.25	U
Toluene	ug/L	-/-	1/Year	Grab	ND < 0.25	U
Toxaphene	ug/L	-/-	1/Year	Composite	ND < 0.24	U
trans-1,2-Dichloroethene	ug/L	-/-	1/Year	Grab	ND < 0.25	U
trans-1,3-Dichloropropene	ug/L	-/-	1/Year	Grab	ND < 0.25	U
Trichlorofluoromethane	ug/L	-/-	1/Year	Grab	ND < 0.25	U
Vinyl chloride	ug/L	-/-	1/Year	Grab	ND < 0.25	U
Xylenes (Total)	ug/L	-/-	1/Year	Grab	ND < 0.50	U
EFFLUENT MONITORING (NO LIMITATIONS) POLLUTANTS						
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/L	-/-	1/Quarter	Grab	ND < 0.50	U
1,2-Dichloro-1,1,2-trifluoroethane	ug/L	-/-	1/Year	Grab	ND < 1.0	U
1,4-Dioxane	ug/L	-/-	1/Year	Composite	ND < 0.50	U
Boron	mg/L	-/-	1/Year	Composite	0.058	--
cis-1,2-Dichloroethene	ug/L	-/-	1/Year	Grab	0.63	--
Cobalt	ug/L	-/-	1/Year	Composite	ND < 2.5	U
Conductivity	µmhos/cm	-/-	1/Discharge	Grab	750	J- (H)
Cyclohexane	ug/L	-/-	1/Year	Grab	ND < 1.0	U
Dissolved Oxygen	mg/L	-/-	1/Discharge	Grab	10.22	*
E. Coli	MPN/100mL	-/-	1/Year	Grab	180	--
Hardness	mg/L	-/-	1/Year	Composite	250	--
Monomethyl hydrazine	ug/L	-/-	1/Year	Composite	ND < 0.25	R (H)
Total Organic Carbon	mg/L	-/-	1/Year	Composite	7.8	--
Diesel Range Organics (DRO C13-C28)	mg/L	-/-	1/Year	Grab	ND < 0.095	U
Gasoline Range Organics (GRO C4-C12)	mg/L	-/-	1/Year	Grab	ND < 0.025	U
Turbidity	NTU	-/-	1/Discharge	Composite	0.47	J- (H)
Vanadium	ug/L	-/-	1/Year	Composite	ND < 5.0	U

See attached notes for abbreviations, definitions, and other explanations for the data presented.

(a)Based on peak LA River flow, sampling event is a dry discharge.

OUTFALL 002 (SOUTH SLOPE)

FIRST QUARTER 2016 REPORTING SUMMARY
 THE BOEING COMPANY
 SANTA SUSANA FIELD LABORATORY
 NPDES PERMIT CA0001309

January 1 through March 31, 2016

				02/04/2016 (Grab) - 02/05/2016 (Composite)		
ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	SAMPLE FREQUENCY	SAMPLE TYPE	RESULT	VALIDATION QUALIFIER
ADDITIONAL POLLUTANTS						
Antimony, dissolved	ug/L	-/-	Additional	Composite	0.59	J (DNQ)
Arsenic, dissolved	ug/L	-/-	Additional	Composite	ND < 5.0	U
Barium, dissolved	mg/L	-/-	Additional	Composite	0.048	--
Beryllium, dissolved	ug/L	-/-	Additional	Composite	ND < 1.0	U
Boron, dissolved	mg/L	-/-	Additional	Composite	0.056	--
Cadmium, dissolved	ug/L	-/-	Additional	Composite	ND < 0.25	U
Chromium, dissolved	ug/L	-/-	Additional	Composite	ND < 2.5	U
Cobalt, dissolved	ug/L	-/-	Additional	Composite	ND < 2.5	U
Copper, dissolved	ug/L	-/-	Additional	Composite	ND < 1.8	U (B)
Hardness, dissolved	mg/L	-/-	Additional	Composite	240	--
Human Bacteroides	CEs /100 mL	-/-	Additional	Grab	ND	U
Iron, dissolved	mg/L	-/-	Additional	Composite	ND < 0.010	U
Lead, dissolved	ug/L	-/-	Additional	Composite	ND < 0.50	U
Manganese, dissolved	ug/L	-/-	Additional	Composite	ND < 10	U
Mercury, dissolved	ug/L	-/-	Additional	Composite	ND < 0.10	U
Nickel, dissolved	ug/L	-/-	Additional	Composite	ND < 5.0	U
Selenium, dissolved	ug/L	-/-	Additional	Composite	ND < 0.50	U
Silver, dissolved	ug/L	-/-	Additional	Composite	ND < 0.50	*
Thallium, dissolved	ug/L	-/-	Additional	Composite	ND < 0.50	U
Vanadium, dissolved	ug/L	-/-	Additional	Composite	ND < 5.0	U
Zinc, dissolved	ug/L	-/-	Additional	Composite	ND < 10	U

See attached notes for abbreviations, definitions, and other explanations for the data presented.

^(a)Based on peak LA River flow. sampling event is a dry discharge.

OUTFALL 002 (SOUTH SLOPE)

FIRST QUARTER 2016 REPORTING SUMMARY
 THE BOEING COMPANY
 SANTA SUSANA FIELD LABORATORY
 NPDES PERMIT CA0001309

Sample Type Composite
 Sample Date February 5, 2016

ANALYTE	SAMPLE FREQUENCY	LAB MDL (ug/L)	LAB RL (ug/L)	LAB RESULT (ug/L)	VALIDATION QUALIFIER	1998 WHO TEF	BEF Great Lakes Water Quality Initiative	TCDD Equivalent (w/out DNQ Values) (ug/L)
1,2,3,4,6,7,8-HpCDD	1/Discharge	5.90E-07	4.70E-05	3.10E-06	U (B)	0.01	0.05	ND
1,2,3,4,6,7,8-HpCDF	1/Discharge	6.50E-07	4.70E-05	2.30E-06	U (B)	0.01	0.01	ND
1,2,3,4,7,8,9-HpCDF	1/Discharge	9.20E-07	4.70E-05	ND	U	0.01	0.4	ND
1,2,3,4,7,8-HxCDD	1/Discharge	9.20E-07	4.70E-05	ND	U	0.1	0.3	ND
1,2,3,4,7,8-HxCDF	1/Discharge	9.90E-07	4.70E-05	ND	U	0.1	0.08	ND
1,2,3,6,7,8-HxCDD	1/Discharge	8.90E-07	4.70E-05	ND	U	0.1	0.1	ND
1,2,3,6,7,8-HxCDF	1/Discharge	7.70E-07	4.70E-05	ND	U	0.1	0.2	ND
1,2,3,7,8,9-HxCDD	1/Discharge	7.30E-07	4.70E-05	ND	U	0.1	0.1	ND
1,2,3,7,8,9-HxCDF	1/Discharge	5.70E-07	4.70E-05	ND	U	0.1	0.6	ND
1,2,3,7,8-PeCDD	1/Discharge	1.10E-06	4.70E-05	ND	U	1.0	0.9	ND
1,2,3,7,8-PeCDF	1/Discharge	1.10E-06	4.70E-05	ND	U	0.05	0.2	ND
2,3,4,6,7,8-HxCDF	1/Discharge	5.80E-07	4.70E-05	ND	U	0.1	0.7	ND
2,3,4,7,8-PeCDF	1/Discharge	1.30E-06	4.70E-05	ND	U	0.5	1.6	ND
2,3,7,8-TCDD	1/Discharge	7.10E-07	9.40E-06	ND	U	1.0	1.0	ND
2,3,7,8-TCDF	1/Discharge	8.10E-07	9.40E-06	ND	U	0.1	0.8	ND
OCDD	1/Discharge	1.00E-06	9.40E-05	1.80E-05	U (B)	0.0001	0.01	ND
OCDF	1/Discharge	7.90E-07	9.40E-05	4.20E-06	U (B)	0.0001	0.02	ND
TCDD TEQ w/out DNQ Values								ND

TCDD TEQ (PRIORITY POLLUTANTS) PERMIT LIMIT = 2.80E-08

See attached notes for abbreviations, definitions, and other explanations for the data presented.

OUTFALL 002 (SOUTH SLOPE)

FIRST QUARTER 2016 REPORTING SUMMARY
 THE BOEING COMPANY
 SANTA SUSANA FIELD LABORATORY
 NPDES PERMIT CA0001309

January 1 through March 31, 2016

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	SAMPLE FREQUENCY	2/05/2016 (Composite)		
				RESULT	MDA	VALIDATION QUALIFIER
NON-CONVENTIONAL POLLUTANTS						
Gross Alpha	pCi/L	15/-	1/Discharge	0.589 ± 1.16	2.1	UJ (C,Q)
Gross Beta	pCi/L	50/-	1/Discharge	3.34 ± 1.27	1.7	J (B)
Total Combined Radium-226 & Radium 228	pCi/L	5.0/-	1/Discharge	0.123 ± 0.230	NM	UJ (B,C)
Strontium-90	pCi/L	8.0/-	1/Discharge	-0.167 ± 0.337	0.627	U
Tritium	pCi/L	20000/-	1/Discharge	-163 ± 244	496	UJ (C)
ADDITIONAL POLLUTANTS						
Cesium-137	pCi/L	200/-	1/Discharge	2.59 ± 7.32	12.8	U
Uranium, Total	pCi/L	20/-	1/Discharge	0.244 ± 0.158	0.11	U (B)
ADDITIONAL POLLUTANTS WITHOUT LIMITS						
Potassium-40	pCi/L	-/-	1/Discharge	-62.0 ± 245	203	U

See attached notes for abbreviations, definitions, and other explanations for the data presented.

OUTFALL 002 (SOUTH SLOPE)

FIRST QUARTER 2016 REPORTING SUMMARY
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY
NPDES PERMIT CA0001309

January 1 through March 31, 2016

					02/04/2016 (Grab) - 02/05/2016 (Composite)	
ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	SAMPLE FREQUENCY	SAMPLE TYPE	RESULT	VALIDATION QUALIFIER
Flow**	MGD	117.83/-	1/Discharge	Meas	0.809444	*
CONVENTIONAL POLLUTANTS						
Biochemical Oxygen Demand (BOD)(5-Day @ 20 deg. C)	LBS/DAY	29,481/-	1/Discharge	Composite	10	J (DNQ)
Oil & Grease	LBS/DAY	14,741/-	1/Discharge	Grab	ND	UJ (L1)
Total Suspended Solids	LBS/DAY	44,222/-	1/Discharge	Composite	7.4	--
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-Dinitrotoluene	LBS/DAY	17.7/-	1/Discharge	Composite	ND	UJ (C)
2,4,6-Trichlorophenol	LBS/DAY	12.8/-	1/Discharge	Composite	ND	U
alpha-BHC	LBS/DAY	0.03/-	1/Discharge	Composite	ND	U
Antimony	LBS/DAY	5.9/-	1/Year	Composite	ND	U (B)
Arsenic	LBS/DAY	9.83/-	1/Year	Composite	ND	U
Beryllium	LBS/DAY	3.93/-	1/Year	Composite	ND	U
Bis (2-Ethylhexyl) Phthalate	LBS/DAY	3.93/-	1/Discharge	Composite	ND	U
Cadmium	LBS/DAY	(3.93) 3.05/- ^(a)	1/Discharge	Composite	ND	U
Chromium VI	LBS/DAY	15.72/-	1/Year	Composite	ND	U
Copper	LBS/DAY	13.76/-	1/Discharge	Composite	0.0088	J (DNQ)
Cyanide	LBS/DAY	8.35/-	1/Discharge	Composite	ND	U
Lead	LBS/DAY	5.11/-	1/Discharge	Composite	ND	U
Mercury	LBS/DAY	0.1/-	1/Discharge	Composite	ND	U
Nickel	LBS/DAY	92.4/-	1/Year	Composite	ND	U
N-Nitrosodimethylamine	LBS/DAY	15.72/-	1/Discharge	Composite	ND	U
Pentachlorophenol	LBS/DAY	16.22/-	1/Discharge	Composite	ND	U
Selenium	LBS/DAY	(4.91) 8.06/- ^(a)	1/Discharge	Composite	ND	U
Silver	LBS/DAY	4.03/-	1/Year	Composite	ND	U
TCDD TEQ_NoDNQ	LBS/DAY	2.75E-08	1/Discharge	Composite	ND	U
Thallium	LBS/DAY	1.97/-	1/Year	Composite	ND	U
Trichloroethene	LBS/DAY	4.91/-	1/Discharge	Grab	ND	U
Zinc	LBS/DAY	117/-	1/Discharge	Composite	ND	U
NON-CONVENTIONAL POLLUTANTS						
Ammonia - N	LBS/DAY	9,925.3/-	1/Discharge	Composite	ND	U
Barium	LBS/DAY	983/-	1/Year	Composite	0.34	--
Chloride	LBS/DAY	147,405/-	1/Discharge	Composite	128	J- (Q)
Chlorine, Total Residual	LBS/DAY	98.3/-	1/Year	Grab	0.07	*
Detergents (as MBAS)	LBS/DAY	491.4/-	1/Discharge	Composite	0.7	--
Fluoride	LBS/DAY	1,572.3/-	1/Year	Composite	1.7	J (DNQ)
Iron	LBS/DAY	295/-	1/Year	Composite	0.14	J (DNQ)
Manganese	LBS/DAY	49.1/-	1/Year	Composite	ND	U
Nitrate - N	LBS/DAY	7,862/-	1/Discharge	Composite	2.4	--
Nitrate + Nitrite as Nitrogen (N)	LBS/DAY	7,862/-	1/Discharge	Composite	3.1	--
Nitrite - N	LBS/DAY	983/-	1/Discharge	Composite	0.68	J (DNQ)
Perchlorate	LBS/DAY	5.9/-	1/Discharge	Composite	ND	U
Sulfate	LBS/DAY	294,810/-	1/Discharge	Composite	1620	J- (Q)
Total Dissolved Solids	LBS/DAY	933,567/-	1/Discharge	Composite	3713	--

See attached notes for abbreviations, definitions,
and other explanations for the data presented.

^(a)Based on peak LA River flow, sampling event is a dry discharge.

OUTFALL 009 (WS-13 DRAINAGE)

FIRST QUARTER 2016 REPORTING SUMMARY
 THE BOEING COMPANY
 SANTA SUSANA FIELD LABORATORY
 NPDES PERMIT CA0001309

January 1 through March 31, 2016

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	SAMPLE FREQUENCY	1/05/2016 and 1/06/2016 (Grab & Composite)		
				SAMPLE TYPE	RESULT	VALIDATION QUALIFIER
Flow	MGD	64.33/-	1/Discharge	Meas	0.016479	*
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	6.65	*
PRIORITY POLLUTANTS						
Antimony	ug/L	6.0/-	1/Discharge	Composite	0.60	J (DNQ)
Cadmium	ug/L	4.0/-	1/Discharge	Composite	ND < 0.25	U
Copper	ug/L	13/-	1/Discharge	Composite	5.3	--
Cyanide	ug/L	9.5/-	1/Discharge	Composite	ND < 2.5	U
Lead	ug/L	5.2/-	1/Discharge	Composite	1.8	--
Mercury	ug/L	0.13/-	1/Discharge	Composite	ND < 0.10	U
Nickel	ug/L	86/-	1/Discharge	Composite	2.2	--
Thallium	ug/L	2.0/-	1/Discharge	Composite	ND < 0.50	U
Zinc	ug/L	120/-	1/Discharge	Composite	11	J+ (DNQ, Q, Q1)
NON-CONVENTIONAL POLLUTANTS						
Boron	mg/L	1.0/-	1/Year	ANR	ANR	ANR
Chloride	mg/L	150/-	1/Discharge	Composite	4.2	J (*III)
Chronic Toxicity	Pass or % Effect	Pass or % Effect <50	1st & 2nd rain event/Year	Composite	Pass	*
Fluoride	mg/L	1.6/-	1/Year	ANR	ANR	ANR
Nitrate + Nitrite as Nitrogen (N)	mg/L	10/-	1/Discharge	Composite	2.0	J (*III)
Perchlorate	ug/L	6.0/-	1/Semiannual	ANR	ANR	ANR
Sulfate	mg/L	250/-	1/Discharge	Composite	4.0	J (*III)
Temperature (Field)	deg. F	86/-	1/Discharge	Grab	47.7	*
Total Dissolved Solids	mg/L	850/-	1/Discharge	Composite	76	--
REMAINING PRIORITY POLLUTANTS						
1,1,1-Trichloroethane	ug/L	-/-	1/Year	ANR	ANR	ANR
1,1,2,2-Tetrachloroethane	ug/L	-/-	1/Year	ANR	ANR	ANR
1,1,2-Trichloroethane	ug/L	-/-	1/Year	ANR	ANR	ANR
1,1-Dichloroethane	ug/L	-/-	1/Year	ANR	ANR	ANR
1,1-Dichloroethene	ug/L	-/-	1/Year	ANR	ANR	ANR
1,2,4-Trichlorobenzene	ug/L	-/-	1/Year	ANR	ANR	ANR
1,2-Dichlorobenzene	ug/L	-/-	1/Year	ANR	ANR	ANR
1,2-Dichlorobenzene	ug/L	-/-	1/Year	ANR	ANR	ANR
1,2-Dichloroethane	ug/L	-/-	1/Year	ANR	ANR	ANR
1,2-Dichloropropane	ug/L	-/-	1/Year	ANR	ANR	ANR
1,2-Diphenylhydrazine/Azobenzene	ug/L	-/-	1/Year	ANR	ANR	ANR
1,3-Dichlorobenzene	ug/L	-/-	1/Year	ANR	ANR	ANR
1,3-Dichlorobenzene	ug/L	-/-	1/Year	ANR	ANR	ANR
1,4-Dichlorobenzene	ug/L	-/-	1/Year	ANR	ANR	ANR
1,4-Dichlorobenzene	ug/L	-/-	1/Year	ANR	ANR	ANR
2,4-Dichlorophenol	ug/L	-/-	1/Year	ANR	ANR	ANR
2,4-Dimethylphenol	ug/L	-/-	1/Year	ANR	ANR	ANR
2,4-Dinitrophenol	ug/L	-/-	1/Year	ANR	ANR	ANR
2,4-Dinitrotoluene	ug/L	-/-	1/Year	ANR	ANR	ANR
2,4,6-Trichlorophenol	ug/L	-/-	1/Year	ANR	ANR	ANR
2,6-Dinitrotoluene	ug/L	-/-	1/Year	ANR	ANR	ANR
2-Chloroethylvinylether	ug/L	-/-	1/Year	ANR	ANR	ANR
2-Chloronaphthalene	ug/L	-/-	1/Year	ANR	ANR	ANR
2-Chlorophenol	ug/L	-/-	1/Year	ANR	ANR	ANR
2-Methyl-4,6-Dinitrophenol	ug/L	-/-	1/Year	ANR	ANR	ANR
2-Nitrophenol	ug/L	-/-	1/Year	ANR	ANR	ANR
3,3'-Dichlorobenzidine	ug/L	-/-	1/Year	ANR	ANR	ANR
4,4'-DDD	ug/L	-/-	1/Year	ANR	ANR	ANR

See attached notes for abbreviations, definitions, and other explanations for the data presented.

OUTFALL 009 (WS-13 DRAINAGE)

FIRST QUARTER 2016 REPORTING SUMMARY
 THE BOEING COMPANY
 SANTA SUSANA FIELD LABORATORY
 NPDES PERMIT CA0001309

January 1 through March 31, 2016

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	SAMPLE FREQUENCY	1/05/2016 and 1/06/2016 (Grab & Composite)		
				SAMPLE TYPE	RESULT	VALIDATION QUALIFIER
4,4'-DDE	ug/L	-/-	1/Year	ANR	ANR	ANR
4,4'-DDT	ug/L	-/-	1/Year	ANR	ANR	ANR
4-Bromophenylphenylether	ug/L	-/-	1/Year	ANR	ANR	ANR
4-Chloro-3-methylphenol	ug/L	-/-	1/Year	ANR	ANR	ANR
4-Chlorophenylphenylether	ug/L	-/-	1/Year	ANR	ANR	ANR
4-Nitrophenol	ug/L	-/-	1/Year	ANR	ANR	ANR
Acenaphthene	ug/L	-/-	1/Year	ANR	ANR	ANR
Acenaphthylene	ug/L	-/-	1/Year	ANR	ANR	ANR
Acrolein	ug/L	-/-	1/Year	ANR	ANR	ANR
Acrylonitrile	ug/L	-/-	1/Year	ANR	ANR	ANR
Aldrin	ug/L	-/-	1/Year	ANR	ANR	ANR
alpha-BHC	ug/L	-/-	1/Year	ANR	ANR	ANR
Anthracene	ug/L	-/-	1/Year	ANR	ANR	ANR
Aroclor 1016	ug/L	-/-	1/Year	ANR	ANR	ANR
Aroclor 1221	ug/L	-/-	1/Year	ANR	ANR	ANR
Aroclor 1232	ug/L	-/-	1/Year	ANR	ANR	ANR
Aroclor 1242	ug/L	-/-	1/Year	ANR	ANR	ANR
Aroclor 1248	ug/L	-/-	1/Year	ANR	ANR	ANR
Aroclor 1254	ug/L	-/-	1/Year	ANR	ANR	ANR
Aroclor 1260	ug/L	-/-	1/Year	ANR	ANR	ANR
Arsenic	ug/L	-/-	1/Year	ANR	ANR	ANR
Asbestos	MFL	-/-	1/Year	ANR	ANR	ANR
Benzene	ug/L	-/-	1/Year	ANR	ANR	ANR
Benzidine	ug/L	-/-	1/Year	ANR	ANR	ANR
Benzo(a)anthracene	ug/L	-/-	1/Year	ANR	ANR	ANR
Benzo(a)pyrene	ug/L	-/-	1/Year	ANR	ANR	ANR
Benzo(b)fluoranthene	ug/L	-/-	1/Year	ANR	ANR	ANR
Benzo(g,h,i)Perylene	ug/L	-/-	1/Year	ANR	ANR	ANR
Benzo(k)fluoranthene	ug/L	-/-	1/Year	ANR	ANR	ANR
Beryllium	ug/L	-/-	1/Year	ANR	ANR	ANR
beta-BHC	ug/L	-/-	1/Year	ANR	ANR	ANR
Bis (2-Chloroethoxy) Methane	ug/L	-/-	1/Year	ANR	ANR	ANR
Bis (2-Chloroethyl) Ether	ug/L	-/-	1/Year	ANR	ANR	ANR
Bis (2-Chloroisopropyl) Ether	ug/L	-/-	1/Year	ANR	ANR	ANR
Bis (2-Ethylhexyl) Phthalate	ug/L	-/-	1/Year	ANR	ANR	ANR
Bromodichloromethane	ug/L	-/-	1/Year	ANR	ANR	ANR
Bromoform	ug/L	-/-	1/Year	ANR	ANR	ANR
Bromomethane	ug/L	-/-	1/Year	ANR	ANR	ANR
Butylbenzylphthalate	ug/L	-/-	1/Year	ANR	ANR	ANR
Carbon Tetrachloride	ug/L	-/-	1/Year	ANR	ANR	ANR
Chlordane	ug/L	-/-	1/Year	ANR	ANR	ANR
Chlorobenzene	ug/L	-/-	1/Year	ANR	ANR	ANR
Chloroethane	ug/L	-/-	1/Year	ANR	ANR	ANR
Chloroform	ug/L	-/-	1/Year	ANR	ANR	ANR
Chloromethane	ug/L	-/-	1/Year	ANR	ANR	ANR
Chromium	ug/L	-/-	1/Year	ANR	ANR	ANR
Chromium VI	ug/L	-/-	1/Year	ANR	ANR	ANR
Chrysene	ug/L	-/-	1/Year	ANR	ANR	ANR
cis-1,3-Dichloropropene	ug/L	-/-	1/Year	ANR	ANR	ANR
delta-BHC	ug/L	-/-	1/Year	ANR	ANR	ANR
Dibenzo(a,h)anthracene	ug/L	-/-	1/Year	ANR	ANR	ANR
Dibromochloromethane	ug/L	-/-	1/Year	ANR	ANR	ANR
Dieldrin	ug/L	-/-	1/Year	ANR	ANR	ANR
Diethylphthalate	ug/L	-/-	1/Year	ANR	ANR	ANR
Dimethylphthalate	ug/L	-/-	1/Year	ANR	ANR	ANR

See attached notes for abbreviations, definitions, and other explanations for the data presented.

OUTFALL 009 (WS-13 DRAINAGE)

FIRST QUARTER 2016 REPORTING SUMMARY
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY
NPDES PERMIT CA0001309

January 1 through March 31, 2016

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	SAMPLE FREQUENCY	1/05/2016 and 1/06/2016 (Grab & Composite)		
				SAMPLE TYPE	RESULT	VALIDATION QUALIFIER
Di-n-butylphthalate	ug/L	-/-	1/Year	ANR	ANR	ANR
Di-n-octylphthalate	ug/L	-/-	1/Year	ANR	ANR	ANR
Endosulfan I	ug/L	-/-	1/Year	ANR	ANR	ANR
Endosulfan II	ug/L	-/-	1/Year	ANR	ANR	ANR
Endosulfan Sulfate	ug/L	-/-	1/Year	ANR	ANR	ANR
Endrin	ug/L	-/-	1/Year	ANR	ANR	ANR
Endrin Aldehyde	ug/L	-/-	1/Year	ANR	ANR	ANR
Ethylbenzene	ug/L	-/-	1/Year	ANR	ANR	ANR
Fluoranthene	ug/L	-/-	1/Year	ANR	ANR	ANR
Fluorene	ug/L	-/-	1/Year	ANR	ANR	ANR
Heptachlor	ug/L	-/-	1/Year	ANR	ANR	ANR
Heptachlor Epoxide	ug/L	-/-	1/Year	ANR	ANR	ANR
Hexachlorobenzene	ug/L	-/-	1/Year	ANR	ANR	ANR
Hexachlorobutadiene	ug/L	-/-	1/Year	ANR	ANR	ANR
Hexachlorocyclopentadiene	ug/L	-/-	1/Year	ANR	ANR	ANR
Hexachloroethane	ug/L	-/-	1/Year	ANR	ANR	ANR
Indeno(1,2,3-cd)pyrene	ug/L	-/-	1/Year	ANR	ANR	ANR
Isophorone	ug/L	-/-	1/Year	ANR	ANR	ANR
Lindane (gamma-BHC)	ug/L	-/-	1/Year	ANR	ANR	ANR
Methylene chloride	ug/L	-/-	1/Year	ANR	ANR	ANR
Naphthalene	ug/L	-/-	1/Year	ANR	ANR	ANR
Naphthalene	ug/L	-/-	1/Year	ANR	ANR	ANR
Nitrobenzene	ug/L	-/-	1/Year	ANR	ANR	ANR
N-Nitrosodimethylamine	ug/L	-/-	1/Year	ANR	ANR	ANR
N-Nitroso-di-n-propylamine	ug/L	-/-	1/Year	ANR	ANR	ANR
N-Nitrosodiphenylamine	ug/L	-/-	1/Year	ANR	ANR	ANR
Pentachlorophenol	ug/L	-/-	1/Year	ANR	ANR	ANR
Phenanthrene	ug/L	-/-	1/Year	ANR	ANR	ANR
Phenol	ug/L	-/-	1/Year	ANR	ANR	ANR
Pyrene	ug/L	-/-	1/Year	ANR	ANR	ANR
Tetrachloroethene	ug/L	-/-	1/Year	ANR	ANR	ANR
Toluene	ug/L	-/-	1/Year	ANR	ANR	ANR
Toxaphene	ug/L	-/-	1/Year	ANR	ANR	ANR
trans-1,2-Dichloroethene	ug/L	-/-	1/Year	ANR	ANR	ANR
trans-1,3-Dichloropropene	ug/L	-/-	1/Year	ANR	ANR	ANR
Trichloroethene	ug/L	-/-	1/Year	ANR	ANR	ANR
Trichlorofluoromethane	ug/L	-/-	1/Year	ANR	ANR	ANR
Vinyl chloride	ug/L	-/-	1/Year	ANR	ANR	ANR
Xylenes (Total)	ug/L	-/-	1/Year	ANR	ANR	ANR
EFFLUENT MONITORING (NO LIMITATIONS) POLLUTANTS						
Aluminum	ug/L	-/-	1/Year	ANR	ANR	ANR
Chlorpyrifos	ug/L	-/-	1/Year	ANR	ANR	ANR
Diazinon	ug/L	-/-	1/Year	ANR	ANR	ANR
E. Coli	MPN/100mL	-/-	1/Year	ANR	ANR	ANR
Hardness	mg/L	-/-	1/Year	ANR	ANR	ANR
Iron	mg/L	-/-	1/Year	ANR	ANR	ANR
Selenium	ug/L	-/-	1/Discharge	Composite	ND < 0.50	U
Silver	ug/L	-/-	1/Discharge	Composite	ND < 0.50	U
Total Suspended Solids	mg/L	-/-	1/Year	ANR	ANR	ANR
Vanadium	ug/L	-/-	1/Year	ANR	ANR	ANR

See attached notes for abbreviations, definitions, and other explanations for the data presented.

OUTFALL 009 (WS-13 DRAINAGE)

FIRST QUARTER 2016 REPORTING SUMMARY
 THE BOEING COMPANY
 SANTA SUSANA FIELD LABORATORY
 NPDES PERMIT CA0001309

January 1 through March 31, 2016

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	SAMPLE FREQUENCY	1/05/2016 and 1/06/2016 (Grab & Composite)		
				SAMPLE TYPE	RESULT	VALIDATION QUALIFIER
ADDITIONAL POLLUTANTS						
Aluminum, dissolved	ug/L	-/-	Additional	ANR	ANR	ANR
Antimony, dissolved	ug/L	-/-	Additional	Composite	ND < 0.76	U (B)
Arsenic, dissolved	ug/L	-/-	Additional	ANR	ANR	ANR
Beryllium, dissolved	ug/L	-/-	Additional	ANR	ANR	ANR
Boron, dissolved	mg/L	-/-	Additional	ANR	ANR	ANR
Cadmium, dissolved	ug/L	-/-	Additional	Composite	ND < 0.25	U
Chromium, dissolved	ug/L	-/-	Additional	ANR	ANR	ANR
cis-1,2-Dichloroethene	ug/L	-/-	1/Year	ANR	ANR	ANR
Copper, dissolved	ug/L	-/-	Additional	Composite	3.4	--
Hardness, dissolved	mg/L	-/-	Additional	ANR	ANR	ANR
Human Bacteroides	CEs/100mL	-/-	Additional	ANR	ANR	ANR
Iron, dissolved	mg/L	-/-	Additional	ANR	ANR	ANR
Lead, dissolved	ug/L	-/-	Additional	Composite	ND < 0.50	U
Mercury, dissolved	ug/L	-/-	Additional	Composite	ND < 0.10	U
Nickel, dissolved	ug/L	-/-	Additional	Composite	1.3	J (DNQ)
Selenium, dissolved	ug/L	-/-	Additional	Composite	ND < 0.50	U
Silver, dissolved	ug/L	-/-	Additional	Composite	ND < 0.50	U
Thallium, dissolved	ug/L	-/-	Additional	Composite	ND < 0.50	U
Vanadium, dissolved	ug/L	-/-	Additional	ANR	ANR	ANR
Zinc, dissolved	ug/L	-/-	Additional	Composite	ND < 9.4	U (B)

See attached notes for abbreviations, definitions,
 and other explanations for the data presented.

OUTFALL 009 (WS-13 DRAINAGE)

FIRST QUARTER 2016 REPORTING SUMMARY
 THE BOEING COMPANY
 SANTA SUSANA FIELD LABORATORY
 NPDES PERMIT CA0001309

January 1 through March 31, 2016

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	SAMPLE FREQUENCY	1/06/2016 (Field Duplicate)		
				SAMPLE TYPE	RESULT	VALIDATION QUALIFIER
Flow	MGD	64.33/-	1/Discharge	ANR	ANR	ANR
CONVENTIONAL POLLUTANTS						
Oil & Grease	mg/L	15/-	1/Discharge	ANR	ANR	ANR
pH (Field)	s.u.	6.5-8.5/-	1/Discharge	ANR	ANR	ANR
PRIORITY POLLUTANTS						
Antimony	ug/L	6.0/-	1/Discharge	ANR	ANR	ANR
Cadmium	ug/L	4.0/-	1/Discharge	ANR	ANR	ANR
Copper	ug/L	13/-	1/Discharge	ANR	ANR	ANR
Cyanide	ug/L	9.5/-	1/Discharge	ANR	ANR	ANR
Lead	ug/L	5.2/-	1/Discharge	ANR	ANR	ANR
Mercury	ug/L	0.13/-	1/Discharge	ANR	ANR	ANR
Nickel	ug/L	86/-	1/Discharge	ANR	ANR	ANR
Thallium	ug/L	2.0/-	1/Discharge	ANR	ANR	ANR
Zinc	ug/L	120/-	1/Discharge	ANR	ANR	ANR
NON-CONVENTIONAL POLLUTANTS						
Boron	mg/L	1.0/-	1/Year	ANR	ANR	ANR
Chloride	mg/L	150/-	1/Discharge	Composite	4.3	J (*III)
Chronic Toxicity	Pass or % Effect	Pass or % Effect <50	1st & 2nd rain event/Year	ANR	ANR	ANR
Fluoride	mg/L	1.6/-	1/Year	ANR	ANR	ANR
Nitrate + Nitrite as Nitrogen (N)	mg/L	10/-	1/Discharge	ANR	ANR	ANR
Perchlorate	ug/L	6.0/-	1/Semiannual	ANR	ANR	ANR
Sulfate	mg/L	250/-	1/Discharge	Composite	3.9	J (*III)
Temperature (Field)	deg. F	86/-	1/Discharge	ANR	ANR	ANR
Total Dissolved Solids	mg/L	850/-	1/Discharge	ANR	ANR	ANR
REMAINING PRIORITY POLLUTANTS						
1,1,1-Trichloroethane	ug/L	-/-	1/Year	ANR	ANR	ANR
1,1,2,2-Tetrachloroethane	ug/L	-/-	1/Year	ANR	ANR	ANR
1,1,2-Trichloroethane	ug/L	-/-	1/Year	ANR	ANR	ANR
1,1-Dichloroethane	ug/L	-/-	1/Year	ANR	ANR	ANR
1,1-Dichloroethene	ug/L	-/-	1/Year	ANR	ANR	ANR
1,2,4-Trichlorobenzene	ug/L	-/-	1/Year	ANR	ANR	ANR
1,2-Dichlorobenzene	ug/L	-/-	1/Year	ANR	ANR	ANR
1,2-Dichlorobenzene	ug/L	-/-	1/Year	ANR	ANR	ANR
1,2-Dichloroethane	ug/L	-/-	1/Year	ANR	ANR	ANR
1,2-Dichloropropane	ug/L	-/-	1/Year	ANR	ANR	ANR
1,2-Diphenylhydrazine/Azobenzene	ug/L	-/-	1/Year	ANR	ANR	ANR
1,3-Dichlorobenzene	ug/L	-/-	1/Year	ANR	ANR	ANR
1,3-Dichlorobenzene	ug/L	-/-	1/Year	ANR	ANR	ANR
1,4-Dichlorobenzene	ug/L	-/-	1/Year	ANR	ANR	ANR
1,4-Dichlorobenzene	ug/L	-/-	1/Year	ANR	ANR	ANR
2,4-Dichlorophenol	ug/L	-/-	1/Year	ANR	ANR	ANR
2,4-Dimethylphenol	ug/L	-/-	1/Year	ANR	ANR	ANR
2,4-Dinitrophenol	ug/L	-/-	1/Year	ANR	ANR	ANR
2,4-Dinitrotoluene	ug/L	-/-	1/Year	ANR	ANR	ANR
2,4,6-Trichlorophenol	ug/L	-/-	1/Year	ANR	ANR	ANR
2,6-Dinitrotoluene	ug/L	-/-	1/Year	ANR	ANR	ANR
2-Chloroethylvinylether	ug/L	-/-	1/Year	ANR	ANR	ANR
2-Chloronaphthalene	ug/L	-/-	1/Year	ANR	ANR	ANR
2-Chlorophenol	ug/L	-/-	1/Year	ANR	ANR	ANR
2-Methyl-4,6-Dinitrophenol	ug/L	-/-	1/Year	ANR	ANR	ANR
2-Nitrophenol	ug/L	-/-	1/Year	ANR	ANR	ANR
3,3'-Dichlorobenzidine	ug/L	-/-	1/Year	ANR	ANR	ANR
4,4'-DDD	ug/L	-/-	1/Year	ANR	ANR	ANR

See attached notes for abbreviations, definitions, and other explanations for the data presented.

OUTFALL 009 (WS-13 DRAINAGE)

FIRST QUARTER 2016 REPORTING SUMMARY
 THE BOEING COMPANY
 SANTA SUSANA FIELD LABORATORY
 NPDES PERMIT CA0001309

January 1 through March 31, 2016

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	SAMPLE FREQUENCY	1/06/2016 (Field Duplicate)		
				SAMPLE TYPE	RESULT	VALIDATION QUALIFIER
4,4'-DDE	ug/L	-/-	1/Year	ANR	ANR	ANR
4,4'-DDT	ug/L	-/-	1/Year	ANR	ANR	ANR
4-Bromophenylphenylether	ug/L	-/-	1/Year	ANR	ANR	ANR
4-Chloro-3-methylphenol	ug/L	-/-	1/Year	ANR	ANR	ANR
4-Chlorophenylphenylether	ug/L	-/-	1/Year	ANR	ANR	ANR
4-Nitrophenol	ug/L	-/-	1/Year	ANR	ANR	ANR
Acenaphthene	ug/L	-/-	1/Year	ANR	ANR	ANR
Acenaphthylene	ug/L	-/-	1/Year	ANR	ANR	ANR
Acrolein	ug/L	-/-	1/Year	ANR	ANR	ANR
Acrylonitrile	ug/L	-/-	1/Year	ANR	ANR	ANR
Aldrin	ug/L	-/-	1/Year	ANR	ANR	ANR
alpha-BHC	ug/L	-/-	1/Year	ANR	ANR	ANR
Anthracene	ug/L	-/-	1/Year	ANR	ANR	ANR
Aroclor 1016	ug/L	-/-	1/Year	ANR	ANR	ANR
Aroclor 1221	ug/L	-/-	1/Year	ANR	ANR	ANR
Aroclor 1232	ug/L	-/-	1/Year	ANR	ANR	ANR
Aroclor 1242	ug/L	-/-	1/Year	ANR	ANR	ANR
Aroclor 1248	ug/L	-/-	1/Year	ANR	ANR	ANR
Aroclor 1254	ug/L	-/-	1/Year	ANR	ANR	ANR
Aroclor 1260	ug/L	-/-	1/Year	ANR	ANR	ANR
Arsenic	ug/L	-/-	1/Year	ANR	ANR	ANR
Asbestos	MFL	-/-	1/Year	ANR	ANR	ANR
Benzene	ug/L	-/-	1/Year	ANR	ANR	ANR
Benzidine	ug/L	-/-	1/Year	ANR	ANR	ANR
Benzo(a)anthracene	ug/L	-/-	1/Year	ANR	ANR	ANR
Benzo(a)pyrene	ug/L	-/-	1/Year	ANR	ANR	ANR
Benzo(b)fluoranthene	ug/L	-/-	1/Year	ANR	ANR	ANR
Benzo(g,h,i)Perylene	ug/L	-/-	1/Year	ANR	ANR	ANR
Benzo(k)fluoranthene	ug/L	-/-	1/Year	ANR	ANR	ANR
Beryllium	ug/L	-/-	1/Year	ANR	ANR	ANR
beta-BHC	ug/L	-/-	1/Year	ANR	ANR	ANR
Bis (2-Chloroethoxy) Methane	ug/L	-/-	1/Year	ANR	ANR	ANR
Bis (2-Chloroethyl) Ether	ug/L	-/-	1/Year	ANR	ANR	ANR
Bis (2-Chloroisopropyl) Ether	ug/L	-/-	1/Year	ANR	ANR	ANR
Bis (2-Ethylhexyl) Phthalate	ug/L	-/-	1/Year	ANR	ANR	ANR
Bromodichloromethane	ug/L	-/-	1/Year	ANR	ANR	ANR
Bromoform	ug/L	-/-	1/Year	ANR	ANR	ANR
Bromomethane	ug/L	-/-	1/Year	ANR	ANR	ANR
Butylbenzylphthalate	ug/L	-/-	1/Year	ANR	ANR	ANR
Carbon Tetrachloride	ug/L	-/-	1/Year	ANR	ANR	ANR
Chlordane	ug/L	-/-	1/Year	ANR	ANR	ANR
Chlorobenzene	ug/L	-/-	1/Year	ANR	ANR	ANR
Chloroethane	ug/L	-/-	1/Year	ANR	ANR	ANR
Chloroform	ug/L	-/-	1/Year	ANR	ANR	ANR
Chloromethane	ug/L	-/-	1/Year	ANR	ANR	ANR
Chromium	ug/L	-/-	1/Year	ANR	ANR	ANR
Chromium VI	ug/L	-/-	1/Year	ANR	ANR	ANR
Chrysene	ug/L	-/-	1/Year	ANR	ANR	ANR
cis-1,3-Dichloropropene	ug/L	-/-	1/Year	ANR	ANR	ANR
delta-BHC	ug/L	-/-	1/Year	ANR	ANR	ANR
Dibenzo(a,h)anthracene	ug/L	-/-	1/Year	ANR	ANR	ANR
Dibromochloromethane	ug/L	-/-	1/Year	ANR	ANR	ANR
Dieldrin	ug/L	-/-	1/Year	ANR	ANR	ANR
Diethylphthalate	ug/L	-/-	1/Year	ANR	ANR	ANR
Dimethylphthalate	ug/L	-/-	1/Year	ANR	ANR	ANR

See attached notes for abbreviations, definitions, and other explanations for the data presented.

OUTFALL 009 (WS-13 DRAINAGE)

FIRST QUARTER 2016 REPORTING SUMMARY
 THE BOEING COMPANY
 SANTA SUSANA FIELD LABORATORY
 NPDES PERMIT CA0001309

January 1 through March 31, 2016

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	SAMPLE FREQUENCY	1/06/2016 (Field Duplicate)		
				SAMPLE TYPE	RESULT	VALIDATION QUALIFIER
Di-n-butylphthalate	ug/L	-/-	1/Year	ANR	ANR	ANR
Di-n-octylphthalate	ug/L	-/-	1/Year	ANR	ANR	ANR
Endosulfan I	ug/L	-/-	1/Year	ANR	ANR	ANR
Endosulfan II	ug/L	-/-	1/Year	ANR	ANR	ANR
Endosulfan Sulfate	ug/L	-/-	1/Year	ANR	ANR	ANR
Endrin	ug/L	-/-	1/Year	ANR	ANR	ANR
Endrin Aldehyde	ug/L	-/-	1/Year	ANR	ANR	ANR
Ethylbenzene	ug/L	-/-	1/Year	ANR	ANR	ANR
Fluoranthene	ug/L	-/-	1/Year	ANR	ANR	ANR
Fluorene	ug/L	-/-	1/Year	ANR	ANR	ANR
Heptachlor	ug/L	-/-	1/Year	ANR	ANR	ANR
Heptachlor Epoxide	ug/L	-/-	1/Year	ANR	ANR	ANR
Hexachlorobenzene	ug/L	-/-	1/Year	ANR	ANR	ANR
Hexachlorobutadiene	ug/L	-/-	1/Year	ANR	ANR	ANR
Hexachlorocyclopentadiene	ug/L	-/-	1/Year	ANR	ANR	ANR
Hexachloroethane	ug/L	-/-	1/Year	ANR	ANR	ANR
Indeno(1,2,3-cd)pyrene	ug/L	-/-	1/Year	ANR	ANR	ANR
Isophorone	ug/L	-/-	1/Year	ANR	ANR	ANR
Lindane (gamma-BHC)	ug/L	-/-	1/Year	ANR	ANR	ANR
Methylene chloride	ug/L	-/-	1/Year	ANR	ANR	ANR
Naphthalene	ug/L	-/-	1/Year	ANR	ANR	ANR
Naphthalene	ug/L	-/-	1/Year	ANR	ANR	ANR
Nitrobenzene	ug/L	-/-	1/Year	ANR	ANR	ANR
N-Nitrosodimethylamine	ug/L	-/-	1/Year	ANR	ANR	ANR
N-Nitroso-di-n-propylamine	ug/L	-/-	1/Year	ANR	ANR	ANR
N-Nitrosodiphenylamine	ug/L	-/-	1/Year	ANR	ANR	ANR
Pentachlorophenol	ug/L	-/-	1/Year	ANR	ANR	ANR
Phenanthrene	ug/L	-/-	1/Year	ANR	ANR	ANR
Phenol	ug/L	-/-	1/Year	ANR	ANR	ANR
Pyrene	ug/L	-/-	1/Year	ANR	ANR	ANR
Tetrachloroethene	ug/L	-/-	1/Year	ANR	ANR	ANR
Toluene	ug/L	-/-	1/Year	ANR	ANR	ANR
Toxaphene	ug/L	-/-	1/Year	ANR	ANR	ANR
trans-1,2-Dichloroethene	ug/L	-/-	1/Year	ANR	ANR	ANR
trans-1,3-Dichloropropene	ug/L	-/-	1/Year	ANR	ANR	ANR
Trichloroethene	ug/L	-/-	1/Year	ANR	ANR	ANR
Trichlorofluoromethane	ug/L	-/-	1/Year	ANR	ANR	ANR
Vinyl chloride	ug/L	-/-	1/Year	ANR	ANR	ANR
Xylenes (Total)	ug/L	-/-	1/Year	ANR	ANR	ANR
EFFLUENT MONITORING (NO LIMITATIONS) POLLUTANTS						
Aluminum	ug/L	-/-	1/Year	ANR	ANR	ANR
Chlorpyrifos	ug/L	-/-	1/Year	ANR	ANR	ANR
Diazinon	ug/L	-/-	1/Year	ANR	ANR	ANR
E. Coli	MPN/100mL	-/-	1/Year	ANR	ANR	ANR
Hardness	mg/L	-/-	1/Year	ANR	ANR	ANR
Iron	mg/L	-/-	1/Year	ANR	ANR	ANR
Selenium	ug/L	-/-	1/Discharge	ANR	ANR	ANR
Silver	ug/L	-/-	1/Discharge	ANR	ANR	ANR
Total Suspended Solids	mg/L	-/-	1/Year	ANR	ANR	ANR
Vanadium	ug/L	-/-	1/Year	ANR	ANR	ANR

See attached notes for abbreviations, definitions, and other explanations for the data presented.

OUTFALL 009 (WS-13 DRAINAGE)

FIRST QUARTER 2016 REPORTING SUMMARY
 THE BOEING COMPANY
 SANTA SUSANA FIELD LABORATORY
 NPDES PERMIT CA0001309

January 1 through March 31, 2016

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	SAMPLE FREQUENCY	1/06/2016 (Field Duplicate)		
				SAMPLE TYPE	RESULT	VALIDATION QUALIFIER
ADDITIONAL POLLUTANTS						
Aluminum, dissolved	ug/L	-/-	Additional	ANR	ANR	ANR
Antimony, dissolved	ug/L	-/-	Additional	ANR	ANR	ANR
Arsenic, dissolved	ug/L	-/-	Additional	ANR	ANR	ANR
Beryllium, dissolved	ug/L	-/-	Additional	ANR	ANR	ANR
Boron, dissolved	mg/L	-/-	Additional	ANR	ANR	ANR
Cadmium, dissolved	ug/L	-/-	Additional	ANR	ANR	ANR
Chromium, dissolved	ug/L	-/-	Additional	ANR	ANR	ANR
cis-1,2-Dichloroethene	ug/L	-/-	1/Year	ANR	ANR	ANR
Copper, dissolved	ug/L	-/-	Additional	ANR	ANR	ANR
Hardness, dissolved	mg/L	-/-	Additional	ANR	ANR	ANR
Human Bacteroides	CEs/100mL	-/-	Additional	ANR	ANR	ANR
Iron, dissolved	mg/L	-/-	Additional	ANR	ANR	ANR
Lead, dissolved	ug/L	-/-	Additional	ANR	ANR	ANR
Mercury, dissolved	ug/L	-/-	Additional	ANR	ANR	ANR
Nickel, dissolved	ug/L	-/-	Additional	ANR	ANR	ANR
Selenium, dissolved	ug/L	-/-	Additional	ANR	ANR	ANR
Silver, dissolved	ug/L	-/-	Additional	ANR	ANR	ANR
Thallium, dissolved	ug/L	-/-	Additional	ANR	ANR	ANR
Vanadium, dissolved	ug/L	-/-	Additional	ANR	ANR	ANR
Zinc, dissolved	ug/L	-/-	Additional	ANR	ANR	ANR

See attached notes for abbreviations, definitions,
 and other explanations for the data presented.

OUTFALL 009 (WS-13 DRAINAGE)

FIRST QUARTER 2016 REPORTING SUMMARY
 THE BOEING COMPANY
 SANTA SUSANA FIELD LABORATORY
 NPDES PERMIT CA0001309

January 1 through March 31, 2016

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	SAMPLE FREQUENCY	3/07/2016 and 3/08/2016 (Grab & Composite)		
				SAMPLE TYPE	RESULT	VALIDATION QUALIFIER
Flow	MGD	64.33/-	1/Discharge	Meas	0.143250	*
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	6.73	*
PRIORITY POLLUTANTS						
Antimony	ug/L	6.0/-	1/Discharge	Composite	0.97	J (DNQ)
Cadmium	ug/L	4.0/-	1/Discharge	Composite	ND < 0.25	U
Copper	ug/L	13/-	1/Discharge	Composite	8.8	--
Cyanide	ug/L	9.5/-	1/Discharge	Composite	ND < 2.5	U
Lead	ug/L	5.2/-	1/Discharge	Composite	5.9	--
Mercury	ug/L	0.13/-	1/Discharge	Composite	ND < 0.10	U
Nickel	ug/L	86/-	1/Discharge	Composite	6.2	J (DNQ)
Thallium	ug/L	2.0/-	1/Discharge	Composite	ND < 0.50	U
Zinc	ug/L	120/-	1/Discharge	Composite	22	--
NON-CONVENTIONAL POLLUTANTS						
Boron	mg/L	1.0/-	1/Year	Composite	0.053	--
Chloride	mg/L	150/-	1/Discharge	Composite	4.0	--
Chronic Toxicity	Pass or % Effect	Pass or % Effect <50	1st & 2nd rain event/Year	Composite	Pass	--
Fluoride	mg/L	1.6/-	1/Year	Composite	ND < 0.25	U
Nitrate + Nitrite as Nitrogen (N)	mg/L	10/-	1/Discharge	Composite	0.34	--
Perchlorate	ug/L	6.0/-	1/Semiannual	Composite	ND < 0.95	U
Sulfate	mg/L	250/-	1/Discharge	Composite	6.9	--
Temperature (Field)	deg. F	86/-	1/Discharge	Grab	50.88	*
Total Dissolved Solids	mg/L	850/-	1/Discharge	Composite	110	--
REMAINING PRIORITY POLLUTANTS						
1,1,1-Trichloroethane	ug/L	-/-	1/Year	Grab	ND < 0.25	U
1,1,2,2-Tetrachloroethane	ug/L	-/-	1/Year	Grab	ND < 0.25	U
1,1,2-Trichloroethane	ug/L	-/-	1/Year	Grab	ND < 0.25	U
1,1-Dichloroethane	ug/L	-/-	1/Year	Grab	ND < 0.25	U
1,1-Dichloroethene	ug/L	-/-	1/Year	Grab	ND < 0.25	U
1,2,4-Trichlorobenzene	ug/L	-/-	1/Year	Composite	ND < 0.478	U
1,2-Dichlorobenzene	ug/L	-/-	1/Year	Grab	ND < 0.25	U
1,2-Dichlorobenzene	ug/L	-/-	1/Year	Composite	ND < 0.191	U
1,2-Dichloroethane	ug/L	-/-	1/Year	Grab	ND < 0.25	U
1,2-Dichloropropane	ug/L	-/-	1/Year	Grab	ND < 0.25	U
1,2-Diphenylhydrazine/Azobenzene	ug/L	-/-	1/Year	Composite	ND < 0.478	U
1,3-Dichlorobenzene	ug/L	-/-	1/Year	Grab	ND < 0.25	U
1,3-Dichlorobenzene	ug/L	-/-	1/Year	Composite	ND < 0.191	U
1,4-Dichlorobenzene	ug/L	-/-	1/Year	Grab	ND < 0.25	U
1,4-Dichlorobenzene	ug/L	-/-	1/Year	Composite	ND < 0.191	U
2,4-Dichlorophenol	ug/L	-/-	1/Year	Composite	ND < 0.957	U
2,4-Dimethylphenol	ug/L	-/-	1/Year	Composite	ND < 0.957	U
2,4-Dinitrophenol	ug/L	-/-	1/Year	Composite	ND < 1.91	U
2,4-Dinitrotoluene	ug/L	-/-	1/Year	Composite	ND < 1.91	U
2,4,6-Trichlorophenol	ug/L	-/-	1/Year	Composite	ND < 0.478	U
2,6-Dinitrotoluene	ug/L	-/-	1/Year	Composite	ND < 1.91	U
2-Chloroethylvinylether	ug/L	-/-	1/Year	Grab	ND < 1.0	U
2-Chloronaphthalene	ug/L	-/-	1/Year	Composite	ND < 0.191	U
2-Chlorophenol	ug/L	-/-	1/Year	Composite	ND < 0.478	U
2-Methyl-4,6-Dinitrophenol	ug/L	-/-	1/Year	Composite	ND < 1.91	U
2-Nitrophenol	ug/L	-/-	1/Year	Composite	ND < 0.957	U
3,3'-Dichlorobenzidine	ug/L	-/-	1/Year	Composite	ND < 1.91	UJ (L1)
4,4'-DDD	ug/L	-/-	1/Year	Composite	ND < 0.0039	U

See attached notes for abbreviations, definitions, and other explanations for the data presented.

OUTFALL 009 (WS-13 DRAINAGE)

FIRST QUARTER 2016 REPORTING SUMMARY
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY
NPDES PERMIT CA0001309

January 1 through March 31, 2016

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	SAMPLE FREQUENCY	3/07/2016 and 3/08/2016 (Grab & Composite)		
				SAMPLE TYPE	RESULT	VALIDATION QUALIFIER
4,4'-DDE	ug/L	-/-	1/Year	Composite	ND < 0.0029	U
4,4'-DDT	ug/L	-/-	1/Year	Composite	ND < 0.0039	U
4-Bromophenylphenylether	ug/L	-/-	1/Year	Composite	ND < 0.478	U
4-Chloro-3-methylphenol	ug/L	-/-	1/Year	Composite	ND < 0.191	U
4-Chlorophenylphenylether	ug/L	-/-	1/Year	Composite	ND < 0.191	U
4-Nitrophenol	ug/L	-/-	1/Year	Composite	ND < 1.91	U
Acenaphthene	ug/L	-/-	1/Year	Composite	ND < 0.191	U
Acenaphthylene	ug/L	-/-	1/Year	Composite	ND < 0.191	U
Acrolein	ug/L	-/-	1/Year	Grab	ND < 2.5	U
Acrylonitrile	ug/L	-/-	1/Year	Grab	ND < 1.0	U
Aldrin	ug/L	-/-	1/Year	Composite	ND < 0.0015	U
alpha-BHC	ug/L	-/-	1/Year	Composite	ND < 0.0024	U
Anthracene	ug/L	-/-	1/Year	Composite	ND < 0.191	U
Aroclor 1016	ug/L	-/-	1/Year	Composite	ND < 0.24	U
Aroclor 1221	ug/L	-/-	1/Year	Composite	ND < 0.24	U
Aroclor 1232	ug/L	-/-	1/Year	Composite	ND < 0.24	U
Aroclor 1242	ug/L	-/-	1/Year	Composite	ND < 0.24	U
Aroclor 1248	ug/L	-/-	1/Year	Composite	ND < 0.24	U
Aroclor 1254	ug/L	-/-	1/Year	Composite	ND < 0.24	U
Aroclor 1260	ug/L	-/-	1/Year	Composite	ND < 0.24	U
Arsenic	ug/L	-/-	1/Year	Composite	ND < 5.0	U
Asbestos	MFL	-/-	1/Year	Composite	ND < 1.70	UJ (H)
Benzene	ug/L	-/-	1/Year	Grab	ND < 0.25	U
Benidine	ug/L	-/-	1/Year	Composite	ND < 4.78	U
Benzo(a)anthracene	ug/L	-/-	1/Year	Composite	ND < 1.91	U
Benzo(a)pyrene	ug/L	-/-	1/Year	Composite	ND < 0.478	U
Benzo(b)fluoranthene	ug/L	-/-	1/Year	Composite	ND < 0.957	U
Benzo(g,h,i)Perylene	ug/L	-/-	1/Year	Composite	ND < 1.91	UJ (C)
Benzo(k)fluoranthene	ug/L	-/-	1/Year	Composite	ND < 0.239	U
Beryllium	ug/L	-/-	1/Year	Composite	ND < 1.0	U
beta-BHC	ug/L	-/-	1/Year	Composite	ND < 0.0039	U
Bis (2-Chloroethoxy) Methane	ug/L	-/-	1/Year	Composite	ND < 0.191	U
Bis (2-Chloroethyl) Ether	ug/L	-/-	1/Year	Composite	ND < 0.191	U
Bis (2-Chloroisopropyl) Ether	ug/L	-/-	1/Year	Composite	ND < 0.191	U
Bis (2-Ethylhexyl) Phthalate	ug/L	-/-	1/Year	Composite	10.6	--
Bromodichloromethane	ug/L	-/-	1/Year	Grab	ND < 0.25	U
Bromoform	ug/L	-/-	1/Year	Grab	ND < 0.40	U
Bromomethane	ug/L	-/-	1/Year	Grab	ND < 0.25	U
Butylbenzylphthalate	ug/L	-/-	1/Year	Composite	ND < 1.91	U
Carbon Tetrachloride	ug/L	-/-	1/Year	Grab	ND < 0.25	U
Chlordane	ug/L	-/-	1/Year	Composite	ND < 0.078	U
Chlorobenzene	ug/L	-/-	1/Year	Grab	ND < 0.25	U
Chloroethane	ug/L	-/-	1/Year	Grab	ND < 0.40	U
Chloroform	ug/L	-/-	1/Year	Grab	ND < 0.25	U
Chloromethane	ug/L	-/-	1/Year	Grab	ND < 0.25	U
Chromium	ug/L	-/-	1/Year	Composite	5.4	--
Chromium VI	ug/L	-/-	1/Year	Composite	ND < 0.25	U
Chrysene	ug/L	-/-	1/Year	Composite	ND < 0.191	U
cis-1,3-Dichloropropene	ug/L	-/-	1/Year	Grab	ND < 0.25	U
delta-BHC	ug/L	-/-	1/Year	Composite	ND < 0.0034	U
Dibenzo(a,h)anthracene	ug/L	-/-	1/Year	Composite	ND < 0.239	U
Dibromochloromethane	ug/L	-/-	1/Year	Grab	ND < 0.25	U
Dieldrin	ug/L	-/-	1/Year	Composite	ND < 0.0020	U
Diethylphthalate	ug/L	-/-	1/Year	Composite	ND < 0.478	U
Dimethylphthalate	ug/L	-/-	1/Year	Composite	ND < 0.239	U

See attached notes for abbreviations, definitions, and other explanations for the data presented.

OUTFALL 009 (WS-13 DRAINAGE)

FIRST QUARTER 2016 REPORTING SUMMARY
 THE BOEING COMPANY
 SANTA SUSANA FIELD LABORATORY
 NPDES PERMIT CA0001309

January 1 through March 31, 2016

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	SAMPLE FREQUENCY	3/07/2016 and 3/08/2016 (Grab & Composite)		
				SAMPLE TYPE	RESULT	VALIDATION QUALIFIER
Di-n-butylphthalate	ug/L	-/-	1/Year	Composite	ND < 0.957	U
Di-n-octylphthalate	ug/L	-/-	1/Year	Composite	ND < 1.91	U
Endosulfan I	ug/L	-/-	1/Year	Composite	ND < 0.0029	U
Endosulfan II	ug/L	-/-	1/Year	Composite	ND < 0.0020	U
Endosulfan Sulfate	ug/L	-/-	1/Year	Composite	ND < 0.0029	U
Endrin	ug/L	-/-	1/Year	Composite	ND < 0.0020	U
Endrin Aldehyde	ug/L	-/-	1/Year	Composite	ND < 0.0020	U
Ethylbenzene	ug/L	-/-	1/Year	Grab	ND < 0.25	U
Fluoranthene	ug/L	-/-	1/Year	Composite	ND < 0.191	U
Fluorene	ug/L	-/-	1/Year	Composite	ND < 0.191	U
Heptachlor	ug/L	-/-	1/Year	Composite	ND < 0.0029	U
Heptachlor Epoxide	ug/L	-/-	1/Year	Composite	ND < 0.0024	U
Hexachlorobenzene	ug/L	-/-	1/Year	Composite	ND < 0.478	U
Hexachlorobutadiene	ug/L	-/-	1/Year	Composite	ND < 0.478	U
Hexachlorocyclopentadiene	ug/L	-/-	1/Year	Composite	ND < 1.91	UJ (L1)
Hexachloroethane	ug/L	-/-	1/Year	Composite	ND < 0.478	U
Indeno(1,2,3-cd)pyrene	ug/L	-/-	1/Year	Composite	ND < 0.957	U
Isophorone	ug/L	-/-	1/Year	Composite	ND < 0.478	U
Lindane (gamma-BHC)	ug/L	-/-	1/Year	Composite	ND < 0.0029	U
Methylene chloride	ug/L	-/-	1/Year	Grab	ND < 1.4	U (T)
Naphthalene	ug/L	-/-	1/Year	Grab	ND < 0.40	U
Naphthalene	ug/L	-/-	1/Year	Composite	ND < 0.478	U
Nitrobenzene	ug/L	-/-	1/Year	Composite	ND < 0.478	U
N-Nitrosodimethylamine	ug/L	-/-	1/Year	Composite	ND < 0.957	U
N-Nitroso-di-n-propylamine	ug/L	-/-	1/Year	Composite	ND < 0.957	U
N-Nitrosodiphenylamine	ug/L	-/-	1/Year	Composite	ND < 0.478	U
Pentachlorophenol	ug/L	-/-	1/Year	Composite	ND < 0.957	U
Phenanthrene	ug/L	-/-	1/Year	Composite	ND < 0.191	U
Phenol	ug/L	-/-	1/Year	Composite	ND < 0.478	U
Pyrene	ug/L	-/-	1/Year	Composite	ND < 0.191	U
Tetrachloroethene	ug/L	-/-	1/Year	Grab	ND < 0.25	U
Toluene	ug/L	-/-	1/Year	Grab	ND < 0.25	U
Toxaphene	ug/L	-/-	1/Year	Composite	ND < 0.24	U
trans-1,2-Dichloroethene	ug/L	-/-	1/Year	Grab	ND < 0.25	U
trans-1,3-Dichloropropene	ug/L	-/-	1/Year	Grab	ND < 0.25	U
Trichloroethene	ug/L	-/-	1/Year	Grab	ND < 0.25	U
Trichlorofluoromethane	ug/L	-/-	1/Year	Grab	ND < 0.25	U
Vinyl chloride	ug/L	-/-	1/Year	Grab	ND < 0.25	U
Xylenes (Total)	ug/L	-/-	1/Year	Grab	ND < 0.50	U
EFFLUENT MONITORING (NO LIMITATIONS) POLLUTANTS						
Aluminum	ug/L	-/-	1/Year	Composite	3,400	--
Chlorpyrifos	ug/L	-/-	1/Year	Composite	ND < 0.53	U
Diazinon	ug/L	-/-	1/Year	Composite	ND < 0.13	U
E. Coli	MPN/100mL	-/-	1/Year	Grab	270	--
Hardness	mg/L	-/-	1/Year	Composite	36	--
Iron	mg/L	-/-	1/Year	Composite	3.9	--
Selenium	ug/L	-/-	1/Discharge	Composite	ND < 0.50	U
Silver	ug/L	-/-	1/Discharge	Composite	0.62	J (DNQ)
Total Suspended Solids	mg/L	-/-	1/Year	Composite	20	J- (H)
Vanadium	ug/L	-/-	1/Year	Composite	8.1	J (DNQ)

See attached notes for abbreviations, definitions, and other explanations for the data presented.

OUTFALL 009 (WS-13 DRAINAGE)

FIRST QUARTER 2016 REPORTING SUMMARY
 THE BOEING COMPANY
 SANTA SUSANA FIELD LABORATORY
 NPDES PERMIT CA0001309

January 1 through March 31, 2016

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	SAMPLE FREQUENCY	3/07/2016 and 3/08/2016 (Grab & Composite)		
				SAMPLE TYPE	RESULT	VALIDATION QUALIFIER
ADDITIONAL POLLUTANTS						
Aluminum, dissolved	ug/L	-/-	Additional	Composite	920	J+ (Q)
Antimony, dissolved	ug/L	-/-	Additional	Composite	0.77	J (DNQ)
Arsenic, dissolved	ug/L	-/-	Additional	Composite	ND < 5.0	U
Beryllium, dissolved	ug/L	-/-	Additional	Composite	ND < 1.0	U
Boron, dissolved	mg/L	-/-	Additional	Composite	0.050	--
Cadmium, dissolved	ug/L	-/-	Additional	Composite	ND < 0.25	U
Chromium, dissolved	ug/L	-/-	Additional	Composite	2.5	J (DNQ)
cis-1,2-Dichloroethene	ug/L	-/-	1/Year	Grab	ND < 0.25	U
Copper, dissolved	ug/L	-/-	Additional	Composite	5.4	--
Hardness, dissolved	mg/L	-/-	Additional	Composite	33	--
Human Bacteroides	CEs/100mL	-/-	Additional	Grab	ND	U
Iron, dissolved	mg/L	-/-	Additional	Composite	0.95	J+ (Q)
Lead, dissolved	ug/L	-/-	Additional	Composite	1.4	--
Mercury, dissolved	ug/L	-/-	Additional	Composite	ND < 0.10	U
Nickel, dissolved	ug/L	-/-	Additional	Composite	ND < 5.0	U
Selenium, dissolved	ug/L	-/-	Additional	Composite	ND < 0.50	U
Silver, dissolved	ug/L	-/-	Additional	Composite	ND < 0.50	*
Thallium, dissolved	ug/L	-/-	Additional	Composite	ND < 0.50	U
Vanadium, dissolved	ug/L	-/-	Additional	Composite	ND < 5.0	U
Zinc, dissolved	ug/L	-/-	Additional	Composite	14	J (DNQ)

See attached notes for abbreviations, definitions,
 and other explanations for the data presented.

OUTFALL 009 (WS-13 DRAINAGE)

**FIRST QUARTER 2016 REPORTING SUMMARY
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY
NPDES PERMIT CA0001309**

January 1 through March 31, 2016

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	SAMPLE FREQUENCY	3/11/2016 and 3/12/2016 (Grab & Composite)		
				SAMPLE TYPE	RESULT	VALIDATION QUALIFIER
Flow	MGD	64.33/-	1/Discharge	Meas	0.008196	*
CONVENTIONAL POLLUTANTS						
Oil & Grease	mg/L	15/-	1/Discharge	Grab	ND < 1.3	U
pH (Field)	s.u.	6.5-8.5/-	1/Discharge	Grab	6.94	*
PRIORITY POLLUTANTS						
Antimony	ug/L	6.0/-	1/Discharge	Composite	0.56	J (DNQ)
Cadmium	ug/L	4.0/-	1/Discharge	Composite	ND < 0.25	U
Copper	ug/L	13/-	1/Discharge	Composite	3.5	--
Cyanide	ug/L	9.5/-	1/Discharge	Composite	ND < 2.5	U
Lead	ug/L	5.2/-	1/Discharge	Composite	0.74	J (DNQ)
Mercury	ug/L	0.13/-	1/Discharge	Composite	ND < 0.10	U
Nickel	ug/L	86/-	1/Discharge	Composite	ND < 5.0	U
Thallium	ug/L	2.0/-	1/Discharge	Composite	ND < 0.50	U
Zinc	ug/L	120/-	1/Discharge	Composite	41	--
NON-CONVENTIONAL POLLUTANTS						
Boron	mg/L	1.0/-	1/Year	ANR	ANR	ANR
Chloride	mg/L	150/-	1/Discharge	Composite	4.5	--
Chronic Toxicity	Pass or % Effect	Pass or % Effect <50	1st & 2nd rain event/Year	ANR	ANR	ANR
Fluoride	mg/L	1.6/-	1/Year	ANR	ANR	ANR
Nitrate + Nitrite as Nitrogen (N)	mg/L	10/-	1/Discharge	Composite	0.56	J- (H)
Perchlorate	ug/L	6.0/-	1/Semiannual	ANR	ANR	ANR
Sulfate	mg/L	250/-	1/Discharge	Composite	5.3	--
Temperature (Field)	deg. F	86/-	1/Discharge	Grab	50.97	*
Total Dissolved Solids	mg/L	850/-	1/Discharge	Composite	85	--
REMAINING PRIORITY POLLUTANTS						
1,1,1-Trichloroethane	ug/L	-/-	1/Year	ANR	ANR	ANR
1,1,2,2-Tetrachloroethane	ug/L	-/-	1/Year	ANR	ANR	ANR
1,1,2-Trichloroethane	ug/L	-/-	1/Year	ANR	ANR	ANR
1,1-Dichloroethane	ug/L	-/-	1/Year	ANR	ANR	ANR
1,1-Dichloroethene	ug/L	-/-	1/Year	ANR	ANR	ANR
1,2,4-Trichlorobenzene	ug/L	-/-	1/Year	ANR	ANR	ANR
1,2-Dichlorobenzene	ug/L	-/-	1/Year	ANR	ANR	ANR
1,2-Dichlorobenzene	ug/L	-/-	1/Year	ANR	ANR	ANR
1,2-Dichloroethane	ug/L	-/-	1/Year	ANR	ANR	ANR
1,2-Dichloropropane	ug/L	-/-	1/Year	ANR	ANR	ANR
1,2-Diphenylhydrazine/Azobenzene	ug/L	-/-	1/Year	ANR	ANR	ANR
1,3-Dichlorobenzene	ug/L	-/-	1/Year	ANR	ANR	ANR
1,3-Dichlorobenzene	ug/L	-/-	1/Year	ANR	ANR	ANR
1,4-Dichlorobenzene	ug/L	-/-	1/Year	ANR	ANR	ANR
1,4-Dichlorobenzene	ug/L	-/-	1/Year	ANR	ANR	ANR
2,4-Dichlorophenol	ug/L	-/-	1/Year	ANR	ANR	ANR
2,4-Dimethylphenol	ug/L	-/-	1/Year	ANR	ANR	ANR
2,4-Dinitrophenol	ug/L	-/-	1/Year	ANR	ANR	ANR
2,4-Dinitrotoluene	ug/L	-/-	1/Year	ANR	ANR	ANR
2,4,6-Trichlorophenol	ug/L	-/-	1/Year	ANR	ANR	ANR
2,6-Dinitrotoluene	ug/L	-/-	1/Year	ANR	ANR	ANR
2-Chloroethylvinylether	ug/L	-/-	1/Year	ANR	ANR	ANR
2-Chloronaphthalene	ug/L	-/-	1/Year	ANR	ANR	ANR
2-Chlorophenol	ug/L	-/-	1/Year	ANR	ANR	ANR
2-Methyl-4,6-Dinitrophenol	ug/L	-/-	1/Year	ANR	ANR	ANR
2-Nitrophenol	ug/L	-/-	1/Year	ANR	ANR	ANR
3,3'-Dichlorobenzidine	ug/L	-/-	1/Year	ANR	ANR	ANR
4,4'-DDD	ug/L	-/-	1/Year	ANR	ANR	ANR

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OUTFALL 009 (WS-13 DRAINAGE)

FIRST QUARTER 2016 REPORTING SUMMARY
 THE BOEING COMPANY
 SANTA SUSANA FIELD LABORATORY
 NPDES PERMIT CA0001309

January 1 through March 31, 2016

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	SAMPLE FREQUENCY	3/11/2016 and 3/12/2016 (Grab & Composite)		
				SAMPLE TYPE	RESULT	VALIDATION QUALIFIER
4,4'-DDE	ug/L	-/-	1/Year	ANR	ANR	ANR
4,4'-DDT	ug/L	-/-	1/Year	ANR	ANR	ANR
4-Bromophenylphenylether	ug/L	-/-	1/Year	ANR	ANR	ANR
4-Chloro-3-methylphenol	ug/L	-/-	1/Year	ANR	ANR	ANR
4-Chlorophenylphenylether	ug/L	-/-	1/Year	ANR	ANR	ANR
4-Nitrophenol	ug/L	-/-	1/Year	ANR	ANR	ANR
Acenaphthene	ug/L	-/-	1/Year	ANR	ANR	ANR
Acenaphthylene	ug/L	-/-	1/Year	ANR	ANR	ANR
Acrolein	ug/L	-/-	1/Year	ANR	ANR	ANR
Acrylonitrile	ug/L	-/-	1/Year	ANR	ANR	ANR
Aldrin	ug/L	-/-	1/Year	ANR	ANR	ANR
alpha-BHC	ug/L	-/-	1/Year	ANR	ANR	ANR
Anthracene	ug/L	-/-	1/Year	ANR	ANR	ANR
Aroclor 1016	ug/L	-/-	1/Year	ANR	ANR	ANR
Aroclor 1221	ug/L	-/-	1/Year	ANR	ANR	ANR
Aroclor 1232	ug/L	-/-	1/Year	ANR	ANR	ANR
Aroclor 1242	ug/L	-/-	1/Year	ANR	ANR	ANR
Aroclor 1248	ug/L	-/-	1/Year	ANR	ANR	ANR
Aroclor 1254	ug/L	-/-	1/Year	ANR	ANR	ANR
Aroclor 1260	ug/L	-/-	1/Year	ANR	ANR	ANR
Arsenic	ug/L	-/-	1/Year	ANR	ANR	ANR
Asbestos	MFL	-/-	1/Year	ANR	ANR	ANR
Benzene	ug/L	-/-	1/Year	ANR	ANR	ANR
Benzidine	ug/L	-/-	1/Year	ANR	ANR	ANR
Benzo(a)anthracene	ug/L	-/-	1/Year	ANR	ANR	ANR
Benzo(a)pyrene	ug/L	-/-	1/Year	ANR	ANR	ANR
Benzo(b)fluoranthene	ug/L	-/-	1/Year	ANR	ANR	ANR
Benzo(g,h,i)Perylene	ug/L	-/-	1/Year	ANR	ANR	ANR
Benzo(k)fluoranthene	ug/L	-/-	1/Year	ANR	ANR	ANR
Beryllium	ug/L	-/-	1/Year	ANR	ANR	ANR
beta-BHC	ug/L	-/-	1/Year	ANR	ANR	ANR
Bis (2-Chloroethoxy) Methane	ug/L	-/-	1/Year	ANR	ANR	ANR
Bis (2-Chloroethyl) Ether	ug/L	-/-	1/Year	ANR	ANR	ANR
Bis (2-Chloroisopropyl) Ether	ug/L	-/-	1/Year	ANR	ANR	ANR
Bis (2-Ethylhexyl) Phthalate	ug/L	-/-	1/Year	ANR	ANR	ANR
Bromodichloromethane	ug/L	-/-	1/Year	ANR	ANR	ANR
Bromoform	ug/L	-/-	1/Year	ANR	ANR	ANR
Bromomethane	ug/L	-/-	1/Year	ANR	ANR	ANR
Butylbenzylphthalate	ug/L	-/-	1/Year	ANR	ANR	ANR
Carbon Tetrachloride	ug/L	-/-	1/Year	ANR	ANR	ANR
Chlordane	ug/L	-/-	1/Year	ANR	ANR	ANR
Chlorobenzene	ug/L	-/-	1/Year	ANR	ANR	ANR
Chloroethane	ug/L	-/-	1/Year	ANR	ANR	ANR
Chloroform	ug/L	-/-	1/Year	ANR	ANR	ANR
Chloromethane	ug/L	-/-	1/Year	ANR	ANR	ANR
Chromium	ug/L	-/-	1/Year	ANR	ANR	ANR
Chromium VI	ug/L	-/-	1/Year	ANR	ANR	ANR
Chrysene	ug/L	-/-	1/Year	ANR	ANR	ANR
cis-1,3-Dichloropropene	ug/L	-/-	1/Year	ANR	ANR	ANR
delta-BHC	ug/L	-/-	1/Year	ANR	ANR	ANR
Dibenzo(a,h)anthracene	ug/L	-/-	1/Year	ANR	ANR	ANR
Dibromochloromethane	ug/L	-/-	1/Year	ANR	ANR	ANR
Dieldrin	ug/L	-/-	1/Year	ANR	ANR	ANR
Diethylphthalate	ug/L	-/-	1/Year	ANR	ANR	ANR
Dimethylphthalate	ug/L	-/-	1/Year	ANR	ANR	ANR

See attached notes for abbreviations, definitions, and other explanations for the data presented.

OUTFALL 009 (WS-13 DRAINAGE)

FIRST QUARTER 2016 REPORTING SUMMARY
 THE BOEING COMPANY
 SANTA SUSANA FIELD LABORATORY
 NPDES PERMIT CA0001309

January 1 through March 31, 2016

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	SAMPLE FREQUENCY	3/11/2016 and 3/12/2016 (Grab & Composite)		
				SAMPLE TYPE	RESULT	VALIDATION QUALIFIER
Di-n-butylphthalate	ug/L	-/-	1/Year	ANR	ANR	ANR
Di-n-octylphthalate	ug/L	-/-	1/Year	ANR	ANR	ANR
Endosulfan I	ug/L	-/-	1/Year	ANR	ANR	ANR
Endosulfan II	ug/L	-/-	1/Year	ANR	ANR	ANR
Endosulfan Sulfate	ug/L	-/-	1/Year	ANR	ANR	ANR
Endrin	ug/L	-/-	1/Year	ANR	ANR	ANR
Endrin Aldehyde	ug/L	-/-	1/Year	ANR	ANR	ANR
Ethylbenzene	ug/L	-/-	1/Year	ANR	ANR	ANR
Fluoranthene	ug/L	-/-	1/Year	ANR	ANR	ANR
Fluorene	ug/L	-/-	1/Year	ANR	ANR	ANR
Heptachlor	ug/L	-/-	1/Year	ANR	ANR	ANR
Heptachlor Epoxide	ug/L	-/-	1/Year	ANR	ANR	ANR
Hexachlorobenzene	ug/L	-/-	1/Year	ANR	ANR	ANR
Hexachlorobutadiene	ug/L	-/-	1/Year	ANR	ANR	ANR
Hexachlorocyclopentadiene	ug/L	-/-	1/Year	ANR	ANR	ANR
Hexachloroethane	ug/L	-/-	1/Year	ANR	ANR	ANR
Indeno(1,2,3-cd)pyrene	ug/L	-/-	1/Year	ANR	ANR	ANR
Isophorone	ug/L	-/-	1/Year	ANR	ANR	ANR
Lindane (gamma-BHC)	ug/L	-/-	1/Year	ANR	ANR	ANR
Methylene chloride	ug/L	-/-	1/Year	ANR	ANR	ANR
Naphthalene	ug/L	-/-	1/Year	ANR	ANR	ANR
Naphthalene	ug/L	-/-	1/Year	ANR	ANR	ANR
Nitrobenzene	ug/L	-/-	1/Year	ANR	ANR	ANR
N-Nitrosodimethylamine	ug/L	-/-	1/Year	ANR	ANR	ANR
N-Nitroso-di-n-propylamine	ug/L	-/-	1/Year	ANR	ANR	ANR
N-Nitrosodiphenylamine	ug/L	-/-	1/Year	ANR	ANR	ANR
Pentachlorophenol	ug/L	-/-	1/Year	ANR	ANR	ANR
Phenanthrene	ug/L	-/-	1/Year	ANR	ANR	ANR
Phenol	ug/L	-/-	1/Year	ANR	ANR	ANR
Pyrene	ug/L	-/-	1/Year	ANR	ANR	ANR
Tetrachloroethene	ug/L	-/-	1/Year	ANR	ANR	ANR
Toluene	ug/L	-/-	1/Year	ANR	ANR	ANR
Toxaphene	ug/L	-/-	1/Year	ANR	ANR	ANR
trans-1,2-Dichloroethene	ug/L	-/-	1/Year	ANR	ANR	ANR
trans-1,3-Dichloropropene	ug/L	-/-	1/Year	ANR	ANR	ANR
Trichloroethene	ug/L	-/-	1/Year	ANR	ANR	ANR
Trichlorofluoromethane	ug/L	-/-	1/Year	ANR	ANR	ANR
Vinyl chloride	ug/L	-/-	1/Year	ANR	ANR	ANR
Xylenes (Total)	ug/L	-/-	1/Year	ANR	ANR	ANR
EFFLUENT MONITORING (NO LIMITATIONS) POLLUTANTS						
Aluminum	ug/L	-/-	1/Year	ANR	ANR	ANR
Chlorpyrifos	ug/L	-/-	1/Year	ANR	ANR	ANR
Diazinon	ug/L	-/-	1/Year	ANR	ANR	ANR
E. Coli	MPN/100mL	-/-	1/Year	ANR	ANR	ANR
Hardness	mg/L	-/-	1/Year	ANR	ANR	ANR
Iron	mg/L	-/-	1/Year	ANR	ANR	ANR
Selenium	ug/L	-/-	1/Discharge	Composite	ND < 0.50	U
Silver	ug/L	-/-	1/Discharge	Composite	ND < 0.50	*
Total Suspended Solids	mg/L	-/-	1/Year	ANR	ANR	ANR
Vanadium	ug/L	-/-	1/Year	ANR	ANR	ANR

See attached notes for abbreviations, definitions, and other explanations for the data presented.

OUTFALL 009 (WS-13 DRAINAGE)

FIRST QUARTER 2016 REPORTING SUMMARY
 THE BOEING COMPANY
 SANTA SUSANA FIELD LABORATORY
 NPDES PERMIT CA0001309

January 1 through March 31, 2016

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	SAMPLE FREQUENCY	3/11/2016 and 3/12/2016 (Grab & Composite)		
				SAMPLE TYPE	RESULT	VALIDATION QUALIFIER
ADDITIONAL POLLUTANTS						
Aluminum, dissolved	ug/L	-/-	Additional	ANR	ANR	ANR
Antimony, dissolved	ug/L	-/-	Additional	Composite	ND < 0.50	U
Arsenic, dissolved	ug/L	-/-	Additional	ANR	ANR	ANR
Beryllium, dissolved	ug/L	-/-	Additional	ANR	ANR	ANR
Boron, dissolved	mg/L	-/-	Additional	ANR	ANR	ANR
Cadmium, dissolved	ug/L	-/-	Additional	Composite	ND < 0.25	U
Chromium, dissolved	ug/L	-/-	Additional	ANR	ANR	ANR
cis-1,2-Dichloroethene	ug/L	-/-	1/Year	ANR	ANR	ANR
Copper, dissolved	ug/L	-/-	Additional	Composite	2.6	J- (B)
Hardness, dissolved	mg/L	-/-	Additional	ANR	ANR	ANR
Human Bacteroides	CEs/100mL	-/-	Additional	ANR	ANR	ANR
Iron, dissolved	mg/L	-/-	Additional	ANR	ANR	ANR
Lead, dissolved	ug/L	-/-	Additional	Composite	ND < 0.50	U
Mercury, dissolved	ug/L	-/-	Additional	Composite	ND < 0.10	U
Nickel, dissolved	ug/L	-/-	Additional	Composite	ND < 5.0	U
Selenium, dissolved	ug/L	-/-	Additional	Composite	ND < 0.50	U
Silver, dissolved	ug/L	-/-	Additional	Composite	ND < 0.50	*
Thallium, dissolved	ug/L	-/-	Additional	Composite	ND < 0.50	U
Vanadium, dissolved	ug/L	-/-	Additional	ANR	ANR	ANR
Zinc, dissolved	ug/L	-/-	Additional	Composite	ND < 10	U

See attached notes for abbreviations, definitions,
 and other explanations for the data presented.

OUTFALL 009 (WS-13 DRAINAGE)

FIRST QUARTER 2016 REPORTING SUMMARY
 THE BOEING COMPANY
 SANTA SUSANA FIELD LABORATORY
 NPDES PERMIT CA0001309

January 1 through March 31, 2016

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	SAMPLE FREQUENCY	3/11/2016 (Field Duplicate)		
				SAMPLE TYPE	RESULT	VALIDATION QUALIFIER
Flow	MGD	64.33/-	1/Discharge	ANR	ANR	ANR
CONVENTIONAL POLLUTANTS						
Oil & Grease	mg/L	15/-	1/Discharge	Grab	ND < 1.3	U
pH (Field)	s.u.	6.5-8.5/-	1/Discharge	ANR	ANR	ANR
PRIORITY POLLUTANTS						
Antimony	ug/L	6.0/-	1/Discharge	ANR	ANR	ANR
Cadmium	ug/L	4.0/-	1/Discharge	ANR	ANR	ANR
Copper	ug/L	13/-	1/Discharge	ANR	ANR	ANR
Cyanide	ug/L	9.5/-	1/Discharge	ANR	ANR	ANR
Lead	ug/L	5.2/-	1/Discharge	ANR	ANR	ANR
Mercury	ug/L	0.13/-	1/Discharge	ANR	ANR	ANR
Nickel	ug/L	86/-	1/Discharge	ANR	ANR	ANR
Thallium	ug/L	2.0/-	1/Discharge	ANR	ANR	ANR
Zinc	ug/L	120/-	1/Discharge	ANR	ANR	ANR
NON-CONVENTIONAL POLLUTANTS						
Boron	mg/L	1.0/-	1/Year	ANR	ANR	ANR
Chloride	mg/L	150/-	1/Discharge	ANR	ANR	ANR
Chronic Toxicity	Pass or % Effect	Pass or % Effect <50	1st & 2nd rain event/Year	ANR	ANR	ANR
Fluoride	mg/L	1.6/-	1/Year	ANR	ANR	ANR
Nitrate + Nitrite as Nitrogen (N)	mg/L	10/-	1/Discharge	ANR	ANR	ANR
Perchlorate	ug/L	6.0/-	1/Semiannual	ANR	ANR	ANR
Sulfate	mg/L	250/-	1/Discharge	ANR	ANR	ANR
Temperature (Field)	deg. F	86/-	1/Discharge	ANR	ANR	ANR
Total Dissolved Solids	mg/L	850/-	1/Discharge	ANR	ANR	ANR
REMAINING PRIORITY POLLUTANTS						
1,1,1-Trichloroethane	ug/L	-/-	1/Year	ANR	ANR	ANR
1,1,2,2-Tetrachloroethane	ug/L	-/-	1/Year	ANR	ANR	ANR
1,1,2-Trichloroethane	ug/L	-/-	1/Year	ANR	ANR	ANR
1,1-Dichloroethane	ug/L	-/-	1/Year	ANR	ANR	ANR
1,1-Dichloroethene	ug/L	-/-	1/Year	ANR	ANR	ANR
1,2,4-Trichlorobenzene	ug/L	-/-	1/Year	ANR	ANR	ANR
1,2-Dichlorobenzene	ug/L	-/-	1/Year	ANR	ANR	ANR
1,2-Dichlorobenzene	ug/L	-/-	1/Year	ANR	ANR	ANR
1,2-Dichloroethane	ug/L	-/-	1/Year	ANR	ANR	ANR
1,2-Dichloropropane	ug/L	-/-	1/Year	ANR	ANR	ANR
1,2-Diphenylhydrazine/Azobenzene	ug/L	-/-	1/Year	ANR	ANR	ANR
1,3-Dichlorobenzene	ug/L	-/-	1/Year	ANR	ANR	ANR
1,3-Dichlorobenzene	ug/L	-/-	1/Year	ANR	ANR	ANR
1,4-Dichlorobenzene	ug/L	-/-	1/Year	ANR	ANR	ANR
1,4-Dichlorobenzene	ug/L	-/-	1/Year	ANR	ANR	ANR
2,4-Dichlorophenol	ug/L	-/-	1/Year	ANR	ANR	ANR
2,4-Dimethylphenol	ug/L	-/-	1/Year	ANR	ANR	ANR
2,4-Dinitrophenol	ug/L	-/-	1/Year	ANR	ANR	ANR
2,4-Dinitrotoluene	ug/L	-/-	1/Year	ANR	ANR	ANR
2,4,6-Trichlorophenol	ug/L	-/-	1/Year	ANR	ANR	ANR
2,6-Dinitrotoluene	ug/L	-/-	1/Year	ANR	ANR	ANR
2-Chloroethylvinylether	ug/L	-/-	1/Year	ANR	ANR	ANR
2-Chloronaphthalene	ug/L	-/-	1/Year	ANR	ANR	ANR
2-Chlorophenol	ug/L	-/-	1/Year	ANR	ANR	ANR
2-Methyl-4,6-Dinitrophenol	ug/L	-/-	1/Year	ANR	ANR	ANR
2-Nitrophenol	ug/L	-/-	1/Year	ANR	ANR	ANR
3,3'-Dichlorobenzidine	ug/L	-/-	1/Year	ANR	ANR	ANR
4,4'-DDD	ug/L	-/-	1/Year	ANR	ANR	ANR

See attached notes for abbreviations, definitions, and other explanations for the data presented.

OUTFALL 009 (WS-13 DRAINAGE)

FIRST QUARTER 2016 REPORTING SUMMARY
 THE BOEING COMPANY
 SANTA SUSANA FIELD LABORATORY
 NPDES PERMIT CA0001309

January 1 through March 31, 2016

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	SAMPLE FREQUENCY	3/11/2016 (Field Duplicate)		
				SAMPLE TYPE	RESULT	VALIDATION QUALIFIER
4,4'-DDE	ug/L	-/-	1/Year	ANR	ANR	ANR
4,4'-DDT	ug/L	-/-	1/Year	ANR	ANR	ANR
4-Bromophenylphenylether	ug/L	-/-	1/Year	ANR	ANR	ANR
4-Chloro-3-methylphenol	ug/L	-/-	1/Year	ANR	ANR	ANR
4-Chlorophenylphenylether	ug/L	-/-	1/Year	ANR	ANR	ANR
4-Nitrophenol	ug/L	-/-	1/Year	ANR	ANR	ANR
Acenaphthene	ug/L	-/-	1/Year	ANR	ANR	ANR
Acenaphthylene	ug/L	-/-	1/Year	ANR	ANR	ANR
Acrolein	ug/L	-/-	1/Year	ANR	ANR	ANR
Acrylonitrile	ug/L	-/-	1/Year	ANR	ANR	ANR
Aldrin	ug/L	-/-	1/Year	ANR	ANR	ANR
alpha-BHC	ug/L	-/-	1/Year	ANR	ANR	ANR
Anthracene	ug/L	-/-	1/Year	ANR	ANR	ANR
Aroclor 1016	ug/L	-/-	1/Year	ANR	ANR	ANR
Aroclor 1221	ug/L	-/-	1/Year	ANR	ANR	ANR
Aroclor 1232	ug/L	-/-	1/Year	ANR	ANR	ANR
Aroclor 1242	ug/L	-/-	1/Year	ANR	ANR	ANR
Aroclor 1248	ug/L	-/-	1/Year	ANR	ANR	ANR
Aroclor 1254	ug/L	-/-	1/Year	ANR	ANR	ANR
Aroclor 1260	ug/L	-/-	1/Year	ANR	ANR	ANR
Arsenic	ug/L	-/-	1/Year	ANR	ANR	ANR
Asbestos	MFL	-/-	1/Year	ANR	ANR	ANR
Benzene	ug/L	-/-	1/Year	ANR	ANR	ANR
Benzidine	ug/L	-/-	1/Year	ANR	ANR	ANR
Benzo(a)anthracene	ug/L	-/-	1/Year	ANR	ANR	ANR
Benzo(a)pyrene	ug/L	-/-	1/Year	ANR	ANR	ANR
Benzo(b)fluoranthene	ug/L	-/-	1/Year	ANR	ANR	ANR
Benzo(g,h,i)Perylene	ug/L	-/-	1/Year	ANR	ANR	ANR
Benzo(k)fluoranthene	ug/L	-/-	1/Year	ANR	ANR	ANR
Beryllium	ug/L	-/-	1/Year	ANR	ANR	ANR
beta-BHC	ug/L	-/-	1/Year	ANR	ANR	ANR
Bis (2-Chloroethoxy) Methane	ug/L	-/-	1/Year	ANR	ANR	ANR
Bis (2-Chloroethyl) Ether	ug/L	-/-	1/Year	ANR	ANR	ANR
Bis (2-Chloroisopropyl) Ether	ug/L	-/-	1/Year	ANR	ANR	ANR
Bis (2-Ethylhexyl) Phthalate	ug/L	-/-	1/Year	ANR	ANR	ANR
Bromodichloromethane	ug/L	-/-	1/Year	ANR	ANR	ANR
Bromoform	ug/L	-/-	1/Year	ANR	ANR	ANR
Bromomethane	ug/L	-/-	1/Year	ANR	ANR	ANR
Butylbenzylphthalate	ug/L	-/-	1/Year	ANR	ANR	ANR
Carbon Tetrachloride	ug/L	-/-	1/Year	ANR	ANR	ANR
Chlordane	ug/L	-/-	1/Year	ANR	ANR	ANR
Chlorobenzene	ug/L	-/-	1/Year	ANR	ANR	ANR
Chloroethane	ug/L	-/-	1/Year	ANR	ANR	ANR
Chloroform	ug/L	-/-	1/Year	ANR	ANR	ANR
Chloromethane	ug/L	-/-	1/Year	ANR	ANR	ANR
Chromium	ug/L	-/-	1/Year	ANR	ANR	ANR
Chromium VI	ug/L	-/-	1/Year	ANR	ANR	ANR
Chrysene	ug/L	-/-	1/Year	ANR	ANR	ANR
cis-1,3-Dichloropropene	ug/L	-/-	1/Year	ANR	ANR	ANR
delta-BHC	ug/L	-/-	1/Year	ANR	ANR	ANR
Dibenzo(a,h)anthracene	ug/L	-/-	1/Year	ANR	ANR	ANR
Dibromochloromethane	ug/L	-/-	1/Year	ANR	ANR	ANR
Dieldrin	ug/L	-/-	1/Year	ANR	ANR	ANR
Diethylphthalate	ug/L	-/-	1/Year	ANR	ANR	ANR
Dimethylphthalate	ug/L	-/-	1/Year	ANR	ANR	ANR

See attached notes for abbreviations, definitions, and other explanations for the data presented.

OUTFALL 009 (WS-13 DRAINAGE)

FIRST QUARTER 2016 REPORTING SUMMARY
 THE BOEING COMPANY
 SANTA SUSANA FIELD LABORATORY
 NPDES PERMIT CA0001309

January 1 through March 31, 2016

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	SAMPLE FREQUENCY	3/11/2016 (Field Duplicate)		
				SAMPLE TYPE	RESULT	VALIDATION QUALIFIER
Di-n-butylphthalate	ug/L	-/-	1/Year	ANR	ANR	ANR
Di-n-octylphthalate	ug/L	-/-	1/Year	ANR	ANR	ANR
Endosulfan I	ug/L	-/-	1/Year	ANR	ANR	ANR
Endosulfan II	ug/L	-/-	1/Year	ANR	ANR	ANR
Endosulfan Sulfate	ug/L	-/-	1/Year	ANR	ANR	ANR
Endrin	ug/L	-/-	1/Year	ANR	ANR	ANR
Endrin Aldehyde	ug/L	-/-	1/Year	ANR	ANR	ANR
Ethylbenzene	ug/L	-/-	1/Year	ANR	ANR	ANR
Fluoranthene	ug/L	-/-	1/Year	ANR	ANR	ANR
Fluorene	ug/L	-/-	1/Year	ANR	ANR	ANR
Heptachlor	ug/L	-/-	1/Year	ANR	ANR	ANR
Heptachlor Epoxide	ug/L	-/-	1/Year	ANR	ANR	ANR
Hexachlorobenzene	ug/L	-/-	1/Year	ANR	ANR	ANR
Hexachlorobutadiene	ug/L	-/-	1/Year	ANR	ANR	ANR
Hexachlorocyclopentadiene	ug/L	-/-	1/Year	ANR	ANR	ANR
Hexachloroethane	ug/L	-/-	1/Year	ANR	ANR	ANR
Indeno(1,2,3-cd)pyrene	ug/L	-/-	1/Year	ANR	ANR	ANR
Isophorone	ug/L	-/-	1/Year	ANR	ANR	ANR
Lindane (gamma-BHC)	ug/L	-/-	1/Year	ANR	ANR	ANR
Methylene chloride	ug/L	-/-	1/Year	ANR	ANR	ANR
Naphthalene	ug/L	-/-	1/Year	ANR	ANR	ANR
Naphthalene	ug/L	-/-	1/Year	ANR	ANR	ANR
Nitrobenzene	ug/L	-/-	1/Year	ANR	ANR	ANR
N-Nitrosodimethylamine	ug/L	-/-	1/Year	ANR	ANR	ANR
N-Nitroso-di-n-propylamine	ug/L	-/-	1/Year	ANR	ANR	ANR
N-Nitrosodiphenylamine	ug/L	-/-	1/Year	ANR	ANR	ANR
Pentachlorophenol	ug/L	-/-	1/Year	ANR	ANR	ANR
Phenanthrene	ug/L	-/-	1/Year	ANR	ANR	ANR
Phenol	ug/L	-/-	1/Year	ANR	ANR	ANR
Pyrene	ug/L	-/-	1/Year	ANR	ANR	ANR
Tetrachloroethene	ug/L	-/-	1/Year	ANR	ANR	ANR
Toluene	ug/L	-/-	1/Year	ANR	ANR	ANR
Toxaphene	ug/L	-/-	1/Year	ANR	ANR	ANR
trans-1,2-Dichloroethene	ug/L	-/-	1/Year	ANR	ANR	ANR
trans-1,3-Dichloropropene	ug/L	-/-	1/Year	ANR	ANR	ANR
Trichloroethene	ug/L	-/-	1/Year	ANR	ANR	ANR
Trichlorofluoromethane	ug/L	-/-	1/Year	ANR	ANR	ANR
Vinyl chloride	ug/L	-/-	1/Year	ANR	ANR	ANR
Xylenes (Total)	ug/L	-/-	1/Year	ANR	ANR	ANR
EFFLUENT MONITORING (NO LIMITATIONS) POLLUTANTS						
Aluminum	ug/L	-/-	1/Year	ANR	ANR	ANR
Chlorpyrifos	ug/L	-/-	1/Year	ANR	ANR	ANR
Diazinon	ug/L	-/-	1/Year	ANR	ANR	ANR
E. Coli	MPN/100mL	-/-	1/Year	ANR	ANR	ANR
Hardness	mg/L	-/-	1/Year	ANR	ANR	ANR
Iron	mg/L	-/-	1/Year	ANR	ANR	ANR
Selenium	ug/L	-/-	1/Discharge	ANR	ANR	ANR
Silver	ug/L	-/-	1/Discharge	ANR	ANR	ANR
Total Suspended Solids	mg/L	-/-	1/Year	ANR	ANR	ANR
Vanadium	ug/L	-/-	1/Year	ANR	ANR	ANR

See attached notes for abbreviations, definitions, and other explanations for the data presented.

OUTFALL 009 (WS-13 DRAINAGE)

FIRST QUARTER 2016 REPORTING SUMMARY
 THE BOEING COMPANY
 SANTA SUSANA FIELD LABORATORY
 NPDES PERMIT CA0001309

January 1 through March 31, 2016

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	SAMPLE FREQUENCY	3/11/2016 (Field Duplicate)		
				SAMPLE TYPE	RESULT	VALIDATION QUALIFIER
ADDITIONAL POLLUTANTS						
Aluminum, dissolved	ug/L	-/-	Additional	ANR	ANR	ANR
Antimony, dissolved	ug/L	-/-	Additional	ANR	ANR	ANR
Arsenic, dissolved	ug/L	-/-	Additional	ANR	ANR	ANR
Beryllium, dissolved	ug/L	-/-	Additional	ANR	ANR	ANR
Boron, dissolved	mg/L	-/-	Additional	ANR	ANR	ANR
Cadmium, dissolved	ug/L	-/-	Additional	ANR	ANR	ANR
Chromium, dissolved	ug/L	-/-	Additional	ANR	ANR	ANR
cis-1,2-Dichloroethene	ug/L	-/-	1/Year	ANR	ANR	ANR
Copper, dissolved	ug/L	-/-	Additional	ANR	ANR	ANR
Hardness, dissolved	mg/L	-/-	Additional	ANR	ANR	ANR
Human Bacteroides	CEs/100mL	-/-	Additional	ANR	ANR	ANR
Iron, dissolved	mg/L	-/-	Additional	ANR	ANR	ANR
Lead, dissolved	ug/L	-/-	Additional	ANR	ANR	ANR
Mercury, dissolved	ug/L	-/-	Additional	ANR	ANR	ANR
Nickel, dissolved	ug/L	-/-	Additional	ANR	ANR	ANR
Selenium, dissolved	ug/L	-/-	Additional	ANR	ANR	ANR
Silver, dissolved	ug/L	-/-	Additional	ANR	ANR	ANR
Thallium, dissolved	ug/L	-/-	Additional	ANR	ANR	ANR
Vanadium, dissolved	ug/L	-/-	Additional	ANR	ANR	ANR
Zinc, dissolved	ug/L	-/-	Additional	ANR	ANR	ANR

See attached notes for abbreviations, definitions,
 and other explanations for the data presented.

OUTFALL 009 (WS-13 DRAINAGE)

FIRST QUARTER 2016 REPORTING SUMMARY
 THE BOEING COMPANY
 SANTA SUSANA FIELD LABORATORY
 NPDES PERMIT CA0001309

Sample Type Composite
 Sample Date January 6, 2016

ANALYTE	SAMPLE FREQUENCY	LAB MDL (ug/L)	LAB RL (ug/L)	LAB RESULT (ug/L)	VALIDATION QUALIFIER	1998 WHO TEF	BEF Great Lakes Water Quality Initiative	TCDD Equivalent (w/out DNQ Values) (ug/L)
1,2,3,4,6,7,8-HpCDD	1/Discharge	4.40E-07	5.00E-05	1.20E-05	UJ (B, F1)	0.01	0.05	ND
1,2,3,4,6,7,8-HpCDF	1/Discharge	5.40E-07	5.00E-05	4.70E-06	U (B)	0.01	0.01	ND
1,2,3,4,7,8,9-HpCDF	1/Discharge	7.30E-07	5.00E-05	ND	U	0.01	0.4	ND
1,2,3,4,7,8-HxCDD	1/Discharge	3.00E-07	5.00E-05	6.60E-07	UJ (*III)	0.1	0.3	ND
1,2,3,4,7,8-HxCDF	1/Discharge	4.50E-07	5.00E-05	7.20E-07	UJ (*III)	0.1	0.08	ND
1,2,3,6,7,8-HxCDD	1/Discharge	2.70E-07	5.00E-05	1.30E-06	UJ (*III)	0.1	0.1	ND
1,2,3,6,7,8-HxCDF	1/Discharge	4.10E-07	5.00E-05	8.00E-07	U (B)	0.1	0.2	ND
1,2,3,7,8,9-HxCDD	1/Discharge	2.40E-07	5.00E-05	8.70E-07	U (B)	0.1	0.1	ND
1,2,3,7,8,9-HxCDF	1/Discharge	3.10E-07	5.00E-05	ND	U	0.1	0.6	ND
1,2,3,7,8-PeCDD	1/Discharge	3.30E-07	5.00E-05	2.90E-07	J (DNQ)	1.0	0.9	ND
1,2,3,7,8-PeCDF	1/Discharge	3.50E-07	5.00E-05	ND	U	0.05	0.2	ND
2,3,4,6,7,8-HxCDF	1/Discharge	3.10E-07	5.00E-05	ND	U	0.1	0.7	ND
2,3,4,7,8-PeCDF	1/Discharge	3.80E-07	5.00E-05	ND	U	0.5	1.6	ND
2,3,7,8-TCDD	1/Discharge	3.20E-07	1.00E-05	ND	U	1.0	1.0	ND
2,3,7,8-TCDF	1/Discharge	2.40E-07	1.00E-05	ND	U	0.1	0.8	ND
OCDD	1/Discharge	1.00E-06	1.00E-04	1.10E-04	J (F1)	0.0001	0.01	1.10E-10
OCDF	1/Discharge	1.00E-06	1.00E-04	1.60E-05	UJ (B, F1)	0.0001	0.02	ND
TCDD TEQ w/out DNQ Values								1.10E-10

TCDD TEQ (PRIORITY POLLUTANTS) PERMIT LIMIT = 2.80E-08

See attached notes for abbreviations, definitions, and other explanations for the data presented.

OUTFALL 009 (WS-13 DRAINAGE)

**FIRST QUARTER 2016 REPORTING SUMMARY
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY
NPDES PERMIT CA0001309**

Sample Type Composite
Sample Date January 6, 2016
Field Duplicate

ANALYTE	SAMPLE FREQUENCY	LAB MDL (ug/L)	LAB RL (ug/L)	LAB RESULT (ug/L)	VALIDATION QUALIFIER	1998 WHO TEF	BEF Great Lakes Water Quality Initiative	TCDD Equivalent (w/out DNQ Values) (ug/L)
1,2,3,4,6,7,8-HpCDD	1/Discharge	2.10E-06	5.00E-05	1.70E-04	J (F1)	0.01	0.05	8.50E-08
1,2,3,4,6,7,8-HpCDF	1/Discharge	8.80E-07	5.00E-05	4.50E-05	U (B)	0.01	0.01	ND
1,2,3,4,7,8,9-HpCDF	1/Discharge	1.20E-06	5.00E-05	3.70E-06	U (B)	0.01	0.4	ND
1,2,3,4,7,8-HxCDD	1/Discharge	4.00E-07	5.00E-05	2.90E-06	UJ (*III)	0.1	0.3	ND
1,2,3,4,7,8-HxCDF	1/Discharge	7.40E-07	5.00E-05	2.20E-06	J (DNQ)	0.1	0.08	ND
1,2,3,6,7,8-HxCDD	1/Discharge	3.80E-07	5.00E-05	8.80E-06	J (DNQ)	0.1	0.1	ND
1,2,3,6,7,8-HxCDF	1/Discharge	6.50E-07	5.00E-05	1.60E-06	U (B)	0.1	0.2	ND
1,2,3,7,8,9-HxCDD	1/Discharge	3.30E-07	5.00E-05	6.10E-06	U (B)	0.1	0.1	ND
1,2,3,7,8,9-HxCDF	1/Discharge	5.10E-07	5.00E-05	ND	U	0.1	0.6	ND
1,2,3,7,8-PeCDD	1/Discharge	4.20E-07	5.00E-05	2.30E-06	J (DNQ)	1.0	0.9	ND
1,2,3,7,8-PeCDF	1/Discharge	3.90E-07	5.00E-05	ND	U	0.05	0.2	ND
2,3,4,6,7,8-HxCDF	1/Discharge	5.20E-07	5.00E-05	1.30E-06	J (DNQ)	0.1	0.7	ND
2,3,4,7,8-PeCDF	1/Discharge	4.30E-07	5.00E-05	ND	U	0.5	1.6	ND
2,3,7,8-TCDD	1/Discharge	3.10E-07	1.00E-05	ND	U	1.0	1.0	ND
2,3,7,8-TCDF	1/Discharge	2.70E-07	1.00E-05	ND	U	0.1	0.8	ND
OCDD	1/Discharge	4.60E-06	1.00E-04	1.90E-03	J (F1)	0.0001	0.01	1.90E-09
OCDF	1/Discharge	1.40E-06	1.00E-04	1.20E-04	J (F1)	0.0001	0.02	2.40E-10
TCDD TEQ w/out DNQ Values								8.71E-08

TCDD TEQ (PRIORITY POLLUTANTS) PERMIT LIMIT = 2.80E-08

See attached notes for abbreviations, definitions, and other explanations for the data presented.

OUTFALL 009 (WS-13 DRAINAGE)

**FIRST QUARTER 2016 REPORTING SUMMARY
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY
NPDES PERMIT CA0001309**

Sample Type Composite
Sample Date March 8, 2016

ANALYTE	SAMPLE FREQUENCY	LAB MDL (ug/L)	LAB RL (ug/L)	LAB RESULT (ug/L)	VALIDATION QUALIFIER	1998 WHO TEF	BEF Great Lakes Water Quality Initiative	TCDD Equivalent (w/out DNQ Values) (ug/L)
1,2,3,4,6,7,8-HpCDD	1/Discharge	9.20E-07	4.70E-05	3.50E-05	U (B)	0.01	0.05	ND
1,2,3,4,6,7,8-HpCDF	1/Discharge	5.00E-07	4.70E-05	1.00E-05	U (B)	0.01	0.01	ND
1,2,3,4,7,8,9-HpCDF	1/Discharge	7.90E-07	4.70E-05	1.80E-06	J (DNQ)	0.01	0.4	ND
1,2,3,4,7,8-HxCDD	1/Discharge	5.00E-07	4.70E-05	1.50E-06	J (DNQ)	0.1	0.3	ND
1,2,3,4,7,8-HxCDF	1/Discharge	5.70E-07	4.70E-05	1.40E-06	U (B)	0.1	0.08	ND
1,2,3,6,7,8-HxCDD	1/Discharge	5.00E-07	4.70E-05	3.00E-06	J (DNQ)	0.1	0.1	ND
1,2,3,6,7,8-HxCDF	1/Discharge	4.90E-07	4.70E-05	1.80E-06	J (DNQ)	0.1	0.2	ND
1,2,3,7,8,9-HxCDD	1/Discharge	4.00E-07	4.70E-05	2.10E-06	UJ (*III)	0.1	0.1	ND
1,2,3,7,8,9-HxCDF	1/Discharge	3.70E-07	4.70E-05	1.60E-06	J (DNQ)	0.1	0.6	ND
1,2,3,7,8-PeCDD	1/Discharge	1.10E-06	4.70E-05	ND	U	1.0	0.9	ND
1,2,3,7,8-PeCDF	1/Discharge	8.30E-07	4.70E-05	ND	U	0.05	0.2	ND
2,3,4,6,7,8-HxCDF	1/Discharge	3.70E-07	4.70E-05	1.60E-06	J (DNQ)	0.1	0.7	ND
2,3,4,7,8-PeCDF	1/Discharge	9.40E-07	4.70E-05	ND	U	0.5	1.6	ND
2,3,7,8-TCDD	1/Discharge	3.60E-07	9.40E-06	ND	U	1.0	1.0	ND
2,3,7,8-TCDF	1/Discharge	4.10E-07	9.40E-06	ND	U	0.1	0.8	ND
OCDD	1/Discharge	3.10E-06	9.40E-05	3.10E-04	--	0.0001	0.01	3.10E-10
OCDF	1/Discharge	6.40E-07	9.40E-05	2.40E-05	U (B)	0.0001	0.02	ND
TCDD TEQ w/out DNQ Values								3.10E-10

TCDD TEQ (PRIORITY POLLUTANTS) PERMIT LIMIT = 2.80E-08

See attached notes for abbreviations, definitions, and other explanations for the data presented.

OUTFALL 009 (WS-13 DRAINAGE)

**FIRST QUARTER 2016 REPORTING SUMMARY
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY
NPDES PERMIT CA0001309**

Sample Type Composite
Sample Date March 12, 2016

ANALYTE	SAMPLE FREQUENCY	LAB MDL (ug/L)	LAB RL (ug/L)	LAB RESULT (ug/L)	VALIDATION QUALIFIER	1998 WHO TEF	BEF Great Lakes Water Quality Initiative	TCDD Equivalent (w/out DNQ Values) (ug/L)
1,2,3,4,6,7,8-HpCDD	1/Discharge	2.60E-07	4.70E-05	4.70E-06	U (B)	0.01	0.05	ND
1,2,3,4,6,7,8-HpCDF	1/Discharge	2.90E-07	4.70E-05	2.50E-06	U (B)	0.01	0.01	ND
1,2,3,4,7,8,9-HpCDF	1/Discharge	4.10E-07	4.70E-05	ND	U	0.01	0.4	ND
1,2,3,4,7,8-HxCDD	1/Discharge	3.10E-07	4.70E-05	ND	U	0.1	0.3	ND
1,2,3,4,7,8-HxCDF	1/Discharge	4.10E-07	4.70E-05	ND	U	0.1	0.08	ND
1,2,3,6,7,8-HxCDD	1/Discharge	2.80E-07	4.70E-05	ND	U	0.1	0.1	ND
1,2,3,6,7,8-HxCDF	1/Discharge	3.20E-07	4.70E-05	ND	U	0.1	0.2	ND
1,2,3,7,8,9-HxCDD	1/Discharge	2.50E-07	4.70E-05	4.00E-07	U (B)	0.1	0.1	ND
1,2,3,7,8,9-HxCDF	1/Discharge	2.30E-07	4.70E-05	ND	U	0.1	0.6	ND
1,2,3,7,8-PeCDD	1/Discharge	3.30E-07	4.70E-05	ND	U	1.0	0.9	ND
1,2,3,7,8-PeCDF	1/Discharge	2.60E-07	4.70E-05	ND	U	0.05	0.2	ND
2,3,4,6,7,8-HxCDF	1/Discharge	2.40E-07	4.70E-05	5.00E-07	U (B)	0.1	0.7	ND
2,3,4,7,8-PeCDF	1/Discharge	2.90E-07	4.70E-05	ND	U	0.5	1.6	ND
2,3,7,8-TCDD	1/Discharge	2.70E-07	9.50E-06	ND	U	1.0	1.0	ND
2,3,7,8-TCDF	1/Discharge	2.00E-07	9.50E-06	ND	U	0.1	0.8	ND
OCDD	1/Discharge	3.40E-07	9.50E-05	3.90E-05	U (B)	0.0001	0.01	ND
OCDF	1/Discharge	3.50E-07	9.50E-05	1.50E-05	U (B)	0.0001	0.02	ND
TCDD TEQ w/out DNQ Values								ND

TCDD TEQ (PRIORITY POLLUTANTS) PERMIT LIMIT = 2.80E-08

See attached notes for abbreviations, definitions, and other explanations for the data presented.

OUTFALL 009 (WS-13 DRAINAGE)

FIRST QUARTER 2016 REPORTING SUMMARY
 THE BOEING COMPANY
 SANTA SUSANA FIELD LABORATORY
 NPDES PERMIT CA0001309

January 1 through March 31, 2016

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	SAMPLE FREQUENCY	01/06/2016 (Composite)		
				RESULT	MDA	VALIDATION QUALIFIER
NON-CONVENTIONAL POLLUTANTS						
Gross Alpha	pCi/L	15/-	1/Discharge	3.03 ± 1.06	0.978	UJ (B, C)
Gross Beta	pCi/L	50/-	1/Discharge	1.97 ± 0.751	0.948	U (B)
Total Combined Radium-226 & Radium 228	pCi/L	5.0/-	1/Discharge	0.316 ± 0.480	NM	UJ (C)
Strontium-90	pCi/L	8.0/-	1/Discharge	0.122 ± 0.382	0.665	UJ (C)
Tritium	pCi/L	20000/-	1/Discharge	242 ± 222	345	U
ADDITIONAL POLLUTANTS						
Cesium-137	pCi/L	200/-	1/Discharge	0.159 ± 5.72	10.7	U
Uranium, Total	pCi/L	20/-	1/Discharge	1.06 ± 0.620	0.539	U (B)
ADDITIONAL POLLUTANTS WITHOUT LIMITS						
Potassium-40	pCi/L	-/-	1/Discharge	-73.2 ± 247	217	U

See attached notes for abbreviations, definitions,
 and other explanations for the data presented.

OUTFALL 009 (WS-13 DRAINAGE)

FIRST QUARTER 2016 REPORTING SUMMARY
 THE BOEING COMPANY
 SANTA SUSANA FIELD LABORATORY
 NPDES PERMIT CA0001309

January 1 through March 31, 2016

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	SAMPLE FREQUENCY	03/08/2016 (Composite)		
				RESULT	MDA	VALIDATION QUALIFIER
NON-CONVENTIONAL POLLUTANTS						
Gross Alpha	pCi/L	15/-	1/Discharge	0.938 ± 19.0	35.8	U
Gross Beta	pCi/L	50/-	1/Discharge	-1.14 ± 14.1	25.4	U
Total Combined Radium-226 & Radium 228	pCi/L	5.0/-	1/Discharge	2.35 ± 1.84	NM	UJ (Q1)
Strontium-90	pCi/L	8.0/-	1/Discharge	0.133 ± 0.625	1.10	U
Tritium	pCi/L	20000/-	1/Discharge	76.1 ± 222	395	UJ (C)
ADDITIONAL POLLUTANTS						
Cesium-137	pCi/L	200/-	1/Discharge	0.000 ± 4.64	14.7	U
Uranium, Total	pCi/L	20/-	1/Discharge	0.354 ± 0.257	0.251	U (B)
ADDITIONAL POLLUTANTS WITHOUT LIMITS						
Potassium-40	pCi/L	-/-	1/Discharge	15.5 ± 96.5	209	U

See attached notes for abbreviations, definitions,
 and other explanations for the data presented.

OUTFALL 009 (WS-13 DRAINAGE)

FIRST QUARTER 2016 REPORTING SUMMARY
 THE BOEING COMPANY
 SANTA SUSANA FIELD LABORATORY
 NPDES PERMIT CA0001309

January 1 through March 31, 2016

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	SAMPLE FREQUENCY	03/12/2016 (Composite)		
				RESULT	MDA	VALIDATION QUALIFIER
NON-CONVENTIONAL POLLUTANTS						
Gross Alpha	pCi/L	15/-	1/Discharge	0.762 ± 0.700	1.05	UJ (C)
Gross Beta	pCi/L	50/-	1/Discharge	1.52 ± 0.672	0.913	J (B)
Total Combined Radium-226 & Radium 228	pCi/L	5.0/-	1/Discharge	0.164 ± 0.231	NM	UJ (C)
Strontium-90	pCi/L	8.0/-	1/Discharge	0.242 ± 0.339	0.565	U
Tritium	pCi/L	20000/-	1/Discharge	117 ± 218	376	UJ (C)
ADDITIONAL POLLUTANTS						
Cesium-137	pCi/L	200/-	1/Discharge	1.42 ± 6.24	11.3	U
Uranium, Total	pCi/L	20/-	1/Discharge	0.167 ± 0.1059	0.108	U (B)
ADDITIONAL POLLUTANTS WITHOUT LIMITS						
Potassium-40	pCi/L	-/-	1/Discharge	-45.8 ± 196	235	U

See attached notes for abbreviations, definitions,
 and other explanations for the data presented.

OUTFALL 009 (WS-13 DRAINAGE)

**FIRST QUARTER 2016 REPORTING SUMMARY
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY
NPDES PERMIT CA0001309**

January 1 through March 31, 2016

				1/05/2016 and 1/06/2016 (Grab & Composite)		
ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	Sample Frequency	Sample Type	Result	Concentration Result Validation Qualifier
Flow	MGD	64.33/-	1/Discharge	Meas	0.016479	*
CONVENTIONAL POLLUTANTS						
Oil & Grease	LBS/DAY	8,048/-	1/Discharge	Grab	ND	U
PRIORITY POLLUTANTS						
Antimony	LBS/DAY	3.22/-	1/Discharge	Composite	0.000082	J (DNQ)
Cadmium	LBS/DAY	2.15/-	1/Discharge	Composite	ND	U
Copper	LBS/DAY	7/-	1/Discharge	Composite	0.00073	--
Cyanide	LBS/DAY	5.1/-	1/Discharge	Composite	ND	U
Lead	LBS/DAY	2.8/-	1/Discharge	Composite	0.00025	--
Mercury	LBS/DAY	0.07/-	1/Discharge	Composite	ND	U
Nickel	LBS/DAY	46.14/-	1/Discharge	Composite	0.00030	--
TCDD TEQ_NoDNQ	LBS/DAY	1.5E-08/-	1/Discharge	Composite	1.51E-14	*
Thallium	LBS/DAY	1.1/-	1/Discharge	Composite	ND	U
Zinc	LBS/DAY	64.4/-	1/Discharge	Composite	0.0015	J+ (DNQ, Q, Q1)
NON-CONVENTIONAL POLLUTANTS						
Boron	LBS/DAY	537/-	1/Year	ANR	ANR	ANR
Chloride	LBS/DAY	80,477/-	1/Discharge	Composite	0.58	J (*III)
Fluoride	LBS/DAY	858-	1/Year	ANR	ANR	ANR
Nitrate + Nitrite as Nitrogen (N)	LBS/DAY	5,365/-	1/Discharge	Composite	0.27	J (*III)
Perchlorate	LBS/DAY	3.22/-	1/Discharge	ANR	ANR	ANR
Sulfate	LBS/DAY	134,128/-	1/Discharge	Composite	0.55	J (*III)
Total Dissolved Solids	LBS/DAY	456,034/-	1/Discharge	Composite	10	--

See attached notes for abbreviations, definitions, and other explanations for the data presented.

OUTFALL 009 (WS-13 DRAINAGE)

**FIRST QUARTER 2016 REPORTING SUMMARY
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY
NPDES PERMIT CA0001309**

January 1 through March 31, 2016

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	Sample Frequency	1/06/2016 (Field Duplicate)		
				Sample Type	Result	Concentration Result Validation Qualifier
Flow	MGD	64.33/-	1/Discharge	Meas	0.016479	*
CONVENTIONAL POLLUTANTS						
Oil & Grease	LBS/DAY	8,048/-	1/Discharge	ANR	ANR	ANR
PRIORITY POLLUTANTS						
Antimony	LBS/DAY	3.22/-	1/Discharge	ANR	ANR	ANR
Cadmium	LBS/DAY	2.15/-	1/Discharge	ANR	ANR	ANR
Copper	LBS/DAY	7/-	1/Discharge	ANR	ANR	ANR
Cyanide	LBS/DAY	5.1/-	1/Discharge	ANR	ANR	ANR
Lead	LBS/DAY	2.8/-	1/Discharge	ANR	ANR	ANR
Mercury	LBS/DAY	0.07/-	1/Discharge	ANR	ANR	ANR
Nickel	LBS/DAY	46.14/-	1/Discharge	ANR	ANR	ANR
TCDD TEQ_NoDNQ	LBS/DAY	1.5E-08/-	1/Discharge	Composite	1.20E-11	*
Thallium	LBS/DAY	1.1/-	1/Discharge	ANR	ANR	ANR
Zinc	LBS/DAY	64.4/-	1/Discharge	ANR	ANR	ANR
NON-CONVENTIONAL POLLUTANTS						
Boron	LBS/DAY	537/-	1/Year	ANR	ANR	ANR
Chloride	LBS/DAY	80,477/-	1/Discharge	Composite	0.59	J (*III)
Fluoride	LBS/DAY	858-	1/Year	ANR	ANR	ANR
Nitrate + Nitrite as Nitrogen (N)	LBS/DAY	5,365/-	1/Discharge	ANR	ANR	ANR
Perchlorate	LBS/DAY	3.22/-	1/Discharge	ANR	ANR	ANR
Sulfate	LBS/DAY	134,128/-	1/Discharge	Composite	0.54	J (*III)
Total Dissolved Solids	LBS/DAY	456,034/-	1/Discharge	ANR	ANR	ANR

See attached notes for abbreviations, definitions,
and other explanations for the data presented.

OUTFALL 009 (WS-13 DRAINAGE)

**FIRST QUARTER 2016 REPORTING SUMMARY
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY
NPDES PERMIT CA0001309**

January 1 through March 31, 2016

				3/07/2016 and 3/08/2016 (Grab & Composite)		
ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	Sample Frequency	Sample Type	Result	Concentration Result Validation Qualifier
Flow	MGD	64.33/-	1/Discharge	Meas	0.143250	*
CONVENTIONAL POLLUTANTS						
Oil & Grease	LBS/DAY	8,048/-	1/Discharge	Grab	ND	U
PRIORITY POLLUTANTS						
Antimony	LBS/DAY	3.22/-	1/Discharge	Composite	0.0012	J (DNQ)
Cadmium	LBS/DAY	2.15/-	1/Discharge	Composite	ND	U
Copper	LBS/DAY	7/-	1/Discharge	Composite	0.011	--
Cyanide	LBS/DAY	5.1/-	1/Discharge	Composite	ND	U
Lead	LBS/DAY	2.8/-	1/Discharge	Composite	0.0070	--
Mercury	LBS/DAY	0.07/-	1/Discharge	Composite	ND	U
Nickel	LBS/DAY	46.14/-	1/Discharge	Composite	0.0074	J (DNQ)
TCDD TEQ_NoDNQ	LBS/DAY	1.5E-08/-	1/Discharge	Composite	3.70E-13	--
Thallium	LBS/DAY	1.1/-	1/Discharge	Composite	ND	U
Zinc	LBS/DAY	64.4/-	1/Discharge	Composite	0.026	--
NON-CONVENTIONAL POLLUTANTS						
Boron	LBS/DAY	537/-	1/Year	Composite	0.063	--
Chloride	LBS/DAY	80,477/-	1/Discharge	Composite	4.8	--
Fluoride	LBS/DAY	858-	1/Year	Composite	ND	U
Nitrate + Nitrite as Nitrogen (N)	LBS/DAY	5,365/-	1/Discharge	Composite	0.41	--
Perchlorate	LBS/DAY	3.22/-	1/Discharge	Composite	ND	U
Sulfate	LBS/DAY	134,128/-	1/Discharge	Composite	8.2	--
Total Dissolved Solids	LBS/DAY	456,034/-	1/Discharge	Composite	131	--

See attached notes for abbreviations, definitions,
and other explanations for the data presented.

OUTFALL 009 (WS-13 DRAINAGE)

**FIRST QUARTER 2016 REPORTING SUMMARY
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY
NPDES PERMIT CA0001309**

January 1 through March 31, 2016

				3/11/2016 and 3/12/2016 (Grab & Composite)		
ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	Sample Frequency	Sample Type	Result	Concentration Result Validation Qualifier
Flow	MGD	64.33/-	1/Discharge	Meas	0.008196	*
CONVENTIONAL POLLUTANTS						
Oil & Grease	LBS/DAY	8,048/-	1/Discharge	Grab	ND	U
PRIORITY POLLUTANTS						
Antimony	LBS/DAY	3.22/-	1/Discharge	Composite	0.000038	J (DNQ)
Cadmium	LBS/DAY	2.15/-	1/Discharge	Composite	ND	U
Copper	LBS/DAY	7/-	1/Discharge	Composite	0.00024	--
Cyanide	LBS/DAY	5.1/-	1/Discharge	Composite	ND	U
Lead	LBS/DAY	2.8/-	1/Discharge	Composite	0.000051	J (DNQ)
Mercury	LBS/DAY	0.07/-	1/Discharge	Composite	ND	U
Nickel	LBS/DAY	46.14/-	1/Discharge	Composite	ND	U
TCDD TEQ_NoDNQ	LBS/DAY	1.5E-08/-	1/Discharge	Composite	ND	U
Thallium	LBS/DAY	1.1/-	1/Discharge	Composite	ND	U
Zinc	LBS/DAY	64.4/-	1/Discharge	Composite	0.0028	--
NON-CONVENTIONAL POLLUTANTS						
Boron	LBS/DAY	537/-	1/Year	ANR	ANR	ANR
Chloride	LBS/DAY	80,477/-	1/Discharge	Composite	0.31	--
Fluoride	LBS/DAY	858-	1/Year	ANR	ANR	ANR
Nitrate + Nitrite as Nitrogen (N)	LBS/DAY	5,365/-	1/Discharge	Composite	0.038	J- (H)
Perchlorate	LBS/DAY	3.22/-	1/Discharge	ANR	ANR	ANR
Sulfate	LBS/DAY	134,128/-	1/Discharge	Composite	0.36	--
Total Dissolved Solids	LBS/DAY	456,034/-	1/Discharge	Composite	5.8	--

See attached notes for abbreviations, definitions, and other explanations for the data presented.

OUTFALL 018 (R-2 POND SPILLWAY)

FIRST QUARTER 2016 REPORTING SUMMARY
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY
NPDES PERMIT CA0001309

January 1 through March 31, 2016

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	SAMPLE FREQUENCY	02/03/2016 (Grab) - 02/04/2016 (Composite)		
				SAMPLE TYPE	RESULT	VALIDATION QUALIFIER
Flow	MGD	117.83/-	1/Discharge	Meas	1.323357	*
CONVENTIONAL POLLUTANTS						
Biochemical Oxygen Demand (BOD) (5-Day @ 20 deg. C)	mg/L	30/-	1/Discharge	Composite	2	--
Oil & Grease	mg/L	15/-	1/Discharge	Grab	ND < 1.3	U
pH (Field)	s.u.	6.5-8.5/-	1/Discharge	Grab	7.79	*
Total Suspended Solids	mg/L	45/-	1/Discharge	Composite	ND < 0.50	U
PRIORITY POLLUTANTS						
1,1-Dichloroethene	ug/L	6.0/-	1/Discharge	Grab	ND < 0.25	U
1,2-Dichloroethane	ug/L	0.5/-	1/Discharge	Grab	ND < 0.25	U
2,4-Dinitrotoluene	ug/L	18/-	1/Discharge	Composite	ND < 1.90	UJ (C)
2,4,6-Trichlorophenol	ug/L	13/-	1/Discharge	Composite	ND < 0.476	U
alpha-BHC	ug/L	0.03/-	1/Discharge	Composite	ND < 0.0024	U
Antimony	ug/L	6.0/-	1/Year	Composite	ND < 0.50	U (B)
Arsenic	ug/L	10.0/-	1/Year	Composite	ND < 5.0	U
Beryllium	ug/L	4.0/-	1/Year	Composite	ND < 1.0	U
Bis (2-Ethylhexyl) Phthalate	ug/L	4.0/-	1/Discharge	Composite	ND < 1.90	U
Cadmium	ug/L	(4.0) 3.1/- ^(a)	1/Discharge	Composite	ND < 0.25	U
Chromium VI	ug/L	16/-	1/Year	Composite	0.26	J- (DNQ, H)
Copper	ug/L	14/-	1/Discharge	Composite	0.94	J (DNQ)
Cyanide	ug/L	8.5/-	1/Discharge	Composite	ND < 2.5	U
Lead	ug/L	5.2/-	1/Discharge	Composite	ND < 0.50	U
Mercury	ug/L	0.1/-	1/Discharge	Composite	ND < 0.10	U
Nickel	ug/L	94/-	1/Year	Composite	ND < 5.0	U
N-Nitrosodimethylamine	ug/L	16/-	1/Discharge	Composite	ND < 0.952	U
Pentachlorophenol	ug/L	16.5/-	1/Discharge	Composite	ND < 0.952	U
Selenium	ug/L	(5) 8.2/- ^(a)	1/Discharge	Composite	ND < 0.50	U
Silver	ug/L	4.1/-	1/Year	Composite	ND < 0.50	*
Thallium	ug/L	2.0/-	1/Year	Composite	ND < 0.50	U
Trichloroethene	ug/L	5.0/-	1/Discharge	Grab	ND < 0.25	U
Zinc	ug/L	119/-	1/Discharge	Composite	ND < 10	U
NON-CONVENTIONAL POLLUTANTS						
Ammonia	mg/L	10.1/-	1/Discharge	Composite	0.411	J (DNQ)
Barium	mg/L	1.0/-	1/Year	Composite	0.014	--
Chloride	mg/L	150/-	1/Discharge	Composite	19	J- (Q)
Chlorine, Total Residual	mg/L	0.1/-	1/Year	Grab	0.03	*
Chronic Toxicity	Pass or % Effect	Pass or % Effect <50	1st & 2nd rain event/Year	Composite	% Effect <50	--
Detergents (as MBAS)	mg/L	0.5/-	1/Discharge	Composite	0.095	J (DNQ)
Fluoride	mg/L	1.6/-	1/Year	Composite	ND < 0.25	U
Iron	mg/L	0.3/-	1/Year	Composite	ND < 0.010	U
Manganese	ug/L	50/-	1/Year	Composite	ND < 10	U
Nitrate	mg/L	8/-	1/Discharge	Composite	0.24	--
Nitrate + Nitrite as Nitrogen (N)	mg/L	8/-	1/Discharge	Composite	0.35	--
Nitrite	mg/L	1/-	1/Discharge	Composite	0.11	J (DNQ)
Perchlorate	ug/L	6.0/-	1/Discharge	Composite	ND < 0.95	U
Settleable Solids	ml/L	0.3/-	1/Discharge	Grab	ND < 0.10	U
Sulfate	mg/L	300/-	1/Discharge	Composite	240	J- (Q)
Temperature (Field)	deg. F	86/-	1/Discharge	Grab	48	*
Total Dissolved Solids	mg/L	950/-	1/Discharge	Composite	540	--
REMAINING PRIORITY POLLUTANTS						
1,1,1-Trichloroethane	ug/L	-/-	1/Year	Grab	ND < 0.25	U
1,1,2,2-Tetrachloroethane	ug/L	-/-	1/Year	Grab	ND < 0.25	U
1,1,2-Trichloroethane	ug/L	-/-	1/Year	Grab	ND < 0.25	U
1,1-Dichloroethane	ug/L	-/-	1/Year	Grab	ND < 0.25	U
1,2-Dichlorobenzene	ug/L	-/-	1/Year	Composite	ND < 0.190	U
1,2-Dichlorobenzene	ug/L	-/-	1/Year	Grab	ND < 0.25	U
1,2-Dichloropropane	ug/L	-/-	1/Year	Grab	ND < 0.25	U
1,2-Diphenylhydrazine/Azobenzene	ug/L	-/-	1/Year	Composite	ND < 0.476	U
1,2,4-Trichlorobenzene	ug/L	-/-	1/Year	Composite	ND < 0.476	U
1,3-Dichlorobenzene	ug/L	-/-	1/Year	Grab	ND < 0.25	U
1,3-Dichlorobenzene	ug/L	-/-	1/Year	Composite	ND < 0.190	U

See attached notes for abbreviations, definitions, and other explanations for the data presented.

^(a)Based on peak LA River flow, sampling event is a dry discharge.

OUTFALL 018 (R-2 POND SPILLWAY)

FIRST QUARTER 2016 REPORTING SUMMARY
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY
NPDES PERMIT CA0001309

January 1 through March 31, 2016

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	SAMPLE FREQUENCY	02/03/2016 (Grab) - 02/04/2016 (Composite)		
				SAMPLE TYPE	RESULT	VALIDATION QUALIFIER
1,4-Dichlorobenzene	ug/L	-/-	1/Year	Grab	ND < 0.25	U
1,4-Dichlorobenzene	ug/L	-/-	1/Year	Composite	ND < 0.190	U
2,4-Dichlorophenol	ug/L	-/-	1/Year	Composite	ND < 0.952	U
2,4-Dimethylphenol	ug/L	-/-	1/Year	Composite	ND < 0.952	U
2,4-Dinitrophenol	ug/L	-/-	1/Year	Composite	ND < 1.90	UJ (C)
2,6-Dinitrotoluene	ug/L	-/-	1/Year	Composite	ND < 1.90	U
2-Chloroethylvinylether	ug/L	-/-	1/Year	Grab	ND < 1.0	U
2-Chloronaphthalene	ug/L	-/-	1/Year	Composite	ND < 0.190	U
2-Chlorophenol	ug/L	-/-	1/Year	Composite	ND < 0.476	U
2-Methyl-4,6-Dinitrophenol	ug/L	-/-	1/Year	Composite	ND < 1.90	UJ (C)
2-Nitrophenol	ug/L	-/-	1/Year	Composite	ND < 0.952	U
3,3'-Dichlorobenzidine	ug/L	-/-	1/Year	Composite	1.9	R (Q)
4,4'-DDD	ug/L	-/-	1/Year	Composite	ND < 0.0038	U
4,4'-DDE	ug/L	-/-	1/Year	Composite	ND < 0.0029	U
4,4'-DDT	ug/L	-/-	1/Year	Composite	ND < 0.0038	U
4-Bromophenylphenylether	ug/L	-/-	1/Year	Composite	ND < 0.476	U
4-Chloro-3-methylphenol	ug/L	-/-	1/Year	Composite	ND < 0.190	U
4-Chlorophenylphenylether	ug/L	-/-	1/Year	Composite	ND < 0.190	U
4-Nitrophenol	ug/L	-/-	1/Year	Composite	ND < 1.90	UJ (C)
Acenaphthene	ug/L	-/-	1/Year	Composite	ND < 0.190	U
Acenaphthylene	ug/L	-/-	1/Year	Composite	ND < 0.190	U
Acrolein	ug/L	-/-	1/Year	Grab	ND < 2.5	U
Acrylonitrile	ug/L	-/-	1/Year	Grab	ND < 1.0	U
Aldrin	ug/L	-/-	1/Year	Composite	ND < 0.0014	U
Anthracene	ug/L	-/-	1/Year	Composite	ND < 0.190	U
Aroclor 1016	ug/L	-/-	1/Year	Composite	ND < 0.24	UJ (C)
Aroclor 1221	ug/L	-/-	1/Year	Composite	ND < 0.24	UJ (C)
Aroclor 1232	ug/L	-/-	1/Year	Composite	ND < 0.24	UJ (C)
Aroclor 1242	ug/L	-/-	1/Year	Composite	ND < 0.24	UJ (C)
Aroclor 1248	ug/L	-/-	1/Year	Composite	ND < 0.24	UJ (C)
Aroclor 1254	ug/L	-/-	1/Year	Composite	ND < 0.24	UJ (C)
Aroclor 1260	ug/L	-/-	1/Year	Composite	ND < 0.24	UJ (C)
Benzene	ug/L	-/-	1/Year	Grab	ND < 0.25	U
Benzdine	ug/L	-/-	1/Year	Composite	4.76	R (Q)
Benzo(a)anthracene	ug/L	-/-	1/Year	Composite	ND < 1.90	U
Benzo(a)pyrene	ug/L	-/-	1/Year	Composite	ND < 0.476	U
Benzo(b)fluoranthene	ug/L	-/-	1/Year	Composite	ND < 0.952	U
Benzo(g,h,i)Perylene	ug/L	-/-	1/Year	Composite	ND < 1.90	U
Benzo(k)fluoranthene	ug/L	-/-	1/Year	Composite	ND < 0.238	U
beta-BHC	ug/L	-/-	1/Year	Composite	ND < 0.0038	U
Bis (2-Chloroethoxy) Methane	ug/L	-/-	1/Year	Composite	ND < 0.190	U
Bis (2-Chloroethyl) Ether	ug/L	-/-	1/Year	Composite	ND < 0.190	U
Bis (2-Chloroisopropyl) Ether	ug/L	-/-	1/Year	Composite	ND < 0.190	U
Bromodichloromethane	ug/L	-/-	1/Year	Grab	ND < 0.25	U
Bromoform	ug/L	-/-	1/Year	Grab	ND < 0.40	U
Bromomethane	ug/L	-/-	1/Year	Grab	ND < 0.25	U
Butylbenzylphthalate	ug/L	-/-	1/Year	Composite	3.28	J (DNQ)
Carbon Tetrachloride	ug/L	-/-	1/Year	Grab	ND < 0.25	U
Chlordane	ug/L	-/-	1/Year	Composite	ND < 0.077	U
Chlorobenzene	ug/L	-/-	1/Year	Grab	ND < 0.25	U
Chloroethane	ug/L	-/-	1/Year	Grab	ND < 0.40	U
Chloroform	ug/L	-/-	1/Year	Grab	ND < 0.25	U
Chloromethane	ug/L	-/-	1/Year	Grab	ND < 0.25	U
Chromium	ug/L	-/-	1/Year	Composite	ND < 2.5	U
Chrysene	ug/L	-/-	1/Year	Composite	ND < 0.190	U
cis-1,3-Dichloropropene	ug/L	-/-	1/Year	Grab	ND < 0.25	U
delta-BHC	ug/L	-/-	1/Year	Composite	ND < 0.0033	U
Dibenzo(a,h)anthracene	ug/L	-/-	1/Year	Composite	ND < 0.238	U
Dibromochloromethane	ug/L	-/-	1/Year	Grab	ND < 0.25	U
Dieldrin	ug/L	-/-	1/Year	Composite	ND < 0.0019	U

See attached notes for abbreviations, definitions, and other explanations for the data presented.

^(a)Based on peak LA River flow, sampling event is a dry discharge.

OUTFALL 018 (R-2 POND SPILLWAY)

FIRST QUARTER 2016 REPORTING SUMMARY
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY
NPDES PERMIT CA0001309

January 1 through March 31, 2016

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	SAMPLE FREQUENCY	02/03/2016 (Grab) - 02/04/2016 (Composite)		
				SAMPLE TYPE	RESULT	VALIDATION QUALIFIER
Diethylphthalate	ug/L	-/-	1/Year	Composite	ND < 0.476	U
Dimethylphthalate	ug/L	-/-	1/Year	Composite	ND < 0.238	U
Di-n-butylphthalate	ug/L	-/-	1/Year	Composite	ND < 0.952	U
Di-n-octylphthalate	ug/L	-/-	1/Year	Composite	ND < 1.90	U
Endosulfan I	ug/L	-/-	1/Year	Composite	ND < 0.0029	U
Endosulfan II	ug/L	-/-	1/Year	Composite	ND < 0.0019	UJ (C)
Endosulfan Sulfate	ug/L	-/-	1/Year	Composite	ND < 0.0029	U
Endrin	ug/L	-/-	1/Year	Composite	ND < 0.0019	U
Endrin Aldehyde	ug/L	-/-	1/Year	Composite	ND < 0.0019	U
Ethylbenzene	ug/L	-/-	1/Year	Grab	ND < 0.25	U
Fluoranthene	ug/L	-/-	1/Year	Composite	ND < 0.190	U
Fluorene	ug/L	-/-	1/Year	Composite	ND < 0.190	U
Heptachlor	ug/L	-/-	1/Year	Composite	ND < 0.0029	U
Heptachlor Epoxide	ug/L	-/-	1/Year	Composite	ND < 0.0024	U
Hexachlorobenzene	ug/L	-/-	1/Year	Composite	ND < 0.476	U
Hexachlorobutadiene	ug/L	-/-	1/Year	Composite	ND < 0.476	U
Hexachlorocyclopentadiene	ug/L	-/-	1/Year	Composite	ND < 1.90	U
Hexachloroethane	ug/L	-/-	1/Year	Composite	ND < 0.476	U
Indeno(1,2,3-cd)pyrene	ug/L	-/-	1/Year	Composite	ND < 0.952	U
Isophorone	ug/L	-/-	1/Year	Composite	ND < 0.476	U
Lindane (gamma-BHC)	ug/L	-/-	1/Year	Composite	ND < 0.0029	U
Methylene chloride	ug/L	-/-	1/Year	Grab	ND < 0.88	U
m,p-Xylenes	ug/L	-/-	1/Year	Grab	ND < 0.50	U
Naphthalene	ug/L	-/-	1/Year	Composite	ND < 0.476	UJ (C)
Naphthalene	ug/L	-/-	1/Year	Grab	ND < 0.40	U
Nitrobenzene	ug/L	-/-	1/Year	Composite	ND < 0.476	U
N-Nitroso-di-n-propylamine	ug/L	-/-	1/Year	Composite	ND < 0.952	U
N-Nitrosodiphenylamine	ug/L	-/-	1/Year	Composite	ND < 0.476	U
o-Xylene	ug/L	-/-	1/Year	Grab	ND < 0.25	U
Phenanthrene	ug/L	-/-	1/Year	Composite	ND < 0.190	U
Phenol	ug/L	-/-	1/Year	Composite	ND < 0.476	U
Pyrene	ug/L	-/-	1/Year	Composite	ND < 0.190	U
Tetrachloroethene	ug/L	-/-	1/Year	Grab	ND < 0.25	U
Toluene	ug/L	-/-	1/Year	Grab	ND < 0.25	U
Toxaphene	ug/L	-/-	1/Year	Composite	ND < 0.24	U
trans-1,2-Dichloroethene	ug/L	-/-	1/Year	Grab	ND < 0.25	U
trans-1,3-Dichloropropene	ug/L	-/-	1/Year	Grab	ND < 0.25	U
Trichlorofluoromethane	ug/L	-/-	1/Year	Grab	ND < 0.25	U
Vinyl chloride	ug/L	-/-	1/Year	Grab	ND < 0.25	U
Xylenes (Total)	ug/L	-/-	1/Year	Grab	ND < 0.50	U
EFFLUENT MONITORING (NO LIMITATIONS) POLLUTANTS						
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/L	-/-	1/Quarter	Grab	ND < 0.50	U
1,2-Dichloro-1,1,2-trifluoroethane	ug/L	-/-	1/Year	Grab	ND < 1.0	U
1,4-Dioxane	ug/L	-/-	1/Year	Composite	ND < 0.50	U
Boron	mg/L	-/-	1/Year	Composite	0.052	--
cis-1,2-Dichloroethene	ug/L	-/-	1/Year	Grab	ND < 0.25	U
Cobalt	ug/L	-/-	1/Year	Composite	ND < 2.5	U
Conductivity	µmhos/cm	-/-	1/Discharge	Grab	750	J- (H)
Cyclohexane	ug/L	-/-	1/Year	Grab	ND < 1.0	U
Dissolved Oxygen	mg/L	-/-	1/Discharge	Grab	8.98	*
E. Coli	MPN/100mL	-/-	1/Year	Grab	ND < 1.8	U
Hardness	mg/L	-/-	1/Year	Composite	250	--
Monomethyl hydrazine	ug/L	-/-	1/Year	Composite	ND < 0.25	R (H)
Total Organic Carbon	mg/L	-/-	1/Year	Composite	5.9	--
Diesel Range Organics (DRO C13-C28)	mg/L	-/-	1/Year	Grab	0.13	J (DNQ)
Gasoline Range Organics (GRO C4-C12)	mg/L	-/-	1/Year	Grab	0.036	J (DNQ)
Turbidity	NTU	-/-	1/Discharge	Composite	0.22	--
Vanadium	ug/L	-/-	1/Year	Composite	ND < 5.0	U

See attached notes for abbreviations, definitions, and other explanations for the data presented.

(a)Based on peak LA River flow. sampling event is a dry discharge.

OUTFALL 018 (R-2 POND SPILLWAY)

FIRST QUARTER 2016 REPORTING SUMMARY
 THE BOEING COMPANY
 SANTA SUSANA FIELD LABORATORY
 NPDES PERMIT CA0001309

January 1 through March 31, 2016

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	SAMPLE FREQUENCY	02/03/2016 (Grab) - 02/04/2016 (Composite)		
				SAMPLE TYPE	RESULT	VALIDATION QUALIFIER
ADDITIONAL POLLUTANTS						
Antimony, dissolved	ug/L	-/-	Additional	Composite	ND < 0.50	U
Arsenic, dissolved	ug/L	-/-	Additional	Composite	ND < 5.0	U
Barium, dissolved	mg/L	-/-	Additional	Composite	0.015	--
Beryllium, dissolved	ug/L	-/-	Additional	Composite	ND < 1.0	U
Boron, dissolved	mg/L	-/-	Additional	Composite	0.053	--
Cadmium, dissolved	ug/L	-/-	Additional	Composite	ND < 0.25	U
Chromium, dissolved	ug/L	-/-	Additional	Composite	ND < 2.5	U
Cobalt, dissolved	ug/L	-/-	Additional	Composite	ND < 2.5	U
Copper, dissolved	ug/L	-/-	Additional	Composite	1.3	J (DNQ)
Hardness, dissolved	mg/L	-/-	Additional	Composite	250	--
Human Bacteroides	CEs /100 mL	-/-	Additional	Grab	ND	U
Iron, dissolved	ug/L	-/-	Additional	Composite	ND < 0.010	U
Lead, dissolved	ug/L	-/-	Additional	Composite	ND < 0.50	U
Manganese, dissolved	ug/L	-/-	Additional	Composite	ND < 10	U
Mercury, dissolved	ug/L	-/-	Additional	Composite	ND < 0.10	U
Nickel, dissolved	ug/L	-/-	Additional	Composite	ND < 5.0	U
Selenium, dissolved	ug/L	-/-	Additional	Composite	ND < 0.50	U
Silver, dissolved	ug/L	-/-	Additional	Composite	ND < 0.50	*
Thallium, dissolved	ug/L	-/-	Additional	Composite	ND < 0.50	U
Vanadium, dissolved	ug/L	-/-	Additional	Composite	ND < 5.0	U
Zinc, dissolved	ug/L	-/-	Additional	Composite	ND < 10	U

See attached notes for abbreviations, definitions, and other explanations for the data presented.

^(a)Based on peak LA River flow. sampling event is a dry discharge.

OUTFALL 018 (R-2 POND SPILLWAY)
FIRST QUARTER 2016 REPORTING SUMMARY
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY
NPDES PERMIT CA0001309

Sample Type Composite
Sample Date February 4, 2016

ANALYTE	SAMPLE FREQUENCY	LAB MDL (ug/L)	LAB RL (ug/L)	LAB RESULT (ug/L)	VALIDATION QUALIFIER	1998 WHO TEF	BEF Great Lakes Water Quality Initiative	TCDD Equivalent (w/out DNQ Values) (ug/L)
1,2,3,4,6,7,8-HpCDD	1/Discharge	8.40E-07	4.80E-05	4.10E-06	U (B)	0.01	0.05	ND
1,2,3,4,6,7,8-HpCDF	1/Discharge	1.00E-06	4.80E-05	2.50E-06	U (B)	0.01	0.01	ND
1,2,3,4,7,8,9-HpCDF	1/Discharge	1.70E-06	4.80E-05	ND	U	0.01	0.4	ND
1,2,3,4,7,8-HxCDD	1/Discharge	1.20E-06	4.80E-05	ND	U	0.1	0.3	ND
1,2,3,4,7,8-HxCDF	1/Discharge	1.50E-06	4.80E-05	ND	U	0.1	0.08	ND
1,2,3,6,7,8-HxCDD	1/Discharge	1.10E-06	4.80E-05	ND	U	0.1	0.1	ND
1,2,3,6,7,8-HxCDF	1/Discharge	1.20E-06	4.80E-05	ND	U	0.1	0.2	ND
1,2,3,7,8,9-HxCDD	1/Discharge	9.30E-07	4.80E-05	ND	U	0.1	0.1	ND
1,2,3,7,8,9-HxCDF	1/Discharge	8.80E-07	4.80E-05	ND	U	0.1	0.6	ND
1,2,3,7,8-PeCDD	1/Discharge	1.60E-06	4.80E-05	ND	U	1.0	0.9	ND
1,2,3,7,8-PeCDF	1/Discharge	2.50E-06	4.80E-05	ND	U	0.05	0.2	ND
2,3,4,6,7,8-HxCDF	1/Discharge	8.50E-07	4.80E-05	ND	U	0.1	0.7	ND
2,3,4,7,8-PeCDF	1/Discharge	2.90E-06	4.80E-05	ND	U	0.5	1.6	ND
2,3,7,8-TCDD	1/Discharge	1.10E-06	9.60E-06	ND	U	1.0	1.0	ND
2,3,7,8-TCDF	1/Discharge	1.20E-06	9.60E-06	ND	U	0.1	0.8	ND
OCDD	1/Discharge	1.30E-06	9.60E-05	1.80E-05	U (B)	0.0001	0.01	ND
OCDF	1/Discharge	1.70E-06	9.60E-05	ND	U	0.0001	0.02	ND
TCDD TEQ w/out DNQ Values								ND

TCDD TEQ (PRIORITY POLLUTANTS) PERMIT LIMIT = 2.80E-08

See attached notes for abbreviations, definitions, and other explanations for the data presented.

OUTFALL 018 (R-2 POND SPILLWAY)
 FIRST QUARTER 2016 REPORTING SUMMARY
 THE BOEING COMPANY
 SANTA SUSANA FIELD LABORATORY
 NPDES PERMIT CA0001309

January 1 through March 31, 2016

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	SAMPLE FREQUENCY	02/04/2016 (Composite)		
				RESULT	MDA	VALIDATION QUALIFIER
NON-CONVENTIONAL POLLUTANTS						
Gross Alpha	pCi/L	15/-	1/Discharge	-0.152 ± 1.21	2.51	U
Gross Beta	pCi/L	50/-	1/Discharge	5.70 ± 1.43	1.62	--
Total Combined Radium-226 & Radium 228	pCi/L	5.0/-	1/Discharge	0.239 ± 0.263	NM	U (F)
Strontium-90	pCi/L	8/-	1/Discharge	0.205 ± 0.273	0.453	U
Tritium	pCi/L	20000/-	1/Discharge	-28.4 ± 188	349	U
ADDITIONAL POLLUTANTS						
Cesium-137	pCi/L	200/-	1/Discharge	-1.85 ± 7.5	13.3	U
Uranium, Total	pCi/L	20/-	1/Discharge	0.194 ± 0.14	0.131	--
ADDITIONAL POLLUTANTS WITHOUT LIMITS						
Potassium-40	pCi/L	-/-	1/Discharge	21.4 ± 90.5	196	U

See attached notes for abbreviations, definitions,
 and other explanations for the data presented.

OUTFALL 018 (R-2 POND SPILLWAY)

FIRST QUARTER 2016 REPORTING SUMMARY
 THE BOEING COMPANY
 SANTA SUSANA FIELD LABORATORY
 NPDES PERMIT CA0001309

January 1 through March 31, 2016

				02/03/2016 (Grab) - 02/04/2016 (Composite)		
ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	SAMPLE FREQUENCY	SAMPLE TYPE	RESULT	VALIDATION QUALIFIER
Flow**	MGD	117.83/-	1/Discharge	Meas	1.323357	*
CONVENTIONAL POLLUTANTS						
Biochemical Oxygen Demand (BOD)(5-Day @ 20 deg. C)	LBS/DAY	29,481/-	1/Discharge	Composite	22.07	--
Oil & Grease	LBS/DAY	14,741/-	1/Discharge	Grab	ND	U
Total Suspended Solids	LBS/DAY	44,222/-	1/Discharge	Composite	ND	U
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-Dinitrotoluene	LBS/DAY	17.7/-	1/Discharge	Composite	ND	UJ (C)
2,4,6-Trichlorophenol	LBS/DAY	12.8/-	1/Discharge	Composite	ND	U
alpha-BHC	LBS/DAY	0.03/-	1/Discharge	Composite	ND	U
Antimony	LBS/DAY	5.9/-	1/Year	Composite	ND	U (B)
Arsenic	LBS/DAY	9.83/-	1/Year	Composite	ND	U
Beryllium	LBS/DAY	3.93/-	1/Year	Composite	ND	U
Bis (2-Ethylhexyl) Phthalate	LBS/DAY	3.93/-	1/Discharge	Composite	ND	U
Cadmium	LBS/DAY	(3.93) 3.05/- ^(a)	1/Discharge	Composite	ND	U
Chromium VI	LBS/DAY	15.72/-	1/Year	Composite	0.0029	J- (DNQ, H)
Copper	LBS/DAY	13.76/-	1/Discharge	Composite	0.010	J (DNQ)
Cyanide	LBS/DAY	8.35/-	1/Discharge	Composite	ND	U
Lead	LBS/DAY	5.11/-	1/Discharge	Composite	ND	U
Mercury	LBS/DAY	0.1/-	1/Discharge	Composite	ND	U
Nickel	LBS/DAY	92.4/-	1/Year	Composite	ND	U
N-Nitrosodimethylamine	LBS/DAY	15.72/-	1/Discharge	Composite	ND	U
Pentachlorophenol	LBS/DAY	16.22/-	1/Discharge	Composite	ND	U
Selenium	LBS/DAY	(4.91) 8.06/- ^(a)	1/Discharge	Composite	ND	U
Silver	LBS/DAY	4.03/-	1/Year	Composite	ND	U
TCDD TEQ_NoDNQ	LBS/DAY	2.75E-08	1/Discharge	Composite	ND	U
Thallium	LBS/DAY	1.97/-	1/Year	Composite	ND	U
Trichloroethene	LBS/DAY	4.91/-	1/Discharge	Grab	ND	U
Zinc	LBS/DAY	117/-	1/Discharge	Composite	ND	U
NON-CONVENTIONAL POLLUTANTS						
Ammonia - N	LBS/DAY	9,925.3/-	1/Discharge	Composite	4.536	J (DNQ)
Barium	LBS/DAY	983/-	1/Year	Composite	0.155	--
Chloride	LBS/DAY	147,405/-	1/Discharge	Composite	176.589	R (D)
Chlorine, Total Residual	LBS/DAY	98.3/-	1/Year	Grab	0.331	*
Detergents (as MBAS)	LBS/DAY	491.4/-	1/Discharge	Composite	1.048	J (DNQ)
Fluoride	LBS/DAY	1,572.3/-	1/Year	Composite	ND	U
Iron	LBS/DAY	295/-	1/Year	Composite	ND	U
Manganese	LBS/DAY	49.1/-	1/Year	Composite	ND	U
Nitrate - N	LBS/DAY	7,862/-	1/Discharge	Composite	2.649	--
Nitrate + Nitrite as Nitrogen (N)	LBS/DAY	7,862/-	1/Discharge	Composite	3.863	--
Nitrite - N	LBS/DAY	983/-	1/Discharge	Composite	1.214	J (DNQ)
Perchlorate	LBS/DAY	5.9/-	1/Discharge	Composite	ND	U
Sulfate	LBS/DAY	294,810/-	1/Discharge	Composite	2648.831	J- (Q)
Total Dissolved Solids	LBS/DAY	933,567/-	1/Discharge	Composite	5959.871	--

See attached notes for abbreviations, definitions, and other explanations for the data presented.

^(a)Based on peak LA River flow, sampling event is a dry discharge.

ARROYO SIMI (FRONTIER PARK RECEIVING WATER)

FIRST QUARTER 2016 REPORTING SUMMARY
 THE BOEING COMPANY
 SANTA SUSANA FIELD LABORATORY
 NPDES PERMIT CA0001309

January 1 through March 31, 2016

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	SAMPLE FREQUENCY	03/07/2016		
				SAMPLE TYPE	RESULT	VALIDATION QUALIFIER
POLLUTANTS WITH LIMITS						
4,4'-DDD	ug/L	0.0014/-	1/Quarter	Grab	ND < 0.0038	U
4,4'-DDE	ug/L	0.001/-	1/Quarter	Grab	ND < 0.0029	U
4,4'-DDT	ug/L	0.001/-	1/Quarter	Grab	ND < 0.0038	U
Aroclor 1016	ug/L	0.0003/-	1/Quarter	Grab	ND < 0.24	U
Aroclor 1221	ug/L	0.0003/-	1/Quarter	Grab	ND < 0.24	U
Aroclor 1232	ug/L	0.0003/-	1/Quarter	Grab	ND < 0.24	U
Aroclor 1242	ug/L	0.0003/-	1/Quarter	Grab	ND < 0.24	U
Aroclor 1248	ug/L	0.0003/-	1/Quarter	Grab	ND < 0.24	U
Aroclor 1254	ug/L	0.0003/-	1/Quarter	Grab	ND < 0.24	U
Aroclor 1260	ug/L	0.0003/-	1/Quarter	Grab	ND < 0.24	U
Chlordane	ug/L	0.001/-	1/Quarter	Grab	ND < 0.077	U
Chlorpyrifos	ug/L	0.02/-	1/Quarter	Grab	ND < 0.54	U
Diazinon	ug/L	0.16/-	1/Quarter	Grab	ND < 0.13	U
Dieldrin	ug/L	0.0002/-	1/Quarter	Grab	ND < 0.0019	U
E. Coli	MPN/100 ml	235/-	1/Year	Grab	35000	--
pH (Field)	s.u.	6.5-8.5/-	1/Quarter	Grab	7.33	*
Toxaphene	ug/L	0.0003/-	1/Quarter	Grab	ND < 0.24	U
POLLUTANTS WITHOUT LIMITS						
Hardness	mg/L	-/-	1/Quarter	Grab	300	--
Temperature (Field)	deg F	-/-	1/Quarter	Grab	61.27	*
Total Suspended Solids	mg/L	-/-	1/Year	Grab	1000	--
Water Velocity	ft/sec	-/-	1/Quarter	Meas	0.1	*

ARROYO SIMI (FRONTIER PARK RECEIVING WATER)

FIRST QUARTER 2016 REPORTING SUMMARY
 THE BOEING COMPANY
 SANTA SUSANA FIELD LABORATORY
 NPDES PERMIT CA0001309

January 1 through March 31, 2016

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	SAMPLE FREQUENCY	03/13/2016		
				SAMPLE TYPE	RESULT	VALIDATION QUALIFIER
POLLUTANTS WITH LIMITS						
4,4'-DDD	ug/L	0.0014/-	1/Quarter	ANR	ANR	ANR
4,4'-DDE	ug/L	0.001/-	1/Quarter	ANR	ANR	ANR
4,4'-DDT	ug/L	0.001/-	1/Quarter	ANR	ANR	ANR
Aroclor 1016	ug/L	0.0003/-	1/Quarter	ANR	ANR	ANR
Aroclor 1221	ug/L	0.0003/-	1/Quarter	ANR	ANR	ANR
Aroclor 1232	ug/L	0.0003/-	1/Quarter	ANR	ANR	ANR
Aroclor 1242	ug/L	0.0003/-	1/Quarter	ANR	ANR	ANR
Aroclor 1248	ug/L	0.0003/-	1/Quarter	ANR	ANR	ANR
Aroclor 1254	ug/L	0.0003/-	1/Quarter	ANR	ANR	ANR
Aroclor 1260	ug/L	0.0003/-	1/Quarter	ANR	ANR	ANR
Chlordane	ug/L	0.001/-	1/Quarter	ANR	ANR	ANR
Chlorpyrifos	ug/L	0.02/-	1/Quarter	ANR	ANR	ANR
Diazinon	ug/L	0.16/-	1/Quarter	ANR	ANR	ANR
Dieldrin	ug/L	0.0002/-	1/Quarter	ANR	ANR	ANR
E. Coli	MPN/100 ml	235/-	1/Year	Grab	4900	--
pH (Field)	s.u.	6.5-8.5/-	1/Quarter	ANR	ANR	ANR
Toxaphene	ug/L	0.0003/-	1/Quarter	ANR	ANR	ANR
POLLUTANTS WITHOUT LIMITS						
Hardness	mg/L	-/-	1/Quarter	ANR	ANR	ANR
Temperature (Field)	deg F	-/-	1/Quarter	ANR	ANR	ANR
Total Suspended Solids	mg/L	-/-	1/Year	ANR	ANR	ANR
Water Velocity	ft/sec	-/-	1/Quarter	ANR	ANR	ANR

ARROYO SIMI (FRONTIER PARK RECEIVING WATER)

FIRST QUARTER 2016 REPORTING SUMMARY
 THE BOEING COMPANY
 SANTA SUSANA FIELD LABORATORY
 NPDES PERMIT CA0001309

January 1 through March 31, 2016

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	SAMPLE FREQUENCY	03/14/2016		
				SAMPLE TYPE	RESULT	VALIDATION QUALIFIER
POLLUTANTS WITH LIMITS						
4,4'-DDD	ug/L	0.0014/-	1/Quarter	ANR	ANR	ANR
4,4'-DDE	ug/L	0.001/-	1/Quarter	ANR	ANR	ANR
4,4'-DDT	ug/L	0.001/-	1/Quarter	ANR	ANR	ANR
Aroclor 1016	ug/L	0.0003/-	1/Quarter	ANR	ANR	ANR
Aroclor 1221	ug/L	0.0003/-	1/Quarter	ANR	ANR	ANR
Aroclor 1232	ug/L	0.0003/-	1/Quarter	ANR	ANR	ANR
Aroclor 1242	ug/L	0.0003/-	1/Quarter	ANR	ANR	ANR
Aroclor 1248	ug/L	0.0003/-	1/Quarter	ANR	ANR	ANR
Aroclor 1254	ug/L	0.0003/-	1/Quarter	ANR	ANR	ANR
Aroclor 1260	ug/L	0.0003/-	1/Quarter	ANR	ANR	ANR
Chlordane	ug/L	0.001/-	1/Quarter	ANR	ANR	ANR
Chlorpyrifos	ug/L	0.02/-	1/Quarter	ANR	ANR	ANR
Diazinon	ug/L	0.16/-	1/Quarter	ANR	ANR	ANR
Dieldrin	ug/L	0.0002/-	1/Quarter	ANR	ANR	ANR
E. Coli	MPN/100 ml	235/-	1/Year	Grab	350	--
pH (Field)	s.u.	6.5-8.5/-	1/Quarter	ANR	ANR	ANR
Toxaphene	ug/L	0.0003/-	1/Quarter	ANR	ANR	ANR
POLLUTANTS WITHOUT LIMITS						
Hardness	mg/L	-/-	1/Quarter	ANR	ANR	ANR
Temperature (Field)	deg F	-/-	1/Quarter	ANR	ANR	ANR
Total Suspended Solids	mg/L	-/-	1/Year	ANR	ANR	ANR
Water Velocity	ft/sec	-/-	1/Quarter	ANR	ANR	ANR

ARROYO SIMI (FRONTIER PARK RECEIVING WATER)

FIRST QUARTER 2016 REPORTING SUMMARY
 THE BOEING COMPANY
 SANTA SUSANA FIELD LABORATORY
 NPDES PERMIT CA0001309

January 1 through March 31, 2016

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	SAMPLE FREQUENCY	03/15/2016		
				SAMPLE TYPE	RESULT	VALIDATION QUALIFIER
POLLUTANTS WITH LIMITS						
4,4'-DDD	ug/L	0.0014/-	1/Quarter	ANR	ANR	ANR
4,4'-DDE	ug/L	0.001/-	1/Quarter	ANR	ANR	ANR
4,4'-DDT	ug/L	0.001/-	1/Quarter	ANR	ANR	ANR
Aroclor 1016	ug/L	0.0003/-	1/Quarter	ANR	ANR	ANR
Aroclor 1221	ug/L	0.0003/-	1/Quarter	ANR	ANR	ANR
Aroclor 1232	ug/L	0.0003/-	1/Quarter	ANR	ANR	ANR
Aroclor 1242	ug/L	0.0003/-	1/Quarter	ANR	ANR	ANR
Aroclor 1248	ug/L	0.0003/-	1/Quarter	ANR	ANR	ANR
Aroclor 1254	ug/L	0.0003/-	1/Quarter	ANR	ANR	ANR
Aroclor 1260	ug/L	0.0003/-	1/Quarter	ANR	ANR	ANR
Chlordane	ug/L	0.001/-	1/Quarter	ANR	ANR	ANR
Chlorpyrifos	ug/L	0.02/-	1/Quarter	ANR	ANR	ANR
Diazinon	ug/L	0.16/-	1/Quarter	ANR	ANR	ANR
Dieldrin	ug/L	0.0002/-	1/Quarter	ANR	ANR	ANR
E. Coli	MPN/100 ml	235/-	1/Year	Grab	160	--
pH (Field)	s.u.	6.5-8.5/-	1/Quarter	ANR	ANR	ANR
Toxaphene	ug/L	0.0003/-	1/Quarter	ANR	ANR	ANR
POLLUTANTS WITHOUT LIMITS						
Hardness	mg/L	-/-	1/Quarter	ANR	ANR	ANR
Temperature (Field)	deg F	-/-	1/Quarter	ANR	ANR	ANR
Total Suspended Solids	mg/L	-/-	1/Year	ANR	ANR	ANR
Water Velocity	ft/sec	-/-	1/Quarter	ANR	ANR	ANR

ARROYO SIMI (FRONTIER PARK RECEIVING WATER)

FIRST QUARTER 2016 REPORTING SUMMARY
 THE BOEING COMPANY
 SANTA SUSANA FIELD LABORATORY
 NPDES PERMIT CA0001309

January 1 through March 31, 2016

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	SAMPLE FREQUENCY	03/16/2016		
				SAMPLE TYPE	RESULT	VALIDATION QUALIFIER
POLLUTANTS WITH LIMITS						
4,4'-DDD	ug/L	0.0014/-	1/Quarter	ANR	ANR	ANR
4,4'-DDE	ug/L	0.001/-	1/Quarter	ANR	ANR	ANR
4,4'-DDT	ug/L	0.001/-	1/Quarter	ANR	ANR	ANR
Aroclor 1016	ug/L	0.0003/-	1/Quarter	ANR	ANR	ANR
Aroclor 1221	ug/L	0.0003/-	1/Quarter	ANR	ANR	ANR
Aroclor 1232	ug/L	0.0003/-	1/Quarter	ANR	ANR	ANR
Aroclor 1242	ug/L	0.0003/-	1/Quarter	ANR	ANR	ANR
Aroclor 1248	ug/L	0.0003/-	1/Quarter	ANR	ANR	ANR
Aroclor 1254	ug/L	0.0003/-	1/Quarter	ANR	ANR	ANR
Aroclor 1260	ug/L	0.0003/-	1/Quarter	ANR	ANR	ANR
Chlordane	ug/L	0.001/-	1/Quarter	ANR	ANR	ANR
Chlorpyrifos	ug/L	0.02/-	1/Quarter	ANR	ANR	ANR
Diazinon	ug/L	0.16/-	1/Quarter	ANR	ANR	ANR
Dieldrin	ug/L	0.0002/-	1/Quarter	ANR	ANR	ANR
E. Coli	MPN/100 ml	235/-	1/Year	Grab	180	--
pH (Field)	s.u.	6.5-8.5/-	1/Quarter	ANR	ANR	ANR
Toxaphene	ug/L	0.0003/-	1/Quarter	ANR	ANR	ANR
POLLUTANTS WITHOUT LIMITS						
Hardness	mg/L	-/-	1/Quarter	ANR	ANR	ANR
Temperature (Field)	deg F	-/-	1/Quarter	ANR	ANR	ANR
Total Suspended Solids	mg/L	-/-	1/Year	ANR	ANR	ANR
Water Velocity	ft/sec	-/-	1/Quarter	ANR	ANR	ANR

ARROYO SIMI (FRONTIER PARK RECEIVING WATER)

FIRST QUARTER 2016 REPORTING SUMMARY
 THE BOEING COMPANY
 SANTA SUSANA FIELD LABORATORY
 NPDES PERMIT CA0001309

January 1 through March 31, 2016

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	SAMPLE FREQUENCY	03/17/2016		
				SAMPLE TYPE	RESULT	VALIDATION QUALIFIER
POLLUTANTS WITH LIMITS						
4,4'-DDD	ug/L	0.0014/-	1/Quarter	ANR	ANR	ANR
4,4'-DDE	ug/L	0.001/-	1/Quarter	ANR	ANR	ANR
4,4'-DDT	ug/L	0.001/-	1/Quarter	ANR	ANR	ANR
Aroclor 1016	ug/L	0.0003/-	1/Quarter	ANR	ANR	ANR
Aroclor 1221	ug/L	0.0003/-	1/Quarter	ANR	ANR	ANR
Aroclor 1232	ug/L	0.0003/-	1/Quarter	ANR	ANR	ANR
Aroclor 1242	ug/L	0.0003/-	1/Quarter	ANR	ANR	ANR
Aroclor 1248	ug/L	0.0003/-	1/Quarter	ANR	ANR	ANR
Aroclor 1254	ug/L	0.0003/-	1/Quarter	ANR	ANR	ANR
Aroclor 1260	ug/L	0.0003/-	1/Quarter	ANR	ANR	ANR
Chlordane	ug/L	0.001/-	1/Quarter	ANR	ANR	ANR
Chlorpyrifos	ug/L	0.02/-	1/Quarter	ANR	ANR	ANR
Diazinon	ug/L	0.16/-	1/Quarter	ANR	ANR	ANR
Dieldrin	ug/L	0.0002/-	1/Quarter	ANR	ANR	ANR
E. Coli	MPN/100 ml	235/-	1/Year	Grab	76	--
pH (Field)	s.u.	6.5-8.5/-	1/Quarter	ANR	ANR	ANR
Toxaphene	ug/L	0.0003/-	1/Quarter	ANR	ANR	ANR
POLLUTANTS WITHOUT LIMITS						
Hardness	mg/L	-/-	1/Quarter	ANR	ANR	ANR
Temperature (Field)	deg F	-/-	1/Quarter	ANR	ANR	ANR
Total Suspended Solids	mg/L	-/-	1/Year	ANR	ANR	ANR
Water Velocity	ft/sec	-/-	1/Quarter	ANR	ANR	ANR

ARROYO SIMI (FRONTIER PARK RECEIVING WATER)

FIRST QUARTER 2016 REPORTING SUMMARY
 THE BOEING COMPANY
 SANTA SUSANA FIELD LABORATORY
 NPDES PERMIT CA0001309

January 1 through March 31, 2016

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	SAMPLE FREQUENCY	03/18/2016		
				SAMPLE TYPE	RESULT	VALIDATION QUALIFIER
POLLUTANTS WITH LIMITS						
4,4'-DDD	ug/L	0.0014/-	1/Quarter	ANR	ANR	ANR
4,4'-DDE	ug/L	0.001/-	1/Quarter	ANR	ANR	ANR
4,4'-DDT	ug/L	0.001/-	1/Quarter	ANR	ANR	ANR
Aroclor 1016	ug/L	0.0003/-	1/Quarter	ANR	ANR	ANR
Aroclor 1221	ug/L	0.0003/-	1/Quarter	ANR	ANR	ANR
Aroclor 1232	ug/L	0.0003/-	1/Quarter	ANR	ANR	ANR
Aroclor 1242	ug/L	0.0003/-	1/Quarter	ANR	ANR	ANR
Aroclor 1248	ug/L	0.0003/-	1/Quarter	ANR	ANR	ANR
Aroclor 1254	ug/L	0.0003/-	1/Quarter	ANR	ANR	ANR
Aroclor 1260	ug/L	0.0003/-	1/Quarter	ANR	ANR	ANR
Chlordane	ug/L	0.001/-	1/Quarter	ANR	ANR	ANR
Chlorpyrifos	ug/L	0.02/-	1/Quarter	ANR	ANR	ANR
Diazinon	ug/L	0.16/-	1/Quarter	ANR	ANR	ANR
Dieldrin	ug/L	0.0002/-	1/Quarter	ANR	ANR	ANR
E. Coli	MPN/100 ml	235/-	1/Year	Grab	180	--
pH (Field)	s.u.	6.5-8.5/-	1/Quarter	ANR	ANR	ANR
Toxaphene	ug/L	0.0003/-	1/Quarter	ANR	ANR	ANR
POLLUTANTS WITHOUT LIMITS						
Hardness	mg/L	-/-	1/Quarter	ANR	ANR	ANR
Temperature (Field)	deg F	-/-	1/Quarter	ANR	ANR	ANR
Total Suspended Solids	mg/L	-/-	1/Year	ANR	ANR	ANR
Water Velocity	ft/sec	-/-	1/Quarter	ANR	ANR	ANR

ARROYO SIMI (FRONTIER PARK RECEIVING WATER)

FIRST QUARTER 2016 REPORTING SUMMARY
 THE BOEING COMPANY
 SANTA SUSANA FIELD LABORATORY
 NPDES PERMIT CA0001309

January 1 through March 31, 2016

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	SAMPLE FREQUENCY	03/19/2016		
				SAMPLE TYPE	RESULT	VALIDATION QUALIFIER
POLLUTANTS WITH LIMITS						
4,4'-DDD	ug/L	0.0014/-	1/Quarter	ANR	ANR	ANR
4,4'-DDE	ug/L	0.001/-	1/Quarter	ANR	ANR	ANR
4,4'-DDT	ug/L	0.001/-	1/Quarter	ANR	ANR	ANR
Aroclor 1016	ug/L	0.0003/-	1/Quarter	ANR	ANR	ANR
Aroclor 1221	ug/L	0.0003/-	1/Quarter	ANR	ANR	ANR
Aroclor 1232	ug/L	0.0003/-	1/Quarter	ANR	ANR	ANR
Aroclor 1242	ug/L	0.0003/-	1/Quarter	ANR	ANR	ANR
Aroclor 1248	ug/L	0.0003/-	1/Quarter	ANR	ANR	ANR
Aroclor 1254	ug/L	0.0003/-	1/Quarter	ANR	ANR	ANR
Aroclor 1260	ug/L	0.0003/-	1/Quarter	ANR	ANR	ANR
Chlordane	ug/L	0.001/-	1/Quarter	ANR	ANR	ANR
Chlorpyrifos	ug/L	0.02/-	1/Quarter	ANR	ANR	ANR
Diazinon	ug/L	0.16/-	1/Quarter	ANR	ANR	ANR
Dieldrin	ug/L	0.0002/-	1/Quarter	ANR	ANR	ANR
E. Coli	MPN/100 ml	235/-	1/Year	Grab	120	--
pH (Field)	s.u.	6.5-8.5/-	1/Quarter	ANR	ANR	ANR
Toxaphene	ug/L	0.0003/-	1/Quarter	ANR	ANR	ANR
POLLUTANTS WITHOUT LIMITS						
Hardness	mg/L	-/-	1/Quarter	ANR	ANR	ANR
Temperature (Field)	deg F	-/-	1/Quarter	ANR	ANR	ANR
Total Suspended Solids	mg/L	-/-	1/Year	ANR	ANR	ANR
Water Velocity	ft/sec	-/-	1/Quarter	ANR	ANR	ANR

ARROYO SIMI (FRONTIER PARK RECEIVING WATER)

FIRST QUARTER 2016 REPORTING SUMMARY
 THE BOEING COMPANY
 SANTA SUSANA FIELD LABORATORY
 NPDES PERMIT CA0001309

January 1 through March 31, 2016

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	SAMPLE FREQUENCY	03/25/2016		
				SAMPLE TYPE	RESULT	VALIDATION QUALIFIER
POLLUTANTS WITH LIMITS						
4,4'-DDD	ug/L	0.0014/-	1/Quarter	ANR	ANR	ANR
4,4'-DDE	ug/L	0.001/-	1/Quarter	ANR	ANR	ANR
4,4'-DDT	ug/L	0.001/-	1/Quarter	ANR	ANR	ANR
Aroclor 1016	ug/L	0.0003/-	1/Quarter	ANR	ANR	ANR
Aroclor 1221	ug/L	0.0003/-	1/Quarter	ANR	ANR	ANR
Aroclor 1232	ug/L	0.0003/-	1/Quarter	ANR	ANR	ANR
Aroclor 1242	ug/L	0.0003/-	1/Quarter	ANR	ANR	ANR
Aroclor 1248	ug/L	0.0003/-	1/Quarter	ANR	ANR	ANR
Aroclor 1254	ug/L	0.0003/-	1/Quarter	ANR	ANR	ANR
Aroclor 1260	ug/L	0.0003/-	1/Quarter	ANR	ANR	ANR
Chlordane	ug/L	0.001/-	1/Quarter	ANR	ANR	ANR
Chlorpyrifos	ug/L	0.02/-	1/Quarter	ANR	ANR	ANR
Diazinon	ug/L	0.16/-	1/Quarter	ANR	ANR	ANR
Dieldrin	ug/L	0.0002/-	1/Quarter	ANR	ANR	ANR
E. Coli	MPN/100 ml	235/-	1/Year	Grab	31	J- (H)
pH (Field)	s.u.	6.5-8.5/-	1/Quarter	ANR	ANR	ANR
Toxaphene	ug/L	0.0003/-	1/Quarter	ANR	ANR	ANR
POLLUTANTS WITHOUT LIMITS						
Hardness	mg/L	-/-	1/Quarter	ANR	ANR	ANR
Temperature (Field)	deg F	-/-	1/Quarter	ANR	ANR	ANR
Total Suspended Solids	mg/L	-/-	1/Year	ANR	ANR	ANR
Water Velocity	ft/sec	-/-	1/Quarter	ANR	ANR	ANR

ARROYO SIMI (FRONTIER PARK RECEIVING WATER)

FIRST QUARTER 2016 REPORTING SUMMARY
 THE BOEING COMPANY
 SANTA SUSANA FIELD LABORATORY
 NPDES PERMIT CA0001309

January 1 through March 31, 2016

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	SAMPLE FREQUENCY	03/31/2016		
				SAMPLE TYPE	RESULT	VALIDATION QUALIFIER
POLLUTANTS WITH LIMITS						
4,4'-DDD	ug/L	0.0014/-	1/Quarter	ANR	ANR	ANR
4,4'-DDE	ug/L	0.001/-	1/Quarter	ANR	ANR	ANR
4,4'-DDT	ug/L	0.001/-	1/Quarter	ANR	ANR	ANR
Aroclor 1016	ug/L	0.0003/-	1/Quarter	ANR	ANR	ANR
Aroclor 1221	ug/L	0.0003/-	1/Quarter	ANR	ANR	ANR
Aroclor 1232	ug/L	0.0003/-	1/Quarter	ANR	ANR	ANR
Aroclor 1242	ug/L	0.0003/-	1/Quarter	ANR	ANR	ANR
Aroclor 1248	ug/L	0.0003/-	1/Quarter	ANR	ANR	ANR
Aroclor 1254	ug/L	0.0003/-	1/Quarter	ANR	ANR	ANR
Aroclor 1260	ug/L	0.0003/-	1/Quarter	ANR	ANR	ANR
Chlordane	ug/L	0.001/-	1/Quarter	ANR	ANR	ANR
Chlorpyrifos	ug/L	0.02/-	1/Quarter	ANR	ANR	ANR
Diazinon	ug/L	0.16/-	1/Quarter	ANR	ANR	ANR
Dieldrin	ug/L	0.0002/-	1/Quarter	ANR	ANR	ANR
E. Coli	MPN/100 ml	235/-	1/Year	Grab	180	--
pH (Field)	s.u.	6.5-8.5/-	1/Quarter	ANR	ANR	ANR
Toxaphene	ug/L	0.0003/-	1/Quarter	ANR	ANR	ANR
POLLUTANTS WITHOUT LIMITS						
Hardness	mg/L	-/-	1/Quarter	ANR	ANR	ANR
Temperature (Field)	deg F	-/-	1/Quarter	ANR	ANR	ANR
Total Suspended Solids	mg/L	-/-	1/Year	ANR	ANR	ANR
Water Velocity	ft/sec	-/-	1/Quarter	ANR	ANR	ANR

ARROYO SIMI (FRONTIER PARK RECEIVING WATER)

FIRST QUARTER 2016 REPORTING SUMMARY
 THE BOEING COMPANY
 SANTA SUSANA FIELD LABORATORY
 NPDES PERMIT CA0001309

Sample Type: Grab
 Sample Date March 7, 2016

ANALYTE	SAMPLE FREQUENCY	LAB MDL (ug/L)	LAB RL (ug/L)	LAB RESULT (ug/L)	VALIDATION QUALIFIER	1998 WHO TEF	BEF Great Lakes Water Quality Initiative	TCDD Equivalent (w/out DNQ Values) (ug/L)
1,2,3,4,6,7,8-HpCDD	1/Year	1.00E-06	4.70E-05	2.80E-05	U (B)	0.01	0.05	ND
1,2,3,4,6,7,8-HpCDF	1/Year	6.00E-07	4.70E-05	1.30E-05	U (B)	0.01	0.01	ND
1,2,3,4,7,8,9-HpCDF	1/Year	8.30E-07	4.70E-05	1.60E-06	U (B)	0.01	0.4	ND
1,2,3,4,7,8-HxCDD	1/Year	4.10E-07	4.70E-05	1.80E-06	J (DNQ)	0.1	0.3	ND
1,2,3,4,7,8-HxCDF	1/Year	7.40E-07	4.70E-05	1.90E-06	UJ (*III)	0.1	0.08	ND
1,2,3,6,7,8-HxCDD	1/Year	3.90E-07	4.70E-05	2.70E-06	U (B)	0.1	0.1	ND
1,2,3,6,7,8-HxCDF	1/Year	6.20E-07	4.70E-05	1.50E-06	UJ (*III)	0.1	0.2	ND
1,2,3,7,8,9-HxCDD	1/Year	3.40E-07	4.70E-05	2.40E-06	U (B)	0.1	0.1	ND
1,2,3,7,8,9-HxCDF	1/Year	3.90E-07	4.70E-05	1.30E-06	U (B)	0.1	0.6	ND
1,2,3,7,8-PeCDD	1/Year	4.60E-07	4.70E-05	2.10E-06	J (DNQ)	1.0	0.9	ND
1,2,3,7,8-PeCDF	1/Year	3.40E-07	4.70E-05	1.60E-06	J (DNQ)	0.05	0.2	ND
2,3,4,6,7,8-HxCDF	1/Year	4.50E-07	4.70E-05	1.70E-06	UJ (*III)	0.1	0.7	ND
2,3,4,7,8-PeCDF	1/Year	3.60E-07	4.70E-05	1.40E-06	J (DNQ)	0.5	1.6	ND
2,3,7,8-TCDD	1/Year	3.10E-07	9.50E-06	ND	U	1.0	1.0	ND
2,3,7,8-TCDF	1/Year	2.90E-07	9.50E-06	ND	U	0.1	0.8	ND
OCDD	1/Year	8.30E-07	9.50E-05	2.10E-04	--	0.0001	0.01	2.10E-10
OCDF	1/Year	6.90E-07	9.50E-05	3.00E-05	U (B)	0.0001	0.02	ND

TCDD TEQ w/out DNQ Values	2.10E-10
----------------------------------	-----------------

ARROYO SIMI (FRONTIER PARK RECEIVING WATER), SEDIMENT

**FIRST QUARTER 2016 REPORTING SUMMARY
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY
NPDES PERMIT CA0001309**

January 1 through March 31, 2016

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	SAMPLE FREQUENCY	3/19/2016		
				SAMPLE TYPE	RESULT	VALIDATION QUALIFIER
POLLUTANTS WITH LIMITS						
4,4'-DDD	ug/g	0.002/-	1/Year	Grab	ND < 0.0016	*
4,4'-DDE	ug/g	0.0014/-	1/Year	Grab	ND < 0.0016	*
4,4'-DDT	ug/g	0.0003/-	1/Year	Grab	ND < 0.0016	*
Aroclor 1016	ug/g	0.12/-	1/Year	Grab	ND < 0.049	*
Aroclor 1221	ug/g	0.12/-	1/Year	Grab	ND < 0.049	*
Aroclor 1232	ug/g	0.12/-	1/Year	Grab	ND < 0.049	*
Aroclor 1242	ug/g	0.12/-	1/Year	Grab	ND < 0.049	*
Aroclor 1248	ug/g	0.12/-	1/Year	Grab	ND < 0.049	*
Aroclor 1254	ug/g	0.12/-	1/Year	Grab	ND < 0.049	*
Aroclor 1260	ug/g	0.12/-	1/Year	Grab	ND < 0.049	*
Chlordane	ug/g	0.0033/-	1/Year	Grab	ND < 0.01	*
Dieldrin	ug/g	0.0002/-	1/Year	Grab	ND < 0.0016	*
Toxaphene	ug/g	0.0006/-	1/Year	Grab	ND < 0.052	*
POLLUTANTS WITHOUT LIMITS						
Percent Moisture	%	-/-	1/Year	Grab	29.0	*
Ammonia as Nitrogen (N)	mg/kg	-/-	1/Year	Grab	4.06	J (DNQ)
Bivalve Embryo toxicity	NA	-/-	1/Year	ANR	ANR	ANR
Conductivity (Field)	umhos/cm	-/-	1/Year	Grab	1450	*
Dissolved Oxygen (Field)	mg/L	-/-	1/Year	Grab	10.52	*
pH (Field)	pH Units	-/-	1/Year	Grab	8.13	*
Sediment toxicity	NA	-/-	1/Year	ANR	ANR	ANR
Temperature (Field)	deg C	-/-	1/Year	Grab	10.52	*
Total Organic Carbon	mg/kg	-/-	1/Year	Grab	1500	J- (Q,\$)
Water Velocity	ft/sec	-/-	1/Year	Meas	0.0	*
PARTICLE SIZE DISTRIBUTION						
Gravel	%	-/-	1/Year	Grab	0.00	*
Coarse Sand	%	-/-	1/Year	Grab	0.00	*
Medium Sand	%	-/-	1/Year	Grab	10.05	*
Fine Sand	%	-/-	1/Year	Grab	23.5	*
Silt/Clay	%	-/-	1/Year	Grab	66.44	*

ARROYO SIMI (FRONTIER PARK RECEIVING WATER), SEDIMENT

**FIRST QUARTER 2016 REPORTING SUMMARY
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY
NPDES PERMIT CA0001309**

January 1 through March 31, 2016

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	SAMPLE FREQUENCY	3/25/2016		
				SAMPLE TYPE	RESULT	VALIDATION QUALIFIER
POLLUTANTS WITH LIMITS						
4,4'-DDD	ug/g	0.002/-	1/Year	ANR	ANR	ANR
4,4'-DDE	ug/g	0.0014/-	1/Year	ANR	ANR	ANR
4,4'-DDT	ug/g	0.0003/-	1/Year	ANR	ANR	ANR
Aroclor 1016	ug/g	0.12/-	1/Year	ANR	ANR	ANR
Aroclor 1221	ug/g	0.12/-	1/Year	ANR	ANR	ANR
Aroclor 1232	ug/g	0.12/-	1/Year	ANR	ANR	ANR
Aroclor 1242	ug/g	0.12/-	1/Year	ANR	ANR	ANR
Aroclor 1248	ug/g	0.12/-	1/Year	ANR	ANR	ANR
Aroclor 1254	ug/g	0.12/-	1/Year	ANR	ANR	ANR
Aroclor 1260	ug/g	0.12/-	1/Year	ANR	ANR	ANR
Chlordane	ug/g	0.0033/-	1/Year	ANR	ANR	ANR
Dieldrin	ug/g	0.0002/-	1/Year	ANR	ANR	ANR
Toxaphene	ug/g	0.0006/-	1/Year	ANR	ANR	ANR
POLLUTANTS WITHOUT LIMITS						
Percent Moisture	%	-/-	1/Year	ANR	ANR	ANR
Ammonia as Nitrogen (N)	mg/kg	-/-	1/Year	ANR	ANR	ANR
Bivalve Embryo toxicity	NA	-/-	1/Year	Grab	Pass	--
Conductivity (Field)	umhos/cm	-/-	1/Year	ANR	ANR	ANR
Dissolved Oxygen (Field)	mg/L	-/-	1/Year	ANR	ANR	ANR
pH (Field)	pH Units	-/-	1/Year	ANR	ANR	ANR
Sediment toxicity	NA	-/-	1/Year	Grab	Pass	--
Temperature (Field)	deg C	-/-	1/Year	ANR	ANR	ANR
Total Organic Carbon	mg/kg	-/-	1/Year	ANR	ANR	ANR
Water Velocity	ft/sec	-/-	1/Year	Meas	0.0	*
PARTICLE SIZE DISTRIBUTION						
Gravel	%	-/-	1/Year	ANR	ANR	ANR
Coarse Sand	%	-/-	1/Year	ANR	ANR	ANR
Medium Sand	%	-/-	1/Year	ANR	ANR	ANR
Fine Sand	%	-/-	1/Year	ANR	ANR	ANR
Silt/Clay	%	-/-	1/Year	ANR	ANR	ANR

APPENDIX D

First Quarter 2016 Summary of Permit Limit Exceedances

**TABLE D
SUMMARY OF PERMIT LIMIT EXCEEDANCES**

**FIRST QUARTER 2016 REPORTING SUMMARY
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY
NPDES PERMIT CA0001309**

**Sample Type Composite
January 1 through March 31, 2016**

DAILY MAX PERMIT LIMIT EXCEEDANCES								
OUTFALL	LOCATIONS	SAMPLE DATE	SAMPLE TYPE	ANALYTE	PERMIT LIMIT DAILY MAX	DAILY MAX RESULT	UNITS	VALIDATION QUALIFIER
Outfall 009	WS-13 Drainage	1/6/2016	Comp	TCDD TEQ w/out DNQ	2.80E-08/-	8.71E-08	ug/L	--
Outfall 009	WS-13 Drainage	3/8/2016	Comp	Lead	5.2/-	5.9	ug/L	--

**TABLE D
SUMMARY OF PERMIT LIMIT EXCEEDANCES**

**FIRST QUARTER 2016 REPORTING SUMMARY
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY
NPDES PERMIT CA0001309**

January 1 through March 31, 2016

SINGLE SAMPLE MAXIMUM RECEIVING WATER LIMIT EXCEEDANCES								
OUTFALL	LOCATIONS	SAMPLE DATE	SAMPLE TYPE	ANALYTE	PERMIT LIMIT DAILY MAX	DAILY MAX RESULT	UNITS	VALIDATION QUALIFIER
Arroyo Simi	Frontier Park Receiving Water	3/7/2016	Grab	E. Coli	235/-	35000	MPN/100 ml	--
Arroyo Simi	Frontier Park Receiving Water	3/13/2016	Grab	E. Coli	235/-	4900	MPN/100 ml	--
Arroyo Simi	Frontier Park Receiving Water	3/14/2016	Grab	E. Coli	235/-	350	MPN/100 ml	--

GEOMETRIC MEAN RECEIVING WATER LIMIT EXCEEDANCES								
OUTFALL	LOCATIONS	SAMPLE DATE	SAMPLE TYPE	ANALYTE	PERMIT LIMIT DAILY MAX	DAILY MAX RESULT	UNITS	VALIDATION QUALIFIER
Arroyo Simi	Frontier Park Receiving Water	3/7, 3/13-3/19, 3/25, 3/31	Grab	E. Coli	126	331	MPN/100 ml	--

APPENDIX E

**First Quarter 2016 Analytical Laboratory Report,
Chain of Custody, and Validation Report
(on CD)**

APPENDIX E
TABLE OF CONTENTS

Section No.

1	Outfall 002 – 440-137200-2, February 4, 2016, MEC ^x Data Validation Report
2	Outfall 002 – 440-137200-2, February 4, 2016, Test American Analytical Laboratory
3	Outfall 002 – 440-137347-1, February 5, 2016, MEC ^x Data Validation Report
4	Outfall 002 – 440-137347-1, February 5, 2016, Test America Analytical Laboratory
5	Outfall 002 – 440-137347-2, February 5, 2016, MEC ^x Data Validation Report
6	Outfall 002 – 440-137347-2, February 5, 2016, Test America Analytical Laboratory
7	Outfall 009 – 440-133027-1, January 5, 2016, MEC ^x Data Validation Report
8	Outfall 009 – 440-133027-1, January 5, 2016, Test America Analytical Laboratory
9	Outfall 009 – 440-133309-1, January 6, 2016, MEC ^x Data Validation Report
10	Outfall 009 – 440-133309-1, January 6, 2016, Test America Analytical Laboratory
11	Outfall 009 – 440-140202-1, March 7, 2016, MEC ^x Data Validation Report
12	Outfall 009 – 440-140202-1, March 7, 2016, Test American Analytical Laboratory
13	Outfall 009 – 440-140288-1, March 8, 2016, MEC ^x Data Validation Report
14	Outfall 009 – 440-140288-1, March 8, 2016, Test American Analytical Laboratory
15	Outfall 009 – 440-140976-1, March 11, 2016, MEC ^x Data Validation Report
16	Outfall 009 – 440-140976-1, March 11, 2016, Test American Analytical Laboratory
17	Outfall 009 – 440-141065-1, March 12, 2016, MEC ^x Data Validation Report
18	Outfall 009 – 440-141065-1, March 12, 2016, Test American Analytical Laboratory
19	Outfall 009 – 440-141065-2, March 12, 2016, MEC ^x Data Validation Report
20	Outfall 009 – 440-141065-2, March 12, 2016, Test American Analytical Laboratory
21	Outfall 018 – 440-137026-1, February 3, 2016, MEC ^x Data Validation Report
22	Outfall 018 – 440-137026-1, February 3, 2016, Test America Analytical Laboratory
23	Outfall 018 – 440-137200-1, February 4, 2016, MEC ^x Data Validation Report
24	Outfall 018 – 440-137200-1, February 4, 2016, Test American Analytical Laboratory
25	Outfall 018 – 440-137200-3, February 4, 2016, MEC ^x Data Validation Report
26	Outfall 018 – 440-137200-3, February 4, 2016, Test American Analytical Laboratory

APPENDIX E

Table of Contents (cont)

27	Arroyo Simi – 440-140204-1, March 7, 2016, MECx Data Validation Report
28	Arroyo Simi – 440-140204-1, March 7, 2016, Test American Analytical Laboratory
29	Arroyo Simi – 440-141131-1, March 14, 2016, MEC ^x Data Validation Report
30	Arroyo Simi – 440-141131-1, March 14, 2016, Test American Analytical Laboratory
31	Arroyo Simi – 440-141209-1, March 13, 2016, MEC ^x Data Validation Report
32	Arroyo Simi – 440-141209-1, March 13, 2016, Test American Analytical Laboratory
33	Arroyo Simi – 440-141410-1, March 15, 2016, MEC ^x Data Validation Report
34	Arroyo Simi – 440-141410-1, March 15, 2016, Test American Analytical Laboratory
35	Arroyo Simi – 440-141681-1, March 17, 2016, MEC ^x Data Validation Report
36	Arroyo Simi – 440-141681-1, March 17, 2016, Test American Analytical Laboratory
37	Arroyo Simi – 440-141912-1, March 18, 2016, MEC ^x Data Validation Report
38	Arroyo Simi – 440-141912-1, March 18, 2016, Test American Analytical Laboratory
39	Arroyo Simi – 440-142060-1, March 19, 2016, MEC ^x Data Validation Report
40	Arroyo Simi – 440-142060-1, March 19, 2016, Test American Analytical Laboratory
41	Arroyo Simi – 440-142067-1, March 19, 2016, MEC ^x Data Validation Report
42	Arroyo Simi – 440-142067-1, March 19, 2016, Test American Analytical Laboratory
43	Arroyo Simi – 440-142069-1, March 16, 2016, MEC ^x Data Validation Report
44	Arroyo Simi – 440-142069-1, March 16, 2016, Test American Analytical Laboratory
45	Arroyo Simi – 440-142572-1, March 25, 2016, MEC ^x Data Validation Report
46	Arroyo Simi – 440-142572-1, March 25, 2016, Test American Analytical Laboratory
47	Arroyo Simi – 440-142666-1, March 25, 2016, MEC ^x Data Validation Report
48	Arroyo Simi – 440-142666-1, March 25, 2016, Test American Analytical Laboratory
49	Arroyo Simi – 440-143004-1, March 31, 2016, MEC ^x Data Validation Report
50	Arroyo Simi – 440-143004-1, March 31, 2016, Test American Analytical Laboratory

DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-137200-2

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 9, 2016

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





TABLE OF CONTENTS

I. INTRODUCTION..... 1

II. Sample Management..... 2

IV. EPA METHOD 8015B— Purgeable (GRO) and Extractable (DRO) Total Petroleum Hydrocarbons (TPHs) 6

IV.1. Holding Times 6

IV.2. Calibration..... 6

IV.3. Quality Control Samples 6

IV.3.1. Method Blanks 6

IV.3.2. Laboratory Control Samples 6

IV.3.3. Surrogate Recovery..... 6

IV.3.4. Matrix Spike/Matrix Spike Duplicate 6

IV.4. Field QC Samples..... 6

IV.5. Compound Identification 6

IV.6. Compound Quantification and Reported Detection Limits 7

V. EPA METHOD 624—Volatile Organic Compounds (VOCs)..... 7

V.1. Holding Times 7

V.2. GC/MS Tuning and Calibration 7

V.3. Quality Control Samples 7

V.3.1. Method Blanks 7

V.3.2. Laboratory Control Samples 7

V.3.3. Surrogate Recovery..... 7

V.3.4. Matrix Spike/Matrix Spike Duplicate 7

V.4. Field QC Samples..... 8

V.5. Internal Standards Performance..... 8

V.6. Compound Identification 8

V.7. Compound Quantification and Reported Detection Limits 8



V.8. Tentatively Identified Compounds 8

V.9. System Performance..... 8

VI. VARIOUS METHODS GENERAL CHEMISTRY 9

VI.1. Holding Times 9

VI.1. Calibration..... 9

VI.1. Quality Control Samples 9

VI.1.1. Method Blanks 9

VI.1.2. Laboratory Control Samples 9

VI.1.3. Laboratory Duplicates..... 9

VI.1.4. Matrix Spike/Matrix Spike Duplicate 9

VI.1.5. Sample Result Verification 9

VI.2. Field QC Samples..... 10

TABLES

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



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-137200-2

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall002_20160204_ Grab	440-137200-1	N/A	Water	2/4/2016 8:25:00 AM	E120.1, E1664, E624, SM2540F, SM9221F, SW8015D, SW8015V



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chain-of-custody (COC) provided by the laboratory for sample delivery group (SDG) 440-137200-2:

- The laboratory received the samples in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius ($^{\circ}\text{C}$) and greater than 0°C .
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Unpreserved aliquots of the sample were provided for analysis of acrolein, acrylonitrile, and 2-chloroethyl vinyl ether.
- The case narrative and sample receipt checklist noted that the collection time was not indicated on the COC. The sample was logged per the collection time listed on the sample label.
- Field and laboratory personnel signed and dated the COC.
- According to the laboratory sample receipt checklist, custody seals were intact.



TABLE 2 - DATA QUALIFIER REFERENCE

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



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	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.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) 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.
B	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.
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.
P	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.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



IV. EPA METHOD 8015B— PURGEABLE (GRO) AND EXTRACTABLE (DRO) TOTAL PETROLEUM HYDROCARBONS (TPHS)

Lynn S. Calvin of MEC^X reviewed the SDG on March 9, 2016

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for Total Fuel Hydrocarbons (DVP-8, Rev. 0)*, *EPA Method 8015B*, and the *National Functional Guidelines for Superfund Organic Methods Data Review (2014)*.

IV.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample for DRO was extracted within seven days of collection and analyzed within 40 days of extraction. The preserved water sample for GRO was analyzed within 14 days of collection.

IV.2. CALIBRATION

Calibration criteria were met. Initial calibration %RSDs were $\leq 20\%$ and continuing calibration %Ds $\leq 15\%$.

IV.3. QUALITY CONTROL SAMPLES

IV.3.1. METHOD BLANKS

Target compounds were not detected in the method blanks.

IV.3.2. LABORATORY CONTROL SAMPLES

LCS recoveries were within the control limits of 80-120% and 40-115% for GRO and DRO, respectively.

IV.3.3. SURROGATE RECOVERY

Recoveries were within the control limits of 65-140% for surrogates 4-bromofluorobenzene (GRO) and 45-120% for n-octacosane (DRO).

IV.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on the site sample from this SDG for both the GRO and DRO analyses. Recoveries and the RPD for GRO were within the control limits of 65-140% and $\leq 20\%$, respectively, and recoveries and the RPD for DRO were within the control limits of 40-120% and $\leq 30\%$, respectively.

IV.4. FIELD QC SAMPLES

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

- Field Blanks and Equipment Blanks: Field blank or equipment blank samples were not identified for this SDG.
- Field Duplicates: Field duplicate samples were not identified in this SDG.

IV.5. COMPOUND IDENTIFICATION

Compound identification was verified. The laboratory reported two hydrocarbon ranges by Method 8015B: C4-C12 (GRO) and C13-C28 (DRO). The hydrocarbon ranges were reported on the electronic data



deliverable (EDD) as follows: PHC as Unknown/Waste Product, Light Range C4-C12, and Total Petroleum Hydrocarbons (C13-C28) (DRO). Review of the sample chromatograms and retention times indicated no problems with target compound identification.

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. Any result reported between the MDL and the reporting limit was qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Reported nondetects are valid to the reporting limit.

V. EPA METHOD 624—VOLATILE ORGANIC COMPOUNDS (VOCs)

Lynn S. Calvin of MEC^x reviewed the SDG on March 8, 2016

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

V.1. HOLDING TIMES

Analytical holding times were met. The preserved water sample was analyzed within 14 days of collection, and the unpreserved aliquot provided for analysis of acrolein, acrylonitrile and 2-chloroethyl vinyl ether was analyzed within seven days of collection.

V.2. GC/MS TUNING AND CALIBRATION

The BFB tunes met the method abundance criteria. The 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 ≥ 0.05 for all applicable target compounds. The initial calibration %RSDs were $\leq 35\%$, or r^2 values ≥ 0.990 . The second source ICV and all applicable CCV recoveries were within the method control limits.

V.3. QUALITY CONTROL SAMPLES

V.3.1. METHOD BLANKS

Target compounds were not detected in the method blanks.

V.3.2. LABORATORY CONTROL SAMPLES

Recoveries were within the laboratory control limits.

V.3.3. SURROGATE RECOVERY

Recoveries were within the laboratory control limits.

V.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on the site sample from this SDG. Recoveries and RPDs were within the laboratory control limits.



V.4. FIELD QC SAMPLES

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

- Trip Blanks: Sample TB-20160204 was identified on the COC as the trip blank associated with the site sample in this SDG; however, trip blank results were not provided in the data package for this SDG.
- Field Blanks and Equipment Blanks: Field blank or equipment blank samples were not identified for this SDG.
- 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 continuing calibration standards: ± 30 seconds for retention times and $-50\%/+100\%$ for internal standard areas.

V.6. COMPOUND IDENTIFICATION

Compound identification was verified. Review of the sample chromatograms, retention times, and spectra indicated no problems 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. Any result reported between the MDL and the reporting limit was qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Reported nondetects are valid to the reporting limit.

V.8. TENTATIVELY IDENTIFIED COMPOUNDS

The laboratory did not report TICs for this SDG.

V.9. SYSTEM PERFORMANCE

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

VI. VARIOUS METHODS GENERAL CHEMISTRY

Michael Cherny of MEC^X reviewed the SDG on March 8th, 2016

The sample listed in Table 1 for these analysis was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *EPA Methods 120.1 and 1664A*, *Standard Methods for the Examination of Water and Wastewater 2540F and 9221F*, and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

VI.1. HOLDING TIMES

As there was no preservative used or lab prep utilized for the specific conductance analysis, the method analytical holding time, 24 hours from collection, was exceeded by 14 days; therefore, specific conductance measured in sample Outfall002_20160204_Grab was qualified as estimated with potential low bias (J-). Remaining analytical holding times as listed below were met:

- 8 hours from collection for Escherichia coli (as per the COC)
- 48 hours from collection for settleable solids
- 28 days from collection for n-hexane extractable material (HEM; oil and grease)

VI.1. CALIBRATION

Calibration criteria were met. The CCV for specific conductance was recovered within the laboratory-established control limits of 90-110%.

VI.1. QUALITY CONTROL SAMPLES

VI.1.1. METHOD BLANKS

The method blanks had no detects for HEM or specific conductance.

VI.1.2. LABORATORY CONTROL SAMPLES

Recoveries for HEM were within the method control limits of 78-114%, and the recovery for specific conductance was within the laboratory-established QC limits of 90-110%. The RPD for HEM (12%) was outside the method control limit of $\leq 11\%$; therefore, nondetected HEM in sample Outfall002_20160204_Grab was qualified as estimated (UJ).

VI.1.3. LABORATORY DUPLICATES

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

VI.1.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the sample in the SDG. MEC^X evaluated method accuracy and precision based on LCS/LCSD results.

VI.1.5. 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. When the sample results



were qualified and the reviewer was able to clearly determine bias, detected results were qualified as either J+ or J-; otherwise, bias was not indicated in the qualification. Any detects between the method detection limit and the reporting limit were qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Reported nondetects are valid to the MDL.

VI.2. FIELD QC SAMPLES

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

- Field Blanks and Equipment Blanks: Field blank or equipment blank samples were not identified for this SDG.
- Field Duplicates: Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms: 4401372002

Analysis Method E120.1

Sample Name Outfall002_20160204_Grab Matrix Type: WM Result Type: TRG

Sample Date: 2/4/2016 8:25:00 AM Validation Level: 8

Lab Sample Name: 440-137200-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Specific Conductance	N	CONDSPEC	750	1.0	1.0	umhos/		J-	H

Analysis Method E1664

Sample Name Outfall002_20160204_Grab Matrix Type: WM Result Type: TRG

Sample Date: 2/4/2016 8:25:00 AM Validation Level: 8

Lab Sample Name: 440-137200-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Oil and Grease	N	OILGREASE	1.3	4.7	1.3	mg/L	UBA	UJ	L1

Analysis Method E624

Sample Name Outfall002_20160204_Grab Matrix Type: WM Result Type: TRG

Sample Date: 2/4/2016 8:25:00 AM Validation Level: 8

Lab Sample Name: 440-137200-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,1,1-Trichloroethane	N	71-55-6	0.50	0.50	0.25	ug/L	U	U	
1,1,2,2-Tetrachloroethane	N	79-34-5	0.50	0.50	0.25	ug/L	U	U	
1,1,2-Trichloroethane	N	79-00-5	0.50	0.50	0.25	ug/L	U	U	
1,1-Dichloroethane	N	75-34-3	0.50	0.50	0.25	ug/L	U	U	
1,1-Dichloroethene	N	75-35-4	0.50	0.50	0.25	ug/L	U	U	
1,2-Dichloro-1,1,2-trifluoroethane	N	354-23-4	2.0	2.0	1.0	ug/L	U	U	
1,2-Dichlorobenzene	N	95-50-1	0.50	0.50	0.25	ug/L	U	U	
1,2-Dichloroethane	N	107-06-2	0.50	0.50	0.25	ug/L	U	U	
1,2-Dichloropropane	N	78-87-5	0.50	0.50	0.25	ug/L	U	U	
1,3-Dichlorobenzene	N	541-73-1	0.50	0.50	0.25	ug/L	U	U	
1,4-Dichlorobenzene	N	106-46-7	0.50	0.50	0.25	ug/L	U	U	
2-Chloroethyl vinyl ether	N	110-75-8	2.0	2.0	1.0	ug/L	UBU	U	
Acrolein	N	107-02-8	5.0	5.0	2.5	ug/L	UBU	U	
Acrylonitrile	N	107-13-1	2.0	2.0	1.0	ug/L	UBU	U	
Benzene	N	71-43-2	0.50	0.50	0.25	ug/L	U	U	
Bromodichloromethane	N	75-27-4	0.50	0.50	0.25	ug/L	U	U	
Bromoform	N	75-25-2	1.0	1.0	0.40	ug/L	U	U	
Bromomethane (Methyl Bromide)	N	74-83-9	0.50	0.50	0.25	ug/L	U	U	

Analysis Method E624

Carbon tetrachloride	N	56-23-5	0.50	0.50	0.25	ug/L	U	U
Chlorobenzene	N	108-90-7	0.50	0.50	0.25	ug/L	U	U
Chloroethane	N	75-00-3	1.0	1.0	0.40	ug/L	U	U
Chloroform (Trichloromethane)	N	67-66-3	0.50	0.50	0.25	ug/L	U	U
Chloromethane (Methyl Chloride)	N	74-87-3	0.50	0.50	0.25	ug/L	U	U
cis-1,2-Dichloroethene	N	156-59-2	0.63	0.50	0.25	ug/L		
cis-1,3-Dichloropropene	N	10061-01-5	0.50	0.50	0.25	ug/L	U	U
Cyclohexane	N	110-82-7	2.0	2.0	1.0	ug/L	U	U
Dibromochloromethane	N	124-48-1	0.50	0.50	0.25	ug/L	U	U
Ethylbenzene	N	100-41-4	0.50	0.50	0.25	ug/L	U	U
m,p-Xylenes	N	179601-23-1	1.0	1.0	0.50	ug/L	U	U
Methylene chloride	N	75-09-2	2.0	2.0	0.88	ug/L	U	U
Naphthalene	N	91-20-3	1.0	1.0	0.40	ug/L	U	U
o-Xylene	N	95-47-6	0.50	0.50	0.25	ug/L	U	U
Tetrachloroethene	N	127-18-4	0.50	0.50	0.25	ug/L	U	U
Toluene	N	108-88-3	0.50	0.50	0.25	ug/L	U	U
trans-1,2-Dichloroethene	N	156-60-5	0.50	0.50	0.25	ug/L	U	U
trans-1,3-Dichloropropene	N	10061-02-6	0.50	0.50	0.25	ug/L	U	U
Trichloroethene	N	79-01-6	0.50	0.50	0.25	ug/L	U	U
Trichlorofluoromethane (CFC-11)	N	75-69-4	0.50	0.50	0.25	ug/L	U	U
Trifluorotrchloroethane (Freon 113)	N	76-13-1	2.0	2.0	0.50	ug/L	U	U
Vinyl chloride	N	75-01-4	0.50	0.50	0.25	ug/L	U	U
Xylene (total)	N	1330-20-7	1.0	1.0	0.50	ug/L	U	U

Analysis Method SM2540F

Sample Name	Outfall002_20160204_Grab			Matrix Type:	WM	Result Type:	TRG		
Sample Date:	2/4/2016 8:25:00 AM		Validation Level:	8					
Lab Sample Name:	440-137200-1								
Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Settleable solids	N	SETTLEABLSO LIDS	0.10	0.10	0.10	ml/l/hr	U	U	

Analysis Method SM9221F

Sample Name	Outfall002_20160204_Grab			Matrix Type:	WM	Result Type:	TRG		
Sample Date:	2/4/2016 8:25:00 AM		Validation Level:	8					
Lab Sample Name:	440-137200-1								
Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Escherichia coli	N	ECOLI	180	1.8	1.8	mpn/10			

Analysis Method *SW8015D*

Sample Name Outfall002_20160204_Grab **Matrix Type:** WM **Result Type:** TRG
Sample Date: 2/4/2016 8:25:00 AM **Validation Level:** 8
Lab Sample Name: 440-137200-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Petroleum Hydrocarbons (C13-C28)(DRO)	N	PHC1328	0.47	0.47	0.095	mg/L	U	U	

Analysis Method *SW8015V*

Sample Name Outfall002_20160204_Grab **Matrix Type:** WM **Result Type:** TRG
Sample Date: 2/4/2016 8:25:00 AM **Validation Level:** 8
Lab Sample Name: 440-137200-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
PHC as Unknown/Waste Product, Light Range C4-C12	N	PHCML	0.050	0.050	0.025	mg/L	U	U	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

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Tel: (949)261-1022

TestAmerica Job ID: 440-137200-2

Client Project/Site: Boeing NPDES SSFL outfalls

For:

Haley & Aldrich, Inc.

5333 Mission Center Road

Suite 300

San Diego, California 92108

Attn: Nancy Gardiner



Authorized for release by:

3/6/2016 10:11:08 PM

Urvashi Patel, Manager of Project Management

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

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

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

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



Urvashi Patel
Manager of Project Management
3/6/2016 10:11:08 PM



Table of Contents

Cover Page	1
Table of Contents	3
Sample Summary	4
Case Narrative	5
Client Sample Results	7
Method Summary	9
Lab Chronicle	10
QC Sample Results	11
QC Association Summary	19
Definitions/Glossary	21
Certification Summary	22
Subcontract Data	23
Chain of Custody	24
Receipt Checklists	27

Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-137200-1	Outfall002_20160204_Grab	Water	02/04/16 08:25	02/04/16 13:55

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-2

Job ID: 440-137200-2

Laboratory: TestAmerica Irvine

Narrative

Job Narrative 440-137200-2

Comments

No additional comments.

Receipt

The samples were received on 2/4/2016 1:55 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 2.1° C, 2.2° C and 2.7° C.

Receipt Exceptions

The following samples was received at the laboratory without a sample collection time documented on the chain of custody: Outfall002_20160204_Grab (440-137200-1), Outfall002_20160204_Grab (440-137200-1[MSJ]), Outfall002_20160204_Grab (440-137200-1[MSD]), TB-20160204 (440-137200-2), Outfall018_20160204_Comp (440-137200-3), Outfall018_20160204_Comp (440-137200-3[DUJ]), Outfall018_20160204_Comp (440-137200-3[MSJ]), Outfall018_20160204_Comp (440-137200-3[MSD]), Outfall018_20160204_CompF (440-137200-4), Outfall018_20160204_CompF (440-137200-4[DUJ]), Outfall018_20160204_CompF (440-137200-4[MSJ]), Outfall018_20160204_CompF (440-137200-4[MSD]) and TRIP BLANK (440-137200-5). Samples were logged in per container label.

sample 3 had no collection time on the coc but on the contianers the time was 1015.

GC/MS VOA

Method(s) 624, 8260B: The continuing calibration verification (CCV) associated with batch 440-310522 recovered above the upper control limit for Continuing Calibration Check Compound (CCC) 1,2-Dichloropropane. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The following samples are impacted: Outfall002_20160204_Grab (440-137200-1) and (CCVIS 440-310522/3).

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

GC VOA

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.

General Chemistry

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

Biology

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

Subcontract non-Sister

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

Organic Prep

Method(s) 1664A: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-310116 and analytical batch 440-310166. The laboratory control sample (LCS) was performed in duplicate to provide precision data for this batch.

Method(s) 1664A: The %RPD of the laboratory control sample (LCS) and laboratory control standard duplicate (LCSD) for preparation batch 440-310116 recovered outside control limits for the following analyte: HEM. Laboratory control sample / laboratory control samples duplicate (LCS/LCSD) percent recovery is in control for affected analytes.

Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-2

Job ID: 440-137200-2 (Continued)

Laboratory: TestAmerica Irvine (Continued)

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.

Subcontract Work

Method Human Bacteroidales: This method was subcontracted to EMSL Analytical, Inc.. The subcontract laboratory certification is different from that of the facility issuing the final report.

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Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-2

Client Sample ID: Outfall002_20160204_Grab

Lab Sample ID: 440-137200-1

Date Collected: 02/04/16 08:25

Matrix: Water

Date Received: 02/04/16 13:55

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		0.50	0.25	ug/L			02/17/16 16:52	1
2-Chloroethyl vinyl ether	ND	BU	2.0	1.0	ug/L			02/08/16 18:55	1
1,1,2,2-Tetrachloroethane	ND		0.50	0.25	ug/L			02/17/16 16:52	1
Acrolein	ND	BU	5.0	2.5	ug/L			02/08/16 18:55	1
1,1,2-Trichloroethane	ND		0.50	0.25	ug/L			02/17/16 16:52	1
Acrylonitrile	ND	BU	2.0	1.0	ug/L			02/08/16 18:55	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		2.0	0.50	ug/L			02/17/16 16:52	1
1,1-Dichloroethane	ND		0.50	0.25	ug/L			02/17/16 16:52	1
1,1-Dichloroethene	ND		0.50	0.25	ug/L			02/17/16 16:52	1
1,2-Dichlorobenzene	ND		0.50	0.25	ug/L			02/17/16 16:52	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			02/17/16 16:52	1
1,2-Dichloropropane	ND		0.50	0.25	ug/L			02/17/16 16:52	1
1,3-Dichlorobenzene	ND		0.50	0.25	ug/L			02/17/16 16:52	1
1,4-Dichlorobenzene	ND		0.50	0.25	ug/L			02/17/16 16:52	1
Benzene	ND		0.50	0.25	ug/L			02/17/16 16:52	1
Bromoform	ND		1.0	0.40	ug/L			02/17/16 16:52	1
1,2-Dichloro-1,1,2-trifluoroethane	ND		2.0	1.0	ug/L			02/17/16 16:52	1
Bromomethane	ND		0.50	0.25	ug/L			02/17/16 16:52	1
Carbon tetrachloride	ND		0.50	0.25	ug/L			02/17/16 16:52	1
Chlorobenzene	ND		0.50	0.25	ug/L			02/17/16 16:52	1
Dibromochloromethane	ND		0.50	0.25	ug/L			02/17/16 16:52	1
Chloroethane	ND		1.0	0.40	ug/L			02/17/16 16:52	1
Chloroform	ND		0.50	0.25	ug/L			02/17/16 16:52	1
Chloromethane	ND		0.50	0.25	ug/L			02/17/16 16:52	1
cis-1,3-Dichloropropene	ND		0.50	0.25	ug/L			02/17/16 16:52	1
Bromodichloromethane	ND		0.50	0.25	ug/L			02/17/16 16:52	1
Ethylbenzene	ND		0.50	0.25	ug/L			02/17/16 16:52	1
Methylene Chloride	ND		2.0	0.88	ug/L			02/17/16 16:52	1
Tetrachloroethene	ND		0.50	0.25	ug/L			02/17/16 16:52	1
Toluene	ND		0.50	0.25	ug/L			02/17/16 16:52	1
trans-1,2-Dichloroethene	ND		0.50	0.25	ug/L			02/17/16 16:52	1
trans-1,3-Dichloropropene	ND		0.50	0.25	ug/L			02/17/16 16:52	1
Trichlorofluoromethane	ND		0.50	0.25	ug/L			02/17/16 16:52	1
Vinyl chloride	ND		0.50	0.25	ug/L			02/17/16 16:52	1
Trichloroethene	ND		0.50	0.25	ug/L			02/17/16 16:52	1
cis-1,2-Dichloroethene	0.63		0.50	0.25	ug/L			02/17/16 16:52	1
Cyclohexane	ND		2.0	1.0	ug/L			02/17/16 16:52	1
m,p-Xylene	ND		1.0	0.50	ug/L			02/17/16 16:52	1
Naphthalene	ND		1.0	0.40	ug/L			02/17/16 16:52	1
o-Xylene	ND		0.50	0.25	ug/L			02/17/16 16:52	1
Xylenes, Total	ND		1.0	0.50	ug/L			02/17/16 16:52	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	117		80 - 128		02/08/16 18:55	1
Dibromofluoromethane (Surr)	113		76 - 132		02/08/16 18:55	1
4-Bromofluorobenzene (Surr)	111		80 - 120		02/08/16 18:55	1
4-Bromofluorobenzene (Surr)	97		80 - 120		02/17/16 16:52	1
Dibromofluoromethane (Surr)	106		76 - 132		02/17/16 16:52	1
Toluene-d8 (Surr)	101		80 - 128		02/17/16 16:52	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-2

Client Sample ID: Outfall002_20160204_Grab

Lab Sample ID: 440-137200-1

Date Collected: 02/04/16 08:25

Matrix: Water

Date Received: 02/04/16 13:55

Method: 8015B - Gasoline Range Organics - (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
GRO (C4-C12)	ND		0.050	0.025	mg/L	-		02/14/16 00:51	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	110		65 - 140		02/14/16 00:51	1

Method: 8015B - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C13-C28	ND		0.47	0.095	mg/L	-	02/05/16 07:18	02/13/16 04:56	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
n-Octacosane	79		45 - 120	02/05/16 07:18	02/13/16 04:56	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM	ND	BA	4.7	1.3	mg/L	-	02/04/16 16:38	02/04/16 21:08	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Specific Conductance	750		1.0	1.0	umhos/cm	-		02/19/16 11:37	1
Settleable Solids	ND		0.10	0.10	mL/L/Hr	-		02/04/16 14:55	1

Method: SM 9221F - E.Coli (Multiple-Tube Fermentation; EC-MUG)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Escherichia coli	180		1.8	1.8	MPN/100mL	-		02/04/16 14:32	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-2

Method	Method Description	Protocol	Laboratory
624	Volatile Organic Compounds (GC/MS)	40CFR136A	TAL IRV
8015B	Gasoline Range Organics - (GC)	SW846	TAL IRV
8015B	Diesel Range Organics (DRO) (GC)	SW846	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
SM 9221F	E.Coli (Multiple-Tube Fermentation; EC-MUG)	SM	TAL IRV
Human Bacteriodales	General Sub Contract Method	NONE	EMSL

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.

NONE = NONE

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

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EMSL = EMSL Analytical, Inc., 200 Rt 130 North, Cinnaminson, NJ 08077

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

Lab Chronicle

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-2

Client Sample ID: Outfall002_20160204_Grab

Lab Sample ID: 440-137200-1

Date Collected: 02/04/16 08:25

Matrix: Water

Date Received: 02/04/16 13:55

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	10 mL	10 mL	310522	02/08/16 18:55	RM	TAL IRV
Total/NA	Analysis	624		1	10 mL	10 mL	311763	02/17/16 16:52	MM1	TAL IRV
Total/NA	Analysis	8015B		1	10 mL	10 mL	311147	02/14/16 00:51	JB	TAL IRV
Total/NA	Prep	3510C			1055 mL	1 mL	310224	02/05/16 07:18	L2A	TAL IRV
Total/NA	Analysis	8015B		1	1055 mL	1 mL	311062	02/13/16 04:56	CN	TAL IRV
Total/NA	Analysis	120.1		1			312390	02/19/16 11:37	BVL	TAL IRV
Total/NA	Prep	1664A			1060 mL	1000 mL	310116	02/04/16 16:38	LEG	TAL IRV
Total/NA	Analysis	1664A		1	1060 mL	1000 mL	310166	02/04/16 21:08	LEG	TAL IRV
Total/NA	Analysis	SM 2540F		1	1000 mL	1000 mL	310079	02/04/16 14:55	AMH	TAL IRV
Total/NA	Analysis	SM 9221F		1	100 mL	100 mL	310901		B1H	TAL IRV
							(Start)	02/04/16 14:32		
							(End)	02/07/16 11:12		

Laboratory References:

EMSL = EMSL Analytical, Inc., 200 Rt 130 North, Cinnaminson, NJ 08077

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

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-2

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

Lab Sample ID: MB 440-310522/4

Matrix: Water

Analysis Batch: 310522

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Chloroethyl vinyl ether	ND		2.0	1.0	ug/L			02/08/16 15:29	1
Acrolein	ND		5.0	2.5	ug/L			02/08/16 15:29	1
Acrylonitrile	ND		2.0	1.0	ug/L			02/08/16 15:29	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	119		80 - 128		02/08/16 15:29	1
Dibromofluoromethane (Surr)	111		76 - 132		02/08/16 15:29	1
4-Bromofluorobenzene (Surr)	110		80 - 120		02/08/16 15:29	1

Lab Sample ID: LCS 440-310522/5

Matrix: Water

Analysis Batch: 310522

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2-Chloroethyl vinyl ether	25.0	27.0		ug/L		108	37 - 150
Acrolein	25.0	19.1		ug/L		76	10 - 145
Acrylonitrile	250	282		ug/L		113	48 - 140

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Toluene-d8 (Surr)	112		80 - 128
Dibromofluoromethane (Surr)	110		76 - 132
4-Bromofluorobenzene (Surr)	111		80 - 120

Lab Sample ID: 440-137200-1 MS

Matrix: Water

Analysis Batch: 310522

Client Sample ID: Outfall002_20160204_Grab

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
2-Chloroethyl vinyl ether	ND	BU	25.0	27.6	BU	ug/L		111	10 - 140
Acrolein	ND	BU	25.0	11.0	BU	ug/L		44	10 - 147
Acrylonitrile	ND	BU	250	272	BU	ug/L		109	38 - 144

Surrogate	MS %Recovery	MS Qualifier	Limits
Toluene-d8 (Surr)	115		80 - 128
Dibromofluoromethane (Surr)	112		76 - 132
4-Bromofluorobenzene (Surr)	110		80 - 120

Lab Sample ID: 440-137200-1 MSD

Matrix: Water

Analysis Batch: 310522

Client Sample ID: Outfall002_20160204_Grab

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
2-Chloroethyl vinyl ether	ND	BU	25.0	28.6	BU	ug/L		114	10 - 140	3	25
Acrolein	ND	BU	25.0	11.8	BU	ug/L		47	10 - 147	7	40
Acrylonitrile	ND	BU	250	282	BU	ug/L		113	38 - 144	4	40

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-2

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

Lab Sample ID: 440-137200-1 MSD
Matrix: Water
Analysis Batch: 310522

Client Sample ID: Outfall002_20160204_Grab
Prep Type: Total/NA

Surrogate	MSD %Recovery	MSD Qualifier	Limits
Toluene-d8 (Surr)	114		80 - 128
Dibromofluoromethane (Surr)	112		76 - 132
4-Bromofluorobenzene (Surr)	110		80 - 120

Lab Sample ID: MB 440-311763/4
Matrix: Water
Analysis Batch: 311763

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		0.50	0.25	ug/L			02/17/16 08:26	1
1,1,2,2-Tetrachloroethane	ND		0.50	0.25	ug/L			02/17/16 08:26	1
1,1,2-Trichloroethane	ND		0.50	0.25	ug/L			02/17/16 08:26	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		2.0	0.50	ug/L			02/17/16 08:26	1
1,1-Dichloroethane	ND		0.50	0.25	ug/L			02/17/16 08:26	1
1,1-Dichloroethene	ND		0.50	0.25	ug/L			02/17/16 08:26	1
1,2-Dichlorobenzene	ND		0.50	0.25	ug/L			02/17/16 08:26	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			02/17/16 08:26	1
1,2-Dichloropropane	ND		0.50	0.25	ug/L			02/17/16 08:26	1
1,3-Dichlorobenzene	ND		0.50	0.25	ug/L			02/17/16 08:26	1
1,4-Dichlorobenzene	ND		0.50	0.25	ug/L			02/17/16 08:26	1
Benzene	ND		0.50	0.25	ug/L			02/17/16 08:26	1
Bromoform	ND		1.0	0.40	ug/L			02/17/16 08:26	1
1,2-Dichloro-1,1,2-trifluoroethane	ND		2.0	1.0	ug/L			02/17/16 08:26	1
Bromomethane	ND		0.50	0.25	ug/L			02/17/16 08:26	1
Carbon tetrachloride	ND		0.50	0.25	ug/L			02/17/16 08:26	1
Chlorobenzene	ND		0.50	0.25	ug/L			02/17/16 08:26	1
Dibromochloromethane	ND		0.50	0.25	ug/L			02/17/16 08:26	1
Chloroethane	ND		1.0	0.40	ug/L			02/17/16 08:26	1
Chloroform	ND		0.50	0.25	ug/L			02/17/16 08:26	1
Chloromethane	ND		0.50	0.25	ug/L			02/17/16 08:26	1
cis-1,3-Dichloropropene	ND		0.50	0.25	ug/L			02/17/16 08:26	1
Bromodichloromethane	ND		0.50	0.25	ug/L			02/17/16 08:26	1
Ethylbenzene	ND		0.50	0.25	ug/L			02/17/16 08:26	1
Methylene Chloride	ND		2.0	0.88	ug/L			02/17/16 08:26	1
Tetrachloroethene	ND		0.50	0.25	ug/L			02/17/16 08:26	1
Toluene	ND		0.50	0.25	ug/L			02/17/16 08:26	1
trans-1,2-Dichloroethene	ND		0.50	0.25	ug/L			02/17/16 08:26	1
trans-1,3-Dichloropropene	ND		0.50	0.25	ug/L			02/17/16 08:26	1
Trichlorofluoromethane	ND		0.50	0.25	ug/L			02/17/16 08:26	1
Vinyl chloride	ND		0.50	0.25	ug/L			02/17/16 08:26	1
Trichloroethene	ND		0.50	0.25	ug/L			02/17/16 08:26	1
cis-1,2-Dichloroethene	ND		0.50	0.25	ug/L			02/17/16 08:26	1
Cyclohexane	ND		2.0	1.0	ug/L			02/17/16 08:26	1
m,p-Xylene	ND		1.0	0.50	ug/L			02/17/16 08:26	1
Naphthalene	ND		1.0	0.40	ug/L			02/17/16 08:26	1
o-Xylene	ND		0.50	0.25	ug/L			02/17/16 08:26	1
Xylenes, Total	ND		1.0	0.50	ug/L			02/17/16 08:26	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-2

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

Lab Sample ID: MB 440-311763/4
Matrix: Water
Analysis Batch: 311763

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

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
4-Bromofluorobenzene (Surr)	97		80 - 120		02/17/16 08:26	1
Dibromofluoromethane (Surr)	99		76 - 132		02/17/16 08:26	1
Toluene-d8 (Surr)	103		80 - 128		02/17/16 08:26	1

Lab Sample ID: LCS 440-311763/5
Matrix: Water
Analysis Batch: 311763

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec.
							Limits
1,1,1-Trichloroethane	25.0	25.7		ug/L		103	70 - 130
1,1,2,2-Tetrachloroethane	25.0	27.7		ug/L		111	63 - 130
1,1,2-Trichloroethane	25.0	25.1		ug/L		101	70 - 130
1,1-Dichloroethane	25.0	24.8		ug/L		99	64 - 130
1,1-Dichloroethene	25.0	23.7		ug/L		95	70 - 130
1,2-Dichlorobenzene	25.0	26.8		ug/L		107	70 - 130
1,2-Dichloroethane	25.0	25.6		ug/L		102	57 - 138
1,2-Dichloropropane	25.0	26.5		ug/L		106	67 - 130
1,3-Dichlorobenzene	25.0	26.2		ug/L		105	70 - 130
1,4-Dichlorobenzene	25.0	26.0		ug/L		104	70 - 130
Benzene	25.0	25.0		ug/L		100	68 - 130
Bromoform	25.0	29.7		ug/L		119	60 - 148
Bromomethane	25.0	25.6		ug/L		103	64 - 139
Carbon tetrachloride	25.0	26.0		ug/L		104	60 - 150
Chlorobenzene	25.0	24.1		ug/L		97	70 - 130
Dibromochloromethane	25.0	26.9		ug/L		108	69 - 145
Chloroethane	25.0	25.4		ug/L		101	64 - 135
Chloroform	25.0	25.6		ug/L		102	70 - 130
Chloromethane	25.0	25.8		ug/L		103	47 - 140
cis-1,3-Dichloropropene	25.0	27.4		ug/L		110	70 - 133
Bromodichloromethane	25.0	26.3		ug/L		105	70 - 132
Ethylbenzene	25.0	25.2		ug/L		101	70 - 130
Methylene Chloride	25.0	23.5		ug/L		94	52 - 130
Tetrachloroethene	25.0	25.1		ug/L		101	70 - 130
Toluene	25.0	25.2		ug/L		101	70 - 130
trans-1,2-Dichloroethene	25.0	26.0		ug/L		104	70 - 130
trans-1,3-Dichloropropene	25.0	26.2		ug/L		105	70 - 132
Trichlorofluoromethane	25.0	25.4		ug/L		102	60 - 150
Vinyl chloride	25.0	25.8		ug/L		103	59 - 133
Trichloroethene	25.0	24.5		ug/L		98	70 - 130
cis-1,2-Dichloroethene	25.0	26.2		ug/L		105	70 - 133
m,p-Xylene	25.0	25.9		ug/L		104	70 - 130
Naphthalene	25.0	30.9		ug/L		124	60 - 140
o-Xylene	25.0	25.3		ug/L		101	70 - 130
Xylenes, Total	50.0	51.2		ug/L		102	70 - 130

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	98		80 - 120

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-2

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

Lab Sample ID: LCS 440-311763/5
Matrix: Water
Analysis Batch: 311763

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

<i>Surrogate</i>	<i>LCS %Recovery</i>	<i>LCS Qualifier</i>	<i>Limits</i>
<i>Dibromofluoromethane (Surr)</i>	99		76 - 132
<i>Toluene-d8 (Surr)</i>	96		80 - 128

Lab Sample ID: 440-137026-E-1 MS
Matrix: Water
Analysis Batch: 311763

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

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	ND		25.0	26.4		ug/L		106	70 - 130
1,1,2,2-Tetrachloroethane	ND		25.0	28.2		ug/L		113	63 - 130
1,1,2-Trichloroethane	ND		25.0	27.0		ug/L		108	70 - 130
1,1-Dichloroethane	ND		25.0	25.2		ug/L		101	65 - 130
1,1-Dichloroethene	ND		25.0	23.9		ug/L		96	70 - 130
1,2-Dichlorobenzene	ND		25.0	27.1		ug/L		108	70 - 130
1,2-Dichloroethane	ND		25.0	27.1		ug/L		108	56 - 146
1,2-Dichloropropane	ND		25.0	27.5		ug/L		110	69 - 130
1,3-Dichlorobenzene	ND		25.0	26.3		ug/L		105	70 - 130
1,4-Dichlorobenzene	ND		25.0	26.1		ug/L		104	70 - 130
Benzene	ND		25.0	25.3		ug/L		101	66 - 130
Bromoform	ND		25.0	30.9		ug/L		124	59 - 150
Bromomethane	ND		25.0	25.6		ug/L		102	62 - 131
Carbon tetrachloride	ND		25.0	26.5		ug/L		106	60 - 150
Chlorobenzene	ND		25.0	24.3		ug/L		97	70 - 130
Dibromochloromethane	ND		25.0	28.1		ug/L		112	70 - 148
Chloroethane	ND		25.0	25.8		ug/L		103	68 - 130
Chloroform	ND		25.0	26.1		ug/L		104	70 - 130
Chloromethane	ND		25.0	26.3		ug/L		105	39 - 144
cis-1,3-Dichloropropene	ND		25.0	27.9		ug/L		112	70 - 133
Bromodichloromethane	ND		25.0	27.4		ug/L		110	70 - 138
Ethylbenzene	ND		25.0	25.4		ug/L		102	70 - 130
Methylene Chloride	ND		25.0	24.2		ug/L		97	52 - 130
Tetrachloroethene	ND		25.0	25.7		ug/L		103	70 - 137
Toluene	ND		25.0	25.2		ug/L		101	70 - 130
trans-1,2-Dichloroethene	ND		25.0	26.2		ug/L		105	70 - 130
trans-1,3-Dichloropropene	ND		25.0	27.2		ug/L		109	70 - 138
Trichlorofluoromethane	ND		25.0	25.7		ug/L		103	60 - 150
Vinyl chloride	ND		25.0	25.6		ug/L		102	50 - 137
Trichloroethene	ND		25.0	24.9		ug/L		100	70 - 130
cis-1,2-Dichloroethene	ND		25.0	26.4		ug/L		106	70 - 130
m,p-Xylene	ND		25.0	26.2		ug/L		105	70 - 133
Naphthalene	ND		25.0	32.3		ug/L		129	60 - 140
o-Xylene	ND		25.0	25.8		ug/L		103	70 - 133
Xylenes, Total	ND		50.0	52.0		ug/L		104	70 - 133

<i>Surrogate</i>	<i>MS %Recovery</i>	<i>MS Qualifier</i>	<i>Limits</i>
<i>4-Bromofluorobenzene (Surr)</i>	97		80 - 120
<i>Dibromofluoromethane (Surr)</i>	98		76 - 132

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-2

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

Lab Sample ID: 440-137026-E-1 MS
Matrix: Water
Analysis Batch: 311763

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

Surrogate	MS %Recovery	MS Qualifier	Limits
Toluene-d8 (Surr)	96		80 - 128

Lab Sample ID: 440-137026-E-1 MSD
Matrix: Water
Analysis Batch: 311763

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

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1,1-Trichloroethane	ND		25.0	27.1		ug/L		108	70 - 130	2	20
1,1,2,2-Tetrachloroethane	ND		25.0	27.4		ug/L		110	63 - 130	3	30
1,1,2-Trichloroethane	ND		25.0	26.5		ug/L		106	70 - 130	2	25
1,1-Dichloroethane	ND		25.0	25.7		ug/L		103	65 - 130	2	20
1,1-Dichloroethene	ND		25.0	24.6		ug/L		98	70 - 130	3	20
1,2-Dichlorobenzene	ND		25.0	27.4		ug/L		110	70 - 130	1	20
1,2-Dichloroethane	ND		25.0	27.0		ug/L		108	56 - 146	0	20
1,2-Dichloropropane	ND		25.0	27.8		ug/L		111	69 - 130	1	20
1,3-Dichlorobenzene	ND		25.0	27.1		ug/L		108	70 - 130	3	20
1,4-Dichlorobenzene	ND		25.0	26.9		ug/L		107	70 - 130	3	20
Benzene	ND		25.0	25.9		ug/L		104	66 - 130	2	20
Bromoform	ND		25.0	30.3		ug/L		121	59 - 150	2	25
Bromomethane	ND		25.0	26.3		ug/L		105	62 - 131	3	25
Carbon tetrachloride	ND		25.0	27.4		ug/L		109	60 - 150	3	25
Chlorobenzene	ND		25.0	24.6		ug/L		98	70 - 130	1	20
Dibromochloromethane	ND		25.0	27.7		ug/L		111	70 - 148	2	25
Chloroethane	ND		25.0	26.7		ug/L		107	68 - 130	3	25
Chloroform	ND		25.0	26.1		ug/L		104	70 - 130	0	20
Chloromethane	ND		25.0	27.0		ug/L		108	39 - 144	2	25
cis-1,3-Dichloropropene	ND		25.0	28.0		ug/L		112	70 - 133	1	20
Bromodichloromethane	ND		25.0	27.6		ug/L		110	70 - 138	1	20
Ethylbenzene	ND		25.0	26.1		ug/L		104	70 - 130	3	20
Methylene Chloride	ND		25.0	24.7		ug/L		99	52 - 130	2	20
Tetrachloroethene	ND		25.0	26.3		ug/L		105	70 - 137	2	20
Toluene	ND		25.0	25.9		ug/L		104	70 - 130	3	20
trans-1,2-Dichloroethene	ND		25.0	26.8		ug/L		107	70 - 130	2	20
trans-1,3-Dichloropropene	ND		25.0	27.1		ug/L		109	70 - 138	0	25
Trichlorofluoromethane	ND		25.0	26.6		ug/L		107	60 - 150	4	25
Vinyl chloride	ND		25.0	27.0		ug/L		108	50 - 137	5	30
Trichloroethene	ND		25.0	25.7		ug/L		103	70 - 130	3	20
cis-1,2-Dichloroethene	ND		25.0	26.8		ug/L		107	70 - 130	2	20
m,p-Xylene	ND		25.0	26.6		ug/L		106	70 - 133	1	25
Naphthalene	ND		25.0	31.6		ug/L		126	60 - 140	2	30
o-Xylene	ND		25.0	26.1		ug/L		104	70 - 133	1	20
Xylenes, Total	ND		50.0	52.7		ug/L		105	70 - 133	1	20

Surrogate	MSD %Recovery	MSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	99		80 - 120
Dibromofluoromethane (Surr)	99		76 - 132
Toluene-d8 (Surr)	97		80 - 128

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-2

Method: 8015B - Gasoline Range Organics - (GC)

Lab Sample ID: MB 440-311147/4
Matrix: Water
Analysis Batch: 311147

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
GRO (C4-C12)	ND		0.050	0.025	mg/L			02/13/16 14:36	1
Surrogate	%Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	113		65 - 140					02/13/16 14:36	1

Lab Sample ID: LCS 440-311147/3
Matrix: Water
Analysis Batch: 311147

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
GRO (C4-C12)	0.800	0.803		mg/L		100	80 - 120
Surrogate	%Recovery	LCS Qualifier	Limits				
4-Bromofluorobenzene (Surr)	94		65 - 140				

Lab Sample ID: 440-137200-1 MS
Matrix: Water
Analysis Batch: 311147

Client Sample ID: Outfall002_20160204_Grab
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
GRO (C4-C12)	ND		0.800	0.833		mg/L		104	65 - 140
Surrogate	%Recovery	MS Qualifier	Limits						
4-Bromofluorobenzene (Surr)	114		65 - 140						

Lab Sample ID: 440-137200-1 MSD
Matrix: Water
Analysis Batch: 311147

Client Sample ID: Outfall002_20160204_Grab
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
GRO (C4-C12)	ND		0.800	0.831		mg/L		104	65 - 140	0	20
Surrogate	%Recovery	MSD Qualifier	Limits								
4-Bromofluorobenzene (Surr)	115		65 - 140								

Method: 8015B - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 440-310224/1-A
Matrix: Water
Analysis Batch: 311062

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 310224

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C13-C28	ND		0.50	0.10	mg/L		02/05/16 07:18	02/13/16 03:31	1
Surrogate	%Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
n-Octacosane	75		45 - 120				02/05/16 07:18	02/13/16 03:31	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-2

Method: 8015B - Diesel Range Organics (DRO) (GC) (Continued)

Lab Sample ID: LCS 440-310224/2-A
Matrix: Water
Analysis Batch: 311062

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 310224

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
C10-C28	1.00	0.762		mg/L		76	40 - 115
Surrogate		LCS %Recovery	LCS Qualifier				Limits
<i>n-Octacosane</i>		90					45 - 120

Lab Sample ID: 440-137200-1 MS
Matrix: Water
Analysis Batch: 311062

Client Sample ID: Outfall002_20160204_Grab
Prep Type: Total/NA
Prep Batch: 310224

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
C10-C28	ND		0.980	0.743		mg/L		76	40 - 120
Surrogate		MS %Recovery		MS Qualifier					Limits
<i>n-Octacosane</i>		80							45 - 120

Lab Sample ID: 440-137200-1 MSD
Matrix: Water
Analysis Batch: 311062

Client Sample ID: Outfall002_20160204_Grab
Prep Type: Total/NA
Prep Batch: 310224

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
C10-C28	ND		0.939	0.668		mg/L		71	40 - 120	11	30
Surrogate		MSD %Recovery		MSD Qualifier					Limits		Limit
<i>n-Octacosane</i>		74							45 - 120		

Method: 120.1 - Conductivity, Specific Conductance

Lab Sample ID: MB 440-312390/3
Matrix: Water
Analysis Batch: 312390

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

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Specific Conductance	ND		1.0	1.0	umhos/cm			02/19/16 11:37	1

Lab Sample ID: LCS 440-312390/4
Matrix: Water
Analysis Batch: 312390

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Specific Conductance	1060	1050		umhos/cm		99	90 - 110

Lab Sample ID: 440-137026-W-1 DU
Matrix: Water
Analysis Batch: 312390

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Specific Conductance	750		758		umhos/cm		0.7	5

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-2

Method: 1664A - HEM and SGT-HEM

Lab Sample ID: MB 440-310116/1-A
Matrix: Water
Analysis Batch: 310166

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 310116

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM	ND		5.0	1.4	mg/L		02/04/16 16:38	02/04/16 21:08	1

Lab Sample ID: LCS 440-310116/2-A
Matrix: Water
Analysis Batch: 310166

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 310116

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
HEM	40.0	42.2		mg/L		106	78 - 114

Lab Sample ID: LCSD 440-310116/3-A
Matrix: Water
Analysis Batch: 310166

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 310116

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
HEM	40.0	37.3	BA	mg/L		93	78 - 114	12	11

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-2

GC/MS VOA

Analysis Batch: 310522

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137200-1	Outfall002_20160204_Grab	Total/NA	Water	624	
440-137200-1 MS	Outfall002_20160204_Grab	Total/NA	Water	624	
440-137200-1 MSD	Outfall002_20160204_Grab	Total/NA	Water	624	
LCS 440-310522/5	Lab Control Sample	Total/NA	Water	624	
MB 440-310522/4	Method Blank	Total/NA	Water	624	

Analysis Batch: 311763

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137026-E-1 MS	Matrix Spike	Total/NA	Water	624	
440-137026-E-1 MSD	Matrix Spike Duplicate	Total/NA	Water	624	
440-137200-1	Outfall002_20160204_Grab	Total/NA	Water	624	
LCS 440-311763/5	Lab Control Sample	Total/NA	Water	624	
MB 440-311763/4	Method Blank	Total/NA	Water	624	

GC VOA

Analysis Batch: 311147

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137200-1	Outfall002_20160204_Grab	Total/NA	Water	8015B	
440-137200-1 MS	Outfall002_20160204_Grab	Total/NA	Water	8015B	
440-137200-1 MSD	Outfall002_20160204_Grab	Total/NA	Water	8015B	
LCS 440-311147/3	Lab Control Sample	Total/NA	Water	8015B	
MB 440-311147/4	Method Blank	Total/NA	Water	8015B	

GC Semi VOA

Prep Batch: 310224

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137200-1	Outfall002_20160204_Grab	Total/NA	Water	3510C	
440-137200-1 MS	Outfall002_20160204_Grab	Total/NA	Water	3510C	
440-137200-1 MSD	Outfall002_20160204_Grab	Total/NA	Water	3510C	
LCS 440-310224/2-A	Lab Control Sample	Total/NA	Water	3510C	
MB 440-310224/1-A	Method Blank	Total/NA	Water	3510C	

Analysis Batch: 311062

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137200-1	Outfall002_20160204_Grab	Total/NA	Water	8015B	310224
440-137200-1 MS	Outfall002_20160204_Grab	Total/NA	Water	8015B	310224
440-137200-1 MSD	Outfall002_20160204_Grab	Total/NA	Water	8015B	310224
LCS 440-310224/2-A	Lab Control Sample	Total/NA	Water	8015B	310224
MB 440-310224/1-A	Method Blank	Total/NA	Water	8015B	310224

General Chemistry

Analysis Batch: 310079

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137200-1	Outfall002_20160204_Grab	Total/NA	Water	SM 2540F	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-2

General Chemistry (Continued)

Prep Batch: 310116

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137200-1	Outfall002_20160204_Grab	Total/NA	Water	1664A	
LCS 440-310116/2-A	Lab Control Sample	Total/NA	Water	1664A	
LCSD 440-310116/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	
MB 440-310116/1-A	Method Blank	Total/NA	Water	1664A	

Analysis Batch: 310166

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137200-1	Outfall002_20160204_Grab	Total/NA	Water	1664A	310116
LCS 440-310116/2-A	Lab Control Sample	Total/NA	Water	1664A	310116
LCSD 440-310116/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	310116
MB 440-310116/1-A	Method Blank	Total/NA	Water	1664A	310116

Analysis Batch: 312390

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137026-W-1 DU	Duplicate	Total/NA	Water	120.1	
440-137200-1	Outfall002_20160204_Grab	Total/NA	Water	120.1	
LCS 440-312390/4	Lab Control Sample	Total/NA	Water	120.1	
MB 440-312390/3	Method Blank	Total/NA	Water	120.1	

Biology

Analysis Batch: 310901

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137200-1	Outfall002_20160204_Grab	Total/NA	Water	SM 9221F	

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-2

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
BU	Analyzed out of holding time

General Chemistry

Qualifier	Qualifier Description
BA	Relative percent difference out of control

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
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
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)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-2

Laboratory: TestAmerica Irvine

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

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-16
Arizona	State Program	9	AZ0671	10-13-16
California	LA Cty Sanitation Districts	9	10256	01-31-17 *
California	State Program	9	CA ELAP 2706	06-30-16
Guam	State Program	9	Cert. No. 12.002r	01-23-17
Hawaii	State Program	9	N/A	01-29-17
Kansas	NELAP Secondary AB	7	E-10420	07-31-16
Nevada	State Program	9	CA015312007A	07-31-16
New Mexico	State Program	6	N/A	01-29-17
Northern Mariana Islands	State Program	9	MP0002	01-29-16 *
Oregon	NELAP	10	4005	01-29-17
USDA	Federal		P330-09-00080	07-08-18
Washington	State Program	10	900	09-03-16

* Certification renewal pending - certification considered valid.

TestAmerica Irvine

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Client: TestAmerica - Irvine, CA

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Attn: Urvashi Patel

Project: Job# 440-137200-1/Project# 44009879/Boeing NPDES SSFL Outfalls

EMSL Order ID: 611600157

Date Received: 2/5/2016

Date Analyzed: 2/10/2016

Date Reported: 2/10/2016

Date Amended:

Rapid Detection of Human *Bacteroides* by Quantitative PCR

Based on a published method (SAM: 348 - 357, 2010), EMSL Test Code: M199, Rev. No. 3, 12/12/2014

Lab Sample Number	Client Sample ID	Description	Water Received (mL)	Water Sampled (mL)	CEs /100 mL
0157-1	Outfall002_20160204_Grab	(440-137200-1)	125	125	None Detected

Note: The qPCR assay for human *Bacteroides* is based on HF183 marker which was evaluated by EPA scientists (SAM, 33, 2010). The qPCR detects human specific *Bacteroides* predominantly.

CEs: Cells Equivalent, measured by PCR using genomic DNA standards.

EMSL maintains liability limited to the cost of analysis. Interpretation of the data contained in this report is the responsibility of the client. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. The above test report relates only to the items tested. EMSL bears no responsibility for sample collection activities or analytical method limitations

Farbod Nekouei, M.S.
Microbiology Laboratory Director
or other approved signatory

CHAIN OF CUSTODY FORM



440-137200 Chain of Custody

R/A R R R R/A R R R A A R R R

Sample Description	Sample Matrix	Sampling Date/Time	Container Type	# of Cont.	Preservative	Bottle #	MS/MSD	Total Recoverable Metals: Cu, Pb, Hg, B, Ba, Fe, Mn, Sb, As, Be, Cd, Cr, Ni, Se, Ag, Tl, Zn, Co, V, Hardness as CaCO3	TCCD (and all congeners)	BOD5 (20 degrees C)	Surfactants (MBAS)	Chl. F, SO4, Nitrate-N, Nitrite-N, NO3+NO2-N, Perchlorate	Turbidity, TDS	TSS	Ammonia-N (350.2)	Priority Pollutants-Pesticides+PCBs	SVOCs PP (625)	Total Recoverable Metals: Mercury (245.1)	Comments
Outfall 018	WM	2/4/2018	500 mL Poly	3	HNO3	80	Yes	X	X										
	WM		1 L Glass Amber	2	None	110	No												
	WM		1 L Poly	1	None	115	No												
	WM		500 mL Poly	6	None	120	Yes												
	WM		500 mL Poly	9	None	125	Yes												
	WM		500 mL Poly	1	None	150	No												
	WM		500 mL Poly	3	H2SO4	180	Yes												
	WM		1 L Glass Amber	6	None	250	Yes												
	WM		1 L Glass Amber	9	None	175	Yes												
	WM		1 L Poly	1	None	185	No												
	WM		borecalcitate vials	12	HNO3	915	Yes (low)												Sample receiving DO NOT OPEN BAG. Bag to be opened in Mercury Prep using clean procedures.
	WM		1 L Glass Amber	2	None	110	No												
	WM		500 mL Poly	2	None	120	No												
	WM		500 mL Poly	2	None	125	No												
	WM		1 L Glass Amber	2	None	250	No												
	WM		1 L Glass Amber	2	None	175	No												

COC Page 2 of 3 and Page 3 of 3 are the composite samples for Outfall 018 for this storm event. These must be added to the same work order for COC Page 1 of 3 for Outfall 018 for the same event.

Legend: R-Routine, A-Annual, Q-Quarterly

Relinquished By: *[Signature]* Date/Time: 2/4/16 13:25 Company: JHA
 Relinquished By: *[Signature]* Date/Time: 2-7-16/13:55 Company: Watson Solutions
 Relinquished By: *[Signature]* Date/Time: 2/4/16 20:20 Company: TAA

Received By: *[Signature]* Date/Time: 2-4-16/13:25
 Received By: *[Signature]* Date/Time: 2/4/16 13:55
 Received By: *[Signature]* Date/Time: 2/4/16 20:20

Turn-around time: (Check) 10 Day: 24 Hour: 72 Hour: 5 Day: Normal:
 Sample integrity: (Check) Intact: On Ice:
 Data Requirements: (Check) No Level IV: All Level IV:

FR 78 1.4/17 0.5/0.8 0.2/0.5
 0.6/0.9 0.8/1.1



CHAIN OF CUSTODY FORM

<p>Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108</p>		<p>Project: Boeing-SSFL NPDES Permit 2016 Annual Outfall [001, 002, 011, 018] Outfall 018 Comp</p>		<p style="text-align: center;">R / A R R R A A A A A</p> <p style="text-align: center;">ANALYSIS REQUIRED</p>										<p>Comments</p>																									
<p>Test America Contact: Debby Wilson 17461 Derian Ave Suite #100 Irvine CA 92614 Tel 949 261 1022 x228 Call 949 237 0693</p>		<p>Project Manager: Nancy Gardiner 619.265.7132, 858.337.4061 (cell)</p>		<p>Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)</p>		<p>Sample Description</p>		<p>Sample Matrix</p>		<p>Container Type</p>		<p>Preservative</p>		<p>Bottle #</p>		<p>MS/MSD</p>		<p>Total Dissolved Metals: Cu, Pb, Hg, Ba, Te, Mn, Sb, As, Bi, Cd, Cr, Ni, Se, Ag, Tl, Zn, Co, V, Hardness as CaCO3</p>		<p>Cyanide</p>		<p>Gross Alpha (900.0), Gross Beta (900.0), Tritium (4-3) (906.0), Sr-90 (905.0), Total Radium 226 (903.0 or 903.1), K-40, CS-137 (901.0 or 901.1)</p>		<p>Chronic Toxicity</p>		<p>1,4-Dioxane</p>		<p>Total Organic Carbon</p>		<p>Monomethyl Hydrazine</p>		<p>Cr (VI), Total (218.6)</p>		<p>Asbestos (100.2)</p>		<p>Total Dissolved Metals: Mercury (245.1)</p>		<p>Filter and preserve w/in 24hrs of receipt at lab</p>	
<p>Outfall 018</p>		<p>Outfall018_20160204_Comp_F</p>		<p>2/4/2016</p>		<p>WM</p>		<p>1 L Poly</p>		<p>None</p>		<p>150</p>		<p>Yes</p>		<p>X</p>		<p>X</p>		<p>X</p>		<p>X</p>		<p>X</p>		<p>X</p>		<p>X</p>		<p>X</p>		<p>X</p>							
<p>Outfall 018</p>		<p>Outfall018_20160204_Comp</p>		<p>2/4/2016</p>		<p>WM</p>		<p>500 mL Poly</p>		<p>NaOH</p>		<p>220</p>		<p>Yes</p>		<p>X</p>		<p>X</p>		<p>X</p>		<p>X</p>		<p>X</p>		<p>X</p>		<p>X</p>		<p>X</p>		<p>X</p>							
<p>Outfall 018</p>		<p>Outfall018_20160204_Comp_Extra</p>		<p>2/4/2016</p>		<p>WM</p>		<p>40 mL VOA</p>		<p>HCl</p>		<p>240</p>		<p>Yes</p>		<p>X</p>		<p>X</p>		<p>X</p>		<p>X</p>		<p>X</p>		<p>X</p>		<p>X</p>		<p>X</p>		<p>X</p>							

COC Page 2 of 3 and Page 3 of 3 are the composite samples for Outfall 018 for this storm event.

These must be added to the same work order for COC Page 1 of 3 for Outfall 018 for the same event.

Legend: R=Routine, A=Annual, Q=Quarterly

Relinquished By: <i>[Signature]</i>	Date/Time: 2/4/16 1325 JHA	Company: JHA	Received By: Bill Clarke	Date/Time: 2-4-16/1325	Company: JHA	Turn-around time: (Check) 24 Hour: _____ 72 Hour: _____ 48 Hour: _____ 5 Day: _____ 10 Day: _____
Relinquished By: Bill Clarke	Date/Time: 2-4-16/1355	Company: Western Solutions	Received By: <i>[Signature]</i>	Date/Time: 2/4/16 1355	Company: Western Solutions	Sample integrity: (Check) Intact: _____ On Ice: _____
Relinquished By: <i>[Signature]</i>	Date/Time: 2/4/16 1540	Company: <i>[Signature]</i>	Received By: <i>[Signature]</i>	Date/Time: 2/4/16 1540	Company: <i>[Signature]</i>	Data Requirements: (Check) No Level IV: _____ All Level IV: _____

HR 28 1.4/1.7 0.5/0.8 0.2/0.5
 0.6/0.9 0.8/1.1 0.4/0.7
 Relinquished by: *[Signature]*
 2/4/16 2020
 Rec: *[Signature]* 2/4/16 20:20



CHAIN OF CUSTODY FORM



440-137200 Chain of Custody

440-137200 Chain of Custody

Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108 Test America Contact: Debby Wilson 17461 Derian Ave Suite #100 Irvine CA 92614 Tel 949 261 1022 x228 Cell 949 237 0603	Project: Boeing-SSFL NPDES Permit 2016 Annual Outfall 001, 002, 011, 015 Outfall 002 Grab	Project Manager: Nancy Gardiner 619.285.7132, 858.337.4061 (cell) Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)	Meter serial # Field Readings (include units) Time of Readings: 0905 DO: 10.22 mg/L ED921644 pH: 6.98 pH unit Temp: 10.6 °C/F TRC: 0.01 mg/L 1129AC8760 Field readings CC Checked by: BK Date/Time: 2-4-16/0930																							
ANALYSIS REQUIRED																										
These Samples at the Grab Portion of Outfall 002 for this storm event. Composite samples will follow and are to be added to this work order. Legend: R=Routine, A=Annual, C=Quarterly																										
U Sample Description	Sample I.D.	Sampling Date/Time	Sample Matrix	Container Type	# of Cont.	Preservative	Bottle #	MS/MSD	ANALYSIS REQUIRED																	
Outfall 002	Outfall002_20160204_Grab	2/4/2016	WM	125mL Sterile Poly	1 ✓	None	5 ✓	No	MST-Bacteroides, Human	<input checked="" type="checkbox"/>	Oil & Grease (1604-HEM)	<input checked="" type="checkbox"/>	Conductivity	<input type="checkbox"/>	VOCs + VOCs PP + Xylenes, Freon 11, Freon 113, Freon 123A, Cyclohexane, cis-1,2-DCP	<input checked="" type="checkbox"/>	VOCs (624) - only A+A+2CVE	<input checked="" type="checkbox"/>	6015 - gas (GRO(C4-C12))	<input checked="" type="checkbox"/>	6015 - diesel/fuel (DRO (C13-C28))	<input checked="" type="checkbox"/>	Field Readings	Meter serial #		
			WM	125mL Sterile Poly	10 ✓	Na2S2O3	10 ✓	No																		
			WM	1 L Glass Amber	2 ✓	HCl	15 ✓	None	15 ✓	No																
			WM	40 mL VOA	3 ✓	HCl	45 ✓	No																		
			WM	40 mL VOA	9 ✓	None	55 ✓	Yes																		
			WM	40 mL VOA	9 ✓	HCl	60 ✓	Yes																		
			WM	1 L Glass Amber	6 ✓	None	65 ✓	Yes																		
			WM	1 L Poly	1 ✓	None	70 ✓	No																		
			WM	500 mL Poly	1 ✓	None	75 ✓	No																		
			WM	1 L Glass Amber	2 ✓	HCl	15 ✓	No																		
			WM	40 mL VOA	3 ✓	HCl	45 ✓	No																		
			WM	40 mL VOA	3 ✓	None	55 ✓	No																		
			WM	500 mL Poly	1 ✓	None	75 ✓	No																		
			WQ	40 mL VOA	4 ✓	HCl	45 ✓	No																		
Tip Blanks	TB-20160204	2/4/2016	WQ	40 mL VOA	2 ✓	None	55 ✓	No																		

Relinquished By: <i>John Parkes</i> Date/Time: <i>2/4/16 9:31</i> Company: <i>STANWYN INC</i>	Received By: <i>Billy Clarke</i> Date/Time: <i>2-4-16/0931</i> Company: <i>WESTON SOLUTIONS</i>
Relinquished By: <i>John Parkes</i> Date/Time: <i>2-4-16 1300</i> Company: <i>FAI</i>	Received By: <i>Debby</i> Date/Time: <i>2-4-16 1209</i> Company: <i>Weston Solutions</i>
Relinquished By: <i>John Parkes</i> Date/Time: <i>2-4-16 1355</i> Company: <i>FAI</i>	Received By: <i>Debby</i> Date/Time: <i>2-4-16 1209</i> Company: <i>Weston Solutions</i>

71.17.2 LR

2.4/2.7 1.8/2.1 1.9/2.2 1R-7R

8/6/2016

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-137200-2

Login Number: 137200

List Source: TestAmerica Irvine

List Number: 1

Creator: Soderblom, Tim

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	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.	False	No sample date and/or time on COC, logged in per container labels.
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-137347-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 31, 2016

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





TABLE OF CONTENTS

I. INTRODUCTION..... 1

II. Sample Management..... 2

IV. EPA METHOD 1613B — Dioxin/Furans..... 6

 IV.1. Holding Times 6

 IV.2. Instrument Performance 6

 IV.2.1. GC Column Performance 6

 IV.2.2. Mass Spectrometer Performance..... 6

 IV.3. Calibration..... 6

 IV.4. Quality Control Samples 6

 IV.4.1. Method Blanks 6

 IV.4.2. Laboratory Control Samples 7

 IV.5. Field QC Samples..... 7

 IV.5.1. Field Blanks and Equipment Blanks 7

 IV.5.2. Field Duplicates..... 7

 IV.6. Internal Standards Performance..... 7

 IV.7. Compound Identification 7

 IV.8. Compound Quantification and Reported Detection Limits 7

V. VARIOUS METHODS — Metals 7

 V.1. Holding Times 7

 V.2. GC/MS Tuning and Calibration 8

 V.3. Quality Control Samples 8

 V.3.1. Method Blanks 8

 V.3.2. Interference Check Samples: 8

 V.3.3. Laboratory Control Samples 8

 V.3.4. Laboratory Duplicates:..... 8

 V.3.5. Matrix Spike/Matrix Spike Duplicate 8



V.4. Serial Dilution:..... 8

V.5. Internal Standards Performance..... 8

V.6. Compound Quantification and Reported Detection Limits 8

V.7. Field QC Samples..... 9

 V.7.1. Field Blanks and Equipment Blanks 9

 V.7.2. Field Duplicates 9

VI. EPA METHOD 608 — Pesticides and PCBs 9

 VI.1. Holding Times 9

 VI.2. Calibration..... 9

 VI.3. Quality Control Samples 9

 VI.3.1. Method Blanks 9

 VI.3.2. Laboratory Control Samples 9

 VI.3.3. Surrogate Recovery..... 9

 VI.3.4. Matrix Spike/Matrix Spike Duplicate 10

 VI.4. Field QC Samples..... 10

 VI.4.1. Field Blanks and Equipment Blanks 10

 VI.4.2. Field Duplicates..... 10

 VI.5. Compound Identification 10

 VI.6. Compound Quantification and Reported Detection Limits 10

VII. EPA METHOD 314.0 — PERCHLORATE 10

 VII.1. Holding Times 10

 VII.2. Calibration..... 10

 VII.3. Quality Control Samples 11

 VII.3.1. Method Blanks 11

 VII.3.2. Laboratory Control Samples 11

 VII.3.3. Laboratory Duplicates..... 11

 VII.3.4. Matrix Spike/Matrix Spike Duplicate 11

 VII.4. Sample Result Verification 11

 VII.5. Field QC Samples..... 11



VII.5.1. Field Blanks and Equipment Blanks 11

VII.5.2. Field Duplicates..... 11

VIII. VARIOUS EPA METHODS — Radionuclides..... 11

VIII.1. Holding Times..... 11

VIII.2. Calibration 12

VIII.3. Quality Control Samples 12

VIII.3.1. Method Blanks 12

VIII.3.2. Laboratory Control Samples 12

VIII.3.3. Laboratory Duplicates..... 12

VIII.3.4. Matrix Spike/Matrix Spike Duplicate 12

VIII.4. Sample Result Verification 12

VIII.5. Field QC Samples..... 12

VIII.5.1. Field Blanks and Equipment Rinsates 12

VIII.5.2. Field Duplicates..... 12

IX. EPA METHOD 625 — Semivolatile Organic Compounds (SVOCs)..... 13

IX.1. Holding Times 13

IX.2. GC/MS Tuning and Calibration 13

IX.3. Quality Control Samples 13

IX.3.1. Method Blanks 13

IX.3.2. Laboratory Control Samples 13

IX.3.3. Surrogate Recovery..... 13

IX.3.4. Matrix Spike/Matrix Spike Duplicate 13

IX.4. Field QC Samples..... 14

IX.4.1. Field Blanks and Equipment Blanks 14

IX.4.2. Field Duplicates 14

IX.5. Internal Standards Performance..... 14

IX.6. Compound Identification 14

IX.7. Compound Quantification and Reported Detection Limits 14

IX.8. Tentatively Identified Compounds (TICs) 14



IX.9.	System Performance.....	14
X.	EPA METHOD 8260B SIM — 1,4-Dioxane	14
X.1.	Holding Times	15
X.2.	GC/MS Tuning and Calibration	15
X.3.	Quality Control Samples	15
X.3.1.	Method Blanks	15
X.3.2.	Laboratory Control Samples	15
X.3.3.	Surrogate Recovery.....	15
X.3.4.	Matrix Spike/Matrix Spike Duplicate	15
X.4.	Field QC Samples.....	15
X.4.1.	Trip Blanks.....	15
X.4.2.	Field Blanks and Equipment Blanks	15
X.4.3.	Field Duplicates.....	15
X.5.	Internal Standards Performance.....	15
X.6.	Compound Identification	16
X.7.	Compound Quantification and Reported Detection Limits	16
X.8.	Tentatively Identified Compounds	16
X.9.	System Performance.....	16
XI.	DV-WC-0077 — Monomethyl Hydrazine	16
XI.1.	Holding Times	16
XI.2.	Calibration.....	16
XI.3.	Quality Control Samples	16
XI.3.1.	Method Blanks	16
XI.3.2.	Laboratory Control Samples	16
XI.3.3.	Laboratory Duplicates.....	17
XI.3.4.	Matrix Spike/Matrix Spike Duplicate	17
XI.4.	Sample Result Verification	17
XI.5.	Field QC Samples.....	17



XII. VARIOUS METHODS — GENERAL CHEMISTRY 17

 XII.1. Holding Times 17

 XII.2. Calibration..... 17

 XII.3. Quality Control Samples 18

 XII.3.1. Method Blanks 18

 XII.3.2. Laboratory Control Samples 18

 XII.3.3. Laboratory Duplicates..... 18

 XII.3.4. Matrix Spike/Matrix Spike Duplicate 18

 XII.4. Sample Result Verification..... 18

 XII.5. Field QC Samples..... 18

 XII.5.1. Field Blanks and Equipment Blanks 18

 XII.5.2. Field Duplicates..... 18

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

MECX Project No.: 1272.003H.01

Sample Delivery Group: 440-137347-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 2

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall002_20160205_Comp	440-137347-1	N/A	Water	2/5/16 8:55 AM	E1613B, E180.1, E200.7, E200.8, E218.6, E245.1, E300, E314.0, E608, E625, EPA-821-R-02-013, HASL-300 U Mod, SM2540C/D, SM4500-CN-E, SM4500-NH3, SM5210B, SM5310B, SM5540, SW8260SIM, DV-WC-0077
Outfall002_20160205_Comp_F	440-137347-2	N/A	Water	2/5/16 8:55 AM	E200.7, E200.8, E245.1



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-137347-1:

- The laboratories received the samples in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratories received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs.
- According to the laboratories' sample receipt checklists, custody seals were intact.

MEC^x noted anomalies regarding sample management identified below.

- Several corrections to the COCs were not initialed or dated.
- Sample Outfall002_20160205_Comp for the DV-WC-0077 (monomethyl hydrazine) analysis was received at the subcontract laboratory three days beyond the preparation holding time. The nondetected sample result was qualified as estimated (UJ). The result was subsequently rejected (see Holding Times section).



TABLE 2 - DATA QUALIFIER REFERENCE

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



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	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.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) 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.
B	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.
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.
P	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.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



IV. EPA METHOD 1613B — DIOXIN/FURANS

Lynn Calvin of MEC^X reviewed the SDG on March 16, 2016

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^X Data Validation Procedure for Dioxins and Furans (DVP-19, Rev. 0), USEPA Method 1613B, and the National Functional Guidelines Chlorinated Dioxin/Furan Data Review (2011).

IV.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample was extracted and analyzed within one year of collection.

IV.2. INSTRUMENT PERFORMANCE

Instrument performance criteria were met. Following are findings associated with instrument performance:

IV.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 less than 25%.

IV.2.2. MASS SPECTROMETER PERFORMANCE

The mass spectrometer performance was acceptable with the static resolving power greater than 10,000.

IV.3. CALIBRATION

Calibration criteria were met. The initial calibration was acceptable with %RSDs $\leq 20\%$ for the 15 native compounds (calibration by isotope dilution) and $\leq 35\%$ for the two native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the Method 1613B control limits for all standards.

Continuing Calibration: Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning of the analytical sequence. The VER was acceptable with the concentrations within the acceptance criteria listed in Table 6 of EPA Method 1613B. The ion abundance ratios and relative retention times were within the method control limits.

IV.4. QUALITY CONTROL SAMPLES

IV.4.1. METHOD BLANKS

The method blank had detects above the EDL for isomers 1,2,3,4,6,7,8-HpCDD, 1,2,3,4,6,7,8-HpCDF, 1,2,3,7,8,9-HxCDD, 1,2,3,7,8,9-HxCDF, 2,3,4,6,7,8-HxCDF, OCDD and OCDF, and for totals HpCDD, HpCDF, HxCDD, and HxCDF. Isomer results for the method blank contaminants detected below the reporting limit in the samples were qualified as nondetects (U) at the level of contamination based upon professional judgement and the guidance for blank qualification in the National Functional Guidelines for Dioxin Review.

Qualified isomer 1,2,3,4,6,7,8-HpCDF was equal to total HpCDF, and the reviewer verified that peaks comprising total HpCDD in the method blank were the same peaks at similar concentrations comprising



total HpCDD in sample Outfall002_20160205_Comp; therefore, the total results were qualified as nondetects (U) at the level of contamination.

IV.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 $\leq 50\%$.

IV.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. 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.

IV.6. INTERNAL STANDARDS PERFORMANCE

The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613B.

IV.7. COMPOUND IDENTIFICATION

Compound identification was verified. All 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. As 2,3,7,8-TCDF was not detected in the sample, confirmation analysis was not necessary.

IV.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. Any detects below the laboratory lower calibration level were qualified as estimated (J). Any detects between the EDL and the reporting limit (RL), or reported below the EDL, were qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Nondetects are valid to the EDL.

V. VARIOUS METHODS — METALS

Michael Cherny of MEC^X reviewed the SDG on March 24, 2016

The samples listed in Table 1 for this analysis were validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for Metals (DVP-5, Rev. 0 and DVP-21, Rev. 0)*, EPA Methods 200.7, 200.8, and 245.1, Standard Method 2340B, and the *National Functional Guidelines for Inorganic Data Review (2014)*.

V.1. HOLDING TIMES

The analytical holding times, 28 days for mercury and six months for the remaining metals, were met.



V.2. GC/MS TUNING AND CALIBRATION

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

Calibration criteria were met. The initial calibration r values were ≥ 0.995 and CRI recoveries were within the control limits of 70-130%. The mercury initial (ICV) and continuing (CCV) recoveries were within NFG control limits of 85-115%. ICV and CCV recoveries for the remaining analytes were within NFG control limits of 90-110%.

V.3. QUALITY CONTROL SAMPLES

V.3.1. METHOD BLANKS

Dissolved copper was detected in the method blank at 0.890 $\mu\text{g/L}$, and total antimony was detected in a bracketing CCB at 0.764 $\mu\text{g/L}$; therefore, dissolved copper in Outfall002_20160205_Comp_F and total antimony in Outfall002_20160205_Comp were qualified as nondetected (U), at the levels of contamination. There were other detects in the method blanks and CCBs, but none of sufficient concentration to qualify any additional site samples.

V.3.2. INTERFERENCE CHECK SAMPLES:

Recoveries were within 80-120%. Although interferences were present in the ICSA solution, there was no recognized effect on matrix interference, as sample detections were less than half of the ICSAB spike amounts.

V.3.3. LABORATORY CONTROL SAMPLES

The recoveries were within the method control limits of 85-115%.

V.3.4. LABORATORY DUPLICATES:

No laboratory duplicate analyses were performed on the sample in this SDG.

V.3.5. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on sample Outfall002_20160205_Comp_F for dissolved metals and mercury. Results were not assessed when the parent sample concentration exceeded the spike amount by 4 \times . Recoveries and RPDs were within the method control limits of 70-130% and $\leq 20\%$, respectively.

V.4. SERIAL DILUTION:

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

V.5. INTERNAL STANDARDS PERFORMANCE

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

V.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Calculations were verified and the sample results reported on the sample result summary were verified against the raw data. No transcription errors or calculation errors were noted. When the sample results were qualified and the reviewer was able to clearly determine bias, detected results were qualified as either J+ or J-; otherwise, bias was not indicated in the qualification. Detects below the RL were qualified as



estimated (J) and coded with DNQ in order to comply with the NPDES permit. Nondetects are valid to the MDL.

V.7. FIELD QC SAMPLES

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

V.7.1. FIELD BLANKS AND EQUIPMENT BLANKS

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

V.7.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

VI. EPA METHOD 608 — PESTICIDES AND PCBs

Lynn Calvin of MEC^X reviewed the SDG on March 18, 2016

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

VI.1. HOLDING TIMES

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

VI.2. CALIBRATION

The initial calibrations had %RSDs of $\leq 10\%$ or r^2 of ≥ 0.990 on both analytical columns. The initial calibration verifications (ICVs) and continuing calibration verifications (CCVs) bracketing the sample analysis had %Ds within the control limit of $\leq 15\%$, with the exception of the %D for heptachlor of 23.0%, with a low response on the secondary column. The nondetect for heptachlor in sample Outfall002_20160205_Comp was qualified as estimated (UJ). The breakdown totals for endrin and 4,4'-DDT were $\leq 15\%$.

VI.3. QUALITY CONTROL SAMPLES

VI.3.1. METHOD BLANKS

Target compounds were not detected in method blanks.

VI.3.2. LABORATORY CONTROL SAMPLES

Recoveries were within the laboratory-established control limits. Chlordane and toxaphene were not spiked in the pesticide LCS.

VI.3.3. SURROGATE RECOVERY

Pesticide surrogate tetrachloro-m-xylene (TCMX) and PCB surrogate decachlorobiphenyl (DCB) were recovered within the laboratory control limits of 10-150% and 29-115%, respectively, in the site sample.



VI.3.4. **MATRIX SPIKE/MATRIX SPIKE DUPLICATE**

Matrix spike (MS)/MS duplicate (MSD) analyses were performed on sample Outfall002_20160205_Comp for pesticides and PCBs. Chlordane and toxaphene were not spiked in the pesticide MS/MSD. The recoveries and RPDs were within the laboratory control limits. Chlordane and toxaphene were not spiked in the pesticide MS/MSD.

VI.4. **FIELD QC SAMPLES**

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

VI.4.1. **FIELD BLANKS AND EQUIPMENT BLANKS**

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

VI.4.2. **FIELD DUPLICATES**

Field duplicate samples were not identified in this SDG.

VI.5. **COMPOUND IDENTIFICATION**

Compound identification was verified. Review of the sample chromatograms and retention times indicated no problems with target compound identification. The laboratory analyzed for select pesticides and seven Aroclors by EPA Method 608.

VI.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. Results reported below the reporting limit were qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Reported nondetects are valid to the reporting limit.

VII. **EPA METHOD 314.0 — PERCHLORATE**

Michael Cherny of MEC^X reviewed the SDG on March 24, 2016

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

VII.1. **HOLDING TIMES**

The analytical holding time, 28 days, was met.

VII.2. **CALIBRATION**

Calibration criteria were met. The initial calibration r^2 value was ≥ 0.995 and all initial and continuing calibration recoveries were within 90-110%. The MRL was recovered in the method QC limits of 90-110%. IPC recoveries were within the method-established control limit of 80-120%.



VII.3. QUALITY CONTROL SAMPLES

VII.3.1. METHOD BLANKS

Method blanks and CCBs had no detects.

VII.3.2. LABORATORY CONTROL SAMPLES

Recoveries were within the method-established QC limits of 85-115%.

VII.3.3. LABORATORY DUPLICATES

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

VII.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Recoveries and RPDs were within method-established QC limits of 80-120% and ≤15%, respectively.

VII.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. When the sample results were qualified and the reviewer was able to clearly determine bias, detected results were qualified as either J+ or J-; otherwise, bias was not indicated in the qualification. Any detects between the method detection limit and the reporting limit were qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Reported nondetects are valid to the MDL.

VII.5. FIELD QC SAMPLES

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

VII.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

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

VII.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

VIII. VARIOUS EPA METHODS — RADIONUCLIDES

Elizabeth Wessling of MEC^X reviewed the SDG on March 24, 2016

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *Method A-01-R U*, and the *National Functional Guidelines for Inorganic Data Review (2014)*.

VIII.1. HOLDING TIMES

Total uranium was prepared within the five-day analytical holding time for unpreserved samples.



VIII.2. CALIBRATION

The laboratory calibration information included the standard certificates and applicable preparation/dilutions logs for NIST-traceability.

Detector efficiencies were greater than 20%. Carrier/tracer recoveries were within the laboratory control limits of 30-110%. All calibration checks were acceptable.

VIII.3. QUALITY CONTROL SAMPLES

VIII.3.1. *METHOD BLANKS*

Total uranium was determined not to differ from the method blank, at the 5% significance level, and was therefore qualified as nondetected (U).

VIII.3.2. *LABORATORY CONTROL SAMPLES*

The recoveries were within laboratory-established control limits.

VIII.3.3. *LABORATORY DUPLICATES*

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

VIII.3.4. *MATRIX SPIKE/MATRIX SPIKE DUPLICATE*

A matrix spike (MS)/MS Duplicate (MSD) was performed for the total uranium analysis. Recoveries were within the laboratory control limits.

VIII.4. SAMPLE RESULT VERIFICATION

An EPA Level IV review was performed for the sample in this data package. The sample results and MDCs reported on the sample result form were verified against the raw data and no calculation or transcription errors were noted. Reported nondetects are valid to the MDC.

VIII.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:

VIII.5.1. *FIELD BLANKS AND EQUIPMENT RINSATES*

This SDG had no identified field blank or equipment rinsate samples.

VIII.5.2. *FIELD DUPLICATES*

There were no field duplicate samples identified for this SDG.



IX. EPA METHOD 625 — SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

Lynn Calvin of MEC^x reviewed the SDG on March 17, 2016

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

IX.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.

IX.2. GC/MS TUNING AND CALIBRATION

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

Calibration criteria were met, with several exceptions noted below. The initial calibration average RRFs were ≥ 0.05 and $\%RSD \leq 35\%$ or r^2 of ≥ 0.990 . An ICV was analyzed (though not specifically required by the method), with the following %D outliers: 2,4-dinitrophenol (24.4%), 2,4-dinitrotoluene (20.9%), 4-nitrophenol (23.0%), and naphthalene (28.1%). The %D for 4,6-dinitro-2-methylphenol was 27.0% in the CCV. Results for the %D outliers, all nondetects, were qualified as estimated (UJ) in sample Outfall002_20160205_Comp. The ICV and CCV RRFs were ≥ 0.05 and remaining %Ds were within the method control limit of $\leq 20\%$.

IX.3. QUALITY CONTROL SAMPLES

IX.3.1. METHOD BLANKS

Target compounds were not detected in the method blank.

IX.3.2. LABORATORY CONTROL SAMPLES

Recoveries were within the laboratory control limits.

IX.3.3. SURROGATE RECOVERY

Recoveries were within the laboratory control limits.

IX.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on sample Outfall002_20160205_Comp. Benzidine and 3,3'-dichlorobenzidine were not recovered in the MS or MSD; therefore, the nondetected parent sample results for both compounds were rejected (R). The MS recovery of 1,2-diphenylhydrazine was below the control limits of 60-120%, at 55%, and the MSD recovery of hexachlorocyclopentadiene was below the control limits of 25-120% at 24%; however, no qualifications were assigned for the single outliers. The RPDs for n-nitrosodiphenylamine and nitrobenzene exceeded the control limit of $\leq 25\%$ at 60% and 32%, respectively; however, as neither compound was detected in the parent sample, no qualifications were assigned. The remaining recoveries and RPDs were within the laboratory control limits.

IX.4. FIELD QC SAMPLES

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

IX.4.1. FIELD BLANKS AND EQUIPMENT BLANKS

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

IX.4.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

IX.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.

IX.6. COMPOUND IDENTIFICATION

Compound identification was verified. The laboratory analyzed for semivolatile target compounds by EPA Method 625. Review of the sample chromatogram, retention times, and spectra indicated no problems with target compound identification.

IX.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. Results reported below the reporting limit were qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Reported nondetects are valid to the reporting limit.

IX.8. TENTATIVELY IDENTIFIED COMPOUNDS (TICs)

The laboratory did not report TICs for this SDG.

IX.9. SYSTEM PERFORMANCE

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

X. EPA METHOD 8260B SIM — 1,4-DIOXANE

Lynn S. Calvin of MEC^X reviewed the SDG on March 18, 2016

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for Volatile Organics (DVP-2, Rev. 2)*, *EPA Method 8260B*, and the *National Functional Guidelines for Superfund Organic Methods Data Review (2014)*.



X.1. HOLDING TIMES

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

X.2. GC/MS TUNING AND CALIBRATION

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

Calibration criteria were met. The initial calibration average RRF and the ICV and CCV RRFs were ≥ 0.05 . The initial calibration %RSD was $\leq 15\%$. The ICV and CCV %Ds were within the control limit of $\leq 20\%$.

X.3. QUALITY CONTROL SAMPLES

X.3.1. METHOD BLANKS

Target compound 1,4-dioxane was not detected in the method blank.

X.3.2. LABORATORY CONTROL SAMPLES

The recovery was within the laboratory control limits of 70-125%.

X.3.3. SURROGATE RECOVERY

Recoveries were within the laboratory control limits of 80-120%.

X.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on sample Outfall002_20160205_Comp. Recoveries and the RPD were within the laboratory control limits of 70-130% and $\leq 30\%$.

X.4. FIELD QC SAMPLES

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

X.4.1. TRIP BLANKS

Trip blank samples were not identified for this SDG.

X.4.2. FIELD BLANKS AND EQUIPMENT BLANKS

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

X.4.3. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

X.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.



X.6. COMPOUND IDENTIFICATION

Compound identification was verified. The laboratory analyzed for 1,4-dioxane by EPA Method 8260B (SIM). Review of the sample chromatogram, retention times, and spectra indicated no problems with target compound identification.

X.7. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limit was supported by the low point of the initial calibration and the laboratory MDLs. Any result reported between the MDL and the reporting limit was qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Reported nondetects are valid to the reporting limit.

X.8. TENTATIVELY IDENTIFIED COMPOUNDS

The laboratory did not report TICs for this SDG.

X.9. SYSTEM PERFORMANCE

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

XI. DV-WC-0077 — MONOMETHYL HYDRAZINE

Lynn S. Calvin of MEC^X reviewed the SDG on March 29, 2016

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for Polynuclear Aromatic Hydrocarbons by HPLC (DVP-15, Rev. 0)*, *EPA Method 8315A* and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

XI.1. HOLDING TIMES

The water sample was acidified 10 days past the holding time of 48 hours from the time of collection. Although the analytical holding time of within 28 days of acidification was met, the preparation holding time was grossly exceeded (>3×) and the nondetected sample result for Outfall002_20160205_Comp was rejected (R).

XI.2. CALIBRATION

As the sample result for Outfall002_20160205_Comp was previously rejected (see Holding Times section) further evaluation was not performed.

XI.3. QUALITY CONTROL SAMPLES

XI.3.1. METHOD BLANKS

As the sample result for Outfall002_20160205_Comp was previously rejected (see Holding Times section) further evaluation was not performed.

XI.3.2. LABORATORY CONTROL SAMPLES

As the sample result for Outfall002_20160205_Comp was previously rejected (see Holding Times section) further evaluation was not performed.

XI.3.3. LABORATORY DUPLICATES

As the sample result for Outfall002_20160205_Comp was previously rejected (see Holding Times section) further evaluation was not performed.

XI.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

As the sample result for Outfall002_20160205_Comp was previously rejected (see Holding Times section) further evaluation was not performed.

XI.4. SAMPLE RESULT VERIFICATION

As the sample result for Outfall002_20160205_Comp was previously rejected (see Holding Times section) further evaluation was not performed.

XI.5. FIELD QC SAMPLES

As the sample result for Outfall002_20160205_Comp was previously rejected (see Holding Times section) further evaluation was not performed.

XII. VARIOUS METHODS — GENERAL CHEMISTRY

Michael Cherny of MEC^X reviewed the SDG on March 24, 2016 and March 26, 2016

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *EPA Methods 180.1, 218.6, 300.0, and 821-R-02-013*, *Standard Methods for the Examination of Water and Wastewater 2540C, 2540D, 4500-CN-E, 4500-NH3, 5210B, 5310B, and 5540C*, and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

XII.1. HOLDING TIMES

The method analytical holding time for turbidity, 48 hours from collection, was exceeded by about six hours; therefore, turbidity measured in sample Outfall002_20160205_Comp was qualified as estimated with potential low bias (J-). Remaining analytical holding times as listed below were met:

- 24 hours from collection for hexavalent chromium and biochemical oxygen demand (BOD)
- 36 hours for chronic toxicity
- 48 hours for nitrate/nitrite as nitrogen and Methyl Blue Active Substances (MBAs)
- 7 days for total dissolved solids (TDS) and total suspended solids (TSS)
- 14 days for total cyanide
- 28 days for ammonia (as N), chloride, fluoride, sulfate, and total organic carbon (TOC)

XII.2. CALIBRATION

Calibration criteria were met. The initial calibration r^2 values were ≥ 0.995 and all initial and continuing calibration recoveries were within 90-110%. The MRL recovery for hexavalent chromium was within the reasonable control limits of 50-150%. Analytical balance calibration logs were provided by the lab. For chronic toxicity, instruments were calibrated as per the manufacturer requirements and standard reference toxicant testing was performed to verify culture health and sensitivity.



XII.3. QUALITY CONTROL SAMPLES

XII.3.1. METHOD BLANKS

The method blanks and CCBs had no detects affecting sample results.

XII.3.2. LABORATORY CONTROL SAMPLES

Recoveries were within the laboratory control limits and RPDs for total cyanide and BOD were within the laboratory control limits.

XII.3.3. LABORATORY DUPLICATES

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

XII.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on Outfall002_20160205_Comp for ammonia (as N), anions, hexavalent chromium, total cyanide, and MBAs. Sulfate (62% / 54%) and chloride (79%) recoveries were below the control limit of 80-120%; therefore, sulfate and chloride detected in the site sample were qualified as estimated with potential low bias (J-). Remaining recoveries and RPDs were within the laboratory-established control limits.

XII.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. When the sample results were qualified and the reviewer was able to clearly determine bias, detected results were qualified as either J+ or J-; otherwise, bias was not indicated in the qualification. Any detects between the method detection limit and the reporting limit were qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Reported nondetects are valid to the MDL. The lab reported both the undiluted and diluted results for anions in the EDD; therefore, the reviewer rejected, "R", undiluted results for chloride, as well as diluted results for nitrate, nitrite, and fluoride. Sulfate and chloride were reported from 20x dilutions.

XII.5. FIELD QC SAMPLES

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

XII.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

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

XII.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms: 440-137347-1

Analysis Method DV-WC-0077

Sample Name Outfall002_20160205_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/5/2016 8:55:00 AM **Validation Level:** 8

Lab Sample Name: 440-137347-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Monomethyl hydrazine	N	60-34-4	0.25	10	0.25	ug/L	UBU	R	H

Analysis Method E1613B

Sample Name Outfall002_20160205_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/5/2016 8:55:00 AM **Validation Level:** 8

Lab Sample Name: 440-137347-1

Analyte	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	0.0000042	0.000094	0.00000079	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	N	3268-87-9	0.000018	0.000094	0.0000010	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	N	67562-39-4	0.0000023	0.000047	0.00000065	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	N	35822-46-9	0.0000031	0.000047	0.00000059	ug/L	J,DXMB	U	B
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	N	55673-89-7	0.00000092	0.000047	0.00000092	ug/L	U	U	
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	N	70648-26-9	0.00000099	0.000047	0.00000099	ug/L	U	U	
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	39227-28-6	0.00000092	0.000047	0.00000092	ug/L	U	U	
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	57117-44-9	0.00000077	0.000047	0.00000077	ug/L	U	U	
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	57653-85-7	0.00000089	0.000047	0.00000089	ug/L	U	U	
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	N	72918-21-9	0.00000057	0.000047	0.00000057	ug/L	U	U	
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	N	19408-74-3	0.00000073	0.000047	0.00000073	ug/L	U	U	
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-41-6	0.0000011	0.000047	0.0000011	ug/L	U	U	
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	N	40321-76-4	0.0000011	0.000047	0.0000011	ug/L	U	U	
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	60851-34-5	0.00000058	0.000047	0.00000058	ug/L	U	U	
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-31-4	0.0000013	0.000047	0.0000013	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	0.00000081	0.000094	0.00000081	ug/L	U	U	

Analysis Method E1613B

2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	N	1746-01-6	0.0000071	0.0000094	0.0000071	ug/L	U	U	
Total Heptachlorodibenzofuran (HpCDF)	N	38998-75-3	0.0000023	0.000047	0.0000079	ug/L	J,DXMB	U	B
Total Heptachlorodibenzo-p-dioxin (HpCDD)	N	37871-00-4	0.0000058	0.000047	0.0000059	ug/L	J,DXMB	U	B
Total Hexachlorodibenzofuran (HxCDF)	N	55684-94-1	0.0000057	0.000047	0.0000057	ug/L	U	U	
Total Hexachlorodibenzo-p-dioxin (HxCDD)	N	34465-46-8	0.0000073	0.000047	0.0000073	ug/L	U	U	
Total Pentachlorodibenzofuran (PeCDF)	N	30402-15-4	0.0000011	0.000047	0.0000011	ug/L	U	U	
Total Pentachlorodibenzo-p-dioxin (PeCDD)	N	36088-22-9	0.0000011	0.000047	0.0000011	ug/L	U	U	
Total Tetrachlorodibenzofuran (TCDF)	N	55722-27-5	0.0000081	0.0000094	0.0000081	ug/L	U	U	
Total Tetrachlorodibenzo-p-dioxin (TCDD)	N	41903-57-5	0.0000071	0.0000094	0.0000071	ug/L	U	U	

Analysis Method E180.1

Sample Name Outfall002_20160205_Comp **Matrix Type:** WM **Result Type:** TRG
Sample Date: 2/5/2016 8:55:00 AM **Validation Level:** 8
Lab Sample Name: 440-137347-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Turbidity	N	TURBIDITY	0.47	0.10	0.040	NTU	BU	J-	H

Analysis Method E200.7

Sample Name Outfall002_20160205_Comp **Matrix Type:** WM **Result Type:** TRG
Sample Date: 2/5/2016 8:55:00 AM **Validation Level:** 8
Lab Sample Name: 440-137347-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Arsenic	T	7440-38-2	5.0	10	5.0	ug/L	U	U	
Barium	T	7440-39-3	0.051	0.010	0.0050	mg/L			
Beryllium	T	7440-41-7	1.0	2.0	1.0	ug/L	U	U	
Boron	T	7440-42-8	0.058	0.050	0.010	mg/L			
Chromium	T	7440-47-3	2.5	5.0	2.5	ug/L	U	U	
Cobalt	T	7440-48-4	2.5	10	2.5	ug/L	U	U	
Hardness as CaCO3	T	HARDNESSCA CO3	250000	330	170	ug/L	MB		
Iron	T	7439-89-6	0.021	0.040	0.010	mg/L	J,DX	J	DNQ
Manganese	T	7439-96-5	10	20	10	ug/L	U	U	
Nickel	T	7440-02-0	5.0	10	5.0	ug/L	U	U	
Silver	T	7440-22-4	5.0	10	5.0	ug/L	U	U	
Vanadium	T	7440-62-2	5.0	10	5.0	ug/L	U	U	
Zinc	T	7440-66-6	10	20	10	ug/L	U	U	

Analysis Method E200.7

Sample Name Outfall002_20160205_Comp_F **Matrix Type:** WM **Result Type:** TRG
Sample Date: 2/5/2016 8:55:00 AM **Validation Level:** 8
Lab Sample Name: 440-137347-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Arsenic	D	7440-38-2	5.0	10	5.0	ug/L	U	U	
Barium	D	7440-39-3	0.048	0.010	0.0050	mg/L			
Beryllium	D	7440-41-7	1.0	2.0	1.0	ug/L	U	U	
Boron	D	7440-42-8	0.056	0.050	0.010	mg/L			
Chromium	D	7440-47-3	2.5	5.0	2.5	ug/L	U	U	
Cobalt	D	7440-48-4	2.5	10	2.5	ug/L	U	U	
Hardness as CaCO3	D	HARDNESSCA CO3	240000	330	170	ug/L			
Iron	D	7439-89-6	0.010	0.040	0.010	mg/L	U	U	
Manganese	D	7439-96-5	10	20	10	ug/L	U	U	
Nickel	D	7440-02-0	5.0	10	5.0	ug/L	U	U	
Silver	D	7440-22-4	5.0	10	5.0	ug/L	U	U	
Vanadium	D	7440-62-2	5.0	10	5.0	ug/L	U	U	
Zinc	D	7440-66-6	10	20	10	ug/L	U	U	

Analysis Method E200.8

Sample Name Outfall002_20160205_Comp **Matrix Type:** WM **Result Type:** TRG
Sample Date: 2/5/2016 8:55:00 AM **Validation Level:** 8
Lab Sample Name: 440-137347-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Antimony	T	7440-36-0	0.51	2.0	0.50	ug/L	J,DX	U	B
Cadmium	T	7440-43-9	0.25	1.0	0.25	ug/L	U	U	
Copper	T	7440-50-8	1.3	2.0	0.50	ug/L	J,DX	J	DNQ
Lead	T	7439-92-1	0.50	1.0	0.50	ug/L	U	U	
Selenium	T	7782-49-2	0.50	2.0	0.50	ug/L	U	U	
Thallium	T	7440-28-0	0.50	1.0	0.50	ug/L	U	U	

Sample Name Outfall002_20160205_Comp_F **Matrix Type:** WM **Result Type:** TRG
Sample Date: 2/5/2016 8:55:00 AM **Validation Level:** 8
Lab Sample Name: 440-137347-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Antimony	D	7440-36-0	0.59	2.0	0.50	ug/L	J,DXQP	J	DNQ
Cadmium	D	7440-43-9	0.25	1.0	0.25	ug/L	UQP	U	
Copper	D	7440-50-8	1.8	2.0	0.50	ug/L	JDXMBQ	U	B
Lead	D	7439-92-1	0.50	1.0	0.50	ug/L	UQP	U	

Analysis Method E200.8

Selenium	D	7782-49-2	0.50	2.0	0.50	ug/L	UQP	U
Thallium	D	7440-28-0	0.50	1.0	0.50	ug/L	UQP	U

Analysis Method E218.6

Sample Name	Outfall002_20160205_Comp			Matrix Type:	WM	Result Type:	TRG		
Sample Date:	2/5/2016 8:55:00 AM		Validation Level:	8					
Lab Sample Name:	440-137347-1								

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chromium VI (Hexavalent)	T	18540-29-9	0.25	1.0	0.25	ug/L	U	U	

Analysis Method E245.1

Sample Name	Outfall002_20160205_Comp			Matrix Type:	WM	Result Type:	TRG		
Sample Date:	2/5/2016 8:55:00 AM		Validation Level:	8					
Lab Sample Name:	440-137347-1								

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

Sample Name	Outfall002_20160205_Comp_F			Matrix Type:	WM	Result Type:	TRG		
Sample Date:	2/5/2016 8:55:00 AM		Validation Level:	8					
Lab Sample Name:	440-137347-2								

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

Analysis Method E300

Sample Name	Outfall002_20160205_Comp			Matrix Type:	WM	Result Type:	TRG		
Sample Date:	2/5/2016 8:55:00 AM		Validation Level:	8					
Lab Sample Name:	440-137347-1								

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chloride	N	16887-00-6	17	0.50	0.25	mg/L		R	D
Chloride	N	16887-00-6	19	10	5.0	mg/L		J-	Q
Fluoride	N	16984-48-8	0.25	0.50	0.25	mg/L	J,DX	J	DNQ
Fluoride	N	16984-48-8	5.0	10	5.0	mg/L	U	R	D
Nitrate (as N)	N	14797-55-8	0.36	0.11	0.055	mg/L			
Nitrate (as N)	N	14797-55-8	1.1	2.2	1.1	mg/L	U	R	D
Nitrite (as N)	N	14797-65-0	0.10	0.15	0.070	mg/L	J,DX	J	DNQ
Nitrite (as N)	N	14797-65-0	1.4	3.0	1.4	mg/L	U	R	D
Nitrite/Nitrate	N	NO2NO3	0.46	0.15	0.070	mg/L			
Sulfate	N	14808-79-8	240	10	5.0	mg/L		J-	Q

Analysis Method E314.0

Sample Name Outfall002_20160205_Comp **Matrix Type:** WM **Result Type:** TRG
Sample Date: 2/5/2016 8:55:00 AM **Validation Level:** 8
Lab Sample Name: 440-137347-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Perchlorate	N	14797-73-0	0.95	4.0	0.95	ug/L	U	U	

Analysis Method E608

Sample Name Outfall002_20160205_Comp **Matrix Type:** WM **Result Type:** TRG
Sample Date: 2/5/2016 8:55:00 AM **Validation Level:** 8
Lab Sample Name: 440-137347-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
4,4'-DDD	N	72-54-8	0.0048	0.0048	0.0038	ug/L	U	U	
4,4'-DDE	N	72-55-9	0.0048	0.0048	0.0029	ug/L	U	U	
4,4'-DDT	N	50-29-3	0.0096	0.0096	0.0038	ug/L	U	U	
Aldrin	N	309-00-2	0.0048	0.0048	0.0014	ug/L	U	U	
alpha-BHC	N	319-84-6	0.0048	0.0048	0.0024	ug/L	U	U	
Aroclor-1016 (PCB-1016)	N	12674-11-2	0.48	0.48	0.24	ug/L	U	U	
Aroclor-1221 (PCB-1221)	N	11104-28-2	0.48	0.48	0.24	ug/L	U	U	
Aroclor-1232 (PCB-1232)	N	11141-16-5	0.48	0.48	0.24	ug/L	U	U	
Aroclor-1242 (PCB-1242)	N	53469-21-9	0.48	0.48	0.24	ug/L	U	U	
Aroclor-1248 (PCB-1248)	N	12672-29-6	0.48	0.48	0.24	ug/L	U	U	
Aroclor-1254 (PCB-1254)	N	11097-69-1	0.48	0.48	0.24	ug/L	U	U	
Aroclor-1260 (PCB-1260)	N	11096-82-5	0.48	0.48	0.24	ug/L	U	U	
beta-BHC	N	319-85-7	0.0096	0.0096	0.0038	ug/L	U	U	
Chlordane	N	57-74-9	0.096	0.096	0.077	ug/L	U	U	
delta-BHC	N	319-86-8	0.0048	0.0048	0.0033	ug/L	U	U	
Dieldrin	N	60-57-1	0.0048	0.0048	0.0019	ug/L	U	U	
Endosulfan I	N	959-98-8	0.0048	0.0048	0.0029	ug/L	U	U	
Endosulfan II	N	33213-65-9	0.0048	0.0048	0.0019	ug/L	U	U	
Endosulfan sulfate	N	1031-07-8	0.0096	0.0096	0.0029	ug/L	U	U	
Endrin	N	72-20-8	0.0048	0.0048	0.0019	ug/L	U	U	
Endrin aldehyde	N	7421-93-4	0.0096	0.0096	0.0019	ug/L	U	U	
gamma-BHC (Lindane)	N	58-89-9	0.0096	0.0096	0.0029	ug/L	U	U	
Heptachlor	N	76-44-8	0.0096	0.0096	0.0029	ug/L	U	UJ	C
Heptachlor epoxide	N	1024-57-3	0.0048	0.0048	0.0024	ug/L	U	U	
Toxaphene	N	8001-35-2	0.48	0.48	0.24	ug/L	U	U	

Analysis Method E625

Sample Name: Outfall002_20160205_Comp **Matrix Type:** WM **Result Type:** TRG
Sample Date: 2/5/2016 8:55:00 AM **Validation Level:** 8
Lab Sample Name: 440-137347-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,2,4-Trichlorobenzene	N	120-82-1	0.943	0.943	0.472	ug/L	U	U	
1,2-Dichlorobenzene	N	95-50-1	0.472	0.472	0.189	ug/L	U	U	
1,2-Diphenylhydrazine	N	122-66-7	0.943	0.943	0.472	ug/L	U	U	
1,3-Dichlorobenzene	N	541-73-1	0.472	0.472	0.189	ug/L	U	U	
1,4-Dichlorobenzene	N	106-46-7	0.472	0.472	0.189	ug/L	U	U	
2,2'-oxybis(1-Chloropropane)	N	108-60-1	0.472	0.472	0.189	ug/L	U	U	
2,4,6-Trichlorophenol	N	88-06-2	0.943	0.943	0.472	ug/L	U	U	
2,4-Dichlorophenol	N	120-83-2	1.89	1.89	0.943	ug/L	U	U	
2,4-Dimethylphenol	N	105-67-9	1.89	1.89	0.943	ug/L	U	U	
2,4-Dinitrophenol	N	51-28-5	4.72	4.72	1.89	ug/L	U	UJ	C
2,4-Dinitrotoluene	N	121-14-2	4.72	4.72	1.89	ug/L	U	UJ	C
2,6-Dinitrotoluene	N	606-20-2	4.72	4.72	1.89	ug/L	U	U	
2-Chloronaphthalene	N	91-58-7	0.472	0.472	0.189	ug/L	U	U	
2-Chlorophenol	N	95-57-8	0.943	0.943	0.472	ug/L	U	U	
2-Nitrophenol	N	88-75-5	1.89	1.89	0.943	ug/L	U	U	
3,3'-Dichlorobenzidine	N	91-94-1	4.72	4.72	1.89	ug/L	U	R	Q
4,6-Dinitro-2-methylphenol	N	534-52-1	4.72	4.72	1.89	ug/L	U	UJ	C
4-Bromophenyl phenyl ether	N	101-55-3	0.943	0.943	0.472	ug/L	U	U	
4-Chloro-3-methylphenol	N	59-50-7	1.89	1.89	0.189	ug/L	U	U	
4-Chlorophenyl phenyl ether	N	7005-72-3	0.472	0.472	0.189	ug/L	U	U	
4-Nitrophenol	N	100-02-7	4.72	4.72	1.89	ug/L	U	UJ	C
Acenaphthene	N	83-32-9	0.472	0.472	0.189	ug/L	U	U	
Acenaphthylene	N	208-96-8	0.472	0.472	0.189	ug/L	U	U	
Anthracene	N	120-12-7	0.472	0.472	0.189	ug/L	U	U	
Benzidine	N	92-87-5	9.43	9.43	4.72	ug/L	U	R	Q
Benzo(a)anthracene	N	56-55-3	4.72	4.72	1.89	ug/L	U	U	
Benzo(a)pyrene	N	50-32-8	1.89	1.89	0.472	ug/L	U	U	
Benzo(b)fluoranthene	N	205-99-2	1.89	1.89	0.943	ug/L	U	U	
Benzo(g,h,i)perylene	N	191-24-2	4.72	4.72	1.89	ug/L	U	U	
Benzo(k)fluoranthene	N	207-08-9	0.472	0.472	0.236	ug/L	U	U	
bis(2-Chloroethoxy)methane	N	111-91-1	0.472	0.472	0.189	ug/L	U	U	
bis(2-Chloroethyl)ether	N	111-44-4	0.472	0.472	0.189	ug/L	U	U	
bis(2-Ethylhexyl)phthalate	N	117-81-7	4.72	4.72	1.89	ug/L	U	U	
Butyl benzylphthalate	N	85-68-7	4.72	4.72	1.89	ug/L	U	U	
Chrysene	N	218-01-9	0.472	0.472	0.189	ug/L	U	U	
Dibenz(a,h)anthracene	N	53-70-3	0.472	0.472	0.236	ug/L	U	U	
Diethyl phthalate	N	84-66-2	0.943	0.943	0.472	ug/L	U	U	

Analysis Method E625

Dimethyl phthalate	N	131-11-3	0.472	0.472	0.236	ug/L	U	U
Di-n-butylphthalate	N	84-74-2	1.89	1.89	0.943	ug/L	U	U
Di-n-octyl phthalate	N	117-84-0	4.72	4.72	1.89	ug/L	U	U
Fluoranthene	N	206-44-0	0.472	0.472	0.189	ug/L	U	U
Fluorene	N	86-73-7	0.472	0.472	0.189	ug/L	U	U
Hexachlorobenzene	N	118-74-1	0.943	0.943	0.472	ug/L	U	U
Hexachlorobutadiene	N	87-68-3	1.89	1.89	0.472	ug/L	U	U
Hexachlorocyclopentadiene	N	77-47-4	4.72	4.72	1.89	ug/L	U	U
Hexachloroethane	N	67-72-1	2.83	2.83	0.472	ug/L	U	U
Indeno(1,2,3-cd)pyrene	N	193-39-5	1.89	1.89	0.943	ug/L	U	U
Isophorone	N	78-59-1	0.943	0.943	0.472	ug/L	U	U
Naphthalene	N	91-20-3	0.943	0.943	0.472	ug/L	U	UJ C
Nitrobenzene	N	98-95-3	0.943	0.943	0.472	ug/L	U	U
N-Nitrosodimethylamine	N	62-75-9	1.89	1.89	0.943	ug/L	U	U
N-Nitrosodi-n-propylamine	N	621-64-7	1.89	1.89	0.943	ug/L	U	U
N-Nitrosodiphenylamine	N	86-30-6	0.943	0.943	0.472	ug/L	U	U
Pentachlorophenol	N	87-86-5	1.89	1.89	0.943	ug/L	U	U
Phenanthrene	N	85-01-8	0.472	0.472	0.189	ug/L	U	U
Phenol	N	108-95-2	0.943	0.943	0.472	ug/L	U	U
Pyrene	N	129-00-0	0.472	0.472	0.189	ug/L	U	U

Analysis Method EPA-821-R-02-013

Sample Name Outfall002_20160205_Comp **Matrix Type:** WM **Result Type:** TRG
Sample Date: 2/5/2016 8:55:00 AM **Validation Level:** 8
Lab Sample Name: 440-137347-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chronic Toxicity, Selenastrum	N	CHRTOXSELEN-43.5 A							

Analysis Method SM2540C

Sample Name Outfall002_20160205_Comp **Matrix Type:** WM **Result Type:** TRG
Sample Date: 2/5/2016 8:55:00 AM **Validation Level:** 8
Lab Sample Name: 440-137347-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Dissolved Solids (TDS)	N	TDS	550	10	5.0	mg/L			

Analysis Method SM2540D**Sample Name** Outfall002_20160205_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/5/2016 8:55:00 AM **Validation Level:** 8**Lab Sample Name:** 440-137347-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Suspended Solids (TSS)	N	TSS	1.1	1.0	0.50	mg/L			

Analysis Method SM4500-CN-E**Sample Name** Outfall002_20160205_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/5/2016 8:55:00 AM **Validation Level:** 8**Lab Sample Name:** 440-137347-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cyanide	N	57-12-5	2.5	5.0	2.5	ug/L	U	U	

Analysis Method SM4500-NH3**Sample Name** Outfall002_20160205_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/5/2016 8:55:00 AM **Validation Level:** 8**Lab Sample Name:** 440-137347-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Ammonia (as N)	N	7664-41-7N	0.100	0.500	0.100	mg/L	U	U	

Analysis Method SM5210B**Sample Name** Outfall002_20160205_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/5/2016 8:55:00 AM **Validation Level:** 8**Lab Sample Name:** 440-137347-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Biochemical Oxygen Demand (BOD)	N	BOD	1.5	2.0	0.50	mg/L	J,DX	J	DNQ

Analysis Method SM5310B**Sample Name** Outfall002_20160205_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/5/2016 8:55:00 AM **Validation Level:** 8**Lab Sample Name:** 440-137347-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Organic Carbon (TOC)	N	TOC	7.8	1.0	0.65	mg/L			

Analysis Method *SM5540*

Sample Name Outfall002_20160205_Comp **Matrix Type:** WM **Result Type:** TRG
Sample Date: 2/5/2016 8:55:00 AM **Validation Level:** 8
Lab Sample Name: 440-137347-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Surfactants as MBAS	N	SURFASMBAS	0.10	0.10	0.050	mg/L			

Analysis Method *SW8260SIM*

Sample Name Outfall002_20160205_Comp **Matrix Type:** WM **Result Type:** TRG
Sample Date: 2/5/2016 8:55:00 AM **Validation Level:** 8
Lab Sample Name: 440-137347-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,4-Dioxane	N	123-91-1	2.0	2.0	0.50	ug/L	U	U	

Validated Sample Result Forms: 440-137347-1

Analysis Method *HASL-300 U Mod*

Sample Name Outfall002_20160205_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/5/2016 8:55:00 AM **Validation Level:** 8

Lab Sample Name: 440-137347-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Uranium	URANIUM	0.244	0.158	0.110	0.110	pCi/L		U	B

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

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Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-137347-1

Client Project/Site: Boeing NPDES SSFL outfalls

Revision: 3

For:

Haley & Aldrich, Inc.

5333 Mission Center Road

Suite 300

San Diego, California 92108

Attn: Nancy Gardiner



Authorized for release by:

4/26/2016 9:32:56 PM

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

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

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



Urvashi Patel
Manager of Project Management
4/26/2016 9:32:56 PM



Table of Contents

Cover Page	1
Table of Contents	3
Sample Summary	4
Case Narrative	5
Client Sample Results	7
Method Summary	13
Lab Chronicle	14
QC Sample Results	16
QC Association Summary	46
Definitions/Glossary	53
Certification Summary	55
Subcontract Data	58
Chain of Custody	74
Receipt Checklists	80
Tracer Carrier Summary	84
Isotope Dilution Summary	85

Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-137347-1	Outfall002_20160205_Comp	Water	02/05/16 08:55	02/05/16 19:00
440-137347-2	Outfall002_20160205_Comp_F	Water	02/05/16 08:55	02/05/16 19:00

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-1

Job ID: 440-137347-1

Laboratory: TestAmerica Irvine

Narrative

**Job Narrative
440-137347-1**

Comments

Revision created to add Hydrazine analyte.
Revision created to add Silver by 200.8 total and dissolved.

Receipt

The samples were received on 2/5/2016 7:00 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 6 coolers at receipt time were 0.5° C, 0.7° C, 0.7° C, 0.8° C, 1.0° C and 1.4° C.

Receipt Exceptions

No additional comments.

GC/MS VOA

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

GC/MS Semi VOA

Method(s) 625: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-310608 and analytical batch 440-311203. The laboratory control sample (LCS) was performed in duplicate to provide precision data for this batch.

Method(s) 625: The continuing calibration verification (CCV) associated with batch 440-311513 recovered above the upper control limit for 4,6-dinitro-2-methylphenol. The samples associated with this CCV were non-detects for the affected analyte; 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.

HPLC/IC

Method(s) 314.0, 314.0 LL: The continuing calibration verification (CCV) associated with batch 312391 recovered above the upper control limit for Perchlorate. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The following sample is impacted: Outfall002_20160205_Comp (440-137347-1).

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

GC VOA

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

GC Semi VOA

Method(s) 608: The continuing calibration verification (CCV) associated with batch 440-312116 recovered above the upper control limit for Heptachlor. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The following samples are impacted: Outfall002_20160205_Comp (440-137347-1) and (CCVIS 440-312116/7).

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

Dioxin

Method(s) 1613B: EPA Method 1613B specifies a +/- 15 second retention time difference between the recovery standard in the initial calibration (ICAL) and the continuing calibration verification (CCV). The 13C-1,2,3,4-TCDD and 13C-1,2,3,7,8,9-HxCDD associated with the following samples run on instrument 4D5 exceeded this criteria: Outfall002_20160205_Comp (440-137347-1), (CCV 320-101275/1), (LCS 320-100382/2-A), (LCSD 320-100382/3-A) and (MB 320-100382/1-A). This retention time shift is due to normal and reasonable column maintenance and does not affect the instrument chromatography resolution, sensitivity, or identification of target analytes. System retention times have been updated for proper analyte identification.

Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-1

Job ID: 440-137347-1 (Continued)

Laboratory: TestAmerica Irvine (Continued)

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

RAD

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.

General Chemistry

Method(s) Filtration: The following samples were received in the Denver lab outside of preparation holding time:
Outfall002_20160205_Comp (440-137347-1), (440-137347-R-1 MS) and (440-137347-R-1 MSD). Hydrazines by IC prep batch,
Filtration_P_48 <PrepBatch>

Method(s) 180.1, SM 2130B: The following sample was analyzed outside of analytical holding time due to system outage.:
Outfall002_20160205_Comp (440-137347-1).

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

Subcontract non-Sister

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

Organic Prep

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

VOA Prep

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

Dioxin Prep

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

Subcontract Work

Method Chronic Cerio, EPA/821-R02-013: This method was subcontracted to Aquatic Bioassay - Ventura, CA. The subcontract laboratory certification is different from that of the facility issuing the final report.

Client Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-1

Client Sample ID: Outfall002_20160205_Comp

Lab Sample ID: 440-137347-1

Date Collected: 02/05/16 08:55

Matrix: Water

Date Received: 02/05/16 19:00

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	ND		2.0	0.50	ug/L			02/16/16 19:47	1
Surrogate	%Recovery	Qualifier	Limits						
Dibromofluoromethane (Surr)	93		80 - 120						
							Prepared	Analyzed	Dil Fac
								02/16/16 19:47	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		0.472	0.189	ug/L		02/09/16 15:30	02/16/16 00:38	1
Acenaphthylene	ND		0.472	0.189	ug/L		02/09/16 15:30	02/16/16 00:38	1
Anthracene	ND		0.472	0.189	ug/L		02/09/16 15:30	02/16/16 00:38	1
Benzidine	ND		9.43	4.72	ug/L		02/09/16 15:30	02/16/16 00:38	1
Benzo[a]anthracene	ND		4.72	1.89	ug/L		02/09/16 15:30	02/16/16 00:38	1
Benzo[b]fluoranthene	ND		1.89	0.943	ug/L		02/09/16 15:30	02/16/16 00:38	1
Benzo[k]fluoranthene	ND		0.472	0.236	ug/L		02/09/16 15:30	02/16/16 00:38	1
Benzo[a]pyrene	ND		1.89	0.472	ug/L		02/09/16 15:30	02/16/16 00:38	1
Bis(2-chloroethoxy)methane	ND		0.472	0.189	ug/L		02/09/16 15:30	02/16/16 00:38	1
Bis(2-chloroethyl)ether	ND		0.472	0.189	ug/L		02/09/16 15:30	02/16/16 00:38	1
Bis(2-ethylhexyl) phthalate	ND		4.72	1.89	ug/L		02/09/16 15:30	02/16/16 00:38	1
4-Bromophenyl phenyl ether	ND		0.943	0.472	ug/L		02/09/16 15:30	02/16/16 00:38	1
Butyl benzyl phthalate	ND		4.72	1.89	ug/L		02/09/16 15:30	02/16/16 00:38	1
4-Chloro-3-methylphenol	ND		1.89	0.189	ug/L		02/09/16 15:30	02/16/16 00:38	1
2-Chloronaphthalene	ND		0.472	0.189	ug/L		02/09/16 15:30	02/16/16 00:38	1
2-Chlorophenol	ND		0.943	0.472	ug/L		02/09/16 15:30	02/16/16 00:38	1
4-Chlorophenyl phenyl ether	ND		0.472	0.189	ug/L		02/09/16 15:30	02/16/16 00:38	1
Chrysene	ND		0.472	0.189	ug/L		02/09/16 15:30	02/16/16 00:38	1
Dibenz(a,h)anthracene	ND		0.472	0.236	ug/L		02/09/16 15:30	02/16/16 00:38	1
Di-n-butyl phthalate	ND		1.89	0.943	ug/L		02/09/16 15:30	02/16/16 00:38	1
1,2-Dichlorobenzene	ND		0.472	0.189	ug/L		02/09/16 15:30	02/16/16 00:38	1
1,3-Dichlorobenzene	ND		0.472	0.189	ug/L		02/09/16 15:30	02/16/16 00:38	1
1,4-Dichlorobenzene	ND		0.472	0.189	ug/L		02/09/16 15:30	02/16/16 00:38	1
3,3'-Dichlorobenzidine	ND		4.72	1.89	ug/L		02/09/16 15:30	02/16/16 00:38	1
2,4-Dichlorophenol	ND		1.89	0.943	ug/L		02/09/16 15:30	02/16/16 00:38	1
Diethyl phthalate	ND		0.943	0.472	ug/L		02/09/16 15:30	02/16/16 00:38	1
2,4-Dimethylphenol	ND		1.89	0.943	ug/L		02/09/16 15:30	02/16/16 00:38	1
Dimethyl phthalate	ND		0.472	0.236	ug/L		02/09/16 15:30	02/16/16 00:38	1
4,6-Dinitro-2-methylphenol	ND		4.72	1.89	ug/L		02/09/16 15:30	02/16/16 00:38	1
2,4-Dinitrophenol	ND		4.72	1.89	ug/L		02/09/16 15:30	02/16/16 00:38	1
2,4-Dinitrotoluene	ND		4.72	1.89	ug/L		02/09/16 15:30	02/16/16 00:38	1
2,6-Dinitrotoluene	ND		4.72	1.89	ug/L		02/09/16 15:30	02/16/16 00:38	1
Di-n-octyl phthalate	ND		4.72	1.89	ug/L		02/09/16 15:30	02/16/16 00:38	1
1,2-Diphenylhydrazine(as Azobenzene)	ND		0.943	0.472	ug/L		02/09/16 15:30	02/16/16 00:38	1
Fluoranthene	ND		0.472	0.189	ug/L		02/09/16 15:30	02/16/16 00:38	1
Fluorene	ND		0.472	0.189	ug/L		02/09/16 15:30	02/16/16 00:38	1
Hexachlorobenzene	ND		0.943	0.472	ug/L		02/09/16 15:30	02/16/16 00:38	1
Hexachlorobutadiene	ND		1.89	0.472	ug/L		02/09/16 15:30	02/16/16 00:38	1
Hexachloroethane	ND		2.83	0.472	ug/L		02/09/16 15:30	02/16/16 00:38	1
Hexachlorocyclopentadiene	ND		4.72	1.89	ug/L		02/09/16 15:30	02/16/16 00:38	1
Indeno[1,2,3-cd]pyrene	ND		1.89	0.943	ug/L		02/09/16 15:30	02/16/16 00:38	1
Isophorone	ND		0.943	0.472	ug/L		02/09/16 15:30	02/16/16 00:38	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-1

Client Sample ID: Outfall002_20160205_Comp

Lab Sample ID: 440-137347-1

Date Collected: 02/05/16 08:55

Matrix: Water

Date Received: 02/05/16 19:00

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		0.943	0.472	ug/L		02/09/16 15:30	02/16/16 00:38	1
Nitrobenzene	ND		0.943	0.472	ug/L		02/09/16 15:30	02/16/16 00:38	1
2-Nitrophenol	ND		1.89	0.943	ug/L		02/09/16 15:30	02/16/16 00:38	1
4-Nitrophenol	ND		4.72	1.89	ug/L		02/09/16 15:30	02/16/16 00:38	1
N-Nitrosodimethylamine	ND		1.89	0.943	ug/L		02/09/16 15:30	02/16/16 00:38	1
N-Nitrosodiphenylamine	ND		0.943	0.472	ug/L		02/09/16 15:30	02/16/16 00:38	1
N-Nitrosodi-n-propylamine	ND		1.89	0.943	ug/L		02/09/16 15:30	02/16/16 00:38	1
Pentachlorophenol	ND		1.89	0.943	ug/L		02/09/16 15:30	02/16/16 00:38	1
Phenanthrene	ND		0.472	0.189	ug/L		02/09/16 15:30	02/16/16 00:38	1
Phenol	ND		0.943	0.472	ug/L		02/09/16 15:30	02/16/16 00:38	1
Pyrene	ND		0.472	0.189	ug/L		02/09/16 15:30	02/16/16 00:38	1
1,2,4-Trichlorobenzene	ND		0.943	0.472	ug/L		02/09/16 15:30	02/16/16 00:38	1
2,4,6-Trichlorophenol	ND		0.943	0.472	ug/L		02/09/16 15:30	02/16/16 00:38	1
Benzo[g,h,i]perylene	ND		4.72	1.89	ug/L		02/09/16 15:30	02/16/16 00:38	1
bis (2-chloroisopropyl) ether	ND		0.472	0.189	ug/L		02/09/16 15:30	02/16/16 00:38	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl	63		50 - 120				02/09/16 15:30	02/16/16 00:38	1
2-Fluorophenol	60		30 - 120				02/09/16 15:30	02/16/16 00:38	1
2,4,6-Tribromophenol	83		40 - 120				02/09/16 15:30	02/16/16 00:38	1
Nitrobenzene-d5	74		45 - 120				02/09/16 15:30	02/16/16 00:38	1
Terphenyl-d14	83		37 - 144				02/09/16 15:30	02/16/16 00:38	1
Phenol-d6	64		35 - 120				02/09/16 15:30	02/16/16 00:38	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor 1016	ND		0.48	0.24	ug/L		02/09/16 11:35	02/13/16 19:36	1
Aroclor 1221	ND		0.48	0.24	ug/L		02/09/16 11:35	02/13/16 19:36	1
Aroclor 1232	ND		0.48	0.24	ug/L		02/09/16 11:35	02/13/16 19:36	1
Aroclor 1242	ND		0.48	0.24	ug/L		02/09/16 11:35	02/13/16 19:36	1
Aroclor 1248	ND		0.48	0.24	ug/L		02/09/16 11:35	02/13/16 19:36	1
Aroclor 1254	ND		0.48	0.24	ug/L		02/09/16 11:35	02/13/16 19:36	1
Aroclor 1260	ND		0.48	0.24	ug/L		02/09/16 11:35	02/13/16 19:36	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl (Surr)	74		29 - 115				02/09/16 11:35	02/13/16 19:36	1

Method: 608 Pesticides - Organochlorine Pesticides Low level

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	ND		0.0048	0.0014	ug/L		02/09/16 11:35	02/18/16 19:23	1
alpha-BHC	ND		0.0048	0.0024	ug/L		02/09/16 11:35	02/18/16 19:23	1
beta-BHC	ND		0.0096	0.0038	ug/L		02/09/16 11:35	02/18/16 19:23	1
Chlordane (technical)	ND		0.096	0.077	ug/L		02/09/16 11:35	02/18/16 19:23	1
delta-BHC	ND		0.0048	0.0033	ug/L		02/09/16 11:35	02/18/16 19:23	1
Dieldrin	ND		0.0048	0.0019	ug/L		02/09/16 11:35	02/18/16 19:23	1
Endosulfan I	ND		0.0048	0.0029	ug/L		02/09/16 11:35	02/18/16 19:23	1
Endosulfan II	ND		0.0048	0.0019	ug/L		02/09/16 11:35	02/18/16 19:23	1
Endosulfan sulfate	ND		0.0096	0.0029	ug/L		02/09/16 11:35	02/18/16 19:23	1
Endrin	ND		0.0048	0.0019	ug/L		02/09/16 11:35	02/18/16 19:23	1
Endrin aldehyde	ND		0.0096	0.0019	ug/L		02/09/16 11:35	02/18/16 19:23	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-1

Client Sample ID: Outfall002_20160205_Comp

Lab Sample ID: 440-137347-1

Date Collected: 02/05/16 08:55

Matrix: Water

Date Received: 02/05/16 19:00

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
gamma-BHC (Lindane)	ND		0.0096	0.0029	ug/L		02/09/16 11:35	02/18/16 19:23	1
Heptachlor	ND		0.0096	0.0029	ug/L		02/09/16 11:35	02/18/16 19:23	1
Heptachlor epoxide	ND		0.0048	0.0024	ug/L		02/09/16 11:35	02/18/16 19:23	1
Toxaphene	ND		0.48	0.24	ug/L		02/09/16 11:35	02/18/16 19:23	1
4,4'-DDD	ND		0.0048	0.0038	ug/L		02/09/16 11:35	02/18/16 19:23	1
4,4'-DDE	ND		0.0048	0.0029	ug/L		02/09/16 11:35	02/18/16 19:23	1
4,4'-DDT	ND		0.0096	0.0038	ug/L		02/09/16 11:35	02/18/16 19:23	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	86	PI	10 - 150	02/09/16 11:35	02/18/16 19:23	1

Method: 218.6 - Chromium, Hexavalent (Ion Chromatography)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	ND		1.0	0.25	ug/L			02/05/16 21:10	1

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	17		0.50	0.25	mg/L			02/06/16 16:57	1
Nitrate as N	0.36		0.11	0.055	mg/L			02/06/16 16:57	1
Fluoride	0.25	J,DX	0.50	0.25	mg/L			02/06/16 16:57	1
Nitrite as N	0.10	J,DX	0.15	0.070	mg/L			02/06/16 16:57	1

Method: 300.0 - Anions, Ion Chromatography - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	240		10	5.0	mg/L			02/06/16 17:11	20

Method: 314.0 - Perchlorate (IC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		4.0	0.95	ug/L			03/02/16 11:57	1

Method: NO3NO2 Calc - Nitrogen, Nitrate-Nitrite

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	0.46		0.15	0.070	mg/L			03/02/16 11:43	1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.0000094	0.0000007	ug/L		02/15/16 09:29	02/21/16 19:00	1
2,3,7,8-TCDF	ND		0.0000094	0.0000008	ug/L		02/15/16 09:29	02/21/16 19:00	1
1,2,3,7,8-PeCDD	ND		0.000047	0.0000011	ug/L		02/15/16 09:29	02/21/16 19:00	1
1,2,3,7,8-PeCDF	ND		0.000047	0.0000011	ug/L		02/15/16 09:29	02/21/16 19:00	1
2,3,4,7,8-PeCDF	ND		0.000047	0.0000013	ug/L		02/15/16 09:29	02/21/16 19:00	1
1,2,3,4,7,8-HxCDD	ND		0.000047	0.0000009	ug/L		02/15/16 09:29	02/21/16 19:00	1
1,2,3,6,7,8-HxCDD	ND		0.000047	0.0000008	ug/L		02/15/16 09:29	02/21/16 19:00	1
1,2,3,7,8,9-HxCDD	ND		0.000047	0.0000007	ug/L		02/15/16 09:29	02/21/16 19:00	1
1,2,3,4,7,8-HxCDF	ND		0.000047	0.0000009	ug/L		02/15/16 09:29	02/21/16 19:00	1
1,2,3,6,7,8-HxCDF	ND		0.000047	0.0000007	ug/L		02/15/16 09:29	02/21/16 19:00	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-1

Client Sample ID: Outfall002_20160205_Comp

Lab Sample ID: 440-137347-1

Date Collected: 02/05/16 08:55

Matrix: Water

Date Received: 02/05/16 19:00

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,7,8,9-HxCDF	ND		0.000047	0.0000005	ug/L		02/15/16 09:29	02/21/16 19:00	1
2,3,4,6,7,8-HxCDF	ND		0.000047	0.0000005	ug/L		02/15/16 09:29	02/21/16 19:00	1
1,2,3,4,6,7,8-HpCDD	0.0000031	J,DX MB	0.000047	0.0000005	ug/L		02/15/16 09:29	02/21/16 19:00	1
1,2,3,4,6,7,8-HpCDF	0.0000023	J,DX MB	0.000047	0.0000006	ug/L		02/15/16 09:29	02/21/16 19:00	1
1,2,3,4,7,8,9-HpCDF	ND		0.000047	0.0000009	ug/L		02/15/16 09:29	02/21/16 19:00	1
OCDD	0.000018	J,DX MB	0.000094	0.0000010	ug/L		02/15/16 09:29	02/21/16 19:00	1
OCDF	0.0000042	J,DX MB	0.000094	0.0000007	ug/L		02/15/16 09:29	02/21/16 19:00	1
Total TCDD	ND		0.0000094	0.0000007	ug/L		02/15/16 09:29	02/21/16 19:00	1
Total TCDF	ND		0.0000094	0.0000008	ug/L		02/15/16 09:29	02/21/16 19:00	1
Total PeCDD	ND		0.000047	0.0000011	ug/L		02/15/16 09:29	02/21/16 19:00	1
Total PeCDF	ND		0.000047	0.0000011	ug/L		02/15/16 09:29	02/21/16 19:00	1
Total HxCDD	ND		0.000047	0.0000007	ug/L		02/15/16 09:29	02/21/16 19:00	1
Total HxCDF	ND		0.000047	0.0000005	ug/L		02/15/16 09:29	02/21/16 19:00	1
Total HpCDD	0.0000058	J,DX MB	0.000047	0.0000005	ug/L		02/15/16 09:29	02/21/16 19:00	1
Total HpCDF	0.0000023	J,DX MB	0.000047	0.0000007	ug/L		02/15/16 09:29	02/21/16 19:00	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	66		25 - 164	02/15/16 09:29	02/21/16 19:00	1
13C-2,3,7,8-TCDF	68		24 - 169	02/15/16 09:29	02/21/16 19:00	1
13C-1,2,3,7,8-PeCDD	62		25 - 181	02/15/16 09:29	02/21/16 19:00	1
13C-1,2,3,7,8-PeCDF	68		24 - 185	02/15/16 09:29	02/21/16 19:00	1
13C-2,3,4,7,8-PeCDF	66		21 - 178	02/15/16 09:29	02/21/16 19:00	1
13C-1,2,3,4,7,8-HxCDD	66		32 - 141	02/15/16 09:29	02/21/16 19:00	1
13C-1,2,3,6,7,8-HxCDD	72		28 - 130	02/15/16 09:29	02/21/16 19:00	1
13C-1,2,3,4,7,8-HxCDF	65		26 - 152	02/15/16 09:29	02/21/16 19:00	1
13C-1,2,3,6,7,8-HxCDF	66		26 - 123	02/15/16 09:29	02/21/16 19:00	1
13C-1,2,3,7,8,9-HxCDF	66		29 - 147	02/15/16 09:29	02/21/16 19:00	1
13C-2,3,4,6,7,8-HxCDF	67		28 - 136	02/15/16 09:29	02/21/16 19:00	1
13C-1,2,3,4,6,7,8-HpCDD	75		23 - 140	02/15/16 09:29	02/21/16 19:00	1
13C-1,2,3,4,6,7,8-HpCDF	72		28 - 143	02/15/16 09:29	02/21/16 19:00	1
13C-1,2,3,4,7,8,9-HpCDF	73		26 - 138	02/15/16 09:29	02/21/16 19:00	1
13C-OCDD	77		17 - 157	02/15/16 09:29	02/21/16 19:00	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	95		35 - 197	02/15/16 09:29	02/21/16 19:00	1

Method: 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		10	5.0	ug/L		02/29/16 10:08	03/01/16 19:53	1
Boron	0.058		0.050	0.010	mg/L		02/29/16 10:08	03/02/16 10:10	1
Barium	0.051		0.010	0.0050	mg/L		02/29/16 10:08	03/01/16 19:53	1
Beryllium	ND		2.0	1.0	ug/L		02/29/16 10:08	03/01/16 19:53	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-1

Client Sample ID: Outfall002_20160205_Comp

Lab Sample ID: 440-137347-1

Date Collected: 02/05/16 08:55

Matrix: Water

Date Received: 02/05/16 19:00

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	ND		10	2.5	ug/L		02/29/16 10:08	03/01/16 19:53	1
Chromium	ND		5.0	2.5	ug/L		02/29/16 10:08	03/01/16 19:53	1
Iron	0.021	J,DX	0.040	0.010	mg/L		02/29/16 10:08	03/01/16 19:53	1
Manganese	ND		20	10	ug/L		02/29/16 10:08	03/01/16 19:53	1
Nickel	ND		10	5.0	ug/L		02/29/16 10:08	03/01/16 19:53	1
Vanadium	ND		10	5.0	ug/L		02/29/16 10:08	03/01/16 19:53	1
Zinc	ND		20	10	ug/L		02/29/16 10:08	03/01/16 19:53	1
Silver	ND		10	5.0	ug/L		02/29/16 10:08	03/01/16 19:53	1
Hardness, as CaCO3	250000	MB	330	170	ug/L		02/29/16 10:08	03/01/16 19:53	1

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		02/16/16 12:33	02/24/16 03:13	1
Copper	1.3	J,DX	2.0	0.50	ug/L		02/16/16 12:33	02/24/16 03:13	1
Lead	ND		1.0	0.50	ug/L		02/16/16 12:33	02/24/16 03:13	1
Antimony	0.51	J,DX	2.0	0.50	ug/L		02/16/16 12:33	02/24/16 03:13	1
Selenium	ND		2.0	0.50	ug/L		02/16/16 12:33	02/24/16 03:13	1
Thallium	ND		1.0	0.50	ug/L		02/16/16 12:33	02/24/16 03:13	1
Silver	ND		1.0	0.50	ug/L		02/16/16 12:33	02/24/16 03:13	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		02/29/16 16:21	03/01/16 00:34	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Turbidity	0.47	BU	0.10	0.040	NTU			02/08/16 15:09	1
Hydrazine	ND	BU	5.0	0.67	ug/L		02/17/16 18:46	02/26/16 01:41	1
Total Dissolved Solids	550		10	5.0	mg/L			02/10/16 14:00	1
Total Suspended Solids	1.1		1.0	0.50	mg/L			02/11/16 20:00	1
Cyanide, Total	ND		5.0	2.5	ug/L		02/10/16 12:25	02/10/16 18:19	1
Ammonia (as N)	ND		0.500	0.100	mg/L		02/26/16 03:00	02/26/16 05:00	1
Total Organic Carbon	7.8		1.0	0.65	mg/L			03/02/16 06:25	1
Methylene Blue Active Substances	0.10		0.10	0.050	mg/L			02/06/16 15:32	1
Biochemical Oxygen Demand	1.5	J,DX	2.0	0.50	mg/L			02/06/16 08:50	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Total Uranium	0.244		0.158	0.158	1.00	0.110	pCi/L	02/18/16 11:31	02/25/16 17:19	1

Client Sample ID: Outfall002_20160205_Comp_F

Lab Sample ID: 440-137347-2

Date Collected: 02/05/16 08:55

Matrix: Water

Date Received: 02/05/16 19:00

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		10	5.0	ug/L		03/01/16 09:17	03/01/16 21:34	1
Boron	0.056		0.050	0.010	mg/L		03/01/16 09:17	03/02/16 10:32	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-1

Client Sample ID: Outfall002_20160205_Comp_F

Lab Sample ID: 440-137347-2

Date Collected: 02/05/16 08:55

Matrix: Water

Date Received: 02/05/16 19:00

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.048		0.010	0.0050	mg/L		03/01/16 09:17	03/01/16 21:34	1
Beryllium	ND		2.0	1.0	ug/L		03/01/16 09:17	03/01/16 21:34	1
Cobalt	ND		10	2.5	ug/L		03/01/16 09:17	03/01/16 21:34	1
Chromium	ND		5.0	2.5	ug/L		03/01/16 09:17	03/01/16 21:34	1
Iron	ND		0.040	0.010	mg/L		03/01/16 09:17	03/01/16 21:34	1
Manganese	ND		20	10	ug/L		03/01/16 09:17	03/01/16 21:34	1
Nickel	ND		10	5.0	ug/L		03/01/16 09:17	03/01/16 21:34	1
Vanadium	ND		10	5.0	ug/L		03/01/16 09:17	03/01/16 21:34	1
Zinc	ND		20	10	ug/L		03/01/16 09:17	03/01/16 21:34	1
Silver	ND		10	5.0	ug/L		03/01/16 09:17	03/01/16 21:34	1
Hardness, as CaCO3	240000		330	170	ug/L		03/01/16 09:17	03/01/16 21:34	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND	QP	1.0	0.25	ug/L		03/01/16 09:19	03/03/16 03:38	1
Copper	1.8	J,DX QP MB	2.0	0.50	ug/L		03/01/16 09:19	03/03/16 03:38	1
Lead	ND	QP	1.0	0.50	ug/L		03/01/16 09:19	03/03/16 03:38	1
Antimony	0.59	J,DX QP	2.0	0.50	ug/L		03/01/16 09:19	03/03/16 03:38	1
Selenium	ND	QP	2.0	0.50	ug/L		03/01/16 09:19	03/03/16 03:38	1
Thallium	ND	QP	1.0	0.50	ug/L		03/01/16 09:19	03/03/16 03:38	1
Silver	ND		1.0	0.50	ug/L		04/22/16 15:06	04/25/16 11:55	1

Method: 245.1 - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND	QP	0.20	0.10	ug/L		02/29/16 16:48	03/01/16 01:22	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-1

Method	Method Description	Protocol	Laboratory
8260B SIM	Volatile Organic Compounds (GC/MS)	SW846	TAL IRV
625	Semivolatile Organic Compounds (GC/MS)	EPA	TAL IRV
608 PCB LL	Polychlorinated Biphenyls (PCBs) Low level	40CFR136A	TAL IRV
608 Pesticides	Organochlorine Pesticides Low level	40CFR136A	TAL IRV
218.6	Chromium, Hexavalent (Ion Chromatography)	EPA	TAL IRV
300.0	Anions, Ion Chromatography	MCAWW	TAL IRV
314.0	Perchlorate (IC)	EPA	TAL IRV
NO3NO2 Calc	Nitrogen, Nitrate-Nitrite	EPA	TAL IRV
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
DV-WC-0077	Hydrazine, Ion Chromatography	TAL-DEN	TAL DEN
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 D	Ammonia	SM	TAL IRV
SM 5310B	Organic Carbon, Total (TOC)	SM	TAL IRV
SM 5540C	Methylene Blue Active Substances (MBAS)	SM	TAL IRV
SM5210B	BOD, 5 Day	SM	TAL IRV
A-01-R	Isotopic Uranium (Alpha Spectrometry)	DOE	TAL SL
Chronic Cerio, EPA/821-R02-013	Bioassay	NONE	ABC

Protocol References:

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

DOE = U.S. Department of Energy

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",

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

TAL-DEN = TestAmerica Laboratories, Denver, Facility Standard Operating Procedure.

Laboratory References:

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

TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

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

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-1

Client Sample ID: Outfall002_20160205_Comp

Lab Sample ID: 440-137347-1

Date Collected: 02/05/16 08:55

Matrix: Water

Date Received: 02/05/16 19:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B SIM		1	10 mL	10 mL	311648	02/16/16 19:47	GK	TAL IRV
Total/NA	Prep	625			1060 mL	2 mL	310608	02/09/16 15:30	IVA	TAL IRV
Total/NA	Analysis	625		1	1060 mL	2 mL	311513	02/16/16 00:38	VS	TAL IRV
Total/NA	Prep	608			1045 mL	2 mL	310364	02/09/16 11:35	FTD	TAL IRV
Total/NA	Analysis	608 PCB LL		1	1045 mL	2 mL	311149	02/13/16 19:36	CN	TAL IRV
Total/NA	Prep	608			1045 mL	2 mL	310364	02/09/16 11:35	FTD	TAL IRV
Total/NA	Analysis	608 Pesticides		1	1045 mL	2 mL	312116	02/18/16 19:23	CN	TAL IRV
Total/NA	Analysis	218.6		1	10 mL		310202	02/05/16 21:10	YZ	TAL IRV
Total/NA	Analysis	300.0		1	5 mL	1.0 mL	310262	02/06/16 16:57	NTN	TAL IRV
Total/NA	Analysis	300.0		1	5 mL	1.0 mL	310263	02/06/16 16:57	NTN	TAL IRV
Total/NA	Analysis	300.0	DL	20	5 mL	1.0 mL	310262	02/06/16 17:11	NTN	TAL IRV
Total/NA	Analysis	300.0	DL	20	5 mL	1.0 mL	310263	02/06/16 17:11	NTN	TAL IRV
Total/NA	Analysis	314.0		1	1 mL		314717	03/02/16 11:57	CH	TAL IRV
Total/NA	Analysis	NO3NO2 Calc		1			314812	03/02/16 11:43	TN	TAL IRV
Total/NA	Prep	1613B			1063.3 mL	20 uL	100382	02/15/16 09:29	DXD	TAL SAC
Total/NA	Analysis	1613B		1	1063.3 mL	20 uL	101275	02/21/16 19:00	KSS	TAL SAC
Total Recoverable	Prep	200.2			25 mL	25 mL	314214	02/29/16 10:08	ND	TAL IRV
Total Recoverable	Analysis	200.7 Rev 4.4		1	25 mL	25 mL	314705	03/01/16 19:53	EN	TAL IRV
Total Recoverable	Prep	200.2			25 mL	25 mL	314214	02/29/16 10:08	ND	TAL IRV
Total Recoverable	Analysis	200.7 Rev 4.4		1	25 mL	25 mL	314801	03/02/16 10:10	EN	TAL IRV
Total Recoverable	Prep	200.2			25 mL	25 mL	311632	02/16/16 12:33	Q1N	TAL IRV
Total Recoverable	Analysis	200.8		1	25 mL	25 mL	313278	02/24/16 03:13	DP	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	314349	02/29/16 16:21	DB	TAL IRV
Total/NA	Analysis	245.1		1	20 mL	20 mL	314591	03/01/16 00:34	DB	TAL IRV
Total/NA	Analysis	180.1		1		20 mL	310370	02/08/16 15:09	ST	TAL IRV
Total/NA	Prep	Filtration			30 mL	30 mL	313831	02/17/16 18:46	MPS	TAL DEN
Total/NA	Analysis	DV-WC-0077		1	30 mL	30 mL	314901	02/26/16 01:41	MPS	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	310632	02/10/16 14:00	XL	TAL IRV
Total/NA	Analysis	SM 2540D		1	1000 mL	1000 mL	310940	02/11/16 20:00	MMH	TAL IRV
Total/NA	Prep	Distill/CN			50 mL	50 mL	310599	02/10/16 12:25	SN	TAL IRV
Total/NA	Analysis	SM 4500 CN E		1	50 mL	50 mL	310693	02/10/16 18:19	SN	TAL IRV
Total/NA	Prep	SM 4500 NH3 B			50 mL	50 mL	313776	02/26/16 03:00	YZ	TAL IRV
Total/NA	Analysis	SM 4500 NH3 D		1	50 mL	50 mL	313806	02/26/16 05:00	YZ	TAL IRV
Total/NA	Analysis	SM 5310B		1		100 mL	314718	03/02/16 06:25	YZ	TAL IRV
Total/NA	Analysis	SM 5540C		1	100 mL	100 mL	310282	02/06/16 15:32	EN	TAL IRV
Total/NA	Analysis	SM5210B		1		300 mL	310283	02/06/16 08:50	MMH	TAL IRV
Total/NA	Prep	ExtChrom			500.06 mL	1.0 mL	237126	02/18/16 11:31	SCB	TAL SL
Total/NA	Analysis	A-01-R		1	500.06 mL		237919	02/25/16 17:19	ALD	TAL SL

TestAmerica Irvine

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-1

Client Sample ID: Outfall002_20160205_Comp_F

Lab Sample ID: 440-137347-2

Date Collected: 02/05/16 08:55

Matrix: Water

Date Received: 02/05/16 19:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			150 mL	150 mL	311598	02/16/16 10:06	K1E	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	314468	03/01/16 09:17	Q1N	TAL IRV
Dissolved	Analysis	200.7 Rev 4.4		1	25 mL	25 mL	314707	03/01/16 21:34	TK	TAL IRV
Dissolved	Filtration	FILTRATION			150 mL	150 mL	311598	02/16/16 10:06	K1E	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	314468	03/01/16 09:17	Q1N	TAL IRV
Dissolved	Analysis	200.7 Rev 4.4		1	25 mL	25 mL	315729	03/02/16 10:32	EN	TAL IRV
Dissolved	Filtration	FILTRATION			150 mL	150 mL	311598	02/16/16 10:06	K1E	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	314469	03/01/16 09:19	Q1N	TAL IRV
Dissolved	Analysis	200.8		1	25 mL	25 mL	315056	03/03/16 03:38	RC	TAL IRV
Dissolved	Filtration	FILTRATION			150 mL	150 mL	311598	02/16/16 10:06	K1E	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	326002	04/22/16 15:06	K1E	TAL IRV
Dissolved	Analysis	200.8		1	25 mL	25 mL	326321	04/25/16 11:55	RC	TAL IRV
Dissolved	Filtration	FILTRATION			150 mL	150 mL	311598	02/16/16 10:06	K1E	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	314363	02/29/16 16:48	DB	TAL IRV
Dissolved	Analysis	245.1		1	20 mL	20 mL	314591	03/01/16 01:22	DB	TAL IRV

Laboratory References:

- ABC = Aquatic Bioassay - Ventura, CA, 29 North Olive Street, Ventura, CA 93001
- TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100
- TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022
- TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600
- TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-1

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-311648/2
Matrix: Water
Analysis Batch: 311648

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	ND		2.0	0.50	ug/L			02/16/16 15:01	1
Surrogate	%Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	84		80 - 120					02/16/16 15:01	1

Lab Sample ID: LCS 440-311648/3
Matrix: Water
Analysis Batch: 311648

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	10.0	9.33		ug/L		93	70 - 125
Surrogate	%Recovery	LCS Qualifier	Limits				%Rec. Limits
Dibromofluoromethane (Surr)	84		80 - 120				

Lab Sample ID: 440-137347-1 MS
Matrix: Water
Analysis Batch: 311648

Client Sample ID: Outfall002_20160205_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	ND		10.0	9.11		ug/L		91	70 - 130
Surrogate	%Recovery	MS Qualifier	Limits				%Rec. Limits		
Dibromofluoromethane (Surr)	94		80 - 120						

Lab Sample ID: 440-137347-1 MSD
Matrix: Water
Analysis Batch: 311648

Client Sample ID: Outfall002_20160205_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,4-Dioxane	ND		10.0	9.79		ug/L		98	70 - 130	7	30
Surrogate	%Recovery	MSD Qualifier	Limits				%Rec. Limits	RPD	RPD Limit		
Dibromofluoromethane (Surr)	93		80 - 120								

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

Lab Sample ID: MB 440-310608/1-A
Matrix: Water
Analysis Batch: 311203

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 310608

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		0.500	0.200	ug/L		02/09/16 15:30	02/13/16 19:38	1
Acenaphthylene	ND		0.500	0.200	ug/L		02/09/16 15:30	02/13/16 19:38	1
Anthracene	ND		0.500	0.200	ug/L		02/09/16 15:30	02/13/16 19:38	1
Benzidine	ND		10.0	5.00	ug/L		02/09/16 15:30	02/13/16 19:38	1
Benzo[a]anthracene	ND		5.00	2.00	ug/L		02/09/16 15:30	02/13/16 19:38	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-1

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

Lab Sample ID: MB 440-310608/1-A
Matrix: Water
Analysis Batch: 311203

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 310608

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Benzo[b]fluoranthene	ND		2.00	1.00	ug/L		02/09/16 15:30	02/13/16 19:38	1
Benzo[k]fluoranthene	ND		0.500	0.250	ug/L		02/09/16 15:30	02/13/16 19:38	1
Benzo[a]pyrene	ND		2.00	0.500	ug/L		02/09/16 15:30	02/13/16 19:38	1
Bis(2-chloroethoxy)methane	ND		0.500	0.200	ug/L		02/09/16 15:30	02/13/16 19:38	1
Bis(2-chloroethyl)ether	ND		0.500	0.200	ug/L		02/09/16 15:30	02/13/16 19:38	1
Bis(2-ethylhexyl) phthalate	ND		5.00	2.00	ug/L		02/09/16 15:30	02/13/16 19:38	1
4-Bromophenyl phenyl ether	ND		1.00	0.500	ug/L		02/09/16 15:30	02/13/16 19:38	1
Butyl benzyl phthalate	ND		5.00	2.00	ug/L		02/09/16 15:30	02/13/16 19:38	1
4-Chloro-3-methylphenol	ND		2.00	0.200	ug/L		02/09/16 15:30	02/13/16 19:38	1
2-Chloronaphthalene	ND		0.500	0.200	ug/L		02/09/16 15:30	02/13/16 19:38	1
2-Chlorophenol	ND		1.00	0.500	ug/L		02/09/16 15:30	02/13/16 19:38	1
4-Chlorophenyl phenyl ether	ND		0.500	0.200	ug/L		02/09/16 15:30	02/13/16 19:38	1
Chrysene	ND		0.500	0.200	ug/L		02/09/16 15:30	02/13/16 19:38	1
Dibenz(a,h)anthracene	ND		0.500	0.250	ug/L		02/09/16 15:30	02/13/16 19:38	1
Di-n-butyl phthalate	ND		2.00	1.00	ug/L		02/09/16 15:30	02/13/16 19:38	1
1,2-Dichlorobenzene	ND		0.500	0.200	ug/L		02/09/16 15:30	02/13/16 19:38	1
1,3-Dichlorobenzene	ND		0.500	0.200	ug/L		02/09/16 15:30	02/13/16 19:38	1
1,4-Dichlorobenzene	ND		0.500	0.200	ug/L		02/09/16 15:30	02/13/16 19:38	1
3,3'-Dichlorobenzidine	ND		5.00	2.00	ug/L		02/09/16 15:30	02/13/16 19:38	1
2,4-Dichlorophenol	ND		2.00	1.00	ug/L		02/09/16 15:30	02/13/16 19:38	1
Diethyl phthalate	ND		1.00	0.500	ug/L		02/09/16 15:30	02/13/16 19:38	1
2,4-Dimethylphenol	ND		2.00	1.00	ug/L		02/09/16 15:30	02/13/16 19:38	1
Dimethyl phthalate	ND		0.500	0.250	ug/L		02/09/16 15:30	02/13/16 19:38	1
4,6-Dinitro-2-methylphenol	ND		5.00	2.00	ug/L		02/09/16 15:30	02/13/16 19:38	1
2,4-Dinitrophenol	ND		5.00	2.00	ug/L		02/09/16 15:30	02/13/16 19:38	1
2,4-Dinitrotoluene	ND		5.00	2.00	ug/L		02/09/16 15:30	02/13/16 19:38	1
2,6-Dinitrotoluene	ND		5.00	2.00	ug/L		02/09/16 15:30	02/13/16 19:38	1
Di-n-octyl phthalate	ND		5.00	2.00	ug/L		02/09/16 15:30	02/13/16 19:38	1
1,2-Diphenylhydrazine(as Azobenzene)	ND		1.00	0.500	ug/L		02/09/16 15:30	02/13/16 19:38	1
Fluoranthene	ND		0.500	0.200	ug/L		02/09/16 15:30	02/13/16 19:38	1
Fluorene	ND		0.500	0.200	ug/L		02/09/16 15:30	02/13/16 19:38	1
Hexachlorobenzene	ND		1.00	0.500	ug/L		02/09/16 15:30	02/13/16 19:38	1
Hexachlorobutadiene	ND		2.00	0.500	ug/L		02/09/16 15:30	02/13/16 19:38	1
Hexachloroethane	ND		3.00	0.500	ug/L		02/09/16 15:30	02/13/16 19:38	1
Hexachlorocyclopentadiene	ND		5.00	2.00	ug/L		02/09/16 15:30	02/13/16 19:38	1
Indeno[1,2,3-cd]pyrene	ND		2.00	1.00	ug/L		02/09/16 15:30	02/13/16 19:38	1
Isophorone	ND		1.00	0.500	ug/L		02/09/16 15:30	02/13/16 19:38	1
Naphthalene	ND		1.00	0.500	ug/L		02/09/16 15:30	02/13/16 19:38	1
Nitrobenzene	ND		1.00	0.500	ug/L		02/09/16 15:30	02/13/16 19:38	1
2-Nitrophenol	ND		2.00	1.00	ug/L		02/09/16 15:30	02/13/16 19:38	1
4-Nitrophenol	ND		5.00	2.00	ug/L		02/09/16 15:30	02/13/16 19:38	1
N-Nitrosodimethylamine	ND		2.00	1.00	ug/L		02/09/16 15:30	02/13/16 19:38	1
N-Nitrosodiphenylamine	ND		1.00	0.500	ug/L		02/09/16 15:30	02/13/16 19:38	1
N-Nitrosodi-n-propylamine	ND		2.00	1.00	ug/L		02/09/16 15:30	02/13/16 19:38	1
Pentachlorophenol	ND		2.00	1.00	ug/L		02/09/16 15:30	02/13/16 19:38	1
Phenanthrene	ND		0.500	0.200	ug/L		02/09/16 15:30	02/13/16 19:38	1
Phenol	ND		1.00	0.500	ug/L		02/09/16 15:30	02/13/16 19:38	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-1

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

Lab Sample ID: MB 440-310608/1-A
Matrix: Water
Analysis Batch: 311203

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 310608

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Pyrene	ND		0.500	0.200	ug/L		02/09/16 15:30	02/13/16 19:38	1
1,2,4-Trichlorobenzene	ND		1.00	0.500	ug/L		02/09/16 15:30	02/13/16 19:38	1
2,4,6-Trichlorophenol	ND		1.00	0.500	ug/L		02/09/16 15:30	02/13/16 19:38	1
Benzo[g,h,i]perylene	ND		5.00	2.00	ug/L		02/09/16 15:30	02/13/16 19:38	1
bis (2-chloroisopropyl) ether	ND		0.500	0.200	ug/L		02/09/16 15:30	02/13/16 19:38	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl	83		50 - 120	02/09/16 15:30	02/13/16 19:38	1
2-Fluorophenol	57		30 - 120	02/09/16 15:30	02/13/16 19:38	1
2,4,6-Tribromophenol	66		40 - 120	02/09/16 15:30	02/13/16 19:38	1
Nitrobenzene-d5	77		45 - 120	02/09/16 15:30	02/13/16 19:38	1
Terphenyl-d14	91		37 - 144	02/09/16 15:30	02/13/16 19:38	1
Phenol-d6	64		35 - 120	02/09/16 15:30	02/13/16 19:38	1

Lab Sample ID: LCS 440-310608/2-A
Matrix: Water
Analysis Batch: 311203

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 310608

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Acenaphthene	10.0	7.079		ug/L		71	47 - 145
Acenaphthylene	10.0	7.314		ug/L		73	33 - 145
Anthracene	10.0	7.245		ug/L		72	27 - 133
Benzidine	10.0	ND		ug/L		18	5 - 66
Benzo[a]anthracene	10.0	7.960		ug/L		80	33 - 143
Benzo[b]fluoranthene	10.0	8.045		ug/L		80	24 - 150
Benzo[k]fluoranthene	10.0	7.791		ug/L		78	11 - 150
Benzo[a]pyrene	10.0	7.590		ug/L		76	17 - 150
Bis(2-chloroethoxy)methane	10.0	7.041		ug/L		70	33 - 150
Bis(2-chloroethyl)ether	10.0	7.014		ug/L		70	12 - 150
Bis(2-ethylhexyl) phthalate	10.0	8.248		ug/L		82	10 - 150
4-Bromophenyl phenyl ether	10.0	7.534		ug/L		75	53 - 127
Butyl benzyl phthalate	10.0	8.436		ug/L		84	10 - 150
4-Chloro-3-methylphenol	10.0	7.601		ug/L		76	22 - 147
2-Chloronaphthalene	10.0	6.842		ug/L		68	60 - 118
2-Chlorophenol	10.0	6.656		ug/L		67	23 - 134
4-Chlorophenyl phenyl ether	10.0	6.825		ug/L		68	25 - 150
Chrysene	10.0	7.744		ug/L		77	17 - 150
Dibenz(a,h)anthracene	10.0	8.145		ug/L		81	10 - 150
Di-n-butyl phthalate	10.0	8.212		ug/L		82	10 - 118
1,2-Dichlorobenzene	10.0	6.393		ug/L		64	32 - 129
1,3-Dichlorobenzene	10.0	6.184		ug/L		62	10 - 150
1,4-Dichlorobenzene	10.0	6.201		ug/L		62	20 - 124
3,3'-Dichlorobenzidine	10.0	9.910		ug/L		99	10 - 150
2,4-Dichlorophenol	10.0	6.903		ug/L		69	39 - 135
Diethyl phthalate	10.0	7.532		ug/L		75	10 - 114
2,4-Dimethylphenol	10.0	5.907		ug/L		59	32 - 119
Dimethyl phthalate	10.0	7.260		ug/L		73	10 - 112
4,6-Dinitro-2-methylphenol	20.0	16.02		ug/L		80	10 - 150

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-1

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

Lab Sample ID: LCS 440-310608/2-A
Matrix: Water
Analysis Batch: 311203

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 310608

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2,4-Dinitrophenol	20.0	14.34		ug/L		72	50 - 150
2,4-Dinitrotoluene	10.0	7.772		ug/L		78	39 - 139
2,6-Dinitrotoluene	10.0	7.572		ug/L		76	50 - 150
Di-n-octyl phthalate	10.0	8.338		ug/L		83	10 - 146
1,2-Diphenylhydrazine(as Azobenzene)	10.1	7.054		ug/L		70	47 - 116
Fluoranthene	10.0	7.894		ug/L		79	26 - 137
Fluorene	10.0	7.171		ug/L		72	59 - 121
Hexachlorobenzene	10.0	7.468		ug/L		75	10 - 150
Hexachlorobutadiene	10.0	5.099		ug/L		51	24 - 116
Hexachloroethane	10.0	5.799		ug/L		58	40 - 113
Hexachlorocyclopentadiene	10.0	ND		ug/L		17	10 - 67
Indeno[1,2,3-cd]pyrene	10.0	9.619		ug/L		96	10 - 150
Isophorone	10.0	7.701		ug/L		77	21 - 150
Naphthalene	10.0	6.894		ug/L		69	21 - 133
Nitrobenzene	10.0	6.917		ug/L		69	35 - 150
2-Nitrophenol	10.0	7.473		ug/L		75	29 - 150
4-Nitrophenol	20.0	13.11		ug/L		66	10 - 132
N-Nitrosodimethylamine	10.0	7.097		ug/L		71	26 - 117
N-Nitrosodiphenylamine	20.0	14.27		ug/L		71	54 - 110
N-Nitrosodi-n-propylamine	10.0	6.917		ug/L		69	10 - 150
Pentachlorophenol	20.0	11.87		ug/L		59	14 - 150
Phenanthrene	10.0	7.627		ug/L		76	54 - 120
Phenol	10.0	6.568		ug/L		66	10 - 112
Pyrene	10.0	8.084		ug/L		81	52 - 115
1,2,4-Trichlorobenzene	10.0	6.277		ug/L		63	44 - 142
2,4,6-Trichlorophenol	10.0	7.407		ug/L		74	37 - 144
Benzo[g,h,i]perylene	10.0	11.31		ug/L		113	10 - 150
bis (2-chloroisopropyl) ether	10.0	6.770		ug/L		68	47 - 103

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
2-Fluorobiphenyl	70		50 - 120
2-Fluorophenol	49		30 - 120
2,4,6-Tribromophenol	78		40 - 120
Nitrobenzene-d5	71		45 - 120
Terphenyl-d14	82		37 - 144
Phenol-d6	64		35 - 120

Lab Sample ID: 440-137347-1 MS
Matrix: Water
Analysis Batch: 311513

Client Sample ID: Outfall002_20160205_Comp
Prep Type: Total/NA
Prep Batch: 310608

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Acenaphthene	ND		9.48	6.952		ug/L		73	47 - 145
Acenaphthylene	ND		9.48	7.028		ug/L		74	33 - 145
Anthracene	ND		9.48	6.858		ug/L		72	27 - 133
Benzidine	ND		9.48	ND	LN	ug/L		0	30 - 160
Benzo[a]anthracene	ND		9.48	7.831		ug/L		83	33 - 143

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-1

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

Lab Sample ID: 440-137347-1 MS

Matrix: Water

Analysis Batch: 311513

Client Sample ID: Outfall002_20160205_Comp

Prep Type: Total/NA

Prep Batch: 310608

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec. Limits
	Result	Qualifier	Added	Result	Qualifier				
Benzo[b]fluoranthene	ND		9.48	7.692		ug/L		81	24 - 150
Benzo[k]fluoranthene	ND		9.48	7.193		ug/L		76	11 - 150
Benzo[a]pyrene	ND		9.48	6.853		ug/L		72	17 - 150
Bis(2-chloroethoxy)methane	ND		9.48	7.228		ug/L		76	33 - 150
Bis(2-chloroethyl)ether	ND		9.48	6.914		ug/L		73	12 - 150
Bis(2-ethylhexyl) phthalate	ND		9.48	8.928		ug/L		94	10 - 150
4-Bromophenyl phenyl ether	ND		9.48	7.701		ug/L		81	53 - 127
Butyl benzyl phthalate	ND		9.48	9.172		ug/L		97	10 - 150
4-Chloro-3-methylphenol	ND		9.48	10.10		ug/L		107	22 - 147
2-Chloronaphthalene	ND		9.48	6.235		ug/L		66	60 - 118
2-Chlorophenol	ND		9.48	6.827		ug/L		72	23 - 134
4-Chlorophenyl phenyl ether	ND		9.48	6.474		ug/L		68	25 - 150
Chrysene	ND		9.48	7.402		ug/L		78	17 - 150
Dibenz(a,h)anthracene	ND		9.48	7.283		ug/L		77	10 - 150
Di-n-butyl phthalate	ND		9.48	8.717		ug/L		92	10 - 118
1,2-Dichlorobenzene	ND		9.48	7.038		ug/L		74	32 - 129
1,3-Dichlorobenzene	ND		9.48	5.621		ug/L		59	10 - 150
1,4-Dichlorobenzene	ND		9.48	5.720		ug/L		60	20 - 124
3,3'-Dichlorobenzidine	ND		9.48	ND	LN	ug/L		0	10 - 150
2,4-Dichlorophenol	ND		9.48	7.536		ug/L		80	39 - 135
Diethyl phthalate	ND		9.48	6.998		ug/L		74	10 - 114
2,4-Dimethylphenol	ND		9.48	7.643		ug/L		81	32 - 119
Dimethyl phthalate	ND		9.48	6.797		ug/L		72	10 - 112
4,6-Dinitro-2-methylphenol	ND		19.0	20.99		ug/L		111	10 - 150
2,4-Dinitrophenol	ND		19.0	21.06		ug/L		111	50 - 150
2,4-Dinitrotoluene	ND		9.48	8.389		ug/L		88	39 - 139
2,6-Dinitrotoluene	ND		9.48	7.696		ug/L		81	50 - 150
Di-n-octyl phthalate	ND		9.48	9.324		ug/L		98	10 - 146
1,2-Diphenylhydrazine(as Azobenzene)	ND		9.57	5.290	LN	ug/L		55	60 - 120
Fluoranthene	ND		9.48	8.261		ug/L		87	26 - 137
Fluorene	ND		9.48	6.608		ug/L		70	59 - 121
Hexachlorobenzene	ND		9.48	7.369		ug/L		78	10 - 150
Hexachlorobutadiene	ND		9.48	5.014		ug/L		53	24 - 116
Hexachloroethane	ND		9.48	5.473		ug/L		58	40 - 113
Hexachlorocyclopentadiene	ND		9.48	2.505	J,DX	ug/L		26	25 - 120
Indeno[1,2,3-cd]pyrene	ND		9.48	8.757		ug/L		92	10 - 150
Isophorone	ND		9.48	8.983		ug/L		95	21 - 150
Naphthalene	ND		9.48	6.572		ug/L		69	21 - 133
Nitrobenzene	ND		9.48	11.01		ug/L		116	35 - 150
2-Nitrophenol	ND		9.48	8.958		ug/L		95	29 - 150
4-Nitrophenol	ND		19.0	18.22		ug/L		96	10 - 132
N-Nitrosodimethylamine	ND		9.48	7.638		ug/L		81	12 - 123
N-Nitrosodiphenylamine	ND		19.0	7.331	LN	ug/L		39	60 - 120
N-Nitrosodi-n-propylamine	ND		9.48	7.638		ug/L		81	10 - 150
Pentachlorophenol	ND		19.0	16.85		ug/L		89	14 - 150
Phenanthrene	ND		9.48	7.720		ug/L		81	54 - 120
Phenol	ND		9.48	6.488		ug/L		68	10 - 112

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-1

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

Lab Sample ID: 440-137347-1 MS

Matrix: Water

Analysis Batch: 311513

Client Sample ID: Outfall002_20160205_Comp

Prep Type: Total/NA

Prep Batch: 310608

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Pyrene	ND		9.48	8.236		ug/L		87	52 - 115
1,2,4-Trichlorobenzene	ND		9.48	5.752		ug/L		61	44 - 142
2,4,6-Trichlorophenol	ND		9.48	8.362		ug/L		88	37 - 144
Benzo[g,h,i]perylene	ND		9.48	10.08		ug/L		106	10 - 150
bis (2-chloroisopropyl) ether	ND		9.48	6.915		ug/L		73	45 - 120

Surrogate	MS %Recovery	MS Qualifier	Limits
2-Fluorobiphenyl	67		50 - 120
2-Fluorophenol	64		30 - 120
2,4,6-Tribromophenol	91		40 - 120
Nitrobenzene-d5	80		45 - 120
Terphenyl-d14	85		37 - 144
Phenol-d6	71		35 - 120

Lab Sample ID: 440-137347-1 MSD

Matrix: Water

Analysis Batch: 311513

Client Sample ID: Outfall002_20160205_Comp

Prep Type: Total/NA

Prep Batch: 310608

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Acenaphthene	ND		9.48	6.518		ug/L		69	47 - 145	6	25
Acenaphthylene	ND		9.48	6.667		ug/L		70	33 - 145	5	25
Anthracene	ND		9.48	6.454		ug/L		68	27 - 133	6	25
Benzidine	ND		9.48	ND	LN	ug/L		0	30 - 160	NC	35
Benzo[a]anthracene	ND		9.48	7.335		ug/L		77	33 - 143	7	20
Benzo[b]fluoranthene	ND		9.48	7.291		ug/L		77	24 - 150	5	25
Benzo[k]fluoranthene	ND		9.48	7.085		ug/L		75	11 - 150	2	30
Benzo[a]pyrene	ND		9.48	6.855		ug/L		72	17 - 150	0	25
Bis(2-chloroethoxy)methane	ND		9.48	7.026		ug/L		74	33 - 150	3	25
Bis(2-chloroethyl)ether	ND		9.48	6.611		ug/L		70	12 - 150	4	25
Bis(2-ethylhexyl) phthalate	ND		9.48	8.302		ug/L		88	10 - 150	7	25
4-Bromophenyl phenyl ether	ND		9.48	7.066		ug/L		75	53 - 127	9	25
Butyl benzyl phthalate	ND		9.48	8.549		ug/L		90	10 - 150	7	25
4-Chloro-3-methylphenol	ND		9.48	9.543		ug/L		101	22 - 147	6	25
2-Chloronaphthalene	ND		9.48	6.015		ug/L		63	60 - 118	4	20
2-Chlorophenol	ND		9.48	6.478		ug/L		68	23 - 134	5	25
4-Chlorophenyl phenyl ether	ND		9.48	5.998		ug/L		63	25 - 150	8	25
Chrysene	ND		9.48	6.930		ug/L		73	17 - 150	7	25
Dibenz(a,h)anthracene	ND		9.48	6.688		ug/L		71	10 - 150	9	30
Di-n-butyl phthalate	ND		9.48	8.129		ug/L		86	10 - 118	7	25
1,2-Dichlorobenzene	ND		9.48	5.799		ug/L		61	32 - 129	19	25
1,3-Dichlorobenzene	ND		9.48	5.293		ug/L		56	10 - 150	6	25
1,4-Dichlorobenzene	ND		9.48	5.501		ug/L		58	20 - 124	4	25
3,3'-Dichlorobenzidine	ND		9.48	ND	LN	ug/L		0	10 - 150	NC	25
2,4-Dichlorophenol	ND		9.48	7.149		ug/L		75	39 - 135	5	25
Diethyl phthalate	ND		9.48	6.632		ug/L		70	10 - 114	5	30
2,4-Dimethylphenol	ND		9.48	7.152		ug/L		75	32 - 119	7	25
Dimethyl phthalate	ND		9.48	6.382		ug/L		67	10 - 112	6	30
4,6-Dinitro-2-methylphenol	ND		19.0	20.57		ug/L		108	10 - 150	2	25

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-1

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

Lab Sample ID: 440-137347-1 MSD

Client Sample ID: Outfall002_20160205_Comp

Matrix: Water

Prep Type: Total/NA

Analysis Batch: 311513

Prep Batch: 310608

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier				Limits		
2,4-Dinitrophenol	ND		19.0	18.50		ug/L		98	50 - 150	13	25
2,4-Dinitrotoluene	ND		9.48	8.051		ug/L		85	39 - 139	4	25
2,6-Dinitrotoluene	ND		9.48	7.519		ug/L		79	50 - 150	2	20
Di-n-octyl phthalate	ND		9.48	8.766		ug/L		92	10 - 146	6	20
1,2-Diphenylhydrazine(as Azobenzene)	ND		9.57	5.889		ug/L		62	60 - 120	11	25
Fluoranthene	ND		9.48	7.647		ug/L		81	26 - 137	8	25
Fluorene	ND		9.48	6.009		ug/L		63	59 - 121	10	25
Hexachlorobenzene	ND		9.48	6.955		ug/L		73	10 - 150	6	25
Hexachlorobutadiene	ND		9.48	4.783		ug/L		50	24 - 116	5	25
Hexachloroethane	ND		9.48	5.233		ug/L		55	40 - 113	4	25
Hexachlorocyclopentadiene	ND		9.48	2.294	J,DX LN	ug/L		24	25 - 120	9	30
Indeno[1,2,3-cd]pyrene	ND		9.48	7.900		ug/L		83	10 - 150	10	30
Isophorone	ND		9.48	8.576		ug/L		90	21 - 150	5	25
Naphthalene	ND		9.48	6.303		ug/L		66	21 - 133	4	25
Nitrobenzene	ND		9.48	8.016	BA	ug/L		85	35 - 150	32	25
2-Nitrophenol	ND		9.48	8.695		ug/L		92	29 - 150	3	25
4-Nitrophenol	ND		19.0	17.73		ug/L		94	10 - 132	3	30
N-Nitrosodimethylamine	ND		9.48	6.744		ug/L		71	12 - 123	12	35
N-Nitrosodiphenylamine	ND		19.0	13.60	BA	ug/L		72	60 - 120	60	25
N-Nitrosodi-n-propylamine	ND		9.48	7.280		ug/L		77	10 - 150	5	25
Pentachlorophenol	ND		19.0	15.85		ug/L		84	14 - 150	6	25
Phenanthrene	ND		9.48	7.261		ug/L		77	54 - 120	6	25
Phenol	ND		9.48	6.337		ug/L		67	10 - 112	2	25
Pyrene	ND		9.48	7.807		ug/L		82	52 - 115	5	25
1,2,4-Trichlorobenzene	ND		9.48	5.540		ug/L		58	44 - 142	4	20
2,4,6-Trichlorophenol	ND		9.48	8.029		ug/L		85	37 - 144	4	30
Benzo[g,h,i]perylene	ND		9.48	9.451		ug/L		100	10 - 150	6	30
bis (2-chloroisopropyl) ether	ND		9.48	6.436		ug/L		68	45 - 120	7	25

Surrogate	MSD	MSD	Limits
	%Recovery	Qualifier	
2-Fluorobiphenyl	62		50 - 120
2-Fluorophenol	60		30 - 120
2,4,6-Tribromophenol	85		40 - 120
Nitrobenzene-d5	77		45 - 120
Terphenyl-d14	79		37 - 144
Phenol-d6	66		35 - 120

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

Lab Sample ID: MB 440-310364/1-A

Client Sample ID: Method Blank

Matrix: Water

Prep Type: Total/NA

Analysis Batch: 311149

Prep Batch: 310364

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Aroclor 1016	ND		0.50	0.25	ug/L		02/09/16 11:35	02/13/16 18:41	1
Aroclor 1221	ND		0.50	0.25	ug/L		02/09/16 11:35	02/13/16 18:41	1
Aroclor 1232	ND		0.50	0.25	ug/L		02/09/16 11:35	02/13/16 18:41	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-1

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

Lab Sample ID: MB 440-310364/1-A
Matrix: Water
Analysis Batch: 311149

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 310364

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor 1242	ND		0.50	0.25	ug/L		02/09/16 11:35	02/13/16 18:41	1
Aroclor 1248	ND		0.50	0.25	ug/L		02/09/16 11:35	02/13/16 18:41	1
Aroclor 1254	ND		0.50	0.25	ug/L		02/09/16 11:35	02/13/16 18:41	1
Aroclor 1260	ND		0.50	0.25	ug/L		02/09/16 11:35	02/13/16 18:41	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl (Surr)	50		29 - 115	02/09/16 11:35	02/13/16 18:41	1

Lab Sample ID: LCS 440-310364/5-A
Matrix: Water
Analysis Batch: 311149

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 310364

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aroclor 1016	4.00	2.98		ug/L		74	50 - 115
Aroclor 1260	4.00	2.71		ug/L		68	10 - 127

Surrogate	LCS %Recovery	LCS Qualifier	Limits
DCB Decachlorobiphenyl (Surr)	62	PI	29 - 115

Lab Sample ID: 440-137347-1 MS
Matrix: Water
Analysis Batch: 311149

Client Sample ID: Outfall002_20160205_Comp
Prep Type: Total/NA
Prep Batch: 310364

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Aroclor 1016	ND		3.85	3.34		ug/L		87	45 - 120
Aroclor 1260	ND		3.85	2.99		ug/L		78	55 - 125

Surrogate	MS %Recovery	MS Qualifier	Limits
DCB Decachlorobiphenyl (Surr)	69		29 - 115

Lab Sample ID: 440-137347-1 MSD
Matrix: Water
Analysis Batch: 311149

Client Sample ID: Outfall002_20160205_Comp
Prep Type: Total/NA
Prep Batch: 310364

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aroclor 1016	ND		3.81	3.39		ug/L		89	45 - 120	1	30
Aroclor 1260	ND		3.81	3.15		ug/L		83	55 - 125	5	25

Surrogate	MSD %Recovery	MSD Qualifier	Limits
DCB Decachlorobiphenyl (Surr)	73		29 - 115

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-1

Method: 608 Pesticides - Organochlorine Pesticides Low level

Lab Sample ID: MB 440-310364/1-A
Matrix: Water
Analysis Batch: 312116

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 310364

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	ND		0.0050	0.0015	ug/L		02/09/16 11:35	02/18/16 16:50	1
alpha-BHC	ND		0.0050	0.0025	ug/L		02/09/16 11:35	02/18/16 16:50	1
beta-BHC	ND		0.010	0.0040	ug/L		02/09/16 11:35	02/18/16 16:50	1
Chlordane (technical)	ND		0.10	0.080	ug/L		02/09/16 11:35	02/18/16 16:50	1
delta-BHC	ND		0.0050	0.0035	ug/L		02/09/16 11:35	02/18/16 16:50	1
Dieldrin	ND		0.0050	0.0020	ug/L		02/09/16 11:35	02/18/16 16:50	1
Endosulfan I	ND		0.0050	0.0030	ug/L		02/09/16 11:35	02/18/16 16:50	1
Endosulfan II	ND		0.0050	0.0020	ug/L		02/09/16 11:35	02/18/16 16:50	1
Endosulfan sulfate	ND		0.010	0.0030	ug/L		02/09/16 11:35	02/18/16 16:50	1
Endrin	ND		0.0050	0.0020	ug/L		02/09/16 11:35	02/18/16 16:50	1
Endrin aldehyde	ND		0.010	0.0020	ug/L		02/09/16 11:35	02/18/16 16:50	1
gamma-BHC (Lindane)	ND		0.010	0.0030	ug/L		02/09/16 11:35	02/18/16 16:50	1
Heptachlor	ND		0.010	0.0030	ug/L		02/09/16 11:35	02/18/16 16:50	1
Heptachlor epoxide	ND		0.0050	0.0025	ug/L		02/09/16 11:35	02/18/16 16:50	1
Toxaphene	ND		0.50	0.25	ug/L		02/09/16 11:35	02/18/16 16:50	1
4,4'-DDD	ND		0.0050	0.0040	ug/L		02/09/16 11:35	02/18/16 16:50	1
4,4'-DDE	ND		0.0050	0.0030	ug/L		02/09/16 11:35	02/18/16 16:50	1
4,4'-DDT	ND		0.010	0.0040	ug/L		02/09/16 11:35	02/18/16 16:50	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	65		10 - 150	02/09/16 11:35	02/18/16 16:50	1

Lab Sample ID: LCS 440-310364/2-A
Matrix: Water
Analysis Batch: 312116

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 310364

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Aldrin	0.250	0.223		ug/L		89	19 - 115
alpha-BHC	0.250	0.204		ug/L		82	42 - 115
beta-BHC	0.250	0.198		ug/L		79	48 - 115
delta-BHC	0.250	0.190		ug/L		76	48 - 115
Dieldrin	0.250	0.249		ug/L		99	51 - 117
Endosulfan I	0.250	0.246		ug/L		98	47 - 117
Endosulfan II	0.250	0.243		ug/L		97	32 - 128
Endosulfan sulfate	0.250	0.220		ug/L		88	50 - 117
Endrin	0.250	0.239		ug/L		95	51 - 120
Endrin aldehyde	0.250	0.204		ug/L		82	49 - 115
gamma-BHC (Lindane)	0.250	0.202		ug/L		81	43 - 115
Heptachlor	0.250	0.253		ug/L		101	44 - 115
Heptachlor epoxide	0.250	0.237		ug/L		95	35 - 131
4,4'-DDD	0.250	0.220		ug/L		88	53 - 126
4,4'-DDE	0.250	0.224		ug/L		89	48 - 115
4,4'-DDT	0.250	0.214		ug/L		86	10 - 150

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Tetrachloro-m-xylene	76		10 - 150

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-1

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

Lab Sample ID: 440-137347-1 MS
Matrix: Water
Analysis Batch: 312116

Client Sample ID: Outfall002_20160205_Comp
Prep Type: Total/NA
Prep Batch: 310364

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	Limits
	Result	Qualifier		Result	Qualifier				
Aldrin	ND		0.243	0.226		ug/L		93	35 - 120
alpha-BHC	ND		0.243	0.195		ug/L		80	40 - 120
beta-BHC	ND		0.243	0.182		ug/L		75	50 - 120
delta-BHC	ND		0.243	0.192		ug/L		79	50 - 120
Dieldrin	ND		0.243	0.235		ug/L		97	50 - 120
Endosulfan I	ND		0.243	0.230		ug/L		95	50 - 120
Endosulfan II	ND		0.243	0.238		ug/L		98	50 - 125
Endosulfan sulfate	ND		0.243	0.227		ug/L		93	55 - 125
Endrin	ND		0.243	0.245		ug/L		101	50 - 120
Endrin aldehyde	ND		0.243	0.203		ug/L		84	45 - 125
gamma-BHC (Lindane)	ND		0.243	0.200		ug/L		82	40 - 120
Heptachlor	ND		0.243	0.240		ug/L		99	40 - 120
Heptachlor epoxide	ND		0.243	0.225		ug/L		93	50 - 120
4,4'-DDD	ND		0.243	0.225		ug/L		93	50 - 125
4,4'-DDE	ND		0.243	0.210		ug/L		87	45 - 125
4,4'-DDT	ND		0.243	0.222		ug/L		92	50 - 125
Surrogate		MS		MS					
		%Recovery		Qualifier					Limits
<i>Tetrachloro-m-xylene</i>		76							10 - 150

Lab Sample ID: 440-137347-1 MSD
Matrix: Water
Analysis Batch: 312116

Client Sample ID: Outfall002_20160205_Comp
Prep Type: Total/NA
Prep Batch: 310364

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	Limits	RPD	Limit
	Result	Qualifier		Result	Qualifier						
Aldrin	ND		0.238	0.221		ug/L		93	35 - 120	2	30
alpha-BHC	ND		0.238	0.187		ug/L		78	40 - 120	4	30
beta-BHC	ND		0.238	0.171		ug/L		72	50 - 120	6	30
delta-BHC	ND		0.238	0.183		ug/L		77	50 - 120	5	30
Dieldrin	ND		0.238	0.225		ug/L		95	50 - 120	4	30
Endosulfan I	ND		0.238	0.221		ug/L		93	50 - 120	4	30
Endosulfan II	ND		0.238	0.226		ug/L		95	50 - 125	5	30
Endosulfan sulfate	ND		0.238	0.213		ug/L		89	55 - 125	6	30
Endrin	ND		0.238	0.235		ug/L		99	50 - 120	4	30
Endrin aldehyde	ND		0.238	0.197		ug/L		83	45 - 125	3	30
gamma-BHC (Lindane)	ND		0.238	0.190		ug/L		80	40 - 120	5	30
Heptachlor	ND		0.238	0.235		ug/L		99	40 - 120	2	30
Heptachlor epoxide	ND		0.238	0.218		ug/L		92	50 - 120	3	30
4,4'-DDD	ND		0.238	0.214		ug/L		90	50 - 125	5	30
4,4'-DDE	ND		0.238	0.202		ug/L		85	45 - 125	4	30
4,4'-DDT	ND		0.238	0.216		ug/L		91	50 - 125	3	30
Surrogate		MSD		MSD							
		%Recovery		Qualifier							
<i>Tetrachloro-m-xylene</i>		76									

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-1

Method: 218.6 - Chromium, Hexavalent (Ion Chromatography)

Lab Sample ID: MB 440-310202/7
Matrix: Water
Analysis Batch: 310202

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	ND		1.0	0.25	ug/L			02/05/16 07:46	1

Lab Sample ID: LCS 440-310202/6
Matrix: Water
Analysis Batch: 310202

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chromium, hexavalent	50.0	48.8		ug/L		98	90 - 110

Lab Sample ID: MRL 440-310202/8
Matrix: Water
Analysis Batch: 310202

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

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chromium, hexavalent	1.00	1.14		ug/L		114	50 - 150

Lab Sample ID: 440-137347-1 MS
Matrix: Water
Analysis Batch: 310202

Client Sample ID: Outfall002_20160205_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chromium, hexavalent	ND		50.0	50.2		ug/L		100	90 - 110

Lab Sample ID: 440-137347-1 MSD
Matrix: Water
Analysis Batch: 310202

Client Sample ID: Outfall002_20160205_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
Chromium, hexavalent	ND		50.0	50.8		ug/L		102	90 - 110	1	10

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 440-310262/4
Matrix: Water
Analysis Batch: 310262

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	ND		0.11	0.055	mg/L			02/06/16 11:37	1
Nitrite as N	ND		0.15	0.070	mg/L			02/06/16 11:37	1

Lab Sample ID: LCS 440-310262/2
Matrix: Water
Analysis Batch: 310262

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	1.13	1.22		mg/L		108	90 - 110
Nitrite as N	1.52	1.58		mg/L		104	90 - 110

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: MB 440-310263/4
Matrix: Water
Analysis Batch: 310263

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50	0.25	mg/L			02/06/16 11:37	1
Fluoride	ND		0.50	0.25	mg/L			02/06/16 11:37	1
Sulfate	ND		0.50	0.25	mg/L			02/06/16 11:37	1

Lab Sample ID: LCS 440-310263/2
Matrix: Water
Analysis Batch: 310263

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	5.00	5.17		mg/L		103	90 - 110
Fluoride	5.00	4.56		mg/L		91	90 - 110
Sulfate	5.00	5.25		mg/L		105	90 - 110

Method: 300.0 - Anions, Ion Chromatography - DL

Lab Sample ID: 440-137347-1 MS
Matrix: Water
Analysis Batch: 310262

Client Sample ID: Outfall002_20160205_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N - DL	ND		11.3	10.4		mg/L		92	80 - 120
Nitrite as N - DL	ND		15.2	14.7		mg/L		97	80 - 120

Lab Sample ID: 440-137347-1 MSD
Matrix: Water
Analysis Batch: 310262

Client Sample ID: Outfall002_20160205_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Nitrate as N - DL	ND		11.3	10.3		mg/L		91	80 - 120	2	20
Nitrite as N - DL	ND		15.2	14.2		mg/L		93	80 - 120	4	20

Lab Sample ID: 440-137347-1 MS
Matrix: Water
Analysis Batch: 310263

Client Sample ID: Outfall002_20160205_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride - DL	19		50.0	59.7		mg/L		80	80 - 120
Fluoride - DL	ND		50.0	42.5		mg/L		85	80 - 120
Sulfate - DL	240		50.0	268	BB	mg/L		62	80 - 120

Lab Sample ID: 440-137347-1 MSD
Matrix: Water
Analysis Batch: 310263

Client Sample ID: Outfall002_20160205_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride - DL	19		50.0	58.7	LN	mg/L		79	80 - 120	2	20
Fluoride - DL	ND		50.0	42.0		mg/L		84	80 - 120	1	20
Sulfate - DL	240		50.0	264	BB	mg/L		54	80 - 120	2	20

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-1

Method: 314.0 - Perchlorate (IC)

Lab Sample ID: MB 440-314717/3
Matrix: Water
Analysis Batch: 314717

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		4.0	0.95	ug/L			03/02/16 08:38	1

Lab Sample ID: LCS 440-314717/2
Matrix: Water
Analysis Batch: 314717

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	25.0	26.4		ug/L		106	85 - 115

Lab Sample ID: MRL 440-314717/5
Matrix: Water
Analysis Batch: 314717

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

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	4.00	4.09		ug/L		102	75 - 125

Lab Sample ID: 440-137347-1 MS
Matrix: Water
Analysis Batch: 314717

Client Sample ID: Outfall002_20160205_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	ND		25.0	29.1		ug/L		116	80 - 120

Lab Sample ID: 440-137347-1 MSD
Matrix: Water
Analysis Batch: 314717

Client Sample ID: Outfall002_20160205_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perchlorate	ND		25.0	30.1		ug/L		120	80 - 120	3	20

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

Lab Sample ID: MB 320-100382/1-A
Matrix: Water
Analysis Batch: 101275

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 100382

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000010	0.0000008	ug/L		02/15/16 09:29	02/21/16 18:17	1
2,3,7,8-TCDF	ND		0.000010	0.0000009	ug/L		02/15/16 09:29	02/21/16 18:17	1
1,2,3,7,8-PeCDD	ND		0.000050	0.0000016	ug/L		02/15/16 09:29	02/21/16 18:17	1
1,2,3,7,8-PeCDF	ND		0.000050	0.0000016	ug/L		02/15/16 09:29	02/21/16 18:17	1
2,3,4,7,8-PeCDF	ND		0.000050	0.0000018	ug/L		02/15/16 09:29	02/21/16 18:17	1
1,2,3,4,7,8-HxCDD	ND		0.000050	0.0000009	ug/L		02/15/16 09:29	02/21/16 18:17	1
1,2,3,6,7,8-HxCDD	ND		0.000050	0.0000008	ug/L		02/15/16 09:29	02/21/16 18:17	1
1,2,3,7,8,9-HxCDD	0.00000155	J,DX q	0.000050	0.0000007	ug/L		02/15/16 09:29	02/21/16 18:17	1

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QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-1

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

Lab Sample ID: MB 320-100382/1-A
Matrix: Water
Analysis Batch: 101275

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 100382

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,7,8-HxCDF	ND		0.000050	0.000012	ug/L		02/15/16 09:29	02/21/16 18:17	1
1,2,3,6,7,8-HxCDF	ND		0.000050	0.000009	ug/L		02/15/16 09:29	02/21/16 18:17	1
1,2,3,7,8,9-HxCDF	0.0000160	J,DX	0.000050	0.000007	ug/L		02/15/16 09:29	02/21/16 18:17	1
2,3,4,6,7,8-HxCDF	0.0000117	J,DX	0.000050	0.000007	ug/L		02/15/16 09:29	02/21/16 18:17	1
1,2,3,4,6,7,8-HpCDD	0.0000445	J,DX	0.000050	0.000011	ug/L		02/15/16 09:29	02/21/16 18:17	1
1,2,3,4,6,7,8-HpCDF	0.0000315	J,DX	0.000050	0.000008	ug/L		02/15/16 09:29	02/21/16 18:17	1
1,2,3,4,7,8,9-HpCDF	ND		0.000050	0.000013	ug/L		02/15/16 09:29	02/21/16 18:17	1
OCDD	0.0000201	J,DX	0.00010	0.000012	ug/L		02/15/16 09:29	02/21/16 18:17	1
OCDF	0.00000688	J,DX	0.00010	0.000013	ug/L		02/15/16 09:29	02/21/16 18:17	1
Total TCDD	ND		0.000010	0.000008	ug/L		02/15/16 09:29	02/21/16 18:17	1
Total TCDF	ND		0.000010	0.000009	ug/L		02/15/16 09:29	02/21/16 18:17	1
Total PeCDD	ND		0.000050	0.000016	ug/L		02/15/16 09:29	02/21/16 18:17	1
Total PeCDF	ND		0.000050	0.000016	ug/L		02/15/16 09:29	02/21/16 18:17	1
Total HxCDD	0.0000155	J,DX q	0.000050	0.000008	ug/L		02/15/16 09:29	02/21/16 18:17	1
Total HxCDF	0.0000277	J,DX	0.000050	0.000009	ug/L		02/15/16 09:29	02/21/16 18:17	1
Total HpCDD	0.0000707	J,DX q	0.000050	0.000011	ug/L		02/15/16 09:29	02/21/16 18:17	1
Total HpCDF	0.0000315	J,DX	0.000050	0.000011	ug/L		02/15/16 09:29	02/21/16 18:17	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	61		25 - 164	02/15/16 09:29	02/21/16 18:17	1
13C-2,3,7,8-TCDF	62		24 - 169	02/15/16 09:29	02/21/16 18:17	1
13C-1,2,3,7,8-PeCDD	56		25 - 181	02/15/16 09:29	02/21/16 18:17	1
13C-1,2,3,7,8-PeCDF	61		24 - 185	02/15/16 09:29	02/21/16 18:17	1
13C-2,3,4,7,8-PeCDF	61		21 - 178	02/15/16 09:29	02/21/16 18:17	1
13C-1,2,3,4,7,8-HxCDD	60		32 - 141	02/15/16 09:29	02/21/16 18:17	1
13C-1,2,3,6,7,8-HxCDD	68		28 - 130	02/15/16 09:29	02/21/16 18:17	1
13C-1,2,3,4,7,8-HxCDF	59		26 - 152	02/15/16 09:29	02/21/16 18:17	1
13C-1,2,3,6,7,8-HxCDF	60		26 - 123	02/15/16 09:29	02/21/16 18:17	1
13C-1,2,3,7,8,9-HxCDF	60		29 - 147	02/15/16 09:29	02/21/16 18:17	1
13C-2,3,4,6,7,8-HxCDF	62		28 - 136	02/15/16 09:29	02/21/16 18:17	1
13C-1,2,3,4,6,7,8-HpCDD	64		23 - 140	02/15/16 09:29	02/21/16 18:17	1
13C-1,2,3,4,6,7,8-HpCDF	62		28 - 143	02/15/16 09:29	02/21/16 18:17	1
13C-1,2,3,4,7,8,9-HpCDF	63		26 - 138	02/15/16 09:29	02/21/16 18:17	1
13C-OCDD	60		17 - 157	02/15/16 09:29	02/21/16 18:17	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	97		35 - 197	02/15/16 09:29	02/21/16 18:17	1

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-1

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

Lab Sample ID: LCS 320-100382/2-A
Matrix: Water
Analysis Batch: 101275

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 100382

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
2,3,7,8-TCDD	0.000200	0.000261		ug/L		131	67 - 158
2,3,7,8-TCDF	0.000200	0.000264		ug/L		132	75 - 158
1,2,3,7,8-PeCDD	0.00100	0.00126		ug/L		126	70 - 142
1,2,3,7,8-PeCDF	0.00100	0.00112		ug/L		112	80 - 134
2,3,4,7,8-PeCDF	0.00100	0.00116		ug/L		116	68 - 160
1,2,3,4,7,8-HxCDD	0.00100	0.00109		ug/L		109	70 - 164
1,2,3,6,7,8-HxCDD	0.00100	0.000970		ug/L		97	76 - 134
1,2,3,7,8,9-HxCDD	0.00100	0.000948	MB	ug/L		95	64 - 162
1,2,3,4,7,8-HxCDF	0.00100	0.00108		ug/L		108	72 - 134
1,2,3,6,7,8-HxCDF	0.00100	0.00109		ug/L		109	84 - 130
1,2,3,7,8,9-HxCDF	0.00100	0.00107	MB	ug/L		107	78 - 130
2,3,4,6,7,8-HxCDF	0.00100	0.00109	MB	ug/L		109	70 - 156
1,2,3,4,6,7,8-HpCDD	0.00100	0.000914	MB	ug/L		91	70 - 140
1,2,3,4,6,7,8-HpCDF	0.00100	0.000863	MB	ug/L		86	82 - 122
1,2,3,4,7,8,9-HpCDF	0.00100	0.000906		ug/L		91	78 - 138
OCDD	0.00200	0.00158	MB	ug/L		79	78 - 144
OCDF	0.00200	0.00158	MB	ug/L		79	63 - 170

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C-2,3,7,8-TCDD	55		20 - 175
13C-2,3,7,8-TCDF	57		22 - 152
13C-1,2,3,7,8-PeCDD	53		21 - 227
13C-1,2,3,7,8-PeCDF	59		21 - 192
13C-2,3,4,7,8-PeCDF	57		13 - 328
13C-1,2,3,4,7,8-HxCDD	58		21 - 193
13C-1,2,3,6,7,8-HxCDD	67		25 - 163
13C-1,2,3,4,7,8-HxCDF	59		19 - 202
13C-1,2,3,6,7,8-HxCDF	59		21 - 159
13C-1,2,3,7,8,9-HxCDF	59		17 - 205
13C-2,3,4,6,7,8-HxCDF	61		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	64		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	62		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	60		20 - 186
13C-OCDD	59		13 - 199

Surrogate	LCS %Recovery	LCS Qualifier	Limits
37Cl4-2,3,7,8-TCDD	96		35 - 197

Lab Sample ID: LCSD 320-100382/3-A
Matrix: Water
Analysis Batch: 101275

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 100382

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
2,3,7,8-TCDD	0.000200	0.000254		ug/L		127	67 - 158	3	50
2,3,7,8-TCDF	0.000200	0.000255		ug/L		127	75 - 158	4	50
1,2,3,7,8-PeCDD	0.00100	0.00129		ug/L		129	70 - 142	2	50
1,2,3,7,8-PeCDF	0.00100	0.00115		ug/L		115	80 - 134	3	50
2,3,4,7,8-PeCDF	0.00100	0.00118		ug/L		118	68 - 160	2	50

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-1

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

Lab Sample ID: LCSD 320-100382/3-A
Matrix: Water
Analysis Batch: 101275

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 100382

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,3,4,7,8-HxCDD	0.00100	0.00107		ug/L		107	70 - 164	2	50
1,2,3,6,7,8-HxCDD	0.00100	0.00112		ug/L		112	76 - 134	14	50
1,2,3,7,8,9-HxCDD	0.00100	0.00100	MB	ug/L		100	64 - 162	5	50
1,2,3,4,7,8-HxCDF	0.00100	0.00113		ug/L		113	72 - 134	4	50
1,2,3,6,7,8-HxCDF	0.00100	0.00113		ug/L		113	84 - 130	3	50
1,2,3,7,8,9-HxCDF	0.00100	0.00113	MB	ug/L		113	78 - 130	6	50
2,3,4,6,7,8-HxCDF	0.00100	0.00113	MB	ug/L		113	70 - 156	3	50
1,2,3,4,6,7,8-HpCDD	0.00100	0.00104	MB	ug/L		104	70 - 140	13	50
1,2,3,4,6,7,8-HpCDF	0.00100	0.000974	MB	ug/L		97	82 - 122	12	50
1,2,3,4,7,8,9-HpCDF	0.00100	0.000999		ug/L		100	78 - 138	10	50
OCDD	0.00200	0.00181	MB	ug/L		91	78 - 144	14	50
OCDF	0.00200	0.00179	MB	ug/L		90	63 - 170	13	50

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	LCSD Limits
13C-2,3,7,8-TCDD	64		20 - 175
13C-2,3,7,8-TCDF	66		22 - 152
13C-1,2,3,7,8-PeCDD	59		21 - 227
13C-1,2,3,7,8-PeCDF	66		21 - 192
13C-2,3,4,7,8-PeCDF	64		13 - 328
13C-1,2,3,4,7,8-HxCDD	66		21 - 193
13C-1,2,3,6,7,8-HxCDD	69		25 - 163
13C-1,2,3,4,7,8-HxCDF	64		19 - 202
13C-1,2,3,6,7,8-HxCDF	65		21 - 159
13C-1,2,3,7,8,9-HxCDF	66		17 - 205
13C-2,3,4,6,7,8-HxCDF	67		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	73		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	67		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	70		20 - 186
13C-OCDD	73		13 - 199

Surrogate	LCSD %Recovery	LCSD Qualifier	LCSD Limits
37Cl4-2,3,7,8-TCDD	95		35 - 197

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: MB 440-314214/1-A
Matrix: Water
Analysis Batch: 314705

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 314214

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		10	5.0	ug/L		02/29/16 10:08	03/01/16 19:39	1
Barium	ND		0.010	0.0050	mg/L		02/29/16 10:08	03/01/16 19:39	1
Beryllium	ND		2.0	1.0	ug/L		02/29/16 10:08	03/01/16 19:39	1
Cobalt	ND		10	2.5	ug/L		02/29/16 10:08	03/01/16 19:39	1
Chromium	ND		5.0	2.5	ug/L		02/29/16 10:08	03/01/16 19:39	1
Iron	ND		0.040	0.010	mg/L		02/29/16 10:08	03/01/16 19:39	1
Manganese	ND		20	10	ug/L		02/29/16 10:08	03/01/16 19:39	1
Nickel	ND		10	5.0	ug/L		02/29/16 10:08	03/01/16 19:39	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-1

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

Lab Sample ID: MB 440-314214/1-A
Matrix: Water
Analysis Batch: 314705

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 314214

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Vanadium	ND		10	5.0	ug/L		02/29/16 10:08	03/01/16 19:39	1
Zinc	ND		20	10	ug/L		02/29/16 10:08	03/01/16 19:39	1
Silver	ND		10	5.0	ug/L		02/29/16 10:08	03/01/16 19:39	1
Hardness, as CaCO3	179	J,DX	330	170	ug/L		02/29/16 10:08	03/01/16 19:39	1

Lab Sample ID: MB 440-314214/1-A
Matrix: Water
Analysis Batch: 314801

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 314214

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Boron	ND		0.050	0.010	mg/L		02/29/16 10:08	03/02/16 09:45	1

Lab Sample ID: LCS 440-314214/2-A
Matrix: Water
Analysis Batch: 314705

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 314214

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec.	Limits
Barium	0.500	0.515		mg/L		103	85 - 115	
Beryllium	500	507		ug/L		101	85 - 115	
Calcium	2.50	2.60		mg/L		104	85 - 115	
Cobalt	500	541		ug/L		108	85 - 115	
Chromium	500	529		ug/L		106	85 - 115	
Iron	0.500	0.522		mg/L		104	85 - 115	
Magnesium	2.50	2.59		mg/L		103	85 - 115	
Manganese	500	510		ug/L		102	85 - 115	
Nickel	500	531		ug/L		106	85 - 115	
Vanadium	500	498		ug/L		100	85 - 115	
Zinc	500	503		ug/L		101	85 - 115	
Silver	250	255		ug/L		102	85 - 115	

Lab Sample ID: LCS 440-314214/2-A
Matrix: Water
Analysis Batch: 314801

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 314214

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec.	Limits

Lab Sample ID: 440-137200-I-3-C MS
Matrix: Water
Analysis Batch: 314705

Client Sample ID: Matrix Spike
Prep Type: Total Recoverable
Prep Batch: 314214

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec.	Limits
Barium	0.014		0.500	0.538		mg/L		105	70 - 130	
Beryllium	ND		500	524		ug/L		105	70 - 130	
Calcium	82	MB	2.50	81.7	BB	mg/L		-10	70 - 130	
Cobalt	ND		500	550		ug/L		110	70 - 130	
Chromium	ND		500	542		ug/L		108	70 - 130	

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-1

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

Lab Sample ID: 440-137200-I-3-C MS
Matrix: Water
Analysis Batch: 314705

Client Sample ID: Matrix Spike
Prep Type: Total Recoverable
Prep Batch: 314214

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec.	Limits
	Result	Qualifier	Added	Result	Qualifier					
Iron	ND		0.500	0.534		mg/L		107		70 - 130
Magnesium	11		2.50	12.9	BB	mg/L		96		70 - 130
Manganese	ND		500	523		ug/L		105		70 - 130
Nickel	ND		500	541		ug/L		108		70 - 130
Vanadium	ND		500	515		ug/L		103		70 - 130
Zinc	ND		500	521		ug/L		104		70 - 130
Silver	ND		250	270		ug/L		108		70 - 130

Lab Sample ID: 440-137200-I-3-C MS
Matrix: Water
Analysis Batch: 314801

Client Sample ID: Matrix Spike
Prep Type: Total Recoverable
Prep Batch: 314214

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec.	Limits
	Result	Qualifier	Added	Result	Qualifier					
Boron	0.052		0.500	0.573		mg/L		104		70 - 130

Lab Sample ID: 440-137200-I-3-D MSD
Matrix: Water
Analysis Batch: 314705

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total Recoverable
Prep Batch: 314214

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	Limits	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier							
Arsenic	ND		500	533		ug/L		107		70 - 130	1	20
Barium	0.014		0.500	0.538		mg/L		105		70 - 130	0	20
Beryllium	ND		500	514		ug/L		103		70 - 130	2	20
Calcium	82	MB	2.50	82.1	BB	mg/L		9		70 - 130	1	20
Cobalt	ND		500	548		ug/L		110		70 - 130	0	20
Chromium	ND		500	540		ug/L		108		70 - 130	0	20
Iron	ND		0.500	0.542		mg/L		108		70 - 130	2	20
Magnesium	11		2.50	12.9	BB	mg/L		97		70 - 130	0	20
Manganese	ND		500	522		ug/L		104		70 - 130	0	20
Nickel	ND		500	539		ug/L		108		70 - 130	0	20
Vanadium	ND		500	513		ug/L		103		70 - 130	0	20
Zinc	ND		500	580		ug/L		116		70 - 130	11	20
Silver	ND		250	266		ug/L		106		70 - 130	2	20

Lab Sample ID: 440-137200-I-3-D MSD
Matrix: Water
Analysis Batch: 314801

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total Recoverable
Prep Batch: 314214

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	Limits	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier							
Boron	0.052		0.500	0.575		mg/L		105		70 - 130	0	20

Lab Sample ID: MB 440-311598/1-E
Matrix: Water
Analysis Batch: 314707

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 314468

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Arsenic	ND		10	5.0	ug/L		03/01/16 09:17	03/01/16 21:29	1
Barium	ND		0.010	0.0050	mg/L		03/01/16 09:17	03/01/16 21:29	1
Beryllium	ND		2.0	1.0	ug/L		03/01/16 09:17	03/01/16 21:29	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-1

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

Lab Sample ID: MB 440-311598/1-E
Matrix: Water
Analysis Batch: 314707

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 314468

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	ND		10	2.5	ug/L		03/01/16 09:17	03/01/16 21:29	1
Chromium	ND		5.0	2.5	ug/L		03/01/16 09:17	03/01/16 21:29	1
Iron	0.0158	J,DX	0.040	0.010	mg/L		03/01/16 09:17	03/01/16 21:29	1
Manganese	ND		20	10	ug/L		03/01/16 09:17	03/01/16 21:29	1
Nickel	ND		10	5.0	ug/L		03/01/16 09:17	03/01/16 21:29	1
Vanadium	ND		10	5.0	ug/L		03/01/16 09:17	03/01/16 21:29	1
Zinc	ND		20	10	ug/L		03/01/16 09:17	03/01/16 21:29	1
Silver	ND		10	5.0	ug/L		03/01/16 09:17	03/01/16 21:29	1
Hardness, as CaCO3	ND		330	170	ug/L		03/01/16 09:17	03/01/16 21:29	1

Lab Sample ID: MB 440-311598/1-E
Matrix: Water
Analysis Batch: 315729

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 314468

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.050	0.010	mg/L		03/01/16 09:17	03/02/16 10:26	1

Lab Sample ID: LCS 440-311598/2-E
Matrix: Water
Analysis Batch: 314707

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 314468

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Arsenic	500	533		ug/L		107	85 - 115
Barium	0.500	0.531		mg/L		106	85 - 115
Beryllium	500	521		ug/L		104	85 - 115
Calcium	2.50	2.67		mg/L		107	85 - 115
Cobalt	500	563		ug/L		113	85 - 115
Chromium	500	548		ug/L		110	85 - 115
Iron	0.500	0.542		mg/L		108	85 - 115
Magnesium	2.50	2.69		mg/L		108	85 - 115
Manganese	500	521		ug/L		104	85 - 115
Nickel	500	553		ug/L		111	85 - 115
Vanadium	500	514		ug/L		103	85 - 115
Zinc	500	518		ug/L		104	85 - 115
Silver	250	266		ug/L		106	85 - 115

Lab Sample ID: LCS 440-311598/2-E
Matrix: Water
Analysis Batch: 315729

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 314468

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Boron	0.500	0.520		mg/L		104	85 - 115

Lab Sample ID: 440-137347-2 MS
Matrix: Water
Analysis Batch: 314707

Client Sample ID: Outfall002_20160205_Comp_F
Prep Type: Dissolved
Prep Batch: 314468

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Arsenic	ND		500	508		ug/L		102	70 - 130

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-1

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

Lab Sample ID: 440-137347-2 MS
Matrix: Water
Analysis Batch: 314707

Client Sample ID: Outfall002_20160205_Comp_F
Prep Type: Dissolved
Prep Batch: 314468

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec.	Limits
	Result	Qualifier	Added	Result	Qualifier					
Barium	0.048		0.500	0.550		mg/L		100		70 - 130
Beryllium	ND		500	499		ug/L		100		70 - 130
Calcium	74		2.50	74.2	BB	mg/L		-3		70 - 130
Cobalt	ND		500	523		ug/L		105		70 - 130
Chromium	ND		500	512		ug/L		102		70 - 130
Iron	ND		0.500	0.512		mg/L		102		70 - 130
Magnesium	13		2.50	15.2	BB	mg/L		82		70 - 130
Manganese	ND		500	494		ug/L		99		70 - 130
Nickel	ND		500	515		ug/L		103		70 - 130
Vanadium	ND		500	496		ug/L		99		70 - 130
Zinc	ND		500	500		ug/L		100		70 - 130
Silver	ND		250	257		ug/L		103		70 - 130

Lab Sample ID: 440-137347-2 MS
Matrix: Water
Analysis Batch: 315729

Client Sample ID: Outfall002_20160205_Comp_F
Prep Type: Dissolved
Prep Batch: 314468

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec.	Limits
	Result	Qualifier	Added	Result	Qualifier					
Boron	0.056		0.500	0.566		mg/L		102		70 - 130

Lab Sample ID: 440-137347-2 MSD
Matrix: Water
Analysis Batch: 314707

Client Sample ID: Outfall002_20160205_Comp_F
Prep Type: Dissolved
Prep Batch: 314468

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	Limits	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier							
Arsenic	ND		500	530		ug/L		106		70 - 130	4	20
Barium	0.048		0.500	0.573		mg/L		105		70 - 130	4	20
Beryllium	ND		500	519		ug/L		104		70 - 130	4	20
Calcium	74		2.50	76.6	BB	mg/L		94		70 - 130	3	20
Cobalt	ND		500	551		ug/L		110		70 - 130	5	20
Chromium	ND		500	540		ug/L		108		70 - 130	5	20
Iron	ND		0.500	0.535		mg/L		107		70 - 130	4	20
Magnesium	13		2.50	15.8	BB	mg/L		104		70 - 130	4	20
Manganese	ND		500	514		ug/L		103		70 - 130	4	20
Nickel	ND		500	544		ug/L		109		70 - 130	5	20
Vanadium	ND		500	515		ug/L		103		70 - 130	4	20
Zinc	ND		500	519		ug/L		104		70 - 130	4	20
Silver	ND		250	268		ug/L		107		70 - 130	4	20

Lab Sample ID: 440-137347-2 MSD
Matrix: Water
Analysis Batch: 315729

Client Sample ID: Outfall002_20160205_Comp_F
Prep Type: Dissolved
Prep Batch: 314468

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	Limits	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier							
Boron	0.056		0.500	0.581		mg/L		105		70 - 130	3	20

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-1

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 440-311632/1-A
Matrix: Water
Analysis Batch: 313278

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 311632

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil	Fac
Cadmium	ND		1.0	0.25	ug/L		02/16/16 12:33	02/24/16 02:59		1
Copper	ND		2.0	0.50	ug/L		02/16/16 12:33	02/24/16 02:59		1
Lead	ND		1.0	0.50	ug/L		02/16/16 12:33	02/24/16 02:59		1
Antimony	ND		2.0	0.50	ug/L		02/16/16 12:33	02/24/16 02:59		1
Selenium	ND		2.0	0.50	ug/L		02/16/16 12:33	02/24/16 02:59		1
Thallium	ND		1.0	0.50	ug/L		02/16/16 12:33	02/24/16 02:59		1
Silver	ND		1.0	0.50	ug/L		02/16/16 12:33	02/24/16 02:59		1

Lab Sample ID: LCS 440-311632/2-A
Matrix: Water
Analysis Batch: 313278

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 311632

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Cadmium	80.0	76.9		ug/L		96	85 - 115
Copper	80.0	78.6		ug/L		98	85 - 115
Lead	80.0	77.6		ug/L		97	85 - 115
Antimony	80.0	78.8		ug/L		98	85 - 115
Selenium	80.0	77.3		ug/L		97	85 - 115
Thallium	80.0	76.8		ug/L		96	85 - 115
Silver	80.0	77.7		ug/L		97	85 - 115

Lab Sample ID: 440-137200-I-3-A MS
Matrix: Water
Analysis Batch: 313278

Client Sample ID: Matrix Spike
Prep Type: Total Recoverable
Prep Batch: 311632

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Cadmium	ND		80.0	76.4		ug/L		95	70 - 130
Copper	0.94	J,DX	80.0	75.0		ug/L		93	70 - 130
Lead	ND		80.0	74.1		ug/L		93	70 - 130
Antimony	0.84	J,DX	80.0	83.7		ug/L		104	70 - 130
Selenium	ND		80.0	76.3		ug/L		95	70 - 130
Thallium	ND		80.0	74.4		ug/L		93	70 - 130
Silver	ND		80.0	76.6		ug/L		96	70 - 130

Lab Sample ID: 440-137200-I-3-B MSD
Matrix: Water
Analysis Batch: 313278

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total Recoverable
Prep Batch: 311632

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	RPD Limit
Cadmium	ND		80.0	75.1		ug/L		94	70 - 130	2	20
Copper	0.94	J,DX	80.0	75.0		ug/L		93	70 - 130	0	20
Lead	ND		80.0	72.7		ug/L		91	70 - 130	2	20
Antimony	0.84	J,DX	80.0	83.7		ug/L		104	70 - 130	0	20
Selenium	ND		80.0	77.3		ug/L		97	70 - 130	1	20
Thallium	ND		80.0	74.0		ug/L		93	70 - 130	1	20
Silver	ND		80.0	76.6		ug/L		96	70 - 130	0	20

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-1

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

Lab Sample ID: MB 440-311598/1-F
Matrix: Water
Analysis Batch: 315056

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 314469

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		03/01/16 09:19	03/03/16 03:32	1
Copper	0.890	J,DX	2.0	0.50	ug/L		03/01/16 09:19	03/03/16 03:32	1
Lead	ND		1.0	0.50	ug/L		03/01/16 09:19	03/03/16 03:32	1
Antimony	ND		2.0	0.50	ug/L		03/01/16 09:19	03/03/16 03:32	1
Selenium	ND		2.0	0.50	ug/L		03/01/16 09:19	03/03/16 03:32	1
Thallium	ND		1.0	0.50	ug/L		03/01/16 09:19	03/03/16 03:32	1

Lab Sample ID: LCS 440-311598/2-F
Matrix: Water
Analysis Batch: 315056

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 314469

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Cadmium	80.0	79.9		ug/L		100	85 - 115
Copper	80.0	80.7		ug/L		101	85 - 115
Lead	80.0	82.8		ug/L		103	85 - 115
Antimony	80.0	79.4		ug/L		99	85 - 115
Selenium	80.0	80.3		ug/L		100	85 - 115
Thallium	80.0	82.5		ug/L		103	85 - 115

Lab Sample ID: 440-137347-2 MS
Matrix: Water
Analysis Batch: 315056

Client Sample ID: Outfall002_20160205_Comp_F
Prep Type: Dissolved
Prep Batch: 314469

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Cadmium	ND	QP	80.0	75.1		ug/L		94	70 - 130
Copper	1.8	J,DX QP	80.0	76.4		ug/L		93	70 - 130
Lead	ND	QP	80.0	77.3		ug/L		97	70 - 130
Antimony	0.59	J,DX QP	80.0	79.0		ug/L		98	70 - 130
Selenium	ND	QP	80.0	76.3		ug/L		95	70 - 130
Thallium	ND	QP	80.0	79.2		ug/L		99	70 - 130

Lab Sample ID: 440-137347-2 MSD
Matrix: Water
Analysis Batch: 315056

Client Sample ID: Outfall002_20160205_Comp_F
Prep Type: Dissolved
Prep Batch: 314469

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Cadmium	ND	QP	80.0	77.4		ug/L		97	70 - 130	3	20
Copper	1.8	J,DX QP	80.0	78.8		ug/L		96	70 - 130	3	20
Lead	ND	QP	80.0	80.2		ug/L		100	70 - 130	4	20
Antimony	0.59	J,DX QP	80.0	80.3		ug/L		100	70 - 130	2	20
Selenium	ND	QP	80.0	78.1		ug/L		98	70 - 130	2	20
Thallium	ND	QP	80.0	80.7		ug/L		101	70 - 130	2	20

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-1

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

Lab Sample ID: MB 440-311598/1-G
Matrix: Water
Analysis Batch: 326321

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 326002

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	ND		1.0	0.50	ug/L		04/22/16 15:06	04/25/16 11:50	1

Lab Sample ID: LCS 440-311598/2-G
Matrix: Water
Analysis Batch: 326321

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 326002

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Silver	80.0	78.1		ug/L		98	85 - 115

Lab Sample ID: 440-137347-2 MS
Matrix: Water
Analysis Batch: 326321

Client Sample ID: Outfall002_20160205_Comp_F
Prep Type: Dissolved
Prep Batch: 326002

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Silver	ND		80.0	75.5		ug/L		94	70 - 130

Lab Sample ID: 440-137347-2 MSD
Matrix: Water
Analysis Batch: 326321

Client Sample ID: Outfall002_20160205_Comp_F
Prep Type: Dissolved
Prep Batch: 326002

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Silver	ND		80.0	75.0		ug/L		94	70 - 130	1	20

Method: 245.1 - Mercury (CVAA)

Lab Sample ID: MB 440-314349/1-A
Matrix: Water
Analysis Batch: 314591

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 314349

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		02/29/16 16:17	03/01/16 00:18	1

Lab Sample ID: LCS 440-314349/2-A
Matrix: Water
Analysis Batch: 314591

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 314349

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	8.00	8.21		ug/L		103	85 - 115

Lab Sample ID: MB 440-311598/1-D
Matrix: Water
Analysis Batch: 314591

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 314363

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		02/29/16 16:48	03/01/16 01:17	1

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QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-1

Method: 245.1 - Mercury (CVAA) (Continued)

Lab Sample ID: LCS 440-311598/2-D
Matrix: Water
Analysis Batch: 314591

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 314363

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	8.00	8.40		ug/L		105	85 - 115

Lab Sample ID: 440-137347-2 MS
Matrix: Water
Analysis Batch: 314591

Client Sample ID: Outfall002_20160205_Comp_F
Prep Type: Dissolved
Prep Batch: 314363

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Mercury	ND	QP	8.00	7.86		ug/L		98	70 - 130

Lab Sample ID: 440-137347-2 MSD
Matrix: Water
Analysis Batch: 314591

Client Sample ID: Outfall002_20160205_Comp_F
Prep Type: Dissolved
Prep Batch: 314363

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	ND	QP	8.00	8.17		ug/L		102	70 - 130	4	20

Method: 180.1 - Turbidity, Nephelometric

Lab Sample ID: MB 440-310370/5
Matrix: Water
Analysis Batch: 310370

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Turbidity	ND		0.10	0.040	NTU			02/08/16 15:09	1

Lab Sample ID: 440-137374-G-19 DU
Matrix: Water
Analysis Batch: 310370

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Turbidity	0.12		0.110		NTU		9	20

Method: DV-WC-0077 - Hydrazine, Ion Chromatography

Lab Sample ID: MB 280-313831/1-A
Matrix: Water
Analysis Batch: 314901

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 313831

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hydrazine	ND		5.0	0.67	ug/L		02/17/16 18:46	02/26/16 00:48	1

Lab Sample ID: LCS 280-313831/2-A
Matrix: Water
Analysis Batch: 314901

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 313831

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Monomethyl Hydrazine	50.1	54.2		ug/L		108	82 - 122
Hydrazine	50.0	49.6		ug/L		99	81 - 121

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-1

Method: DV-WC-0077 - Hydrazine, Ion Chromatography (Continued)

Lab Sample ID: LCSD 280-313831/3-A

Matrix: Water

Analysis Batch: 314901

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 313831

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Monomethyl Hydrazine	50.1	54.4		ug/L		109	82 - 122	0	20
Hydrazine	50.0	49.1		ug/L		98	81 - 121	1	20

Lab Sample ID: 440-137347-1 MS

Matrix: Water

Analysis Batch: 314901

Client Sample ID: Outfall002_20160205_Comp

Prep Type: Total/NA

Prep Batch: 313831

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Monomethyl Hydrazine	ND	BU	50.1	49.8		ug/L		99	81 - 121		
Hydrazine	ND	BU	50.0	22.7	LN	ug/L		45	82 - 122		

Lab Sample ID: 440-137347-1 MSD

Matrix: Water

Analysis Batch: 314901

Client Sample ID: Outfall002_20160205_Comp

Prep Type: Total/NA

Prep Batch: 313831

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Monomethyl Hydrazine	ND	BU	50.1	47.6		ug/L		95	81 - 121	4	20
Hydrazine	ND	BU	50.0	19.6	LN	ug/L		39	82 - 122	15	20

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

Lab Sample ID: MB 440-310632/1

Matrix: Water

Analysis Batch: 310632

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10	5.0	mg/L			02/10/16 14:00	1

Lab Sample ID: LCS 440-310632/2

Matrix: Water

Analysis Batch: 310632

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Dissolved Solids	1000	1030		mg/L		103	90 - 110		

Lab Sample ID: 440-137236-H-5 DU

Matrix: Water

Analysis Batch: 310632

Client Sample ID: Duplicate

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	ND		ND		mg/L		NC	5

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-1

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

Lab Sample ID: MB 440-310940/1
Matrix: Water
Analysis Batch: 310940

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		1.0	0.50	mg/L			02/11/16 20:00	1

Lab Sample ID: LCS 440-310940/2
Matrix: Water
Analysis Batch: 310940

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	1000	980		mg/L		98	85 - 115

Lab Sample ID: 440-137375-A-1 DU
Matrix: Water
Analysis Batch: 310940

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Suspended Solids	68		66.5		mg/L		2	10

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

Lab Sample ID: MB 440-310599/1-A
Matrix: Water
Analysis Batch: 310693

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 310599

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	ND		5.0	2.5	ug/L		02/10/16 12:25	02/10/16 18:19	1

Lab Sample ID: LCS 440-310599/2-A
Matrix: Water
Analysis Batch: 310693

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 310599

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	100	100		ug/L		100	90 - 110

Lab Sample ID: LCSD 440-310599/3-A
Matrix: Water
Analysis Batch: 310693

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 310599

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cyanide, Total	100	104		ug/L		104	90 - 110	3	10

Lab Sample ID: 440-137347-1 MS
Matrix: Water
Analysis Batch: 310693

Client Sample ID: Outfall002_20160205_Comp
Prep Type: Total/NA
Prep Batch: 310599

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	ND		100	101		ug/L		101	70 - 115

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-1

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

Lab Sample ID: 440-137347-1 MSD

Matrix: Water

Analysis Batch: 310693

Client Sample ID: Outfall002_20160205_Comp

Prep Type: Total/NA

Prep Batch: 310599

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cyanide, Total	ND		100	104		ug/L		104	70 - 115	3	15

Method: SM 4500 NH3 D - Ammonia

Lab Sample ID: MB 440-313776/2-A

Matrix: Water

Analysis Batch: 313806

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 313776

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia (as N)	ND		0.500	0.100	mg/L		02/26/16 03:00	02/26/16 05:00	1

Lab Sample ID: LCS 440-313776/1-A

Matrix: Water

Analysis Batch: 313806

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 313776

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia (as N)	2.50	2.316		mg/L		93	85 - 115

Lab Sample ID: 440-137347-1 MS

Matrix: Water

Analysis Batch: 313806

Client Sample ID: Outfall002_20160205_Comp

Prep Type: Total/NA

Prep Batch: 313776

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia (as N)	ND		2.50	2.316		mg/L		93	75 - 125

Lab Sample ID: 440-137347-1 MSD

Matrix: Water

Analysis Batch: 313806

Client Sample ID: Outfall002_20160205_Comp

Prep Type: Total/NA

Prep Batch: 313776

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Ammonia (as N)	ND		2.50	2.415		mg/L		97	75 - 125	4	15

Method: SM 5310B - Organic Carbon, Total (TOC)

Lab Sample ID: MB 440-314718/8

Matrix: Water

Analysis Batch: 314718

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	ND		1.0	0.65	mg/L			03/02/16 00:37	1

Lab Sample ID: LCS 440-314718/7

Matrix: Water

Analysis Batch: 314718

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon	10.0	10.8		mg/L		108	90 - 110

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-1

Method: SM 5310B - Organic Carbon, Total (TOC) (Continued)

Lab Sample ID: 440-138021-C-5 MS
Matrix: Water
Analysis Batch: 314718

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

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon	1.9		5.00	6.93		mg/L		100	80 - 120

Lab Sample ID: 440-138021-C-5 MSD
Matrix: Water
Analysis Batch: 314718

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

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Organic Carbon	1.9		5.00	6.96		mg/L		101	80 - 120	1	20

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

Lab Sample ID: MB 440-310282/9
Matrix: Water
Analysis Batch: 310282

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methylene Blue Active Substances	ND		0.10	0.050	mg/L			02/06/16 15:32	1

Lab Sample ID: LCS 440-310282/10
Matrix: Water
Analysis Batch: 310282

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methylene Blue Active Substances	0.250	0.257		mg/L		103	90 - 110

Lab Sample ID: 440-137347-1 MS
Matrix: Water
Analysis Batch: 310282

Client Sample ID: Outfall002_20160205_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Methylene Blue Active Substances	0.10		0.250	0.384		mg/L		113	50 - 125

Lab Sample ID: 440-137347-1 MSD
Matrix: Water
Analysis Batch: 310282

Client Sample ID: Outfall002_20160205_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Methylene Blue Active Substances	0.10		0.250	0.366		mg/L		106	50 - 125	5	20

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-1

Method: SM5210B - BOD, 5 Day

Lab Sample ID: USB 440-310283/1
Matrix: Water
Analysis Batch: 310283

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

Analyte	USB Result	USB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Biochemical Oxygen Demand	ND		2.0	0.50	mg/L			02/06/16 08:50	1

Lab Sample ID: LCS 440-310283/4
Matrix: Water
Analysis Batch: 310283

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Biochemical Oxygen Demand	199	198		mg/L		100	85 - 115

Lab Sample ID: LCSD 440-310283/5
Matrix: Water
Analysis Batch: 310283

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Biochemical Oxygen Demand	199	201		mg/L		101	85 - 115	1	20

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Lab Sample ID: MB 160-237126/1-A
Matrix: Water
Analysis Batch: 237914

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 237126

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Total Uranium	0.009460	U	0.04671	0.04675	1.00	0.124	pCi/L	02/18/16 11:31	02/25/16 17:19	1

Lab Sample ID: LCS 160-237126/2-A
Matrix: Water
Analysis Batch: 237915

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 237126

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Uranium-234	12.7	11.05		1.34	1.00	0.111	pCi/L	87	84 - 120
Uranium-238	13.0	12.48		1.47	1.00	0.0638	pCi/L	96	83 - 121

Tracer	LCS %Yield	LCS Qualifier	Limits
Uranium-232	92.2		30 - 110

Lab Sample ID: 440-137347-1 MS
Matrix: Water
Analysis Batch: 237920

Client Sample ID: Outfall002_20160205_Comp
Prep Type: Total/NA
Prep Batch: 237126

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Uranium-234	0.0971		12.7	13.09		1.59	1.00	0.0748	pCi/L	102	65 - 146
Uranium-238	0.117		13.0	12.27		1.51	1.00	0.0747	pCi/L	93	68 - 143

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Lab Sample ID: 440-137347-1 MS
 Matrix: Water
 Analysis Batch: 237920

Client Sample ID: Outfall002_20160205_Comp
 Prep Type: Total/NA
 Prep Batch: 237126

	MS	MS	
Tracer	%Yield	Qualifier	Limits
Uranium-232	80.7		30 - 110

Lab Sample ID: 440-137347-1 MSD
 Matrix: Water
 Analysis Batch: 237921

Client Sample ID: Outfall002_20160205_Comp
 Prep Type: Total/NA
 Prep Batch: 237126

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec.		RER
											Limits	RER	Limit
Uranium-234	0.0971		12.7	12.91		1.57	1.00	0.128	pCi/L	101	65 - 146	0.06	1
Uranium-238	0.117		13.0	11.85		1.47	1.00	0.128	pCi/L	90	68 - 143	0.14	1

	MSD	MSD	
Tracer	%Yield	Qualifier	Limits
Uranium-232	83.2		30 - 110

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-1

GC/MS VOA

Analysis Batch: 311648

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137347-1	Outfall002_20160205_Comp	Total/NA	Water	8260B SIM	
440-137347-1 MS	Outfall002_20160205_Comp	Total/NA	Water	8260B SIM	
440-137347-1 MSD	Outfall002_20160205_Comp	Total/NA	Water	8260B SIM	
LCS 440-311648/3	Lab Control Sample	Total/NA	Water	8260B SIM	
MB 440-311648/2	Method Blank	Total/NA	Water	8260B SIM	

GC/MS Semi VOA

Prep Batch: 310608

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137347-1	Outfall002_20160205_Comp	Total/NA	Water	625	
440-137347-1 MS	Outfall002_20160205_Comp	Total/NA	Water	625	
440-137347-1 MSD	Outfall002_20160205_Comp	Total/NA	Water	625	
LCS 440-310608/2-A	Lab Control Sample	Total/NA	Water	625	
MB 440-310608/1-A	Method Blank	Total/NA	Water	625	

Analysis Batch: 311203

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 440-310608/2-A	Lab Control Sample	Total/NA	Water	625	310608
MB 440-310608/1-A	Method Blank	Total/NA	Water	625	310608

Analysis Batch: 311513

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137347-1	Outfall002_20160205_Comp	Total/NA	Water	625	310608
440-137347-1 MS	Outfall002_20160205_Comp	Total/NA	Water	625	310608
440-137347-1 MSD	Outfall002_20160205_Comp	Total/NA	Water	625	310608

GC Semi VOA

Prep Batch: 310364

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137347-1	Outfall002_20160205_Comp	Total/NA	Water	608	
440-137347-1 MS	Outfall002_20160205_Comp	Total/NA	Water	608	
440-137347-1 MS	Outfall002_20160205_Comp	Total/NA	Water	608	
440-137347-1 MSD	Outfall002_20160205_Comp	Total/NA	Water	608	
440-137347-1 MSD	Outfall002_20160205_Comp	Total/NA	Water	608	
LCS 440-310364/2-A	Lab Control Sample	Total/NA	Water	608	
LCS 440-310364/5-A	Lab Control Sample	Total/NA	Water	608	
MB 440-310364/1-A	Method Blank	Total/NA	Water	608	

Analysis Batch: 311149

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137347-1	Outfall002_20160205_Comp	Total/NA	Water	608 PCB LL	310364
440-137347-1 MS	Outfall002_20160205_Comp	Total/NA	Water	608 PCB LL	310364
440-137347-1 MSD	Outfall002_20160205_Comp	Total/NA	Water	608 PCB LL	310364
LCS 440-310364/5-A	Lab Control Sample	Total/NA	Water	608 PCB LL	310364
MB 440-310364/1-A	Method Blank	Total/NA	Water	608 PCB LL	310364

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-1

GC Semi VOA (Continued)

Analysis Batch: 312116

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137347-1	Outfall002_20160205_Comp	Total/NA	Water	608 Pesticides	310364
440-137347-1 MS	Outfall002_20160205_Comp	Total/NA	Water	608 Pesticides	310364
440-137347-1 MSD	Outfall002_20160205_Comp	Total/NA	Water	608 Pesticides	310364
LCS 440-310364/2-A	Lab Control Sample	Total/NA	Water	608 Pesticides	310364
MB 440-310364/1-A	Method Blank	Total/NA	Water	608 Pesticides	310364

HPLC/IC

Analysis Batch: 310202

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137347-1	Outfall002_20160205_Comp	Total/NA	Water	218.6	
440-137347-1 MS	Outfall002_20160205_Comp	Total/NA	Water	218.6	
440-137347-1 MSD	Outfall002_20160205_Comp	Total/NA	Water	218.6	
LCS 440-310202/6	Lab Control Sample	Total/NA	Water	218.6	
MB 440-310202/7	Method Blank	Total/NA	Water	218.6	
MRL 440-310202/8	Lab Control Sample	Total/NA	Water	218.6	

Analysis Batch: 310262

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137347-1	Outfall002_20160205_Comp	Total/NA	Water	300.0	
440-137347-1 - DL	Outfall002_20160205_Comp	Total/NA	Water	300.0	
440-137347-1 MS - DL	Outfall002_20160205_Comp	Total/NA	Water	300.0	
440-137347-1 MSD - DL	Outfall002_20160205_Comp	Total/NA	Water	300.0	
LCS 440-310262/2	Lab Control Sample	Total/NA	Water	300.0	
MB 440-310262/4	Method Blank	Total/NA	Water	300.0	

Analysis Batch: 310263

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137347-1	Outfall002_20160205_Comp	Total/NA	Water	300.0	
440-137347-1 - DL	Outfall002_20160205_Comp	Total/NA	Water	300.0	
440-137347-1 MS - DL	Outfall002_20160205_Comp	Total/NA	Water	300.0	
440-137347-1 MSD - DL	Outfall002_20160205_Comp	Total/NA	Water	300.0	
LCS 440-310263/2	Lab Control Sample	Total/NA	Water	300.0	
MB 440-310263/4	Method Blank	Total/NA	Water	300.0	

Analysis Batch: 314717

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137347-1	Outfall002_20160205_Comp	Total/NA	Water	314.0	
440-137347-1 MS	Outfall002_20160205_Comp	Total/NA	Water	314.0	
440-137347-1 MSD	Outfall002_20160205_Comp	Total/NA	Water	314.0	
LCS 440-314717/2	Lab Control Sample	Total/NA	Water	314.0	
MB 440-314717/3	Method Blank	Total/NA	Water	314.0	
MRL 440-314717/5	Lab Control Sample	Total/NA	Water	314.0	

Analysis Batch: 314812

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137347-1	Outfall002_20160205_Comp	Total/NA	Water	NO3NO2 Calc	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-1

Specialty Organics

Prep Batch: 100382

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137347-1	Outfall002_20160205_Comp	Total/NA	Water	1613B	
LCS 320-100382/2-A	Lab Control Sample	Total/NA	Water	1613B	
LCS 320-100382/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	
MB 320-100382/1-A	Method Blank	Total/NA	Water	1613B	

Analysis Batch: 101275

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137347-1	Outfall002_20160205_Comp	Total/NA	Water	1613B	100382
LCS 320-100382/2-A	Lab Control Sample	Total/NA	Water	1613B	100382
LCS 320-100382/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	100382
MB 320-100382/1-A	Method Blank	Total/NA	Water	1613B	100382

Metals

Filtration Batch: 311598

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137347-2	Outfall002_20160205_Comp_F	Dissolved	Water	FILTRATION	
440-137347-2 MS	Outfall002_20160205_Comp_F	Dissolved	Water	FILTRATION	
440-137347-2 MSD	Outfall002_20160205_Comp_F	Dissolved	Water	FILTRATION	
LCS 440-311598/2-D	Lab Control Sample	Dissolved	Water	FILTRATION	
LCS 440-311598/2-E	Lab Control Sample	Dissolved	Water	FILTRATION	
LCS 440-311598/2-F	Lab Control Sample	Dissolved	Water	FILTRATION	
LCS 440-311598/2-G	Lab Control Sample	Dissolved	Water	FILTRATION	
MB 440-311598/1-D	Method Blank	Dissolved	Water	FILTRATION	
MB 440-311598/1-E	Method Blank	Dissolved	Water	FILTRATION	
MB 440-311598/1-F	Method Blank	Dissolved	Water	FILTRATION	
MB 440-311598/1-G	Method Blank	Dissolved	Water	FILTRATION	

Prep Batch: 311632

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137200-I-3-A MS	Matrix Spike	Total Recoverable	Water	200.2	
440-137200-I-3-B MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.2	
440-137347-1	Outfall002_20160205_Comp	Total Recoverable	Water	200.2	
LCS 440-311632/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
MB 440-311632/1-A	Method Blank	Total Recoverable	Water	200.2	

Analysis Batch: 313278

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137200-I-3-A MS	Matrix Spike	Total Recoverable	Water	200.8	311632
440-137200-I-3-B MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.8	311632
440-137347-1	Outfall002_20160205_Comp	Total Recoverable	Water	200.8	311632
LCS 440-311632/2-A	Lab Control Sample	Total Recoverable	Water	200.8	311632
MB 440-311632/1-A	Method Blank	Total Recoverable	Water	200.8	311632

Prep Batch: 314214

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137200-I-3-C MS	Matrix Spike	Total Recoverable	Water	200.2	
440-137200-I-3-D MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.2	
440-137347-1	Outfall002_20160205_Comp	Total Recoverable	Water	200.2	
LCS 440-314214/2-A	Lab Control Sample	Total Recoverable	Water	200.2	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-1

Metals (Continued)

Prep Batch: 314214 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 440-314214/1-A	Method Blank	Total Recoverable	Water	200.2	

Prep Batch: 314349

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137347-1	Outfall002_20160205_Comp	Total/NA	Water	245.1	
440-137347-1 MS	Outfall002_20160205_Comp	Total/NA	Water	245.1	
440-137347-1 MSD	Outfall002_20160205_Comp	Total/NA	Water	245.1	
LCS 440-314349/2-A	Lab Control Sample	Total/NA	Water	245.1	
MB 440-314349/1-A	Method Blank	Total/NA	Water	245.1	

Prep Batch: 314363

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137347-2	Outfall002_20160205_Comp_F	Dissolved	Water	245.1	311598
440-137347-2 MS	Outfall002_20160205_Comp_F	Dissolved	Water	245.1	311598
440-137347-2 MSD	Outfall002_20160205_Comp_F	Dissolved	Water	245.1	311598
LCS 440-311598/2-D	Lab Control Sample	Dissolved	Water	245.1	311598
MB 440-311598/1-D	Method Blank	Dissolved	Water	245.1	311598

Prep Batch: 314468

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137347-2	Outfall002_20160205_Comp_F	Dissolved	Water	200.2	311598
440-137347-2 MS	Outfall002_20160205_Comp_F	Dissolved	Water	200.2	311598
440-137347-2 MSD	Outfall002_20160205_Comp_F	Dissolved	Water	200.2	311598
LCS 440-311598/2-E	Lab Control Sample	Dissolved	Water	200.2	311598
MB 440-311598/1-E	Method Blank	Dissolved	Water	200.2	311598

Prep Batch: 314469

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137347-2	Outfall002_20160205_Comp_F	Dissolved	Water	200.2	311598
440-137347-2 MS	Outfall002_20160205_Comp_F	Dissolved	Water	200.2	311598
440-137347-2 MSD	Outfall002_20160205_Comp_F	Dissolved	Water	200.2	311598
LCS 440-311598/2-F	Lab Control Sample	Dissolved	Water	200.2	311598
MB 440-311598/1-F	Method Blank	Dissolved	Water	200.2	311598

Analysis Batch: 314591

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137347-1	Outfall002_20160205_Comp	Total/NA	Water	245.1	314349
440-137347-1 MS	Outfall002_20160205_Comp	Total/NA	Water	245.1	314349
440-137347-1 MSD	Outfall002_20160205_Comp	Total/NA	Water	245.1	314349
440-137347-2	Outfall002_20160205_Comp_F	Dissolved	Water	245.1	314363
440-137347-2 MS	Outfall002_20160205_Comp_F	Dissolved	Water	245.1	314363
440-137347-2 MSD	Outfall002_20160205_Comp_F	Dissolved	Water	245.1	314363
LCS 440-311598/2-D	Lab Control Sample	Dissolved	Water	245.1	314363
LCS 440-314349/2-A	Lab Control Sample	Total/NA	Water	245.1	314349
MB 440-311598/1-D	Method Blank	Dissolved	Water	245.1	314363
MB 440-314349/1-A	Method Blank	Total/NA	Water	245.1	314349

Analysis Batch: 314705

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137200-I-3-C MS	Matrix Spike	Total Recoverable	Water	200.7 Rev 4.4	314214
440-137200-I-3-D MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.7 Rev 4.4	314214

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-1

Metals (Continued)

Analysis Batch: 314705 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137347-1	Outfall002_20160205_Comp	Total Recoverable	Water	200.7 Rev 4.4	314214
LCS 440-314214/2-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	314214
MB 440-314214/1-A	Method Blank	Total Recoverable	Water	200.7 Rev 4.4	314214

Analysis Batch: 314707

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137347-2	Outfall002_20160205_Comp_F	Dissolved	Water	200.7 Rev 4.4	314468
440-137347-2 MS	Outfall002_20160205_Comp_F	Dissolved	Water	200.7 Rev 4.4	314468
440-137347-2 MSD	Outfall002_20160205_Comp_F	Dissolved	Water	200.7 Rev 4.4	314468
LCS 440-311598/2-E	Lab Control Sample	Dissolved	Water	200.7 Rev 4.4	314468
MB 440-311598/1-E	Method Blank	Dissolved	Water	200.7 Rev 4.4	314468

Analysis Batch: 314801

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137200-I-3-C MS	Matrix Spike	Total Recoverable	Water	200.7 Rev 4.4	314214
440-137200-I-3-D MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.7 Rev 4.4	314214
440-137347-1	Outfall002_20160205_Comp	Total Recoverable	Water	200.7 Rev 4.4	314214
LCS 440-314214/2-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	314214
MB 440-314214/1-A	Method Blank	Total Recoverable	Water	200.7 Rev 4.4	314214

Analysis Batch: 315056

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137347-2	Outfall002_20160205_Comp_F	Dissolved	Water	200.8	314469
440-137347-2 MS	Outfall002_20160205_Comp_F	Dissolved	Water	200.8	314469
440-137347-2 MSD	Outfall002_20160205_Comp_F	Dissolved	Water	200.8	314469
LCS 440-311598/2-F	Lab Control Sample	Dissolved	Water	200.8	314469
MB 440-311598/1-F	Method Blank	Dissolved	Water	200.8	314469

Analysis Batch: 315729

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137347-2	Outfall002_20160205_Comp_F	Dissolved	Water	200.7 Rev 4.4	314468
440-137347-2 MS	Outfall002_20160205_Comp_F	Dissolved	Water	200.7 Rev 4.4	314468
440-137347-2 MSD	Outfall002_20160205_Comp_F	Dissolved	Water	200.7 Rev 4.4	314468
LCS 440-311598/2-E	Lab Control Sample	Dissolved	Water	200.7 Rev 4.4	314468
MB 440-311598/1-E	Method Blank	Dissolved	Water	200.7 Rev 4.4	314468

Prep Batch: 326002

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137347-2	Outfall002_20160205_Comp_F	Dissolved	Water	200.2	311598
440-137347-2 MS	Outfall002_20160205_Comp_F	Dissolved	Water	200.2	311598
440-137347-2 MSD	Outfall002_20160205_Comp_F	Dissolved	Water	200.2	311598
LCS 440-311598/2-G	Lab Control Sample	Dissolved	Water	200.2	311598
MB 440-311598/1-G	Method Blank	Dissolved	Water	200.2	311598

Analysis Batch: 326321

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137347-2	Outfall002_20160205_Comp_F	Dissolved	Water	200.8	326002
440-137347-2 MS	Outfall002_20160205_Comp_F	Dissolved	Water	200.8	326002
440-137347-2 MSD	Outfall002_20160205_Comp_F	Dissolved	Water	200.8	326002
LCS 440-311598/2-G	Lab Control Sample	Dissolved	Water	200.8	326002
MB 440-311598/1-G	Method Blank	Dissolved	Water	200.8	326002

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-1

General Chemistry

Analysis Batch: 310282

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137347-1	Outfall002_20160205_Comp	Total/NA	Water	SM 5540C	
440-137347-1 MS	Outfall002_20160205_Comp	Total/NA	Water	SM 5540C	
440-137347-1 MSD	Outfall002_20160205_Comp	Total/NA	Water	SM 5540C	
LCS 440-310282/10	Lab Control Sample	Total/NA	Water	SM 5540C	
MB 440-310282/9	Method Blank	Total/NA	Water	SM 5540C	

Analysis Batch: 310283

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137347-1	Outfall002_20160205_Comp	Total/NA	Water	SM5210B	
LCS 440-310283/4	Lab Control Sample	Total/NA	Water	SM5210B	
LCS 440-310283/5	Lab Control Sample Dup	Total/NA	Water	SM5210B	
USB 440-310283/1	Method Blank	Total/NA	Water	SM5210B	

Analysis Batch: 310370

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137347-1	Outfall002_20160205_Comp	Total/NA	Water	180.1	
440-137374-G-19 DU	Duplicate	Total/NA	Water	180.1	
MB 440-310370/5	Method Blank	Total/NA	Water	180.1	

Prep Batch: 310599

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137347-1	Outfall002_20160205_Comp	Total/NA	Water	Distill/CN	
440-137347-1 MS	Outfall002_20160205_Comp	Total/NA	Water	Distill/CN	
440-137347-1 MSD	Outfall002_20160205_Comp	Total/NA	Water	Distill/CN	
LCS 440-310599/2-A	Lab Control Sample	Total/NA	Water	Distill/CN	
LCS 440-310599/3-A	Lab Control Sample Dup	Total/NA	Water	Distill/CN	
MB 440-310599/1-A	Method Blank	Total/NA	Water	Distill/CN	

Analysis Batch: 310632

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137236-H-5 DU	Duplicate	Total/NA	Water	SM 2540C	
440-137347-1	Outfall002_20160205_Comp	Total/NA	Water	SM 2540C	
LCS 440-310632/2	Lab Control Sample	Total/NA	Water	SM 2540C	
MB 440-310632/1	Method Blank	Total/NA	Water	SM 2540C	

Analysis Batch: 310693

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137347-1	Outfall002_20160205_Comp	Total/NA	Water	SM 4500 CN E	310599
440-137347-1 MS	Outfall002_20160205_Comp	Total/NA	Water	SM 4500 CN E	310599
440-137347-1 MSD	Outfall002_20160205_Comp	Total/NA	Water	SM 4500 CN E	310599
LCS 440-310599/2-A	Lab Control Sample	Total/NA	Water	SM 4500 CN E	310599
LCS 440-310599/3-A	Lab Control Sample Dup	Total/NA	Water	SM 4500 CN E	310599
MB 440-310599/1-A	Method Blank	Total/NA	Water	SM 4500 CN E	310599

Analysis Batch: 310940

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137347-1	Outfall002_20160205_Comp	Total/NA	Water	SM 2540D	
440-137375-A-1 DU	Duplicate	Total/NA	Water	SM 2540D	
LCS 440-310940/2	Lab Control Sample	Total/NA	Water	SM 2540D	
MB 440-310940/1	Method Blank	Total/NA	Water	SM 2540D	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-1

General Chemistry (Continued)

Prep Batch: 313776

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137347-1	Outfall002_20160205_Comp	Total/NA	Water	SM 4500 NH3 B	
440-137347-1 MS	Outfall002_20160205_Comp	Total/NA	Water	SM 4500 NH3 B	
440-137347-1 MSD	Outfall002_20160205_Comp	Total/NA	Water	SM 4500 NH3 B	
LCS 440-313776/1-A	Lab Control Sample	Total/NA	Water	SM 4500 NH3 B	
MB 440-313776/2-A	Method Blank	Total/NA	Water	SM 4500 NH3 B	

Analysis Batch: 313806

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137347-1	Outfall002_20160205_Comp	Total/NA	Water	SM 4500 NH3 D	313776
440-137347-1 MS	Outfall002_20160205_Comp	Total/NA	Water	SM 4500 NH3 D	313776
440-137347-1 MSD	Outfall002_20160205_Comp	Total/NA	Water	SM 4500 NH3 D	313776
LCS 440-313776/1-A	Lab Control Sample	Total/NA	Water	SM 4500 NH3 D	313776
MB 440-313776/2-A	Method Blank	Total/NA	Water	SM 4500 NH3 D	313776

Prep Batch: 313831

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137347-1	Outfall002_20160205_Comp	Total/NA	Water	Filtration	
440-137347-1 MS	Outfall002_20160205_Comp	Total/NA	Water	Filtration	
440-137347-1 MSD	Outfall002_20160205_Comp	Total/NA	Water	Filtration	
LCS 280-313831/2-A	Lab Control Sample	Total/NA	Water	Filtration	
LCSD 280-313831/3-A	Lab Control Sample Dup	Total/NA	Water	Filtration	
MB 280-313831/1-A	Method Blank	Total/NA	Water	Filtration	

Analysis Batch: 314718

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137347-1	Outfall002_20160205_Comp	Total/NA	Water	SM 5310B	
440-138021-C-5 MS	Matrix Spike	Total/NA	Water	SM 5310B	
440-138021-C-5 MSD	Matrix Spike Duplicate	Total/NA	Water	SM 5310B	
LCS 440-314718/7	Lab Control Sample	Total/NA	Water	SM 5310B	
MB 440-314718/8	Method Blank	Total/NA	Water	SM 5310B	

Analysis Batch: 314901

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137347-1	Outfall002_20160205_Comp	Total/NA	Water	DV-WC-0077	313831
440-137347-1 MS	Outfall002_20160205_Comp	Total/NA	Water	DV-WC-0077	313831
440-137347-1 MSD	Outfall002_20160205_Comp	Total/NA	Water	DV-WC-0077	313831
LCS 280-313831/2-A	Lab Control Sample	Total/NA	Water	DV-WC-0077	313831
LCSD 280-313831/3-A	Lab Control Sample Dup	Total/NA	Water	DV-WC-0077	313831
MB 280-313831/1-A	Method Blank	Total/NA	Water	DV-WC-0077	313831

Rad

Prep Batch: 237126

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137347-1	Outfall002_20160205_Comp	Total/NA	Water	ExtChrom	
440-137347-1 MS	Outfall002_20160205_Comp	Total/NA	Water	ExtChrom	
440-137347-1 MSD	Outfall002_20160205_Comp	Total/NA	Water	ExtChrom	
LCS 160-237126/2-A	Lab Control Sample	Total/NA	Water	ExtChrom	
MB 160-237126/1-A	Method Blank	Total/NA	Water	ExtChrom	

TestAmerica Irvine

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-1

Qualifiers

GC/MS Semi VOA

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

GC Semi VOA

Qualifier	Qualifier Description
PI	Primary and confirm results varied by > than 40% RPD

HPLC/IC

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
BB	Sample > 4X spike concentration
LN	MS and/or MSD below acceptance limits. See Blank Spike (LCS)

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
BB	Sample > 4X spike concentration
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
MB	Analyte present in the method blank
QP	Holding time Immediate. Analyzed as close to receipt as possible

General Chemistry

Qualifier	Qualifier Description
BU	Sample was prepped beyond the specified holding time
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
BU	Analyzed out of holding time
LN	MS and/or MSD below acceptance limits. See Blank Spike (LCS)

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit

TestAmerica Irvine

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-1

Glossary (Continued)

Abbreviation	These commonly used abbreviations may or may not be present in this report.
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
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)

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16

Certification Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-1

Laboratory: TestAmerica Irvine

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

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-16
Arizona	State Program	9	AZ0671	10-13-16
California	LA Cty Sanitation Districts	9	10256	01-31-17 *
California	State Program	9	CA ELAP 2706	06-30-16
Guam	State Program	9	Cert. No. 12.002r	01-23-17
Hawaii	State Program	9	N/A	01-29-17
Kansas	NELAP Secondary AB	7	E-10420	07-31-16
Nevada	State Program	9	CA015312016-2	07-31-16
New Mexico	State Program	6	N/A	01-29-17
Northern Mariana Islands	State Program	9	MP0002	01-29-16 *
Oregon	NELAP	10	4028	01-29-17
USDA	Federal		P330-09-00080	07-08-18
Washington	State Program	10	C900	09-03-16

Laboratory: TestAmerica Denver

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

Authority	Program	EPA Region	Certification ID	Expiration Date
A2LA	DoD ELAP		2907.01	10-31-17
A2LA	ISO/IEC 17025		2907.01	10-31-17
Alabama	State Program	4	40730	09-30-12 *
Alaska (UST)	State Program	10	UST-30	04-05-17
Arizona	State Program	9	AZ0713	12-19-16
Arkansas DEQ	State Program	6	88-0687	06-01-16
California	State Program	9	2513	08-31-16
Connecticut	State Program	1	PH-0686	09-30-16
Florida	NELAP	4	E87667	06-30-16
Georgia	State Program	4	N/A	01-09-17
Illinois	NELAP	5	200017	04-30-17
Iowa	State Program	7	370	11-30-16
Kansas	NELAP	7	E-10166	04-30-16
Louisiana	NELAP	6	02096	06-30-16
Maine	State Program	1	CO0002	03-03-17
Minnesota	NELAP	5	8-999-405	12-31-16
Nevada	State Program	9	CO0026	07-31-16
New Hampshire	NELAP	1	205310	04-28-16
New Jersey	NELAP	2	CO004	06-30-16
New York	NELAP	2	11964	04-01-17
North Carolina (WW/SW)	State Program	4	358	12-31-16
North Dakota	State Program	8	R-034	01-09-17
Oklahoma	State Program	6	8614	08-31-16
Oregon	NELAP	10	4025	01-09-17
Pennsylvania	NELAP	3	68-00664	07-31-16
South Carolina	State Program	4	72002001	01-09-16 *
Texas	NELAP	6	T104704183-15-11	09-30-16
USDA	Federal		P330-13-00202	07-02-16
Utah	NELAP	8	CO00026	07-31-16
Virginia	NELAP	3	460232	06-14-16
Washington	State Program	10	C583	08-03-16
West Virginia DEP	State Program	3	354	11-30-16

* Certification renewal pending - certification considered valid.

TestAmerica Irvine

Certification Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-1

Laboratory: TestAmerica Denver (Continued)

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

Authority	Program	EPA Region	Certification ID	Expiration Date
Wisconsin	State Program	5	999615430	08-31-16
Wyoming (UST)	A2LA	8	2907.01	10-31-17

Laboratory: TestAmerica Sacramento

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

Authority	Program	EPA Region	Certification ID	Expiration Date
A2LA	DoD ELAP		2928-01	01-31-17
Alaska (UST)	State Program	10	UST-055	12-18-16
Arizona	State Program	9	AZ0708	08-11-16
Arkansas DEQ	State Program	6	88-0691	06-17-16
California	State Program	9	2897	01-31-17
Colorado	State Program	8	CA00044	08-31-16
Connecticut	State Program	1	PH-0691	06-30-17
Florida	NELAP	4	E87570	06-30-16
Hawaii	State Program	9	N/A	01-31-17
Illinois	NELAP	5	200060	03-17-17
Kansas	NELAP	7	E-10375	05-31-16
Louisiana	NELAP	6	30612	06-30-16
Maine	State Program	1	CA0004	04-18-16
Michigan	State Program	5	9947	01-31-18
Nevada	State Program	9	CA00044	07-31-16
New Jersey	NELAP	2	CA005	06-30-16
New York	NELAP	2	11666	04-01-17
Oregon	NELAP	10	4040	01-29-17
Pennsylvania	NELAP	3	68-01272	03-31-17
Texas	NELAP	6	T104704399	05-31-16
US Fish & Wildlife	Federal		LE148388-0	10-31-16
USDA	Federal		P330-11-00436	12-30-17
USEPA UCMR	Federal	1	CA00044	11-06-16
Utah	NELAP	8	CA00044	02-28-17
Virginia	NELAP	3	460278	03-14-17
Washington	State Program	10	C581	05-04-16
West Virginia (DW)	State Program	3	9930C	12-31-16
Wyoming	State Program	8	8TMS-L	01-29-17

Laboratory: TestAmerica St. Louis

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

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	MO00054	06-30-16
California	State Program	9	2886	03-31-18
Connecticut	State Program	1	PH-0241	03-31-17
Florida	NELAP	4	E87689	06-30-16
Illinois	NELAP	5	003757	11-30-16
Iowa	State Program	7	373	12-01-16
Kansas	NELAP	7	E-10236	05-31-16
Kentucky (DW)	State Program	4	90125	12-31-16
L-A-B	DoD ELAP		L2305	04-06-19
Louisiana	NELAP	6	04080	06-30-16 *
Louisiana (DW)	NELAP	6	LA160008	12-31-16

* Certification renewal pending - certification considered valid.

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-1

Laboratory: TestAmerica St. Louis (Continued)

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

Authority	Program	EPA Region	Certification ID	Expiration Date
Maryland	State Program	3	310	09-30-16
Missouri	State Program	7	780	06-30-16
Nevada	State Program	9	MO000542016-1	07-31-16
New Jersey	NELAP	2	MO002	06-30-16
New York	NELAP	2	11616	03-31-17
North Dakota	State Program	8	R207	06-30-16
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-16
Pennsylvania	NELAP	3	68-00540	02-28-17 *
South Carolina	State Program	4	85002001	06-30-16
Texas	NELAP	6	T104704193-15-9	07-31-16
USDA	Federal		P330-07-00122	01-09-17
Utah	NELAP	8	MO000542015-7	07-31-16
Virginia	NELAP	3	460230	06-14-16
Washington	State Program	10	C592	08-30-16
West Virginia DEP	State Program	3	381	08-31-16

* Certification renewal pending - certification considered valid.

TestAmerica Irvine

INVOICE NO. TAM0216.0157

February 29, 2016

Accounts Payable
TestAmerica Irvine
17461 Derian Avenue, Suite 100
Irvine, CA 92614

SAMPLE I.D.: Outfall 002
DATE RECEIVED: 5 Feb - 16
ABC LAB NO.: TAM0216.137
PROJECT NAME: BOEING-SSFL NPDES PERMIT 2016

NPDES CHRONIC BIOASSAY	
Selenastrum Algae-(1 @ 735.00)	\$735.00

TOTAL	\$735.00
-------	----------

Make checks payable to: Aquatic Bioassay & Consulting
29 N. Olive St.
Ventura, CA 93001

Terms are net 30 days.



February 29, 2016

Ms. Debbie Wilson
TestAmerica Irvine
17461 Derian Avenue, Suite 100
Irvine, CA 92614

Dear Ms. Wilson:

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

CLIENT: Haley & Aldrich
SAMPLE ID.: Outfall 002
DATE RECEIVED: 5 Feb - 16
ABC LAB NO.: TAM0216.137

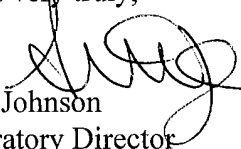
CHRONIC SELENASTRUM ALGAE GROWTH BIOASSAY

IWC = 100.00 %

TST RESULT

GROWTH = PASS % EFFECT = -43.50 %

Yours very truly,


Scott Johnson
Laboratory Director

TST Summary Sheet

Lab Name	Aquatic Bioassay Labs.	Client Name	TestAmerica Irvine
Test ID	Outfall 002	Test Species	<i>S. capricornutum (green algae)</i>
Test Date	2/5/2016	Test Type	Chronic
Test Duration	96 hours	Endpoint	Growth
Critical Conc.	100 %		

Statistic	Control	Critical Concentration
Mean of Raw Data	1.29	1.84
Mean used in Calculation (non-transformed)	1.29	1.84
Variance used in Calculation (non-transformed)	0.004	0.008
Standard Deviation of Raw Data	0.064	0.087
CV of Raw Data	0.050	0.047
n	8	8

Mean % Effect at Critical Conc.

-43.50

Calculated t-value	Degrees of Freedom	Table t-value	Percent Difference
24.9534	10	0.6998	

Results

Pass Sample is Non-toxic

Raw Data

Control Data		Critical Concentration Data	
No. of Organisms Exposed or Counted	Response (Final Count, Weight, Length, etc.)	No. of Organisms Exposed or Counted	Response (Final Count, Weight, Length, etc.)
	1.313		1.79
	1.37		1.694
	1.36		1.868
	1.227		1.965
	1.235		1.933
	1.266		1.82
	1.317		1.891
	1.196		1.797

CETIS Summary Report

Report Date: 29 Feb-16 15:15 (p 1 of 1)
 Test Code: TAM0216.137 | 06-3959-3057

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 09-2898-4174	Test Type: Cell Growth	Analyst:
Start Date: 05 Feb-16 13:30	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 09 Feb-16 11:30	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 94h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 16-5466-9524	Code: TAM0216.137	Client: Test America Irvine
Sample Date: 05 Feb-16 08:55	Material: Sample Water	Project: Boeing-SSFL NPDES
Receive Date: 05 Feb-16 12:30	Source: Bioassay Report	
Sample Age: 5h (3 °C)	Station: Outfall 002	

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
02-8515-6162	Cell Density	100	>100	NA	5.25%	1	Equal Variance t Two-Sample Test

Point Estimate Summary

Analysis ID	Endpoint	Level	%	95% LCL	95% UCL	TU	Method
16-6180-8528	Cell Density	IC5	>100	N/A	N/A	<1	Linear Interpolation (ICPIN)
		IC10	>100	N/A	N/A	<1	
		IC15	>100	N/A	N/A	<1	
		IC20	>100	N/A	N/A	<1	
		IC25	>100	N/A	N/A	<1	
		IC40	>100	N/A	N/A	<1	
		IC50	>100	N/A	N/A	<1	

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
02-8515-6162	Cell Density	Control CV	0.0499	NL - 0.2	Yes	Passes Acceptability Criteria
16-6180-8528	Cell Density	Control CV	0.0499	NL - 0.2	Yes	Passes Acceptability Criteria
02-8515-6162	Cell Density	Control Resp	1.29E+6	1.00E+6 - NL	Yes	Passes Acceptability Criteria
16-6180-8528	Cell Density	Control Resp	1.29E+6	1.00E+6 - NL	Yes	Passes Acceptability Criteria
02-8515-6162	Cell Density	PMSD	0.05254	0.091 - 0.29	Yes	Below Acceptability Criteria

Cell Density Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	8	1.286E+6	1.232E+6	1.339E+6	1.196E+6	1.370E+6	2.268E+4	6.414E+4	4.99%	0.0%
100		8	1.845E+6	1.772E+6	1.918E+6	1.694E+6	1.965E+6	3.092E+4	8.746E+4	4.74%	-43.5%

Cell Density Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	Negative Control	1.313E+6	1.370E+6	1.360E+6	1.227E+6	1.235E+6	1.266E+6	1.317E+6	1.196E+6
100		1.790E+6	1.694E+6	1.868E+6	1.965E+6	1.933E+6	1.820E+6	1.891E+6	1.797E+6

CETIS Analytical Report

Report Date: 25 Feb-16 15:37 (p 1 of 1)
 Test Code: TAM0216.137 | 06-3959-3057

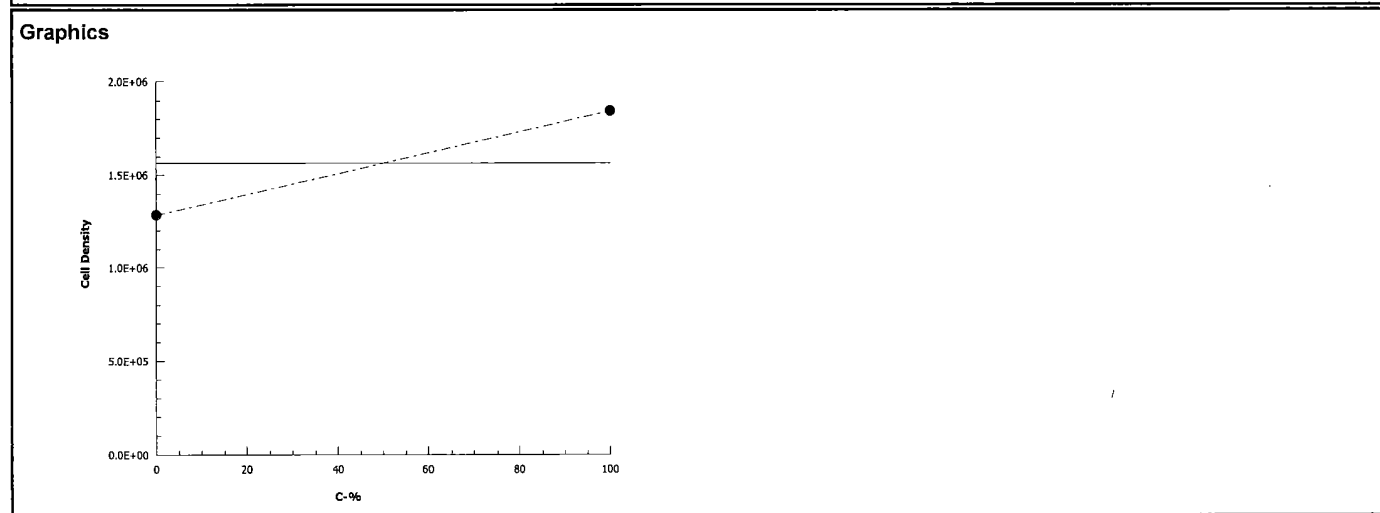
Selenastrum Growth Test		Aquatic Bioassay & Consulting Labs, Inc.	
Analysis ID: 16-6180-8528	Endpoint: Cell Density	CETIS Version: CETISv1.8.7	
Analyzed: 25 Feb-16 15:37	Analysis: Linear Interpolation (ICPIN)	Official Results: Yes	

Linear Interpolation Options					
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	0	280	Yes	Two-Point Interpolation

Point Estimates						
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC5	>100	N/A	N/A	<1	NA	NA
IC10	>100	N/A	N/A	<1	NA	NA
IC15	>100	N/A	N/A	<1	NA	NA
IC20	>100	N/A	N/A	<1	NA	NA
IC25	>100	N/A	N/A	<1	NA	NA
IC40	>100	N/A	N/A	<1	NA	NA
IC50	>100	N/A	N/A	<1	NA	NA

Cell Density Summary			Calculated Variate						
C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	8	1.286E+6	1.196E+6	1.370E+6	2.268E+4	6.415E+4	4.99%	0.0%
100		8	1.845E+6	1.694E+6	1.965E+6	3.092E+4	8.746E+4	4.74%	-43.5%

Cell Density Detail										
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	
0	Negative Control	1.313E+6	1.370E+6	1.360E+6	1.227E+6	1.235E+6	1.266E+6	1.317E+6	1.196E+6	
100		1.790E+6	1.694E+6	1.868E+6	1.965E+6	1.933E+6	1.820E+6	1.891E+6	1.797E+6	



CETIS Measurement Report

Report Date: 29 Feb-16 15:16 (p 1 of 2)
 Test Code: TAM0216.137 | 06-3959-3057

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 09-2898-4174	Test Type: Cell Growth	Analyst:
Start Date: 05 Feb-16 13:30	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 09 Feb-16 11:30	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 94h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 16-5466-9524	Code: TAM0216.137	Client: Test America Irvine
Sample Date: 05 Feb-16 08:55	Material: Sample Water	Project: Boeing-SSFL NPDES
Receive Date: 05 Feb-16 12:30	Source: Bioassay Report	
Sample Age: 5h (3 °C)	Station: Outfall 002	

Alkalinity (CaCO3)-mg/L

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	1	63			63	63	0	0	0.0%	0
100		1	108			108	108	0	0	0.0%	0
Overall		2	85.5			63	108				0 (0%)

Conductivity-µmhos

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	5	433.2	410.5	455.9	418	456	8.163	18.25	4.21%	0
100		5	860.8	848.2	873.4	849	870	4.554	10.18	1.18%	0
Overall		10	647			418	870				0 (0%)

Hardness (CaCO3)-mg/L

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	1	99			99	99	0	0	0.0%	0
100		1	213			213	213	0	0	0.0%	0
Overall		2	156			99	213				0 (0%)

pH-Units

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	5	7.52	7.416	7.624	7.4	7.6	0.03742	0.08367	1.11%	0
100		5	8.14	8.072	8.208	8.1	8.2	0.0245	0.05479	0.67%	0
Overall		10	7.83			7.4	8.2				0 (0%)

Temperature-°C

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	5	24.3	23.81	24.79	24.1	25	0.1761	0.3937	1.62%	0
100		5	24.1	24.01	24.19	24	24.2	0.03156	0.07056	0.29%	0
Overall		10	24.2			24	25				0 (0%)

CETIS Measurement Report

Report Date: 29 Feb-16 15:16 (p 2 of 2)
Test Code: TAM0216.137 | 06-3959-3057

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Alkalinity (CaCO₃)-mg/L

C-%	Control Type	1
0	Negative Contr	63
100		108

Conductivity-µmhos

C-%	Control Type	1	2	3	4	5
0	Negative Contr	422	420	418	456	450
100		864	870	870	849	851

Hardness (CaCO₃)-mg/L

C-%	Control Type	1
0	Negative Contr	99
100		213

pH-Units

C-%	Control Type	1	2	3	4	5
0	Negative Contr	7.4	7.5	7.5	7.6	7.6
100		8.2	8.1	8.1	8.1	8.2

Temperature-°C

C-%	Control Type	1	2	3	4	5
0	Negative Contr	24.1	24.1	24.1	24.2	25
100		24.1	24.1	24.1	24.2	24

Test America

CHAIN OF CUSTODY FORM

3 of 3

4/26/2016

Client Name/Address:
Haley & Aldrich
 5333 Mission Center Rd Suite 300
 San Diego, CA 92108

Project:
Boeing-SF/L NPDES
Permit 2016
 Annual Outfall 001, 002, 011, 018I
 Outfall 002
 Comp

Test America Contact: Debby Wilson
 17461 Derian Ave Suite #100
 Irvine CA 92614
 Tel 949 261 1022 x228
 Cell 949 297 0603

Project Manager: Nancy Gardiner
 619 285 7132, 856 337 4061 (cell)

Sampler: *Heidi Smith*
Van Smith,

Field Manager: Mark Dominick
 818 350 7312, 818 599 0702 (cell)

Sample Description	Sample I.D.	Sampling Date/Time	Sample Matrix	Container Type	# of Cont.	Preservative	Bottle #	M/S/MSD	Total Dissolved Metals: Cu, Pb, Hg, B, Ba, Fe, Mn, Sb, As, Be, Cd, Cr, Ni, Se, Ag, Ti, Zn, Co, V, Hardness as CaCO3	Cyanide	Gross Alpha(900.0), Gross Beta(900.0), Tritium (H-3) (906.0), Sr-90 (905.0), Total Combined Radium 226 (903.0 or 903.1) & Radium 228 (904.0), Uranium (908.0), K-40, CS-137 (901.0 or 901.1)	Chronic Toxicity	1,4-Dioxane	Total Organic Carbon	Monomethyl Hydrazine	Cr (VI), Total (218.6)	Asbestos (100.2)	Total Dissolved Metals: Mercury (245.1)	Filter and preserve with 24hrs of receipt at lab																						
Outfall002_20160205_Comp_F	WM	2/5/2016/0855	borosilicate vials	1 L Poly	3	None	190	Yes	X									X	Sample receiving DO NOT OPEN BAG. Bag to be opened in Mercury Prep using clean procedures.																						
																				WM	500 mL Poly	3	NaOH	220	Yes																
																				WM	2.5 Gal Cube	3	None	225	Yes																
																				WM	1 L Glass Amber	3	None	230	Yes																
																				WM	1 Gal Cube	6	None	235	No																
																				WM	40 mL VOA	9	HCl	240	Yes																
																				WM	1 L Glass Amber	1	HCl	245	No																
																				WM	1 L Glass Amber	2	None	255	No																
																				WM	500 mL Poly	3	None	260	Yes																
																				WM	1 L Poly	1	None	271	No																
Outfall002_20160205_Comp_Extra	WM	2/5/2016/0855	40 mL VOA	1 L Glass Amber	2	None	255	No												Hold																					
																					WM	1 L Glass Amber	2	HCl	245	No															
																					WM	500 mL Poly	3	None	260	Yes															

COC Page 2 of 3 and Page 3 of 3 are the composite samples for Outfall 002 for this storm event. These must be added to the same work order for COC Page 1 of 3 for Outfall 002 for the same event.

Legend: R=Routine, A=Annual, Q=Quarterly

Relinquished By: <i>[Signature]</i>	Date/Time: 2/5/16 11:25	Company: SHN	Received By: <i>[Signature]</i>	Date/Time: 2/5/16 12:30	Company: SHN
Relinquished By: <i>[Signature]</i>	Date/Time: 2/5/16 11:25	Company: SHN	Received By: <i>[Signature]</i>	Date/Time: 2/5/16 12:30	Company: SHN
Relinquished By: <i>[Signature]</i>	Date/Time: 2/5/16 11:25	Company: SHN	Received By: <i>[Signature]</i>	Date/Time: 2/5/16 12:30	Company: SHN

Temp. deg. C = 5.2°C

Chlorine (mg/L) = 49.1

NH3 (mg/L) = 0.7



CHRONIC SELENASTRUM GROWTH BIOASSAY

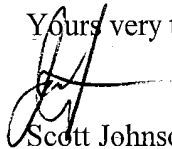
DATE: 4 February - 2016

STANDARD TOXICANT: Cadmium Chloride

NOEC = 80.00 ug/l

IC25 = 109.40 ug/l
IC50 = 171.10 ug/l

Yours very truly,


Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 01 Mar-16 15:51 (p 1 of 1)
 Test Code: SEL020416 | 20-2574-1811

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 20-9351-9588	Test Type: Cell Growth	Analyst:
Start Date: 04 Feb-16 11:30	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 08 Feb-16 11:40	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 4d 0h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 11-7087-0424	Code: SEL020416	Client: Internal Lab
Sample Date: 04 Feb-16 11:30	Material: Cadmium chloride	Project:
Receive Date:	Source: Reference Toxicant	
Sample Age: NA	Station: REF TOX	

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
08-9694-6006	Cell Density	80	140	105.8	8.94%		Dunnett Multiple Comparison Test

Point Estimate Summary

Analysis ID	Endpoint	Level	µg/L	95% LCL	95% UCL	TU	Method
01-3787-1617	Cell Density	IC5	57.07	32.78	79.02		Linear Interpolation (ICPIN)
		IC10	75.89	48.76	93.56		
		IC15	88.25	64.89	101.7		
		IC20	98.8	79.36	112.1		
		IC25	109.4	92.53	121.8		
		IC40	141.4	127.2	158.3		
		IC50	171.1	157.8	182.4		

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
01-3787-1617	Cell Density	Control CV	0.08128	NL - 0.2	Yes	Passes Acceptability Criteria
08-9694-6006	Cell Density	Control CV	0.08128	NL - 0.2	Yes	Passes Acceptability Criteria
01-3787-1617	Cell Density	Control Resp	1.32E+6	1.00E+6 - NL	Yes	Passes Acceptability Criteria
08-9694-6006	Cell Density	Control Resp	1.32E+6	1.00E+6 - NL	Yes	Passes Acceptability Criteria
08-9694-6006	Cell Density	PMSD	0.08942	0.091 - 0.29	Yes	Below Acceptability Criteria

Cell Density Summary

C-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	4	1.325E+6	1.153E+6	1.496E+6	1.184E+6	1.411E+6	5.384E+4	1.077E+5	8.13%	0.0%
20		4	1.419E+6	1.292E+6	1.545E+6	1.315E+6	1.482E+6	3.978E+4	7.956E+4	5.61%	-7.08%
40		4	1.365E+6	1.320E+6	1.410E+6	1.326E+6	1.389E+6	1.410E+4	2.821E+4	2.07%	-3.06%
80		4	1.220E+6	1.108E+6	1.331E+6	1.125E+6	1.294E+6	3.508E+4	7.015E+4	5.75%	7.95%
140		4	8.295E+5	7.254E+5	9.336E+5	7.810E+5	9.260E+5	3.270E+4	6.539E+4	7.88%	37.38%
180		4	6.445E+5	5.906E+5	6.984E+5	6.230E+5	6.950E+5	1.693E+4	3.387E+4	5.26%	51.35%

Cell Density Detail

C-µg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	1.297E+6	1.184E+6	1.411E+6	1.407E+6
20		1.315E+6	1.480E+6	1.482E+6	1.397E+6
40		1.382E+6	1.326E+6	1.389E+6	1.364E+6
80		1.125E+6	1.236E+6	1.223E+6	1.294E+6
140		8.080E+5	7.810E+5	9.260E+5	8.030E+5
180		6.950E+5	6.280E+5	6.230E+5	6.320E+5

CETIS Analytical Report

Report Date: 01 Mar-16 15:51 (p 1 of 2)
 Test Code: SELO20416 | 20-2574-1811

Selenastrum Growth Test				Aquatic Bioassay & Consulting Labs, Inc.			
Analysis ID: 08-9694-6006	Endpoint: Cell Density			CETIS Version: CETISv1.8.7			
Analyzed: 01 Mar-16 15:51	Analysis: Parametric-Control vs Treatments			Official Results: Yes			

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU
Untransformed	NA	C > T	NA	NA	8.94%	80	140	105.8	

Dunnett Multiple Comparison Test									
Control	vs	C-µg/L	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Negative Control		20	-1.905	2.407	1E+05	6	0.9988	CDF	Non-Significant Effect
		40	-0.8229	2.407	1E+05	6	0.9725	CDF	Non-Significant Effect
		80	2.139	2.407	1E+05	6	0.0819	CDF	Non-Significant Effect
		140*	10.06	2.407	1E+05	6	<0.0001	CDF	Significant Effect
		180*	13.82	2.407	1E+05	6	<0.0001	CDF	Significant Effect

ANOVA Table						
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	2.04177E+12	4.08354E+11	5	84.3	<0.0001	Significant Effect
Error	87195500000	4844194000	18			
Total	2.128965E+12		23			

Distributional Tests						
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)	
Variances	Bartlett Equality of Variance	5.884	15.09	0.3176	Equal Variances	
Variances	Mod Levene Equality of Variance	1.331	4.248	0.2960	Equal Variances	
Variances	Levene Equality of Variance	1.952	4.248	0.1352	Equal Variances	
Distribution	Shapiro-Wilk W Normality	0.9571	0.884	0.3822	Normal Distribution	
Distribution	Kolmogorov-Smirnov D	0.1178	0.2056	0.5315	Normal Distribution	
Distribution	D'Agostino Skewness	0.8309	2.576	0.4060	Normal Distribution	
Distribution	D'Agostino Kurtosis	0.1315	2.576	0.8954	Normal Distribution	
Distribution	D'Agostino-Pearson K2 Omnibus	0.7076	9.21	0.7020	Normal Distribution	
Distribution	Anderson-Darling A2 Normality	0.4262	3.878	0.3191	Normal Distribution	

Cell Density Summary											
C-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Negative Control	4	1.325E+6	1.153E+6	1.496E+6	1352000	1.184E+6	1.411E+6	5.384E+4	8.13%	0.0%
20		4	1.419E+6	1.292E+6	1.545E+6	1439000	1.315E+6	1.482E+6	3.978E+4	5.61%	-7.08%
40		4	1.365E+6	1.320E+6	1.410E+6	1373000	1.326E+6	1.389E+6	1.410E+4	2.07%	-3.06%
80		4	1.220E+6	1.108E+6	1.331E+6	1230000	1.125E+6	1.294E+6	3.508E+4	5.75%	7.95%
140		4	8.295E+5	7.254E+5	9.336E+5	805500	7.810E+5	9.260E+5	3.270E+4	7.88%	37.38%
180		4	6.445E+5	5.906E+5	6.984E+5	630000	6.230E+5	6.950E+5	1.693E+4	5.26%	51.35%

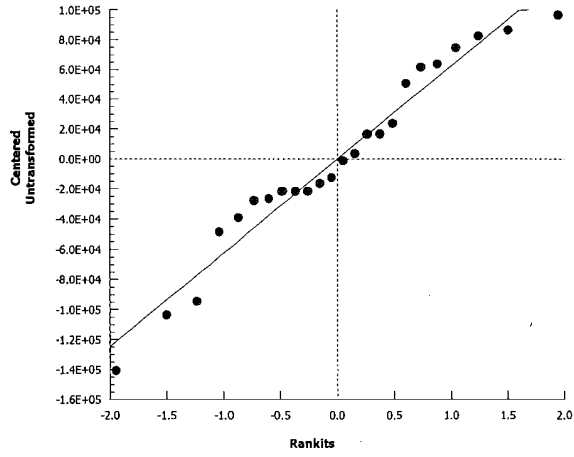
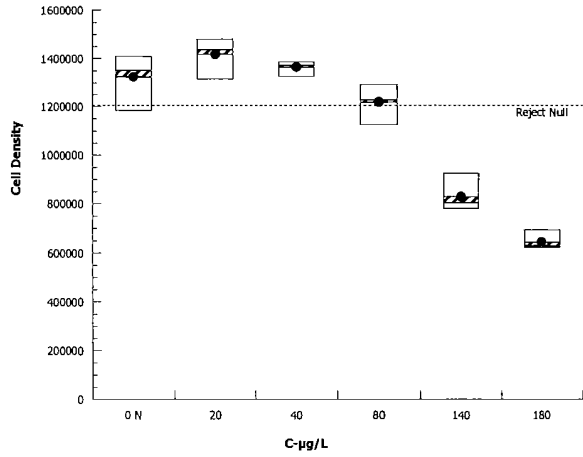
Cell Density Detail						
C-µg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	
0	Negative Control	1.297E+6	1.184E+6	1.411E+6	1.407E+6	
20		1.315E+6	1.480E+6	1.482E+6	1.397E+6	
40		1.382E+6	1.326E+6	1.389E+6	1.364E+6	
80		1.125E+6	1.236E+6	1.223E+6	1.294E+6	
140		8.080E+5	7.810E+5	9.260E+5	8.030E+5	
180		6.950E+5	6.280E+5	6.230E+5	6.320E+5	

CETIS Analytical Report

Report Date: 01 Mar-16 15:51 (p 2 of 2)
Test Code: SEL020416 | 20-2574-1811

Selenastrum Growth Test		Aquatic Bioassay & Consulting Labs, Inc.	
Analysis ID: 08-9694-6006	Endpoint: Cell Density	CETIS Version: CETISv1.8.7	
Analyzed: 01 Mar-16 15:51	Analysis: Parametric-Control vs Treatments	Official Results: Yes	

Graphics



CETIS Measurement Report

Report Date: 01 Mar-16 15:51 (p 1 of 2)
 Test Code: SEL020416 | 20-2574-1811

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 20-9351-9588	Test Type: Cell Growth	Analyst:
Start Date: 04 Feb-16 11:30	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 08 Feb-16 11:40	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 4d 0h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 11-7087-0424	Code: SEL020416	Client: Internal Lab
Sample Date: 04 Feb-16 11:30	Material: Cadmium chloride	Project:
Receive Date:	Source: Reference Toxicant	
Sample Age: NA	Station: REF TOX	

Alkalinity (CaCO3)-mg/L

C-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	1	63			63	63	0	0	0.0%	0
20		1	70			70	70	0	0	0.0%	0
40		1	72			72	72	0	0	0.0%	0
80		1	73			73	73	0	0	0.0%	0
140		1	66			66	66	0	0	0.0%	0
180		1	63			63	63	0	0	0.0%	0
Overall		6	67.83			63	73				0 (0%)

Conductivity-µmhos

C-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	5	428	408.4	447.6	418	456	7.071	15.81	3.69%	0
20		5	422.6	402	443.2	412	452	7.407	16.56	3.92%	0
40		5	422.6	402	443.2	412	452	7.407	16.56	3.92%	0
80		5	403	397.1	408.9	399	411	2.121	4.743	1.18%	0
140		5	387.8	384.2	391.4	384	392	1.281	2.864	0.74%	0
180		5	378.8	368.9	388.7	371	390	3.569	7.981	2.11%	0
Overall		30	407.1			371	456				0 (0%)

Hardness (CaCO3)-mg/L

C-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	1	99			99	99	0	0	0.0%	0
20		1	93			93	93	0	0	0.0%	0
40		1	105			105	105	0	0	0.0%	0
80		1	109			109	109	0	0	0.0%	0
140		1	93			93	93	0	0	0.0%	0
180		1	87			87	87	0	0	0.0%	0
Overall		6	97.67			87	109				0 (0%)

pH-Units

C-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	5	7.54	7.398	7.682	7.4	7.7	0.05099	0.114	1.51%	0
20		5	7.84	7.632	8.048	7.7	8.1	0.07483	0.1673	2.13%	0
40		5	7.82	7.616	8.024	7.6	8	0.07348	0.1643	2.1%	0
80		5	7.84	7.652	8.028	7.6	8	0.06782	0.1517	1.93%	0
140		5	7.86	7.672	8.048	7.6	8	0.06782	0.1517	1.93%	0
180		5	7.84	7.673	8.007	7.6	7.9	0.06	0.1342	1.71%	0
Overall		30	7.79			7.4	8.1				0 (0%)

Temperature-°C

C-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	5	24.1	24.01	24.19	24	24.2	0.03156	0.07056	0.29%	0
20		5	24.1	24.01	24.19	24	24.2	0.03156	0.07056	0.29%	0
40		5	24.1	24.01	24.19	24	24.2	0.03156	0.07056	0.29%	0
80		5	24.1	24.01	24.19	24	24.2	0.03156	0.07056	0.29%	0
140		5	24.1	24.01	24.19	24	24.2	0.03156	0.07056	0.29%	0
180		5	24.1	24.01	24.19	24	24.2	0.03156	0.07056	0.29%	0
Overall		30	24.1			24	24.2				0 (0%)

CHAIN OF CUSTODY FORM

Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108		Project: Boeing-SSFL NPDES Permit 2016 Annual Outfall [001, 002, 011, 018] Outfall 002 Comp		R/A R R R A A A A A ANALYSIS REQUIRED	
Test America Contact: Debby Wilson 17461 Dentan Ave Suite #100 Irvine CA 92614 Tel 949 261 1022 x228 Cell 562 237 0603 Sampler: <i>Deby Smith</i>		Project Manager: Nancy Gardiner 619.285.7132, 858.337.4061 (cell)		Total Dissolved Metals: Mercury (245.1) Asbestos (100.2) Cr (VI), Total (218.6) Monomethyl Hydrazine Total Organic Carbon 1,4-Dioxane Chronic Toxicity CS-137 (901.0 or 901.1) Combined Radium 226 (903.0 or 903.1) & Radium 228 (904.0), Uranium (908.0), K-40, Tritium (T-3) (906.0), Sr-90 (905.0), Total Gross Alpha (900.0), Gross Beta (900.0), Cyanide Total Dissolved Metals: Cu, Pb, Hg, Ag, Ti, Zn, Co, Mn, Sb, As, Be, Cd, Cr, Ni, Se, Ag, Ti, Zn, Co, V, Hardness as CaCO3	
Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)		Sample Matrix: WM Sampling Date/Time: 2/5/2016/0855 Sample I.D.: Outfall002_20160205_Comp_F		Filter and preserve w/in 24hrs of receipt at lab Sample receiving DO NOT OPEN BAG. Bag to be opened in Mercury Prep using clean procedures. Unfiltered and unpreserved analysis, Separately RAD onto another workorder. Only test first or second rain events of the year	
Sample Description: Outfall 002		Container Type: 1 L Poly # of Cont.: 3 Preservative: None Bottle # MS/MSD: 190 Yes		Total Dissolved Metals: Cu, Pb, Hg, Ag, Ti, Zn, Co, Mn, Sb, As, Be, Cd, Cr, Ni, Se, Ag, Ti, Zn, Co, V, Hardness as CaCO3	
Sample Matrix: WM Sampling Date/Time: 2/5/2016/0855 Sample I.D.: Outfall002_20160205_Comp		Container Type: borosilicate vials # of Cont.: 2 Preservative: None Bottle # MS/MSD: 320 Yes		Total Dissolved Metals: Cu, Pb, Hg, Ag, Ti, Zn, Co, Mn, Sb, As, Be, Cd, Cr, Ni, Se, Ag, Ti, Zn, Co, V, Hardness as CaCO3	
Sample Matrix: WM Sampling Date/Time: 2/5/2016/0855 Sample I.D.: Outfall002_20160205_Comp_Extra		Container Type: 500 mL Poly # of Cont.: 3 Preservative: NaOH Bottle # MS/MSD: 220 Yes		Total Dissolved Metals: Cu, Pb, Hg, Ag, Ti, Zn, Co, Mn, Sb, As, Be, Cd, Cr, Ni, Se, Ag, Ti, Zn, Co, V, Hardness as CaCO3	
		Container Type: 2.5 Gal Cube # of Cont.: 3 Preservative: None Bottle # MS/MSD: 225 Yes		Total Dissolved Metals: Cu, Pb, Hg, Ag, Ti, Zn, Co, Mn, Sb, As, Be, Cd, Cr, Ni, Se, Ag, Ti, Zn, Co, V, Hardness as CaCO3	
		Container Type: 1 L Glass Amber # of Cont.: 3 Preservative: None Bottle # MS/MSD: 230 Yes		Total Dissolved Metals: Cu, Pb, Hg, Ag, Ti, Zn, Co, Mn, Sb, As, Be, Cd, Cr, Ni, Se, Ag, Ti, Zn, Co, V, Hardness as CaCO3	
		Container Type: 1 Gal Cube # of Cont.: 6 Preservative: None Bottle # MS/MSD: 235 No		Total Dissolved Metals: Cu, Pb, Hg, Ag, Ti, Zn, Co, Mn, Sb, As, Be, Cd, Cr, Ni, Se, Ag, Ti, Zn, Co, V, Hardness as CaCO3	
		Container Type: 40 mL VOA # of Cont.: 9 Preservative: HCl Bottle # MS/MSD: 240 Yes		Total Dissolved Metals: Cu, Pb, Hg, Ag, Ti, Zn, Co, Mn, Sb, As, Be, Cd, Cr, Ni, Se, Ag, Ti, Zn, Co, V, Hardness as CaCO3	
		Container Type: 1 L Glass Amber # of Cont.: 1 Preservative: HCl Bottle # MS/MSD: 245 No		Total Dissolved Metals: Cu, Pb, Hg, Ag, Ti, Zn, Co, Mn, Sb, As, Be, Cd, Cr, Ni, Se, Ag, Ti, Zn, Co, V, Hardness as CaCO3	
		Container Type: 1 L Glass Amber # of Cont.: 2 Preservative: None Bottle # MS/MSD: 255 No		Total Dissolved Metals: Cu, Pb, Hg, Ag, Ti, Zn, Co, Mn, Sb, As, Be, Cd, Cr, Ni, Se, Ag, Ti, Zn, Co, V, Hardness as CaCO3	
		Container Type: 500 mL Poly # of Cont.: 3 Preservative: None Bottle # MS/MSD: 260 Yes		Total Dissolved Metals: Cu, Pb, Hg, Ag, Ti, Zn, Co, Mn, Sb, As, Be, Cd, Cr, Ni, Se, Ag, Ti, Zn, Co, V, Hardness as CaCO3	
		Container Type: 1 L Poly # of Cont.: 1 Preservative: None Bottle # MS/MSD: 271 No		Total Dissolved Metals: Cu, Pb, Hg, Ag, Ti, Zn, Co, Mn, Sb, As, Be, Cd, Cr, Ni, Se, Ag, Ti, Zn, Co, V, Hardness as CaCO3	
		Container Type: 40 mL VOA # of Cont.: 3 Preservative: HCl Bottle # MS/MSD: 240 No		Total Dissolved Metals: Cu, Pb, Hg, Ag, Ti, Zn, Co, Mn, Sb, As, Be, Cd, Cr, Ni, Se, Ag, Ti, Zn, Co, V, Hardness as CaCO3	
		Container Type: 1 L Glass Amber # of Cont.: 2 Preservative: None Bottle # MS/MSD: 255 No		Total Dissolved Metals: Cu, Pb, Hg, Ag, Ti, Zn, Co, Mn, Sb, As, Be, Cd, Cr, Ni, Se, Ag, Ti, Zn, Co, V, Hardness as CaCO3	

CDC Page 2 of 3 and Page 3 of 3 are the composite samples for Outfall 002 for this storm event.
 These must be added to the same work order for COC Page 1 of 3 for Outfall 002 for the same event.

Legend: R=Routine, A=Annular, Q=Quarterly

Relinquished By: <i>[Signature]</i>	Date/Time: 2/5/16 1125	Company: SHA	Received By: <i>[Signature]</i>	Date/Time: 2/5/16 1125	Company: SHA	Turn-around time: (Check) 24 Hour: _____ 72 Hour: _____ 10 Day: _____ 48 Hour: _____ 5 Day: _____ Normal: _____
Relinquished By: <i>[Signature]</i>	Date/Time: 2/5/16	Company: George Genko	Received By: <i>[Signature]</i>	Date/Time: 2/5/16	Company: George Genko	Sample Integrity: (Check) Intact: _____ On Ice: _____
Relinquished By: <i>[Signature]</i>	Date/Time: 2/5/16	Company: George Genko	Received By: <i>[Signature]</i>	Date/Time: 2/5/16	Company: George Genko	Data Requirements: (Check) No Level IV: _____ All Level IV: _____

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-137347-1

Login Number: 137347

List Number: 1

Creator: Escalante, Maria I

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	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?	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 <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-137347-1

Login Number: 137347

List Number: 3

Creator: Soto, Mayra A

List Source: TestAmerica Denver

List Creation: 02/10/16 02:23 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
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	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.	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.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-137347-1

Login Number: 137347

List Number: 2

Creator: Nelson, Kym D

List Source: TestAmerica Sacramento

List Creation: 02/09/16 01:17 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	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	
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	



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-137347-1

Login Number: 137347

List Number: 4

Creator: Daniels, Brian J

List Source: TestAmerica St. Louis

List Creation: 02/11/16 02:17 PM

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	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 <math><6\text{mm}</math> (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	False	



Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	U-232 (30-110)
440-137347-1 MS	Outfall002_20160205_Comp	80.7
440-137347-1 MSD	Outfall002_20160205_Comp	83.2
LCS 160-237126/2-A	Lab Control Sample	92.2
MB 160-237126/1-A	Method Blank	91.8

Tracer/Carrier Legend

U-232 = Uranium-232

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16

Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-1

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

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (25-164)	TCDF (24-169)	PeCDD (25-181)	PeCDF1 (24-185)	PeCDF2 (21-178)	HxCDD1 (32-141)	HxCDD2 (28-130)	HxCDF1 (26-152)
440-137347-1	Outfall002_20160205_Comp	66	68	62	68	66	66	72	65
MB 320-100382/1-A	Method Blank	61	62	56	61	61	60	68	59

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (26-123)	HxCDF4 (29-147)	HxCDF3 (28-136)	HpCDD (23-140)	HpCDF1 (28-143)	HpCDF2 (26-138)	OCDD (17-157)
440-137347-1	Outfall002_20160205_Comp	66	66	67	75	72	73	77
MB 320-100382/1-A	Method Blank	60	60	62	64	62	63	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
 PeCDF1 = 13C-1,2,3,7,8-PeCDF
 PeCDF2 = 13C-2,3,4,7,8-PeCDF
 HxCDD1 = 13C-1,2,3,4,7,8-HxCDD
 HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
 HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
 HxCDF2 = 13C-1,2,3,6,7,8-HxCDF
 HxCDF4 = 13C-1,2,3,7,8,9-HxCDF
 HxCDF3 = 13C-2,3,4,6,7,8-HxCDF
 HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
 HpCDF1 = 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)

Lab Sample ID	Client Sample ID	TCDD (20-175)	TCDF (22-152)	PeCDD (21-227)	PeCDF1 (21-192)	PeCDF2 (13-328)	HxCDD1 (21-193)	HxCDD2 (25-163)	HxCDF1 (19-202)
LCS 320-100382/2-A	Lab Control Sample	55	57	53	59	57	58	67	59
LCSD 320-100382/3-A	Lab Control Sample Dup	64	66	59	66	64	66	69	64

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (21-159)	HxCDF4 (17-205)	HxCDF3 (22-176)	HpCDD (26-166)	HpCDF1 (21-158)	HpCDF2 (20-186)	OCDD (13-199)
LCS 320-100382/2-A	Lab Control Sample	59	59	61	64	62	60	59
LCSD 320-100382/3-A	Lab Control Sample Dup	65	66	67	73	67	70	73

Surrogate Legend

TCDD = 13C-2,3,7,8-TCDD
 TCDF = 13C-2,3,7,8-TCDF
 PeCDD = 13C-1,2,3,7,8-PeCDD
 PeCDF1 = 13C-1,2,3,7,8-PeCDF
 PeCDF2 = 13C-2,3,4,7,8-PeCDF
 HxCDD1 = 13C-1,2,3,4,7,8-HxCDD
 HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
 HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
 HxCDF2 = 13C-1,2,3,6,7,8-HxCDF

TestAmerica Irvine

Isotope Dilution Summary

Client: Haley & Aldrich, Inc.

Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-1

HxCDF4 = 13C-1,2,3,7,8,9-HxCDF
HxCDF3 = 13C-2,3,4,6,7,8-HxCDF
HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF
HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
OCDD = 13C-OCDD

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DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-137347-2

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 24, 2016

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





TABLE OF CONTENTS

I. INTRODUCTION..... 1

II. Sample Management..... 2

IV. VARIOUS EPA METHODS —Radionuclides..... 6

IV.1. Holding Times:..... 6

IV.2. Calibration: 6

IV.3. Quality Control Samples 6

IV.3.1. Method Blanks 6

IV.3.2. Laboratory Control Samples: 6

IV.3.3. Laboratory Duplicates:..... 6

IV.3.4. Matrix Spike/Matrix Spike Duplicate: 6

IV.4. Sample Result Verification:..... 6

IV.5. Field QC Samples: 7

IV.5.1. Field Blanks and Equipment Rinsates: 7

IV.5.2. Field Duplicates:..... 7

TABLES

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



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-137347-2

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall002_20160205_ Comp	440-137347-1	N/A	Water	2/5/2016 8:55:00 AM	E900, E901.1, E903.0, E904.0, E905.0 E906.0



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-137347-2:

- The laboratories received the sample in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius ($^{\circ}\text{C}$) and greater than 0°C .
- The laboratories received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs in SDG 440-13747-1 and this portion of the SDG was split from the original work order at TA-St. Louis.
- According to the laboratories' sample receipt checklists, custody seals were intact.

MECX noted anomalies regarding sample management identified below:

- Several corrections to the COCs were not initialed or dated.



TABLE 2 - DATA QUALIFIER REFERENCE

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



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	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.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) 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.
B	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.
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.
P	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.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



IV. VARIOUS EPA METHODS — RADIONUCLIDES

Elizabeth Wessling of MEC^X reviewed the SDG on March 24, 2016

The samples listed in Table 1 for this analysis were validated based on the guidelines outlined in the *EPA Methods 900.0, 901.1, 903.0, 904.0, 905.0, and 906.0*, and the *National Functional Guidelines for Inorganic Data Review* (2014).

IV.1. HOLDING TIMES:

The tritium sample was analyzed within 180 days of collection. Remaining aliquots were prepared within the five-day analytical holding time for unpreserved samples.

IV.2. CALIBRATION:

The laboratory calibration information included the standard certificates and applicable preparation/dilutions logs for NIST-traceability.

The gross alpha, radium-226 and tritium detector efficiencies were less than 20%; therefore, the nondetected results for these analytes were qualified as estimated (UJ) in the sample. The remaining detector efficiencies were greater than 20%. Carrier/tracer recoveries were within the laboratory control limits of 40-110%. All calibration checks were acceptable.

IV.3. QUALITY CONTROL SAMPLES

IV.3.1. METHOD BLANKS

Ra-226 was detected in the method blanks and the sample result was determined not to differ from the method blank, at the 1% significance level, and was therefore qualified as nondetected (U). The detect for gross beta was determined not to differ from the method blank at the 5% significance level and was therefore qualified as estimated (J). There were no other detects in the method blanks which resulted in qualifications.

IV.3.2. LABORATORY CONTROL SAMPLES:

The recoveries were within laboratory-established 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:

A matrix spike (MS)/MS duplicate pair was performed for the gross alpha, gross beta, Ra-226, Ra-228, tritium and Sr-90 analyses. Recoveries were within the laboratory control limits, with the exception of the recoveries for gross alpha which was recovered below the lab limits. Nondetected gross alpha was qualified as an estimated nondetect in the sample (UJ).

IV.4. SAMPLE RESULT VERIFICATION:

An EPA Level IV review was performed for the sample in this data package. The sample results and MDCs reported on the sample result form were verified against the raw data and no calculation or transcription errors were noted. Reported nondetects are valid to the MDC.

**IV.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:

IV.5.1. FIELD BLANKS AND EQUIPMENT RINSATES:

This SDG had no identified field blank or equipment rinsate samples.

IV.5.2. FIELD DUPLICATES:

There were no field duplicate samples identified for this SDG.

Validated Sample Result Forms: 440-137347-2

Analysis Method E900

Sample Name Outfall002_20160205_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/5/2016 8:55:00 AM Validation Level: 8

Lab Sample Name: 440-137347-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Gross Alpha Analytes	GROSSALPHA	0.589	1.16	2.10	2.10	pCi/L	U	UJ	C, Q
Gross Beta Analytes	GROSSBETA	3.34	1.27	1.70	1.70	pCi/L		J	B

Analysis Method E901.1

Sample Name Outfall002_20160205_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/5/2016 8:55:00 AM Validation Level: 8

Lab Sample Name: 440-137347-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cesium-137	10045-97-3	2.59	7.32	12.8	12.8	pCi/L	U	U	
Potassium-40	13966-00-2	-62.0	245	203	203	pCi/L	U	U	

Analysis Method E903.0

Sample Name Outfall002_20160205_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/5/2016 8:55:00 AM Validation Level: 8

Lab Sample Name: 440-137347-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-226	13982-63-3	0.0836	0.0480	0.0599	0.0599	pCi/L		UJ	B, C

Analysis Method E904.0

Sample Name Outfall002_20160205_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/5/2016 8:55:00 AM Validation Level: 8

Lab Sample Name: 440-137347-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-228	15262-20-1	0.0393	0.225	0.396	0.396	pCi/L	U	U	

Analysis Method *E905.0*

Sample Name Outfall002_20160205_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/5/2016 8:55:00 AM **Validation Level:** 8

Lab Sample Name: 440-137347-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Strontium-90	10098-97-2	-0.167	0.337	0.627	0.627	pCi/L	U	U	

Analysis Method *E906.0*

Sample Name Outfall002_20160205_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/5/2016 8:55:00 AM **Validation Level:** 8

Lab Sample Name: 440-137347-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Tritium	10028-17-8	-163	244	496	496	pCi/L	U	UJ	C

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-137347-2

Client Project/Site: Boeing NPDES SSFL outfalls

For:

Haley & Aldrich, Inc.

5333 Mission Center Road

Suite 300

San Diego, California 92108

Attn: Nancy Gardiner



Authorized for release by:

3/16/2016 8:10:10 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

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www.testamericainc.com

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

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

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

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



Urvashi Patel
Manager of Project Management
3/16/2016 8:10:10 PM



Table of Contents

Cover Page	1
Table of Contents	3
Sample Summary	4
Case Narrative	5
Client Sample Results	6
Method Summary	7
Lab Chronicle	8
QC Sample Results	9
QC Association Summary	16
Definitions/Glossary	17
Certification Summary	18
Chain of Custody	19
Receipt Checklists	21
Tracer Carrier Summary	23

Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-137347-1	Outfall002_20160205_Comp	Water	02/05/16 08:55	02/05/16 19:00

- 1
- 2
- 3
- 4
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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-2

Job ID: 440-137347-2

Laboratory: TestAmerica Irvine

Narrative

Job Narrative 440-137347-2

Comments

No additional comments.

Receipt

The samples were received on 2/5/2016 7:00 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 6 coolers at receipt time were 0.5° C, 0.7° C, 0.7° C, 0.8° C, 1.0° C and 1.4° C.

Receipt Exceptions

A Chain-of-Custody (COC) was not received with these samples: one COC for two different projects, .

RAD

Method(s) 900.0: Gross Alpha/Beta Prep Batch 160-239456:

The matrix spike and matrix spike duplicate (MS/MSD) recoveries are outside the QC lower control limits. Sample matrix interferences are suspected because the associated laboratory control sample (LCS) recovery is within acceptance limits.

Outfall002_20160205_Comp (440-137347-1), (LCS 160-239456/2-A), (LCSB 160-239456/3-A), (MB 160-239456/1-A), (440-137200-AZ-3-H), (440-137200-P-3-S MS), (440-137200-P-3-U MSB), (440-137200-P-3-V MSB), (440-137200-P-3-T MSD), (440-137347-K-1-V MS), (440-137347-K-1-X MSB), (440-137347-K-1-Y MSB) and (440-137347-K-1-W MSD)

Method(s) 904.0: Radium-228 Prep Batch 160-236549:

The following sample was inadvertently not spiked with radium-228 resulting in a failing spike recovery and a failing RPD/RER (440-137200-P-3-F MSD; 3%). The batch precision is demonstrated by passing RPD/RER for samples 440-137347-K-1-L MS and 440-137347-K-1-M MSD. The data have been qualified and reported.

Outfall002_20160205_Comp (440-137347-1), Outfall002_20160205_Comp (440-137347-1[MS]), Outfall002_20160205_Comp (440-137347-1[MSD]), (LCS 160-236549/2-A) and (MB 160-236549/1-A)

Method(s) PrecSep-7: Strontium-90 Prep Batch 160-236508:

The following samples were prepared at a reduced aliquot due to sediment and yellow discoloration: Outfall002_20160205_Comp (440-137347-1), Outfall002_20160205_Comp (440-137347-1[MS]) and Outfall002_20160205_Comp (440-137347-1[MSD]).

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: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-2

Client Sample ID: Outfall002_20160205_Comp

Lab Sample ID: 440-137347-1

Date Collected: 02/05/16 08:55

Matrix: Water

Date Received: 02/05/16 19:00

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	0.589	U	1.16	1.16	3.00	2.10	pCi/L	03/08/16 09:12	03/11/16 15:16	1
Gross Beta	3.34		1.23	1.27	4.00	1.70	pCi/L	03/08/16 09:12	03/11/16 15:16	1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	2.59	U	7.31	7.32	20.0	12.8	pCi/L	02/12/16 07:46	02/16/16 20:32	1
Potassium-40	-62.0	U	244	245		203	pCi/L	02/12/16 07:46	02/16/16 20:32	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0836		0.0474	0.0480	1.00	0.0599	pCi/L	02/12/16 11:51	03/09/16 06:23	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	98.3		40 - 110					02/12/16 11:51	03/09/16 06:23	1

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0393	U	0.225	0.225	1.00	0.396	pCi/L	02/15/16 09:19	03/01/16 12:30	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	98.3		40 - 110					02/15/16 09:19	03/01/16 12:30	1
Y Carrier	86.4		40 - 110					02/15/16 09:19	03/01/16 12:30	1

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.167	U	0.337	0.337	3.00	0.627	pCi/L	02/12/16 13:36	02/25/16 21:43	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	90.5		40 - 110					02/12/16 13:36	02/25/16 21:43	1
Y Carrier	92.7		40 - 110					02/12/16 13:36	02/25/16 21:43	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-163	U	244	244	500	496	pCi/L	02/23/16 14:08	02/25/16 17:57	1

TestAmerica Irvine

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-2

Method	Method Description	Protocol	Laboratory
900.0	Gross Alpha and Gross Beta Radioactivity	EPA	TAL SL
901.1	Cesium 137 & Other Gamma Emitters (GS)	EPA	TAL SL
903.0	Radium-226 (GFPC)	EPA	TAL SL
904.0	Radium-228 (GFPC)	EPA	TAL SL
905	Strontium-90 (GFPC)	EPA	TAL SL
906.0	Tritium, Total (LSC)	EPA	TAL SL

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566



Lab Chronicle

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-2

Client Sample ID: Outfall002_20160205_Comp

Lab Sample ID: 440-137347-1

Date Collected: 02/05/16 08:55

Matrix: Water

Date Received: 02/05/16 19:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Evaporation			125 mL	1.0 g	239456	03/08/16 09:12	CMT	TAL SL
Total/NA	Analysis	900.0		1	125 mL		240131	03/11/16 15:16	MFM	TAL SL
Total/NA	Prep	Fill_Geo-0			1000 mL	1.0 g	236466	02/12/16 07:46	R1S	TAL SL
Total/NA	Analysis	901.1		1	1000 mL		238216	02/16/16 20:32	ALS	TAL SL
Total/NA	Prep	PrecSep-21			1000.34 mL	1.0 g	236495	02/12/16 11:51	CMS	TAL SL
Total/NA	Analysis	903.0		1	1000.34 mL		239757	03/09/16 06:23	RTM	TAL SL
Total/NA	Prep	PrecSep_0			1000.34 mL	1.0 g	236549	02/15/16 09:19	CMS	TAL SL
Total/NA	Analysis	904.0		1	1000.34 mL		238559	03/01/16 12:30	RTM	TAL SL
Total/NA	Prep	PrecSep-7			500.47 mL	1.0 g	236508	02/12/16 13:36	CMS	TAL SL
Total/NA	Analysis	905		1	500.47 mL		238036	02/25/16 21:43	ALS	TAL SL
Total/NA	Prep	LSC_Dist_Susp			100.02 mL	1.0 g	237768	02/23/16 14:08	JDL	TAL SL
Total/NA	Analysis	906.0		1	100.02 mL		238222	02/25/16 17:57	ALD	TAL SL

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-2

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Lab Sample ID: MB 160-239456/1-A
Matrix: Water
Analysis Batch: 240131

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 239456

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Gross Alpha	0.4899	U	0.477	0.480	3.00	0.738	pCi/L	03/08/16 09:12	03/11/16 15:15	1
Gross Beta	-0.1616	U	0.611	0.611	4.00	1.09	pCi/L	03/08/16 09:12	03/11/16 15:15	1

Lab Sample ID: LCS 160-239456/2-A
Matrix: Water
Analysis Batch: 240131

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 239456

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Gross Alpha	50.0	50.40		7.21	3.00	1.40	pCi/L	101	73 - 133

Lab Sample ID: LCSB 160-239456/3-A
Matrix: Water
Analysis Batch: 240131

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 239456

Analyte	Spike Added	LCSB Result	LCSB Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Gross Beta	93.2	97.00		10.2	4.00	1.06	pCi/L	104	75 - 125

Lab Sample ID: 440-137200-P-3-S MS
Matrix: Water
Analysis Batch: 240131

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 239456

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
						Uncert. (2σ+/-)					
Gross Alpha	-0.152	U	71.9	38.50	F1	6.73	3.00	2.73	pCi/L	54	60 - 140

Lab Sample ID: 440-137200-P-3-T MSD
Matrix: Water
Analysis Batch: 240131

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 239456

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
						Uncert. (2σ+/-)							
Gross Alpha	-0.152	U	72.4	34.14	F1	6.34	3.00	3.01	pCi/L	47	60 - 140	0.33	1

Lab Sample ID: 440-137200-P-3-U MSBT
Matrix: Water
Analysis Batch: 240131

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 239456

Analyte	Sample Result	Sample Qual	Spike Added	MSBT Result	MSBT Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
						Uncert. (2σ+/-)					
Gross Beta	5.70		134	143.3		15.1	4.00	1.43	pCi/L	103	60 - 140

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-2

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity (Continued)

Lab Sample ID: 440-137200-P-3-V MSBTD
Matrix: Water
Analysis Batch: 240131

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 239456

Analyte	Sample Result	Sample Qual	Spike Added	MSBTD Result	MSBTD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		RER	Limit
											60 - 140	0.02	1	
Gross Beta	5.70		135	142.7		15.1	4.00	1.61	pCi/L	101	60 - 140	0.02	1	

Lab Sample ID: 440-137347-1 MS
Matrix: Water
Analysis Batch: 240131

Client Sample ID: Outfall002_20160205_Comp
Prep Type: Total/NA
Prep Batch: 239456

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		RER	Limit
											60 - 140			
Gross Alpha	0.589	U	69.4	29.15	F1	5.74	3.00	3.37	pCi/L	42	60 - 140			

Lab Sample ID: 440-137347-1 MSBT
Matrix: Water
Analysis Batch: 240131

Client Sample ID: Outfall002_20160205_Comp
Prep Type: Total/NA
Prep Batch: 239456

Analyte	Sample Result	Sample Qual	Spike Added	MSBT Result	MSBT Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		RER	Limit
											60 - 140			
Gross Beta	3.34		129	130.3		13.8	4.00	1.45	pCi/L	98	60 - 140			

Lab Sample ID: 440-137347-1 MSBTD
Matrix: Water
Analysis Batch: 240131

Client Sample ID: Outfall002_20160205_Comp
Prep Type: Total/NA
Prep Batch: 239456

Analyte	Sample Result	Sample Qual	Spike Added	MSBTD Result	MSBTD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		RER	Limit
											60 - 140	0.01	1	
Gross Beta	3.34		129	130.1		13.8	4.00	1.49	pCi/L	98	60 - 140	0.01	1	

Lab Sample ID: 440-137347-1 MSD
Matrix: Water
Analysis Batch: 240131

Client Sample ID: Outfall002_20160205_Comp
Prep Type: Total/NA
Prep Batch: 239456

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		RER	Limit
											60 - 140	0.44	1	
Gross Alpha	0.589	U	69.4	34.47	F1	6.41	3.00	3.51	pCi/L	50	60 - 140	0.44	1	

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Lab Sample ID: MB 160-236466/1-A
Matrix: Water
Analysis Batch: 238221

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 236466

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Potassium-40	-41.16	U	164	164		199	pCi/L	02/12/16 07:46	02/20/16 19:18	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-2

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS) (Continued)

Lab Sample ID: LCS 160-236466/2-A
Matrix: Water
Analysis Batch: 238213

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 236466

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
Americium-241	137000	138200		16000		453	pCi/L	101	90 - 111	
Cesium-137	48100	48920		4870	20.0	154	pCi/L	102	90 - 111	
Cobalt-60	45400	44590		4400		119	pCi/L	98	89 - 110	

Lab Sample ID: 160-16061-F-4-B DU
Matrix: Water
Analysis Batch: 238213

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 236466

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit	
Cesium-137	3.04	U	-1.010	U	7.14	20.0	12.9	pCi/L	0.32	1	
Potassium-40	-70.9	U	-56.96	U	232		207	pCi/L	0.01	1	

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-236495/1-A
Matrix: Water
Analysis Batch: 239757

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 236495

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Carrier	MB %Yield	MB Qualifier	Limits		Prepared	Analyzed	Dil Fac			
Ba Carrier	107		40 - 110		02/12/16 11:51	03/09/16 06:22	1			

Lab Sample ID: LCS 160-236495/2-A
Matrix: Water
Analysis Batch: 239757

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 236495

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
Radium-226	11.2	10.86		1.06	1.00	0.0647	pCi/L	97	68 - 137	
Carrier	LCS %Yield	LCS Qualifier	Limits							
Ba Carrier	106		40 - 110							

Lab Sample ID: 440-137347-1 MS
Matrix: Water
Analysis Batch: 239757

Client Sample ID: Outfall002_20160205_Comp
Prep Type: Total/NA
Prep Batch: 236495

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
Radium-226	0.0836		11.2	12.43		1.21	1.00	0.0565	pCi/L	111	75 - 138	

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QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-2

Method: 903.0 - Radium-226 (GFPC) (Continued)

Lab Sample ID: 440-137347-1 MS
Matrix: Water
Analysis Batch: 239757

Client Sample ID: Outfall002_20160205_Comp
Prep Type: Total/NA
Prep Batch: 236495

Carrier	MS %Yield	MS Qualifier	Limits
Ba Carrier	96.3		40 - 110

Lab Sample ID: 440-137347-1 MSD
Matrix: Water
Analysis Batch: 239757

Client Sample ID: Outfall002_20160205_Comp
Prep Type: Total/NA
Prep Batch: 236495

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226	0.0836		11.2	11.76		1.15	1.00	0.0867	pCi/L	105	75 - 138	0.28	1

Carrier	MSD %Yield	MSD Qualifier	Limits
Ba Carrier	107		40 - 110

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-236549/1-A
Matrix: Water
Analysis Batch: 238559

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 236549

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.2184	U	0.221	0.222	1.00	0.360	pCi/L	02/15/16 09:19	03/01/16 12:29	1

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	107		40 - 110	02/15/16 09:19	03/01/16 12:29	1
Y Carrier	86.7		40 - 110	02/15/16 09:19	03/01/16 12:29	1

Lab Sample ID: LCS 160-236549/2-A
Matrix: Water
Analysis Batch: 238559

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 236549

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	9.33	9.588		1.09	1.00	0.365	pCi/L	103	56 - 140

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	106		40 - 110
Y Carrier	87.5		40 - 110

Lab Sample ID: 440-137347-1 MS
Matrix: Water
Analysis Batch: 238559

Client Sample ID: Outfall002_20160205_Comp
Prep Type: Total/NA
Prep Batch: 236549

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	0.0393	U	9.32	9.831		1.14	1.00	0.451	pCi/L	105	45 - 150

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QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-2

Method: 904.0 - Radium-228 (GFPC) (Continued)

Lab Sample ID: 440-137347-1 MS
Matrix: Water
Analysis Batch: 238559

Client Sample ID: Outfall002_20160205_Comp
Prep Type: Total/NA
Prep Batch: 236549

	MS	MS	
Carrier	%Yield	Qualifier	Limits
Ba Carrier	96.3		40 - 110
Y Carrier	88.6		40 - 110

Lab Sample ID: 440-137347-1 MSD
Matrix: Water
Analysis Batch: 238559

Client Sample ID: Outfall002_20160205_Comp
Prep Type: Total/NA
Prep Batch: 236549

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		RER	Limit
											RER	Limit		
Radium-228	0.0393	U	9.32	7.967		0.941	1.00	0.361	pCi/L	86	45 - 150	0.89	1	

	MSD	MSD	
Carrier	%Yield	Qualifier	Limits
Ba Carrier	107		40 - 110
Y Carrier	90.5		40 - 110

Method: 905 - Strontium-90 (GFPC)

Lab Sample ID: MB 160-236508/1-A
Matrix: Water
Analysis Batch: 238036

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 236508

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared		Analyzed		Dil Fac
								Prepared	Analyzed	Prepared	Analyzed	
Strontium-90	-0.04416	U	0.158	0.158	3.00	0.289	pCi/L	02/12/16 13:36	02/25/16 21:40			1

	MB	MB		Prepared	Analyzed	Dil Fac
Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	94.6		40 - 110	02/12/16 13:36	02/25/16 21:40	1
Y Carrier	92.3		40 - 110	02/12/16 13:36	02/25/16 21:40	1

Lab Sample ID: LCS 160-236508/2-A
Matrix: Water
Analysis Batch: 238036

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 236508

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
									RER	Limit
Strontium-90	8.71	8.927		0.925	3.00	0.332	pCi/L	103	75 - 125	

	LCS	LCS	
Carrier	%Yield	Qualifier	Limits
Sr Carrier	86.8		40 - 110
Y Carrier	92.7		40 - 110

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-2

Method: 905 - Strontium-90 (GFPC) (Continued)

Lab Sample ID: 440-137347-1 MS
Matrix: Water
Analysis Batch: 238036

Client Sample ID: Outfall002_20160205_Comp
Prep Type: Total/NA
Prep Batch: 236508

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Strontium-90	-0.167	U	17.4	17.90		1.85	3.00	0.573	pCi/L	103	19 - 150
MS MS											
Carrier	%Yield	Qualifier	Limits								
Sr Carrier	88.4		40 - 110								
Y Carrier	89.3		40 - 110								

Lab Sample ID: 440-137347-1 MSD
Matrix: Water
Analysis Batch: 238036

Client Sample ID: Outfall002_20160205_Comp
Prep Type: Total/NA
Prep Batch: 236508

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Strontium-90	-0.167	U	17.4	16.28		1.74	3.00	0.610	pCi/L	94	19 - 150	0.45	1
MSD MSD													
Carrier	%Yield	Qualifier	Limits										
Sr Carrier	78.8		40 - 110										
Y Carrier	95.0		40 - 110										

Method: 906.0 - Tritium, Total (LSC)

Lab Sample ID: MB 160-237768/1-A
Matrix: Water
Analysis Batch: 238222

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 237768

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-18.02	U	254	254	500	474	pCi/L	02/23/16 14:08	02/25/16 14:47	1

Lab Sample ID: LCS 160-237768/2-A
Matrix: Water
Analysis Batch: 238222

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 237768

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	4680	4365		701	500	471	pCi/L	93	74 - 114

Lab Sample ID: 440-137347-1 MS
Matrix: Water
Analysis Batch: 238222

Client Sample ID: Outfall002_20160205_Comp
Prep Type: Total/NA
Prep Batch: 237768

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	-163	U	4680	3941		656	500	461	pCi/L	84	67 - 130

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QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-2

Method: 906.0 - Tritium, Total (LSC) (Continued)

Lab Sample ID: 440-137347-1 MSD
 Matrix: Water
 Analysis Batch: 238222

Client Sample ID: Outfall002_20160205_Comp
 Prep Type: Total/NA
 Prep Batch: 237768

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Tritium	-163	U	4680	4140		680	500	471	pCi/L	88	67 - 130	0.15	1

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QC Association Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-2

Rad

Prep Batch: 236466

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-16061-F-4-B DU	Duplicate	Total/NA	Water	Fill_Geo-0	
440-137347-1	Outfall002_20160205_Comp	Total/NA	Water	Fill_Geo-0	
LCS 160-236466/2-A	Lab Control Sample	Total/NA	Water	Fill_Geo-0	
MB 160-236466/1-A	Method Blank	Total/NA	Water	Fill_Geo-0	

Prep Batch: 236495

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137347-1	Outfall002_20160205_Comp	Total/NA	Water	PrecSep-21	
440-137347-1 MS	Outfall002_20160205_Comp	Total/NA	Water	PrecSep-21	
440-137347-1 MSD	Outfall002_20160205_Comp	Total/NA	Water	PrecSep-21	
LCS 160-236495/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
MB 160-236495/1-A	Method Blank	Total/NA	Water	PrecSep-21	

Prep Batch: 236508

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137347-1	Outfall002_20160205_Comp	Total/NA	Water	PrecSep-7	
440-137347-1 MS	Outfall002_20160205_Comp	Total/NA	Water	PrecSep-7	
440-137347-1 MSD	Outfall002_20160205_Comp	Total/NA	Water	PrecSep-7	
LCS 160-236508/2-A	Lab Control Sample	Total/NA	Water	PrecSep-7	
MB 160-236508/1-A	Method Blank	Total/NA	Water	PrecSep-7	

Prep Batch: 236549

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137347-1	Outfall002_20160205_Comp	Total/NA	Water	PrecSep_0	
440-137347-1 MS	Outfall002_20160205_Comp	Total/NA	Water	PrecSep_0	
440-137347-1 MSD	Outfall002_20160205_Comp	Total/NA	Water	PrecSep_0	
LCS 160-236549/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
MB 160-236549/1-A	Method Blank	Total/NA	Water	PrecSep_0	

Prep Batch: 237768

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137347-1	Outfall002_20160205_Comp	Total/NA	Water	LSC_Dist_Susp	
440-137347-1 MS	Outfall002_20160205_Comp	Total/NA	Water	LSC_Dist_Susp	
440-137347-1 MSD	Outfall002_20160205_Comp	Total/NA	Water	LSC_Dist_Susp	
LCS 160-237768/2-A	Lab Control Sample	Total/NA	Water	LSC_Dist_Susp	
MB 160-237768/1-A	Method Blank	Total/NA	Water	LSC_Dist_Susp	

Prep Batch: 239456

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137200-P-3-S MS	Matrix Spike	Total/NA	Water	Evaporation	
440-137200-P-3-T MSD	Matrix Spike Duplicate	Total/NA	Water	Evaporation	
440-137200-P-3-U MSBT	Matrix Spike	Total/NA	Water	Evaporation	
440-137200-P-3-V MSBTD	Matrix Spike Duplicate	Total/NA	Water	Evaporation	
440-137347-1	Outfall002_20160205_Comp	Total/NA	Water	Evaporation	
440-137347-1 MS	Outfall002_20160205_Comp	Total/NA	Water	Evaporation	
440-137347-1 MSBT	Outfall002_20160205_Comp	Total/NA	Water	Evaporation	
440-137347-1 MSBTD	Outfall002_20160205_Comp	Total/NA	Water	Evaporation	
440-137347-1 MSD	Outfall002_20160205_Comp	Total/NA	Water	Evaporation	
LCS 160-239456/2-A	Lab Control Sample	Total/NA	Water	Evaporation	
LCSB 160-239456/3-A	Lab Control Sample	Total/NA	Water	Evaporation	
MB 160-239456/1-A	Method Blank	Total/NA	Water	Evaporation	

TestAmerica Irvine

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-2

Qualifiers

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.
F1	MS and/or MSD Recovery is outside acceptance limits.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
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
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)

Certification Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-2

Laboratory: TestAmerica Irvine

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

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-16
Arizona	State Program	9	AZ0671	10-13-16
California	LA Cty Sanitation Districts	9	10256	01-31-17 *
California	State Program	9	CA ELAP 2706	06-30-16
Guam	State Program	9	Cert. No. 12.002r	01-23-17
Hawaii	State Program	9	N/A	01-29-17
Kansas	NELAP Secondary AB	7	E-10420	07-31-16
Nevada	State Program	9	CA015312007A	07-31-16
New Mexico	State Program	6	N/A	01-29-17
Northern Mariana Islands	State Program	9	MP0002	01-29-16 *
Oregon	NELAP	10	4005	01-29-17
USDA	Federal		P330-09-00080	07-08-18
Washington	State Program	10	900	09-03-16

Laboratory: TestAmerica St. Louis

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

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	MO00054	06-30-16
California	ELAP	9	2886	03-31-16 *
Connecticut	State Program	1	PH-0241	03-31-17
Florida	NELAP	4	E87689	06-30-16
Illinois	NELAP	5	003757	11-30-16
Iowa	State Program	7	373	12-01-16
Kansas	NELAP	7	E-10236	05-31-16
Kentucky (DW)	State Program	4	90125	12-31-16
L-A-B	DoD ELAP		L2305	04-10-16 *
Louisiana	NELAP	6	04080	06-30-16
Louisiana (DW)	NELAP	6	LA160008	12-31-16
Maryland	State Program	3	310	09-30-16
Missouri	State Program	7	780	06-30-16
Nevada	State Program	9	MO000542016-1	07-31-16
New Jersey	NELAP	2	MO002	06-30-16
New York	NELAP	2	11616	03-31-16 *
North Dakota	State Program	8	R207	06-30-16
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-16
Pennsylvania	NELAP	3	68-00540	02-28-17 *
South Carolina	State Program	4	85002001	06-30-16
Texas	NELAP	6	T104704193-15-9	07-31-16
USDA	Federal		P330-07-00122	01-09-17
Utah	NELAP	8	MO000542015-7	07-31-16
Virginia	NELAP	3	460230	06-14-16
Washington	State Program	10	C592	08-30-16
West Virginia DEP	State Program	3	381	08-31-16

* Certification renewal pending - certification considered valid.

CHAIN OF CUSTODY FORM



440-137347 Chain of Custody

Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108		Project: Boeing-SSFL NPDES Permit 2016 Annual Outfall 001, 002, 011, 018 Outfall 002 Comp		R/A R R R R/A R R R A A R R R ANALYSIS REQUIRED										Comments							
Test America Contact: Debby Wilson 17461 Derian Ave Suite #100 Irvine CA 92614 Tel 949 251 1022 x228 Cell 949 237 0603 Sampler: <i>Red in: the Dan in: it's</i>		Project Manager: Nancy Gardiner 619.285.7132, 858.337.4061(ceil)		Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)																	
Sample Description	Sample I.D.	Sampling Date/Time	Sample Matrix	Container Type	# of Cont.	Preservative	Bottle #	MSMSD	TCD (and all congeners)	BOD ₅ (20 degrees C)	Surfactants (MBAS)	Ch, F, SO ₄ , Nitrate-N, Nitrite-N, NO ₃ -NO ₂ -N, Perchlorate	Turbidity, TDS	TSS	Ammonia-N (350.2)	Priority Pollutants-Pesticides+PCBs	SVOCs PP (625)	Total Recoverable Metals: Mercury (245.1)			
Outfall 002	Outfall002_20160205_Comp	2/5/2016 / 0855	WM	1 L Glass Amber	2	HNO ₃	80	No	X												
			WM	1 L Poly	1	None	110	No													
			WM	500 mL Poly	6	None	120	Yes													
			WM	500 mL Poly	6	None	125	Yes													
			WM	500 mL Poly	1	None	150	No													
			WM	500 mL Poly	3	H ₂ SO ₄	160	Yes													
			WM	1 L Glass Amber	6	None	260	Yes													
			WM	1 L Glass Amber	6	None	175	Yes													
			WM	1 L Poly	1	None	185	No													
			WM	borosilicate vials	2	HNO ₃	315	Yes													
Outfall002_20160205_Comp_Extra	Outfall002_20160205_Comp_Extra	2/5/2016 / 1025	WM	1 L Glass Amber	2	None	110	No													
			WM	500 mL Poly	2	None	120	No													
			WM	500 mL Poly	2	None	125	No													
			WM	1 L Glass Amber	2	None	250	No													

COC Page 2 of 3 and Page 3 of 3 are the composite samples for Outfall 002 for this storm event.
These must be added to the same work order for COC Page 1 of 3 for Outfall 002 for the same event.

Legend: R=Routine, A=Annual, Q=Quarterly

Relinquished By: *[Signature]* Date/Time: 2/5/16 1125 Company: JHA
 Received By: *George Gervin* Date/Time: 2/5/16 1125
 Relinquished By: *[Signature]* Date/Time: 2/5/16 0228 Company: JHA
 Received By: *George Gervin* Date/Time: 2/5/16 1900
 Relinquished By: *[Signature]* Date/Time: 2/5/16 1125 Company: JHA
 Received By: *George Gervin* Date/Time: 2/5/16 1900

Turn-around time: (Check) 24 Hour: _____ 72 Hour: _____ 10 Day: _____
 48 Hour: _____ 5 Day: _____ Normal: _____

Sample Integrity: (Check) Intact: _____ On Ice: _____
 Data Requirements: (Check) Level IV: _____

0.7/1.0, 1.1/1.4, 0.8/0.8, 0.4/0.7, 0.2/0.5, 0.4/0.7

00
2/6/16
11:00

CHAIN OF CUSTODY FORM

<p>Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108</p>		<p>Project: Boeing-SSFL NPDES Permit 2016 Annual Outfall [001, 002, 011, 018] Outfall 002 Comp</p>		<p>R/A R R R R A A A A A ANALYSIS REQUIRED</p>		<p>Comments</p>	
<p>Test America Contact: Debby Wilson 17461 Dentan Ave Suite #100 Irvine CA 92614 Tel 949 261 1022 x228 Cell 949 237 0603 Sampler: <i>Deby Smith</i></p>		<p>Project Manager: Nancy Gardiner 619.285.7132, 858.337.4061 (cell)</p>		<p>Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)</p>		<p>Total Dissolved Metals: Mercury (245.1)</p>	
<p>Sample Description: Outfall002_20160205_Comp_F</p>		<p>Sample Matrix: WM</p>		<p>Container Type: 1 L Poly</p>		<p>Cr (VI), Total (218.6)</p>	
<p>Sampling Date/Time: 2/5/2016/0855</p>		<p># of Cont: 3</p>		<p>Preservative: None</p>		<p>Asbestos (100.2)</p>	
<p>Sample I.D.: Outfall002_20160205_Comp</p>		<p>Matrix: WM</p>		<p>Matrix: borosilicate vials</p>		<p>Total Organic Carbon</p>	
<p>Sample I.D.: Outfall002_20160205_Comp</p>		<p>Matrix: WM</p>		<p>Matrix: 500 mL Poly</p>		<p>1,4-Dioxane</p>	
<p>Sample I.D.: Outfall002_20160205_Comp_Extra</p>		<p>Matrix: WM</p>		<p>Matrix: 40 mL VOA</p>		<p>Chronic Toxicity</p>	
<p>Sample I.D.: Outfall 002</p>		<p>Matrix: WM</p>		<p>Matrix: 2.5 Gal Cube</p>		<p>Gross Alpha(900.0), Gross Beta(900.0), Tritium (H-3) (906.0), Sr-90 (905.0), Total Radium 226 (903.0 or 903.1) & CS-137 (901.0 or 901.1)</p>	
<p>Sample I.D.: Outfall 002</p>		<p>Matrix: WM</p>		<p>Matrix: 1 L Glass Amber</p>		<p>Cyanide</p>	
<p>Sample I.D.: Outfall 002</p>		<p>Matrix: WM</p>		<p>Matrix: 1 L Glass Amber</p>		<p>V, Hardness as CaCO3</p>	
<p>Sample I.D.: Outfall 002</p>		<p>Matrix: WM</p>		<p>Matrix: 500 mL Poly</p>		<p>Total Dissolved Metals: Cu, Pb, Hg, Ag, Ti, Zn, Co, Mn, Sb, As, Be, Cd, Cr, Ni, Se, Ag, Ti, Zn, Co, V, Hardness as CaCO3</p>	
<p>Sample I.D.: Outfall 002</p>		<p>Matrix: WM</p>		<p>Matrix: 1 L Glass Amber</p>		<p>Filter and preserve w/in 24hrs of receipt at lab</p>	
<p>Sample I.D.: Outfall 002</p>		<p>Matrix: WM</p>		<p>Matrix: 1 L Glass Amber</p>		<p>Sample receiving DO NOT OPEN BAG. Bag to be opened in Mercury Prep using clean procedures.</p>	
<p>Sample I.D.: Outfall 002</p>		<p>Matrix: WM</p>		<p>Matrix: 1 L Glass Amber</p>		<p>Unfiltered and unpreserved analysis. Separately RAD onto another workorder.</p>	
<p>Sample I.D.: Outfall 002</p>		<p>Matrix: WM</p>		<p>Matrix: 1 L Glass Amber</p>		<p>Only test first or second rain events of the year</p>	
<p>Sample I.D.: Outfall 002</p>		<p>Matrix: WM</p>		<p>Matrix: 1 L Glass Amber</p>		<p>Hold</p>	
<p>Sample I.D.: Outfall 002</p>		<p>Matrix: WM</p>		<p>Matrix: 1 L Glass Amber</p>		<p>Hold</p>	

CDC Page 2 of 3 and Page 3 of 3 are the composite samples for Outfall 002 for this storm event. These must be added to the same work order for COC Page 1 of 3 for Outfall 002 for the same event.

Legend: R=Routine, A=Amn/Inj, G=Quarternary

Relinquished By: *George Genhu* Date/Time: 2/5/16 1125 Company: SHA

Relinquished By: *George Genhu* Date/Time: 2/5/16 1900 Company: DCS 1900

Relinquished By: *George Genhu* Date/Time: 2/5/16 1900 Company: DCS 1900

Received By: *George Genhu* Date/Time: 2/5/16 1125

Received By: *George Genhu* Date/Time: 2/5/16 1900

Received By: *George Genhu* Date/Time: 2/5/16 1900

Turn-around time: (Check) 24 Hour: 72 Hour: 10 Day: 48 Hour: 5 Day: Normal: On Ice: Sample Integrity: (Check) Intact: Data Requirements: (Check) No Level IV: All Level IV:

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-137347-2

Login Number: 137347

List Number: 1

Creator: Escalante, Maria I

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	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?	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 <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-137347-2

Login Number: 137347

List Number: 4

Creator: Daniels, Brian J

List Source: TestAmerica St. Louis

List Creation: 02/11/16 02:17 PM

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	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 $<6\text{mm}$ (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	False	

Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137347-2

Method: 903.0 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (40-110)
440-137347-1	Outfall002_20160205_Comp	98.3
440-137347-1 MS	Outfall002_20160205_Comp	96.3
440-137347-1 MSD	Outfall002_20160205_Comp	107
LCS 160-236495/2-A	Lab Control Sample	106
MB 160-236495/1-A	Method Blank	107

Tracer/Carrier Legend

Ba = Ba Carrier

Method: 904.0 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (40-110)	Y (40-110)
440-137347-1	Outfall002_20160205_Comp	98.3	86.4
440-137347-1 MS	Outfall002_20160205_Comp	96.3	88.6
440-137347-1 MSD	Outfall002_20160205_Comp	107	90.5
LCS 160-236549/2-A	Lab Control Sample	106	87.5
MB 160-236549/1-A	Method Blank	107	86.7

Tracer/Carrier Legend

Ba = Ba Carrier

Y = Y Carrier

Method: 905 - Strontium-90 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Sr (C) (40-110)	Y (40-110)
440-137347-1	Outfall002_20160205_Comp	90.5	92.7
440-137347-1 MS	Outfall002_20160205_Comp	88.4	89.3
440-137347-1 MSD	Outfall002_20160205_Comp	78.8	95.0
LCS 160-236508/2-A	Lab Control Sample	86.8	92.7
MB 160-236508/1-A	Method Blank	94.6	92.3

Tracer/Carrier Legend

Sr (C) = Sr Carrier

Y = Y Carrier

DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-133027-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 3, 2016

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





TABLE OF CONTENTS

I. INTRODUCTION..... 1

II. Sample Management..... 2

IV. EPA METHOD 1664A—Oil and Grease (HEM)..... 6

 IV.1. Holding Times 6

 IV.2. Calibration..... 6

 IV.1. Quality Control Samples 6

 IV.1.1. Method Blanks 6

 IV.1.2. Laboratory Control Samples 6

 IV.1.3. Laboratory Duplicates..... 6

 IV.1.4. Matrix Spike/Matrix Spike Duplicate 6

 IV.1.5. Sample Result Verification 6

 IV.2. Field QC Samples..... 6

TABLES

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



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-133027-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall009_20160105_Grab	440-133027-1	N/A	Water	1/5/2016 1:12:00 PM	E1664



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chain-of-custody (COC) provided by the laboratory for sample delivery group (SDG) 440-133027-1:

- The laboratory received the sample in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Laboratory and field personnel signed and dated the COC.
- According to the laboratory sample receipt checklist, custody seals were intact.



TABLE 2 - DATA QUALIFIER REFERENCE

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



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	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.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) 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.
B	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.
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.
P	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.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



IV. EPA METHOD 1664A—OIL AND GREASE (HEM)

Michael Cherny of MEC^X reviewed the SDG on March 3rd, 2016

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *EPA Method 1664A*, and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

IV.1. HOLDING TIMES

The analytical holding time for n-hexane extractable material (HEM; oil and grease), 28 days from collection, was met.

IV.2. CALIBRATION

Calibration criteria were met. The analytical balance calibration was verified before and after the analytical batch, as per the method requirements.

IV.1. QUALITY CONTROL SAMPLES

IV.1.1. METHOD BLANKS

The method blank had no detects for HEM.

IV.1.2. LABORATORY CONTROL SAMPLES

Recoveries were within the method control limits of 78-114% and the RPD was $\leq 11\%$.

IV.1.3. LABORATORY DUPLICATES

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

IV.1.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the sample in the SDG, as there was insufficient sample volume available and the COC did not request a MS/MSD. MEC^X evaluated method accuracy and precision based on LCS/LCSD results.

IV.1.5. 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. When the sample results were qualified and the reviewer was able to clearly determine bias, detected results were qualified as either "J+" or "J-"; otherwise, bias was not indicated in the qualification. Any detects between the method detection limit and the reporting limit were qualified as estimated, "J," and coded with "DNQ," in order to comply with the NPDES permit. Reported nondetects are valid to the MDL.

IV.2. FIELD QC SAMPLES

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

- Field Blanks and Equipment Blanks: Field blank or equipment blank samples were not identified for this SDG.



- Field Duplicates: There were no field duplicates identified in this SDG.

Validated Sample Result Forms: 4401330271

Analysis Method *E1664*

Sample Name Outfall009_20160105_Grab **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/5/2016 1:12:00 PM **Validation Level:** 8

Lab Sample Name: 440-133027-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Oil and Grease	N	OILGREASE	1.4	5.1	1.4	mg/L	U	U	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-133027-1

Client Project/Site: Routine Outfall 009 Grab

For:

Haley & Aldrich, Inc.

5333 Mission Center Road

Suite 300

San Diego, California 92108

Attn: Nancy Gardiner



Authorized for release by:

1/26/2016 2:56:35 PM

Debby Wilson, Operations Manager

(949)261-1022

debby.wilson@testamericainc.com

LINKS

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www.testamericainc.com

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

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

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

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



Debby Wilson
Operations Manager
1/26/2016 2:56:35 PM



Table of Contents

Cover Page	1
Table of Contents	3
Sample Summary	4
Case Narrative	5
Client Sample Results	6
Method Summary	7
Lab Chronicle	8
QC Sample Results	9
QC Association Summary	10
Definitions/Glossary	11
Certification Summary	12
Chain of Custody	13
Receipt Checklists	14

Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Grab

TestAmerica Job ID: 440-133027-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-133027-1	Outfall 009_20160105_Grab	Water	01/05/16 13:12	01/05/16 17:20

1

2

3

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13

Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Grab

TestAmerica Job ID: 440-133027-1

Job ID: 440-133027-1

Laboratory: TestAmerica Irvine

Narrative

**Job Narrative
440-133027-1**

Comments

No additional comments.

Receipt

The sample was received on 1/5/2016 5:20 PM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.2° C.

Organic Prep

Method(s) 1664A: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-306447 and analytical batch 440-306930. 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.

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Grab

TestAmerica Job ID: 440-133027-1

Client Sample ID: Outfall 009_20160105_Grab

Lab Sample ID: 440-133027-1

Date Collected: 01/05/16 13:12

Matrix: Water

Date Received: 01/05/16 17:20

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM	ND		5.1	1.4	mg/L		01/18/16 14:38	01/18/16 14:38	1

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Grab

TestAmerica Job ID: 440-133027-1

Method	Method Description	Protocol	Laboratory
1664A	HEM and SGT-HEM	1664A	TAL IRV

Protocol References:

1664A = EPA-821-98-002

Laboratory References:

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



Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Grab

TestAmerica Job ID: 440-133027-1

Client Sample ID: Outfall 009_20160105_Grab

Lab Sample ID: 440-133027-1

Date Collected: 01/05/16 13:12

Matrix: Water

Date Received: 01/05/16 17:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	1664A		1	980 mL	1000 mL	306930	01/18/16 14:38	L1A	TAL IRV
Total/NA	Prep	1664A			980 mL	1000 mL	306447	01/18/16 14:38	QCT	TAL IRV

Laboratory References:

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

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 009 Grab

TestAmerica Job ID: 440-133027-1

Method: 1664A - HEM and SGT-HEM

Lab Sample ID: MB 440-306447/1-A
 Matrix: Water
 Analysis Batch: 306930

Client Sample ID: Method Blank
 Prep Type: Total/NA
 Prep Batch: 306447

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM	ND		5.0	1.4	mg/L		01/18/16 14:38	01/18/16 14:38	1

Lab Sample ID: LCS 440-306447/2-A
 Matrix: Water
 Analysis Batch: 306930

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA
 Prep Batch: 306447

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
HEM	40.0	34.1		mg/L		85	78 - 114

Lab Sample ID: LCSD 440-306447/3-A
 Matrix: Water
 Analysis Batch: 306930

Client Sample ID: Lab Control Sample Dup
 Prep Type: Total/NA
 Prep Batch: 306447

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
HEM	40.0	35.3		mg/L		88	78 - 114	3	11

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Grab

TestAmerica Job ID: 440-133027-1

General Chemistry

Prep Batch: 306447

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-133027-1	Outfall 009_20160105_Grab	Total/NA	Water	1664A	
LCS 440-306447/2-A	Lab Control Sample	Total/NA	Water	1664A	
LCSD 440-306447/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	
MB 440-306447/1-A	Method Blank	Total/NA	Water	1664A	

Analysis Batch: 306930

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-133027-1	Outfall 009_20160105_Grab	Total/NA	Water	1664A	306447
LCS 440-306447/2-A	Lab Control Sample	Total/NA	Water	1664A	306447
LCSD 440-306447/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	306447
MB 440-306447/1-A	Method Blank	Total/NA	Water	1664A	306447

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Grab

TestAmerica Job ID: 440-133027-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
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
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)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Grab

TestAmerica Job ID: 440-133027-1

Laboratory: TestAmerica Irvine

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

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-16
Arizona	State Program	9	AZ0671	10-13-16
California	LA Cty Sanitation Districts	9	10256	01-31-17 *
California	State Program	9	2706	06-30-16
Guam	State Program	9	Cert. No. 12.002r	01-23-16 *
Hawaii	State Program	9	N/A	01-29-17
Kansas	NELAP Secondary AB	7	E-10420	07-31-16
Nevada	State Program	9	CA015312007A	07-31-16
New Mexico	State Program	6	N/A	01-29-16 *
Northern Mariana Islands	State Program	9	MP0002	01-29-16 *
Oregon	NELAP	10	4005	01-29-16 *
USDA	Federal		P330-09-00080	07-08-18
Washington	State Program	10	900	09-03-16

* Certification renewal pending - certification considered valid.

TestAmerica Irvine

CHAIN OF CUSTODY FORM

Test America

Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108 Test America Contact: Debby Wilson 17461 Derian Ave Suite #100 Irvine CA 92614 Tel 949 261 1022 x228 Cell 949 237 0603		Project: Boeing-SSFL NPDES 2016 Permit Routine Outfall 009 Outfall 009 GRAB		Project Manager: Nancy Gardiner 619.285.7132, 858.337.4061 (cell) Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)		Meter serial # W8C3000AR				
Sampler: Daniel Egan Roy Bannjakh		Field Readings Time of Readings: 13:23 pH: 6.5 pH unit Temp: 8.72 °F		Field readings QC Checked by: ANITA RICE JRF Date/Time: 1-5-16/1340		ANALYSIS REQUIRED				
Sample Description	Sample ID	Sampling Date/Time	Sample Matrix	Container Type	# of Cont.	Preservative	Bottle #	MSMSD	Oil & Grease (1664-HEM)	Comments
Outfall 009	Outfall009_20160105_Grab	1-5-16/1312	WM	1L Glass Amber	2	HCl	15	No	X	
	Outfall009_20160105_Grab_Extra	1-5-16/1312	WM	1L Glass Amber	2	HCl	15	No	X	
These Samples are the Grab Portion of Outfall 009 for this storm event. Composite samples will follow and are to be added to this work order.										
Relinquished By	Date/Time	Company	Received By	Date/Time	Company	Turn-around times: (Check)	10 Day:	Normal:		
Bill Conte for Anita-Rice	1-5-16/1338	JTA E40	ANITA RICE	1-5-16/1338	Wetron Solutions	24 Hour: _____ 48 Hour: _____ 72 Hour: _____	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Relinquished By	Date/Time	Company	Received By	Date/Time	Company	Sample Integrity: (Check)	Intact:	On Ice:		
George Gavorba	1-5-16/1443	Wetron Solutions	George Gavorba	1-5-16/1443	Wetron Solutions	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Relinquished By	Date/Time	Company	Received By	Date/Time	Company	Data Requirements: (Check)	No. Level IV:	All Level IV:		
George Gavorba	1/5/16		George Gavorba	1/5/17		<input checked="" type="checkbox"/>				



440-133027 Chain of Custody

44/4.2 IR-79

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-133027-1

Login Number: 133027

List Number: 1

Creator: Escalante, Maria I

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	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?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	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	



DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-133309-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 4, 2016

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





TABLE OF CONTENTS

I. INTRODUCTION..... 1

II. Sample Management..... 2

III. Method Analyses – E1613 Dioxin/Furans..... 6

 III.1. Holding Times 6

 III.2. Instrument Performance: 6

 III.2.1. GC Column Performance: 6

 III.2.2. Mass Spectrometer Performance:..... 6

 III.3. Calibration..... 6

 III.4. Quality Control Samples 6

 III.4.1. Method Blanks 6

 III.4.2. Laboratory Control Samples 7

 III.5. Field QC Samples..... 7

 III.6. Internal Standards Performance:..... 7

 III.7. Compound Identification 7

 III.8. Compound Quantification and Reported Detection Limits 8

IV. EPA METHODS 200.8, 245.1— Metals..... 8

 IV.1. Holding Times 8

 IV.2. GC/MS Tuning and Calibration 8

 IV.3. Quality Control Samples 8

 IV.3.1. Method Blanks 8

 IV.3.2. Interference Check Samples: 9

 IV.3.3. Laboratory Control Samples 9

 IV.3.4. Laboratory Duplicates:..... 9

 IV.3.5. Matrix Spike/Matrix Spike Duplicate 9

 IV.4. Serial Dilution:..... 9

 IV.5. Internal Standards Performance..... 9



IV.6. Compound Quantification and Reported Detection Limits 9

IV.7. Field QC Samples..... 9

V. VARIOUS EPA METHODS —Radionuclides..... 10

V.1. Holding Times:..... 10

V.2. Calibration: 10

V.3. Quality Control Samples 10

V.3.1. Method Blanks 10

V.3.2. Laboratory Control Samples: 10

V.3.3. Laboratory Duplicates:..... 10

V.3.4. Matrix Spike/Matrix Spike Duplicate: 10

V.4. Sample Result Verification:..... 10

V.5. Field QC Samples: 11

V.5.1. Field Blanks and Equipment Rinsates: 11

V.5.2. Field Duplicates:..... 11

VI. VARIOUS METHODS—General Minerals..... 11

VI.1. Holding Times 11

VI.2. Calibration..... 11

VI.1. Quality Control Samples 11

VI.1.1. Method Blanks 11

VI.1.2. Laboratory Control Samples 11

VI.1.3. Laboratory Duplicates..... 12

VI.1.4. Matrix Spike/Matrix Spike Duplicate 12

VI.1.5. Sample Result Verification 12

VI.2. Field QC Samples..... 12

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**MECX Project No.:** 1272.003H.01**Sample Delivery Group:** 440-133309-1**Project Manager:** Katherine Miller**Matrix:** Water**QC Level:** IV**No. of Samples:** 3**No. of Reanalyses/Dilutions:** 0**Laboratory:** TestAmerica**TABLE 1 - SAMPLE IDENTIFICATION**

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall009_20160106 _Comp	440-133309-1	N/A	Water	1/6/2016 12:28:00 PM	E1613, E200.8, E245.1, E300, E900, E901.1, E903.0, E904.0, E905.0, E906.0, HASL-300 U Mod, SM2540C, SM4500-CN-E
Outfall009_20160106 _Comp_F	440-133309-2	N/A	Water	1/6/2016 12:28:00 PM	E200.8, E245.1
Outfall009_20160106 _Comp_EXTRA	440-133309-3	N/A	Water	1/6/2016 12:28:00 PM	E1613, E300



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chain-of-custody (COC) provided by the laboratory for sample delivery group (SDG) 440-133309-1:

- The laboratory received samples in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COC.
- According to the sample receipt checklist, custody seals were intact.



TABLE 2 - DATA QUALIFIER REFERENCE

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



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	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.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) 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.
B	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.
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.
P	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.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



III. METHOD ANALYSES – E1613 DIOXIN/FURANS

Lynn Calvin of MEC^X reviewed the SDG on March 4, 2016

The samples listed in Table 1 for this analysis were validated based on the guidelines outlined in the MEC^X Data Validation Procedure for Dioxins and Furans (DVP-19, Rev. 0), USEPA Method 1613B, and the National Functional Guidelines Chlorinated Dioxin/Furan Data Review (2011).

III.1. HOLDING TIMES

Extraction and analytical holding times were met. The water samples were 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 less than 25%.

III.2.2. MASS SPECTROMETER PERFORMANCE:

The mass spectrometer performance was acceptable with the static resolving power greater than 10,000.

III.3. CALIBRATION

Calibration criteria were met. The initial calibration was acceptable with %RSDs $\leq 20\%$ for the 15 native compounds (calibration by isotope dilution) and $\leq 35\%$ for the two native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the Method 1613B control limits for all standards.

Continuing Calibration: Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning of the analytical sequence. The VER was acceptable with the concentrations within the acceptance criteria listed in Table 6 of EPA Method 1613B. The ion abundance ratios and relative retention times were within the method control limits.

III.4. QUALITY CONTROL SAMPLES

III.4.1. METHOD BLANKS

The method blank had detects above the EDL 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, 1,2,3,7,8,9-HxCDD, 1,2,3,6,7,8-HxCDF, OCDD and OCDF, and for totals HpCDD, HpCDF, HxCDD, HxCDF, and TCDD. All isomer results for the method blank contaminants detected below the reporting limit in the samples were qualified as nondetects (U) at the level of contamination based upon professional judgement and the guidance for blank qualification in the National Functional Guidelines for Dioxin Review. The method blank concentrations were not sufficient to qualify sample detects above the reporting limits.

The reviewer verified that peaks comprising totals HpCDD and TCDD in the method blank were the same peaks at similar concentrations comprising total HpCDD in sample Outfall009_20160106_Comp and total TCDD in sample Outfall009_20160106_Comp_EXTRA; therefore, the total results were qualified as nondetects (U) at the level of contamination. A portion of total HxCDD in sample Outfall009_20160106_Comp was determined by the reviewer to be method blank contamination, and the result was qualified as nondetected (U) at the level of contamination (see Compound Quantification and Reported Detection Limits section also).

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 $\leq 50\%$.

III.5. FIELD QC SAMPLES

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

- Field Blanks and Equipment Blanks: Field blank or equipment blank samples were not identified for this SDG.
- Field Duplicates: Sample Outfall009_20160106_Comp_EXTRA was collected to be extra sample volume should the need arise; however, the lab analyzed this extra volume as a separate sample. It was therefore treated as a field duplicate of sample Outfall009_20160106_Comp.

The samples had a common detect above the reporting limit for OCDD, with an RPD of 178%. Results for OCDD were qualified as estimated (J) in both samples. OCDF and 1,2,3,4,6,7,8-HpCDD were reported above the reporting limit in sample Outfall009_20160106_Comp_EXTRA and originally detected below the reporting limit in the parent sample. Parent sample results for OCDF and 1,2,3,4,6,7,8-HpCDD were previously qualified as method blank contamination (see Blanks section); however, as the results were not within the reasonable control limit of \pm the reporting limit, they were qualified as estimated (J or UJ) in both samples.

The samples had a common detect for 1,2,3,7,8-PeCDD below the reporting limit, and sample Outfall009_20160106_Comp_EXTRA had detects below the reporting limit for three additional isomers, all within the reasonable control limit of \pm the reporting limit.

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. All 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. As 2,3,7,8-TCDF was not detected in the samples, confirmation analysis was not necessary.



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. Any detects below the laboratory lower calibration level were qualified as estimated (J). Any detects between the EDL and the reporting limit (RL), or reported below the EDL, were qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Nondetects are valid to the EDL.

A result previously qualified as a nondetect for method blank contamination was not further qualified as an estimated maximum possible concentration (EMPC). Remaining individual isomers flagged by the laboratory as EMPCs were qualified as estimated nondetects (UJ) at the level of the EMPC. A portion of total HxCDD in sample Outfall009_20160106_Comp was determined by the reviewer to be an EMPC matching a qualified isomer in the sample, and was therefore qualified as an estimated nondetect (UJ) at the level of the EMPC (see Blanks section also). Remaining totals containing EMPC peaks were qualified as estimated (J).

Per client request, results meeting retention time and signal to noise (S/N) criteria were reported below the EDL. Results for 1,2,3,7,8-PeCDD and total PeCDD (consisting only of the isomer) were reported below the EDL in sample Outfall009_20160106_Comp.

IV. EPA METHODS 200.8. 245.1— METALS

Michael Cherny of MEC^X reviewed the SDG on March 3, 2016

The samples listed in Table 1 for this analysis were validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for Metals (DVP-5, Rev. 0 and DVP-21, Rev. 0)*, *EPA Methods 200.8, and 245.1*, and the *National Functional Guidelines for Inorganic Data Review (2014)*.

IV.1. HOLDING TIMES

The analytical holding times, 28 days for mercury and six months for the remaining metals, were met.

IV.2. GC/MS TUNING AND CALIBRATION

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

Calibration criteria were met. The initial calibration r values were ≥ 0.995 and CRI recoveries were within the control limits of 70-130%. The mercury initial (ICV) and continuing (CCV) recoveries were within NFG control limits of 85-115%. ICV and CCV recoveries for the remaining analytes were within NFG control limits of 90-110%.

IV.3. QUALITY CONTROL SAMPLES

IV.3.1. METHOD BLANKS

Dissolved zinc was detected in the method blank at 9.32 $\mu\text{g/L}$, and dissolved antimony was detected in a bracketing CCB at 0.988 $\mu\text{g/L}$; therefore, dissolved antimony and dissolved zinc in sample Outfall009_20160106_Comp_F were qualified as nondetected (U), at the levels of contamination. There were other detects in the method blanks and CCBs, but none of sufficient concentration to qualify any additional site samples.



IV.3.2. *INTERFERENCE CHECK SAMPLES:*

Recoveries were within 80-120%. Although interferents were present in the ICSA solution, there was no recognized effect on matrix interference, as sample detections were less than half of the ICSAB spike amounts.

IV.3.3. *LABORATORY CONTROL SAMPLES*

The recoveries and RPDs were within the method control limits of 85-115% and $\leq 20\%$, respectively.

IV.3.4. *LABORATORY DUPLICATES:*

No laboratory duplicate analyses were performed on the sample in this SDG.

IV.3.5. *MATRIX SPIKE/MATRIX SPIKE DUPLICATE*

MS/MSD analyses were performed on sample Outfall009_20160106_Comp for total metals and on Outfall009_20160106_Comp_F for dissolved mercury. Zinc was recovered at 146% with an RPD of 26%; therefore, total zinc detected in Outfall009_20160106_Comp was qualified as estimated with potential high bias (J+). Remaining recoveries and RPDs were within the method control limits of 70-130% and $\leq 20\%$, respectively.

IV.4. *SERIAL DILUTION:*

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

IV.5. *INTERNAL STANDARDS PERFORMANCE*

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

IV.6. *COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS*

Calculations were verified and the sample results reported on the sample result summary were verified against the raw data. No transcription errors or calculation errors were noted. When the sample results were qualified and the reviewer was able to clearly determine bias, detected results were qualified as either J+ or J-; otherwise, bias was not indicated in the qualification. Detects below the RL were qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Nondetects are valid to the MDL.

IV.7. *FIELD QC SAMPLES*

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

- Field Blanks and Equipment Blanks: Field blank or equipment blank samples were not identified for this SDG.
- Field Duplicates: There were no field duplicate samples identified for this SDG.



V. VARIOUS EPA METHODS — RADIONUCLIDES

Elizabeth Wessling of MEC^X reviewed the SDG on March 4, 2016

The samples listed in Table 1 for this analysis were validated based on the guidelines outlined in the *EPA Methods 900.0, 901.1, 903.0, 904.0, 905.0, and 906.0, and A-01-R U*, and the *National Functional Guidelines for Inorganic Data Review* (2014).

V.1. HOLDING TIMES:

The tritium sample was analyzed within 180 days of collection. Remaining aliquots were prepared within the five-day analytical holding time for unpreserved samples.

V.2. CALIBRATION:

The laboratory calibration information included the standard certificates and applicable preparation/dilutions logs for NIST-traceability.

The gross alpha, radium-226 and strontium-90 detector efficiencies were less than 20%; therefore, the nondetected results for these analytes were qualified as estimated (UJ) in the sample. The remaining detector efficiencies were greater than 20%. Carrier/tracer recoveries were within the laboratory control limits of 40-110%. All calibration checks were acceptable.

V.3. QUALITY CONTROL SAMPLES

V.3.1. METHOD BLANKS

There were no analytes detected in the method blanks; however, total uranium, gross alpha and gross beta were determined not to differ from the method blank, at the 5% significance level, and were therefore qualified as nondetected (U).

V.3.2. LABORATORY CONTROL SAMPLES:

The recoveries were within laboratory-established control limits.

V.3.3. LABORATORY DUPLICATES:

Laboratory duplicate analyses were performed on the sample in this SDG for total uranium, cesium-137, and potassium-40. The relative error ratio was within the laboratory control limit of ≤ 1 .

V.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE:

A matrix spike (MS) was performed for the tritium analysis. Recoveries were within the laboratory control limits. No other MS/MSD analyses were performed on the sample in this SDG. MEC^X evaluated method accuracy for the remaining analyses based on the LCS results.

V.4. SAMPLE RESULT VERIFICATION:

An EPA Level IV review was performed for the sample in this data package. The sample results and MDCs reported on the sample result form were verified against the raw data and no calculation or transcription errors were noted. Reported nondetects are valid to the MDC.

V.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:

V.5.1. FIELD BLANKS AND EQUIPMENT RINSATES:

This SDG had no identified field blank or equipment rinsate samples.

V.5.2. FIELD DUPLICATES:

There were no field duplicate samples identified for this SDG.

VI. VARIOUS METHODS—GENERAL MINERALS

Michael Cherny of MEC^X reviewed the SDG on March 3rd, 2016

The samples listed in Table 1 for this analysis were validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *Standard Methods for the Examination of Water and Wastewater Methods 2540C and 4500-CN-E*, *EPA Method 300.0* and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

VI.1. HOLDING TIMES

The following analytical holding times were met:

- 48 hours for nitrate/nitrite as nitrogen
- 7 days for total dissolved solids (TDS)
- 14 days for total cyanide
- 28 days for chloride and sulfate

VI.2. CALIBRATION

Calibration criteria were met, with one exception. There were no daily ICVs conducted for anions, and the ICV provided from the initial calibration had significant outliers; therefore, all detects for anions were qualified as estimated (J). The initial calibration r values were ≥ 0.995 and CCVs for anions were within the method control limits of 90-110%. ICVs and CCVs for cyanide were recovered within the NFG control limits of 85-115%.

VI.1. QUALITY CONTROL SAMPLES

VI.1.1. METHOD BLANKS

The method blanks and CCBs had no detects.

VI.1.2. LABORATORY CONTROL SAMPLES

Summary form results of the nitrate/nitrite as nitrogen laboratory control samples (LCS) were not provided by the laboratory. The reviewer assessed the raw data against the LCS true values for other anions and found that recoveries were within the method control limits of 90-110%. Recoveries for all remaining analytes were also within the control limits of 90-110%.



VI.1.3. LABORATORY DUPLICATES

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

VI.1.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on sample Outfall009_20160106_Comp for chloride and sulfate. Recoveries and the RPDs were within the laboratory-established control limits of 80-120% and $\leq 20\%$, respectively. MEC^X evaluated method accuracy for cyanide and nitrate/nitrite as nitrogen based on the LCS results.

VI.1.5. SAMPLE RESULT VERIFICATION

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. When the sample results were qualified and the reviewer was able to clearly determine bias, detected results were qualified as either "J+" or "J-"; otherwise, bias was not indicated in the qualification. Any detects between the method detection limit and the reporting limit were qualified as estimated, "J," and coded with "DNQ," in order to comply with the NPDES permit. Reported nondetects are valid to the MDL.

VI.2. FIELD QC SAMPLES

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

- Field Blanks and Equipment Blanks: Field blank or equipment blank samples were not identified for this SDG.
- Field Duplicates: Sample Outfall009_20160106_Comp_EXTRA was collected to be extra sample volume, should the need arise; however, the lab analyzed this extra volume as a separate sample. It was therefore treated as a field duplicate of sample Outfall009_20160106_Comp. RPDs for chloride and sulfate were $\leq 30\%$.

Validated Sample Result Forms: 4401333091

Analysis Method E1613B

Sample Name Outfall009_20160106_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/6/2016 12:28:00 PM **Validation Level:** 8

Lab Sample Name: 440-133309-1

Analyte	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	0.000016	0.00010	0.0000010	ug/L	J,DXMB	UJ	B, F1
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	N	3268-87-9	0.00011	0.00010	0.0000010	ug/L	MB	J	F1
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	N	67562-39-4	0.0000047	0.000050	0.00000054	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	N	35822-46-9	0.000012	0.000050	0.00000044	ug/L	J,DXMB	UJ	B, F1
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	N	55673-89-7	0.00000073	0.000050	0.00000073	ug/L	U	U	
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	N	70648-26-9	0.00000072	0.000050	0.00000045	ug/L	J,DXq	UJ	*III
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	39227-28-6	0.00000066	0.000050	0.00000030	ug/L	J,DXq	UJ	*III
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	57117-44-9	0.00000080	0.000050	0.00000041	ug/L	J,DXqMB	U	B
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	57653-85-7	0.0000013	0.000050	0.00000027	ug/L	J,DXq	UJ	*III
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	N	72918-21-9	0.00000031	0.000050	0.00000031	ug/L	U	U	
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	N	19408-74-3	0.00000087	0.000050	0.00000024	ug/L	J,DXqMB	U	B
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-41-6	0.00000035	0.000050	0.00000035	ug/L	U	U	
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	N	40321-76-4	0.00000029	0.000050	0.00000033	ug/L	J,DX	J	DNQ
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	60851-34-5	0.00000031	0.000050	0.00000031	ug/L	U	U	
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-31-4	0.00000038	0.000050	0.00000038	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	0.00000024	0.000010	0.00000024	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	N	1746-01-6	0.00000032	0.000010	0.00000032	ug/L	U	U	
Total Heptachlorodibenzofuran (HpCDF)	N	38998-75-3	0.0000091	0.000050	0.00000063	ug/L	J,DXMB	J	B, DNQ
Total Heptachlorodibenzo-p-dioxin (HpCDD)	N	37871-00-4	0.000027	0.000050	0.00000044	ug/L	J,DXMB	U	B
Total Hexachlorodibenzofuran (HxCDF)	N	55684-94-1	0.0000025	0.000050	0.00000037	ug/L	J,DXqMB	J	B, DNQ, *III
Total Hexachlorodibenzo-p-dioxin (HxCDD)	N	34465-46-8	0.0000041	0.000050	0.00000027	ug/L	J,DXqMB	UJ	B, *III

Analysis Method *E1613B*

Total Pentachlorodibenzofuran (PeCDF)	N	30402-15-4	0.00000035	0.000050	0.00000035	ug/L	U	U	
Total Pentachlorodibenzo-p-dioxin (PeCDD)	N	36088-22-9	0.00000029	0.000050	0.00000033	ug/L	J,DX	J	DNQ
Total Tetrachlorodibenzofuran (TCDF)	N	55722-27-5	0.00000024	0.000010	0.00000024	ug/L	U	U	
Total Tetrachlorodibenzo-p-dioxin (TCDD)	N	41903-57-5	0.00000032	0.000010	0.00000032	ug/L	U	U	

Sample Name: Outfall009_20160106_Comp_EXTRA **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/6/2016 12:28:00 PM **Validation Level:** 8

Lab Sample Name: 440-133309-3

Analyte	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	0.00012	0.00010	0.0000014	ug/L	MB	J	F1
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	N	3268-87-9	0.0019	0.00010	0.0000046	ug/L	MB	J	F1
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	N	67562-39-4	0.000045	0.000050	0.00000088	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	N	35822-46-9	0.00017	0.000050	0.0000021	ug/L	MB	J	F1
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	N	55673-89-7	0.0000037	0.000050	0.0000012	ug/L	J,DXMB	U	B
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	N	70648-26-9	0.0000022	0.000050	0.00000074	ug/L	J,DX	J	DNQ
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	39227-28-6	0.0000029	0.000050	0.00000040	ug/L	J,DXq	UJ	*III
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	57117-44-9	0.0000016	0.000050	0.00000065	ug/L	J,DXqMB	U	B
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	57653-85-7	0.0000088	0.000050	0.00000038	ug/L	J,DX	J	DNQ
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	N	72918-21-9	0.00000051	0.000050	0.00000051	ug/L	U	U	
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	N	19408-74-3	0.0000061	0.000050	0.00000033	ug/L	J,DXqMB	U	B
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-41-6	0.00000039	0.000050	0.00000039	ug/L	U	U	
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	N	40321-76-4	0.0000023	0.000050	0.00000042	ug/L	J,DX	J	DNQ
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	60851-34-5	0.0000013	0.000050	0.00000052	ug/L	J,DX	J	DNQ
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-31-4	0.00000043	0.000050	0.00000043	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	0.00000027	0.000010	0.00000027	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	N	1746-01-6	0.00000031	0.000010	0.00000031	ug/L	U	U	
Total Heptachlorodibenzofuran (HpCDF)	N	38998-75-3	0.00012	0.000050	0.0000010	ug/L	MB	J	B
Total Heptachlorodibenzo-p-dioxin (HpCDD)	N	37871-00-4	0.00042	0.000050	0.0000021	ug/L	MB	J	B

Analysis Method E1613B

Total Hexachlorodibenzofuran (HxCDF)	N	55684-94-1	0.000038	0.000050	0.00000060	ug/L	J,DXqMB	J	B, DNQ, *III
Total Hexachlorodibenzo-p-dioxin (HxCDD)	N	34465-46-8	0.000043	0.000050	0.00000037	ug/L	J,DXqMB	J	B, DNQ, *III
Total Pentachlorodibenzofuran (PeCDF)	N	30402-15-4	0.0000042	0.000050	0.00000041	ug/L	J,DXq	J	DNQ, *III
Total Pentachlorodibenzo-p-dioxin (PeCDD)	N	36088-22-9	0.0000032	0.000050	0.00000042	ug/L	J,DX	J	DNQ
Total Tetrachlorodibenzofuran (TCDF)	N	55722-27-5	0.00000027	0.000010	0.00000027	ug/L	U	U	
Total Tetrachlorodibenzo-p-dioxin (TCDD)	N	41903-57-5	0.00000047	0.000010	0.00000031	ug/L	J,DXqMB	U	B

Analysis Method E200.8

Sample Name: Outfall009_20160106_Comp **Matrix Type:** WM **Result Type:** TRG
Sample Date: 1/6/2016 12:28:00 PM **Validation Level:** 8
Lab Sample Name: 440-133309-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Antimony	T	7440-36-0	0.60	2.0	0.50	ug/L	J,DX	J	DNQ
Cadmium	T	7440-43-9	0.25	1.0	0.25	ug/L	U	U	
Copper	T	7440-50-8	5.3	2.0	0.50	ug/L	MB		
Lead	T	7439-92-1	1.8	1.0	0.50	ug/L			
Nickel	T	7440-02-0	2.2	2.0	0.50	ug/L			
Selenium	T	7782-49-2	0.50	2.0	0.50	ug/L	U	U	
Silver	T	7440-22-4	0.50	1.0	0.50	ug/L	U	U	
Thallium	T	7440-28-0	0.50	1.0	0.50	ug/L	U	U	
Zinc	T	7440-66-6	11	20	2.5	ug/L	J,DX	J+	DNQ, Q, Q1

Sample Name: Outfall009_20160106_Comp_F **Matrix Type:** WM **Result Type:** TRG
Sample Date: 1/6/2016 12:28:00 PM **Validation Level:** 8
Lab Sample Name: 440-133309-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Antimony	D	7440-36-0	0.76	2.0	0.50	ug/L	J,DX	U	B
Cadmium	D	7440-43-9	0.25	1.0	0.25	ug/L	U	U	
Copper	D	7440-50-8	3.4	2.0	0.50	ug/L			
Lead	D	7439-92-1	0.50	1.0	0.50	ug/L	U	U	
Nickel	D	7440-02-0	1.3	2.0	0.50	ug/L	J,DX	J	DNQ
Selenium	D	7782-49-2	0.50	2.0	0.50	ug/L	U	U	
Silver	D	7440-22-4	0.50	1.0	0.50	ug/L	U	U	
Thallium	D	7440-28-0	0.50	1.0	0.50	ug/L	U	U	
Zinc	D	7440-66-6	9.4	20	2.5	ug/L	J,DXMB	U	B

Analysis Method E245.1

Sample Name Outfall009_20160106_Comp Matrix Type: WM Result Type: TRG

Sample Date: 1/6/2016 12:28:00 PM Validation Level: 8

Lab Sample Name: 440-133309-1

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

Sample Name Outfall009_20160106_Comp_F Matrix Type: WM Result Type: TRG

Sample Date: 1/6/2016 12:28:00 PM Validation Level: 8

Lab Sample Name: 440-133309-2

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

Analysis Method E300

Sample Name Outfall009_20160106_Comp Matrix Type: WM Result Type: TRG

Sample Date: 1/6/2016 12:28:00 PM Validation Level: 8

Lab Sample Name: 440-133309-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chloride	N	16887-00-6	4.2	0.50	0.25	mg/L		J	*III
Nitrite/Nitrate	N	NO2NO3	2.0	0.15	0.070	mg/L		J	*III
Sulfate	N	14808-79-8	4.0	0.50	0.25	mg/L		J	*III

Sample Name Outfall009_20160106_Comp_EXTRA Matrix Type: WM Result Type: TRG

Sample Date: 1/6/2016 12:28:00 PM Validation Level: 8

Lab Sample Name: 440-133309-3

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chloride	N	16887-00-6	4.3	0.50	0.25	mg/L		J	*III
Sulfate	N	14808-79-8	3.9	0.50	0.25	mg/L		J	*III

Analysis Method E900

Sample Name Outfall009_20160106_Comp Matrix Type: WM Result Type: TRG

Sample Date: 1/6/2016 12:28:00 PM Validation Level: 8

Lab Sample Name: 440-133309-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Gross Alpha Analytes	N	GROSSALPHA	3.03	0.978	0.978	pCi/L		UJ	B, C
Gross Beta Analytes	N	GROSSBETA	1.97	0.948	0.948	pCi/L		U	B

Analysis Method E901.1**Sample Name** Outfall009_20160106_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/6/2016 12:28:00 PM **Validation Level:** 8**Lab Sample Name:** 440-133309-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cesium-137	N	10045-97-3	0.159	10.7	10.7	pCi/L	U	U	
Potassium-40	N	13966-00-2	-73.2	217	217	pCi/L	U	U	

Analysis Method E903.0**Sample Name** Outfall009_20160106_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/6/2016 12:28:00 PM **Validation Level:** 8**Lab Sample Name:** 440-133309-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-226	N	13982-63-3	0.109	0.270	0.270	pCi/L	U	UJ	C

Analysis Method E904.0**Sample Name** Outfall009_20160106_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/6/2016 12:28:00 PM **Validation Level:** 8**Lab Sample Name:** 440-133309-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-228	N	15262-20-1	0.207	0.777	0.777	pCi/L	U	U	

Analysis Method E905.0**Sample Name** Outfall009_20160106_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/6/2016 12:28:00 PM **Validation Level:** 8**Lab Sample Name:** 440-133309-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Strontium-90	N	10098-97-2	0.122	0.665	0.665	pCi/L	U	UJ	C

Analysis Method E906.0**Sample Name** Outfall009_20160106_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/6/2016 12:28:00 PM **Validation Level:** 8**Lab Sample Name:** 440-133309-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Tritium	N	10028-17-8	242	345	345	pCi/L	U	U	

Analysis Method HASL-300 U Mod

Sample Name Outfall009_20160106_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/6/2016 12:28:00 PM **Validation Level:** 8

Lab Sample Name: 440-133309-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Uranium	N	URANIUM	1.06	0.539	0.539	pCi/L		U	B

Analysis Method SM2540C

Sample Name Outfall009_20160106_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/6/2016 12:28:00 PM **Validation Level:** 8

Lab Sample Name: 440-133309-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Dissolved Solids (TDS)	N	TDS	76	10	5.0	mg/L			

Analysis Method SM4500-CN-E

Sample Name Outfall009_20160106_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/6/2016 12:28:00 PM **Validation Level:** 8

Lab Sample Name: 440-133309-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cyanide	N	57-12-5	2.5	5.0	2.5	ug/L	U	U	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-133309-1

Client Project/Site: Routine Outfall 009 Comp

For:

Haley & Aldrich, Inc.

5333 Mission Center Road

Suite 300

San Diego, California 92108

Attn: Nancy Gardiner



Authorized for release by:

2/25/2016 7:31:41 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

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LINKS

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

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

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

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



Urvashi Patel
Manager of Project Management
2/25/2016 7:31:41 PM



Table of Contents

Cover Page	1
Table of Contents	3
Sample Summary	4
Case Narrative	5
Client Sample Results	7
Method Summary	12
Lab Chronicle	13
QC Sample Results	15
QC Association Summary	30
Definitions/Glossary	34
Certification Summary	35
Subcontract Data	37
Chain of Custody	93
Receipt Checklists	98
Tracer Carrier Summary	101
Isotope Dilution Summary	102

Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-133309-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-133309-1	Outfall009_20160106_Comp	Water	01/06/16 12:28	01/06/16 18:40
440-133309-2	Outfall009_20160106_Comp_F	Water	01/06/16 12:28	01/06/16 18:40
440-133309-3	Outfall009_20160106_Comp_Extra	Water	01/06/16 12:28	01/06/16 18:40

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-133309-1

Job ID: 440-133309-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative 440-133309-1

Comments

No additional comments.

Receipt

The samples were received on 1/6/2016 6:40 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 1.8° C, 2.0° C and 2.1° C.

HPLC/IC

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

Dioxin

Method(s) 1613B: The following sample has one or more analytes with a concentration less than the corresponding estimated detection limit (EDL): Outfall009_20160106_Comp (440-133309-1). The associated peaks elute at the correct retention time for both characteristic ions and have a signal to noise ratio greater than the method required 2.5:1; therefore, per client request, the detections have been reported.

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

RAD

Method(s) 900.0: Gross Alpha/Beta Prep Batch 160-231501:

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: (160-15644-A-1-A) and (160-15644-A-1-G DU). Analytical results are reported with the detection limit achieved.

Method(s) ExtChrom: Uranium Prep Batch (232862): Samples are yellow and cloudy, therefore a reduced aliquot was used to prevent matrix interference.

Outfall009_20160106_Comp (440-133309-1) and (440-133309-H-1 DU)

Method(s) PrecSep-7: Strontium-90 Prep Batch 160-232609:

Insufficient sample volume was available to perform a sample duplicate (DUP) for the following samples: Outfall009_20160106_Comp (440-133309-1). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead. The samples were further prepared at a reduced aliquot due to limited sample available.

Method(s) PrecSep-21: Radium-226 160-231737:

Insufficient sample volume was available to perform a sample duplicate (DUP) for the following samples. Outfall009_20160106_Comp (440-133309-1) A laboratory control sample/ laboratory sample duplicate (LCS/LCSD) were prepared instead. Samples 440-133309-1, 280-78591-3, and 280-78591-4 were prepared at a reduced aliquot due to limited sample available.

Method(s) PrecSep_0: Radium-228 160-231743:

Insufficient sample volume was available to perform a sample duplicate (DUP) for the following samples. Outfall009_20160106_Comp (440-133309-1) A laboratory control sample/ laboratory sample duplicate (LCS/LCSD) were prepared instead. Samples 440-133309-1, 280-78591-3, and 280-78591-4 were prepared at a reduced aliquot due to limited sample available.

Method(s) PrecSep_0: Radium-228 Prep Batch 160-231743:

A deviation from the Standard Operating Procedure (SOP) occurred. Details are as follows:

Samples were re-prepared as follows:

Precipitate on planchet was re-dissolved with EDTA, moved to a centrifuge tube, added standardized y carrier and lead carrier. Samples were place into a "re-ingrowth" period of at least 36 hours. This was to ensure proper removal of strontium sulfate that was dropping out with the barium sulfate causing high biased "barium" carrier recoveries. new T1 times were recorded for the actinium-228, but not for the radium-226. Original T1 time will be used for the radium-226 portion as recored in TALs.

Outfall009_20160106_Comp (440-133309-1)

Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-133309-1

Job ID: 440-133309-1 (Continued)

Laboratory: TestAmerica Irvine (Continued)

Method(s) PrecSep-21: Radium-226 Prep Batch 160-231737:

A deviation from the Standard Operating Procedure (SOP) occurred. Details are as follows:

Samples were re-prepared as follows:

Precipitate on planchet was re-dissolved with EDTA, moved to a centrifuge tube, added standardized y carrier and lead carrier. Samples were place into a "re-ingrowth" period of at least 36 hours. This was to ensure proper removal of strontium sulfate that was dropping out with the barium sulfate causing high biased "barium" carrier recoveries. new T1 times were recorded for the actinium-228, but not for the radium-226. Original T1 time will be used for the radium-226 portion as recored in TALs.

Outfall009_20160106_Comp (440-133309-1)

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

Metals

Method(s) 200.8: The matrix spike / matrix spike duplicate (MS/MSD) precision for preparation batch 440-304883 and analytical batch 440-305343 was outside control limits for Zinc. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) precision was within acceptance limits. (440-133309-A-1-F MSD)

Method(s) 200.8: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD) associated with preparation batch 440-304528 and 440-305092 and analytical batch 440-306050. See LCS/LCSD.

Outfall009_20160106_Comp_F (440-133309-2)

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.

Dioxin Prep

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

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-133309-1

Client Sample ID: Outfall009_20160106_Comp

Lab Sample ID: 440-133309-1

Date Collected: 01/06/16 12:28

Matrix: Water

Date Received: 01/06/16 18:40

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	4.2		0.50	0.25	mg/L			01/06/16 23:32	1
Sulfate	4.0		0.50	0.25	mg/L			01/06/16 23:32	1

Method: NO3NO2 Calc - Nitrogen, Nitrate-Nitrite

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	2.0		0.15	0.070	mg/L			01/15/16 11:41	1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000010	0.0000003	ug/L		01/15/16 08:33	01/21/16 12:51	1
2,3,7,8-TCDF	ND		0.000010	0.0000002	ug/L		01/15/16 08:33	01/21/16 12:51	1
1,2,3,7,8-PeCDD	0.00000029	J,DX	0.000050	0.0000003	ug/L		01/15/16 08:33	01/21/16 12:51	1
1,2,3,7,8-PeCDF	ND		0.000050	0.0000003	ug/L		01/15/16 08:33	01/21/16 12:51	1
2,3,4,7,8-PeCDF	ND		0.000050	0.0000003	ug/L		01/15/16 08:33	01/21/16 12:51	1
1,2,3,4,7,8-HxCDD	0.00000066	J,DX q	0.000050	0.0000003	ug/L		01/15/16 08:33	01/21/16 12:51	1
1,2,3,6,7,8-HxCDD	0.00000013	J,DX q	0.000050	0.0000002	ug/L		01/15/16 08:33	01/21/16 12:51	1
1,2,3,7,8,9-HxCDD	0.00000087	J,DX q MB	0.000050	0.0000002	ug/L		01/15/16 08:33	01/21/16 12:51	1
1,2,3,4,7,8-HxCDF	0.00000072	J,DX q	0.000050	0.0000004	ug/L		01/15/16 08:33	01/21/16 12:51	1
1,2,3,6,7,8-HxCDF	0.00000080	J,DX q MB	0.000050	0.0000004	ug/L		01/15/16 08:33	01/21/16 12:51	1
1,2,3,7,8,9-HxCDF	ND		0.000050	0.0000003	ug/L		01/15/16 08:33	01/21/16 12:51	1
2,3,4,6,7,8-HxCDF	ND		0.000050	0.0000003	ug/L		01/15/16 08:33	01/21/16 12:51	1
1,2,3,4,6,7,8-HpCDD	0.00000012	J,DX MB	0.000050	0.0000004	ug/L		01/15/16 08:33	01/21/16 12:51	1
1,2,3,4,6,7,8-HpCDF	0.00000047	J,DX MB	0.000050	0.0000005	ug/L		01/15/16 08:33	01/21/16 12:51	1
1,2,3,4,7,8,9-HpCDF	ND		0.000050	0.0000007	ug/L		01/15/16 08:33	01/21/16 12:51	1
OCDD	0.000011	MB	0.00010	0.0000010	ug/L		01/15/16 08:33	01/21/16 12:51	1
OCDF	0.000016	J,DX MB	0.00010	0.0000010	ug/L		01/15/16 08:33	01/21/16 12:51	1
Total TCDD	ND		0.000010	0.0000003	ug/L		01/15/16 08:33	01/21/16 12:51	1
Total TCDF	ND		0.000010	0.0000002	ug/L		01/15/16 08:33	01/21/16 12:51	1
Total PeCDD	0.00000029	J,DX	0.000050	0.0000003	ug/L		01/15/16 08:33	01/21/16 12:51	1
Total PeCDF	ND		0.000050	0.0000003	ug/L		01/15/16 08:33	01/21/16 12:51	1
Total HxCDD	0.00000041	J,DX q MB	0.000050	0.0000002	ug/L		01/15/16 08:33	01/21/16 12:51	1
Total HxCDF	0.00000025	J,DX q MB	0.000050	0.0000003	ug/L		01/15/16 08:33	01/21/16 12:51	1
Total HpCDD	0.00000027	J,DX MB	0.000050	0.0000004	ug/L		01/15/16 08:33	01/21/16 12:51	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-133309-1

Client Sample ID: Outfall009_20160106_Comp

Lab Sample ID: 440-133309-1

Date Collected: 01/06/16 12:28

Matrix: Water

Date Received: 01/06/16 18:40

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
Total HpCDF	0.0000091	J,DX MB	0.000050	0.0000006	ug/L		01/15/16 08:33	01/21/16 12:51	1
3									
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	60		25 - 164				01/15/16 08:33	01/21/16 12:51	1
13C-2,3,7,8-TCDF	61		24 - 169				01/15/16 08:33	01/21/16 12:51	1
13C-1,2,3,7,8-PeCDD	70		25 - 181				01/15/16 08:33	01/21/16 12:51	1
13C-1,2,3,7,8-PeCDF	61		24 - 185				01/15/16 08:33	01/21/16 12:51	1
13C-2,3,4,7,8-PeCDF	64		21 - 178				01/15/16 08:33	01/21/16 12:51	1
13C-1,2,3,4,7,8-HxCDD	68		32 - 141				01/15/16 08:33	01/21/16 12:51	1
13C-1,2,3,6,7,8-HxCDD	61		28 - 130				01/15/16 08:33	01/21/16 12:51	1
13C-1,2,3,4,7,8-HxCDF	68		26 - 152				01/15/16 08:33	01/21/16 12:51	1
13C-1,2,3,6,7,8-HxCDF	62		26 - 123				01/15/16 08:33	01/21/16 12:51	1
13C-1,2,3,7,8,9-HxCDF	65		29 - 147				01/15/16 08:33	01/21/16 12:51	1
13C-2,3,4,6,7,8-HxCDF	68		28 - 136				01/15/16 08:33	01/21/16 12:51	1
13C-1,2,3,4,6,7,8-HpCDD	56		23 - 140				01/15/16 08:33	01/21/16 12:51	1
13C-1,2,3,4,6,7,8-HpCDF	58		28 - 143				01/15/16 08:33	01/21/16 12:51	1
13C-1,2,3,4,7,8,9-HpCDF	53		26 - 138				01/15/16 08:33	01/21/16 12:51	1
13C-OCDD	49		17 - 157				01/15/16 08:33	01/21/16 12:51	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	88		35 - 197				01/15/16 08:33	01/21/16 12:51	1

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		01/11/16 12:46	01/13/16 02:37	1
Copper	5.3	MB	2.0	0.50	ug/L		01/11/16 12:46	01/13/16 02:37	1
Lead	1.8		1.0	0.50	ug/L		01/11/16 12:46	01/15/16 10:51	1
Antimony	0.60	J,DX	2.0	0.50	ug/L		01/11/16 12:46	01/13/16 02:37	1
Thallium	ND		1.0	0.50	ug/L		01/11/16 12:46	01/13/16 02:37	1
Nickel	2.2		2.0	0.50	ug/L		01/11/16 12:46	01/13/16 02:37	1
Silver	ND		1.0	0.50	ug/L		01/11/16 12:46	01/13/16 02:37	1
Zinc	11	J,DX	20	2.5	ug/L		01/11/16 12:46	01/13/16 02:37	1
Selenium	ND		2.0	0.50	ug/L		01/11/16 12:46	01/13/16 02:37	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		01/08/16 18:27	01/11/16 21:05	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	76		10	5.0	mg/L			01/12/16 08:38	1
Cyanide, Total	ND		5.0	2.5	ug/L		01/06/16 21:23	01/10/16 19:14	1

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Gross Alpha	3.03		0.998	1.06	3.00	0.978	pCi/L	01/11/16 11:06	01/15/16 11:43	1
Gross Beta	1.97		0.724	0.751	4.00	0.948	pCi/L	01/11/16 11:06	01/15/16 11:43	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-133309-1

Client Sample ID: Outfall009_20160106_Comp

Lab Sample ID: 440-133309-1

Date Collected: 01/06/16 12:28

Matrix: Water

Date Received: 01/06/16 18:40

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Cesium-137	0.159	U	5.72	5.72	20.0	10.7	pCi/L	01/08/16 16:21	01/10/16 20:54	1
Potassium-40	-73.2	U	247	247		217	pCi/L	01/08/16 16:21	01/10/16 20:54	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	0.109	U	0.159	0.159	1.00	0.270	pCi/L	01/11/16 16:16	02/17/16 23:46	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	84.3		40 - 110					01/11/16 16:16	02/17/16 23:46	1

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-228	0.207	U	0.452	0.453	1.00	0.777	pCi/L	01/11/16 17:23	02/16/16 11:43	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	84.3		40 - 110					01/11/16 17:23	02/16/16 11:43	1
Y Carrier	79.6		40 - 110					01/11/16 17:23	02/16/16 11:43	1

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Strontium-90	0.122	U	0.382	0.382	3.00	0.665	pCi/L	01/15/16 12:07	01/25/16 17:22	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	85.7		40 - 110					01/15/16 12:07	01/25/16 17:22	1
Y Carrier	87.1		40 - 110					01/15/16 12:07	01/25/16 17:22	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Tritium	242	U	221	222	500	345	pCi/L	01/22/16 15:27	01/25/16 17:47	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Total Uranium	1.06		0.617	0.620	1.00	0.539	pCi/L	01/18/16 12:50	01/26/16 13:48	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	54.9		30 - 110					01/18/16 12:50	01/26/16 13:48	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-133309-1

Client Sample ID: Outfall009_20160106_Comp_F

Lab Sample ID: 440-133309-2

Date Collected: 01/06/16 12:28

Matrix: Water

Date Received: 01/06/16 18:40

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		01/12/16 10:12	01/15/16 12:42	1
Copper	3.4		2.0	0.50	ug/L		01/12/16 10:12	01/15/16 12:42	1
Lead	ND		1.0	0.50	ug/L		01/12/16 10:12	01/15/16 12:42	1
Antimony	0.76	J,DX	2.0	0.50	ug/L		01/12/16 10:12	01/15/16 12:42	1
Thallium	ND		1.0	0.50	ug/L		01/12/16 10:12	01/15/16 12:42	1
Nickel	1.3	J,DX	2.0	0.50	ug/L		01/12/16 10:12	01/15/16 12:42	1
Silver	ND		1.0	0.50	ug/L		01/12/16 10:12	01/15/16 12:42	1
Zinc	9.4	J,DX MB	20	2.5	ug/L		01/12/16 10:12	01/15/16 12:42	1
Selenium	ND		2.0	0.50	ug/L		01/12/16 10:12	01/15/16 12:42	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		01/08/16 17:12	01/11/16 19:24	1

Client Sample ID: Outfall009_20160106_Comp_Extra

Lab Sample ID: 440-133309-3

Date Collected: 01/06/16 12:28

Matrix: Water

Date Received: 01/06/16 18:40

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	4.3		0.50	0.25	mg/L			01/06/16 23:49	1
Sulfate	3.9		0.50	0.25	mg/L			01/06/16 23:49	1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000010	0.0000003	ug/L		01/15/16 08:33	01/21/16 13:37	1
2,3,7,8-TCDF	ND		0.000010	0.0000002	ug/L		01/15/16 08:33	01/21/16 13:37	1
1,2,3,7,8-PeCDD	0.0000023	J,DX	0.000050	0.0000004	ug/L		01/15/16 08:33	01/21/16 13:37	1
1,2,3,7,8-PeCDF	ND		0.000050	0.0000003	ug/L		01/15/16 08:33	01/21/16 13:37	1
2,3,4,7,8-PeCDF	ND		0.000050	0.0000004	ug/L		01/15/16 08:33	01/21/16 13:37	1
1,2,3,4,7,8-HxCDD	0.0000029	J,DX q	0.000050	0.0000004	ug/L		01/15/16 08:33	01/21/16 13:37	1
1,2,3,6,7,8-HxCDD	0.0000088	J,DX	0.000050	0.0000003	ug/L		01/15/16 08:33	01/21/16 13:37	1
1,2,3,7,8,9-HxCDD	0.0000061	J,DX q MB	0.000050	0.0000003	ug/L		01/15/16 08:33	01/21/16 13:37	1
1,2,3,4,7,8-HxCDF	0.0000022	J,DX	0.000050	0.0000007	ug/L		01/15/16 08:33	01/21/16 13:37	1
1,2,3,6,7,8-HxCDF	0.0000016	J,DX q MB	0.000050	0.0000006	ug/L		01/15/16 08:33	01/21/16 13:37	1
1,2,3,7,8,9-HxCDF	ND		0.000050	0.0000005	ug/L		01/15/16 08:33	01/21/16 13:37	1
2,3,4,6,7,8-HxCDF	0.0000013	J,DX	0.000050	0.0000005	ug/L		01/15/16 08:33	01/21/16 13:37	1
1,2,3,4,6,7,8-HpCDD	0.00017	MB	0.000050	0.0000021	ug/L		01/15/16 08:33	01/21/16 13:37	1
1,2,3,4,6,7,8-HpCDF	0.000045	J,DX MB	0.000050	0.0000008	ug/L		01/15/16 08:33	01/21/16 13:37	1
1,2,3,4,7,8,9-HpCDF	0.0000037	J,DX MB	0.000050	0.0000012	ug/L		01/15/16 08:33	01/21/16 13:37	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-133309-1

Client Sample ID: Outfall009_20160106_Comp_Extra

Lab Sample ID: 440-133309-3

Date Collected: 01/06/16 12:28

Matrix: Water

Date Received: 01/06/16 18:40

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
OCDD	0.0019	MB	0.00010	0.0000046	ug/L		01/15/16 08:33	01/21/16 13:37	1
OCDF	0.00012	MB	0.00010	0.0000014	ug/L		01/15/16 08:33	01/21/16 13:37	1
Total TCDD	0.00000047	J,DX q MB	0.000010	0.0000003	ug/L		01/15/16 08:33	01/21/16 13:37	1
Total TCDF	ND		0.000010	0.0000002	ug/L		01/15/16 08:33	01/21/16 13:37	1
Total PeCDD	0.0000032	J,DX	0.000050	0.0000004	ug/L		01/15/16 08:33	01/21/16 13:37	1
Total PeCDF	0.0000042	J,DX q	0.000050	0.0000004	ug/L		01/15/16 08:33	01/21/16 13:37	1
Total HxCDD	0.000043	J,DX q MB	0.000050	0.0000003	ug/L		01/15/16 08:33	01/21/16 13:37	1
Total HxCDF	0.000038	J,DX q MB	0.000050	0.0000006	ug/L		01/15/16 08:33	01/21/16 13:37	1
Total HpCDD	0.00042	MB	0.000050	0.0000021	ug/L		01/15/16 08:33	01/21/16 13:37	1
Total HpCDF	0.00012	MB	0.000050	0.0000010	ug/L		01/15/16 08:33	01/21/16 13:37	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	63		25 - 164				01/15/16 08:33	01/21/16 13:37	1
13C-2,3,7,8-TCDF	63		24 - 169				01/15/16 08:33	01/21/16 13:37	1
13C-1,2,3,7,8-PeCDD	70		25 - 181				01/15/16 08:33	01/21/16 13:37	1
13C-1,2,3,7,8-PeCDF	67		24 - 185				01/15/16 08:33	01/21/16 13:37	1
13C-2,3,4,7,8-PeCDF	69		21 - 178				01/15/16 08:33	01/21/16 13:37	1
13C-1,2,3,4,7,8-HxCDD	76		32 - 141				01/15/16 08:33	01/21/16 13:37	1
13C-1,2,3,6,7,8-HxCDD	68		28 - 130				01/15/16 08:33	01/21/16 13:37	1
13C-1,2,3,4,7,8-HxCDF	78		26 - 152				01/15/16 08:33	01/21/16 13:37	1
13C-1,2,3,6,7,8-HxCDF	71		26 - 123				01/15/16 08:33	01/21/16 13:37	1
13C-1,2,3,7,8,9-HxCDF	72		29 - 147				01/15/16 08:33	01/21/16 13:37	1
13C-2,3,4,6,7,8-HxCDF	77		28 - 136				01/15/16 08:33	01/21/16 13:37	1
13C-1,2,3,4,6,7,8-HpCDD	57		23 - 140				01/15/16 08:33	01/21/16 13:37	1
13C-1,2,3,4,6,7,8-HpCDF	57		28 - 143				01/15/16 08:33	01/21/16 13:37	1
13C-1,2,3,4,7,8,9-HpCDF	53		26 - 138				01/15/16 08:33	01/21/16 13:37	1
13C-OCDD	48		17 - 157				01/15/16 08:33	01/21/16 13:37	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	92		35 - 197				01/15/16 08:33	01/21/16 13:37	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-133309-1

Method	Method Description	Protocol	Laboratory
300.0	Anions, Ion Chromatography	MCAWW	TAL IRV
NO3NO2 Calc	Nitrogen, Nitrate-Nitrite	EPA	TAL IRV
1613B	Dioxins and Furans (HRGC/HRMS)	40CFR136A	TAL SAC
200.8	Metals (ICP/MS)	EPA	TAL IRV
245.1	Mercury (CVAA)	EPA	TAL IRV
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL IRV
SM 4500 CN E	Cyanide, Total (Low Level)	SM	TAL IRV
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
Chronic Cerio, EPA/821-R02-013	Bioassay	NONE	ABC

Protocol References:

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

DOE = U.S. Department of Energy

EPA = US Environmental Protection Agency

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

NONE = NONE

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

Laboratory References:

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

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

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-133309-1

Client Sample ID: Outfall009_20160106_Comp

Lab Sample ID: 440-133309-1

Date Collected: 01/06/16 12:28

Matrix: Water

Date Received: 01/06/16 18:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1	5 mL		304031	01/06/16 23:32	NTN	TAL IRV
Total/NA	Analysis	NO3NO2 Calc		1			306016	01/15/16 11:41	TN	TAL IRV
Total/NA	Prep	1613B			995.5 mL	20 uL	98188	01/15/16 08:33	DXD	TAL SAC
Total/NA	Analysis	1613B		1	995.5 mL	20 uL	98758	01/21/16 12:51	SMA	TAL SAC
Total Recoverable	Prep	200.2			25 mL	25 mL	304883	01/11/16 12:46	GK	TAL IRV
Total Recoverable	Analysis	200.8		1	25 mL	25 mL	305343	01/13/16 02:37	DP	TAL IRV
Total Recoverable	Prep	200.2			25 mL	25 mL	304883	01/11/16 12:46	GK	TAL IRV
Total Recoverable	Analysis	200.8		1	25 mL	25 mL	306017	01/15/16 10:51	RC	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	304655	01/08/16 18:27	DB	TAL IRV
Total/NA	Analysis	245.1		1	20 mL	20 mL	305100	01/11/16 21:05	DB	TAL IRV
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	305066	01/12/16 08:38	XL	TAL IRV
Total/NA	Prep	Distill/CN			50 mL	50 mL	304171	01/06/16 21:23	SN	TAL IRV
Total/NA	Analysis	SM 4500 CN E		1	50 mL	50 mL	304760	01/10/16 19:14	SN	TAL IRV
Total/NA	Prep	Evaporation			200 mL	1.0 g	231501	01/11/16 11:06	CMT	TAL SL
Total/NA	Analysis	900.0		1	200 mL		232602	01/15/16 11:43	ALS	TAL SL
Total/NA	Prep	Fill_Geo-0			1000 mL	1.0 g	231399	01/08/16 16:21	R1S	TAL SL
Total/NA	Analysis	901.1		1	1000 mL		231769	01/10/16 20:54	ALS	TAL SL
Total/NA	Prep	PrecSep-21			500.76 mL	1.0 g	231737	01/11/16 16:16	CMS	TAL SL
Total/NA	Analysis	903.0		1	500.76 mL		237324	02/17/16 23:46	RTM	TAL SL
Total/NA	Prep	PrecSep_0			500.76 mL	1.0 g	231743	01/11/16 17:23	CMS	TAL SL
Total/NA	Analysis	904.0		1	500.76 mL		237335	02/16/16 11:43	RTM	TAL SL
Total/NA	Prep	PrecSep-7			500.58 mL	1.0 g	232609	01/15/16 12:07	CMS	TAL SL
Total/NA	Analysis	905		1	500.58 mL		234039	01/25/16 17:22	ALS	TAL SL
Total/NA	Prep	LSC_Dist_Susp			100.00 mL	1.0 g	233865	01/22/16 15:27	JDL	TAL SL
Total/NA	Analysis	906.0		1	100.00 mL		234118	01/25/16 17:47	ALD	TAL SL
Total/NA	Prep	ExtChrom			100.23 mL	1.0 mL	232862	01/18/16 12:50	SEK	TAL SL
Total/NA	Analysis	A-01-R		1	100.23 mL		234174	01/26/16 13:48	ALD	TAL SL

Client Sample ID: Outfall009_20160106_Comp_F

Lab Sample ID: 440-133309-2

Date Collected: 01/06/16 12:28

Matrix: Water

Date Received: 01/06/16 18:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			150 mL	150 mL	304528	01/08/16 10:26	K1E	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	305092	01/12/16 10:12	Q1N	TAL IRV
Dissolved	Analysis	200.8		1	25 mL	25 mL	306050	01/15/16 12:42	RC	TAL IRV
Dissolved	Filtration	FILTRATION			150 mL	150 mL	304528	01/08/16 10:26	K1E	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	304625	01/08/16 17:12	DB	TAL IRV
Dissolved	Analysis	245.1		1	20 mL	20 mL	305100	01/11/16 19:24	DB	TAL IRV

TestAmerica Irvine

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-133309-1

Client Sample ID: Outfall009_20160106_Comp_Extra

Lab Sample ID: 440-133309-3

Date Collected: 01/06/16 12:28

Matrix: Water

Date Received: 01/06/16 18:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1	5 mL		304031	01/06/16 23:49	NTN	TAL IRV
Total/NA	Prep	1613B			997 mL	20 uL	98188	01/15/16 08:33	DXD	TAL SAC
Total/NA	Analysis	1613B		1	997 mL	20 uL	98758	01/21/16 13:37	SMA	TAL SAC

Laboratory References:

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

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

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-133309-1

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 440-304031/4
Matrix: Water
Analysis Batch: 304031

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50	0.25	mg/L			01/06/16 11:33	1
Sulfate	ND		0.50	0.25	mg/L			01/06/16 11:33	1

Lab Sample ID: LCS 440-304031/2
Matrix: Water
Analysis Batch: 304031

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	5.00	4.79		mg/L		96	90 - 110
Sulfate	5.00	4.91		mg/L		98	90 - 110

Lab Sample ID: 440-132901-B-1 MS
Matrix: Water
Analysis Batch: 304031

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

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	3.4		5.00	8.51		mg/L		102	80 - 120
Sulfate	3.5		5.00	8.64		mg/L		104	80 - 120

Lab Sample ID: 440-132901-B-1 MSD
Matrix: Water
Analysis Batch: 304031

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

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	3.4		5.00	8.34		mg/L		99	80 - 120	2	20
Sulfate	3.5		5.00	8.06		mg/L		92	80 - 120	7	20

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

Lab Sample ID: MB 320-98188/1-A
Matrix: Water
Analysis Batch: 98758

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 98188

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000010	0.0000002	ug/L		01/15/16 08:33	01/21/16 10:32	1
2,3,7,8-TCDF	ND		0.000010	0.0000002	ug/L		01/15/16 08:33	01/21/16 10:32	1
1,2,3,7,8-PeCDD	ND		0.000050	0.0000002	ug/L		01/15/16 08:33	01/21/16 10:32	1
1,2,3,7,8-PeCDF	ND		0.000050	0.0000003	ug/L		01/15/16 08:33	01/21/16 10:32	1
2,3,4,7,8-PeCDF	ND		0.000050	0.0000003	ug/L		01/15/16 08:33	01/21/16 10:32	1
1,2,3,4,7,8-HxCDD	ND		0.000050	0.0000002	ug/L		01/15/16 08:33	01/21/16 10:32	1
1,2,3,6,7,8-HxCDD	ND		0.000050	0.0000002	ug/L		01/15/16 08:33	01/21/16 10:32	1
1,2,3,7,8,9-HxCDD	0.000000833	J,DX	0.000050	0.0000001	ug/L		01/15/16 08:33	01/21/16 10:32	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-133309-1

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

Lab Sample ID: MB 320-98188/1-A
Matrix: Water
Analysis Batch: 98758

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 98188

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,7,8-HxCDF	ND		0.000050	0.0000003	ug/L		01/15/16 08:33	01/21/16 10:32	1
1,2,3,6,7,8-HxCDF	0.000000838	J,DX q	0.000050	0.0000003	ug/L		01/15/16 08:33	01/21/16 10:32	1
1,2,3,7,8,9-HxCDF	ND		0.000050	0.0000002	ug/L		01/15/16 08:33	01/21/16 10:32	1
2,3,4,6,7,8-HxCDF	ND		0.000050	0.0000002	ug/L		01/15/16 08:33	01/21/16 10:32	1
1,2,3,4,6,7,8-HpCDD	0.00000207	J,DX	0.000050	0.0000001	ug/L		01/15/16 08:33	01/21/16 10:32	1
1,2,3,4,6,7,8-HpCDF	0.00000255	J,DX	0.000050	0.0000003	ug/L		01/15/16 08:33	01/21/16 10:32	1
1,2,3,4,7,8,9-HpCDF	0.00000122	J,DX q	0.000050	0.0000005	ug/L		01/15/16 08:33	01/21/16 10:32	1
OCDD	0.0000106	J,DX	0.00010	0.0000003	ug/L		01/15/16 08:33	01/21/16 10:32	1
OCDF	0.0000109	J,DX	0.00010	0.0000006	ug/L		01/15/16 08:33	01/21/16 10:32	1
Total TCDD	0.000000517	J,DX q	0.000010	0.0000002	ug/L		01/15/16 08:33	01/21/16 10:32	1
Total TCDF	ND		0.000010	0.0000002	ug/L		01/15/16 08:33	01/21/16 10:32	1
Total PeCDD	ND		0.000050	0.0000002	ug/L		01/15/16 08:33	01/21/16 10:32	1
Total PeCDF	ND		0.000050	0.0000003	ug/L		01/15/16 08:33	01/21/16 10:32	1
Total HxCDD	0.000000833	J,DX	0.000050	0.0000002	ug/L		01/15/16 08:33	01/21/16 10:32	1
Total HxCDF	0.000000838	J,DX q	0.000050	0.0000002	ug/L		01/15/16 08:33	01/21/16 10:32	1
Total HpCDD	0.00000411	J,DX	0.000050	0.0000001	ug/L		01/15/16 08:33	01/21/16 10:32	1
Total HpCDF	0.00000377	J,DX q	0.000050	0.0000004	ug/L		01/15/16 08:33	01/21/16 10:32	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	55		25 - 164	01/15/16 08:33	01/21/16 10:32	1
13C-2,3,7,8-TCDF	52		24 - 169	01/15/16 08:33	01/21/16 10:32	1
13C-1,2,3,7,8-PeCDD	64		25 - 181	01/15/16 08:33	01/21/16 10:32	1
13C-1,2,3,7,8-PeCDF	53		24 - 185	01/15/16 08:33	01/21/16 10:32	1
13C-2,3,4,7,8-PeCDF	57		21 - 178	01/15/16 08:33	01/21/16 10:32	1
13C-1,2,3,4,7,8-HxCDD	61		32 - 141	01/15/16 08:33	01/21/16 10:32	1
13C-1,2,3,6,7,8-HxCDD	53		28 - 130	01/15/16 08:33	01/21/16 10:32	1
13C-1,2,3,4,7,8-HxCDF	56		26 - 152	01/15/16 08:33	01/21/16 10:32	1
13C-1,2,3,6,7,8-HxCDF	51		26 - 123	01/15/16 08:33	01/21/16 10:32	1
13C-1,2,3,7,8,9-HxCDF	55		29 - 147	01/15/16 08:33	01/21/16 10:32	1
13C-2,3,4,6,7,8-HxCDF	56		28 - 136	01/15/16 08:33	01/21/16 10:32	1
13C-1,2,3,4,6,7,8-HpCDD	53		23 - 140	01/15/16 08:33	01/21/16 10:32	1
13C-1,2,3,4,6,7,8-HpCDF	53		28 - 143	01/15/16 08:33	01/21/16 10:32	1
13C-1,2,3,4,7,8,9-HpCDF	45		26 - 138	01/15/16 08:33	01/21/16 10:32	1
13C-OCDD	45		17 - 157	01/15/16 08:33	01/21/16 10:32	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-133309-1

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

Lab Sample ID: MB 320-98188/1-A
Matrix: Water
Analysis Batch: 98758

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 98188

Surrogate	MB MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery Qualifier				
37Cl4-2,3,7,8-TCDD	85	35 - 197	01/15/16 08:33	01/21/16 10:32	1

Lab Sample ID: LCS 320-98188/2-A
Matrix: Water
Analysis Batch: 98758

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 98188

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2,3,7,8-TCDD	0.000200	0.000205		ug/L		102	67 - 158
2,3,7,8-TCDF	0.000200	0.000214		ug/L		107	75 - 158
1,2,3,7,8-PeCDD	0.00100	0.00103		ug/L		103	70 - 142
1,2,3,7,8-PeCDF	0.00100	0.00111		ug/L		111	80 - 134
2,3,4,7,8-PeCDF	0.00100	0.00108		ug/L		108	68 - 160
1,2,3,4,7,8-HxCDD	0.00100	0.00104		ug/L		104	70 - 164
1,2,3,6,7,8-HxCDD	0.00100	0.00101		ug/L		101	76 - 134
1,2,3,7,8,9-HxCDD	0.00100	0.000989	MB	ug/L		99	64 - 162
1,2,3,4,7,8-HxCDF	0.00100	0.00104		ug/L		104	72 - 134
1,2,3,6,7,8-HxCDF	0.00100	0.00105	MB	ug/L		105	84 - 130
1,2,3,7,8,9-HxCDF	0.00100	0.00107		ug/L		107	78 - 130
2,3,4,6,7,8-HxCDF	0.00100	0.00112		ug/L		112	70 - 156
1,2,3,4,6,7,8-HpCDD	0.00100	0.000952	MB	ug/L		95	70 - 140
1,2,3,4,6,7,8-HpCDF	0.00100	0.000957	MB	ug/L		96	82 - 122
1,2,3,4,7,8,9-HpCDF	0.00100	0.000995	MB	ug/L		99	78 - 138
OCDD	0.00200	0.00176	MB	ug/L		88	78 - 144
OCDF	0.00200	0.00169	MB	ug/L		84	63 - 170

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C-2,3,7,8-TCDD	51		20 - 175
13C-2,3,7,8-TCDF	51		22 - 152
13C-1,2,3,7,8-PeCDD	67		21 - 227
13C-1,2,3,7,8-PeCDF	56		21 - 192
13C-2,3,4,7,8-PeCDF	61		13 - 328
13C-1,2,3,4,7,8-HxCDD	59		21 - 193
13C-1,2,3,6,7,8-HxCDD	52		25 - 163
13C-1,2,3,4,7,8-HxCDF	56		19 - 202
13C-1,2,3,6,7,8-HxCDF	49		21 - 159
13C-1,2,3,7,8,9-HxCDF	55		17 - 205
13C-2,3,4,6,7,8-HxCDF	55		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	52		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	52		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	46		20 - 186
13C-OCDD	44		13 - 199

Surrogate	LCS %Recovery	LCS Qualifier	Limits
37Cl4-2,3,7,8-TCDD	84		35 - 197

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-133309-1

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

Lab Sample ID: LCSD 320-98188/3-A
Matrix: Water
Analysis Batch: 98758

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 98188

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2,3,7,8-TCDD	0.000200	0.000214		ug/L		107	67 - 158	4	50
2,3,7,8-TCDF	0.000200	0.000231		ug/L		115	75 - 158	8	50
1,2,3,7,8-PeCDD	0.00100	0.00111		ug/L		111	70 - 142	8	50
1,2,3,7,8-PeCDF	0.00100	0.00116		ug/L		116	80 - 134	4	50
2,3,4,7,8-PeCDF	0.00100	0.00116		ug/L		116	68 - 160	7	50
1,2,3,4,7,8-HxCDD	0.00100	0.00116		ug/L		116	70 - 164	10	50
1,2,3,6,7,8-HxCDD	0.00100	0.00112		ug/L		112	76 - 134	10	50
1,2,3,7,8,9-HxCDD	0.00100	0.00110	MB	ug/L		110	64 - 162	10	50
1,2,3,4,7,8-HxCDF	0.00100	0.00118		ug/L		118	72 - 134	12	50
1,2,3,6,7,8-HxCDF	0.00100	0.00116	MB	ug/L		116	84 - 130	10	50
1,2,3,7,8,9-HxCDF	0.00100	0.00118		ug/L		118	78 - 130	10	50
2,3,4,6,7,8-HxCDF	0.00100	0.00118		ug/L		118	70 - 156	5	50
1,2,3,4,6,7,8-HpCDD	0.00100	0.00103	MB	ug/L		103	70 - 140	8	50
1,2,3,4,6,7,8-HpCDF	0.00100	0.000991	MB	ug/L		99	82 - 122	3	50
1,2,3,4,7,8,9-HpCDF	0.00100	0.00108	MB	ug/L		108	78 - 138	9	50
OCDD	0.00200	0.00188	MB	ug/L		94	78 - 144	7	50
OCDF	0.00200	0.00181	MB	ug/L		91	63 - 170	7	50

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	LCSD Limits
13C-2,3,7,8-TCDD	53		20 - 175
13C-2,3,7,8-TCDF	50		22 - 152
13C-1,2,3,7,8-PeCDD	60		21 - 227
13C-1,2,3,7,8-PeCDF	51		21 - 192
13C-2,3,4,7,8-PeCDF	55		13 - 328
13C-1,2,3,4,7,8-HxCDD	57		21 - 193
13C-1,2,3,6,7,8-HxCDD	49		25 - 163
13C-1,2,3,4,7,8-HxCDF	53		19 - 202
13C-1,2,3,6,7,8-HxCDF	47		21 - 159
13C-1,2,3,7,8,9-HxCDF	53		17 - 205
13C-2,3,4,6,7,8-HxCDF	53		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	48		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	50		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	43		20 - 186
13C-OCDD	40		13 - 199

Surrogate	LCSD %Recovery	LCSD Qualifier	LCSD Limits
37Cl4-2,3,7,8-TCDD	92		35 - 197

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 440-304883/1-A
Matrix: Water
Analysis Batch: 305343

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 304883

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		01/11/16 12:46	01/13/16 02:32	1
Copper	0.724	J,DX	2.0	0.50	ug/L		01/11/16 12:46	01/13/16 02:32	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-133309-1

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

Lab Sample ID: MB 440-304883/1-A
Matrix: Water
Analysis Batch: 305343

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 304883

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Antimony	ND		2.0	0.50	ug/L		01/11/16 12:46	01/13/16 02:32	1
Thallium	ND		1.0	0.50	ug/L		01/11/16 12:46	01/13/16 02:32	1
Nickel	ND		2.0	0.50	ug/L		01/11/16 12:46	01/13/16 02:32	1
Silver	ND		1.0	0.50	ug/L		01/11/16 12:46	01/13/16 02:32	1
Zinc	ND		20	2.5	ug/L		01/11/16 12:46	01/13/16 02:32	1
Selenium	ND		2.0	0.50	ug/L		01/11/16 12:46	01/13/16 02:32	1

Lab Sample ID: MB 440-304883/1-A
Matrix: Water
Analysis Batch: 306017

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 304883

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Lead	ND		1.0	0.50	ug/L		01/11/16 12:46	01/15/16 10:47	1
Zinc	ND		20	2.5	ug/L		01/11/16 12:46	01/15/16 10:47	1

Lab Sample ID: LCS 440-304883/2-A
Matrix: Water
Analysis Batch: 305343

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 304883

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits	
Cadmium	80.0	80.0		ug/L		100	85 - 115	
Copper	80.0	83.5		ug/L		104	85 - 115	
Antimony	80.0	80.7		ug/L		101	85 - 115	
Thallium	80.0	80.0		ug/L		100	85 - 115	
Nickel	80.0	81.3		ug/L		102	85 - 115	
Silver	80.0	81.5		ug/L		102	85 - 115	
Zinc	80.0	86.9		ug/L		109	85 - 115	
Selenium	80.0	76.8		ug/L		96	85 - 115	

Lab Sample ID: LCS 440-304883/2-A
Matrix: Water
Analysis Batch: 306017

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 304883

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits	
Lead	80.0	88.6		ug/L		111	85 - 115	
Zinc	80.0	84.5		ug/L		106	85 - 115	

Lab Sample ID: 440-133309-1 MS
Matrix: Water
Analysis Batch: 305343

Client Sample ID: Outfall009_20160106_Comp
Prep Type: Total Recoverable
Prep Batch: 304883

Analyte	Sample		Spike Added	MS MS		Unit	D	%Rec	Limits
	Result	Qualifier		Result	Qualifier				
Cadmium	ND		80.0	81.5		ug/L		102	70 - 130
Copper	5.3	MB	80.0	89.8		ug/L		106	70 - 130
Antimony	0.60	J,DX	80.0	81.5		ug/L		101	70 - 130
Thallium	ND		80.0	81.5		ug/L		102	70 - 130
Nickel	2.2		80.0	84.6		ug/L		103	70 - 130
Silver	ND		80.0	81.6		ug/L		102	70 - 130
Zinc	11	J,DX	80.0	128	LM	ug/L		146	70 - 130

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-133309-1

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

Lab Sample ID: 440-133309-1 MS
Matrix: Water
Analysis Batch: 305343

Client Sample ID: Outfall009_20160106_Comp
Prep Type: Total Recoverable
Prep Batch: 304883

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Selenium	ND		80.0	78.9		ug/L		99	70 - 130

Lab Sample ID: 440-133309-1 MS
Matrix: Water
Analysis Batch: 306017

Client Sample ID: Outfall009_20160106_Comp
Prep Type: Total Recoverable
Prep Batch: 304883

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Lead	1.8		80.0	89.5		ug/L		110	70 - 130
Zinc	9.5	J,DX	80.0	123	LM	ug/L		142	70 - 130

Lab Sample ID: 440-133309-1 MSD
Matrix: Water
Analysis Batch: 305343

Client Sample ID: Outfall009_20160106_Comp
Prep Type: Total Recoverable
Prep Batch: 304883

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Cadmium	ND		80.0	84.1		ug/L		105	70 - 130	3	20
Copper	5.3	MB	80.0	92.4		ug/L		109	70 - 130	3	20
Antimony	0.60	J,DX	80.0	84.2		ug/L		104	70 - 130	3	20
Thallium	ND		80.0	82.9		ug/L		104	70 - 130	2	20
Nickel	2.2		80.0	86.9		ug/L		106	70 - 130	3	20
Silver	ND		80.0	84.1		ug/L		105	70 - 130	3	20
Zinc	11	J,DX	80.0	99.7	BA	ug/L		111	70 - 130	25	20
Selenium	ND		80.0	79.1		ug/L		99	70 - 130	0	20

Lab Sample ID: 440-133309-1 MSD
Matrix: Water
Analysis Batch: 306017

Client Sample ID: Outfall009_20160106_Comp
Prep Type: Total Recoverable
Prep Batch: 304883

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Lead	1.8		80.0	92.3		ug/L		113	70 - 130	3	20
Zinc	9.5	J,DX	80.0	94.9	BA	ug/L		107	70 - 130	26	20

Lab Sample ID: MB 440-304528/1-C
Matrix: Water
Analysis Batch: 306050

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 305092

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		01/12/16 10:12	01/15/16 12:32	1
Copper	ND		2.0	0.50	ug/L		01/12/16 10:12	01/15/16 12:32	1
Lead	ND		1.0	0.50	ug/L		01/12/16 10:12	01/15/16 12:32	1
Antimony	ND		2.0	0.50	ug/L		01/12/16 10:12	01/15/16 12:32	1
Thallium	ND		1.0	0.50	ug/L		01/12/16 10:12	01/15/16 12:32	1
Nickel	ND		2.0	0.50	ug/L		01/12/16 10:12	01/15/16 12:32	1
Silver	ND		1.0	0.50	ug/L		01/12/16 10:12	01/15/16 12:32	1
Zinc	9.32	J,DX	20	2.5	ug/L		01/12/16 10:12	01/15/16 12:32	1
Selenium	ND		2.0	0.50	ug/L		01/12/16 10:12	01/15/16 12:32	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-133309-1

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

Lab Sample ID: LCS 440-304528/2-C
Matrix: Water
Analysis Batch: 306050

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 305092

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Cadmium	80.0	78.9		ug/L		99	85 - 115
Copper	80.0	79.6		ug/L		100	85 - 115
Lead	80.0	76.1		ug/L		95	85 - 115
Antimony	80.0	80.8		ug/L		101	85 - 115
Thallium	80.0	76.9		ug/L		96	85 - 115
Nickel	80.0	79.3		ug/L		99	85 - 115
Silver	80.0	79.6		ug/L		100	85 - 115
Zinc	80.0	81.2		ug/L		101	85 - 115
Selenium	80.0	80.8		ug/L		101	85 - 115

Lab Sample ID: LCSD 440-304528/3-B
Matrix: Water
Analysis Batch: 306050

Client Sample ID: Lab Control Sample Dup
Prep Type: Dissolved
Prep Batch: 305092

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	RPD Limit
Cadmium	80.0	78.1		ug/L		98	85 - 115	1	20
Copper	80.0	79.5		ug/L		99	85 - 115	0	20
Lead	80.0	76.2		ug/L		95	85 - 115	0	20
Antimony	80.0	79.9		ug/L		100	85 - 115	1	20
Thallium	80.0	76.3		ug/L		95	85 - 115	1	20
Nickel	80.0	79.1		ug/L		99	85 - 115	0	20
Silver	80.0	79.0		ug/L		99	85 - 115	1	20
Zinc	80.0	81.2		ug/L		102	85 - 115	0	20
Selenium	80.0	80.0		ug/L		100	85 - 115	1	20

Method: 245.1 - Mercury (CVAA)

Lab Sample ID: MB 440-304655/1-A
Matrix: Water
Analysis Batch: 305100

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 304655

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		01/08/16 18:27	01/11/16 19:48	1

Lab Sample ID: LCS 440-304655/2-A
Matrix: Water
Analysis Batch: 305100

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 304655

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	8.00	7.90		ug/L		99	85 - 115

Lab Sample ID: 720-69552-E-1-B MS
Matrix: Water
Analysis Batch: 305100

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 304655

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Mercury	ND		8.00	7.91		ug/L		99	70 - 130

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-133309-1

Method: 245.1 - Mercury (CVAA) (Continued)

Lab Sample ID: 720-69552-E-1-C MSD
Matrix: Water
Analysis Batch: 305100

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 304655

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	ND		8.00	8.11		ug/L		101	70 - 130	3	20

Lab Sample ID: MB 440-304528/1-B
Matrix: Water
Analysis Batch: 305100

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 304625

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		01/08/16 17:12	01/11/16 19:13	1

Lab Sample ID: LCS 440-304528/2-B
Matrix: Water
Analysis Batch: 305100

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 304625

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	8.00	8.18		ug/L		102	85 - 115

Lab Sample ID: 440-133309-2 MS
Matrix: Water
Analysis Batch: 305100

Client Sample ID: Outfall009_20160106_Comp_F
Prep Type: Dissolved
Prep Batch: 304625

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Mercury	ND		8.00	8.16		ug/L		102	70 - 130

Lab Sample ID: 440-133309-2 MSD
Matrix: Water
Analysis Batch: 305100

Client Sample ID: Outfall009_20160106_Comp_F
Prep Type: Dissolved
Prep Batch: 304625

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	ND		8.00	8.09		ug/L		101	70 - 130	1	20

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

Lab Sample ID: MB 440-305066/1
Matrix: Water
Analysis Batch: 305066

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10	5.0	mg/L			01/12/16 08:38	1

Lab Sample ID: LCS 440-305066/2
Matrix: Water
Analysis Batch: 305066

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Total Dissolved Solids	1000	1020		mg/L		102	90 - 110

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-133309-1

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

Lab Sample ID: 440-133286-A-1 DU
Matrix: Water
Analysis Batch: 305066

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	690		679		mg/L		0.9	5

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

Lab Sample ID: MB 440-304171/1-A
Matrix: Water
Analysis Batch: 304760

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 304171

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	ND		5.0	2.5	ug/L		01/06/16 19:21	01/10/16 19:13	1

Lab Sample ID: LCS 440-304171/2-A
Matrix: Water
Analysis Batch: 304760

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 304171

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Cyanide, Total	100	101		ug/L		101	90 - 110

Lab Sample ID: 440-133046-B-1-D MS
Matrix: Water
Analysis Batch: 304760

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 304171

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Cyanide, Total	ND		100	99.9		ug/L		100	70 - 115

Lab Sample ID: 440-133046-B-1-E MSD
Matrix: Water
Analysis Batch: 304760

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 304171

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	RPD Limit
Cyanide, Total	ND		100	105		ug/L		105	70 - 115	4	15

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Lab Sample ID: MB 160-231501/1-A
Matrix: Water
Analysis Batch: 232645

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 231501

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	0.8396		0.560	0.568	3.00	0.769	pCi/L	01/11/16 11:06	01/15/16 16:50	1
Gross Beta	0.8229	U	0.689	0.694	4.00	1.09	pCi/L	01/11/16 11:06	01/15/16 16:50	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-133309-1

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity (Continued)

Lab Sample ID: LCS 160-231501/2-A
Matrix: Water
Analysis Batch: 232602

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 231501

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Gross Alpha	50.0	44.60		6.59	3.00	2.07	pCi/L	89	73 - 133

Lab Sample ID: LCSB 160-231501/3-A
Matrix: Water
Analysis Batch: 232602

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 231501

Analyte	Spike Added	LCSB Result	LCSB Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Gross Beta	93.6	93.02		9.83	4.00	0.994	pCi/L	99	75 - 125

Lab Sample ID: 160-15644-A-1-E MS
Matrix: Water
Analysis Batch: 232602

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 231501

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Gross Alpha	4.88	U G	179	119.6		21.4	3.00	11.0	pCi/L	67	60 - 140

Lab Sample ID: 160-15644-A-1-F MSBT
Matrix: Water
Analysis Batch: 232602

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 231501

Analyte	Sample Result	Sample Qual	Spike Added	MSBT Result	MSBT Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Gross Beta	8.84		334	320.1		34.0	4.00	3.20	pCi/L	93	60 - 140

Lab Sample ID: 160-15644-A-1-G DU
Matrix: Water
Analysis Batch: 232602

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 231501

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Gross Alpha	4.88	U G	12.68	G	8.02	3.00	10.7	pCi/L	0.61	1
Gross Beta	8.84		8.574		2.96	4.00	3.72	pCi/L	0.05	1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Lab Sample ID: MB 160-231399/1-A
Matrix: Water
Analysis Batch: 231769

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 231399

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	0.04264	U	5.53	5.53	20.0	10.5	pCi/L	01/08/16 16:21	01/10/16 19:41	1
Potassium-40	-88.44	U	280	280		206	pCi/L	01/08/16 16:21	01/10/16 19:41	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-133309-1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS) (Continued)

Lab Sample ID: LCS 160-231399/2-A
Matrix: Water
Analysis Batch: 231767

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 231399

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
Americium-241	137000	131200		15200		389	pCi/L	96	90 - 111	
Cesium-137	48200	49250		4940	20.0	143	pCi/L	102	90 - 111	
Cobalt-60	46000	45940		4540		77.8	pCi/L	100	89 - 110	

Lab Sample ID: 440-133309-1 DU
Matrix: Water
Analysis Batch: 231768

Client Sample ID: Outfall009_20160106_Comp
Prep Type: Total/NA
Prep Batch: 231399

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Cesium-137	0.159	U	0.1483	U	4.88	20.0	9.31	pCi/L	0	1
Potassium-40	-73.2	U	-10.51	U	119		191	pCi/L	0.17	1

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-231737/1-A
Matrix: Water
Analysis Batch: 237324

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 231737

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared		Analyzed		Dil Fac
Radium-226	0.03887	U	0.100	0.100	1.00	0.179	pCi/L	01/11/16 16:16	02/17/16 23:46		1	
Carrier	%Yield	MB Qualifier	Limits					Prepared	Analyzed	Dil Fac		
Ba Carrier	87.8		40 - 110					01/11/16 16:16	02/17/16 23:46		1	

Lab Sample ID: LCS 160-231737/2-A
Matrix: Water
Analysis Batch: 237324

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 231737

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
Radium-226	11.2	12.24		1.28	1.00	0.161	pCi/L	110	68 - 137	
Carrier	LCS %Yield	LCS Qualifier	Limits							
Ba Carrier	90.6		40 - 110							

Lab Sample ID: LCSD 160-231737/3-A
Matrix: Water
Analysis Batch: 237324

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 231737

Analyte	Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		RER Limit
Radium-226	11.2	12.53		1.31	1.00	0.153	pCi/L	112	68 - 137	0.11	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-133309-1

Method: 903.0 - Radium-226 (GFPC) (Continued)

Lab Sample ID: LCSD 160-231737/3-A
Matrix: Water
Analysis Batch: 237324

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 231737

Carrier	LCS D %Yield	LCS D Qualifier	Limits
Ba Carrier	88.4		40 - 110

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-231743/1-A
Matrix: Water
Analysis Batch: 237335

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 231743

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.1737	U	0.210	0.211	1.00	0.348	pCi/L	01/11/16 17:23	02/16/16 11:41	1

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	87.8		40 - 110	01/11/16 17:23	02/16/16 11:41	1
Y Carrier	81.8		40 - 110	01/11/16 17:23	02/16/16 11:41	1

Lab Sample ID: LCS 160-231743/2-A
Matrix: Water
Analysis Batch: 237333

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 231743

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	3.12	2.994		0.480	1.00	0.321	pCi/L	96	56 - 140

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	90.6		40 - 110
Y Carrier	81.1		40 - 110

Lab Sample ID: LCSD 160-231743/3-A
Matrix: Water
Analysis Batch: 237335

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 231743

Analyte	Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228	3.12	2.930		0.517	1.00	0.455	pCi/L	94	56 - 140	0.06	1

Carrier	LCSD %Yield	LCSD Qualifier	Limits
Ba Carrier	88.4		40 - 110
Y Carrier	77.9		40 - 110

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-133309-1

Method: 905 - Strontium-90 (GFPC)

Lab Sample ID: MB 160-232609/1-A
Matrix: Water
Analysis Batch: 234039

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 232609

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.2911	U	0.404	0.404	3.00	0.758	pCi/L	01/15/16 12:07	01/25/16 17:22	1
Carrier	MB %Yield	MB Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	85.3		40 - 110					01/15/16 12:07	01/25/16 17:22	1
Y Carrier	92.0		40 - 110					01/15/16 12:07	01/25/16 17:22	1

Lab Sample ID: LCS 160-232609/2-A
Matrix: Water
Analysis Batch: 234039

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 232609

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Strontium-90	17.5	17.81		1.88	3.00	0.708	pCi/L	102	75 - 125
Carrier	LCS %Yield	LCS Qualifier	Limits						
Sr Carrier	87.4		40 - 110						
Y Carrier	90.5		40 - 110						

Lab Sample ID: LCSD 160-232609/3-A
Matrix: Water
Analysis Batch: 234039

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 232609

Analyte	Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Strontium-90	17.5	17.49		1.87	3.00	0.726	pCi/L	100	75 - 125	0.08	1
Carrier	LCSD %Yield	LCSD Qualifier	Limits								
Sr Carrier	88.0		40 - 110								
Y Carrier	87.1		40 - 110								

Method: 906.0 - Tritium, Total (LSC)

Lab Sample ID: MB 160-233865/1-A
Matrix: Water
Analysis Batch: 234118

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 233865

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	44.59	U	195	195	500	352	pCi/L	01/22/16 15:27	01/25/16 16:15	1

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-133309-1

Method: 906.0 - Tritium, Total (LSC) (Continued)

Lab Sample ID: LCS 160-233865/2-A
Matrix: Water
Analysis Batch: 234118

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 233865

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	4700	5336		765	500	357	pCi/L	113	74 - 114

Lab Sample ID: 440-133309-1 MS
Matrix: Water
Analysis Batch: 234118

Client Sample ID: Outfall009_20160106_Comp
Prep Type: Total/NA
Prep Batch: 233865

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	242	U	4700	5111		743	500	359	pCi/L	109	67 - 130

Lab Sample ID: 440-130088-B-1-B DU
Matrix: Water
Analysis Batch: 234118

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 233865

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Tritium	111	U	268.9	U	225	500	345	pCi/L	0.37	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Lab Sample ID: MB 160-232862/1-A
Matrix: Water
Analysis Batch: 234172

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 232862

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Total Uranium	0.03888	U	0.06669	0.06676	1.00	0.0967	pCi/L	01/18/16 12:50	01/26/16 13:48	1
Tracer	%Yield	MB Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	86.0		30 - 110					01/18/16 12:50	01/26/16 13:48	1

Lab Sample ID: LCS 160-232862/2-A
Matrix: Water
Analysis Batch: 234173

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 232862

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Uranium-234	12.7	12.46		1.30	1.00	0.0950	pCi/L	98	84 - 120
Uranium-238	13.0	13.37		1.38	1.00	0.0650	pCi/L	103	83 - 121
Tracer	LCS %Yield	LCS Qualifier	Limits						
Uranium-232	76.3		30 - 110						

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QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-133309-1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Lab Sample ID: 440-133309-1 DU
 Matrix: Water
 Analysis Batch: 234175

Client Sample ID: Outfall009_20160106_Comp
 Prep Type: Total/NA
 Prep Batch: 232862

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Total Uranium	1.06		0.4236	U	0.656	1.00	0.859	pCi/L	0.50	1

Tracer	DU %Yield	DU Qualifier	Limits
Uranium-232	43.3		30 - 110

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-133309-1

HPLC/IC

Analysis Batch: 304031

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-132901-B-1 MS	Matrix Spike	Total/NA	Water	300.0	
440-132901-B-1 MSD	Matrix Spike Duplicate	Total/NA	Water	300.0	
440-133309-1	Outfall009_20160106_Comp	Total/NA	Water	300.0	
440-133309-3	Outfall009_20160106_Comp_Extra	Total/NA	Water	300.0	
LCS 440-304031/2	Lab Control Sample	Total/NA	Water	300.0	
MB 440-304031/4	Method Blank	Total/NA	Water	300.0	

Analysis Batch: 306016

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-133309-1	Outfall009_20160106_Comp	Total/NA	Water	NO3NO2 Calc	

Specialty Organics

Prep Batch: 98188

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-133309-1	Outfall009_20160106_Comp	Total/NA	Water	1613B	
440-133309-3	Outfall009_20160106_Comp_Extra	Total/NA	Water	1613B	
LCS 320-98188/2-A	Lab Control Sample	Total/NA	Water	1613B	
LCSD 320-98188/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	
MB 320-98188/1-A	Method Blank	Total/NA	Water	1613B	

Analysis Batch: 98758

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-133309-1	Outfall009_20160106_Comp	Total/NA	Water	1613B	98188
440-133309-3	Outfall009_20160106_Comp_Extra	Total/NA	Water	1613B	98188
LCS 320-98188/2-A	Lab Control Sample	Total/NA	Water	1613B	98188
LCSD 320-98188/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	98188
MB 320-98188/1-A	Method Blank	Total/NA	Water	1613B	98188

Metals

Filtration Batch: 304528

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-133309-2	Outfall009_20160106_Comp_F	Dissolved	Water	FILTRATION	
440-133309-2 MS	Outfall009_20160106_Comp_F	Dissolved	Water	FILTRATION	
440-133309-2 MSD	Outfall009_20160106_Comp_F	Dissolved	Water	FILTRATION	
LCS 440-304528/2-B	Lab Control Sample	Dissolved	Water	FILTRATION	
LCS 440-304528/2-C	Lab Control Sample	Dissolved	Water	FILTRATION	
LCSD 440-304528/3-B	Lab Control Sample Dup	Dissolved	Water	FILTRATION	
MB 440-304528/1-B	Method Blank	Dissolved	Water	FILTRATION	
MB 440-304528/1-C	Method Blank	Dissolved	Water	FILTRATION	

Prep Batch: 304625

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-133309-2	Outfall009_20160106_Comp_F	Dissolved	Water	245.1	304528
440-133309-2 MS	Outfall009_20160106_Comp_F	Dissolved	Water	245.1	304528
440-133309-2 MSD	Outfall009_20160106_Comp_F	Dissolved	Water	245.1	304528
LCS 440-304528/2-B	Lab Control Sample	Dissolved	Water	245.1	304528
MB 440-304528/1-B	Method Blank	Dissolved	Water	245.1	304528

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QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-133309-1

Metals (Continued)

Prep Batch: 304655

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-133309-1	Outfall009_20160106_Comp	Total/NA	Water	245.1	
720-69552-E-1-B MS	Matrix Spike	Total/NA	Water	245.1	
720-69552-E-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	
LCS 440-304655/2-A	Lab Control Sample	Total/NA	Water	245.1	
MB 440-304655/1-A	Method Blank	Total/NA	Water	245.1	

Prep Batch: 304883

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-133309-1	Outfall009_20160106_Comp	Total Recoverable	Water	200.2	
440-133309-1 MS	Outfall009_20160106_Comp	Total Recoverable	Water	200.2	
440-133309-1 MSD	Outfall009_20160106_Comp	Total Recoverable	Water	200.2	
LCS 440-304883/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
MB 440-304883/1-A	Method Blank	Total Recoverable	Water	200.2	

Prep Batch: 305092

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-133309-2	Outfall009_20160106_Comp_F	Dissolved	Water	200.2	304528
LCS 440-304528/2-C	Lab Control Sample	Dissolved	Water	200.2	304528
LCSD 440-304528/3-B	Lab Control Sample Dup	Dissolved	Water	200.2	304528
MB 440-304528/1-C	Method Blank	Dissolved	Water	200.2	304528

Analysis Batch: 305100

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-133309-1	Outfall009_20160106_Comp	Total/NA	Water	245.1	304655
440-133309-2	Outfall009_20160106_Comp_F	Dissolved	Water	245.1	304625
440-133309-2 MS	Outfall009_20160106_Comp_F	Dissolved	Water	245.1	304625
440-133309-2 MSD	Outfall009_20160106_Comp_F	Dissolved	Water	245.1	304625
720-69552-E-1-B MS	Matrix Spike	Total/NA	Water	245.1	304655
720-69552-E-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	304655
LCS 440-304528/2-B	Lab Control Sample	Dissolved	Water	245.1	304625
LCS 440-304655/2-A	Lab Control Sample	Total/NA	Water	245.1	304655
MB 440-304528/1-B	Method Blank	Dissolved	Water	245.1	304625
MB 440-304655/1-A	Method Blank	Total/NA	Water	245.1	304655

Analysis Batch: 305343

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-133309-1	Outfall009_20160106_Comp	Total Recoverable	Water	200.8	304883
440-133309-1 MS	Outfall009_20160106_Comp	Total Recoverable	Water	200.8	304883
440-133309-1 MSD	Outfall009_20160106_Comp	Total Recoverable	Water	200.8	304883
LCS 440-304883/2-A	Lab Control Sample	Total Recoverable	Water	200.8	304883
MB 440-304883/1-A	Method Blank	Total Recoverable	Water	200.8	304883

Analysis Batch: 306017

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-133309-1	Outfall009_20160106_Comp	Total Recoverable	Water	200.8	304883
440-133309-1 MS	Outfall009_20160106_Comp	Total Recoverable	Water	200.8	304883
440-133309-1 MSD	Outfall009_20160106_Comp	Total Recoverable	Water	200.8	304883
LCS 440-304883/2-A	Lab Control Sample	Total Recoverable	Water	200.8	304883
MB 440-304883/1-A	Method Blank	Total Recoverable	Water	200.8	304883

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QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-133309-1

Metals (Continued)

Analysis Batch: 306050

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-133309-2	Outfall009_20160106_Comp_F	Dissolved	Water	200.8	305092
LCS 440-304528/2-C	Lab Control Sample	Dissolved	Water	200.8	305092
LCS 440-304528/3-B	Lab Control Sample Dup	Dissolved	Water	200.8	305092
MB 440-304528/1-C	Method Blank	Dissolved	Water	200.8	305092

General Chemistry

Prep Batch: 304171

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-133046-B-1-D MS	Matrix Spike	Total/NA	Water	Distill/CN	
440-133046-B-1-E MSD	Matrix Spike Duplicate	Total/NA	Water	Distill/CN	
440-133309-1	Outfall009_20160106_Comp	Total/NA	Water	Distill/CN	
LCS 440-304171/2-A	Lab Control Sample	Total/NA	Water	Distill/CN	
MB 440-304171/1-A	Method Blank	Total/NA	Water	Distill/CN	

Analysis Batch: 304760

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-133046-B-1-D MS	Matrix Spike	Total/NA	Water	SM 4500 CN E	304171
440-133046-B-1-E MSD	Matrix Spike Duplicate	Total/NA	Water	SM 4500 CN E	304171
440-133309-1	Outfall009_20160106_Comp	Total/NA	Water	SM 4500 CN E	304171
LCS 440-304171/2-A	Lab Control Sample	Total/NA	Water	SM 4500 CN E	304171
MB 440-304171/1-A	Method Blank	Total/NA	Water	SM 4500 CN E	304171

Analysis Batch: 305066

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-133286-A-1 DU	Duplicate	Total/NA	Water	SM 2540C	
440-133309-1	Outfall009_20160106_Comp	Total/NA	Water	SM 2540C	
LCS 440-305066/2	Lab Control Sample	Total/NA	Water	SM 2540C	
MB 440-305066/1	Method Blank	Total/NA	Water	SM 2540C	

Rad

Prep Batch: 231399

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-133309-1	Outfall009_20160106_Comp	Total/NA	Water	Fill_Geo-0	
440-133309-1 DU	Outfall009_20160106_Comp	Total/NA	Water	Fill_Geo-0	
LCS 160-231399/2-A	Lab Control Sample	Total/NA	Water	Fill_Geo-0	
MB 160-231399/1-A	Method Blank	Total/NA	Water	Fill_Geo-0	

Prep Batch: 231501

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-15644-A-1-E MS	Matrix Spike	Total/NA	Water	Evaporation	
160-15644-A-1-F MSBT	Matrix Spike	Total/NA	Water	Evaporation	
160-15644-A-1-G DU	Duplicate	Total/NA	Water	Evaporation	
440-133309-1	Outfall009_20160106_Comp	Total/NA	Water	Evaporation	
LCS 160-231501/2-A	Lab Control Sample	Total/NA	Water	Evaporation	
LCSB 160-231501/3-A	Lab Control Sample	Total/NA	Water	Evaporation	
MB 160-231501/1-A	Method Blank	Total/NA	Water	Evaporation	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-133309-1

Rad (Continued)

Prep Batch: 231737

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-133309-1	Outfall009_20160106_Comp	Total/NA	Water	PrecSep-21	
LCS 160-231737/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-231737/3-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	
MB 160-231737/1-A	Method Blank	Total/NA	Water	PrecSep-21	

Prep Batch: 231743

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-133309-1	Outfall009_20160106_Comp	Total/NA	Water	PrecSep_0	
LCS 160-231743/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-231743/3-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	
MB 160-231743/1-A	Method Blank	Total/NA	Water	PrecSep_0	

Prep Batch: 232609

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-133309-1	Outfall009_20160106_Comp	Total/NA	Water	PrecSep-7	
LCS 160-232609/2-A	Lab Control Sample	Total/NA	Water	PrecSep-7	
LCSD 160-232609/3-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-7	
MB 160-232609/1-A	Method Blank	Total/NA	Water	PrecSep-7	

Prep Batch: 232862

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-133309-1	Outfall009_20160106_Comp	Total/NA	Water	ExtChrom	
440-133309-1 DU	Outfall009_20160106_Comp	Total/NA	Water	ExtChrom	
LCS 160-232862/2-A	Lab Control Sample	Total/NA	Water	ExtChrom	
MB 160-232862/1-A	Method Blank	Total/NA	Water	ExtChrom	

Prep Batch: 233865

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-130088-B-1-B DU	Duplicate	Total/NA	Water	LSC_Dist_Susp	
440-133309-1	Outfall009_20160106_Comp	Total/NA	Water	LSC_Dist_Susp	
440-133309-1 MS	Outfall009_20160106_Comp	Total/NA	Water	LSC_Dist_Susp	
LCS 160-233865/2-A	Lab Control Sample	Total/NA	Water	LSC_Dist_Susp	
MB 160-233865/1-A	Method Blank	Total/NA	Water	LSC_Dist_Susp	

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-133309-1

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.

Metals

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
MB	Analyte present in the method blank
LM	MS and/or MSD above acceptance limits. See Blank Spike (LCS)
BA	Relative percent difference out of control

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.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
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
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)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-133309-1

Laboratory: TestAmerica Irvine

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

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-16
Arizona	State Program	9	AZ0671	10-13-16
California	LA Cty Sanitation Districts	9	10256	01-31-17 *
California	State Program	9	CA ELAP 2706	06-30-16
Guam	State Program	9	Cert. No. 12.002r	01-23-17
Hawaii	State Program	9	N/A	01-29-17
Kansas	NELAP Secondary AB	7	E-10420	07-31-16
Nevada	State Program	9	CA015312007A	07-31-16
New Mexico	State Program	6	N/A	01-29-17
Northern Mariana Islands	State Program	9	MP0002	01-29-16 *
Oregon	NELAP	10	4005	01-29-17
USDA	Federal		P330-09-00080	07-08-18
Washington	State Program	10	900	09-03-16

Laboratory: TestAmerica Sacramento

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

Authority	Program	EPA Region	Certification ID	Expiration Date
A2LA	DoD ELAP		2928-01	01-31-17
Alaska (UST)	State Program	10	UST-055	12-18-16
Arizona	State Program	9	AZ0708	08-11-16
Arkansas DEQ	State Program	6	88-0691	06-17-16
California	State Program	9	2897	01-31-17
Colorado	State Program	8	N/A	08-31-16
Connecticut	State Program	1	PH-0691	06-30-17
Florida	NELAP	4	E87570	06-30-16
Hawaii	State Program	9	N/A	01-31-17
Illinois	NELAP	5	200060	03-17-17
Kansas	NELAP	7	E-10375	05-31-16
Louisiana	NELAP	6	30612	06-30-16
Michigan	State Program	5	9947	01-31-18
Nevada	State Program	9	CA44	07-31-16
New Jersey	NELAP	2	CA005	06-30-16
New York	NELAP	2	11666	04-01-16
Oregon	NELAP	10	CA200005	01-29-17
Pennsylvania	NELAP	3	9947	03-31-16
Texas	NELAP	6	T104704399-15-9	05-31-16
US Fish & Wildlife	Federal		LE148388-0	10-31-16
USDA	Federal		P330-11-00436	12-30-17
USEPA UCMR	Federal	1	CA00044	11-06-16
Utah	NELAP	8	QUAN1	02-28-17
Virginia	NELAP Secondary AB	3	460278	03-14-16
Washington	State Program	10	C581	05-04-16
West Virginia (DW)	State Program	3	9930C	12-31-16
Wyoming	State Program	8	8TMS-Q	01-29-16 *

Laboratory: TestAmerica St. Louis

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

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	MO00054	06-30-16

* Certification renewal pending - certification considered valid.

TestAmerica Irvine

Certification Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-133309-1

Laboratory: TestAmerica St. Louis (Continued)

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

Authority	Program	EPA Region	Certification ID	Expiration Date
California	ELAP	9	2886	03-31-16 *
Connecticut	State Program	1	PH-0241	03-31-17
Florida	NELAP	4	E87689	06-30-16
Illinois	NELAP	5	003757	11-30-16
Iowa	State Program	7	373	12-01-16
Kansas	NELAP	7	E-10236	05-31-16
Kentucky (DW)	State Program	4	90125	12-31-16
L-A-B	DoD ELAP		L2305	04-10-16 *
Louisiana	NELAP	6	04080	06-30-16
Louisiana (DW)	NELAP	6	LA160008	12-31-16
Maryland	State Program	3	310	09-30-16
Missouri	State Program	7	780	06-30-16
Nevada	State Program	9	MO000542016-1	07-31-16
New Jersey	NELAP	2	MO002	06-30-16
New York	NELAP	2	11616	03-31-16 *
North Dakota	State Program	8	R207	06-30-16
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-16
Pennsylvania	NELAP	3	68-00540	02-28-16 *
South Carolina	State Program	4	85002001	06-30-16
Texas	NELAP	6	T104704193-15-9	07-31-16
USDA	Federal		P330-07-00122	01-09-17
Utah	NELAP	8	MO000542015-7	07-31-16
Virginia	NELAP	3	460230	06-14-16
Washington	State Program	10	C592	08-30-16
West Virginia DEP	State Program	3	381	08-31-16

* Certification renewal pending - certification considered valid.



January 27, 2016

Ms. Debby Wilson
TestAmerica Irvine
17461 Derian Avenue, Suite 100
Irvine, CA 92614-5817

Dear Ms. Wilson:

We are pleased to present the enclosed bioassay report. The test was conducted under guidelines prescribed in *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms EPA-821-R-02-013*. "All acceptability criteria were met and the concentration-response was normal. This is a valid test." Results were as follows:

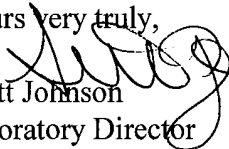
CLIENT: Haley & Aldrich
SAMPLE ID.: Outfall 009
DATE RECEIVED: 7 Jan - 16
ABC LAB NO.: TAM0116.074

CHRONIC FATHEAD LARVAE SURVIVAL & GROWTH BIOASSAY

SURVIVAL NOEC = 100.00 %
 TUc = 1.00
 EC25 = >100.00 %
 EC50 = >100.00 %

GROWTH NOEC = 100.00 %
 TUc = 1.00
 IC25 = >100.00 %
 IC50 = >100.00 %

Yours very truly,


Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 22 Jan-16 14:23 (p 1 of 2)
 Test Code: TAM0116.074fml | 08-5266-2645

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 05-6136-2343	Test Type: Growth-Survival (7d)	Analyst:
Start Date: 07 Jan-16 13:29	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 17 Jan-16 12:00	Species: Pimephales promelas	Brine: Not Applicable
Duration: 9d 23h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 18-7713-4970	Code: TAM0116.074fml	Client: Test America Irvine
Sample Date: 06 Jan-16 12:28	Material: Sample Water	Project:
Receive Date: 07 Jan-16 11:31	Source: Bioassay Report	
Sample Age: 25h (1 °C)	Station: Outfall 009	

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
13-6265-9075	7d Survival Rate	100	>100	NA	16.7%	1	Equal Variance t Two-Sample Test
12-3321-1346	Mean Dry Biomass-mg	100	>100	NA	12.4%	1	Equal Variance t Two-Sample Test

Point Estimate Summary

Analysis ID	Endpoint	Level	%	95% LCL	95% UCL	TU	Method
00-9767-6389	7d Survival Rate	EC5	>100	N/A	N/A	<1	Linear Interpolation (ICPIN)
		EC10	>100	N/A	N/A	<1	
		EC15	>100	N/A	N/A	<1	
		EC20	>100	N/A	N/A	<1	
		EC25	>100	N/A	N/A	<1	
		EC40	>100	N/A	N/A	<1	
05-1453-3334	Mean Dry Biomass-mg	IC5	>100	N/A	N/A	<1	Linear Interpolation (ICPIN)
		IC10	>100	N/A	N/A	<1	
		IC15	>100	N/A	N/A	<1	
		IC20	>100	N/A	N/A	<1	
		IC25	>100	N/A	N/A	<1	
		IC40	>100	N/A	N/A	<1	

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
00-9767-6389	7d Survival Rate	Control Resp	0.8667	0.8 - NL	Yes	Passes Acceptability Criteria
13-6265-9075	7d Survival Rate	Control Resp	0.8667	0.8 - NL	Yes	Passes Acceptability Criteria
05-1453-3334	Mean Dry Biomass-mg	Control Resp	0.2732	0.25 - NL	Yes	Passes Acceptability Criteria
12-3321-1346	Mean Dry Biomass-mg	Control Resp	0.2732	0.25 - NL	Yes	Passes Acceptability Criteria
12-3321-1346	Mean Dry Biomass-mg	PMSD	0.124	0.12 - 0.3	Yes	Passes Acceptability Criteria

7d Survival Rate Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	4	0.8667	0.6375	1	0.6667	1	0.07201	0.144	16.62%	0.0%
100		4	0.9833	0.9303	1	0.9333	1	0.01667	0.03333	3.39%	-13.46%

Mean Dry Biomass-mg Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	4	0.2732	0.2268	0.3196	0.2473	0.3013	0.01458	0.02917	10.68%	0.0%
100		4	0.3143	0.2839	0.3447	0.2887	0.334	0.009555	0.01911	6.08%	-15.07%

7d Survival Rate Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	1	0.9333	0.8667	0.6667
100		1	0.9333	1	1

Mean Dry Biomass-mg Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	0.2953	0.3013	0.2487	0.2473
100		0.2887	0.334	0.3133	0.3213

CETIS Analytical Report

Report Date: 22 Jan-16 14:23 (p 1 of 3)
 Test Code: TAM0116.074fml | 08-5266-2645

Fathead Minnow 7-d Larval Survival and Growth Test							Aquatic Bioassay & Consulting Labs, Inc.				
Analysis ID: 13-6265-9075		Endpoint: 7d Survival Rate			CETIS Version: CETISv1.8.7						
Analyzed: 22 Jan-16 14:23		Analysis: Parametric-Two Sample			Official Results: Yes						
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result					
Angular (Corrected)	NA	C > T	NA	NA	16.7%	Passes 7d survival rate					
Equal Variance t Two-Sample Test											
Control	vs	C-%	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)		
Negative Control		100	-1.688	1.943	0.210	6	0.9288	CDF	Non-Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.06667645		0.06667645		1	2.848	0.1425	Non-Significant Effect			
Error	0.140483		0.02341383		6						
Total	0.2071595				7						
Distributional Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α:1%)					
Variances	Variance Ratio F		9.8	47.47	0.0930	Equal Variances					
Variances	Mod Levene Equality of Variance		3.033	13.75	0.1322	Equal Variances					
Variances	Levene Equality of Variance		2.934	13.75	0.1376	Equal Variances					
Distribution	Shapiro-Wilk W Normality		0.9361	0.6451	0.5731	Normal Distribution					
Distribution	Kolmogorov-Smirnov D		0.2169	0.3313	0.3715	Normal Distribution					
Distribution	Anderson-Darling A2 Normality		0.4128	3.878	0.3430	Normal Distribution					
7d Survival Rate Summary											
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Negative Control	4	0.8667	0.6375	1	0.9	0.6667	1	0.07201	16.62%	0.0%
100		4	0.9833	0.9303	1	1	0.9333	1	0.01667	3.39%	-13.46%
Angular (Corrected) Transformed Summary											
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Negative Contr	4	1.226	0.8978	1.554	1.253	0.9553	1.441	0.1031	16.82%	0.0%
100		4	1.408	1.304	1.513	1.441	1.31	1.441	0.03292	4.68%	-14.9%
7d Survival Rate Detail											
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4						
0	Negative Control	1	0.9333	0.8667	0.6667						
100		1	0.9333	1	1						
Angular (Corrected) Transformed Detail											
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4						
0	Negative Control	1.441	1.31	1.197	0.9553						
100		1.441	1.31	1.441	1.441						
7d Survival Rate Binomials											
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4						
0	Negative Control	15/15	14/15	13/15	10/15						
100		15/15	14/15	15/15	15/15						

CETIS Analytical Report

Report Date: 22 Jan-16 14:23 (p 1 of 2)
 Test Code: TAM0116.074fml | 08-5266-2645

Fathead Minnow 7-d Larval Survival and Growth Test Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 00-9767-6389 Endpoint: 7d Survival Rate CETIS Version: CETISv1.8.7
 Analyzed: 22 Jan-16 14:23 Analysis: Linear Interpolation (ICPIN) Official Results: Yes

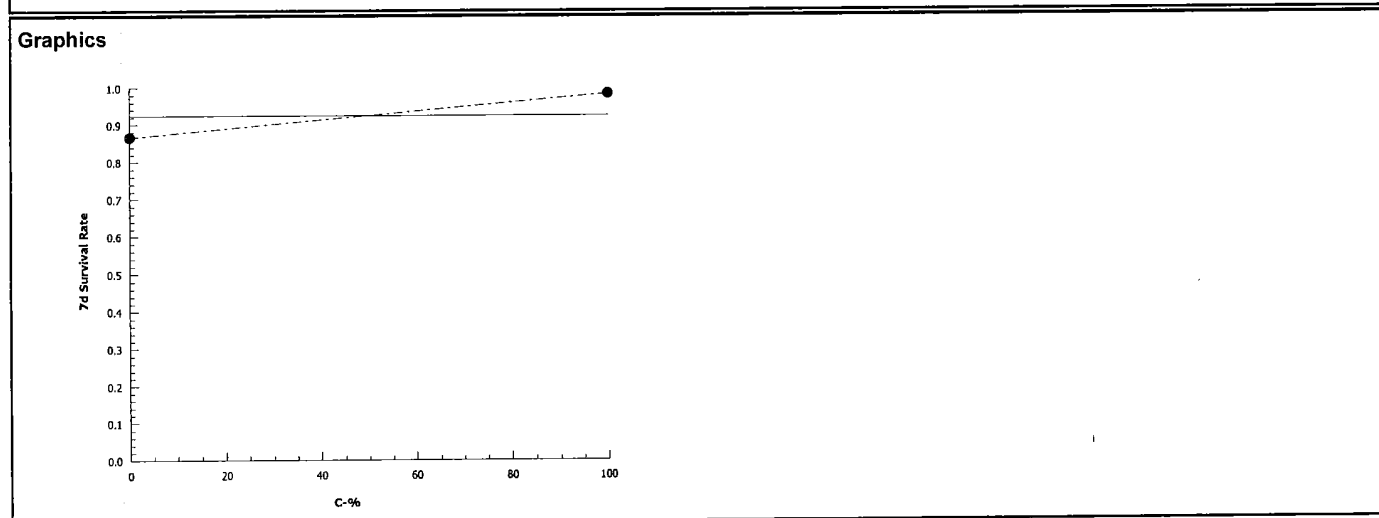
Linear Interpolation Options					
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	0	280	Yes	Two-Point Interpolation

Point Estimates						
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
EC5	>100	N/A	N/A	<1	NA	NA
EC10	>100	N/A	N/A	<1	NA	NA
EC15	>100	N/A	N/A	<1	NA	NA
EC20	>100	N/A	N/A	<1	NA	NA
EC25	>100	N/A	N/A	<1	NA	NA
EC40	>100	N/A	N/A	<1	NA	NA
EC50	>100	N/A	N/A	<1	NA	NA

7d Survival Rate Summary			Calculated Variate(A/B)									
C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B	
0	Negative Control	4	0.8667	0.6667	1	0.07201	0.144	16.62%	0.0%	52	60	
100		4	0.9833	0.9333	1	0.01667	0.03333	3.39%	-13.46%	59	60	

7d Survival Rate Detail						
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	
0	Negative Control	1	0.9333	0.8667	0.6667	
100		1	0.9333	1	1	

7d Survival Rate Binomials						
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	
0	Negative Control	15/15	14/15	13/15	10/15	
100		15/15	14/15	15/15	15/15	



CETIS Measurement Report

Report Date: 22 Jan-16 14:23 (p 1 of 2)
 Test Code: TAM0116.074fml | 08-5266-2645

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 05-6136-2343	Test Type: Growth-Survival (7d)	Analyst:
Start Date: 07 Jan-16 13:29	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 17 Jan-16 12:00	Species: Pimephales promelas	Brine: Not Applicable
Duration: 9d 23h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 18-7713-4970	Code: TAM0116.074fml	Client: Test America Irvine
Sample Date: 06 Jan-16 12:28	Material: Sample Water	Project:
Receive Date: 07 Jan-16 11:31	Source: Bioassay Report	
Sample Age: 25h (1 °C)	Station: Outfall 009	

Alkalinity (CaCO3)-mg/L

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	63.13	60.35	65.9	60	68	1.172	3.314	5.25%	0
100		8	47	47	47	47	47	0	0	0.0%	0
Overall		16	55.06			47	68				0 (0%)

Conductivity-µmhos

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	329	326.2	331.8	323	333	1.165	3.295	1.0%	0
100		8	83.13	76.66	89.59	72	96	2.735	7.736	9.31%	0
Overall		16	206.1			72	333				0 (0%)

Dissolved Oxygen-mg/L

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	7.863	7.486	8.239	6.9	8.4	0.1592	0.4502	5.73%	0
100		8	8.137	7.673	8.602	7.1	8.9	0.1963	0.5553	6.82%	0
Overall		16	8			6.9	8.9				0 (0%)

Hardness (CaCO3)-mg/L

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	91	87.81	94.19	88	97	1.35	3.817	4.2%	0
100		8	68	68	68	68	68	0	0	0.0%	0
Overall		16	79.5			68	97				0 (0%)

pH-Units

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	7.988	7.785	8.19	7.6	8.3	0.08543	0.2416	3.03%	0
100		8	7.9	7.7	8.1	7.4	8.1	0.08452	0.239	3.03%	0
Overall		16	7.944			7.4	8.3				0 (0%)

Temperature-°C

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	24.01	23.98	24.04	24	24.1	0.01249	0.03531	0.15%	0
100		8	24.01	23.98	24.04	24	24.1	0.01249	0.03531	0.15%	0
Overall		16	24.01			24	24.1				0 (0%)

CETIS Measurement Report

Report Date: 22 Jan-16 14:23 (p 2 of 2)
 Test Code: TAM0116.074fml | 08-5266-2645

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Alkalinity (CaCO3)-mg/L

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	68	68	63	63	63	60	60	60
100		47	47	47	47	47	47	47	47

Conductivity-µmhos

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	332	323	328	330	326	329	333	331
100		72	82	80	80	96	82	80	93

Dissolved Oxygen-mg/L

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	8.4	7.7	7.8	7.9	7.9	8.1	8.2	6.9
100		8.9	8.7	8	7.9	7.9	8.3	8.3	7.1

Hardness (CaCO3)-mg/L

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	97	97	90	90	90	88	88	88
100		68	68	68	68	68	68	68	68

pH-Units

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	7.9	7.7	8.3	8.1	8.2	7.6	8	8.1
100		7.4	8.1	8	8	8	7.7	8.1	7.9

Temperature-°C

C-%	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	24	24	24	24	24	24	24	24.1
100		24	24	24	24	24	24	24.1	24



January 27, 2016

Ms. Debbie Wilson
TestAmerica Irvine
17461 Derian Avenue, Suite 100
Irvine, CA 92614

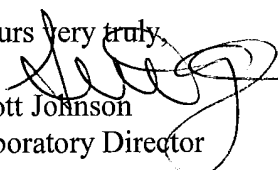
Dear Ms. Wilson:

We are pleased to present the enclosed bioassay report. The test was conducted under guidelines prescribed in *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms EPA-821-R-02-013*. "All acceptability criteria were met and the concentration-response was normal. This is a valid test." Results were as follows:

CLIENT: Haley & Aldrich
SAMPLE ID.: Outfall 009
DATE RECEIVED: 7 Jan - 16
ABC LAB NO.: TAM0116.074

CHRONIC CERIODAPHNIA SURVIVAL & REPRODUCTION BIOASSAY

SURVIVAL	NOEC =	100.00 %
	TUc =	1.00
	EC25 =	>100.00 %
	EC50 =	>100.00 %
REPRODUCTION	NOEC =	100.00 %
	TUc =	1.00
	IC25 =	>100.00 %
	IC50 =	>100.00 %

Yours very truly,

Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 22 Jan-16 15:09 (p 1 of 2)

Test Code: TAM0116.074cer | 11-0754-1992

Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 06-3802-5957	Test Type: Reproduction-Survival (7d)	Analyst:
Start Date: 07 Jan-16 13:29	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 14 Jan-16 12:00	Species: Ceriodaphnia dubia	Brine: Not Applicable
Duration: 6d 23h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 02-7007-7266	Code: TAM0116.074cer	Client: Test America Irvine
Sample Date: 06 Jan-16 12:28	Material: Sample Water	Project:
Receive Date: 07 Jan-16 11:31	Source: Bioassay Report	
Sample Age: 25h (1 °C)	Station: Outfall 009	

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
19-7059-8447	7d Survival Rate	100	>100	NA	NA	1	Fisher Exact Test
14-4909-5988	Reproduction	100	>100	NA	18.5%	1	Equal Variance t Two-Sample Test

Point Estimate Summary

Analysis ID	Endpoint	Level	%	95% LCL	95% UCL	TU	Method
11-4515-7381	7d Survival Rate	EC5	>100	N/A	N/A	<1	Linear Interpolation (ICPIN)
		EC10	>100	N/A	N/A	<1	
		EC15	>100	N/A	N/A	<1	
		EC20	>100	N/A	N/A	<1	
		EC25	>100	N/A	N/A	<1	
		EC40	>100	N/A	N/A	<1	
14-8721-6124	Reproduction	IC5	>100	N/A	N/A	<1	Linear Interpolation (ICPIN)
		IC10	>100	N/A	N/A	<1	
		IC15	>100	N/A	N/A	<1	
		IC20	>100	N/A	N/A	<1	
		IC25	>100	N/A	N/A	<1	
		IC40	>100	N/A	N/A	<1	

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
11-4515-7381	7d Survival Rate	Control Resp	1	0.8 - NL	Yes	Passes Acceptability Criteria
19-7059-8447	7d Survival Rate	Control Resp	1	0.8 - NL	Yes	Passes Acceptability Criteria
14-4909-5988	Reproduction	Control Resp	19.2	15 - NL	Yes	Passes Acceptability Criteria
14-8721-6124	Reproduction	Control Resp	19.2	15 - NL	Yes	Passes Acceptability Criteria
14-4909-5988	Reproduction	PMSD	0.1852	0.13 - 0.47	Yes	Passes Acceptability Criteria

7d Survival Rate Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	10	1	1	1	1	1	0	0	0.0%	0.0%
100		10	1	1	1	1	1	0	0	0.0%	0.0%

Reproduction Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	10	19.2	16.17	22.23	12	25	1.34	4.237	22.07%	0.0%
100		10	19.9	16.39	23.41	7	24	1.552	4.909	24.67%	-3.65%

7d Survival Rate Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Negative Control	1	1	1	1	1	1	1	1	1	1
100		1	1	1	1	1	1	1	1	1	1

Reproduction Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Negative Control	23	20	25	23	19	16	14	12	22	18
100		21	21	22	7	22	22	20	17	24	23

CETIS Summary Report

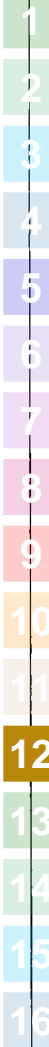
Report Date: 22 Jan-16 15:09 (p 2 of 2)
Test Code: TAM0116.074cer | 11-0754-1992

Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay & Consulting Labs, Inc.

7d Survival Rate Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Negative Control	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1



CETIS Analytical Report

Report Date: 22 Jan-16 15:09 (p 1 of 1)
 Test Code: TAM0116.074cer | 11-0754-1992

Ceriodaphnia 7-d Survival and Reproduction Test				Aquatic Bioassay & Consulting Labs, Inc.		
Analysis ID: 14-4909-5988	Endpoint: Reproduction	CETIS Version: CETISv1.8.7		Official Results: Yes		
Analyzed: 22 Jan-16 15:09	Analysis: Parametric-Two Sample					

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	18.5%	Passes reproduction

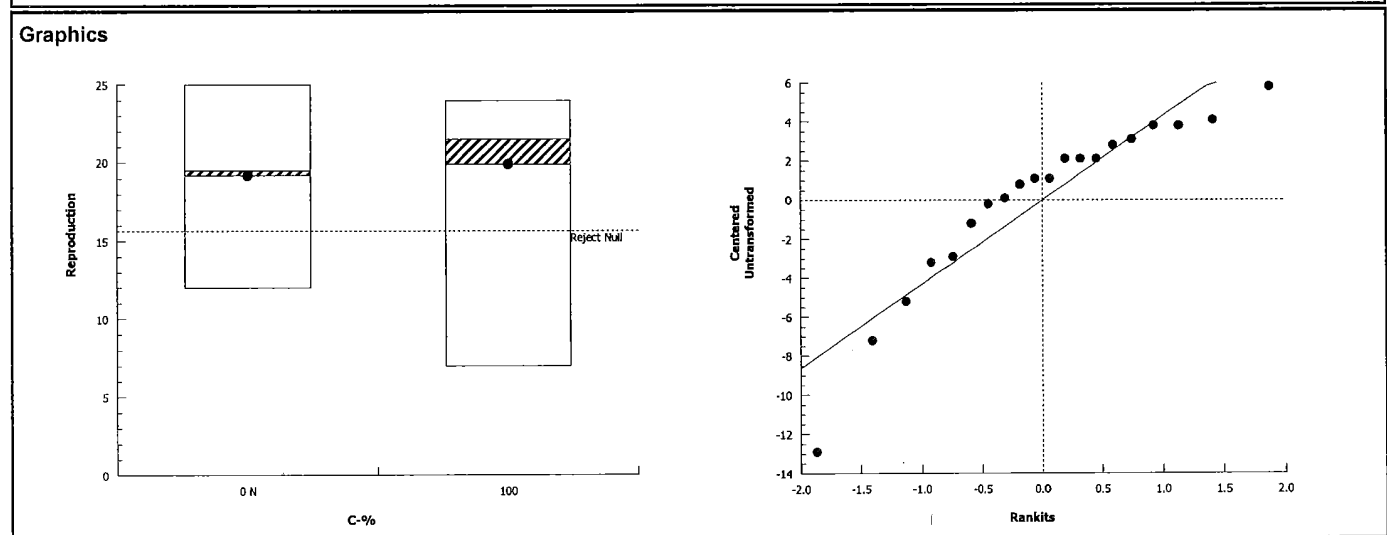
Equal Variance t Two-Sample Test									
Control	vs	C-%	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Negative Control		100	-0.3413	1.734	3.556	18	0.6316	CDF	Non-Significant Effect

ANOVA Table						
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	2.45	2.45	1	0.1165	0.7368	Non-Significant Effect
Error	378.5	21.02778	18			
Total	380.95		19			

Distributional Tests						
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)	
Variances	Variance Ratio F	1.342	6.541	0.6682	Equal Variances	
Variances	Mod Levene Equality of Variance	0.2037	8.285	0.6571	Equal Variances	
Variances	Levene Equality of Variance	0.0318	8.285	0.8605	Equal Variances	
Distribution	Shapiro-Wilk W Normality	0.8774	0.866	0.0159	Normal Distribution	
Distribution	Kolmogorov-Smirnov D	0.1821	0.2235	0.0809	Normal Distribution	
Distribution	D'Agostino Skewness	2.686	2.576	0.0072	Non-normal Distribution	
Distribution	D'Agostino Kurtosis	1.979	2.576	0.0478	Normal Distribution	
Distribution	D'Agostino-Pearson K2 Omnibus	11.13	9.21	0.0038	Non-normal Distribution	
Distribution	Anderson-Darling A2 Normality	0.9619	3.878	0.0154	Normal Distribution	

Reproduction Summary											
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Negative Control	10	19.2	16.17	22.23	19.5	12	25	1.34	22.07%	0.0%
100		10	19.9	16.39	23.41	21.5	7	24	1.552	24.67%	-3.65%

Reproduction Detail											
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Negative Control	23	20	25	23	19	16	14	12	22	18
100		21	21	22	7	22	22	20	17	24	23



CETIS Analytical Report

Report Date: 22 Jan-16 15:09 (p 1 of 2)
 Test Code: TAM0116.074cer | 11-0754-1992

Ceriodaphnia 7-d Survival and Reproduction Test			Aquatic Bioassay & Consulting Labs, Inc.		
Analysis ID: 11-4515-7381	Endpoint: 7d Survival Rate	CETIS Version: CETISv1.8.7			
Analyzed: 22 Jan-16 15:09	Analysis: Linear Interpolation (ICPIN)	Official Results: Yes			

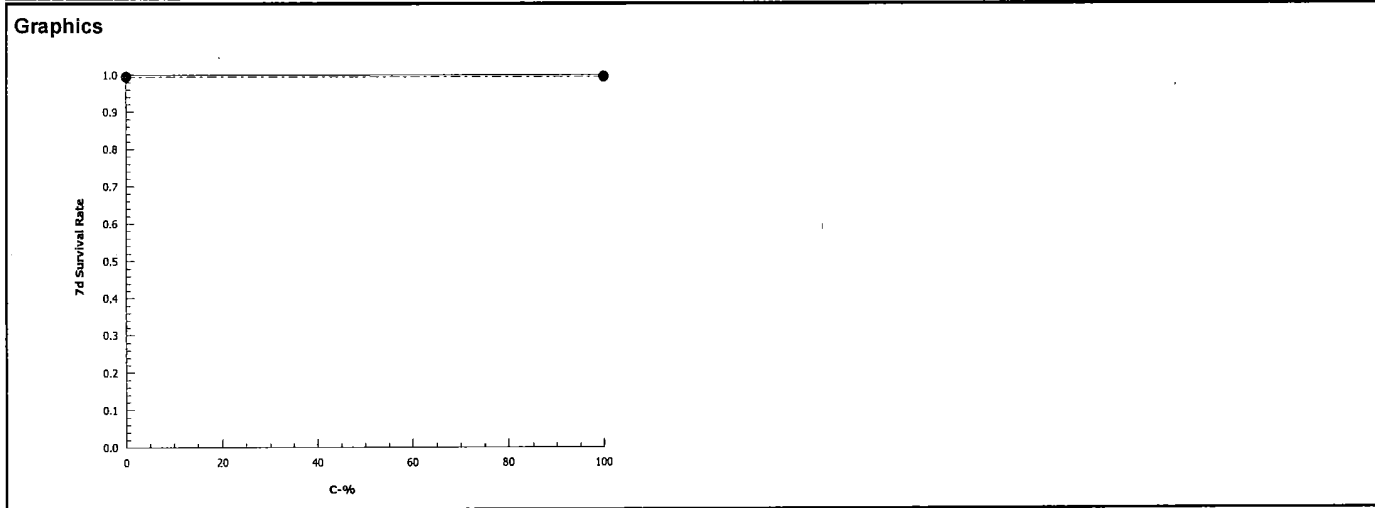
Linear Interpolation Options					
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	0	280	Yes	Two-Point Interpolation

Point Estimates						
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
EC5	>100	N/A	N/A	<1	NA	NA
EC10	>100	N/A	N/A	<1	NA	NA
EC15	>100	N/A	N/A	<1	NA	NA
EC20	>100	N/A	N/A	<1	NA	NA
EC25	>100	N/A	N/A	<1	NA	NA
EC40	>100	N/A	N/A	<1	NA	NA
EC50	>100	N/A	N/A	<1	NA	NA

7d Survival Rate Summary			Calculated Variate(A/B)									
C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B	
0	Negative Control	10	1	1	1	0	0	0.0%	0.0%	10	10	
100		10	1	1	1	0	0	0.0%	0.0%	10	10	

7d Survival Rate Detail												
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10	
0	Negative Control	1	1	1	1	1	1	1	1	1	1	
100		1	1	1	1	1	1	1	1	1	1	

7d Survival Rate Binomials												
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10	
0	Negative Control	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	



CETIS Analytical Report

Report Date: 22 Jan-16 15:09 (p 1 of 1)
 Test Code: TAM0116.074cer | 11-0754-1992

Ceriodaphnia 7-d Survival and Reproduction Test **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID: 19-7059-8447 Endpoint: 7d Survival Rate CETIS Version: CETISv1.8.7
 Analyzed: 22 Jan-16 15:09 Analysis: Single 2x2 Contingency Table Official Results: Yes

Data Transform	Zeta	Alt Hyp	Trials	Seed	Test Result
Untransformed		C > T	NA	NA	Passes 7d survival rate

Fisher Exact Test

Control	vs	C-%	Test Stat	P-Value	P-Type	Decision(α:5%)
Negative Control		100	1	1.0000	Exact	Non-Significant Effect

Data Summary

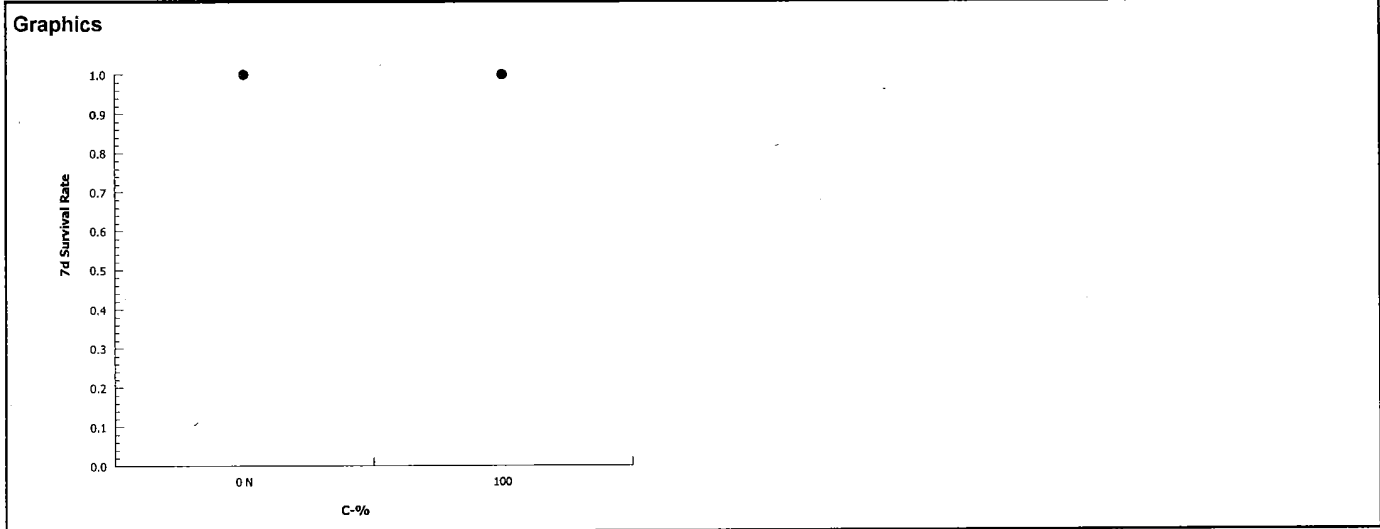
C-%	Control Type	NR	R	NR + R	Prop NR	Prop R	%Effect
0	Negative Contr	10	0	10	1	0	0.0%
100		10	0	10	1	0	0.0%

7d Survival Rate Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Negative Control	1	1	1	1	1	1	1	1	1	1
100		1	1	1	1	1	1	1	1	1	1

7d Survival Rate Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Negative Control	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1





January 27, 2016

Ms. Debbie Wilson
TestAmerica Irvine
17461 Derian Avenue, Suite 100
Irvine, CA 92614

Dear Ms. Wilson:

We are pleased to present the enclosed bioassay report. The test was conducted under guidelines prescribed in *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms EPA-821-R-02-013*. "All acceptability criteria were met and the concentration-response was normal. This is a valid test." Results were as follows:

CLIENT: Haley & Aldrich
SAMPLE ID.: Outfall 009
DATE RECEIVED: 7 Jan - 16
ABC LAB NO.: TAM0116.074

CHRONIC SELENASTRUM ALGAE GROWTH BIOASSAY

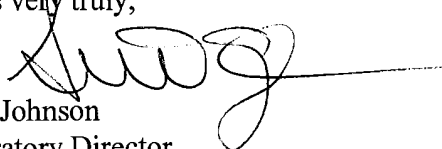
NOEC = <100.00 %

TUc = >1.00

IC25 = >100.00 %

IC50 = >100.00 %

Yours very truly,


Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 15 Jan-16 11:37 (p 1 of 1)
 Test Code: TAM0116.074sel | 17-9801-4136

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 20-4845-9872	Test Type: Cell Growth	Analyst:
Start Date: 07 Jan-16 13:03	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 11 Jan-16 11:30	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 94h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 05-0278-8284	Code: TAM0116.074sel	Client: Test America Irvine
Sample Date: 06 Jan-16 12:28	Material: Sample Water	Project:
Receive Date: 07 Jan-16 11:31	Source: Bioassay Report	
Sample Age: 25h (7.5 °C)	Station: Outfall 009	

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
16-2940-5072	Cell Density	<100	100	NA	3.01%	>1	Equal Variance t Two-Sample Test

Point Estimate Summary

Analysis ID	Endpoint	Level	%	95% LCL	95% UCL	TU	Method
05-4549-0790	Cell Density	IC5	41.69	30.21	55.48	2.399	Linear Interpolation (ICPIN)
		IC10	83.37	60.41	N/A	1.199	
		IC15	>100	N/A	N/A	<1	
		IC20	>100	N/A	N/A	<1	
		IC25	>100	N/A	N/A	<1	
		IC40	>100	N/A	N/A	<1	
		IC50	>100	N/A	N/A	<1	

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
05-4549-0790	Cell Density	Control CV	0.01484	NL - 0.2	Yes	Passes Acceptability Criteria
16-2940-5072	Cell Density	Control CV	0.01484	NL - 0.2	Yes	Passes Acceptability Criteria
05-4549-0790	Cell Density	Control Resp	1.09E+6	1.00E+6 - NL	Yes	Passes Acceptability Criteria
16-2940-5072	Cell Density	Control Resp	1.09E+6	1.00E+6 - NL	Yes	Passes Acceptability Criteria
16-2940-5072	Cell Density	PMSD	0.03007	0.091 - 0.29	Yes	Below Acceptability Criteria

Cell Density Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	4	1.088E+6	1.062E+6	1.114E+6	1.064E+6	1.099E+6	8.073E+3	1.615E+4	1.48%	0.0%
100		4	9.575E+5	9.105E+5	1.005E+6	9.190E+5	9.910E+5	1.477E+4	2.955E+4	3.09%	11.99%

Cell Density Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	1.094E+6	1.099E+6	1.064E+6	1.095E+6
100		9.610E+5	9.590E+5	9.910E+5	9.190E+5

CETIS Analytical Report

Report Date: 15 Jan-16 11:37 (p 1 of 1)
 Test Code: TAM0116.074sel | 17-9801-4136

Selenastrum Growth Test			Aquatic Bioassay & Consulting Labs, Inc.		
Analysis ID: 16-2940-5072	Endpoint: Cell Density	CETIS Version: CETISv1.8.7			
Analyzed: 15 Jan-16 11:36	Analysis: Parametric-Two Sample	Official Results: Yes			

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Untransformed	NA	C > T	NA	NA	3.01%	Fails cell density

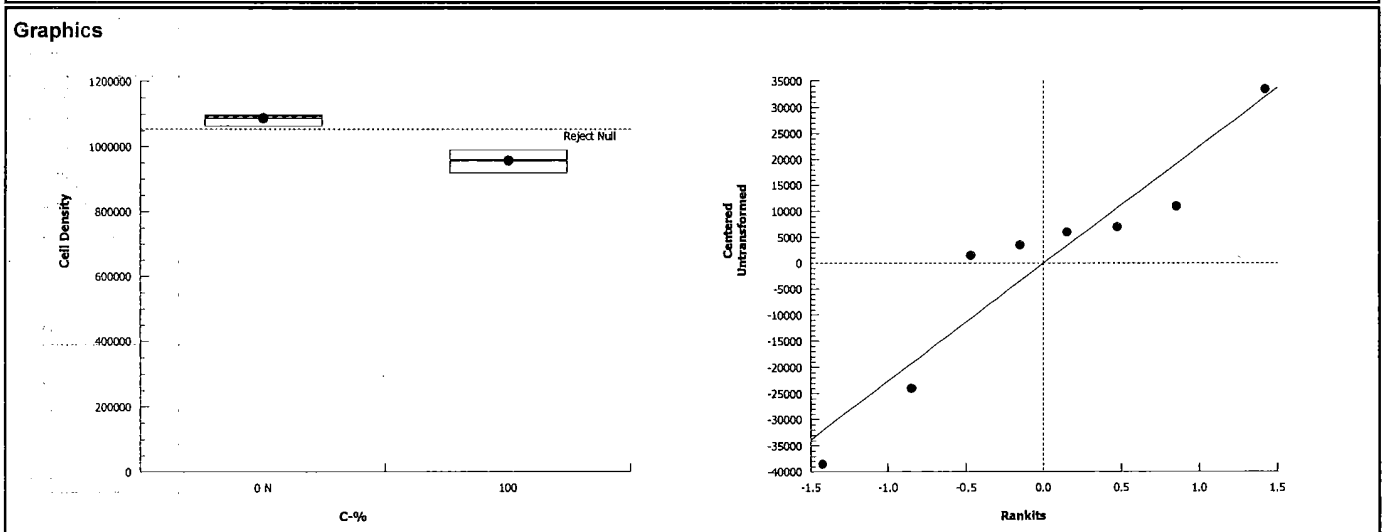
Equal Variance t Two-Sample Test									
Control	vs	C-%	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Negative Control		100*	7.752	1.943	32710	6	0.0001	CDF	Significant Effect

ANOVA Table						
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	34060500000	34060500000	1	60.09	0.0002	Significant Effect
Error	3401000000	566833300	6			
Total	37461500000		7			

Distributional Tests						
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)	
Variances	Variance Ratio F	3.349	47.47	0.3474	Equal Variances	
Variances	Mod Levene Equality of Variance	0.5694	13.75	0.4791	Equal Variances	
Variances	Levene Equality of Variance	0.4697	13.75	0.5187	Equal Variances	
Distribution	Shapiro-Wilk W Normality	0.9135	0.6451	0.3795	Normal Distribution	
Distribution	Kolmogorov-Smirnov D	0.2771	0.3313	0.0708	Normal Distribution	
Distribution	Anderson-Darling A2 Normality	0.5251	3.878	0.1846	Normal Distribution	

Cell Density Summary											
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Negative Control	4	1.088E+6	1.062E+6	1.114E+6	1095000	1.064E+6	1.099E+6	8.072E+3	1.48%	0.0%
100		4	9.575E+5	9.105E+5	1.005E+6	960000	9.190E+5	9.910E+5	1.477E+4	3.09%	11.99%

Cell Density Detail						
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	
0	Negative Control	1.094E+6	1.099E+6	1.064E+6	1.095E+6	
100		9.610E+5	9.590E+5	9.910E+5	9.190E+5	



CETIS Analytical Report

Report Date: 15 Jan-16 11:37 (p 1 of 1)

Test Code: TAM0116.074sel | 17-9801-4136

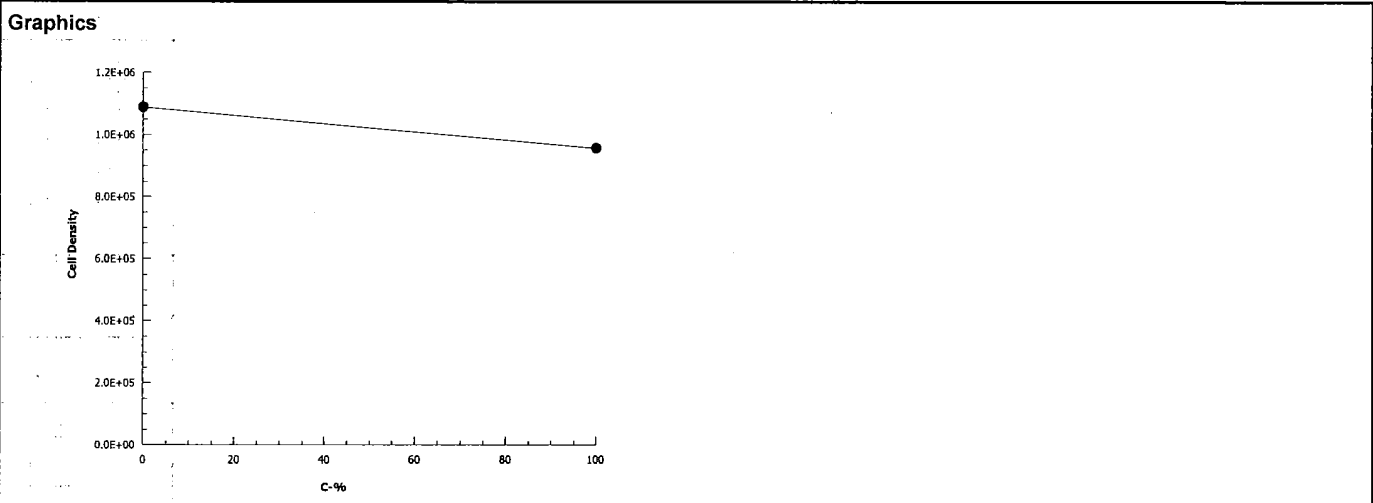
Selenastrum Growth Test		Aquatic Bioassay & Consulting Labs, Inc.	
Analysis ID: 05-4549-0790	Endpoint: Cell Density	CETIS Version: CETISv1.8.7	
Analyzed: 15 Jan-16 11:37	Analysis: Linear Interpolation (ICPIN)	Official Results: Yes	

Linear Interpolation Options					
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	0	280	Yes	Two-Point Interpolation

Point Estimates						
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC5	41.69	30.21	55.48	2.399	1.803	3.31
IC10	83.37	60.41	N/A	1.199	NA	1.655
IC15	>100	N/A	N/A	<1	NA	NA
IC20	>100	N/A	N/A	<1	NA	NA
IC25	>100	N/A	N/A	<1	NA	NA
IC40	>100	N/A	N/A	<1	NA	NA
IC50	>100	N/A	N/A	<1	NA	NA

Cell Density Summary			Calculated Variate						
C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	4	1.088E+6	1.064E+6	1.099E+6	8.072E+3	1.614E+4	1.48%	0.0%
100		4	9.575E+5	9.190E+5	9.910E+5	1.477E+4	2.955E+4	3.09%	11.99%

Cell Density Detail					
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	1.094E+6	1.099E+6	1.064E+6	1.095E+6
100		9.610E+5	9.590E+5	9.910E+5	9.190E+5



CETIS Measurement Report

Report Date: 15 Jan-16 11:37 (p 1 of 2)
 Test Code: TAM0116.074sel | 17-9801-4136

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 20-4845-9872	Test Type: Cell Growth	Analyst:
Start Date: 07 Jan-16 13:03	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 11 Jan-16 11:30	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 94h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 05-0278-8284	Code: TAM0116.074sel	Client: Test America Irvine
Sample Date: 06 Jan-16 12:28	Material: Sample Water	Project:
Receive Date: 07 Jan-16 11:31	Source: Bioassay Report	
Sample Age: 25h (7.5 °C)	Station: Outfall 009	

Alkalinity (CaCO3)-mg/L

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	1	70			70	70	0	0	0.0%	0
100		1	47			47	47	0	0	0.0%	0
Overall		2	58.5			47	70				0 (0%)

Conductivity-µmhos

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	5	412	405.9	418.1	405	418	2.191	4.899	1.19%	0
100		5	196.4	189.1	203.7	186	200	2.619	5.857	2.98%	0
Overall		10	304.2			186	418				0 (0%)

Hardness (CaCO3)-mg/L

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	1	100			100	100	0	0	0.0%	0
100		1	68			68	68	0	0	0.0%	0
Overall		2	84			68	100				0 (0%)

pH-Units

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	5	7.74	7.598	7.882	7.6	7.9	0.05099	0.114	1.47%	0
100		5	8.18	7.941	8.419	8	8.5	0.08602	0.1924	2.35%	0
Overall		10	7.96			7.6	8.5				0 (0%)

Temperature-°C

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	5	24.1	23.82	24.38	24	24.5	0.1	0.2236	0.93%	0
100		5	24.1	23.82	24.38	24	24.5	0.1	0.2236	0.93%	0
Overall		10	24.1			24	24.5				0 (0%)

CETIS Measurement Report

Report Date: 15 Jan-16 11:37 (p 2 of 2)
 Test Code: TAM0116.074sel | 17-9801-4136

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Alkalinity (CaCO3)-mg/L

C-%	Control Type	1
0	Negative Contr	70
100		47

Conductivity-µmhos

C-%	Control Type	1	2	3	4	5
0	Negative Contr	411	411	415	418	405
100		186	199	198	199	200

Hardness (CaCO3)-mg/L

C-%	Control Type	1
0	Negative Contr	100
100		68

pH-Units

C-%	Control Type	1	2	3	4	5
0	Negative Contr	7.7	7.6	7.7	7.8	7.9
100		8.5	8.2	8.1	8.1	8

Temperature-°C

C-%	Control Type	1	2	3	4	5
0	Negative Contr	24.5	24	24	24	24
100		24.5	24	24	24	24

CHAIN OF CUSTODY FORM

Client Name/Address:
 Haley & Aldrich
 5333 Mission Center Rd Suite 300
 San Diego, CA 92108
 Test America Contact: Debby Wilson
 17461 Delian Ave Suite #100
 Irvine CA 92614
 Tel 949 261 1022 X228
 Cell 949 237 0603

Project:
 Boeing-SSFL NPDES
 Permit 2016
 Routine Outfall 009
 Outfall 009
 Comp

Project Manager: Nancy Gardiner
 619.286.7132, 858.337.4061 (cell)
 Field Manager: Mark Dominick
 818.350.7312, 818.599.0702 (cell)

Perpeteg C = 1.23
 Chlorine (mg/L) = 20.1
 NH3 (mg/L) = 0.7
 Comments

Sample Description	Sample ID	Sampling Date/Time	Sample Matrix	Container Type	# of Cont.	Preservative	Bottle #	MS/MSD	Total Recoverable Metals: Cu, Pb, Hg, Ni, Ag, Sb, Ti, Cd, Se, Zn		TCDD (and all congeners)	Cl ⁻ , SO ₄ , NO ₃ , NO ₂ -N	TDS	Total Dissolved Metals: Cu, Pb, Hg, Ni, Ag, Sb, Ti, Cd, Se, Zn		Gross Alpha(900.0), Gross Beta(900.0), Tritium (H-3) (906.0), Sr-90 (905.0), Total Combined Radium 226 (903.0 or 903.1) & Radium 228 (904.0), Uranium (908.0), K-40, CS-137 (901.0 or 901.1)	Chronic Toxicity (species sensitivity)	Cyanide	Turn-around time: (Check) 24 Hour: _____ 72 Hour: _____ 48 Hour: _____ 5 Day: _____	10 Day: _____ Normal: _____	
									X					X							X
Outfall 009	Outfall009_20160106_Comp	1/6/2016, 1228	WM	1 L Poly	1	HNO ₃	95	No		X											
			WM	1 L Glass Amber	2	None	110	No			X										
			WM	500 mL Poly	2	None	145	No				X									
			WM	500 mL Poly	1	None	155	No					X								
Outfall 009	Outfall009_20160106_Comp_F	1/6/2016, 1228	WM	500 mL Poly	1	NaOH	220	No													
			WM	2.5 Gal Cube	1	None	225	No				X									
			WM	1 L Glass Amber	1	None	230	No													
			WM	1 Gal Cube	12	None	235	No													
Outfall 009	Outfall009_20160106_Comp_Extra	1/6/2016, 1226	WM	1 L Poly	1	None	265	No													
			WM	1 L Glass Amber	2	None	110	No			X										
			WM	500 mL Poly	2	None	145	No			X										

COG Page 2 of 2 list Composite Samples for Outfall 009 for this storm event.
 These must be added for the same work order for COG Page 1 of 3 for Outfall 009 for the storm event.

Reinquised By: _____ Date/Time: 1/6/16 16:00 Company: JHA
 Received By: _____ Date/Time: 1/6/16 16:00
 Reinquised By: _____ Date/Time: 1/6/16 18:44 Company: JHA
 Received By: _____ Date/Time: 1/6/16 18:44
 Reinquised By: _____ Date/Time: 1/7/16 11:30 Company: JHA
 Received By: _____ Date/Time: 1/7/16 11:31
 Data Requirements: (Check)
 Intact: _____ On Ice: _____
 Sample Integrity: (Check)
 No Level IV: _____ All Level IV: _____
 URC



CHRONIC FATHEAD MINNOW SURVIVAL AND GROWTH BIOASSAY

DATE: 6 January 2016

STANDARD TOXICANT: Copper Chloride

ENDPOINT: SURVIVAL

NOEC = 38.00 ug/l

EC25 = 45.88 ug/l

EC50 = 58.39 ug/l


ENDPOINT: GROWTH

NOEC = 19.00 ug/l

IC25 = 30.24 ug/l

IC50 = 49.32 ug/l

Yours very truly,



Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 22 Jan-16 12:29 (p 1 of 2)
 Test Code: FML010616 | 15-5420-7482

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 05-3787-4752	Test Type: Growth-Survival (7d)	Analyst:
Start Date: 06 Jan-16 13:50	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 13 Jan-16 11:50	Species: Pimephales promelas	Brine: Not Applicable
Duration: 6d 22h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 12-7379-3699	Code: FML010616	Client: ABC Labs
Sample Date: 06 Jan-16 13:50	Material: Copper chloride	Project: REF TOX
Receive Date:	Source: Reference Toxicant	
Sample Age: NA	Station: REF TOX	

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
13-2406-5401	7d Survival Rate	38	75	53.39	14.5%		Dunnett Multiple Comparison Test
07-4926-4741	Mean Dry Biomass-mg	19	38	26.87	18.1%		Dunnett Multiple Comparison Test

Point Estimate Summary

Analysis ID	Endpoint	Level	µg/L	95% LCL	95% UCL	TU	Method
04-8272-9535	7d Survival Rate	EC5	22.01	10.58	49.41		Linear Interpolation (ICPIN)
		EC10	38.38	17.51	43.26		
		EC15	40.88	33.77	45.38		
		EC20	43.38	38.19	47.65		
		EC25	45.88	41.06	50.1		
		EC40	53.39	49.14	58.09		
06-4915-6096	Mean Dry Biomass-mg	IC5	12.82	10.73	17.21		Linear Interpolation (ICPIN)
		IC10	15.64	12.51	24.11		
		IC15	18.46	13.88	35.55		
		IC20	24.02	13.53	49.02		
		IC25	30.24	15.5	49.09		
		IC40	43.29	28.44	53.89		
		IC50	49.32	35.59	58.4		

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
04-8272-9535	7d Survival Rate	Control Resp	0.9833	0.8 - NL	Yes	Passes Acceptability Criteria
13-2406-5401	7d Survival Rate	Control Resp	0.9833	0.8 - NL	Yes	Passes Acceptability Criteria
06-4915-6096	Mean Dry Biomass-mg	Control Resp	0.3072	0.25 - NL	Yes	Passes Acceptability Criteria
07-4926-4741	Mean Dry Biomass-mg	Control Resp	0.3072	0.25 - NL	Yes	Passes Acceptability Criteria
07-4926-4741	Mean Dry Biomass-mg	PMSD	0.1805	0.12 - 0.3	Yes	Passes Acceptability Criteria

7d Survival Rate Summary

C-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	4	0.9833	0.9303	1	0.9333	1	0.01667	0.03333	3.39%	0.0%
10		4	1	1	1	1	1	0	0	0.0%	-1.7%
19		4	0.95	0.8484	1	0.8667	1	0.03191	0.06383	6.72%	3.39%
38		4	0.9	0.763	1	0.8	1	0.04303	0.08607	9.56%	8.48%
75		4	0.1667	0	0.3698	0.06667	0.3333	0.06383	0.1277	76.59%	83.05%
150		4	0.1333	0	0.4206	0	0.4	0.09027	0.1805	135.4%	86.44%

Mean Dry Biomass-mg Summary

C-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	4	0.3072	0.2595	0.3549	0.2893	0.352	0.01498	0.02997	9.76%	0.0%
10		4	0.339	0.2951	0.3829	0.3007	0.364	0.01379	0.02758	8.14%	-10.36%
19		4	0.2715	0.2371	0.3059	0.2467	0.2993	0.0108	0.0216	7.96%	11.61%
38		4	0.2222	0.1328	0.3115	0.16	0.2713	0.02808	0.05616	25.28%	27.67%
75		4	0.023	-0.003914	0.04991	0.006	0.046	0.008457	0.01691	73.54%	92.51%
150		4	0.02517	-0.01993	0.07026	0	0.06533	0.01417	0.02834	112.6%	91.81%

CETIS Summary Report

Report Date: 22 Jan-16 12:29 (p 2 of 2)
 Test Code: FML010616 | 15-5420-7482

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

7d Survival Rate Detail

C-µg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	1	1	0.9333	1
10		1	1	1	1
19		1	1	0.8667	0.9333
38		0.8667	0.9333	0.8	1
75		0.06667	0.06667	0.3333	0.2
150		0	0.4	0.06667	0.06667

Mean Dry Biomass-mg Detail

C-µg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	0.352	0.2893	0.2927	0.2947
10		0.3387	0.3527	0.3007	0.364
19		0.2713	0.2993	0.2467	0.2687
38		0.1893	0.2713	0.16	0.268
75		0.006	0.01667	0.046	0.02333
150		0	0.06533	0.02267	0.01267

7d Survival Rate Binomials

C-µg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	15/15	15/15	14/15	15/15
10		15/15	15/15	15/15	15/15
19		15/15	15/15	13/15	14/15
38		13/15	14/15	12/15	15/15
75		1/15	1/15	5/15	3/15
150		0/15	6/15	1/15	1/15

CETIS Analytical Report

Report Date: 22 Jan-16 12:29 (p 1 of 3)
 Test Code: FML010616 | 15-5420-7482

Fathead Minnow 7-d Larval Survival and Growth Test		Aquatic Bioassay & Consulting Labs, Inc.	
Analysis ID: 04-8272-9535	Endpoint: 7d Survival Rate	CETIS Version: CETISv1.8.7	
Analyzed: 22 Jan-16 12:03	Analysis: Linear Interpolation (ICPIN)	Official Results: Yes	

Linear Interpolation Options					
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	0	280	Yes	Two-Point Interpolation

Point Estimates			
Level	µg/L	95% LCL	95% UCL
EC5	22.01	10.58	49.41
EC10	38.38	17.51	43.26
EC15	40.88	33.77	45.38
EC20	43.38	38.19	47.65
EC25	45.88	41.06	50.1
EC40	53.39	49.14	58.09
EC50	58.39	54.31	64.09

7d Survival Rate Summary			Calculated Variate(A/B)									
C-µg/L	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B	
0	Negative Control	4	0.9833	0.9333	1	0.01667	0.03333	3.39%	0.0%	59	60	
10		4	1	1	1	0	0	0.0%	-1.7%	60	60	
19		4	0.95	0.8667	1	0.03191	0.06383	6.72%	3.39%	57	60	
38		4	0.9	0.8	1	0.04303	0.08607	9.56%	8.48%	54	60	
75		4	0.1667	0.06667	0.3333	0.06383	0.1277	76.59%	83.05%	10	60	
150		4	0.1333	0	0.4	0.09027	0.1805	135.4%	86.44%	8	60	

7d Survival Rate Detail					
C-µg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	1	1	0.9333	1
10		1	1	1	1
19		1	1	0.8667	0.9333
38		0.8667	0.9333	0.8	1
75		0.06667	0.06667	0.3333	0.2
150		0	0.4	0.06667	0.06667

7d Survival Rate Binomials					
C-µg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	15/15	15/15	14/15	15/15
10		15/15	15/15	15/15	15/15
19		15/15	15/15	13/15	14/15
38		13/15	14/15	12/15	15/15
75		1/15	1/15	5/15	3/15
150		0/15	6/15	1/15	1/15

CETIS Measurement Report

Report Date: 22 Jan-16 12:29 (p 1 of 2)
 Test Code: FML010616 | 15-5420-7482

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 05-3787-4752	Test Type: Growth-Survival (7d)	Analyst:
Start Date: 06 Jan-16 13:50	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 13 Jan-16 11:50	Species: Pimephales promelas	Brine: Not Applicable
Duration: 6d 22h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 12-7379-3699	Code: FML010616	Client: ABC Labs
Sample Date: 06 Jan-16 13:50	Material: Copper chloride	Project: REF TOX
Receive Date:	Source: Reference Toxicant	
Sample Age: NA	Station: REF TOX	

Alkalinity (CaCO3)-mg/L

C-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	64.13	61.25	67	60	68	1.217	3.441	5.37%	0
150		8	74	74	74	74	74	0	0	0.0%	0
Overall		16	69.06			60	74				0 (0%)

Conductivity-µmhos

C-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	328.4	326	330.8	323	332	1.017	2.875	0.88%	0
10		8	329	314.4	343.6	295	350	6.159	17.42	5.3%	0
19		8	322.8	315.4	330.1	308	332	3.098	8.763	2.72%	0
38		8	323.1	317.2	329	307	328	2.496	7.06	2.19%	0
75		8	318	302.1	333.9	271	327	6.743	19.07	6.0%	0
150		8	324.8	323.4	326.1	322	327	0.559	1.581	0.49%	0
Overall		48	324.3			271	350				0 (0%)

Dissolved Oxygen-mg/L

C-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	8.1	7.686	8.514	7.7	9.2	0.1753	0.4957	6.12%	0
10		8	8.5	7.928	9.072	7.8	9.7	0.242	0.6845	8.05%	0
19		8	8.55	7.955	9.145	7.7	9.7	0.2514	0.7111	8.32%	0
38		8	8.6	8.007	9.193	7.7	9.8	0.2507	0.7091	8.25%	0
75		8	8.588	8.006	9.169	7.7	9.8	0.246	0.6958	8.1%	0
150		8	8.563	8.017	9.108	7.7	9.6	0.2306	0.6523	7.62%	0
Overall		48	8.483			7.7	9.8				0 (0%)

Hardness (CaCO3)-mg/L

C-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	92.13	88.68	95.57	88	97	1.457	4.121	4.47%	0
150		8	99	99	99	99	99	0	0	0.0%	0
Overall		16	95.56			88	99				0 (0%)

pH-Units

C-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	8.025	7.803	8.247	7.6	8.3	0.09402	0.2659	3.31%	0
10		8	7.725	7.526	7.924	7.4	8	0.08399	0.2375	3.08%	0
19		8	7.763	7.608	7.917	7.5	8	0.06529	0.1847	2.38%	0
38		8	7.788	7.643	7.932	7.5	8	0.06105	0.1727	2.22%	0
75		8	7.775	7.643	7.907	7.5	7.9	0.0559	0.1581	2.03%	0
150		8	7.763	7.637	7.888	7.5	7.9	0.05324	0.1506	1.94%	0
Overall		48	7.806			7.4	8.3				0 (0%)

CETIS Measurement Report

Report Date: 22 Jan-16 12:29 (p 2 of 2)
 Test Code: FML010616 | 15-5420-7482

Fathead Minnow 7-d Larval Survival and Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Temperature-°C

C-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	24.08	23.9	24.25	24	24.6	0.075	0.2121	0.88%	0
10		8	24.1	23.86	24.34	24	24.8	0.1	0.2828	1.17%	0
19		8	24.1	23.9	24.3	24	24.7	0.0866	0.2449	1.02%	0
38		8	24.08	23.93	24.22	24	24.5	0.06196	0.1752	0.73%	0
75		8	24.01	23.98	24.04	24	24.1	0.01249	0.03531	0.15%	0
150		8	24.04	23.99	24.08	24	24.1	0.01827	0.05167	0.22%	0
Overall		48	24.07			24	24.8				0 (0%)

Alkalinity (CaCO3)-mg/L

C-µg/L	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	68	68	68	63	63	63	60	60
150		74	74	74	74	74	74	74	74

Conductivity-µmhos

C-µg/L	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	328	332	323	328	330	326	329	331
10		321	295	350	348	338	327	325	328
19		322	308	325	330	332	326	311	328
38		320	307	326	327	328	326	323	328
75		321	271	325	326	325	325	324	327
150		322	325	323	325	325	326	325	327

Dissolved Oxygen-mg/L

C-µg/L	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	7.8	8.4	7.7	7.8	7.9	7.9	8.1	9.2
10		8.6	9.7	7.9	7.8	7.8	8.5	9.2	8.5
19		8.6	9.7	7.8	7.9	7.7	8.8	9.2	8.7
38		8.7	9.8	8	7.9	7.7	8.8	9.2	8.7
75		8.6	9.8	8.1	7.9	7.7	8.6	9.2	8.8
150		8.7	9.6	8.2	7.8	7.7	8.7	9.2	8.6

Hardness (CaCO3)-mg/L

C-µg/L	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	97	97	97	90	90	90	88	88
150		99	99	99	99	99	99	99	99

pH-Units

C-µg/L	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	8.1	7.9	7.7	8.3	8.1	8.2	7.6	8.3
10		7.4	7.4	7.9	7.9	7.9	8	7.6	7.7
19		7.5	7.6	7.9	7.9	7.9	8	7.6	7.7
38		7.5	7.7	7.9	8	7.9	7.9	7.6	7.8
75		7.5	7.7	7.9	7.9	7.9	7.9	7.6	7.8
150		7.5	7.7	7.8	7.9	7.9	7.9	7.6	7.8

Temperature-°C

C-µg/L	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	24	24	24	24	24	24	24.6	24
10		24	24	24	24	24	24	24.8	24
19		24	24	24	24	24.1	24	24.7	24
38		24	24	24	24	24.1	24	24.5	24
75		24	24	24	24	24.1	24	24	24
150		24	24	24	24	24.1	24.1	24.1	24



CHRONIC CERIODAPHNIA SURVIVAL AND REPRODUCTION BIOASSAY

DATE: 5 January- 2016

STANDARD TOXICANT: Copper Chloride

ENDPOINT: SURVIVAL

NOEC = 10.00 ug/l

EC25 = 14.29 ug/l

EC50 = 21.43 ug/l

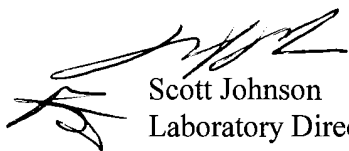
ENDPOINT: REPRODUCTION

NOEC = 10.00 ug/l

IC25 = 10.55 ug/l

IC50 = 17.36 ug/l

Yours very truly,



Scott Johnson
Laboratory Director

CETIS Analytical Report

Report Date: 21 Jan-16 14:40 (p 1 of 2)

Test Code: CER010516 | 16-9645-7640

Ceriodaphnia 7-d Survival and Reproduction Test						Aquatic Bioassay & Consulting Labs, Inc.					
Analysis ID: 06-7842-3993		Endpoint: Reproduction				CETIS Version: CETISv1.8.7					
Analyzed: 13 Jan-16 15:05		Analysis: Nonparametric-Control vs Treatments				Official Results: Yes					
Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU		
Untransformed	NA	C > T	NA	NA	21.6%	10	30	17.32			
Steel Many-One Rank Sum Test											
Control	vs	C-µg/L	Test Stat	Critical	Ties	DF	P-Value	P-Type	Decision(α:5%)		
Negative Control		3	120.5	76	1	18	0.9871	Asymp	Non-Significant Effect		
		5	123.5	76	3	18	0.9938	Asymp	Non-Significant Effect		
		10	82.5	76	3	18	0.1302	Asymp	Non-Significant Effect		
		30*	55	76	0	18	0.0003	Asymp	Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	7897.6		1974.4		4	43.72	<0.0001	Significant Effect			
Error	2032.4		45.16444		45						
Total	9930				49						
Distributional Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α:1%)					
Variances	Bartlett Equality of Variance		22.73	13.28	0.0001	Unequal Variances					
Variances	Mod Levene Equality of Variance		4.536	3.767	0.0037	Unequal Variances					
Variances	Levene Equality of Variance		4.477	3.767	0.0039	Unequal Variances					
Distribution	Shapiro-Wilk W Normality		0.954	0.9367	0.0500	Normal Distribution					
Distribution	Kolmogorov-Smirnov D		0.1222	0.1453	0.0598	Normal Distribution					
Distribution	D'Agostino Skewness		1.716	2.576	0.0862	Normal Distribution					
Distribution	D'Agostino Kurtosis		1.269	2.576	0.2046	Normal Distribution					
Distribution	D'Agostino-Pearson K2 Omnibus		4.553	9.21	0.1026	Normal Distribution					
Distribution	Anderson-Darling A2 Normality		0.8851	3.878	0.0235	Normal Distribution					
Reproduction Summary											
C-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Negative Control	10	30.9	28.55	33.25	29.5	27	36	1.038	10.62%	0.0%
3		10	33.1	27.32	38.88	34	15	41	2.554	24.4%	-7.12%
5		10	36.1	29.41	42.79	37.5	22	48	2.957	25.9%	-16.83%
10		10	25.7	20.22	31.18	25	13	39	2.422	29.81%	16.83%
30		10	1.2	-0.1822	2.582	0	0	4	0.611	161.0%	96.12%
50		10	0	0	0	0	0	0	0		100.0%
Reproduction Detail											
C-µg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Negative Control	29	29	36	36	28	27	31	30	34	29
3		29	40	33	29	29	40	41	15	40	35
5		22	44	44	43	36	22	39	35	48	28
10		23	39	27	18	33	21	29	31	23	13
30		0	0	0	0	4	4	0	4	0	0
50		0	0	0	0	0	0	0	0	0	0

CETIS Analytical Report

Report Date: 21 Jan-16 14:40 (p 2 of 2)
Test Code: CER010516 | 16-9645-7640

Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 06-7842-3993

Endpoint: Reproduction

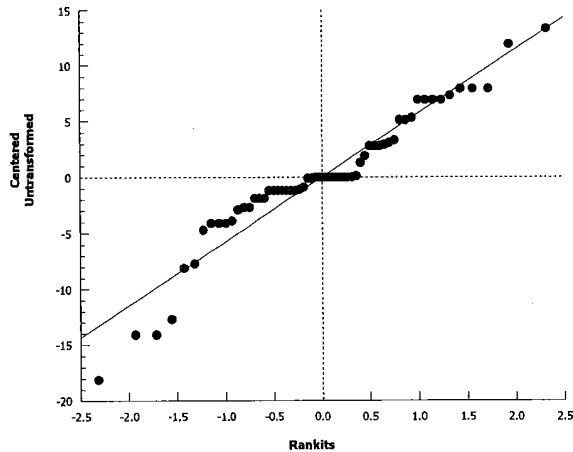
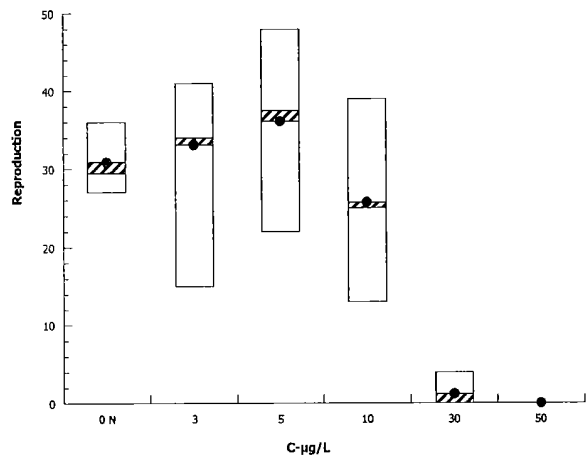
CETIS Version: CETISv1.8.7

Analyzed: 13 Jan-16 15:05

Analysis: Nonparametric-Control vs Treatments

Official Results: Yes

Graphics



CETIS Analytical Report

Report Date: 21 Jan-16 14:40 (p 1 of 1)
 Test Code: CER010516 | 16-9645-7640

Ceriodaphnia 7-d Survival and Reproduction Test Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 17-7157-2608 Endpoint: 7d Survival Rate CETIS Version: CETISv1.8.7
 Analyzed: 13 Jan-16 15:05 Analysis: STP 2x2 Contingency Tables Official Results: Yes

Data Transform	Zeta	Alt Hyp	Trials	Seed	NOEL	LOEL	TOEL	TU
Untransformed		C > T	NA	NA	10	30	17.32	

Fisher Exact/Bonferroni-Holm Test

Control	vs	C-µg/L	Test Stat	P-Value	P-Type	Decision(α:5%)
Negative Control		3	1	1.0000	Exact	Non-Significant Effect
		5	1	1.0000	Exact	Non-Significant Effect
		10	0.5	1.0000	Exact	Non-Significant Effect
		30	0.0003572	0.0014	Exact	Significant Effect
		50	5.413E-06	<0.0001	Exact	Significant Effect

Data Summary

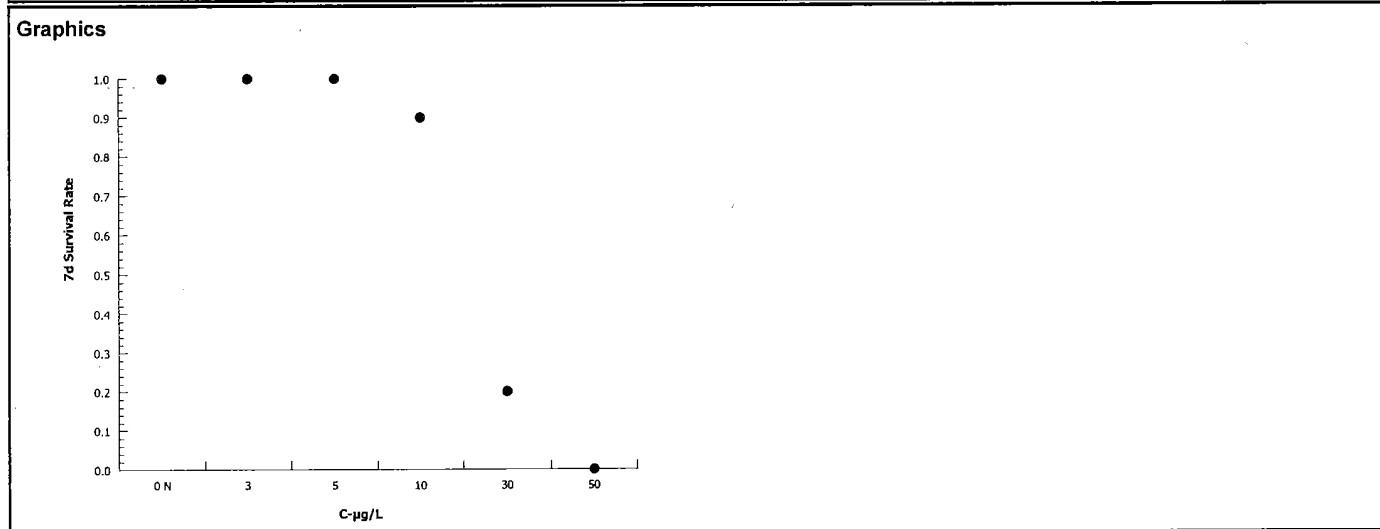
C-µg/L	Control Type	NR	R	NR + R	Prop NR	Prop R	%Effect
0	Negative Contr	10	0	10	1	0	0.0%
3		10	0	10	1	0	0.0%
5		10	0	10	1	0	0.0%
10		9	1	10	0.9	0.1	10.0%
30		2	8	10	0.2	0.8	80.0%
50		0	10	10	0	1	100.0%

7d Survival Rate Detail

C-µg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Negative Control	1	1	1	1	1	1	1	1	1	1
3		1	1	1	1	1	1	1	1	1	1
5		1	1	1	1	1	1	1	1	1	1
10		1	1	1	1	1	1	1	1	1	0
30		0	0	0	0	1	0	0	1	0	0
50		0	0	0	0	0	0	0	0	0	0

7d Survival Rate Binomials

C-µg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Negative Control	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
3		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
10		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	0/1
30		0/1	0/1	0/1	0/1	1/1	0/1	0/1	1/1	0/1	0/1
50		0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1



CETIS Measurement Report

Report Date: 21 Jan-16 14:40 (p 1 of 2)
 Test Code: CER010516 | 16-9645-7640

Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 14-6650-7256	Test Type: Reproduction-Survival (7d)	Analyst:
Start Date: 05 Jan-16 12:00	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 12 Jan-16 11:00	Species: Ceriodaphnia dubia	Brine: Not Applicable
Duration: 6d 23h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 13-1381-7155	Code: CER010516	Client: Internal Lab
Sample Date: 05 Jan-16 12:00	Material: Copper chloride	Project:
Receive Date:	Source: Reference Toxicant	
Sample Age: NA	Station: REF TOX	

Alkalinity (CaCO3)-mg/L

C-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	65.5	63.27	67.73	63	68	0.9449	2.673	4.08%	0
50		5	60	60	60	60	60	0	0	0.0%	0
Overall		13	62.75			60	68				0 (0%)

Conductivity-µmhos

C-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	328.5	325.8	331.2	323	333	1.134	3.207	0.98%	0
3		8	320	309.9	330.1	310	338	4.289	12.13	3.79%	0
5		8	313.4	307.9	318.8	308	325	2.314	6.545	2.09%	0
10		8	311.9	307.1	316.7	308	322	2.03	5.743	1.84%	0
30		8	303.6	294.5	312.7	291	321	3.84	10.86	3.58%	0
50		5	311	308.2	313.8	310	315	1	2.236	0.72%	0
Overall		45	314.7			291	338				0 (0%)

Dissolved Oxygen-mg/L

C-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	7.925	7.717	8.133	7.7	8.4	0.08813	0.2493	3.15%	0
3		8	8.288	7.829	8.746	7.7	9.5	0.1941	0.5489	6.62%	0
5		8	8.25	7.986	8.514	7.8	8.7	0.1118	0.3162	3.83%	0
10		8	8.288	7.986	8.589	7.7	8.7	0.1274	0.3603	4.35%	0
30		8	8.288	7.964	8.611	7.7	8.8	0.1368	0.3871	4.67%	0
50		5	8.38	7.993	8.767	8	8.7	0.1393	0.3114	3.72%	0
Overall		45	8.236			7.7	9.5				0 (0%)

Hardness (CaCO3)-mg/L

C-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	93.5	90.37	96.63	90	97	1.323	3.742	4.0%	0
50		5	84	84	84	84	84	0	0	0.0%	0
Overall		13	88.75			84	97				0 (0%)

pH-Units

C-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	7.975	7.753	8.197	7.5	8.3	0.09402	0.2659	3.33%	0
3		8	8	7.874	8.126	7.8	8.2	0.05345	0.1512	1.89%	0
5		8	7.963	7.822	8.103	7.7	8.2	0.05957	0.1685	2.12%	0
10		8	7.938	7.797	8.078	7.7	8.2	0.05957	0.1685	2.12%	0
30		8	7.938	7.804	8.071	7.7	8.1	0.0565	0.1598	2.01%	0
50		5	7.88	7.676	8.084	7.7	8.1	0.07349	0.1643	2.09%	0
Overall		45	7.949			7.5	8.3				0 (0%)

CETIS Measurement Report

Report Date: 21 Jan-16 14:40 (p 2 of 2)
 Test Code: CER010516 | 16-9645-7640

Ceriodaphnia 7-d Survival and Reproduction Test

Aquatic Bioassay & Consulting Labs, Inc.

Temperature-°C

C-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	8	24.2	23.96	24.44	24	24.7	0.1018	0.2878	1.19%	0
3		8	24.19	23.97	24.41	24	24.6	0.09342	0.2642	1.09%	0
5		8	24.14	23.96	24.31	24	24.6	0.07303	0.2066	0.86%	0
10		8	24.16	24.01	24.31	24	24.5	0.06249	0.1768	0.73%	0
30		8	24.13	23.95	24.3	24	24.6	0.07257	0.2053	0.85%	0
50		5	24.16	23.85	24.47	24	24.6	0.1122	0.251	1.04%	0
Overall		45	24.16			24	24.7				0 (0%)

Alkalinity (CaCO3)-mg/L

C-µg/L	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	68	68	68	68	63	63	63	63
50		60	60	60	60	60			

Conductivity-µmhos

C-µg/L	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	328	328	332	323	328	330	326	333
3		310	310	334	310	315	312	331	338
5		309	308	314	309	310	310	322	325
10		308	308	311	309	308	309	320	322
30		292	291	298	310	309	312	321	296
50		310	310	310	310	315			

Dissolved Oxygen-mg/L

C-µg/L	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	7.7	7.8	8.4	7.7	7.8	7.9	7.9	8.2
3		8.2	8.4	9.5	8.3	7.7	7.8	8.3	8.1
5		8.4	8.4	8	8.7	7.9	7.8	8.3	8.5
10		8.3	8.5	8.6	8.4	7.8	7.7	8.3	8.7
30		8.3	8.6	8.6	8.2	7.8	7.7	8.3	8.8
50		8.1	8.5	8.7	8.6	8			

Hardness (CaCO3)-mg/L

C-µg/L	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	97	97	97	97	90	90	90	90
50		84	84	84	84	84			

pH-Units

C-µg/L	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	8	8.1	7.9	7.7	8.3	8.1	8.2	7.5
3		7.9	8	8.2	7.8	7.9	7.9	8.1	8.2
5		7.9	7.9	8.2	7.7	7.9	7.9	8	8.2
10		7.8	7.8	8.1	7.7	8	7.9	8	8.2
30		7.8	7.7	8.1	7.8	8.1	7.9	8	8.1
50		7.8	7.7	8	7.8	8.1			

Temperature-°C

C-µg/L	Control Type	1	2	3	4	5	6	7	8
0	Negative Contr	24.6	24.1	24.7	24.2	24	24	24	24
3		24.6	24.1	24.6	24.2	24	24	24	24
5		24	24.2	24.6	24.2	24.1	24	24	24
10		24.3	24.2	24.5	24.2	24.1	24	24	24
30		24	24.1	24.6	24.2	24.1	24	24	24
50		24	24.1	24.6	24.1	24			



CHRONIC SELENASTRUM GROWTH BIOASSAY

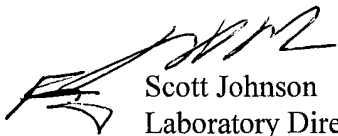
DATE: 7 January - 2016

STANDARD TOXICANT: Cadmium Chloride

NOEC = 80.00 ug/l

IC25 = 104.90 ug/l
IC50 = 156.20 ug/l

Yours very truly,



Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 13 Jan-16 15:51 (p 1 of 1)

Test Code: SEL010716 | 15-2352-3661

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 03-4998-4998	Test Type: Cell Growth	Analyst:
Start Date: 07 Jan-16 13:09	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 11 Jan-16 14:00	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 4d 1h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 00-2681-6804	Code: SEL010716	Client: Internal Lab
Sample Date: 07 Jan-16 13:09	Material: Cadmium chloride	Project:
Receive Date:	Source: Reference Toxicant	
Sample Age: NA	Station: REF TOX	

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
14-1417-3399	Cell Density	80	140	105.8	12.0%		Dunnett Multiple Comparison Test

Point Estimate Summary

Analysis ID	Endpoint	Level	µg/L	95% LCL	95% UCL	TU	Method
18-5250-6959	Cell Density	IC5	55.52	25.19	82.51		Linear Interpolation (ICPIN)
		IC10	71.03	53.7	96.08		
		IC15	84.34	65.16	101.3		
		IC20	94.62	76.74	108.8		
		IC25	104.9	89.64	117.6		
		IC40	135.7	124.5	149.1		
		IC50	156.2	144.8	165		

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
14-1417-3399	Cell Density	Control CV	0.01484	NL - 0.2	Yes	Passes Acceptability Criteria
18-5250-6959	Cell Density	Control CV	0.01484	NL - 0.2	Yes	Passes Acceptability Criteria
14-1417-3399	Cell Density	Control Resp	1.09E+6	1.00E+6 - NL	Yes	Passes Acceptability Criteria
18-5250-6959	Cell Density	Control Resp	1.09E+6	1.00E+6 - NL	Yes	Passes Acceptability Criteria
14-1417-3399	Cell Density	PMSD	0.1205	0.091 - 0.29	Yes	Passes Acceptability Criteria

Cell Density Summary

C-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	4	1.088E+6	1.062E+6	1.114E+6	1.064E+6	1.099E+6	8.073E+3	1.615E+4	1.48%	0.0%
20		4	1.395E+6	1.258E+6	1.531E+6	1.310E+6	1.480E+6	4.283E+4	8.566E+4	6.14%	-28.19%
40		4	1.288E+6	1.091E+6	1.484E+6	1.140E+6	1.397E+6	6.162E+4	1.232E+5	9.57%	-18.34%
80		4	1.095E+6	9.569E+5	1.233E+6	1.022E+6	1.220E+6	4.330E+4	8.661E+4	7.91%	-0.62%
140		4	7.280E+5	6.338E+5	8.222E+5	6.730E+5	7.990E+5	2.959E+4	5.918E+4	8.13%	33.09%
180		4	4.818E+5	4.145E+5	5.490E+5	4.450E+5	5.250E+5	2.112E+4	4.225E+4	8.77%	55.72%

Cell Density Detail

C-µg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	1.094E+6	1.099E+6	1.064E+6	1.095E+6
20		1.333E+6	1.310E+6	1.480E+6	1.456E+6
40		1.381E+6	1.232E+6	1.397E+6	1.140E+6
80		1.220E+6	1.060E+6	1.022E+6	1.077E+6
140		6.730E+5	7.540E+5	7.990E+5	6.860E+5
180		4.450E+5	4.460E+5	5.250E+5	5.110E+5

CETIS Analytical Report

Report Date: 13 Jan-16 15:51 (p 1 of 2)
 Test Code: SEL010716 | 15-2352-3661

Selenastrum Growth Test Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 14-1417-3399 **Endpoint:** Cell Density **CETIS Version:** CETISv1.8.7
 Analyzed: 13 Jan-16 15:50 **Analysis:** Parametric-Control vs Treatments **Official Results:** Yes

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU
Untransformed	NA	C > T	NA	NA	12.0%	80	140	105.8	

Dunnett Multiple Comparison Test

Control	vs	C-µg/L	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Negative Control		20	-5.634	2.407	1E+05	6	1.0000	CDF	Non-Significant Effect
		40	-3.664	2.407	1E+05	6	1.0000	CDF	Non-Significant Effect
		80	-0.124	2.407	1E+05	6	0.8672	CDF	Non-Significant Effect
		140*	6.612	2.407	1E+05	6	<0.0001	CDF	Significant Effect
		180*	11.13	2.407	1E+05	6	<0.0001	CDF	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	2.387365E+12	4.774729E+11	5	80.53	<0.0001	Significant Effect
Error	1.067293E+11	5929403000	18			
Total	2.494094E+12		23			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance	9.196	15.09	0.1015	Equal Variances
Variances	Mod Levene Equality of Variance	3.244	4.248	0.0291	Equal Variances
Variances	Levene Equality of Variance	5.257	4.248	0.0038	Unequal Variances
Distribution	Shapiro-Wilk W Normality	0.9763	0.884	0.8200	Normal Distribution
Distribution	Kolmogorov-Smirnov D	0.1117	0.2056	0.6287	Normal Distribution
Distribution	D'Agostino Skewness	0.1423	2.576	0.8868	Normal Distribution
Distribution	D'Agostino Kurtosis	0.2983	2.576	0.7654	Normal Distribution
Distribution	D'Agostino-Pearson K2 Omnibus	0.1093	9.21	0.9468	Normal Distribution
Distribution	Anderson-Darling A2 Normality	0.2888	3.878	0.6459	Normal Distribution

Cell Density Summary

C-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Negative Control	4	1.088E+6	1.062E+6	1.114E+6	1095000	1.064E+6	1.099E+6	8.072E+3	1.48%	0.0%
20		4	1.395E+6	1.258E+6	1.531E+6	1395000	1.310E+6	1.480E+6	4.283E+4	6.14%	-28.19%
40		4	1.288E+6	1.091E+6	1.484E+6	1307000	1.140E+6	1.397E+6	6.162E+4	9.57%	-18.34%
80		4	1.095E+6	9.569E+5	1.233E+6	1069000	1.022E+6	1.220E+6	4.330E+4	7.91%	-0.62%
140		4	7.280E+5	6.338E+5	8.222E+5	720000	6.730E+5	7.990E+5	2.959E+4	8.13%	33.09%
180		4	4.818E+5	4.145E+5	5.490E+5	478500	4.450E+5	5.250E+5	2.112E+4	8.77%	55.72%

Cell Density Detail

C-µg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Negative Control	1.094E+6	1.099E+6	1.064E+6	1.095E+6
20		1.333E+6	1.310E+6	1.480E+6	1.456E+6
40		1.381E+6	1.232E+6	1.397E+6	1.140E+6
80		1.220E+6	1.060E+6	1.022E+6	1.077E+6
140		6.730E+5	7.540E+5	7.990E+5	6.860E+5
180		4.450E+5	4.460E+5	5.250E+5	5.110E+5

CETIS Analytical Report

Report Date: 13 Jan-16 15:51 (p 1 of 1)
 Test Code: SEL010716 | 15-2352-3661

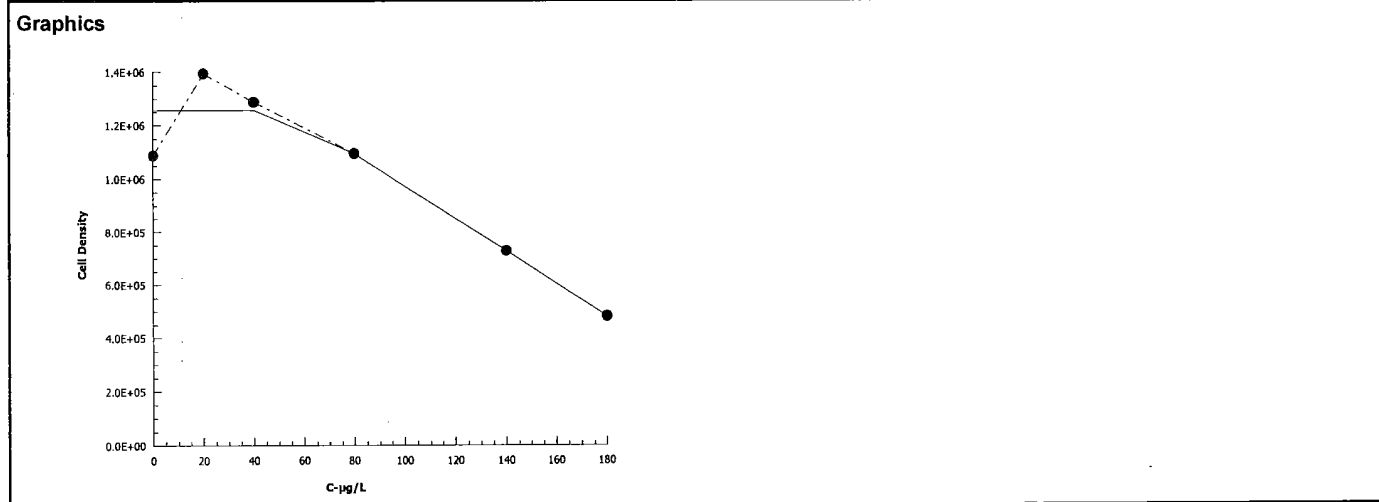
Selenastrum Growth Test		Aquatic Bioassay & Consulting Labs, Inc.	
Analysis ID: 18-5250-6959	Endpoint: Cell Density	CETIS Version: CETISv1.8.7	
Analyzed: 13 Jan-16 15:50	Analysis: Linear Interpolation (ICPIN)	Official Results: Yes	

Linear Interpolation Options					
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	0	280	Yes	Two-Point Interpolation

Point Estimates			
Level	µg/L	95% LCL	95% UCL
IC5	55.52	25.19	82.51
IC10	71.03	53.7	96.08
IC15	84.34	65.16	101.3
IC20	94.62	76.74	108.8
IC25	104.9	89.64	117.6
IC40	135.7	124.5	149.1
IC50	156.2	144.8	165

Cell Density Summary			Calculated Variate						
C-µg/L	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	4	1.088E+6	1.064E+6	1.099E+6	8.072E+3	1.614E+4	1.48%	0.0%
20		4	1.395E+6	1.310E+6	1.480E+6	4.283E+4	8.566E+4	6.14%	-28.19%
40		4	1.288E+6	1.140E+6	1.397E+6	6.162E+4	1.232E+5	9.57%	-18.34%
80		4	1.095E+6	1.022E+6	1.220E+6	4.330E+4	8.661E+4	7.91%	-0.62%
140		4	7.280E+5	6.730E+5	7.990E+5	2.959E+4	5.918E+4	8.13%	33.09%
180		4	4.818E+5	4.450E+5	5.250E+5	2.112E+4	4.225E+4	8.77%	55.72%

Cell Density Detail						
C-µg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	
0	Negative Control	1.094E+6	1.099E+6	1.064E+6	1.095E+6	
20		1.333E+6	1.310E+6	1.480E+6	1.456E+6	
40		1.381E+6	1.232E+6	1.397E+6	1.140E+6	
80		1.220E+6	1.060E+6	1.022E+6	1.077E+6	
140		6.730E+5	7.540E+5	7.990E+5	6.860E+5	
180		4.450E+5	4.460E+5	5.250E+5	5.110E+5	



CETIS Measurement Report

Report Date: 13 Jan-16 15:51 (p 1 of 2)
 Test Code: SEL010716 | 15-2352-3661

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 03-4998-4998	Test Type: Cell Growth	Analyst:
Start Date: 07 Jan-16 13:09	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 11 Jan-16 14:00	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 4d 1h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 00-2681-6804	Code: SEL010716	Client: Internal Lab
Sample Date: 07 Jan-16 13:09	Material: Cadmium chloride	Project:
Receive Date:	Source: Reference Toxicant	
Sample Age: NA	Station: REF TOX	

Alkalinity (CaCO3)-mg/L

C-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	1	70			70	70	0	0	0.0%	0
20		1	78			78	78	0	0	0.0%	0
40		1	84			84	84	0	0	0.0%	0
80		1	79			79	79	0	0	0.0%	0
140		1	79			79	79	0	0	0.0%	0
180		1	67			67	67	0	0	0.0%	0
Overall		6	76.17			67	84				0 (0%)

Conductivity-µmhos

C-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	5	412.4	405.5	419.3	405	420	2.482	5.55	1.35%	0
20		5	442.8	434.5	451.1	432	450	2.99	6.686	1.51%	0
40		5	415	408.5	421.5	411	424	2.345	5.244	1.26%	0
80		5	403.2	402.6	403.8	403	404	0.2	0.4472	0.11%	0
140		5	378.8	370.4	387.2	372	389	3.023	6.76	1.79%	0
180		5	356	351.5	360.5	351	361	1.612	3.606	1.01%	0
Overall		30	401.4			351	450				0 (0%)

Hardness (CaCO3)-mg/L

C-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	1	100			100	100	0	0	0.0%	0
20		1	100			100	100	0	0	0.0%	0
40		1	108			108	108	0	0	0.0%	0
80		1	112			112	112	0	0	0.0%	0
140		1	116			116	116	0	0	0.0%	0
180		1	104			104	104	0	0	0.0%	0
Overall		6	106.7			100	116				0 (0%)

pH-Units

C-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	5	7.74	7.598	7.882	7.6	7.9	0.05099	0.114	1.47%	0
20		5	7.98	7.796	8.164	7.8	8.2	0.06633	0.1483	1.86%	0
40		5	8.02	7.884	8.156	7.9	8.2	0.04899	0.1095	1.37%	0
80		5	8.02	7.884	8.156	7.9	8.2	0.04899	0.1095	1.37%	0
140		5	7.98	7.876	8.084	7.9	8.1	0.03742	0.08366	1.05%	0
180		5	7.96	7.892	8.028	7.9	8	0.02449	0.05476	0.69%	0
Overall		30	7.95			7.6	8.2				0 (0%)

Temperature-°C

C-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	5	24.1	23.82	24.38	24	24.5	0.1	0.2236	0.93%	0
20		5	24.1	23.82	24.38	24	24.5	0.1	0.2236	0.93%	0
40		5	24.1	23.82	24.38	24	24.5	0.1	0.2236	0.93%	0
80		5	24.1	23.82	24.38	24	24.5	0.1	0.2236	0.93%	0
140		5	24.1	23.82	24.38	24	24.5	0.1	0.2236	0.93%	0
180		5	24.1	23.82	24.38	24	24.5	0.1	0.2236	0.93%	0
Overall		30	24.1			24	24.5				0 (0%)

CETIS Measurement Report

Report Date: 13 Jan-16 15:51 (p 2 of 2)
 Test Code: SEL010716 | 15-2352-3661

Aquatic Bioassay & Consulting Labs, Inc.

Selenastrum Growth Test

Alkalinity (CaCO3)-mg/L

C-µg/L	Control Type	1
0	Negative Contr	70
20		78
40		84
80		79
140		79
180		67

Conductivity-µmhos

C-µg/L	Control Type	1	2	3	4	5
0	Negative Contr	411	411	415	420	405
20		432	445	442	450	445
40		412	411	415	413	424
80		403	403	403	403	404
140		375	376	382	389	372
180		351	356	355	357	361

Hardness (CaCO3)-mg/L

C-µg/L	Control Type	1
0	Negative Contr	100
20		100
40		108
80		112
140		116
180		104

pH-Units

C-µg/L	Control Type	1	2	3	4	5
0	Negative Contr	7.7	7.6	7.7	7.8	7.9
20		8	8.2	7.9	7.8	8
40		8	8.2	8	7.9	8
80		8	8.2	8	8	7.9
140		7.9	8.1	8	8	7.9
180		7.9	8	8	8	7.9

Temperature-°C

C-µg/L	Control Type	1	2	3	4	5
0	Negative Contr	24.5	24	24	24	24
20		24.5	24	24	24	24
40		24.5	24	24	24	24
80		24.5	24	24	24	24
140		24.5	24	24	24	24
180		24.5	24	24	24	24

Chain of Custody Record



Client Information (Sub Contract Lab) Client Contact: Wilson, Debby S Shipping/Receiving: debby.wilson@testamericainc.com Company: TestAmerica Laboratories, Inc.		Sampler: Lab PM: Wilson, Debby S Phone: E-Mail: debby.wilson@testamericainc.com		Carrier Tracking No(s): COC No: 440-93225.1 Page: Page 1 of 1 Job #: 440-133309-1				
Address: 13715 Rider Trail North, City: Earth City State, Zip: MO, 63045 Phone: 314-298-8566(Tel) 314-298-8757(Fax) Email:		Due Date Requested: 2/1/2016 TAT Requested (days):		Analysis Requested Total Number of Containers: 2				
Project Name: Routine Outfall 009 Comp Site:		PO #: WO #: Project #: 44009879 SSOW#:		Preservation Codes: M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - ph 4-5 Z - other (specify) Other:				
Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=wastewater, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Analysis Requested	Special Instructions/Note:
Outfall_20160106_Comp (440-133309-1)	1/6/16	12:28 Pacific	Water	Water	X	X	900.0/Evaporation Gross Alpha/Beta 901.1_Cs/Fill_Geo. 0 K-40 and Cesium-137 903.0/Presep_21 Radium-226 904.0/Presep_0 Radium-228 906.0/Presep_7 Strontium-90 906.0/LSC_Diet Susp Tritium A01R_U/Exchrom_Actin Total Uranium	Boeing SSFL; DO NOT FILTER; use prep date from preservation
Possible Hazard Identification Unconfirmed Deliverable Requested: I, II, III, IV, Other (specify)								
Empty Kit Relinquished by:		Date:		Method of Shipment:		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For Months		
Relinquished by: <i>W. Bandy</i>		Date/Time: 1/7/16 17:00		Company: <i>TAI</i>		Received by: <i>FEDEx</i> Date/Time: 1/2/16 17:00 Company:		
Relinquished by: <i>FEDEx</i>		Date/Time:		Company:		Received by: <i>W. McE</i> Date/Time: 1/8/16 0925 Company:		
Relinquished by:		Date/Time:		Company:		Received by: Date/Time: Company:		
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:				



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-133309-1

Login Number: 133309

List Number: 1

Creator: Soderblom, Tim

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	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?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	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 <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-133309-1

Login Number: 133309

List Number: 3

Creator: Hytrek, Cheryl

List Source: TestAmerica Sacramento

List Creation: 01/08/16 05:06 PM

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	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	
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.	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	

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-133309-1

Login Number: 133309

List Number: 2

Creator: McKinney, Gerrod E

List Source: TestAmerica St. Louis

List Creation: 01/08/16 01:50 PM

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	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	
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.	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 <math><6\text{mm}</math> (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-133309-1

Method: 903.0 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (40-110)		
440-133309-1	Outfall009_20160106_Comp	84.3		
LCS 160-231737/2-A	Lab Control Sample	90.6		
LCSD 160-231737/3-A	Lab Control Sample Dup	88.4		
MB 160-231737/1-A	Method Blank	87.8		

Tracer/Carrier Legend

Ba = Ba Carrier

Method: 904.0 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (40-110)	Y (40-110)		
440-133309-1	Outfall009_20160106_Comp	84.3	79.6		
LCS 160-231743/2-A	Lab Control Sample	90.6	81.1		
LCSD 160-231743/3-A	Lab Control Sample Dup	88.4	77.9		
MB 160-231743/1-A	Method Blank	87.8	81.8		

Tracer/Carrier Legend

Ba = Ba Carrier

Y = Y Carrier

Method: 905 - Strontium-90 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Sr (C) (40-110)	Y (40-110)		
440-133309-1	Outfall009_20160106_Comp	85.7	87.1		
LCS 160-232609/2-A	Lab Control Sample	87.4	90.5		
LCSD 160-232609/3-A	Lab Control Sample Dup	88.0	87.1		
MB 160-232609/1-A	Method Blank	85.3	92.0		

Tracer/Carrier Legend

Sr (C) = Sr Carrier

Y = Y Carrier

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	U-232 (30-110)		
440-133309-1	Outfall009_20160106_Comp	54.9		
440-133309-1 DU	Outfall009_20160106_Comp	43.3		
LCS 160-232862/2-A	Lab Control Sample	76.3		
MB 160-232862/1-A	Method Blank	86.0		

Tracer/Carrier Legend

U-232 = Uranium-232

TestAmerica Irvine

Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-133309-1

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

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (25-164)	TCDF (24-169)	PeCDD (25-181)	PeCDF1 (24-185)	PeCDF2 (21-178)	HxCDD1 (32-141)	HxCDD2 (28-130)	HxCDF1 (26-152)
440-133309-1	Outfall009_20160106_Comp	60	61	70	61	64	68	61	68
440-133309-3	Outfall009_20160106_Comp_E xtra	63	63	70	67	69	76	68	78
MB 320-98188/1-A	Method Blank	55	52	64	53	57	61	53	56

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (26-123)	HxCDF4 (29-147)	HxCDF3 (28-136)	HpCDD (23-140)	HpCDF1 (28-143)	HpCDF2 (26-138)	OCDD (17-157)
440-133309-1	Outfall009_20160106_Comp	62	65	68	56	58	53	49
440-133309-3	Outfall009_20160106_Comp_E xtra	71	72	77	57	57	53	48
MB 320-98188/1-A	Method Blank	51	55	56	53	53	45	45

Surrogate Legend

- TCDD = 13C-2,3,7,8-TCDD
- TCDF = 13C-2,3,7,8-TCDF
- PeCDD = 13C-1,2,3,7,8-PeCDD
- PeCDF1 = 13C-1,2,3,7,8-PeCDF
- PeCDF2 = 13C-2,3,4,7,8-PeCDF
- HxCDD1 = 13C-1,2,3,4,7,8-HxCDD
- HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
- HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
- HxCDF2 = 13C-1,2,3,6,7,8-HxCDF
- HxCDF4 = 13C-1,2,3,7,8,9-HxCDF
- HxCDF3 = 13C-2,3,4,6,7,8-HxCDF
- HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
- HpCDF1 = 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)

Lab Sample ID	Client Sample ID	TCDD (20-175)	TCDF (22-152)	PeCDD (21-227)	PeCDF1 (21-192)	PeCDF2 (13-328)	HxCDD1 (21-193)	HxCDD2 (25-163)	HxCDF1 (19-202)
LCS 320-98188/2-A	Lab Control Sample	51	51	67	56	61	59	52	56
LCSD 320-98188/3-A	Lab Control Sample Dup	53	50	60	51	55	57	49	53

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (21-159)	HxCDF4 (17-205)	HxCDF3 (22-176)	HpCDD (26-166)	HpCDF1 (21-158)	HpCDF2 (20-186)	OCDD (13-199)
LCS 320-98188/2-A	Lab Control Sample	49	55	55	52	52	46	44
LCSD 320-98188/3-A	Lab Control Sample Dup	47	53	53	48	50	43	40

Surrogate Legend

- TCDD = 13C-2,3,7,8-TCDD
- TCDF = 13C-2,3,7,8-TCDF
- PeCDD = 13C-1,2,3,7,8-PeCDD
- PeCDF1 = 13C-1,2,3,7,8-PeCDF
- PeCDF2 = 13C-2,3,4,7,8-PeCDF
- HxCDD1 = 13C-1,2,3,4,7,8-HxCDD

TestAmerica Irvine

Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-133309-1

HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
HxCDF2 = 13C-1,2,3,6,7,8-HxCDF
HxCDF4 = 13C-1,2,3,7,8,9-HxCDF
HxCDF3 = 13C-2,3,4,6,7,8-HxCDF
HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF
HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
OCDD = 13C-OCDD

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16

DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-140202-1

Prepared for

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

April 4, 2016

MEC^x, Inc.
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Houston, Texas 77054

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TABLE OF CONTENTS

I. INTRODUCTION 1

II. Sample Management 2

III. EPA METHOD 624—Volatile Organic Compounds (VOCs)..... 6

 III.1. Holding Times 6

 III.2. GC/MS Tuning and Calibration 6

 III.3. Quality Control Samples 6

 III.3.1. Method Blanks 6

 III.3.2. Laboratory Control Samples 6

 III.3.3. Surrogate Recovery..... 6

 III.3.4. Matrix Spike/Matrix Spike Duplicate 6

 III.4. Field QC Samples..... 6

 III.4.1. Trip Blanks..... 6

 III.4.2. Field Blanks and Equipment Blanks 7

 III.4.3. Field Duplicates..... 7

 III.5. Internal Standards Performance..... 7

 III.6. Compound Identification 7

 III.7. Compound Quantification and Reported Detection Limits 7

 III.8. Tentatively Identified Compounds 7

 III.9. System Performance..... 7

IV. VARIOUS METHODS — GENERAL MINERALS..... 7

 IV.1. Holding Times 7

 IV.2. Calibration..... 7

 IV.3. Quality Control Samples 8

 IV.3.1. Method Blanks 8

 IV.3.2. Laboratory Control Samples 8

 IV.3.3. Laboratory Duplicates..... 8



IV.3.4. Matrix Spike/Matrix Spike Duplicate 8

IV.3.5. Sample Result Verification 8

IV.4. Field QC Samples..... 8

IV.4.1. Field Blanks and Equipment Blanks 8

IV.4.2. Field Duplicates..... 8

TABLES

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



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-140202-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 2

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall009_20160307_Grab	440-140202-1	N/A	Water	3/7/2016 11:30:00 AM	E1664, E624, SAM348-357, SM9221F
TB-20160307	440-140202-3	N/A	Water	3/7/2016 11:30:00 AM	E624



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chain-of-custody (COC) provided by the laboratory for sample delivery group (SDG) 440-140202-1:

- The laboratory received the samples in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius ($^{\circ}\text{C}$) and greater than 0°C .
- The laboratory received the sample containers intact and properly preserved, as applicable. Unpreserved aliquots of the samples were provided for the analysis of volatile target compounds acrolein, acrylonitrile, and 2-chloroethyl vinyl ether.
- Field and laboratory personnel signed and dated the COC.
- According to the laboratory's sample receipt checklist, custody seals were intact.



TABLE 2 - DATA QUALIFIER REFERENCE

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



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	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.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) 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.
B	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.
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.
P	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.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



III. EPA METHOD 624—VOLATILE ORGANIC COMPOUNDS (VOCs)

Lynn Calvin of MEC^X reviewed the SDG on April 4, 2016

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

III.1. HOLDING TIMES

Analytical holding times were met. The preserved water samples were analyzed within 14 days of collection, and the unpreserved aliquots provided for analysis of acrolein, acrylonitrile and 2-chloroethyl vinyl ether were analyzed within seven days of collection.

III.2. GC/MS TUNING AND CALIBRATION

The BFB tunes met the method abundance criteria. The 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 ≥ 0.05 for all applicable target compounds. The initial calibration %RSDs were $\leq 35\%$, or r^2 values ≥ 0.990 . The second source ICV and all applicable CCV recoveries were within the method control limits.

III.3. QUALITY CONTROL SAMPLES

III.3.1. METHOD BLANKS

Target compounds were not detected in the method blanks.

III.3.2. LABORATORY CONTROL SAMPLES

Recoveries and RPDs were within the laboratory control limits.

III.3.3. SURROGATE RECOVERY

Recoveries were within the laboratory control limits.

III.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on the site sample from this SDG, Outfall009_20160307_Grab. Recoveries and RPDs were within the laboratory control limits.

III.4. FIELD QC SAMPLES

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

III.4.1. TRIP BLANKS

Sample TB-20160307 was identified as the trip blank associated with the site sample in this SDG. Methylene chloride was detected below the reporting limit in the trip blank at 1.6 $\mu\text{g/L}$; therefore, the result for methylene chloride in sample Outfall009_20160307_Grab was qualified as nondetected (U) at the reporting limit.



III.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. Review of the sample chromatograms, retention times, and spectra indicated no problems 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. Any result reported between the MDL and the reporting limit was qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. 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 problems with system performance.

IV. **VARIOUS METHODS — GENERAL MINERALS**

Michael Cherny of MEC^X reviewed the SDG on April 5, 2016

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, EPA Method 1664A, *Standard Method for the Examination of Water and Wastewater 9221B*, SAM348-357 (Human Bacteroides by Quantitative PCR) and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

IV.1. **HOLDING TIMES**

The analytical holding time for n-hexane extractable material (HEM; oil and grease), 28 days from collection, was met. The requested E. coli was prepared within 8 hours of collection, no qualifications were required.

IV.2. **CALIBRATION**

Calibration criteria were met. The analytical balance calibration was verified before and after the analytical batch, as per the method requirements, and biological controls were acceptable.



IV.3. QUALITY CONTROL SAMPLES

IV.3.1. METHOD BLANKS

The method blank had no detects for HEM (Oil and Grease). The method blank is not applicable to the biological method.

IV.3.2. LABORATORY CONTROL SAMPLES

Recoveries for HEM were within the method control limits of 78-114% and the RPD was $\leq 11\%$. The presumptive test was analyzed for the biological methods with the positive detects for the target bacteria.

IV.3.3. LABORATORY DUPLICATES

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

IV.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the sample in the SDG, as there was insufficient sample volume available and the COC did not request a MS/MSD. MEC^x evaluated method accuracy and precision based on LCS/LCSD results.

IV.3.5. 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. When the sample results were qualified and the reviewer was able to clearly determine bias, detected results were qualified as either "J+" or "J-"; otherwise, bias was not indicated in the qualification. Any detects between the method detection limit and the reporting limit were qualified as estimated, "J," and coded with "DNQ," in order to comply with the NPDES permit. Reported nondetects are valid to the MDL.

IV.4. FIELD QC SAMPLES

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

IV.4.1. FIELD BLANKS AND EQUIPMENT BLANKS

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

IV.4.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

Validated Sample Result Forms: 440-140202-1

Analysis Method E1664

Sample Name Outfall009_20160307_Grab Matrix Type: WM Result Type: TRG

Sample Date: 3/7/2016 11:30:00 AM Validation Level: 8

Lab Sample Name: 440-140202-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Oil and Grease	N	OILGREASE	1.5	5.2	1.5	mg/L	U	U	

Analysis Method E624

Sample Name Outfall009_20160307_Grab Matrix Type: WM Result Type: TRG

Sample Date: 3/7/2016 11:30:00 AM Validation Level: 8

Lab Sample Name: 440-140202-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,1,1-Trichloroethane	N	71-55-6	0.50	0.50	0.25	ug/L	U	U	
1,1,2,2-Tetrachloroethane	N	79-34-5	0.50	0.50	0.25	ug/L	U	U	
1,1,2-Trichloroethane	N	79-00-5	0.50	0.50	0.25	ug/L	U	U	
1,1-Dichloroethane	N	75-34-3	0.50	0.50	0.25	ug/L	U	U	
1,1-Dichloroethene	N	75-35-4	0.50	0.50	0.25	ug/L	U	U	
1,2-Dichlorobenzene	N	95-50-1	0.50	0.50	0.25	ug/L	U	U	
1,2-Dichloroethane	N	107-06-2	0.50	0.50	0.25	ug/L	U	U	
1,2-Dichloropropane	N	78-87-5	0.50	0.50	0.25	ug/L	U	U	
1,3-Dichlorobenzene	N	541-73-1	0.50	0.50	0.25	ug/L	U	U	
1,4-Dichlorobenzene	N	106-46-7	0.50	0.50	0.25	ug/L	U	U	
2-Chloroethyl vinyl ether	N	110-75-8	2.0	2.0	1.0	ug/L	U	U	
Acrolein	N	107-02-8	5.0	5.0	2.5	ug/L	U	U	
Acrylonitrile	N	107-13-1	2.0	2.0	1.0	ug/L	U	U	
Benzene	N	71-43-2	0.50	0.50	0.25	ug/L	U	U	
Bromodichloromethane	N	75-27-4	0.50	0.50	0.25	ug/L	U	U	
Bromoform	N	75-25-2	1.0	1.0	0.40	ug/L	U	U	
Bromomethane (Methyl Bromide)	N	74-83-9	0.50	0.50	0.25	ug/L	U	U	
Carbon tetrachloride	N	56-23-5	0.50	0.50	0.25	ug/L	U	U	
Chlorobenzene	N	108-90-7	0.50	0.50	0.25	ug/L	U	U	
Chloroethane	N	75-00-3	1.0	1.0	0.40	ug/L	U	U	
Chloroform (Trichloromethane)	N	67-66-3	0.50	0.50	0.25	ug/L	U	U	
Chloromethane (Methyl Chloride)	N	74-87-3	0.50	0.50	0.25	ug/L	U	U	
cis-1,2-Dichloroethene	N	156-59-2	0.50	0.50	0.25	ug/L	U	U	
cis-1,3-Dichloropropene	N	10061-01-5	0.50	0.50	0.25	ug/L	U	U	
Dibromochloromethane	N	124-48-1	0.50	0.50	0.25	ug/L	U	U	

Analysis Method E624

Ethylbenzene	N	100-41-4	0.50	0.50	0.25	ug/L	U	U
Methylene chloride	N	75-09-2	1.4	2.0	0.88	ug/L	J,DX	U T
Naphthalene	N	91-20-3	1.0	1.0	0.40	ug/L	U	U
Tetrachloroethene	N	127-18-4	0.50	0.50	0.25	ug/L	U	U
Toluene	N	108-88-3	0.50	0.50	0.25	ug/L	U	U
trans-1,2-Dichloroethene	N	156-60-5	0.50	0.50	0.25	ug/L	U	U
trans-1,3-Dichloropropene	N	10061-02-6	0.50	0.50	0.25	ug/L	U	U
Trichloroethene	N	79-01-6	0.50	0.50	0.25	ug/L	U	U
Trichlorofluoromethane (CFC-11)	N	75-69-4	0.50	0.50	0.25	ug/L	U	U
Vinyl chloride	N	75-01-4	0.50	0.50	0.25	ug/L	U	U
Xylene (total)	N	1330-20-7	1.0	1.0	0.50	ug/L	U	U

Sample Name TB-20160307 **Matrix Type:** WMQ **Result Type:** TRG

Sample Date: 3/7/2016 11:30:00 AM **Validation Level:** 8

Lab Sample Name: 440-140202-3

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,1,1-Trichloroethane	N	71-55-6	0.50	0.50	0.25	ug/L	U	U	
1,1,2,2-Tetrachloroethane	N	79-34-5	0.50	0.50	0.25	ug/L	U	U	
1,1,2-Trichloroethane	N	79-00-5	0.50	0.50	0.25	ug/L	U	U	
1,1-Dichloroethane	N	75-34-3	0.50	0.50	0.25	ug/L	U	U	
1,1-Dichloroethene	N	75-35-4	0.50	0.50	0.25	ug/L	U	U	
1,2-Dichlorobenzene	N	95-50-1	0.50	0.50	0.25	ug/L	U	U	
1,2-Dichloroethane	N	107-06-2	0.50	0.50	0.25	ug/L	U	U	
1,2-Dichloropropane	N	78-87-5	0.50	0.50	0.25	ug/L	U	U	
1,3-Dichlorobenzene	N	541-73-1	0.50	0.50	0.25	ug/L	U	U	
1,4-Dichlorobenzene	N	106-46-7	0.50	0.50	0.25	ug/L	U	U	
2-Chloroethyl vinyl ether	N	110-75-8	2.0	2.0	1.0	ug/L	U	U	
Acrolein	N	107-02-8	5.0	5.0	2.5	ug/L	U	U	
Acrylonitrile	N	107-13-1	2.0	2.0	1.0	ug/L	U	U	
Benzene	N	71-43-2	0.50	0.50	0.25	ug/L	U	U	
Bromodichloromethane	N	75-27-4	0.50	0.50	0.25	ug/L	U	U	
Bromoform	N	75-25-2	1.0	1.0	0.40	ug/L	U	U	
Bromomethane (Methyl Bromide)	N	74-83-9	0.50	0.50	0.25	ug/L	U	U	
Carbon tetrachloride	N	56-23-5	0.50	0.50	0.25	ug/L	U	U	
Chlorobenzene	N	108-90-7	0.50	0.50	0.25	ug/L	U	U	
Chloroethane	N	75-00-3	1.0	1.0	0.40	ug/L	U	U	
Chloroform (Trichloromethane)	N	67-66-3	0.50	0.50	0.25	ug/L	U	U	
Chloromethane (Methyl Chloride)	N	74-87-3	0.50	0.50	0.25	ug/L	U	U	
cis-1,2-Dichloroethene	N	156-59-2	0.50	0.50	0.25	ug/L	U	U	
cis-1,3-Dichloropropene	N	10061-01-5	0.50	0.50	0.25	ug/L	U	U	
Dibromochloromethane	N	124-48-1	0.50	0.50	0.25	ug/L	U	U	
Ethylbenzene	N	100-41-4	0.50	0.50	0.25	ug/L	U	U	

Analysis Method E624

Methylene chloride	N	75-09-2	1.6	2.0	0.88	ug/L	J,DX	J	DNQ
Naphthalene	N	91-20-3	1.0	1.0	0.40	ug/L	U	U	
Tetrachloroethene	N	127-18-4	0.50	0.50	0.25	ug/L	U	U	
Toluene	N	108-88-3	0.50	0.50	0.25	ug/L	U	U	
trans-1,2-Dichloroethene	N	156-60-5	0.50	0.50	0.25	ug/L	U	U	
trans-1,3-Dichloropropene	N	10061-02-6	0.50	0.50	0.25	ug/L	U	U	
Trichloroethene	N	79-01-6	0.50	0.50	0.25	ug/L	U	U	
Trichlorofluoromethane (CFC-11)	N	75-69-4	0.50	0.50	0.25	ug/L	U	U	
Vinyl chloride	N	75-01-4	0.50	0.50	0.25	ug/L	U	U	
Xylene (total)	N	1330-20-7	1.0	1.0	0.50	ug/L	U	U	

Analysis Method SAM348-357

Sample Name: Outfall009_20160307_Grab **Matrix Type:** WM **Result Type:** TRG
Sample Date: 3/7/2016 11:30:00 AM **Validation Level:** 8
Lab Sample Name: 0340-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Human Bacteroides	N	HumanBact						U	

Analysis Method SM9221F

Sample Name: Outfall009_20160307_Grab **Matrix Type:** WM **Result Type:** TRG
Sample Date: 3/7/2016 11:30:00 AM **Validation Level:** 8
Lab Sample Name: 440-140202-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Escherichia coli	N	ECOLI	270	1.8	1.8	mpn/10			

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-140202-1

Client Project/Site: Outfall 009 Grab

For:

Haley & Aldrich, Inc.

5333 Mission Center Road

Suite 300

San Diego, California 92108

Attn: Nancy Gardiner



Authorized for release by:

3/29/2016 9:38:55 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

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

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

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

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



Urvashi Patel
Manager of Project Management
3/29/2016 9:38:55 PM



Table of Contents

Cover Page	1
Table of Contents	3
Sample Summary	4
Case Narrative	5
Client Sample Results	6
Method Summary	9
Lab Chronicle	10
QC Sample Results	11
QC Association Summary	18
Definitions/Glossary	19
Certification Summary	20
Subcontract Data	21
Chain of Custody	22
Receipt Checklists	23

Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Grab

TestAmerica Job ID: 440-140202-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-140202-1	Outfall009_20160307_Grab	Water	03/07/16 11:30	03/07/16 16:50
440-140202-3	TB-20160307	Water	03/07/16 11:30	03/07/16 16:50

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Grab

TestAmerica Job ID: 440-140202-1

Job ID: 440-140202-1

Laboratory: TestAmerica Irvine

Narrative

**Job Narrative
440-140202-1**

Comments

No additional comments.

Receipt

The samples were received on 3/7/2016 4:50 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 8 coolers at receipt time were 1.2° C, 1.3° C, 1.4° C, 1.7° C, 2.0° C, 2.6° C, 2.7° C and 3.0° C.

GC/MS VOA

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

Biology

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

Subcontract non-Sister

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

Organic Prep

Method(s) 1664A: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-316210 and analytical batch 440-316321. The Laboratory control sample (LCS) was performed in duplicate to provide precision data from this batch.

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: Outfall 009 Grab

TestAmerica Job ID: 440-140202-1

Client Sample ID: Outfall009_20160307_Grab

Lab Sample ID: 440-140202-1

Date Collected: 03/07/16 11:30

Matrix: Water

Date Received: 03/07/16 16:50

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		0.50	0.25	ug/L			03/11/16 12:11	1
2-Chloroethyl vinyl ether	ND		2.0	1.0	ug/L			03/10/16 13:32	1
1,1,2,2-Tetrachloroethane	ND		0.50	0.25	ug/L			03/11/16 12:11	1
Acrolein	ND		5.0	2.5	ug/L			03/10/16 13:32	1
1,1,2-Trichloroethane	ND		0.50	0.25	ug/L			03/11/16 12:11	1
Acrylonitrile	ND		2.0	1.0	ug/L			03/10/16 13:32	1
1,1-Dichloroethane	ND		0.50	0.25	ug/L			03/11/16 12:11	1
1,1-Dichloroethene	ND		0.50	0.25	ug/L			03/11/16 12:11	1
1,2-Dichlorobenzene	ND		0.50	0.25	ug/L			03/11/16 12:11	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			03/11/16 12:11	1
1,2-Dichloropropane	ND		0.50	0.25	ug/L			03/11/16 12:11	1
1,3-Dichlorobenzene	ND		0.50	0.25	ug/L			03/11/16 12:11	1
1,4-Dichlorobenzene	ND		0.50	0.25	ug/L			03/11/16 12:11	1
Benzene	ND		0.50	0.25	ug/L			03/11/16 12:11	1
Bromoform	ND		1.0	0.40	ug/L			03/11/16 12:11	1
Bromomethane	ND		0.50	0.25	ug/L			03/11/16 12:11	1
Carbon tetrachloride	ND		0.50	0.25	ug/L			03/11/16 12:11	1
Chlorobenzene	ND		0.50	0.25	ug/L			03/11/16 12:11	1
Dibromochloromethane	ND		0.50	0.25	ug/L			03/11/16 12:11	1
Chloroethane	ND		1.0	0.40	ug/L			03/11/16 12:11	1
Chloroform	ND		0.50	0.25	ug/L			03/11/16 12:11	1
Chloromethane	ND		0.50	0.25	ug/L			03/11/16 12:11	1
cis-1,3-Dichloropropene	ND		0.50	0.25	ug/L			03/11/16 12:11	1
Bromodichloromethane	ND		0.50	0.25	ug/L			03/11/16 12:11	1
Ethylbenzene	ND		0.50	0.25	ug/L			03/11/16 12:11	1
Methylene Chloride	1.4	J,DX	2.0	0.88	ug/L			03/11/16 12:11	1
Tetrachloroethene	ND		0.50	0.25	ug/L			03/11/16 12:11	1
Toluene	ND		0.50	0.25	ug/L			03/11/16 12:11	1
trans-1,2-Dichloroethene	ND		0.50	0.25	ug/L			03/11/16 12:11	1
trans-1,3-Dichloropropene	ND		0.50	0.25	ug/L			03/11/16 12:11	1
Trichlorofluoromethane	ND		0.50	0.25	ug/L			03/11/16 12:11	1
Vinyl chloride	ND		0.50	0.25	ug/L			03/11/16 12:11	1
Trichloroethene	ND		0.50	0.25	ug/L			03/11/16 12:11	1
cis-1,2-Dichloroethene	ND		0.50	0.25	ug/L			03/11/16 12:11	1
Naphthalene	ND		1.0	0.40	ug/L			03/11/16 12:11	1
Xylenes, Total	ND		1.0	0.50	ug/L			03/11/16 12:11	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	102		80 - 128		03/10/16 13:32	1
Dibromofluoromethane (Surr)	101		76 - 132		03/10/16 13:32	1
4-Bromofluorobenzene (Surr)	92		80 - 120		03/10/16 13:32	1
4-Bromofluorobenzene (Surr)	91		80 - 120		03/11/16 12:11	1
Dibromofluoromethane (Surr)	104		76 - 132		03/11/16 12:11	1
Toluene-d8 (Surr)	102		80 - 128		03/11/16 12:11	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM	ND		5.2	1.5	mg/L		03/09/16 07:48	03/09/16 13:43	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Grab

TestAmerica Job ID: 440-140202-1

Client Sample ID: Outfall009_20160307_Grab

Lab Sample ID: 440-140202-1

Date Collected: 03/07/16 11:30

Matrix: Water

Date Received: 03/07/16 16:50

Method: SM 9221F - E.Coli (Multiple-Tube Fermentation; EC-MUG)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Escherichia coli	270		1.8	1.8	MPN/100mL			03/07/16 17:53	1

Client Sample ID: TB-20160307

Lab Sample ID: 440-140202-3

Date Collected: 03/07/16 11:30

Matrix: Water

Date Received: 03/07/16 16:50

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		0.50	0.25	ug/L			03/11/16 12:40	1
2-Chloroethyl vinyl ether	ND		2.0	1.0	ug/L			03/10/16 14:01	1
1,1,2,2-Tetrachloroethane	ND		0.50	0.25	ug/L			03/11/16 12:40	1
Acrolein	ND		5.0	2.5	ug/L			03/10/16 14:01	1
1,1,2-Trichloroethane	ND		0.50	0.25	ug/L			03/11/16 12:40	1
Acrylonitrile	ND		2.0	1.0	ug/L			03/10/16 14:01	1
1,1-Dichloroethane	ND		0.50	0.25	ug/L			03/11/16 12:40	1
1,1-Dichloroethene	ND		0.50	0.25	ug/L			03/11/16 12:40	1
1,2-Dichlorobenzene	ND		0.50	0.25	ug/L			03/11/16 12:40	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			03/11/16 12:40	1
1,2-Dichloropropane	ND		0.50	0.25	ug/L			03/11/16 12:40	1
1,3-Dichlorobenzene	ND		0.50	0.25	ug/L			03/11/16 12:40	1
1,4-Dichlorobenzene	ND		0.50	0.25	ug/L			03/11/16 12:40	1
Benzene	ND		0.50	0.25	ug/L			03/11/16 12:40	1
Bromoform	ND		1.0	0.40	ug/L			03/11/16 12:40	1
Bromomethane	ND		0.50	0.25	ug/L			03/11/16 12:40	1
Carbon tetrachloride	ND		0.50	0.25	ug/L			03/11/16 12:40	1
Chlorobenzene	ND		0.50	0.25	ug/L			03/11/16 12:40	1
Dibromochloromethane	ND		0.50	0.25	ug/L			03/11/16 12:40	1
Chloroethane	ND		1.0	0.40	ug/L			03/11/16 12:40	1
Chloroform	ND		0.50	0.25	ug/L			03/11/16 12:40	1
Chloromethane	ND		0.50	0.25	ug/L			03/11/16 12:40	1
cis-1,3-Dichloropropene	ND		0.50	0.25	ug/L			03/11/16 12:40	1
Bromodichloromethane	ND		0.50	0.25	ug/L			03/11/16 12:40	1
Ethylbenzene	ND		0.50	0.25	ug/L			03/11/16 12:40	1
Methylene Chloride	1.6	J,DX	2.0	0.88	ug/L			03/11/16 12:40	1
Tetrachloroethene	ND		0.50	0.25	ug/L			03/11/16 12:40	1
Toluene	ND		0.50	0.25	ug/L			03/11/16 12:40	1
trans-1,2-Dichloroethene	ND		0.50	0.25	ug/L			03/11/16 12:40	1
trans-1,3-Dichloropropene	ND		0.50	0.25	ug/L			03/11/16 12:40	1
Trichlorofluoromethane	ND		0.50	0.25	ug/L			03/11/16 12:40	1
Vinyl chloride	ND		0.50	0.25	ug/L			03/11/16 12:40	1
Trichloroethene	ND		0.50	0.25	ug/L			03/11/16 12:40	1
cis-1,2-Dichloroethene	ND		0.50	0.25	ug/L			03/11/16 12:40	1
Naphthalene	ND		1.0	0.40	ug/L			03/11/16 12:40	1
Xylenes, Total	ND		1.0	0.50	ug/L			03/11/16 12:40	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	103		80 - 128		03/10/16 14:01	1
Dibromofluoromethane (Surr)	101		76 - 132		03/10/16 14:01	1
4-Bromofluorobenzene (Surr)	92		80 - 120		03/10/16 14:01	1
4-Bromofluorobenzene (Surr)	91		80 - 120		03/11/16 12:40	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Grab

TestAmerica Job ID: 440-140202-1

Client Sample ID: TB-20160307

Date Collected: 03/07/16 11:30

Date Received: 03/07/16 16:50

Lab Sample ID: 440-140202-3

Matrix: Water

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

<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Dibromofluoromethane (Surr)</i>	103		76 - 132		03/11/16 12:40	1
<i>Toluene-d8 (Surr)</i>	101		80 - 128		03/11/16 12:40	1

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Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Grab

TestAmerica Job ID: 440-140202-1

Method	Method Description	Protocol	Laboratory
624	Volatile Organic Compounds (GC/MS)	40CFR136A	TAL IRV
1664A	HEM and SGT-HEM	1664A	TAL IRV
SM 9221F	E.Coli (Multiple-Tube Fermentation; EC-MUG)	SM	TAL IRV
Human Bacteriodales	General Sub Contract Method	NONE	EMSL

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.

NONE = NONE

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

Laboratory References:

EMSL = EMSL Analytical, Inc., 200 Rt 130 North, Cinnaminson, NJ 08077

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

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Grab

TestAmerica Job ID: 440-140202-1

Client Sample ID: Outfall009_20160307_Grab

Lab Sample ID: 440-140202-1

Date Collected: 03/07/16 11:30

Matrix: Water

Date Received: 03/07/16 16:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	10 mL	10 mL	316465	03/10/16 13:32	AA	TAL IRV
Total/NA	Analysis	624		1	10 mL	10 mL	316779	03/11/16 12:11	HR	TAL IRV
Total/NA	Prep	1664A			965 mL	1000 mL	316210	03/09/16 07:48	L1A	TAL IRV
Total/NA	Analysis	1664A		1	965 mL	1000 mL	316321	03/09/16 13:43	L1A	TAL IRV
Total/NA	Analysis	SM 9221F		1	100 mL	100 mL	316959		KRW	TAL IRV
								(Start) 03/07/16 17:53		
								(End) 03/10/16 15:24		

Client Sample ID: TB-20160307

Lab Sample ID: 440-140202-3

Date Collected: 03/07/16 11:30

Matrix: Water

Date Received: 03/07/16 16:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	10 mL	10 mL	316465	03/10/16 14:01	AA	TAL IRV
Total/NA	Analysis	624		1	10 mL	10 mL	316779	03/11/16 12:40	HR	TAL IRV

Laboratory References:

EMSL = EMSL Analytical, Inc., 200 Rt 130 North, Cinnaminson, NJ 08077

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

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Grab

TestAmerica Job ID: 440-140202-1

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

Lab Sample ID: MB 440-316465/4
Matrix: Water
Analysis Batch: 316465

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Chloroethyl vinyl ether	ND		2.0	1.0	ug/L			03/10/16 08:04	1
Acrolein	ND		5.0	2.5	ug/L			03/10/16 08:04	1
Acrylonitrile	ND		2.0	1.0	ug/L			03/10/16 08:04	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	103		80 - 128		03/10/16 08:04	1
Dibromofluoromethane (Surr)	101		76 - 132		03/10/16 08:04	1
4-Bromofluorobenzene (Surr)	92		80 - 120		03/10/16 08:04	1

Lab Sample ID: LCS 440-316465/5
Matrix: Water
Analysis Batch: 316465

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2-Chloroethyl vinyl ether	25.0	22.3		ug/L		89	37 - 150
Acrolein	25.0	29.1		ug/L		116	10 - 145
Acrylonitrile	250	186		ug/L		74	48 - 140

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Toluene-d8 (Surr)	100		80 - 128
Dibromofluoromethane (Surr)	105		76 - 132
4-Bromofluorobenzene (Surr)	92		80 - 120

Lab Sample ID: LCSD 440-316465/12
Matrix: Water
Analysis Batch: 316465

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2-Chloroethyl vinyl ether	25.0	22.2		ug/L		89	37 - 150	0	25
Acrolein	25.0	30.6		ug/L		122	10 - 145	5	30
Acrylonitrile	250	193		ug/L		77	48 - 140	4	30

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
Toluene-d8 (Surr)	102		80 - 128
Dibromofluoromethane (Surr)	101		76 - 132
4-Bromofluorobenzene (Surr)	92		80 - 120

Lab Sample ID: 440-140202-1 MS
Matrix: Water
Analysis Batch: 316465

Client Sample ID: Outfall009_20160307_Grab
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
2-Chloroethyl vinyl ether	ND		25.0	21.3		ug/L		85	10 - 140
Acrolein	ND		25.0	26.7		ug/L		107	10 - 147
Acrylonitrile	ND		250	173		ug/L		69	38 - 144

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Outfall 009 Grab

TestAmerica Job ID: 440-140202-1

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

Lab Sample ID: 440-140202-1 MS
Matrix: Water
Analysis Batch: 316465

Client Sample ID: Outfall009_20160307_Grab
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Toluene-d8 (Surr)	101		80 - 128
Dibromofluoromethane (Surr)	101		76 - 132
4-Bromofluorobenzene (Surr)	90		80 - 120

Lab Sample ID: 440-140202-1 MSD
Matrix: Water
Analysis Batch: 316465

Client Sample ID: Outfall009_20160307_Grab
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2-Chloroethyl vinyl ether	ND		25.0	21.0		ug/L		84	10 - 140	1	25
Acrolein	ND		25.0	24.7		ug/L		99	10 - 147	8	40
Acrylonitrile	ND		250	170		ug/L		68	38 - 144	2	40

Surrogate	MSD %Recovery	MSD Qualifier	Limits
Toluene-d8 (Surr)	100		80 - 128
Dibromofluoromethane (Surr)	103		76 - 132
4-Bromofluorobenzene (Surr)	90		80 - 120

Lab Sample ID: MB 440-316779/4
Matrix: Water
Analysis Batch: 316779

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		0.50	0.25	ug/L			03/11/16 08:37	1
1,1,2,2-Tetrachloroethane	ND		0.50	0.25	ug/L			03/11/16 08:37	1
1,1,2-Trichloroethane	ND		0.50	0.25	ug/L			03/11/16 08:37	1
1,1-Dichloroethane	ND		0.50	0.25	ug/L			03/11/16 08:37	1
1,1-Dichloroethene	ND		0.50	0.25	ug/L			03/11/16 08:37	1
1,2-Dichlorobenzene	ND		0.50	0.25	ug/L			03/11/16 08:37	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			03/11/16 08:37	1
1,2-Dichloropropane	ND		0.50	0.25	ug/L			03/11/16 08:37	1
1,3-Dichlorobenzene	ND		0.50	0.25	ug/L			03/11/16 08:37	1
1,4-Dichlorobenzene	ND		0.50	0.25	ug/L			03/11/16 08:37	1
Benzene	ND		0.50	0.25	ug/L			03/11/16 08:37	1
Bromoform	ND		1.0	0.40	ug/L			03/11/16 08:37	1
Bromomethane	ND		0.50	0.25	ug/L			03/11/16 08:37	1
Carbon tetrachloride	ND		0.50	0.25	ug/L			03/11/16 08:37	1
Chlorobenzene	ND		0.50	0.25	ug/L			03/11/16 08:37	1
Dibromochloromethane	ND		0.50	0.25	ug/L			03/11/16 08:37	1
Chloroethane	ND		1.0	0.40	ug/L			03/11/16 08:37	1
Chloroform	ND		0.50	0.25	ug/L			03/11/16 08:37	1
Chloromethane	ND		0.50	0.25	ug/L			03/11/16 08:37	1
cis-1,3-Dichloropropane	ND		0.50	0.25	ug/L			03/11/16 08:37	1
Bromodichloromethane	ND		0.50	0.25	ug/L			03/11/16 08:37	1
Ethylbenzene	ND		0.50	0.25	ug/L			03/11/16 08:37	1
Methylene Chloride	ND		2.0	0.88	ug/L			03/11/16 08:37	1
Tetrachloroethene	ND		0.50	0.25	ug/L			03/11/16 08:37	1
Toluene	ND		0.50	0.25	ug/L			03/11/16 08:37	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Grab

TestAmerica Job ID: 440-140202-1

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

Lab Sample ID: MB 440-316779/4
Matrix: Water
Analysis Batch: 316779

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

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
trans-1,2-Dichloroethene	ND		0.50	0.25	ug/L			03/11/16 08:37	1
trans-1,3-Dichloropropene	ND		0.50	0.25	ug/L			03/11/16 08:37	1
Trichlorofluoromethane	ND		0.50	0.25	ug/L			03/11/16 08:37	1
Vinyl chloride	ND		0.50	0.25	ug/L			03/11/16 08:37	1
Trichloroethene	ND		0.50	0.25	ug/L			03/11/16 08:37	1
cis-1,2-Dichloroethene	ND		0.50	0.25	ug/L			03/11/16 08:37	1
Naphthalene	ND		1.0	0.40	ug/L			03/11/16 08:37	1
Xylenes, Total	ND		1.0	0.50	ug/L			03/11/16 08:37	1

Surrogate	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
4-Bromofluorobenzene (Surr)	91		80 - 120		03/11/16 08:37	1
Dibromofluoromethane (Surr)	100		76 - 132		03/11/16 08:37	1
Toluene-d8 (Surr)	104		80 - 128		03/11/16 08:37	1

Lab Sample ID: LCS 440-316779/5
Matrix: Water
Analysis Batch: 316779

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec.
							Limits
1,1,1-Trichloroethane	25.0	23.3		ug/L		93	70 - 130
1,1,1,2-Tetrachloroethane	25.0	23.9		ug/L		95	63 - 130
1,1,2-Trichloroethane	25.0	26.1		ug/L		104	70 - 130
1,1-Dichloroethane	25.0	22.0		ug/L		88	64 - 130
1,1-Dichloroethene	25.0	28.3		ug/L		113	70 - 130
1,2-Dichlorobenzene	25.0	26.6		ug/L		106	70 - 130
1,2-Dichloroethane	25.0	19.6		ug/L		79	57 - 138
1,2-Dichloropropane	25.0	23.6		ug/L		94	67 - 130
1,3-Dichlorobenzene	25.0	26.2		ug/L		105	70 - 130
1,4-Dichlorobenzene	25.0	26.3		ug/L		105	70 - 130
Benzene	25.0	25.7		ug/L		103	68 - 130
Bromoform	25.0	27.4		ug/L		110	60 - 148
Bromomethane	25.0	28.5		ug/L		114	64 - 139
Carbon tetrachloride	25.0	24.0		ug/L		96	60 - 150
Chlorobenzene	25.0	26.2		ug/L		105	70 - 130
Dibromochloromethane	25.0	25.6		ug/L		103	69 - 145
Chloroethane	25.0	25.4		ug/L		101	64 - 135
Chloroform	25.0	24.0		ug/L		96	70 - 130
Chloromethane	25.0	23.3		ug/L		93	47 - 140
cis-1,3-Dichloropropene	25.0	26.1		ug/L		104	70 - 133
Bromodichloromethane	25.0	23.1		ug/L		92	70 - 132
Ethylbenzene	25.0	25.1		ug/L		100	70 - 130
Methylene Chloride	25.0	26.5		ug/L		106	52 - 130
Tetrachloroethene	25.0	28.7		ug/L		115	70 - 130
Toluene	25.0	26.3		ug/L		105	70 - 130
trans-1,2-Dichloroethene	25.0	29.7		ug/L		119	70 - 130
trans-1,3-Dichloropropene	25.0	24.1		ug/L		96	70 - 132
Trichlorofluoromethane	25.0	22.7		ug/L		91	60 - 150
Vinyl chloride	25.0	22.3		ug/L		89	59 - 133

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Grab

TestAmerica Job ID: 440-140202-1

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

Lab Sample ID: LCS 440-316779/5
Matrix: Water
Analysis Batch: 316779

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Trichloroethene	25.0	28.1		ug/L		112	70 - 130
cis-1,2-Dichloroethene	25.0	28.8		ug/L		115	70 - 133
Naphthalene	25.0	26.5		ug/L		106	60 - 140
Xylenes, Total	50.0	55.1		ug/L		110	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	90		80 - 120
Dibromofluoromethane (Surr)	101		76 - 132
Toluene-d8 (Surr)	102		80 - 128

Lab Sample ID: LCSD 440-316779/6
Matrix: Water
Analysis Batch: 316779

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1,1-Trichloroethane	25.0	21.3		ug/L		85	70 - 130	9	20
1,1,2,2-Tetrachloroethane	25.0	22.7		ug/L		91	63 - 130	5	25
1,1,2-Trichloroethane	25.0	24.5		ug/L		98	70 - 130	6	20
1,1-Dichloroethane	25.0	21.0		ug/L		84	64 - 130	5	20
1,1-Dichloroethene	25.0	25.8		ug/L		103	70 - 130	9	20
1,2-Dichlorobenzene	25.0	25.8		ug/L		103	70 - 130	3	20
1,2-Dichloroethane	25.0	18.7		ug/L		75	57 - 138	5	20
1,2-Dichloropropane	25.0	23.2		ug/L		93	67 - 130	2	20
1,3-Dichlorobenzene	25.0	25.6		ug/L		102	70 - 130	2	20
1,4-Dichlorobenzene	25.0	25.7		ug/L		103	70 - 130	2	20
Benzene	25.0	24.6		ug/L		98	68 - 130	5	20
Bromoform	25.0	25.6		ug/L		102	60 - 148	7	25
Bromomethane	25.0	26.7		ug/L		107	64 - 139	7	20
Carbon tetrachloride	25.0	22.0		ug/L		88	60 - 150	9	25
Chlorobenzene	25.0	24.4		ug/L		97	70 - 130	7	20
Dibromochloromethane	25.0	23.9		ug/L		95	69 - 145	7	20
Chloroethane	25.0	23.2		ug/L		93	64 - 135	9	20
Chloroform	25.0	23.2		ug/L		93	70 - 130	4	20
Chloromethane	25.0	20.4		ug/L		82	47 - 140	13	25
cis-1,3-Dichloropropene	25.0	24.6		ug/L		99	70 - 133	6	25
Bromodichloromethane	25.0	23.0		ug/L		92	70 - 132	0	20
Ethylbenzene	25.0	22.6		ug/L		90	70 - 130	10	20
Methylene Chloride	25.0	25.8		ug/L		103	52 - 130	3	20
Tetrachloroethene	25.0	25.5		ug/L		102	70 - 130	12	20
Toluene	25.0	23.9		ug/L		95	70 - 130	10	20
trans-1,2-Dichloroethene	25.0	28.0		ug/L		112	70 - 130	6	20
trans-1,3-Dichloropropene	25.0	23.1		ug/L		92	70 - 132	4	20
Trichlorofluoromethane	25.0	20.3		ug/L		81	60 - 150	11	20
Vinyl chloride	25.0	20.0		ug/L		80	59 - 133	11	30
Trichloroethene	25.0	26.2		ug/L		105	70 - 130	7	20
cis-1,2-Dichloroethene	25.0	27.7		ug/L		111	70 - 133	4	20
Naphthalene	25.0	24.9		ug/L		100	60 - 140	6	25
Xylenes, Total	50.0	50.2		ug/L		100	70 - 130	9	20

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Grab

TestAmerica Job ID: 440-140202-1

Surrogate	LCSD		Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	91		80 - 120
Dibromofluoromethane (Surr)	103		76 - 132
Toluene-d8 (Surr)	98		80 - 128

Lab Sample ID: 550-59963-F-1 MS
Matrix: Water
Analysis Batch: 316779

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

Analyte	Sample	Sample	Spike	MS		Unit	D	%Rec	%Rec.	Limits
	Result	Qualifier		Result	Qualifier					
1,1,1-Trichloroethane	ND		25.0	22.6		ug/L		90	70 - 130	
1,1,2,2-Tetrachloroethane	ND		25.0	23.3		ug/L		93	63 - 130	
1,1,2-Trichloroethane	ND		25.0	24.9		ug/L		100	70 - 130	
1,1-Dichloroethane	ND		25.0	21.6		ug/L		86	65 - 130	
1,1-Dichloroethene	ND		25.0	27.6		ug/L		110	70 - 130	
1,2-Dichlorobenzene	ND		25.0	25.9		ug/L		104	70 - 130	
1,2-Dichloroethane	ND		25.0	18.5		ug/L		74	56 - 146	
1,2-Dichloropropane	ND		25.0	22.8		ug/L		91	69 - 130	
1,3-Dichlorobenzene	ND		25.0	25.8		ug/L		103	70 - 130	
1,4-Dichlorobenzene	ND		25.0	25.8		ug/L		103	70 - 130	
Benzene	ND		25.0	25.1		ug/L		100	66 - 130	
Bromoform	1.1		25.0	26.9		ug/L		104	59 - 150	
Bromomethane	ND		25.0	27.9		ug/L		111	62 - 131	
Carbon tetrachloride	ND		25.0	23.3		ug/L		93	60 - 150	
Chlorobenzene	ND		25.0	25.3		ug/L		101	70 - 130	
Dibromochloromethane	2.7		25.0	27.9		ug/L		101	70 - 148	
Chloroethane	ND		25.0	24.1		ug/L		96	68 - 130	
Chloroform	1.0		25.0	24.3		ug/L		93	70 - 130	
Chloromethane	ND		25.0	23.1		ug/L		92	39 - 144	
cis-1,3-Dichloropropene	ND		25.0	25.3		ug/L		101	70 - 133	
Bromodichloromethane	2.1		25.0	24.8		ug/L		91	70 - 138	
Ethylbenzene	ND		25.0	24.4		ug/L		98	70 - 130	
Methylene Chloride	1.3	J,DX	25.0	26.4		ug/L		101	52 - 130	
Tetrachloroethene	ND		25.0	28.1		ug/L		112	70 - 137	
Toluene	ND		25.0	25.7		ug/L		103	70 - 130	
trans-1,2-Dichloroethene	ND		25.0	29.2		ug/L		117	70 - 130	
trans-1,3-Dichloropropene	ND		25.0	23.3		ug/L		93	70 - 138	
Trichlorofluoromethane	ND		25.0	22.4		ug/L		89	60 - 150	
Vinyl chloride	ND		25.0	22.7		ug/L		91	50 - 137	
Trichloroethene	ND		25.0	27.3		ug/L		109	70 - 130	
cis-1,2-Dichloroethene	ND		25.0	28.1		ug/L		112	70 - 130	
Naphthalene	ND		25.0	25.2		ug/L		101	60 - 140	
Xylenes, Total	ND		50.0	53.2		ug/L		106	70 - 133	

Surrogate	MS		Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	93		80 - 120
Dibromofluoromethane (Surr)	101		76 - 132
Toluene-d8 (Surr)	103		80 - 128

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Grab

TestAmerica Job ID: 440-140202-1

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

Lab Sample ID: 550-59963-F-1 MSD

Matrix: Water

Analysis Batch: 316779

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	RPD	RPD
	Result	Qualifier	Added	Result	Qualifier				Limits		
1,1,1-Trichloroethane	ND		25.0	23.4		ug/L		94	70 - 130	4	20
1,1,2,2-Tetrachloroethane	ND		25.0	24.7		ug/L		99	63 - 130	6	30
1,1,2-Trichloroethane	ND		25.0	25.9		ug/L		104	70 - 130	4	25
1,1-Dichloroethane	ND		25.0	22.0		ug/L		88	65 - 130	2	20
1,1-Dichloroethene	ND		25.0	28.0		ug/L		112	70 - 130	1	20
1,2-Dichlorobenzene	ND		25.0	26.7		ug/L		107	70 - 130	3	20
1,2-Dichloroethane	ND		25.0	19.2		ug/L		77	56 - 146	4	20
1,2-Dichloropropane	ND		25.0	23.2		ug/L		93	69 - 130	2	20
1,3-Dichlorobenzene	ND		25.0	26.5		ug/L		106	70 - 130	2	20
1,4-Dichlorobenzene	ND		25.0	26.8		ug/L		107	70 - 130	4	20
Benzene	ND		25.0	25.6		ug/L		102	66 - 130	2	20
Bromoform	1.1		25.0	28.9		ug/L		111	59 - 150	7	25
Bromomethane	ND		25.0	28.6		ug/L		115	62 - 131	3	25
Carbon tetrachloride	ND		25.0	24.1		ug/L		96	60 - 150	4	25
Chlorobenzene	ND		25.0	25.9		ug/L		103	70 - 130	2	20
Dibromochloromethane	2.7		25.0	28.7		ug/L		104	70 - 148	3	25
Chloroethane	ND		25.0	24.9		ug/L		100	68 - 130	3	25
Chloroform	1.0		25.0	24.9		ug/L		95	70 - 130	2	20
Chloromethane	ND		25.0	23.3		ug/L		93	39 - 144	1	25
cis-1,3-Dichloropropene	ND		25.0	26.0		ug/L		104	70 - 133	3	20
Bromodichloromethane	2.1		25.0	25.7		ug/L		94	70 - 138	3	20
Ethylbenzene	ND		25.0	24.6		ug/L		99	70 - 130	1	20
Methylene Chloride	1.3	J,DX	25.0	27.2		ug/L		104	52 - 130	3	20
Tetrachloroethene	ND		25.0	28.4		ug/L		114	70 - 137	1	20
Toluene	ND		25.0	26.1		ug/L		105	70 - 130	2	20
trans-1,2-Dichloroethene	ND		25.0	29.8		ug/L		119	70 - 130	2	20
trans-1,3-Dichloropropene	ND		25.0	24.3		ug/L		97	70 - 138	4	25
Trichlorofluoromethane	ND		25.0	22.8		ug/L		91	60 - 150	2	25
Vinyl chloride	ND		25.0	22.6		ug/L		91	50 - 137	0	30
Trichloroethene	ND		25.0	28.0		ug/L		112	70 - 130	3	20
cis-1,2-Dichloroethene	ND		25.0	28.6		ug/L		114	70 - 130	2	20
Naphthalene	ND		25.0	26.5		ug/L		106	60 - 140	5	30
Xylenes, Total	ND		50.0	54.6		ug/L		109	70 - 133	3	20

Surrogate	MSD %Recovery	MSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	93		80 - 120
Dibromofluoromethane (Surr)	100		76 - 132
Toluene-d8 (Surr)	102		80 - 128

Method: 1664A - HEM and SGT-HEM

Lab Sample ID: MB 440-316210/1-A

Matrix: Water

Analysis Batch: 316321

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 316210

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
HEM	ND		5.0	1.4	mg/L		03/09/16 07:48	03/09/16 13:43	1

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QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Outfall 009 Grab

TestAmerica Job ID: 440-140202-1

Method: 1664A - HEM and SGT-HEM (Continued)

Lab Sample ID: LCS 440-316210/2-A
 Matrix: Water
 Analysis Batch: 316321

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA
 Prep Batch: 316210

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
HEM	40.0	33.3		mg/L		83	78 - 114

Lab Sample ID: LCSD 440-316210/3-A
 Matrix: Water
 Analysis Batch: 316321

Client Sample ID: Lab Control Sample Dup
 Prep Type: Total/NA
 Prep Batch: 316210

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
HEM	40.0	34.1		mg/L		85	78 - 114	2	11



QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Grab

TestAmerica Job ID: 440-140202-1

GC/MS VOA

Analysis Batch: 316465

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-140202-1	Outfall009_20160307_Grab	Total/NA	Water	624	
440-140202-1 MS	Outfall009_20160307_Grab	Total/NA	Water	624	
440-140202-1 MSD	Outfall009_20160307_Grab	Total/NA	Water	624	
440-140202-3	TB-20160307	Total/NA	Water	624	
LCS 440-316465/5	Lab Control Sample	Total/NA	Water	624	
LCSD 440-316465/12	Lab Control Sample Dup	Total/NA	Water	624	
MB 440-316465/4	Method Blank	Total/NA	Water	624	

Analysis Batch: 316779

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-140202-1	Outfall009_20160307_Grab	Total/NA	Water	624	
440-140202-3	TB-20160307	Total/NA	Water	624	
550-59963-F-1 MS	Matrix Spike	Total/NA	Water	624	
550-59963-F-1 MSD	Matrix Spike Duplicate	Total/NA	Water	624	
LCS 440-316779/5	Lab Control Sample	Total/NA	Water	624	
LCSD 440-316779/6	Lab Control Sample Dup	Total/NA	Water	624	
MB 440-316779/4	Method Blank	Total/NA	Water	624	

General Chemistry

Prep Batch: 316210

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-140202-1	Outfall009_20160307_Grab	Total/NA	Water	1664A	
LCS 440-316210/2-A	Lab Control Sample	Total/NA	Water	1664A	
LCSD 440-316210/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	
MB 440-316210/1-A	Method Blank	Total/NA	Water	1664A	

Analysis Batch: 316321

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-140202-1	Outfall009_20160307_Grab	Total/NA	Water	1664A	316210
LCS 440-316210/2-A	Lab Control Sample	Total/NA	Water	1664A	316210
LCSD 440-316210/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	316210
MB 440-316210/1-A	Method Blank	Total/NA	Water	1664A	316210

Biology

Analysis Batch: 316959

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-140202-1	Outfall009_20160307_Grab	Total/NA	Water	SM 9221F	

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Grab

TestAmerica Job ID: 440-140202-1

Qualifiers

GC/MS VOA

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, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
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
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)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Grab

TestAmerica Job ID: 440-140202-1

Laboratory: TestAmerica Irvine

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

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-16
Arizona	State Program	9	AZ0671	10-13-16
California	LA Cty Sanitation Districts	9	10256	01-31-17 *
California	State Program	9	CA ELAP 2706	06-30-16
Guam	State Program	9	Cert. No. 12.002r	01-23-17
Hawaii	State Program	9	N/A	01-29-17
Kansas	NELAP Secondary AB	7	E-10420	07-31-16
Nevada	State Program	9	CA015312007A	07-31-16
New Mexico	State Program	6	N/A	01-29-17
Northern Mariana Islands	State Program	9	MP0002	01-29-16 *
Oregon	NELAP	10	4005	01-29-17
USDA	Federal		P330-09-00080	07-08-18
Washington	State Program	10	900	09-03-16

* Certification renewal pending - certification considered valid.

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CHAIN OF CUSTODY FORM

Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108		Project: Boeing-SSFL NPDES Permit 2016 Annual Outfall (003-007, 009, 010) Outfall 009 Grab	
Test America Contact: Urvasi Patel 17461 Derian Ave Suite #100 Irvine CA 92614 Tel 949-260-3289 Cell 949-333-9055		Project Manager: Nancy Gardiner 619.285.7132, 858.337.4061 (cell) Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)	
Sampler: Neal Smith, John Parks		ANALYSIS REQUIRED MST-Bacterioidales, Human E. coli (SM9221) Oil & Grease (1664-HEM) VOCs PP + xylenes, Freon 11 VOCs (624) - only A+A + 2CVE	
Sample Description Outfall 009	Sample I.D. Outfall009_20160307_Grab	Sampling Date/Time 3/7/2016 1130	Field Readings Meter serial # Field Readings: (include units) WQES05SA Time of Readings: 1140
Outfall 009	Outfall009_20160307_Grab_Extra	3/7/2016 1130	pH 10.73 pH unit Temp 10.49 C/F
Trip Blank	TB-20160307	3/7/2016 1130	Field readings QC Checked by: JK Date/Time: 1200
These Samples at the Grab Portion of Outfall 009 for this storm event. Composite samples will follow and are to be added to this work order.		Comments Deliver to lab ASAP 8 hr hold time Deliver to lab ASAP 8 hr hold time, Need 1x, 10x, 100x dilutions	
Requisitioned By George Gahn	Date/Time 3.7.16/1500	Company WESTON	Turn-around time: (Check) 24 Hour: _____ 72 Hour: _____ 10 Day: _____ 48 Hour: _____ 5 Day: _____ Normal: _____
Requisitioned By George Gahn	Date/Time 3/7/16	Company DTS	Sample Integrity: (Check) Intact: _____ On ice: _____ Data Requirements: (Check) No Level IV: _____ All Level IV: _____
Received By George Gahn		Date/Time 3/7/16 15:00	Received By Olga Omeles
Received By George Gahn		Date/Time 3/7/16 16:50	Received By Olga Omeles

3.20c/1.70c 3.50c/2.00c 4.20c/2.70c 4.50c/3.00c 2.90c/1.40c 4.10c/2.60c 2.70c/1.20c 3.80c/1.30c
 IR-73

Page 2 of 3 **3/29/16 15:45 A**

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-140202-1

Login Number: 140202

List Number: 1

Creator: Avila, Stephanie 1

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	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?	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	



DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-140288-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

April 20, 2016

MEC^x, Inc.
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Houston, Texas 77054

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TABLE OF CONTENTS

- I. INTRODUCTION 1
- II. Sample Management 2
- IV. EPA METHOD 1613B — Dioxin/Furans 6
 - IV.1. Holding Times 6
 - IV.2. Instrument Performance 6
 - IV.2.1. GC Column Performance 6
 - IV.2.2. Mass Spectrometer Performance 6
 - IV.3. Calibration 6
 - IV.4. Quality Control Samples 6
 - IV.4.1. Method Blanks 6
 - IV.4.2. Laboratory Control Samples 7
 - IV.5. Field QC Samples 7
 - IV.5.1. Field Blanks and Equipment Blanks 7
 - IV.5.2. Field Duplicates 7
 - IV.6. Internal Standards Performance 7
 - IV.7. Compound Identification 7
 - IV.8. Compound Quantification and Reported Detection Limits 7
- V. VARIOUS METHODS — Metals 8
 - V.1. Holding Times 8
 - V.2. MS Tuning and Calibration 8
 - V.3. Quality Control Samples 8
 - V.3.1. Method Blanks 8
 - V.3.2. Interference Check Samples: 8
 - V.3.3. Laboratory Control Samples 8
 - V.3.4. Laboratory Duplicates: 8
 - V.3.5. Matrix Spike/Matrix Spike Duplicate 8



- V.4. Serial Dilution..... 8
- V.5. Internal Standards Performance..... 9
- V.6. Compound Quantification and Reported Detection Limits 9
- V.7. Field QC Samples..... 9
 - V.7.1. Field Blanks and Equipment Blanks 9
 - V.7.2. Field Duplicates 9

- VI. Method Analyses – 608 Pesticides and PCBs..... 9
 - VI.1. Holding Times 9
 - VI.2. Calibration..... 9
 - VI.3. Quality Control Samples 10
 - VI.3.1. Method Blanks 10
 - VI.3.2. Laboratory Control Samples 10
 - VI.3.3. Surrogate Recovery..... 10
 - VI.3.4. Matrix Spike/Matrix Spike Duplicate 10
 - VI.4. Field QC Samples..... 10
 - VI.4.1. Field Blanks and Equipment Blanks 10
 - VI.4.2. Field Duplicates..... 10
 - VI.5. Compound Identification 10
 - VI.6. Compound Quantification and Reported Detection Limits 10

- VII. EPA METHOD 314.0 — Perchlorate 11
 - VII.1. Holding Times 11
 - VII.2. Calibration..... 11
 - VII.3. Quality Control Samples 11
 - VII.3.1. Method Blanks 11
 - VII.3.2. Laboratory Control Samples 11
 - VII.3.3. Laboratory Duplicates..... 11
 - VII.3.4. Matrix Spike/Matrix Spike Duplicate 11
 - VII.4. Sample Result Verification 11
 - VII.5. Field QC Samples..... 11



VII.5.1. Field Blanks and Equipment Blanks 11

VII.5.2. Field Duplicates..... 12

VIII. VARIOUS EPA METHODS — Radionuclides..... 12

VIII.1. Holding Times..... 12

VIII.2. Calibration 12

VIII.3. Quality Control Samples 12

VIII.3.1. Method Blanks 12

VIII.3.2. Laboratory Control Samples 12

VIII.3.3. Laboratory Duplicates..... 12

VIII.3.4. Matrix Spike/Matrix Spike Duplicate 12

VIII.4. Sample Result Verification 12

VIII.5. Field QC Samples..... 13

VIII.5.1. Field Blanks and Equipment Rinsates 13

VIII.5.2. Field Duplicates..... 13

IX. EPA METHOD 625 — Semivolatile Organic Compounds (SVOCs)..... 13

IX.1. Holding Times 13

IX.2. GC/MS Tuning and Calibration 13

IX.3. Quality Control Samples 13

IX.3.1. Method Blanks 13

IX.3.2. Laboratory Control Samples 13

IX.3.3. Surrogate Recovery..... 14

IX.3.4. Matrix Spike/Matrix Spike Duplicate 14

IX.4. Field QC Samples..... 14

IX.4.1. Field Blanks and Equipment Blanks: 14

IX.4.2. Field Duplicates: 14

IX.5. Internal Standards Performance..... 14

IX.6. Compound Identification 14

IX.7. Compound Quantification and Reported Detection Limits 14

IX.8. Tentatively Identified Compounds (TICs) 14



IX.9.	System Performance.....	14
X.	EPA METHODS 525.2— Semivolatile Organic Compounds (SVOCs).....	15
X.1.	Holding Times	15
X.2.	GC/MS Tuning and Calibration	15
X.3.	Quality Control Samples	15
X.3.1.	Method Blanks	15
X.3.2.	Laboratory Control Samples	15
X.3.3.	Surrogate Recovery.....	15
X.3.4.	Matrix Spike/Matrix Spike Duplicate	15
X.4.	Field QC Samples.....	15
X.4.1.	Field Blanks and Equipment Blanks	15
X.4.2.	Field Duplicates	15
X.5.	Internal Standards Performance.....	16
X.6.	Compound Identification	16
X.7.	Compound Quantification and Reported Detection Limits	16
X.8.	Tentatively Identified Compounds (TICs)	16
X.9.	System Performance.....	16
XI.	VARIOUS METHODS — GENERAL CHEMISTRY.....	16
XI.1.	Holding Times	16
XI.2.	Calibration.....	17
XI.3.	Quality Control Samples	17
XI.3.1.	Method Blanks	17
XI.3.2.	Laboratory Control Samples	17
XI.3.3.	Laboratory Duplicates.....	17
XI.3.4.	Matrix Spike/Matrix Spike Duplicate	17
XI.4.	Sample Result Verification.....	17
XI.5.	Field QC Samples.....	17
XI.5.1.	Field Blanks and Equipment Blanks	17
XI.5.2.	Field Duplicates.....	17



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**MECX Project No.:** 1272.003H.01**Sample Delivery Group:** 440-140288-1**Project Manager:** Katherine Miller**Matrix:** Water**QC Level:** IV**No. of Samples:** 2**No. of Reanalyses/Dilutions:** 0**Laboratory:** TestAmerica**TABLE 1 - SAMPLE IDENTIFICATION**

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall009_20160308_ Comp	440-140288-1	N/A	Water	3/8/2016 9:46:00 AM	E1613B, E200.7, E200.8, E218.6, E245.1, E300, E314.0, E525.2, E608, E625, E900, E901.1, E903.0, E904.0, E905.0, E906.0, EPA100.2, EPA-821-R-02-013, HASL-300 U Mod, RADIUM, SM2340, SM2540C/D, SM4500-CN-E
Outfall009_20160308_ Comp_F	440-140288-2	N/A	Water	3/8/2016 9:46:00 AM	E200.7, E200.8, E245.1, SM2340



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-140288-1:

- The laboratories received the samples in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratories received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs.
- According to the laboratories' sample receipt checklists, custody seals were intact.

MECX noted anomalies regarding sample management identified below.

- None were 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 Code	Organic	Inorganic
H	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.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) 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.
B	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.
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.
P	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.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



IV. EPA METHOD 1613B — DIOXIN/FURANS

Lynn Calvin of MEC^X reviewed the SDG on April 12, 2016

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^X Data Validation Procedure for Dioxins and Furans (DVP-19, Rev. 0), USEPA Method 1613B, and the National Functional Guidelines Chlorinated Dioxin/Furan Data Review (2011).

IV.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample was extracted and analyzed within one year of collection.

IV.2. INSTRUMENT PERFORMANCE

Instrument performance criteria were met. Following are findings associated with instrument performance:

IV.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 less than 25%.

IV.2.2. MASS SPECTROMETER PERFORMANCE

The mass spectrometer performance was acceptable with the static resolving power greater than 10,000.

IV.3. CALIBRATION

Calibration criteria were met. The initial calibration was acceptable with %RSDs $\leq 20\%$ for the 15 native compounds (calibration by isotope dilution) and $\leq 35\%$ for the two native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the Method 1613B control limits for all standards.

Continuing Calibration: Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning of the analytical sequence. The VER was acceptable with the concentrations within the acceptance criteria listed in Table 6 of EPA Method 1613B. The ion abundance ratios and relative retention times were within the method control limits.

IV.4. QUALITY CONTROL SAMPLES

IV.4.1. METHOD BLANKS

The method blank had detects above the EDL and below the reporting limit for 1,2,3,4,6,7,8-HpCDD, 1,2,3,4,6,7,8-HpCDF, 1,2,3,4,7,8-HxCDF, OCDD, and OCDF, and for totals HpCDD, HpCDF, HxCDD, HxCDF and TCDD. Isomer results for the method blank contaminants detected below the reporting limit in the sample were qualified as nondetects (U) at the level of contamination based upon professional judgement and the guidance for blank qualification in the National Functional Guidelines for Dioxin Review. The method blank concentration of OCDD was not sufficient to qualify the sample result for OCDD above the reporting limit.

The reviewer verified that peaks comprising total HpCDD in the method blank were the same peaks comprising total HpCDD in sample Outfall009_20160308_Comp. The result for total HpCDD was therefore qualified as a nondetect (U) at the level of contamination. Remaining totals containing blank contamination were qualified as estimated (J).

IV.4.2. LABORATORY CONTROL SAMPLES

Recoveries were above the control limits of 70-142% for 1,2,3,7,8-PeCDD in the LCS and LCSD at 146% and 147%, respectively; however, as 1,2,3,7,8-PeCDD was not detected in the associated sample, no qualification was necessary. Remaining recoveries were within the acceptance criteria listed in Table 6 of Method 1613B, and all RPDs were within the laboratory control limit of $\leq 50\%$.

IV.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. 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.

IV.6. INTERNAL STANDARDS PERFORMANCE

The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613B.

IV.7. COMPOUND IDENTIFICATION

Compound identification was verified. All 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. As 2,3,7,8-TCDF was not detected in the sample, confirmation analysis was unnecessary.

IV.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. Any detects below the laboratory lower calibration level were qualified as estimated (J). Any detects between the EDL and the reporting limit (RL), or reported below the EDL, were qualified as estimated (J) and coded with DNQ in order 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, for the sample in this SDG, results were not detected below the EDL.

A result previously qualified as a nondetect for method blank contamination was not further qualified as an estimated maximum possible concentration (EMPC). Remaining individual isomers flagged by the laboratory as EMPCs were qualified as estimated nondetects (UJ) at the level of the EMPC. Totals containing EMPC peaks were qualified as estimated (J).



V. VARIOUS METHODS — METALS

Michael Cherny of MEC^X reviewed the SDG on April 15, 2016

The samples listed in Table 1 for this analysis were validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for Metals (DVP-5, Rev. 0 and DVP-21, Rev. 0)*, EPA Methods 200.7, 200.8, and 245.1, Standard Method 2340, and the *National Functional Guidelines for Inorganic Data Review (2014)*.

V.1. HOLDING TIMES

The analytical holding times, 28 days for mercury and six months for the remaining metals, were met.

V.2. MS TUNING AND CALIBRATION

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

Calibration criteria were met. The initial calibration r values were ≥ 0.995 and CRI recoveries were within the control limits of 70-130%. The mercury initial (ICV) and continuing (CCV) recoveries were within NFG control limits of 85-115%. ICV and CCV recoveries for the remaining analytes were within NFG control limits of 90-110%.

V.3. QUALITY CONTROL SAMPLES

V.3.1. METHOD BLANKS

There were detects in the method blanks and CCBs, but none of sufficient concentration to qualify any site sample results.

V.3.2. INTERFERENCE CHECK SAMPLES:

Recoveries were within 80-120%. Although interferents were present in the ICSA solution, there was no recognized effect on matrix interference, as sample detections were less than half of the ICSAB spike amounts.

V.3.3. LABORATORY CONTROL SAMPLES

The recoveries were within the method control limits of 85-115%.

V.3.4. LABORATORY DUPLICATES:

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

V.3.5. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on samples Outfall009_20160308_Comp and Outfall009_20160308_Comp_F. Results were not assessed when the parent sample concentration exceeded the spike amount by 4 \times . Recoveries for dissolved aluminum (219%/243%) and dissolved iron (133%) were above the control limit; therefore, dissolved aluminum and iron detected in Outfall009_20160308_Comp_F were qualified as estimated with a potential high bias (J+). Remaining recoveries and RPDs were within the method control limits of 70-130% and $\leq 20\%$, respectively.

V.4. SERIAL DILUTION

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



V.5. INTERNAL STANDARDS PERFORMANCE

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

V.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Calculations were verified and the sample results reported on the sample result summary were verified against the raw data. No transcription errors or calculation errors were noted. When the sample results were qualified and the reviewer was able to clearly determine bias, detected results were qualified as either J+ or J-; otherwise, bias was not indicated in the qualification. Detects below the RL were qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Nondetects are valid to the MDL.

V.7. FIELD QC SAMPLES

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

V.7.1. FIELD BLANKS AND EQUIPMENT BLANKS

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

V.7.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

VI. METHOD ANALYSES – 608 PESTICIDES AND PCBs

Lynn Calvin of MEC^X reviewed the SDG on April 13, 2016

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

VI.1. HOLDING TIMES

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

VI.2. CALIBRATION

The initial calibrations had %RSDs of $\leq 10\%$ or r^2 of ≥ 0.990 on both analytical columns. One initial calibration verification (ICV) Aroclor 1221 peak and several continuing calibration verification (CCV) pesticide compounds had %Ds exceeding the control limit; however, as the outliers were associated with high responses and the compounds were not detected in the sample, no qualifications were applied. The remaining ICVs and CCVs associated with the sample analyses had %Ds within the control limit of $\leq 15\%$. The breakdown totals for endrin and 4,4'-DDT were $\leq 15\%$.



VI.3. QUALITY CONTROL SAMPLES

VI.3.1. METHOD BLANKS

Target compounds were not detected in method blanks.

VI.3.2. LABORATORY CONTROL SAMPLES

Recoveries were within the laboratory-established control limits. Chlordane and toxaphene were not spiked in the pesticide LCS.

VI.3.3. SURROGATE RECOVERY

Pesticide surrogate tetrachloro-m-xylene (TCMX) and PCB surrogate decachlorobiphenyl (DCB) were recovered within the laboratory control limits of 10-150% and 29-115%, respectively, in the site sample.

VI.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Matrix spike (MS)/MS duplicate (MSD) analyses were performed on sample Outfall009_20160308_Comp for pesticides and PCBs. Chlordane and toxaphene were not spiked in the pesticide MS/MSD. The recoveries and RPDs were within the laboratory control limits.

VI.4. FIELD QC SAMPLES

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

VI.4.1. FIELD BLANKS AND EQUIPMENT BLANKS

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

VI.4.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

VI.5. COMPOUND IDENTIFICATION

Compound identification was verified. Review of the sample chromatograms and retention times indicated no problems with target compound identification. The laboratory analyzed for select pesticides and seven Aroclors by Method 608.

VI.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. Results reported below the reporting limit were qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Reported nondetects are valid to the reporting limit.



VII. EPA METHOD 314.0 — PERCHLORATE

Michael Cherny of MEC^X reviewed the SDG on April 15, 2016

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

VII.1. HOLDING TIMES

The analytical holding time, 28 days, was met.

VII.2. CALIBRATION

Calibration criteria were met. The initial calibration r^2 value was ≥ 0.995 and all initial and continuing calibration recoveries were within 90-110%. The MRL was recovered in the method QC limits of 90-110%. IPC recoveries were within the method-established control limit of 80-120%.

VII.3. QUALITY CONTROL SAMPLES

VII.3.1. METHOD BLANKS

Method blanks and CCBs had no detects.

VII.3.2. LABORATORY CONTROL SAMPLES

Recoveries were within the method-established QC limits of 85-115%.

VII.3.3. LABORATORY DUPLICATES

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

VII.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Recoveries and RPDs were within method-established QC limits of 80-120% and $\leq 15\%$, respectively.

VII.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. When the sample results were qualified and the reviewer was able to clearly determine bias, detected results were qualified as either J+ or J-; otherwise, bias was not indicated in the qualification. Any detects between the method detection limit and the reporting limit were qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Reported nondetects are valid to the MDL.

VII.5. FIELD QC SAMPLES

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

VII.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

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



VII.5.2. **FIELD DUPLICATES**

Field duplicate samples were not identified in this SDG.

VIII. **VARIOUS EPA METHODS — RADIONUCLIDES**

Elizabeth Wessling of MEC^x reviewed the SDG on April 19, 2016

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)*.

VIII.1. **HOLDING TIMES**

Aliquots were prepared within the five-day analytical holding time for unpreserved samples.

VIII.2. **CALIBRATION**

The laboratory calibration information included the standard certificates and applicable preparation/dilutions logs for NIST-traceability.

The detector efficiencies were greater than 20% with the exception of the detector for tritium which was 16%. Tritium was qualified as an estimated nondetect (UJ). Carrier/tracer recoveries were within the laboratory control limits of 40-110%. All other calibration checks were acceptable.

VIII.3. **QUALITY CONTROL SAMPLES**

VIII.3.1. **METHOD BLANKS**

There were no analytes detected in the method blanks sufficient to qualify the site sample with the exception of the total uranium. Total uranium was not different from the method blank at the 1% level of confidence and was therefore qualified as a nondetect in the site sample.

VIII.3.2. **LABORATORY CONTROL SAMPLES**

The recoveries were within laboratory-established control limits.

VIII.3.3. **LABORATORY DUPLICATES**

Laboratory duplicate analyses were performed on the sample in this SDG for cesium-137 and potassium-40. The relative error ratio was within the laboratory control limit of ≤ 1 .

VIII.3.4. **MATRIX SPIKE/MATRIX SPIKE DUPLICATE**

A matrix spike (MS)/MS duplicate pair was performed for the all analyses except cesium-137 and potassium-40. Recoveries and RPD or DER were within the laboratory control limits with the exception of the radium-228 which was recovered above the QC limits. Radium-228 was qualified as an estimated nondetect (UJ) and the combined radium was also qualified as an estimated nondetect (UJ).

VIII.4. **SAMPLE RESULT VERIFICATION**

An EPA Level IV review was performed for the sample in this data package. The sample results and MDCs reported on the sample result form were verified against the raw data and no calculation or transcription



errors were noted. Reported nondetects are valid to the MDC.

VIII.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:

VIII.5.1. FIELD BLANKS AND EQUIPMENT RINSATES

This SDG had no identified field blank or equipment rinsate samples.

VIII.5.2. FIELD DUPLICATES

This SDG had no identified field duplicate samples.

IX. EPA METHOD 625 — SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

Lynn Calvin of MEC^X reviewed the SDG on April 13, 2016

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

IX.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.

IX.2. GC/MS TUNING AND CALIBRATION

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

Calibration criteria were met, with one exception noted below. The initial calibration average RRFs were ≥ 0.05 and $\%RSD \leq 35\%$ or r^2 of ≥ 0.990 . The %D for benzo(g,h,i)perylene was 29.8% in the CCV. The nondetected sample result for benzo(g,h,i)perylene was qualified as estimated (UJ) in sample Outfall009_20160308_Comp. The ICV and CCV RRFs were ≥ 0.05 and remaining %Ds were within the method control limit of $\leq 20\%$.

IX.3. QUALITY CONTROL SAMPLES

IX.3.1. METHOD BLANKS

Target compounds were not detected in the method blank.

IX.3.2. LABORATORY CONTROL SAMPLES

Benzidine was recovered above the control limits of 5-66% in both the LCS and LCSD at 82% and 105%, respectively; however, as benzidine was not detected in sample Outfall009_20160308_Comp, no qualification was necessary. The LCSD recovery for 3,3'-dichlorobenzidine was below the control limits of 10-150% at 4%, with an RPD above the control limit of $\leq 35\%$ at 170%. The RPD for hexachlorocyclopentadiene also exceeded the control limit, at 55%. Qualifications were not assigned for the



single recovery outlier; however, the nondetected results for 3,3'-dichlorobenzidine and hexachlorocyclopentadiene were qualified as estimated (UJ) for the RPD outliers. Remaining recoveries and RPDs were within the laboratory control limits.

IX.3.3. SURROGATE RECOVERY

Recoveries were within the laboratory control limits.

IX.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^X evaluated method accuracy and precision based on the LCS/LCSD results.

IX.4. FIELD QC SAMPLES

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

IX.4.1. FIELD BLANKS AND EQUIPMENT BLANKS:

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

IX.4.2. FIELD DUPLICATES:

Field duplicate samples were not identified in this SDG.

IX.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.

IX.6. COMPOUND IDENTIFICATION

Compound identification was verified. The laboratory analyzed for semivolatile target compounds by EPA Method 625. Review of the sample chromatogram, retention times, and spectra indicated no problems with target compound identification.

IX.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. Results reported below the reporting limit were qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Reported nondetects are valid to the reporting limit.

IX.8. TENTATIVELY IDENTIFIED COMPOUNDS (TICs)

The laboratory did not report TICs for this SDG.

IX.9. SYSTEM PERFORMANCE

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



X. EPA METHODS 525.2— SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

Lynn Calvin of MEC^X reviewed the SDG on April 13, 2016

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^X Data Validation Procedure for Semivolatile Organics (DVP-3, Rev. 1), EPA Method 525.2, and the National Functional Guidelines for Superfund Organic Methods Data Review (2014).

X.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample was extracted within 24 hours of collection and analyzed within 30 days of extraction.

X.2. GC/MS TUNING AND CALIBRATION

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

Calibration criteria were met. The initial calibration average RRFs were ≥ 0.05 and %RSD $\leq 30\%$. The continuing calibration RRFs were ≥ 0.05 and recoveries were within the method QC limits of 70-130%.

X.3. QUALITY CONTROL SAMPLES

X.3.1. *METHOD BLANKS*

Target compounds were not detected in the method blank.

X.3.2. *LABORATORY CONTROL SAMPLES*

The recoveries and RPDs were within the control limits of 70-130% and $\leq 30\%$, respectively.

X.3.3. *SURROGATE RECOVERY*

Recoveries were within laboratory-established control limits of 70-130%.

X.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^X evaluated method accuracy and precision based on the LCS/LCSD results.

X.4. FIELD QC SAMPLES

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

X.4.1. *FIELD BLANKS AND EQUIPMENT BLANKS*

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

X.4.2. *FIELD DUPLICATES*

Field duplicate samples were not identified in this SDG.

X.5. INTERNAL STANDARDS PERFORMANCE

The internal standard area counts were within the method control limits established by the continuing calibration standards of $\pm 30\%$ for areas and ± 10 seconds for retention times.

X.6. COMPOUND IDENTIFICATION

Compound identification was verified. The laboratory analyzed for chlorpyrifos and diazinon by Method 525.2. Review of the sample chromatogram, retention times, and spectra indicated no problems with target compound identification.

X.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.

X.8. TENTATIVELY IDENTIFIED COMPOUNDS (TICs)

The laboratory did not report TICs for this SDG.

X.9. SYSTEM PERFORMANCE

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

XI. VARIOUS METHODS — GENERAL CHEMISTRY

Michael Cherny of MEC^X reviewed the SDG on April 15, 2016

Elizabeth Wessling of MEC^X reviewed the asbestos on April 20, 2016

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, EPA Methods 100.2, 218.6, 300.0 and 821-R-02-013, *Standard Methods for the Examination of Water and Wastewater 2540C, 2540D, and 4500-CN-E*, and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

XI.1. HOLDING TIMES

The method analytical holding time for total suspended solids (TSS), 7 days from collection, was exceeded by about four hours; therefore, TSS detected in sample Outfall009_20160308_Comp was qualified as estimated with potential low bias (J-). Asbestos was received at the subcontracted laboratory past the 48 hour holding time. The laboratory subjected the sample to UV and ozonation to minimize bacteriological growth. The reviewer qualified the nondetect in the sample as an estimated nondetect (UJ) as a conservative evaluation of the sample results. The remaining analytical holding times as listed below were met:

- 24 hours from collection for hexavalent chromium
- 36 hours for chronic toxicity
- 48 hours for nitrate/nitrite as nitrogen
- 7 days for total dissolved solids (TDS)
- 14 days for total cyanide
- 28 days for chloride, fluoride, and sulfate



- 48 hours for asbestos in water

XI.2. CALIBRATION

Calibration criteria were met. The initial calibration r^2 values were ≥ 0.995 and all initial and continuing calibration recoveries were within 90-110%. The MRL recovery for hexavalent chromium was within the reasonable control limits of 50-150%. Analytical balance calibration logs were provided by the lab. For chronic toxicity, instruments were calibrated as per the manufacturer requirements and standard reference toxicant testing was performed to verify culture health and sensitivity

XI.3. QUALITY CONTROL SAMPLES

XI.3.1. METHOD BLANKS

The method blanks and CCBs had no detects.

XI.3.2. LABORATORY CONTROL SAMPLES

Recoveries were within the laboratory control limits and the RPD for total cyanide was within the laboratory control limits.

XI.3.3. LABORATORY DUPLICATES

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

XI.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on Outfall009_20160308_Comp for anions, cyanide, and hexavalent chromium. Recoveries and RPDs were within the laboratory-established control limits.

XI.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. When the sample results were qualified and the reviewer was able to clearly determine bias, detected results were qualified as either J+ or J-; otherwise, bias was not indicated in the qualification. Any detects between the method detection limit and the reporting limit were qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Reported nondetects are valid to the MDL.

XI.5. FIELD QC SAMPLES

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

XI.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

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

XI.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms 4401402881

Analysis Method E1613B

Sample Name Outfall009_20160308_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 3/8/2016 9:46:00 AM **Validation Level:** 8

Lab Sample Name: 440-140288-1

Analyte	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	0.000024	0.000094	0.00000064	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	N	3268-87-9	0.00031	0.000094	0.00000031	ug/L	MB		
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	N	67562-39-4	0.000010	0.000047	0.00000050	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	N	35822-46-9	0.000035	0.000047	0.00000092	ug/L	J,DXMB	U	B
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	N	55673-89-7	0.0000018	0.000047	0.00000079	ug/L	J,DX	J	DNQ
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	N	70648-26-9	0.0000014	0.000047	0.00000057	ug/L	J,DXqMB	U	B
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	39227-28-6	0.0000015	0.000047	0.00000050	ug/L	J,DX	J	DNQ
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	57117-44-9	0.0000018	0.000047	0.00000049	ug/L	J,DX	J	DNQ
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	57653-85-7	0.0000030	0.000047	0.00000050	ug/L	J,DX	J	DNQ
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	N	72918-21-9	0.0000016	0.000047	0.00000037	ug/L	J,DX	J	DNQ
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	N	19408-74-3	0.0000021	0.000047	0.00000040	ug/L	J,DXq	UJ	*III
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-41-6	0.00000083	0.000047	0.00000083	ug/L	U	U	
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	N	40321-76-4	0.0000011	0.000047	0.00000011	ug/L	ULQ	U	
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	60851-34-5	0.0000016	0.000047	0.00000037	ug/L	J,DX	J	DNQ
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-31-4	0.00000094	0.000047	0.00000094	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	0.00000041	0.000094	0.00000041	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	N	1746-01-6	0.00000036	0.000094	0.00000036	ug/L	U	U	
Total Heptachlorodibenzofuran (HpCDF)	N	38998-75-3	0.000022	0.000047	0.00000065	ug/L	J,DXMB	J	B, DNQ
Total Heptachlorodibenzo-p-dioxin (HpCDD)	N	37871-00-4	0.000078	0.000047	0.00000092	ug/L	J,DXMB	U	B
Total Hexachlorodibenzofuran (HxCDF)	N	55684-94-1	0.000012	0.000047	0.00000045	ug/L	J,DXqMB	J	B, DNQ, *III
Total Hexachlorodibenzo-p-dioxin (HxCDD), Mixture	N	34465-46-8	0.000013	0.000047	0.00000047	ug/L	J,DXqMB	J	B, DNQ, *III

Analysis Method E1613B

Total Pentachlorodibenzofuran (PeCDF)	N	30402-15-4	0.00000083	0.000047	0.00000083	ug/L	U	U	
Total Pentachlorodibenzo-p-dioxin (PeCDD)	N	36088-22-9	0.0000011	0.000047	0.0000011	ug/L	U	U	
Total Tetrachlorodibenzofuran (TCDF)	N	55722-27-5	0.00000041	0.0000094	0.00000041	ug/L	U	U	
Total Tetrachlorodibenzo-p-dioxin (TCDD)	N	41903-57-5	0.00000064	0.0000094	0.00000036	ug/L	J,DXqMB	J	B, DNQ, *III

Analysis Method E200.7

Sample Name: Outfall009_20160308_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 3/8/2016 9:46:00 AM **Validation Level:** 8

Lab Sample Name: 440-140288-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Aluminum	T	7429-90-5	3400	50	25	ug/L	MB		
Arsenic	T	7440-38-2	5.0	10	5.0	ug/L	U	U	
Beryllium	T	7440-41-7	1.0	2.0	1.0	ug/L	U	U	
Boron	T	7440-42-8	0.053	0.050	0.010	mg/L			
Chromium	T	7440-47-3	5.4	5.0	2.5	ug/L			
Iron	T	7439-89-6	3.9	0.040	0.010	mg/L			
Nickel	T	7440-02-0	6.2	10	5.0	ug/L	J,DX	J	DNQ
Silver	T	7440-22-4	5.0	10	5.0	ug/L	U	U	
Vanadium	T	7440-62-2	8.1	10	5.0	ug/L	J,DX	J	DNQ
Zinc	T	7440-66-6	22	20	10	ug/L			

Sample Name: Outfall009_20160308_Comp_F **Matrix Type:** WM **Result Type:** TRG

Sample Date: 3/8/2016 9:46:00 AM **Validation Level:** 8

Lab Sample Name: 440-140288-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Aluminum	D	7429-90-5	920	50	25	ug/L	MBQP	J+	Q
Arsenic	D	7440-38-2	5.0	10	5.0	ug/L	UQP	U	
Beryllium	D	7440-41-7	1.0	2.0	1.0	ug/L	UQP	U	
Boron	D	7440-42-8	0.050	0.050	0.010	mg/L	QP		
Chromium	D	7440-47-3	2.5	5.0	2.5	ug/L	J,DXQP	J	DNQ
Iron	D	7439-89-6	0.95	0.040	0.010	mg/L	QP	J+	Q
Nickel	D	7440-02-0	5.0	10	5.0	ug/L	UQP	U	
Silver	D	7440-22-4	5.0	10	5.0	ug/L	UQP	U	
Vanadium	D	7440-62-2	5.0	10	5.0	ug/L	UQP	U	
Zinc	D	7440-66-6	14	20	10	ug/L	J,DXQP	J	DNQ

Analysis Method E200.8

Sample Name Outfall009_20160308_Comp **Matrix Type:** WM **Result Type:** TRG
Sample Date: 3/8/2016 9:46:00 AM **Validation Level:** 8
Lab Sample Name: 440-140288-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Antimony	T	7440-36-0	0.97	2.0	0.50	ug/L	J,DX	J	DNQ
Cadmium	T	7440-43-9	0.25	1.0	0.25	ug/L	U	U	
Copper	T	7440-50-8	8.8	2.0	0.50	ug/L			
Lead	T	7439-92-1	5.9	1.0	0.50	ug/L			
Selenium	T	7782-49-2	0.50	2.0	0.50	ug/L	U	U	
Thallium	T	7440-28-0	0.50	1.0	0.50	ug/L	U	U	

Sample Name Outfall009_20160308_Comp_F **Matrix Type:** WM **Result Type:** TRG
Sample Date: 3/8/2016 9:46:00 AM **Validation Level:** 8
Lab Sample Name: 440-140288-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Antimony	D	7440-36-0	0.77	2.0	0.50	ug/L	J,DXQP	J	DNQ
Cadmium	D	7440-43-9	0.25	1.0	0.25	ug/L	UQP	U	
Copper	D	7440-50-8	5.4	2.0	0.50	ug/L	QP		
Lead	D	7439-92-1	1.4	1.0	0.50	ug/L	QP		
Selenium	D	7782-49-2	0.50	2.0	0.50	ug/L	UQP	U	
Thallium	D	7440-28-0	0.50	1.0	0.50	ug/L	UQP	U	

Analysis Method E218.6

Sample Name Outfall009_20160308_Comp **Matrix Type:** WM **Result Type:** TRG
Sample Date: 3/8/2016 9:46:00 AM **Validation Level:** 8
Lab Sample Name: 440-140288-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chromium VI (Hexavalent)	T	18540-29-9	0.25	1.0	0.25	ug/L	U	U	

Analysis Method E245.1

Sample Name Outfall009_20160308_Comp **Matrix Type:** WM **Result Type:** TRG
Sample Date: 3/8/2016 9:46:00 AM **Validation Level:** 8
Lab Sample Name: 440-140288-1

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

Analysis Method E245.1

Sample Name Outfall009_20160308_Comp_F **Matrix Type:** WM **Result Type:** TRG
Sample Date: 3/8/2016 9:46:00 AM **Validation Level:** 8
Lab Sample Name: 440-140288-2

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

Analysis Method E300

Sample Name Outfall009_20160308_Comp **Matrix Type:** WM **Result Type:** TRG
Sample Date: 3/8/2016 9:46:00 AM **Validation Level:** 8
Lab Sample Name: 440-140288-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chloride	N	16887-00-6	4.0	0.50	0.25	mg/L			
Fluoride	N	16984-48-8	0.25	0.50	0.25	mg/L	U	U	
Nitrite/Nitrate	N	NO2NO3	0.34	0.15	0.070	mg/L			
Sulfate	N	14808-79-8	6.9	0.50	0.25	mg/L			

Analysis Method E314.0

Sample Name Outfall009_20160308_Comp **Matrix Type:** WM **Result Type:** TRG
Sample Date: 3/8/2016 9:46:00 AM **Validation Level:** 8
Lab Sample Name: 440-140288-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Perchlorate	N	14797-73-0	0.95	4.0	0.95	ug/L	U	U	

Analysis Method E525.2

Sample Name Outfall009_20160308_Comp **Matrix Type:** WM **Result Type:** TRG
Sample Date: 3/8/2016 9:46:00 AM **Validation Level:** 8
Lab Sample Name: 440-140288-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chlorpyrifos	N	2921-88-2	1.1	1.1	0.53	ug/L	U	U	
Diazinon	N	333-41-5	0.26	0.26	0.13	ug/L	U	U	

Analysis Method E608

Sample Name Outfall009_20160308_Comp **Matrix Type:** WM **Result Type:** TRG
Sample Date: 3/8/2016 9:46:00 AM **Validation Level:** 8
Lab Sample Name: 440-140288-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
4,4'-DDD	N	72-54-8	0.0049	0.0049	0.0039	ug/L	U	U	
4,4'-DDE	N	72-55-9	0.0049	0.0049	0.0029	ug/L	U	U	
4,4'-DDT	N	50-29-3	0.0098	0.0098	0.0039	ug/L	U	U	
Aldrin	N	309-00-2	0.0049	0.0049	0.0015	ug/L	U	U	
alpha-BHC	N	319-84-6	0.0049	0.0049	0.0024	ug/L	U	U	
Aroclor-1016 (PCB-1016)	N	12674-11-2	0.49	0.49	0.24	ug/L	U	U	
Aroclor-1221 (PCB-1221)	N	11104-28-2	0.49	0.49	0.24	ug/L	U	U	
Aroclor-1232 (PCB-1232)	N	11141-16-5	0.49	0.49	0.24	ug/L	U	U	
Aroclor-1242 (PCB-1242)	N	53469-21-9	0.49	0.49	0.24	ug/L	U	U	
Aroclor-1248 (PCB-1248)	N	12672-29-6	0.49	0.49	0.24	ug/L	U	U	
Aroclor-1254 (PCB-1254)	N	11097-69-1	0.49	0.49	0.24	ug/L	U	U	
Aroclor-1260 (PCB-1260)	N	11096-82-5	0.49	0.49	0.24	ug/L	U	U	
beta-BHC	N	319-85-7	0.0098	0.0098	0.0039	ug/L	U	U	
Chlordane	N	57-74-9	0.098	0.098	0.078	ug/L	U	U	
delta-BHC	N	319-86-8	0.0049	0.0049	0.0034	ug/L	U	U	
Dieldrin	N	60-57-1	0.0049	0.0049	0.0020	ug/L	U	U	
Endosulfan I	N	959-98-8	0.0049	0.0049	0.0029	ug/L	U	U	
Endosulfan II	N	33213-65-9	0.0049	0.0049	0.0020	ug/L	U	U	
Endosulfan sulfate	N	1031-07-8	0.0098	0.0098	0.0029	ug/L	U	U	
Endrin	N	72-20-8	0.0049	0.0049	0.0020	ug/L	U	U	
Endrin aldehyde	N	7421-93-4	0.0098	0.0098	0.0020	ug/L	U	U	
gamma-BHC (Lindane)	N	58-89-9	0.0098	0.0098	0.0029	ug/L	U	U	
Heptachlor	N	76-44-8	0.0098	0.0098	0.0029	ug/L	U	U	
Heptachlor epoxide	N	1024-57-3	0.0049	0.0049	0.0024	ug/L	U	U	
Toxaphene	N	8001-35-2	0.49	0.49	0.24	ug/L	U	U	

Analysis Method E625

Sample Name Outfall009_20160308_Comp **Matrix Type:** WM **Result Type:** TRG
Sample Date: 3/8/2016 9:46:00 AM **Validation Level:** 8
Lab Sample Name: 440-140288-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,2,4-Trichlorobenzene	N	120-82-1	0.957	0.957	0.478	ug/L	U	U	
1,2-Dichlorobenzene	N	95-50-1	0.478	0.478	0.191	ug/L	U	U	
1,2-Diphenylhydrazine	N	122-66-7	0.957	0.957	0.478	ug/L	U	U	
1,3-Dichlorobenzene	N	541-73-1	0.478	0.478	0.191	ug/L	U	U	
1,4-Dichlorobenzene	N	106-46-7	0.478	0.478	0.191	ug/L	U	U	

Analysis Method E625

2,2'-oxybis(1-Chloropropane)	N	108-60-1	0.478	0.478	0.191	ug/L	U	U
2,4,6-Trichlorophenol	N	88-06-2	0.957	0.957	0.478	ug/L	U	U
2,4-Dichlorophenol	N	120-83-2	1.91	1.91	0.957	ug/L	U	U
2,4-Dimethylphenol	N	105-67-9	1.91	1.91	0.957	ug/L	U	U
2,4-Dinitrophenol	N	51-28-5	4.78	4.78	1.91	ug/L	U	U
2,4-Dinitrotoluene	N	121-14-2	4.78	4.78	1.91	ug/L	U	U
2,6-Dinitrotoluene	N	606-20-2	4.78	4.78	1.91	ug/L	U	U
2-Chloronaphthalene	N	91-58-7	0.478	0.478	0.191	ug/L	U	U
2-Chlorophenol	N	95-57-8	0.957	0.957	0.478	ug/L	U	U
2-Nitrophenol	N	88-75-5	1.91	1.91	0.957	ug/L	U	U
3,3'-Dichlorobenzidine	N	91-94-1	4.78	4.78	1.91	ug/L	ULRBA	UJ L1
4,6-Dinitro-2-methylphenol	N	534-52-1	4.78	4.78	1.91	ug/L	U	U
4-Bromophenyl phenyl ether	N	101-55-3	0.957	0.957	0.478	ug/L	U	U
4-Chloro-3-methylphenol	N	59-50-7	1.91	1.91	0.191	ug/L	U	U
4-Chlorophenyl phenyl ether	N	7005-72-3	0.478	0.478	0.191	ug/L	U	U
4-Nitrophenol	N	100-02-7	4.78	4.78	1.91	ug/L	U	U
Acenaphthene	N	83-32-9	0.478	0.478	0.191	ug/L	U	U
Acenaphthylene	N	208-96-8	0.478	0.478	0.191	ug/L	U	U
Anthracene	N	120-12-7	0.478	0.478	0.191	ug/L	U	U
Benidine	N	92-87-5	9.57	9.57	4.78	ug/L	ULQ	U
Benzo(a)anthracene	N	56-55-3	4.78	4.78	1.91	ug/L	U	U
Benzo(a)pyrene	N	50-32-8	1.91	1.91	0.478	ug/L	U	U
Benzo(b)fluoranthene	N	205-99-2	1.91	1.91	0.957	ug/L	U	U
Benzo(g,h,i)perylene	N	191-24-2	4.78	4.78	1.91	ug/L	U	UJ C
Benzo(k)fluoranthene	N	207-08-9	0.478	0.478	0.239	ug/L	U	U
bis(2-Chloroethoxy)methane	N	111-91-1	0.478	0.478	0.191	ug/L	U	U
bis(2-Chloroethyl)ether	N	111-44-4	0.478	0.478	0.191	ug/L	U	U
bis(2-Ethylhexyl)phthalate	N	117-81-7	10.6	4.78	1.91	ug/L		
Butyl benzylphthalate	N	85-68-7	4.78	4.78	1.91	ug/L	U	U
Chrysene	N	218-01-9	0.478	0.478	0.191	ug/L	U	U
Dibenz(a,h)anthracene	N	53-70-3	0.478	0.478	0.239	ug/L	U	U
Diethyl phthalate	N	84-66-2	0.957	0.957	0.478	ug/L	U	U
Dimethyl phthalate	N	131-11-3	0.478	0.478	0.239	ug/L	U	U
Di-n-butylphthalate	N	84-74-2	1.91	1.91	0.957	ug/L	U	U
Di-n-octyl phthalate	N	117-84-0	4.78	4.78	1.91	ug/L	U	U
Fluoranthene	N	206-44-0	0.478	0.478	0.191	ug/L	U	U
Fluorene	N	86-73-7	0.478	0.478	0.191	ug/L	U	U
Hexachlorobenzene	N	118-74-1	0.957	0.957	0.478	ug/L	U	U
Hexachlorobutadiene	N	87-68-3	1.91	1.91	0.478	ug/L	U	U
Hexachlorocyclopentadiene	N	77-47-4	4.78	4.78	1.91	ug/L	UBA	UJ L1
Hexachloroethane	N	67-72-1	2.87	2.87	0.478	ug/L	U	U
Indeno(1,2,3-cd)pyrene	N	193-39-5	1.91	1.91	0.957	ug/L	U	U
Isophorone	N	78-59-1	0.957	0.957	0.478	ug/L	U	U

Analysis Method E625

Naphthalene	N	91-20-3	0.957	0.957	0.478	ug/L	U	U
Nitrobenzene	N	98-95-3	0.957	0.957	0.478	ug/L	U	U
N-Nitrosodimethylamine	N	62-75-9	1.91	1.91	0.957	ug/L	U	U
N-Nitrosodi-n-propylamine	N	621-64-7	1.91	1.91	0.957	ug/L	U	U
N-Nitrosodiphenylamine	N	86-30-6	0.957	0.957	0.478	ug/L	U	U
Pentachlorophenol	N	87-86-5	1.91	1.91	0.957	ug/L	U	U
Phenanthrene	N	85-01-8	0.478	0.478	0.191	ug/L	U	U
Phenol	N	108-95-2	0.957	0.957	0.478	ug/L	U	U
Pyrene	N	129-00-0	0.478	0.478	0.191	ug/L	U	U

Analysis Method EPA100.2

Sample Name Outfall009_20160308_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 3/8/2016 9:46:00 AM **Validation Level:** 8

Lab Sample Name: 440-140288-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Asbestos	N	1332-21-4	1.70	1.70	1.70	MFL	ND	UJ	H

Analysis Method EPA-821-R-02-013

Sample Name Outfall009_20160308_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 3/8/2016 9:46:00 AM **Validation Level:** 8

Lab Sample Name: 440-140288-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chronic Toxicity, Selenastrum	N	CHRTOXSE LENA	16.1						

Analysis Method SM2340

Sample Name Outfall009_20160308_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 3/8/2016 9:46:00 AM **Validation Level:** 8

Lab Sample Name: 440-140288-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Hardness as CaCO3	T	HARDNESS CACO3	36	0.33	0.17	mg/L			

Sample Name Outfall009_20160308_Comp_F **Matrix Type:** WM **Result Type:** TRG

Sample Date: 3/8/2016 9:46:00 AM **Validation Level:** 8

Lab Sample Name: 440-140288-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Hardness as CaCO3	D	HARDNESS CACO3	33	0.33	0.17	mg/L			

Analysis Method SM2540C

Sample Name Outfall009_20160308_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 3/8/2016 9:46:00 AM **Validation Level:** 8

Lab Sample Name: 440-140288-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Dissolved Solids (TDS)	N	TDS	110	10	5.0	mg/L			

Analysis Method SM2540D

Sample Name Outfall009_20160308_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 3/8/2016 9:46:00 AM **Validation Level:** 8

Lab Sample Name: 440-140288-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Suspended Solids (TSS)	N	TSS	20	3.3	1.7	mg/L		J-	H

Analysis Method SM4500-CN-E

Sample Name Outfall009_20160308_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 3/8/2016 9:46:00 AM **Validation Level:** 8

Lab Sample Name: 440-140288-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cyanide	N	57-12-5	2.5	5.0	2.5	ug/L	U	U	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

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TestAmerica Job ID: 440-140288-1

Client Project/Site: Outfall 009 Comp

For:

Haley & Aldrich, Inc.

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Suite 300

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Attn: Nancy Gardiner



Authorized for release by:

4/8/2016 6:57:59 PM

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

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

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



Urvashi Patel
Manager of Project Management
4/8/2016 6:57:59 PM



Table of Contents

Cover Page	1
Table of Contents	3
Sample Summary	4
Case Narrative	5
Client Sample Results	9
Method Summary	16
Lab Chronicle	17
QC Sample Results	19
QC Association Summary	49
Definitions/Glossary	56
Certification Summary	58
Subcontract Data	60
Chain of Custody	77
Receipt Checklists	82
Tracer Carrier Summary	85
Isotope Dilution Summary	87

Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Comp

TestAmerica Job ID: 440-140288-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-140288-1	Outfall009_20160308_Comp	Water	03/08/16 09:46	03/08/16 18:45
440-140288-2	Outfall009_20160308_Comp_F	Water	03/08/16 09:46	03/08/16 18:45

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Comp

TestAmerica Job ID: 440-140288-1

Job ID: 440-140288-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative 440-140288-1

Comments

No additional comments.

Receipt

The samples were received on 3/8/2016 6:45 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 6 coolers at receipt time were 0.3° C, 1.2° C, 1.6° C, 1.7° C, 1.8° C and 1.9° C.

Receipt Exceptions

The Chain-of-Custody (COC) was incomplete as received and/or improperly completed. COC was relinquished with no date or time.

GC/MS Semi VOA

Method(s) 525.2: Surrogate recovery for the following sample was outside the upper control limit: Outfall009_20160308_Comp (440-140288-1). This sample did not contain any target analytes; therefore, re-extraction and/or re-analysis was not performed.

Method(s) 525.2: Internal standard (ISTD) response for Chrysene-d12 for the following sample was outside the lower acceptance limits: Outfall009_20160308_Comp (440-140288-1). The sample is ND and that IS is not used for quantitation of the target analytes therefore sample was not re extracted or re analyzed.

Method(s) 625: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-316074 and analytical batch 440-316864. The laboratory control sample (LCS) was performed in duplicate to provide precision data for this batch.

Method(s) 625: The continuing calibration verification (CCV) associated with batch 440-318612 recovered above the upper control limit for benzo(g,h,i)perylene. The samples associated with this CCV were non-detect for the affected analyte; therefore, the data have been reported. The following samples are impacted: Outfall009_20160308_Comp (440-140288-1) and (CCVIS 440-318612/2).

Method(s) 625: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-317330 and analytical batch 440-318612. The laboratory control sample (LCS) was performed in duplicate to provide precision data for this batch.

Method(s) 625: The laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 440-317330 and analytical batch 440-318612 recovered outside control limits for benzidine. These analytes were biased high in the LCS/LCSD and were not detected in the associated samples; therefore, the data have been reported.

Method(s) 625: The percent recovery of 3,3'-dichlorobenzidine in the laboratory control sample duplicate (LCSD) of preparation batch 317330 failed below the lower acceptance limit. This analyte is considered a poor performer. This is the second extraction attempt with this analyte failure for affected sample 440-140288-1. Another attempt could not be performed within sample hold time.

Method(s) 625: The %RPD of the laboratory control sample (LCS) and laboratory control standard duplicate (LCSD) for preparation batch 440-317330 recovered outside control limits for 3,3'-dichlorobenzidine and hexachlorocyclopentadiene.

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

HPLC/IC

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

GC Semi VOA

Method(s) 608: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with

Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Comp

TestAmerica Job ID: 440-140288-1

Job ID: 440-140288-1 (Continued)

Laboratory: TestAmerica Irvine (Continued)

316196. The laboratory control sample (LCS) was performed in duplicate to provide precision data for this batch. (LCS 440-316196/4-A)

Method(s) 608: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD/DUP) associated with preparation batch 440-316196 and analytical batch 440-316240. The laboratory control sample (LCS) was performed in duplicate to provide precision data for this batch.

Method(s) 608: The continuing calibration verification (CCV) associated with batch 440-316240 recovered above the upper control limit for Endrin. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The following samples are impacted: Outfall009_20160308_Comp (440-140288-1) and (CCVIS 440-316240/11).

Method(s) 608: The continuing calibration verification (CCV) associated with batch 440-317358 recovered above the upper control limit for 2,4'-DDE, Aldrin, beta BHC, Dieldrin, Endosulfan I, Endosulfan II, Endrin, Endrin aldehyde, Heptachlor, and Heptachlor epoxide. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The following samples are impacted: Outfall009_20160308_Comp (440-140288-1) and (CCVIS 440-317358/7).

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

Dioxin
Method(s) 1613B: EPA Method 1613B specifies a +/- 15 second retention time difference between the recovery standard in the initial calibration (ICAL) and the continuing calibration verification (CCV). The 13C-1,2,3,7,8,9-HxCDD associated with the following sample run on instrument 4D5 exceeded this criteria: Outfall009_20160308_Comp (440-140288-1), (CCV 320-103469/2), (LCS 320-103052/2-A), (LCSD 320-103052/3-A) and (MB 320-103052/1-A). This retention time shift is due to normal and reasonable column maintenance and does not affect the instrument chromatography resolution, sensitivity, or identification of target analytes. System retention times have been updated for proper analyte identification.

Method(s) 1613B: The laboratory control sample (LCS) and / or laboratory control sample duplicate (LCSD) for prep batch 320-103052 recovered outside control limits for the following analyte: 1,2,3,7,8-PeCDD. This analyte was biased high in the LCS and was 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.

RAD
Method(s) PrecSep-7: Strontium-90 Prep Batch 160-240665:
The following samples were prepared at a reduced aliquot due to cloudiness, discoloration, and a sulfur smell:
Outfall009_20160308_Comp (440-140288-1), Outfall009_20160308_Comp (440-140288-1[MS]) and Outfall009_20160308_Comp (440-140288-1[MSD]).

Method(s) PrecSep_0: Radium-228 prep batch 160-240400: The samples were weighed at a reduced aliquot due to sediment in the sample. Outfall009_20160308_Comp (440-140288-1), Outfall009_20160308_Comp (440-140288-1[MS]) and Outfall009_20160308_Comp (440-140288-1[MSD])

Method(s) PrecSep-21: Radium 226 prep batch 160-240169: The following samples were weighed at a reduced aliquot due to sediment in the sample. Outfall009_20160308_Comp (440-140288-1), Outfall009_20160308_Comp (440-140288-1[MS]) and Outfall009_20160308_Comp (440-140288-1[MSD])

Method(s) ExtChrom: Uranium Prep Batch (241443): Samples are beige and contain debris, therefore a reduced aliquot was used to prevent matrix interference.

Outfall009_20160308_Comp (440-140288-1), Outfall009_20160308_Comp (440-140288-1[MS]) and Outfall009_20160308_Comp (440-140288-1[MSD])

Method(s) 900.0: Gross Alpha/Beta Prep Batch 160-241360:
The gross alpha and beta detection goal was not met for the following samples due to a reduction of the sample size attributed to high residual mass: Outfall009_20160308_Comp (440-140288-1). Analytical results are reported with the detection limit achieved.

Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Comp

TestAmerica Job ID: 440-140288-1

Job ID: 440-140288-1 (Continued)

Laboratory: TestAmerica Irvine (Continued)

Method(s) PrecSep-21: Radium-226 Prep Batch 160-240169:

The barium carrier recovery is outside the lower control limit (40%) for the following sample: Outfall009_20160308_Comp (440-140288-1). The pellet was noted as small throughout the out of ingrowth process and was seeded with barium carrier and pH tested to ensure that all barium had precipitated out.

Method(s) PrecSep-21: Radium-226 Prep Batch 240169:

The following sample(s) could not be thoroughly homogenized before preparation: Outfall009_20160308_Comp (440-140288-1), Outfall009_20160308_Comp (440-140288-1[MS]) and Outfall009_20160308_Comp (440-140288-1[MSD]). The samples were deeply discolored yellow with sediment, and came from 3 separate containers.

Method(s) PrecSep_0: Radium-228 Prep Batch 160-240400:

The barium carrier recovery is outside the lower control limit (40%) for the following sample: Outfall009_20160308_Comp (440-140288-1). The pellet was noted as small throughout the out of ingrowth process and was seeded with barium carrier and pH tested to ensure that all barium had precipitated out.

Method(s) PrecSep_0: Radium-228 Prep Batch 240400:

The following sample(s) could not be thoroughly homogenized before preparation: Outfall009_20160308_Comp (440-140288-1), Outfall009_20160308_Comp (440-140288-1[MS]) and Outfall009_20160308_Comp (440-140288-1[MSD]). The samples were deeply discolored yellow with sediment, and came from 3 separate containers.

Method(s) 904.0: Radium-228 Prep Batch 160-240400:

The following samples have an RER (replicate error ratio) result outside of the acceptance criteria of 1 (1.26) for radium-228; (see prep NCM 81764). Duplicate precision is demonstrated by acceptable relative percent difference (RPD), within the limit of 40% (29%). The data have been qualified and reported. Outfall009_20160308_Comp (440-140288-1), Outfall009_20160308_Comp (440-140288-1[MS]), Outfall009_20160308_Comp (440-140288-1[MSD]), (LCS 160-240400/2-A) and (MB 160-240400/1-A)

Method(s) 904.0: Radium-228 Prep Batch 160-240400:

The barium carrier recovery (25%) is outside the lower control limit (40%) for the following sample: Outfall009_20160308_Comp (440-140288-1). There was physical evidence of matrix interference apparent during the initial preparation of the sample (see prep NCM 80651, 81763, and 81764). The QC samples associated with the batch have acceptable carrier recovery indicating the presence of matrix interference. The data have been qualified and reported.

Method(s) 904.0: Radium-228 Prep Batch 160-240400:

The radium-228 detection goal was not met for the following samples due to the reduced sample volume and lower barium carrier recoveries attributed to the presence of matrix interferences (see prep NCM 80651, 81763, and 81764): Outfall009_20160308_Comp (440-140288-1), Outfall009_20160308_Comp (440-140288-1[MS]) and Outfall009_20160308_Comp (440-140288-1[MSD]). Analytical results are reported with the detection limit achieved.

Method(s) 903.0: Radium-226 Prep Batch 160-240169:

The barium carrier recovery (25%) is outside the lower control limit (40%) for the following sample: Outfall009_20160308_Comp (440-140288-1). There was physical evidence of matrix interference apparent during the initial preparation of the sample (see prep NCM 80652, 81761, and 81762). The QC samples associated with the batch have acceptable carrier recovery indicating the presence of matrix interference. The data have been qualified and reported.

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

Metals

Method(s) 200.7 Rev 4.4: The continuing calibration blank (CCB) for analytical batch 440-321907 contained Aluminum above the reporting limit (RL). All reported samples associated with this CCB contained this analyte at a concentration greater than 10X the value found in the CCB; therefore, re-analysis of samples was not performed. Outfall009_20160308_Comp (440-140288-1)

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

General Chemistry

Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Comp

TestAmerica Job ID: 440-140288-1

Job ID: 440-140288-1 (Continued)

Laboratory: TestAmerica Irvine (Continued)

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.

Dioxin Prep

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

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Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Comp

TestAmerica Job ID: 440-140288-1

Client Sample ID: Outfall009_20160308_Comp

Lab Sample ID: 440-140288-1

Date Collected: 03/08/16 09:46

Matrix: Water

Date Received: 03/08/16 18:45

Method: 525.2 - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlorpyrifos	ND		1.1	0.53	ug/L		03/09/16 08:14	03/09/16 17:41	1
Diazinon	ND		0.26	0.13	ug/L		03/09/16 08:14	03/09/16 17:41	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,3-Dimethyl-2-nitrobenzene	99		70 - 130				03/09/16 08:14	03/09/16 17:41	1
Perylene-d12	86	GR	70 - 130				03/09/16 08:14	03/09/16 17:41	1
Triphenylphosphate	201	LH GR	70 - 130				03/09/16 08:14	03/09/16 17:41	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		0.478	0.191	ug/L		03/14/16 13:28	03/18/16 22:51	1
Acenaphthylene	ND		0.478	0.191	ug/L		03/14/16 13:28	03/18/16 22:51	1
Anthracene	ND		0.478	0.191	ug/L		03/14/16 13:28	03/18/16 22:51	1
Benzidine	ND	LQ	9.57	4.78	ug/L		03/14/16 13:28	03/18/16 22:51	1
Benzo[a]anthracene	ND		4.78	1.91	ug/L		03/14/16 13:28	03/18/16 22:51	1
Benzo[b]fluoranthene	ND		1.91	0.957	ug/L		03/14/16 13:28	03/18/16 22:51	1
Benzo[k]fluoranthene	ND		0.478	0.239	ug/L		03/14/16 13:28	03/18/16 22:51	1
Benzo[a]pyrene	ND		1.91	0.478	ug/L		03/14/16 13:28	03/18/16 22:51	1
Bis(2-chloroethoxy)methane	ND		0.478	0.191	ug/L		03/14/16 13:28	03/18/16 22:51	1
Bis(2-chloroethyl)ether	ND		0.478	0.191	ug/L		03/14/16 13:28	03/18/16 22:51	1
Bis(2-ethylhexyl) phthalate	10.6		4.78	1.91	ug/L		03/14/16 13:28	03/18/16 22:51	1
4-Bromophenyl phenyl ether	ND		0.957	0.478	ug/L		03/14/16 13:28	03/18/16 22:51	1
Butyl benzyl phthalate	ND		4.78	1.91	ug/L		03/14/16 13:28	03/18/16 22:51	1
4-Chloro-3-methylphenol	ND		1.91	0.191	ug/L		03/14/16 13:28	03/18/16 22:51	1
2-Chloronaphthalene	ND		0.478	0.191	ug/L		03/14/16 13:28	03/18/16 22:51	1
2-Chlorophenol	ND		0.957	0.478	ug/L		03/14/16 13:28	03/18/16 22:51	1
4-Chlorophenyl phenyl ether	ND		0.478	0.191	ug/L		03/14/16 13:28	03/18/16 22:51	1
Chrysene	ND		0.478	0.191	ug/L		03/14/16 13:28	03/18/16 22:51	1
Dibenz(a,h)anthracene	ND		0.478	0.239	ug/L		03/14/16 13:28	03/18/16 22:51	1
Di-n-butyl phthalate	ND		1.91	0.957	ug/L		03/14/16 13:28	03/18/16 22:51	1
1,2-Dichlorobenzene	ND		0.478	0.191	ug/L		03/14/16 13:28	03/18/16 22:51	1
1,3-Dichlorobenzene	ND		0.478	0.191	ug/L		03/14/16 13:28	03/18/16 22:51	1
1,4-Dichlorobenzene	ND		0.478	0.191	ug/L		03/14/16 13:28	03/18/16 22:51	1
3,3'-Dichlorobenzidine	ND	LR BA	4.78	1.91	ug/L		03/14/16 13:28	03/18/16 22:51	1
2,4-Dichlorophenol	ND		1.91	0.957	ug/L		03/14/16 13:28	03/18/16 22:51	1
Diethyl phthalate	ND		0.957	0.478	ug/L		03/14/16 13:28	03/18/16 22:51	1
2,4-Dimethylphenol	ND		1.91	0.957	ug/L		03/14/16 13:28	03/18/16 22:51	1
Dimethyl phthalate	ND		0.478	0.239	ug/L		03/14/16 13:28	03/18/16 22:51	1
4,6-Dinitro-2-methylphenol	ND		4.78	1.91	ug/L		03/14/16 13:28	03/18/16 22:51	1
2,4-Dinitrophenol	ND		4.78	1.91	ug/L		03/14/16 13:28	03/18/16 22:51	1
2,4-Dinitrotoluene	ND		4.78	1.91	ug/L		03/14/16 13:28	03/18/16 22:51	1
2,6-Dinitrotoluene	ND		4.78	1.91	ug/L		03/14/16 13:28	03/18/16 22:51	1
Di-n-octyl phthalate	ND		4.78	1.91	ug/L		03/14/16 13:28	03/18/16 22:51	1
1,2-Diphenylhydrazine(as Azobenzene)	ND		0.957	0.478	ug/L		03/14/16 13:28	03/18/16 22:51	1
Fluoranthene	ND		0.478	0.191	ug/L		03/14/16 13:28	03/18/16 22:51	1
Fluorene	ND		0.478	0.191	ug/L		03/14/16 13:28	03/18/16 22:51	1
Hexachlorobenzene	ND		0.957	0.478	ug/L		03/14/16 13:28	03/18/16 22:51	1
Hexachlorobutadiene	ND		1.91	0.478	ug/L		03/14/16 13:28	03/18/16 22:51	1
Hexachloroethane	ND		2.87	0.478	ug/L		03/14/16 13:28	03/18/16 22:51	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Comp

TestAmerica Job ID: 440-140288-1

Client Sample ID: Outfall009_20160308_Comp

Lab Sample ID: 440-140288-1

Date Collected: 03/08/16 09:46

Matrix: Water

Date Received: 03/08/16 18:45

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hexachlorocyclopentadiene	ND	BA	4.78	1.91	ug/L		03/14/16 13:28	03/18/16 22:51	1
Indeno[1,2,3-cd]pyrene	ND		1.91	0.957	ug/L		03/14/16 13:28	03/18/16 22:51	1
Isophorone	ND		0.957	0.478	ug/L		03/14/16 13:28	03/18/16 22:51	1
Naphthalene	ND		0.957	0.478	ug/L		03/14/16 13:28	03/18/16 22:51	1
Nitrobenzene	ND		0.957	0.478	ug/L		03/14/16 13:28	03/18/16 22:51	1
2-Nitrophenol	ND		1.91	0.957	ug/L		03/14/16 13:28	03/18/16 22:51	1
4-Nitrophenol	ND		4.78	1.91	ug/L		03/14/16 13:28	03/18/16 22:51	1
N-Nitrosodimethylamine	ND		1.91	0.957	ug/L		03/14/16 13:28	03/18/16 22:51	1
N-Nitrosodiphenylamine	ND		0.957	0.478	ug/L		03/14/16 13:28	03/18/16 22:51	1
N-Nitrosodi-n-propylamine	ND		1.91	0.957	ug/L		03/14/16 13:28	03/18/16 22:51	1
Pentachlorophenol	ND		1.91	0.957	ug/L		03/14/16 13:28	03/18/16 22:51	1
Phenanthrene	ND		0.478	0.191	ug/L		03/14/16 13:28	03/18/16 22:51	1
Phenol	ND		0.957	0.478	ug/L		03/14/16 13:28	03/18/16 22:51	1
Pyrene	ND		0.478	0.191	ug/L		03/14/16 13:28	03/18/16 22:51	1
1,2,4-Trichlorobenzene	ND		0.957	0.478	ug/L		03/14/16 13:28	03/18/16 22:51	1
2,4,6-Trichlorophenol	ND		0.957	0.478	ug/L		03/14/16 13:28	03/18/16 22:51	1
Benzo[g,h,i]perylene	ND		4.78	1.91	ug/L		03/14/16 13:28	03/18/16 22:51	1
bis (2-chloroisopropyl) ether	ND		0.478	0.191	ug/L		03/14/16 13:28	03/18/16 22:51	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl	67		50 - 120	03/14/16 13:28	03/18/16 22:51	1
2-Fluorophenol	68		30 - 120	03/14/16 13:28	03/18/16 22:51	1
2,4,6-Tribromophenol	68		40 - 120	03/14/16 13:28	03/18/16 22:51	1
Nitrobenzene-d5	68		45 - 120	03/14/16 13:28	03/18/16 22:51	1
Terphenyl-d14	56		37 - 144	03/14/16 13:28	03/18/16 22:51	1
Phenol-d6	62		35 - 120	03/14/16 13:28	03/18/16 22:51	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor 1016	ND		0.49	0.24	ug/L		03/14/16 06:27	03/15/16 12:58	1
Aroclor 1221	ND		0.49	0.24	ug/L		03/14/16 06:27	03/15/16 12:58	1
Aroclor 1232	ND		0.49	0.24	ug/L		03/14/16 06:27	03/15/16 12:58	1
Aroclor 1242	ND		0.49	0.24	ug/L		03/14/16 06:27	03/15/16 12:58	1
Aroclor 1248	ND		0.49	0.24	ug/L		03/14/16 06:27	03/15/16 12:58	1
Aroclor 1254	ND		0.49	0.24	ug/L		03/14/16 06:27	03/15/16 12:58	1
Aroclor 1260	ND		0.49	0.24	ug/L		03/14/16 06:27	03/15/16 12:58	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl (Surr)	92		29 - 115	03/14/16 06:27	03/15/16 12:58	1

Method: 608 Pesticides - Organochlorine Pesticides Low level

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	ND		0.0049	0.0015	ug/L		03/14/16 06:27	03/15/16 00:23	1
alpha-BHC	ND		0.0049	0.0024	ug/L		03/14/16 06:27	03/15/16 00:23	1
beta-BHC	ND		0.0098	0.0039	ug/L		03/14/16 06:27	03/15/16 00:23	1
Chlordane (technical)	ND		0.098	0.078	ug/L		03/14/16 06:27	03/15/16 00:23	1
delta-BHC	ND		0.0049	0.0034	ug/L		03/14/16 06:27	03/15/16 00:23	1
Dieldrin	ND		0.0049	0.0020	ug/L		03/14/16 06:27	03/15/16 00:23	1
Endosulfan I	ND		0.0049	0.0029	ug/L		03/14/16 06:27	03/15/16 00:23	1
Endosulfan II	ND		0.0049	0.0020	ug/L		03/14/16 06:27	03/15/16 00:23	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Comp

TestAmerica Job ID: 440-140288-1

Client Sample ID: Outfall009_20160308_Comp

Lab Sample ID: 440-140288-1

Date Collected: 03/08/16 09:46

Matrix: Water

Date Received: 03/08/16 18:45

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Endosulfan sulfate	ND		0.0098	0.0029	ug/L		03/14/16 06:27	03/15/16 00:23	1
Endrin	ND		0.0049	0.0020	ug/L		03/14/16 06:27	03/15/16 00:23	1
Endrin aldehyde	ND		0.0098	0.0020	ug/L		03/14/16 06:27	03/15/16 00:23	1
gamma-BHC (Lindane)	ND		0.0098	0.0029	ug/L		03/14/16 06:27	03/15/16 00:23	1
Heptachlor	ND		0.0098	0.0029	ug/L		03/14/16 06:27	03/15/16 00:23	1
Heptachlor epoxide	ND		0.0049	0.0024	ug/L		03/14/16 06:27	03/15/16 00:23	1
Toxaphene	ND		0.49	0.24	ug/L		03/14/16 06:27	03/15/16 00:23	1
4,4'-DDD	ND		0.0049	0.0039	ug/L		03/14/16 06:27	03/15/16 00:23	1
4,4'-DDE	ND		0.0049	0.0029	ug/L		03/14/16 06:27	03/15/16 00:23	1
4,4'-DDT	ND		0.0098	0.0039	ug/L		03/14/16 06:27	03/15/16 00:23	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	63		10 - 150				03/14/16 06:27	03/15/16 00:23	1

Method: 218.6 - Chromium, Hexavalent (Ion Chromatography)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	ND		1.0	0.25	ug/L			03/08/16 22:23	1

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	4.0		0.50	0.25	mg/L			03/09/16 18:55	1
Fluoride	ND		0.50	0.25	mg/L			03/09/16 18:55	1
Sulfate	6.9		0.50	0.25	mg/L			03/09/16 18:55	1

Method: 314.0 - Perchlorate (IC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		4.0	0.95	ug/L			03/25/16 10:38	1

Method: NO3NO2 Calc - Nitrogen, Nitrate-Nitrite

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	0.34		0.15	0.070	mg/L			03/31/16 13:23	1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000094	0.000003	ug/L		03/11/16 08:55	03/16/16 01:37	1
2,3,7,8-TCDF	ND		0.000094	0.000004	ug/L		03/11/16 08:55	03/16/16 01:37	1
1,2,3,7,8-PeCDD	ND	LQ	0.000047	0.000011	ug/L		03/11/16 08:55	03/16/16 01:37	1
1,2,3,7,8-PeCDF	ND		0.000047	0.000008	ug/L		03/11/16 08:55	03/16/16 01:37	1
2,3,4,7,8-PeCDF	ND		0.000047	0.000009	ug/L		03/11/16 08:55	03/16/16 01:37	1
1,2,3,4,7,8-HxCDD	0.000015	J,DX	0.000047	0.000005	ug/L		03/11/16 08:55	03/16/16 01:37	1
1,2,3,6,7,8-HxCDD	0.000030	J,DX	0.000047	0.000005	ug/L		03/11/16 08:55	03/16/16 01:37	1
1,2,3,7,8,9-HxCDD	0.000021	J,DX q	0.000047	0.000004	ug/L		03/11/16 08:55	03/16/16 01:37	1
1,2,3,4,7,8-HxCDF	0.000014	J,DX q MB	0.000047	0.000005	ug/L		03/11/16 08:55	03/16/16 01:37	1
1,2,3,6,7,8-HxCDF	0.000018	J,DX	0.000047	0.000004	ug/L		03/11/16 08:55	03/16/16 01:37	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Comp

TestAmerica Job ID: 440-140288-1

Client Sample ID: Outfall009_20160308_Comp

Lab Sample ID: 440-140288-1

Date Collected: 03/08/16 09:46

Matrix: Water

Date Received: 03/08/16 18:45

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,7,8,9-HxCDF	0.0000016	J,DX	0.000047	0.0000003	ug/L		03/11/16 08:55	03/16/16 01:37	1
2,3,4,6,7,8-HxCDF	0.0000016	J,DX	0.000047	0.0000003	ug/L		03/11/16 08:55	03/16/16 01:37	1
1,2,3,4,6,7,8-HpCDD	0.000035	J,DX MB	0.000047	0.0000009	ug/L		03/11/16 08:55	03/16/16 01:37	1
1,2,3,4,6,7,8-HpCDF	0.000010	J,DX MB	0.000047	0.0000005	ug/L		03/11/16 08:55	03/16/16 01:37	1
1,2,3,4,7,8,9-HpCDF	0.0000018	J,DX	0.000047	0.0000007	ug/L		03/11/16 08:55	03/16/16 01:37	1
OCDD	0.00031	MB	0.000094	0.0000031	ug/L		03/11/16 08:55	03/16/16 01:37	1
OCDF	0.000024	J,DX MB	0.000094	0.0000006	ug/L		03/11/16 08:55	03/16/16 01:37	1
Total TCDD	0.00000064	J,DX q MB	0.0000094	0.0000003	ug/L		03/11/16 08:55	03/16/16 01:37	1
Total TCDF	ND		0.0000094	0.0000004	ug/L		03/11/16 08:55	03/16/16 01:37	1
Total PeCDD	ND		0.000047	0.0000011	ug/L		03/11/16 08:55	03/16/16 01:37	1
Total PeCDF	ND		0.000047	0.0000008	ug/L		03/11/16 08:55	03/16/16 01:37	1
Total HxCDD	0.000013	J,DX q MB	0.000047	0.0000004	ug/L		03/11/16 08:55	03/16/16 01:37	1
Total HxCDF	0.000012	J,DX q MB	0.000047	0.0000004	ug/L		03/11/16 08:55	03/16/16 01:37	1
Total HpCDD	0.000078	J,DX MB	0.000047	0.0000009	ug/L		03/11/16 08:55	03/16/16 01:37	1
Total HpCDF	0.000022	J,DX MB	0.000047	0.0000006	ug/L		03/11/16 08:55	03/16/16 01:37	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	76		25 - 164				03/11/16 08:55	03/16/16 01:37	1
13C-2,3,7,8-TCDF	78		24 - 169				03/11/16 08:55	03/16/16 01:37	1
13C-1,2,3,7,8-PeCDD	52		25 - 181				03/11/16 08:55	03/16/16 01:37	1
13C-1,2,3,7,8-PeCDF	77		24 - 185				03/11/16 08:55	03/16/16 01:37	1
13C-2,3,4,7,8-PeCDF	76		21 - 178				03/11/16 08:55	03/16/16 01:37	1
13C-1,2,3,4,7,8-HxCDD	78		32 - 141				03/11/16 08:55	03/16/16 01:37	1
13C-1,2,3,6,7,8-HxCDD	87		28 - 130				03/11/16 08:55	03/16/16 01:37	1
13C-1,2,3,4,7,8-HxCDF	82		26 - 152				03/11/16 08:55	03/16/16 01:37	1
13C-1,2,3,6,7,8-HxCDF	81		26 - 123				03/11/16 08:55	03/16/16 01:37	1
13C-1,2,3,7,8,9-HxCDF	76		29 - 147				03/11/16 08:55	03/16/16 01:37	1
13C-2,3,4,6,7,8-HxCDF	81		28 - 136				03/11/16 08:55	03/16/16 01:37	1
13C-1,2,3,4,6,7,8-HpCDD	70		23 - 140				03/11/16 08:55	03/16/16 01:37	1
13C-1,2,3,4,6,7,8-HpCDF	77		28 - 143				03/11/16 08:55	03/16/16 01:37	1
13C-1,2,3,4,7,8,9-HpCDF	70		26 - 138				03/11/16 08:55	03/16/16 01:37	1
13C-OCDD	58		17 - 157				03/11/16 08:55	03/16/16 01:37	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	104		35 - 197				03/11/16 08:55	03/16/16 01:37	1

Method: 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	3400	MB	50	25	ug/L		03/30/16 10:28	04/02/16 12:46	1
Arsenic	ND		10	5.0	ug/L		03/30/16 10:28	03/31/16 21:25	1
Boron	0.053		0.050	0.010	mg/L		03/30/16 10:28	04/02/16 12:46	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Comp

TestAmerica Job ID: 440-140288-1

Client Sample ID: Outfall009_20160308_Comp

Lab Sample ID: 440-140288-1

Date Collected: 03/08/16 09:46

Matrix: Water

Date Received: 03/08/16 18:45

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Beryllium	ND		2.0	1.0	ug/L		03/30/16 10:28	03/31/16 21:25	1
Chromium	5.4		5.0	2.5	ug/L		03/30/16 10:28	03/31/16 21:25	1
Iron	3.9		0.040	0.010	mg/L		03/30/16 10:28	03/31/16 21:25	1
Nickel	6.2	J,DX	10	5.0	ug/L		03/30/16 10:28	03/31/16 21:25	1
Vanadium	8.1	J,DX	10	5.0	ug/L		03/30/16 10:28	03/31/16 21:25	1
Zinc	22		20	10	ug/L		03/30/16 10:28	03/31/16 21:25	1
Silver	ND		10	5.0	ug/L		03/30/16 10:28	03/31/16 21:25	1

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		03/30/16 10:30	04/04/16 20:37	1
Copper	8.8		2.0	0.50	ug/L		03/30/16 10:30	04/04/16 20:37	1
Lead	5.9		1.0	0.50	ug/L		03/30/16 10:30	04/04/16 20:37	1
Antimony	0.97	J,DX	2.0	0.50	ug/L		03/30/16 10:30	04/04/16 20:37	1
Selenium	ND		2.0	0.50	ug/L		03/30/16 10:30	04/04/16 20:37	1
Thallium	ND		1.0	0.50	ug/L		03/30/16 10:30	04/04/16 20:37	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		03/22/16 16:25	03/23/16 00:41	1

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	36		0.33	0.17	mg/L			03/30/16 17:39	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	110		10	5.0	mg/L			03/14/16 11:57	1
Total Suspended Solids	20		3.3	1.7	mg/L			03/15/16 14:10	1
Cyanide, Total	ND		5.0	2.5	ug/L		03/14/16 21:37	03/16/16 18:17	1

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Gross Alpha	0.938	U G	19.0	19.0	3.00	35.8	pCi/L	03/21/16 12:29	03/27/16 18:20	1
Gross Beta	-1.14	U G	14.1	14.1	4.00	25.4	pCi/L	03/21/16 12:29	03/27/16 18:20	1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Cesium-137	0.000	U	4.64	4.64	20.0	14.7	pCi/L	03/16/16 04:47	03/16/16 14:26	1
Potassium-40	15.5	U	96.5	96.5		209	pCi/L	03/16/16 04:47	03/16/16 14:26	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Radium-226	0.511	U	0.518	0.520	1.00	0.833	pCi/L	03/11/16 15:35	04/04/16 07:36	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Comp

TestAmerica Job ID: 440-140288-1

Client Sample ID: Outfall009_20160308_Comp

Lab Sample ID: 440-140288-1

Date Collected: 03/08/16 09:46

Matrix: Water

Date Received: 03/08/16 18:45

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	25.9	X	40 - 110	03/11/16 15:35	04/04/16 07:36	1

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.84	U G F	1.75	1.76	1.00	2.83	pCi/L	03/14/16 13:57	04/01/16 10:47	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	25.9	X	40 - 110	03/14/16 13:57	04/01/16 10:47	1
Y Carrier	82.6		40 - 110	03/14/16 13:57	04/01/16 10:47	1

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.133	U	0.624	0.625	3.00	1.10	pCi/L	03/15/16 20:05	03/23/16 15:46	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	87.1		40 - 110	03/15/16 20:05	03/23/16 15:46	1
Y Carrier	93.1		40 - 110	03/15/16 20:05	03/23/16 15:46	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	76.1	U	222	222	500	395	pCi/L	03/31/16 13:49	04/01/16 12:25	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Total Uranium	0.354		0.256	0.257	1.00	0.251	pCi/L	03/22/16 10:06	03/29/16 11:19	1

Client Sample ID: Outfall009_20160308_Comp_F

Lab Sample ID: 440-140288-2

Date Collected: 03/08/16 09:46

Matrix: Water

Date Received: 03/08/16 18:45

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	920	MB QP	50	25	ug/L		03/29/16 08:39	03/30/16 11:19	1
Arsenic	ND	QP	10	5.0	ug/L		03/29/16 08:39	03/30/16 00:37	1
Boron	0.050	QP	0.050	0.010	mg/L		03/29/16 08:39	03/30/16 11:19	1
Beryllium	ND	QP	2.0	1.0	ug/L		03/29/16 08:39	03/30/16 00:37	1
Chromium	2.5	J,DX QP	5.0	2.5	ug/L		03/29/16 08:39	03/30/16 00:37	1
Iron	0.95	QP	0.040	0.010	mg/L		03/29/16 08:39	03/30/16 00:37	1
Nickel	ND	QP	10	5.0	ug/L		03/29/16 08:39	03/30/16 11:19	1
Vanadium	ND	QP	10	5.0	ug/L		03/29/16 08:39	03/30/16 00:37	1
Zinc	14	J,DX QP	20	10	ug/L		03/29/16 08:39	03/30/16 00:37	1
Silver	ND	QP	10	5.0	ug/L		03/29/16 08:39	03/30/16 00:37	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Comp

TestAmerica Job ID: 440-140288-1

Client Sample ID: Outfall009_20160308_Comp_F

Lab Sample ID: 440-140288-2

Date Collected: 03/08/16 09:46

Matrix: Water

Date Received: 03/08/16 18:45

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND	QP	1.0	0.25	ug/L		03/29/16 11:14	04/04/16 20:19	1
Copper	5.4	QP	2.0	0.50	ug/L		03/29/16 11:14	04/04/16 20:19	1
Lead	1.4	QP	1.0	0.50	ug/L		03/29/16 11:14	04/04/16 20:19	1
Antimony	0.77	J,DX QP	2.0	0.50	ug/L		03/29/16 11:14	04/04/16 20:19	1
Selenium	ND	QP	2.0	0.50	ug/L		03/29/16 11:14	04/04/16 20:19	1
Thallium	ND	QP	1.0	0.50	ug/L		03/29/16 11:14	04/04/16 20:19	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		03/30/16 17:33	03/31/16 13:47	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hardness, as CaCO3	33		0.33	0.17	mg/L			03/30/16 17:39	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Comp

TestAmerica Job ID: 440-140288-1

Method	Method Description	Protocol	Laboratory
525.2	Semivolatile Organic Compounds (GC/MS)	EPA	TAL IRV
625	Semivolatile Organic Compounds (GC/MS)	EPA	TAL IRV
608 PCB LL	Polychlorinated Biphenyls (PCBs) Low level	40CFR136A	TAL IRV
608 Pesticides	Organochlorine Pesticides Low level	40CFR136A	TAL IRV
218.6	Chromium, Hexavalent (Ion Chromatography)	EPA	TAL IRV
300.0	Anions, Ion Chromatography	MCAWW	TAL IRV
314.0	Perchlorate (IC)	EPA	TAL IRV
NO3NO2 Calc	Nitrogen, Nitrate-Nitrite	EPA	TAL IRV
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
SM 2340B	Total Hardness (as CaCO3) by calculation	SM	TAL IRV
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL IRV
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL IRV
SM 4500 CN E	Cyanide, Total (Low Level)	SM	TAL IRV
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
Asbestos 100.2	EPA 100.2 Asbestos in Drinking Water	NONE	LA Testing
Chronic Cerio, EPA/821-R02-013	Bioassay	NONE	ABC

Protocol References:

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

DOE = U.S. Department of Energy

EPA = US Environmental Protection Agency

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

NONE = NONE

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

Laboratory References:

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

LA Testing = LA Testing, 520 Mission Street, South Pasadena, CA 91030

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

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Comp

TestAmerica Job ID: 440-140288-1

Client Sample ID: Outfall009_20160308_Comp

Lab Sample ID: 440-140288-1

Date Collected: 03/08/16 09:46

Matrix: Water

Date Received: 03/08/16 18:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	525.2			950 mL	1 mL	316215	03/09/16 08:14	IVA	TAL IRV
Total/NA	Analysis	525.2		1	950 mL	1 mL	316232	03/09/16 17:41	MF	TAL IRV
Total/NA	Prep	625			1045 mL	2 mL	317330	03/14/16 13:28	GCY	TAL IRV
Total/NA	Analysis	625		1	1045 mL	2 mL	318612	03/18/16 22:51	DF	TAL IRV
Total/NA	Prep	608			1025 mL	2 mL	317195	03/14/16 06:27	FTD	TAL IRV
Total/NA	Analysis	608 PCB LL		1	1025 mL	2 mL	317502	03/15/16 12:58	JM	TAL IRV
Total/NA	Prep	608			1025 mL	2 mL	317195	03/14/16 06:27	FTD	TAL IRV
Total/NA	Analysis	608 Pesticides		1	1025 mL	2 mL	317358	03/15/16 00:23	KS	TAL IRV
Total/NA	Analysis	218.6		1	10 mL		315946	03/08/16 22:23	MN	TAL IRV
Total/NA	Analysis	300.0		1	5 mL		316245	03/09/16 18:55	NTN	TAL IRV
Total/NA	Analysis	314.0		1	1 mL		320123	03/25/16 10:38	CH	TAL IRV
Total/NA	Analysis	NO3NO2 Calc		1			321488	03/31/16 13:23	TN	TAL IRV
Total/NA	Prep	1613B			1060.1 mL	20 uL	103052	03/11/16 08:55	DXD	TAL SAC
Total/NA	Analysis	1613B		1	1060.1 mL	20 uL	103469	03/16/16 01:37	KSS	TAL SAC
Total Recoverable	Prep	200.2			25 mL	25 mL	321131	03/30/16 10:28	Q1N	TAL IRV
Total Recoverable	Analysis	200.7 Rev 4.4		1	25 mL	25 mL	321604	03/31/16 21:25	EN	TAL IRV
Total Recoverable	Prep	200.2			25 mL	25 mL	321131	03/30/16 10:28	Q1N	TAL IRV
Total Recoverable	Analysis	200.7 Rev 4.4		1	25 mL	25 mL	321907	04/02/16 12:46	EN	TAL IRV
Total Recoverable	Prep	200.2			25 mL	25 mL	321133	03/30/16 10:30	Q1N	TAL IRV
Total Recoverable	Analysis	200.8		1	25 mL	25 mL	322225	04/04/16 20:37	RC	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	319385	03/22/16 16:25	DB	TAL IRV
Total/NA	Analysis	245.1		1	20 mL	20 mL	319620	03/23/16 00:41	DB	TAL IRV
Total Recoverable	Analysis	SM 2340B		1			321298	03/30/16 17:39	DP	TAL IRV
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	317303	03/14/16 11:57	XL	TAL IRV
Total/NA	Analysis	SM 2540D		1	300 mL	1000 mL	317612	03/15/16 14:10	MMH	TAL IRV
Total/NA	Prep	Distill/CN			50 mL	50 mL	317433	03/14/16 21:37	SN	TAL IRV
Total/NA	Analysis	SM 4500 CN E		1	50 mL	50 mL	318026	03/16/16 18:17	SN	TAL IRV
Total/NA	Prep	Evaporation			7 mL	1.0 g	241360	03/21/16 12:29	SCB	TAL SL
Total/NA	Analysis	900.0		1	7 mL		242410	03/27/16 18:20	ALS	TAL SL
Total/NA	Prep	Fill_Geo-0			1000 mL	1.0 g	240679	03/16/16 04:47	R1S	TAL SL
Total/NA	Analysis	901.1		1	1000 mL		240820	03/16/16 14:26	ALS	TAL SL
Total/NA	Prep	PrecSep-21			500.04 mL	1.0 g	240169	03/11/16 15:35	MRB	TAL SL
Total/NA	Analysis	903.0		1	500.04 mL		243362	04/04/16 07:36	RTM	TAL SL
Total/NA	Prep	PrecSep_0			500.04 mL	1.0 g	240400	03/14/16 13:57	CMC	TAL SL
Total/NA	Analysis	904.0		1	500.04 mL		243314	04/01/16 10:47	ALS	TAL SL
Total/NA	Prep	PrecSep-7			250.08 mL	1.0 g	240665	03/15/16 20:05	CMC	TAL SL
Total/NA	Analysis	905		1	250.08 mL		241800	03/23/16 15:46	ALS	TAL SL
Total/NA	Prep	LSC_Dist_Susp			100.01 mL	1.0 g	243061	03/31/16 13:49	JDL	TAL SL
Total/NA	Analysis	906.0		1	100.01 mL		243338	04/01/16 12:25	ALD	TAL SL
Total/NA	Prep	ExtChrom			200.12 mL	1.0 mL	241443	03/22/16 10:06	SEK	TAL SL
Total/NA	Analysis	A-01-R		1	200.12 mL		242668	03/29/16 11:19	ALD	TAL SL

TestAmerica Irvine

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Comp

TestAmerica Job ID: 440-140288-1

Client Sample ID: Outfall009_20160308_Comp_F

Lab Sample ID: 440-140288-2

Date Collected: 03/08/16 09:46

Matrix: Water

Date Received: 03/08/16 18:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			150 mL	150 mL	318971	03/21/16 09:42	K1E	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	320831	03/29/16 08:39	Q1N	TAL IRV
Dissolved	Analysis	200.7 Rev 4.4		1	25 mL	25 mL	321084	03/30/16 00:37	VS	TAL IRV
Dissolved	Filtration	FILTRATION			150 mL	150 mL	318971	03/21/16 09:42	K1E	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	320831	03/29/16 08:39	Q1N	TAL IRV
Dissolved	Analysis	200.7 Rev 4.4		1	25 mL	25 mL	321166	03/30/16 11:19	TK	TAL IRV
Dissolved	Filtration	FILTRATION			150 mL	150 mL	318971	03/21/16 09:42	K1E	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	320890	03/29/16 11:14	Q1N	TAL IRV
Dissolved	Analysis	200.8		1	25 mL	25 mL	322224	04/04/16 20:19	RC	TAL IRV
Dissolved	Filtration	FILTRATION			150 mL	150 mL	318971	03/21/16 09:42	K1E	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	321294	03/30/16 17:33	DB	TAL IRV
Dissolved	Analysis	245.1		1	20 mL	20 mL	321503	03/31/16 13:47	EN	TAL IRV
Dissolved	Analysis	SM 2340B		1			321298	03/30/16 17:39	DP	TAL IRV

Laboratory References:

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

LA Testing = LA Testing, 520 Mission Street, South Pasadena, CA 91030

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

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Comp

TestAmerica Job ID: 440-140288-1

Method: 525.2 - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-316215/1-A
Matrix: Water
Analysis Batch: 316232

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 316215

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlorpyrifos	ND		1.0	0.50	ug/L		03/09/16 08:14	03/09/16 15:50	1
Diazinon	ND		0.25	0.12	ug/L		03/09/16 08:14	03/09/16 15:50	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,3-Dimethyl-2-nitrobenzene	100		70 - 130	03/09/16 08:14	03/09/16 15:50	1
Perylene-d12	97		70 - 130	03/09/16 08:14	03/09/16 15:50	1
Triphenylphosphate	103		70 - 130	03/09/16 08:14	03/09/16 15:50	1

Lab Sample ID: LCS 440-316215/2-A
Matrix: Water
Analysis Batch: 316232

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 316215

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Chlorpyrifos	5.00	5.11		ug/L		102	70 - 130
Diazinon	5.00	4.32		ug/L		86	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,3-Dimethyl-2-nitrobenzene	95		70 - 130
Perylene-d12	104		70 - 130
Triphenylphosphate	106		70 - 130

Lab Sample ID: LCSD 440-316215/3-A
Matrix: Water
Analysis Batch: 316232

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 316215

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	RPD Limit
Chlorpyrifos	5.00	5.21		ug/L		104	70 - 130	2	30
Diazinon	5.00	3.54		ug/L		71	70 - 130	20	30

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
1,3-Dimethyl-2-nitrobenzene	97		70 - 130
Perylene-d12	103		70 - 130
Triphenylphosphate	103		70 - 130

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

Lab Sample ID: MB 440-317330/1-A
Matrix: Water
Analysis Batch: 318612

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 317330

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		0.500	0.200	ug/L		03/14/16 13:28	03/18/16 18:02	1
Acenaphthylene	ND		0.500	0.200	ug/L		03/14/16 13:28	03/18/16 18:02	1
Anthracene	ND		0.500	0.200	ug/L		03/14/16 13:28	03/18/16 18:02	1
Benzidine	ND		10.0	5.00	ug/L		03/14/16 13:28	03/18/16 18:02	1
Benzo[a]anthracene	ND		5.00	2.00	ug/L		03/14/16 13:28	03/18/16 18:02	1
Benzo[b]fluoranthene	ND		2.00	1.00	ug/L		03/14/16 13:28	03/18/16 18:02	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Comp

TestAmerica Job ID: 440-140288-1

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

Lab Sample ID: MB 440-317330/1-A

Matrix: Water

Analysis Batch: 318612

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 317330

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Benzo[k]fluoranthene	ND		0.500	0.250	ug/L		03/14/16 13:28	03/18/16 18:02	1
Benzo[a]pyrene	ND		2.00	0.500	ug/L		03/14/16 13:28	03/18/16 18:02	1
Bis(2-chloroethoxy)methane	ND		0.500	0.200	ug/L		03/14/16 13:28	03/18/16 18:02	1
Bis(2-chloroethyl)ether	ND		0.500	0.200	ug/L		03/14/16 13:28	03/18/16 18:02	1
Bis(2-ethylhexyl) phthalate	ND		5.00	2.00	ug/L		03/14/16 13:28	03/18/16 18:02	1
4-Bromophenyl phenyl ether	ND		1.00	0.500	ug/L		03/14/16 13:28	03/18/16 18:02	1
Butyl benzyl phthalate	ND		5.00	2.00	ug/L		03/14/16 13:28	03/18/16 18:02	1
4-Chloro-3-methylphenol	ND		2.00	0.200	ug/L		03/14/16 13:28	03/18/16 18:02	1
2-Chloronaphthalene	ND		0.500	0.200	ug/L		03/14/16 13:28	03/18/16 18:02	1
2-Chlorophenol	ND		1.00	0.500	ug/L		03/14/16 13:28	03/18/16 18:02	1
4-Chlorophenyl phenyl ether	ND		0.500	0.200	ug/L		03/14/16 13:28	03/18/16 18:02	1
Chrysene	ND		0.500	0.200	ug/L		03/14/16 13:28	03/18/16 18:02	1
Dibenz(a,h)anthracene	ND		0.500	0.250	ug/L		03/14/16 13:28	03/18/16 18:02	1
Di-n-butyl phthalate	ND		2.00	1.00	ug/L		03/14/16 13:28	03/18/16 18:02	1
1,2-Dichlorobenzene	ND		0.500	0.200	ug/L		03/14/16 13:28	03/18/16 18:02	1
1,3-Dichlorobenzene	ND		0.500	0.200	ug/L		03/14/16 13:28	03/18/16 18:02	1
1,4-Dichlorobenzene	ND		0.500	0.200	ug/L		03/14/16 13:28	03/18/16 18:02	1
3,3'-Dichlorobenzidine	ND		5.00	2.00	ug/L		03/14/16 13:28	03/18/16 18:02	1
2,4-Dichlorophenol	ND		2.00	1.00	ug/L		03/14/16 13:28	03/18/16 18:02	1
Diethyl phthalate	ND		1.00	0.500	ug/L		03/14/16 13:28	03/18/16 18:02	1
2,4-Dimethylphenol	ND		2.00	1.00	ug/L		03/14/16 13:28	03/18/16 18:02	1
Dimethyl phthalate	ND		0.500	0.250	ug/L		03/14/16 13:28	03/18/16 18:02	1
4,6-Dinitro-2-methylphenol	ND		5.00	2.00	ug/L		03/14/16 13:28	03/18/16 18:02	1
2,4-Dinitrophenol	ND		5.00	2.00	ug/L		03/14/16 13:28	03/18/16 18:02	1
2,4-Dinitrotoluene	ND		5.00	2.00	ug/L		03/14/16 13:28	03/18/16 18:02	1
2,6-Dinitrotoluene	ND		5.00	2.00	ug/L		03/14/16 13:28	03/18/16 18:02	1
Di-n-octyl phthalate	ND		5.00	2.00	ug/L		03/14/16 13:28	03/18/16 18:02	1
1,2-Diphenylhydrazine(as Azobenzene)	ND		1.00	0.500	ug/L		03/14/16 13:28	03/18/16 18:02	1
Fluoranthene	ND		0.500	0.200	ug/L		03/14/16 13:28	03/18/16 18:02	1
Fluorene	ND		0.500	0.200	ug/L		03/14/16 13:28	03/18/16 18:02	1
Hexachlorobenzene	ND		1.00	0.500	ug/L		03/14/16 13:28	03/18/16 18:02	1
Hexachlorobutadiene	ND		2.00	0.500	ug/L		03/14/16 13:28	03/18/16 18:02	1
Hexachloroethane	ND		3.00	0.500	ug/L		03/14/16 13:28	03/18/16 18:02	1
Hexachlorocyclopentadiene	ND		5.00	2.00	ug/L		03/14/16 13:28	03/18/16 18:02	1
Indeno[1,2,3-cd]pyrene	ND		2.00	1.00	ug/L		03/14/16 13:28	03/18/16 18:02	1
Isophorone	ND		1.00	0.500	ug/L		03/14/16 13:28	03/18/16 18:02	1
Naphthalene	ND		1.00	0.500	ug/L		03/14/16 13:28	03/18/16 18:02	1
Nitrobenzene	ND		1.00	0.500	ug/L		03/14/16 13:28	03/18/16 18:02	1
2-Nitrophenol	ND		2.00	1.00	ug/L		03/14/16 13:28	03/18/16 18:02	1
4-Nitrophenol	ND		5.00	2.00	ug/L		03/14/16 13:28	03/18/16 18:02	1
N-Nitrosodimethylamine	ND		2.00	1.00	ug/L		03/14/16 13:28	03/18/16 18:02	1
N-Nitrosodiphenylamine	ND		1.00	0.500	ug/L		03/14/16 13:28	03/18/16 18:02	1
N-Nitrosodi-n-propylamine	ND		2.00	1.00	ug/L		03/14/16 13:28	03/18/16 18:02	1
Pentachlorophenol	ND		2.00	1.00	ug/L		03/14/16 13:28	03/18/16 18:02	1
Phenanthrene	ND		0.500	0.200	ug/L		03/14/16 13:28	03/18/16 18:02	1
Phenol	ND		1.00	0.500	ug/L		03/14/16 13:28	03/18/16 18:02	1
Pyrene	ND		0.500	0.200	ug/L		03/14/16 13:28	03/18/16 18:02	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Comp

TestAmerica Job ID: 440-140288-1

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

Lab Sample ID: MB 440-317330/1-A
Matrix: Water
Analysis Batch: 318612

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 317330

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,4-Trichlorobenzene	ND		1.00	0.500	ug/L		03/14/16 13:28	03/18/16 18:02	1
2,4,6-Trichlorophenol	ND		1.00	0.500	ug/L		03/14/16 13:28	03/18/16 18:02	1
Benzo[g,h,i]perylene	ND		5.00	2.00	ug/L		03/14/16 13:28	03/18/16 18:02	1
bis (2-chloroisopropyl) ether	ND		0.500	0.200	ug/L		03/14/16 13:28	03/18/16 18:02	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl	65		50 - 120	03/14/16 13:28	03/18/16 18:02	1
2-Fluorophenol	40		30 - 120	03/14/16 13:28	03/18/16 18:02	1
2,4,6-Tribromophenol	53		40 - 120	03/14/16 13:28	03/18/16 18:02	1
Nitrobenzene-d5	54		45 - 120	03/14/16 13:28	03/18/16 18:02	1
Terphenyl-d14	90		37 - 144	03/14/16 13:28	03/18/16 18:02	1
Phenol-d6	44		35 - 120	03/14/16 13:28	03/18/16 18:02	1

Lab Sample ID: LCS 440-317330/2-A
Matrix: Water
Analysis Batch: 318612

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 317330

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Acenaphthene	10.0	7.503		ug/L		75	47 - 145
Acenaphthylene	10.0	7.337		ug/L		73	33 - 145
Anthracene	10.0	7.512		ug/L		75	27 - 133
Benzidine	10.0	8.208	J,DX LQ	ug/L		82	5 - 66
Benzo[a]anthracene	10.0	7.944		ug/L		79	33 - 143
Benzo[b]fluoranthene	10.0	8.437		ug/L		84	24 - 150
Benzo[k]fluoranthene	10.0	7.826		ug/L		78	11 - 150
Benzo[a]pyrene	10.0	7.693		ug/L		77	17 - 150
Bis(2-chloroethoxy)methane	10.0	7.048		ug/L		70	33 - 150
Bis(2-chloroethyl)ether	10.0	6.631		ug/L		66	12 - 150
Bis(2-ethylhexyl) phthalate	10.0	9.127		ug/L		91	10 - 150
4-Bromophenyl phenyl ether	10.0	7.445		ug/L		74	53 - 127
Butyl benzyl phthalate	10.0	8.486		ug/L		85	10 - 150
4-Chloro-3-methylphenol	10.0	6.276		ug/L		63	22 - 147
2-Chloronaphthalene	10.0	7.188		ug/L		72	60 - 118
2-Chlorophenol	10.0	6.524		ug/L		65	23 - 134
4-Chlorophenyl phenyl ether	10.0	8.294		ug/L		83	25 - 150
Chrysene	10.0	7.853		ug/L		79	17 - 150
Dibenz(a,h)anthracene	10.0	8.928		ug/L		89	10 - 150
Di-n-butyl phthalate	10.0	8.487		ug/L		85	10 - 118
1,2-Dichlorobenzene	10.0	6.211		ug/L		62	32 - 129
1,3-Dichlorobenzene	10.0	6.138		ug/L		61	10 - 150
1,4-Dichlorobenzene	10.0	6.187		ug/L		62	20 - 124
3,3'-Dichlorobenzidine	10.0	4.980	J,DX	ug/L		50	10 - 150
2,4-Dichlorophenol	10.0	7.105		ug/L		71	39 - 135
Diethyl phthalate	10.0	8.800		ug/L		88	10 - 114
2,4-Dimethylphenol	10.0	6.233		ug/L		62	32 - 119
Dimethyl phthalate	10.0	8.648		ug/L		86	10 - 112
4,6-Dinitro-2-methylphenol	20.0	15.84		ug/L		79	10 - 150
2,4-Dinitrophenol	20.0	16.59		ug/L		83	50 - 150

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Comp

TestAmerica Job ID: 440-140288-1

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

Lab Sample ID: LCS 440-317330/2-A
Matrix: Water
Analysis Batch: 318612

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 317330

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2,4-Dinitrotoluene	10.0	8.254		ug/L		83	39 - 139
2,6-Dinitrotoluene	10.0	8.204		ug/L		82	50 - 150
Di-n-octyl phthalate	10.0	7.242		ug/L		72	10 - 146
1,2-Diphenylhydrazine(as Azobenzene)	10.1	8.452		ug/L		84	47 - 116
Fluoranthene	10.0	8.244		ug/L		82	26 - 137
Fluorene	10.0	8.474		ug/L		85	59 - 121
Hexachlorobenzene	10.0	7.498		ug/L		75	10 - 150
Hexachlorobutadiene	10.0	5.411		ug/L		54	24 - 116
Hexachloroethane	10.0	5.785		ug/L		58	40 - 113
Hexachlorocyclopentadiene	10.0	ND		ug/L		18	10 - 67
Indeno[1,2,3-cd]pyrene	10.0	9.905		ug/L		99	10 - 150
Isophorone	10.0	6.200		ug/L		62	21 - 150
Naphthalene	10.0	6.752		ug/L		68	21 - 133
Nitrobenzene	10.0	6.831		ug/L		68	35 - 150
2-Nitrophenol	10.0	6.662		ug/L		67	29 - 150
4-Nitrophenol	20.0	16.94		ug/L		85	10 - 132
N-Nitrosodimethylamine	10.0	6.666		ug/L		67	26 - 117
N-Nitrosodiphenylamine	20.0	14.04		ug/L		70	54 - 110
N-Nitrosodi-n-propylamine	10.0	6.492		ug/L		65	10 - 150
Pentachlorophenol	20.0	13.30		ug/L		66	14 - 150
Phenanthrene	10.0	7.959		ug/L		80	54 - 120
Phenol	10.0	6.949		ug/L		69	10 - 112
Pyrene	10.0	8.177		ug/L		82	52 - 115
1,2,4-Trichlorobenzene	10.0	6.456		ug/L		65	44 - 142
2,4,6-Trichlorophenol	10.0	7.195		ug/L		72	37 - 144
Benzo[g,h,i]perylene	10.0	14.46		ug/L		145	10 - 150
bis (2-chloroisopropyl) ether	10.0	6.831		ug/L		68	47 - 103

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2-Fluorobiphenyl	69		50 - 120
2-Fluorophenol	54		30 - 120
2,4,6-Tribromophenol	71		40 - 120
Nitrobenzene-d5	67		45 - 120
Terphenyl-d14	84		37 - 144
Phenol-d6	67		35 - 120

Lab Sample ID: LCSD 440-317330/3-A
Matrix: Water
Analysis Batch: 318612

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 317330

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Acenaphthene	10.0	7.913		ug/L		79	47 - 145	5	35
Acenaphthylene	10.0	7.772		ug/L		78	33 - 145	6	35
Anthracene	10.0	7.957		ug/L		80	27 - 133	6	35
Benzidine	10.0	10.50	LQ	ug/L		105	5 - 66	25	35
Benzo[a]anthracene	10.0	8.059		ug/L		81	33 - 143	1	35
Benzo[b]fluoranthene	10.0	8.599		ug/L		86	24 - 150	2	35

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Comp

TestAmerica Job ID: 440-140288-1

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

Lab Sample ID: LCSD 440-317330/3-A

Matrix: Water

Analysis Batch: 318612

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 317330

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD
									Limit
Benzo[k]fluoranthene	10.0	8.716		ug/L		87	11 - 150	11	35
Benzo[a]pyrene	10.0	7.970		ug/L		80	17 - 150	4	35
Bis(2-chloroethoxy)methane	10.0	7.350		ug/L		73	33 - 150	4	35
Bis(2-chloroethyl)ether	10.0	7.168		ug/L		72	12 - 150	8	35
Bis(2-ethylhexyl) phthalate	10.0	8.591		ug/L		86	10 - 150	6	35
4-Bromophenyl phenyl ether	10.0	7.872		ug/L		79	53 - 127	6	35
Butyl benzyl phthalate	10.0	8.337		ug/L		83	10 - 150	2	35
4-Chloro-3-methylphenol	10.0	6.584		ug/L		66	22 - 147	5	35
2-Chloronaphthalene	10.0	7.552		ug/L		76	60 - 118	5	35
2-Chlorophenol	10.0	6.890		ug/L		69	23 - 134	5	35
4-Chlorophenyl phenyl ether	10.0	9.077		ug/L		91	25 - 150	9	35
Chrysene	10.0	7.981		ug/L		80	17 - 150	2	35
Dibenz(a,h)anthracene	10.0	8.715		ug/L		87	10 - 150	2	35
Di-n-butyl phthalate	10.0	8.715		ug/L		87	10 - 118	3	35
1,2-Dichlorobenzene	10.0	6.873		ug/L		69	32 - 129	10	35
1,3-Dichlorobenzene	10.0	6.496		ug/L		65	10 - 150	6	35
1,4-Dichlorobenzene	10.0	6.624		ug/L		66	20 - 124	7	35
3,3'-Dichlorobenzidine	10.0	ND	LR BA	ug/L		4	10 - 150	170	35
2,4-Dichlorophenol	10.0	7.445		ug/L		74	39 - 135	5	35
Diethyl phthalate	10.0	9.630		ug/L		96	10 - 114	9	35
2,4-Dimethylphenol	10.0	7.133		ug/L		71	32 - 119	13	35
Dimethyl phthalate	10.0	9.440		ug/L		94	10 - 112	9	35
4,6-Dinitro-2-methylphenol	20.0	16.69		ug/L		83	10 - 150	5	35
2,4-Dinitrophenol	20.0	18.09		ug/L		90	50 - 150	9	35
2,4-Dinitrotoluene	10.0	8.899		ug/L		89	39 - 139	8	35
2,6-Dinitrotoluene	10.0	8.922		ug/L		89	50 - 150	8	35
Di-n-octyl phthalate	10.0	8.707		ug/L		87	10 - 146	18	35
1,2-Diphenylhydrazine(as Azobenzene)	10.1	8.895		ug/L		88	47 - 116	5	35
Fluoranthene	10.0	8.427		ug/L		84	26 - 137	2	35
Fluorene	10.0	9.184		ug/L		92	59 - 121	8	35
Hexachlorobenzene	10.0	7.899		ug/L		79	10 - 150	5	35
Hexachlorobutadiene	10.0	5.953		ug/L		60	24 - 116	10	35
Hexachloroethane	10.0	5.950		ug/L		60	40 - 113	3	35
Hexachlorocyclopentadiene	10.0	3.185	J,DX BA	ug/L		32	10 - 67	55	35
Indeno[1,2,3-cd]pyrene	10.0	9.821		ug/L		98	10 - 150	1	35
Isophorone	10.0	6.407		ug/L		64	21 - 150	3	35
Naphthalene	10.0	7.193		ug/L		72	21 - 133	6	35
Nitrobenzene	10.0	7.389		ug/L		74	35 - 150	8	35
2-Nitrophenol	10.0	7.031		ug/L		70	29 - 150	5	35
4-Nitrophenol	20.0	16.24		ug/L		81	10 - 132	4	35
N-Nitrosodimethylamine	10.0	6.875		ug/L		69	26 - 117	3	35
N-Nitrosodiphenylamine	20.0	13.15		ug/L		66	54 - 110	7	35
N-Nitrosodi-n-propylamine	10.0	6.824		ug/L		68	10 - 150	5	35
Pentachlorophenol	20.0	13.57		ug/L		68	14 - 150	2	35
Phenanthrene	10.0	8.468		ug/L		85	54 - 120	6	35
Phenol	10.0	6.907		ug/L		69	10 - 112	1	35
Pyrene	10.0	8.521		ug/L		85	52 - 115	4	35

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Comp

TestAmerica Job ID: 440-140288-1

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

Lab Sample ID: LCSD 440-317330/3-A
Matrix: Water
Analysis Batch: 318612

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 317330

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,4-Trichlorobenzene	10.0	6.737		ug/L		67	44 - 142	4	35
2,4,6-Trichlorophenol	10.0	7.599		ug/L		76	37 - 144	5	35
Benzo[g,h,i]perylene	10.0	13.07		ug/L		131	10 - 150	10	35
bis (2-chloroisopropyl) ether	10.0	7.256		ug/L		73	47 - 103	6	35

Surrogate	LCSD %Recovery	LCSD Qualifier	LCSD Limits
2-Fluorobiphenyl	72		50 - 120
2-Fluorophenol	56		30 - 120
2,4,6-Tribromophenol	78		40 - 120
Nitrobenzene-d5	72		45 - 120
Terphenyl-d14	87		37 - 144
Phenol-d6	66		35 - 120

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

Lab Sample ID: MB 440-317195/1-A
Matrix: Water
Analysis Batch: 317502

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 317195

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor 1016	ND		0.50	0.25	ug/L		03/14/16 06:27	03/15/16 11:14	1
Aroclor 1221	ND		0.50	0.25	ug/L		03/14/16 06:27	03/15/16 11:14	1
Aroclor 1232	ND		0.50	0.25	ug/L		03/14/16 06:27	03/15/16 11:14	1
Aroclor 1242	ND		0.50	0.25	ug/L		03/14/16 06:27	03/15/16 11:14	1
Aroclor 1248	ND		0.50	0.25	ug/L		03/14/16 06:27	03/15/16 11:14	1
Aroclor 1254	ND		0.50	0.25	ug/L		03/14/16 06:27	03/15/16 11:14	1
Aroclor 1260	ND		0.50	0.25	ug/L		03/14/16 06:27	03/15/16 11:14	1

Surrogate	MB %Recovery	MB Qualifier	MB Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl (Surr)	105		29 - 115	03/14/16 06:27	03/15/16 11:14	1

Lab Sample ID: LCS 440-317195/7-A
Matrix: Water
Analysis Batch: 317502

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 317195

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aroclor 1016	4.00	3.92		ug/L		98	50 - 115
Aroclor 1260	4.00	3.75		ug/L		94	10 - 127

Surrogate	LCS %Recovery	LCS Qualifier	LCS Limits
DCB Decachlorobiphenyl (Surr)	108		29 - 115

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Comp

TestAmerica Job ID: 440-140288-1

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

Lab Sample ID: 440-140288-1 MS

Matrix: Water
Analysis Batch: 317502

Client Sample ID: Outfall009_20160308_Comp

Prep Type: Total/NA
Prep Batch: 317195

Analyte	Sample	Sample	Spike	MS MS		Unit	D	%Rec	Limits
	Result	Qualifier		Result	Qualifier				
Aroclor 1016	ND		3.88	3.94		ug/L		101	45 - 120
Aroclor 1260	ND		3.88	3.79		ug/L		98	55 - 125
		MS MS							
Surrogate	%Recovery	Qualifier	Limits						
DCB Decachlorobiphenyl (Surr)	110		29 - 115						

Lab Sample ID: 440-140288-1 MSD

Matrix: Water
Analysis Batch: 317502

Client Sample ID: Outfall009_20160308_Comp

Prep Type: Total/NA
Prep Batch: 317195

Analyte	Sample	Sample	Spike	MSD MSD		Unit	D	%Rec	Limits	RPD	RPD Limit
	Result	Qualifier		Result	Qualifier						
Aroclor 1016	ND		4.04	3.92		ug/L		97	45 - 120	0	30
Aroclor 1260	ND		4.04	3.78		ug/L		93	55 - 125	0	25
		MSD MSD									
Surrogate	%Recovery	Qualifier	Limits								
DCB Decachlorobiphenyl (Surr)	105		29 - 115								

Method: 608 Pesticides - Organochlorine Pesticides Low level

Lab Sample ID: MB 440-317195/1-A

Matrix: Water
Analysis Batch: 317358

Client Sample ID: Method Blank

Prep Type: Total/NA
Prep Batch: 317195

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Aldrin	ND		0.0050	0.0015	ug/L		03/14/16 06:27	03/14/16 21:10	1
alpha-BHC	ND		0.0050	0.0025	ug/L		03/14/16 06:27	03/14/16 21:10	1
beta-BHC	ND		0.010	0.0040	ug/L		03/14/16 06:27	03/14/16 21:10	1
Chlordane (technical)	ND		0.10	0.080	ug/L		03/14/16 06:27	03/14/16 21:10	1
delta-BHC	ND		0.0050	0.0035	ug/L		03/14/16 06:27	03/14/16 21:10	1
Dieldrin	ND		0.0050	0.0020	ug/L		03/14/16 06:27	03/14/16 21:10	1
Endosulfan I	ND		0.0050	0.0030	ug/L		03/14/16 06:27	03/14/16 21:10	1
Endosulfan II	ND		0.0050	0.0020	ug/L		03/14/16 06:27	03/14/16 21:10	1
Endosulfan sulfate	ND		0.010	0.0030	ug/L		03/14/16 06:27	03/14/16 21:10	1
Endrin	ND		0.0050	0.0020	ug/L		03/14/16 06:27	03/14/16 21:10	1
Endrin aldehyde	ND		0.010	0.0020	ug/L		03/14/16 06:27	03/14/16 21:10	1
gamma-BHC (Lindane)	ND		0.010	0.0030	ug/L		03/14/16 06:27	03/14/16 21:10	1
Heptachlor	ND		0.010	0.0030	ug/L		03/14/16 06:27	03/14/16 21:10	1
Heptachlor epoxide	ND		0.0050	0.0025	ug/L		03/14/16 06:27	03/14/16 21:10	1
Toxaphene	ND		0.50	0.25	ug/L		03/14/16 06:27	03/14/16 21:10	1
4,4'-DDD	ND		0.0050	0.0040	ug/L		03/14/16 06:27	03/14/16 21:10	1
4,4'-DDE	ND		0.0050	0.0030	ug/L		03/14/16 06:27	03/14/16 21:10	1
4,4'-DDT	ND		0.010	0.0040	ug/L		03/14/16 06:27	03/14/16 21:10	1
		MB MB							
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	62		10 - 150				03/14/16 06:27	03/14/16 21:10	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Comp

TestAmerica Job ID: 440-140288-1

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

Lab Sample ID: LCS 440-317195/2-A
Matrix: Water
Analysis Batch: 317358

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 317195

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Aldrin	0.200	0.146		ug/L		73	19 - 115
alpha-BHC	0.200	0.147		ug/L		74	42 - 115
beta-BHC	0.200	0.145		ug/L		73	48 - 115
delta-BHC	0.200	0.145		ug/L		73	48 - 115
Dieldrin	0.200	0.166		ug/L		83	51 - 117
Endosulfan I	0.200	0.173		ug/L		87	47 - 117
Endosulfan II	0.200	0.166		ug/L		83	32 - 128
Endosulfan sulfate	0.200	0.143		ug/L		71	50 - 117
Endrin	0.200	0.157		ug/L		78	51 - 120
Endrin aldehyde	0.200	0.153		ug/L		77	49 - 115
gamma-BHC (Lindane)	0.200	0.146		ug/L		73	43 - 115
Heptachlor	0.200	0.159		ug/L		79	44 - 115
Heptachlor epoxide	0.200	0.168		ug/L		84	35 - 131
4,4'-DDD	0.200	0.162		ug/L		81	53 - 126
4,4'-DDE	0.200	0.158		ug/L		79	48 - 115
4,4'-DDT	0.200	0.163		ug/L		81	10 - 150
Surrogate		LCS %Recovery	LCS Qualifier				Limits
Tetrachloro-m-xylene		65					10 - 150

Lab Sample ID: 440-140288-1 MS
Matrix: Water
Analysis Batch: 317358

Client Sample ID: Outfall009_20160308_Comp
Prep Type: Total/NA
Prep Batch: 317195

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Aldrin	ND		0.201	0.122		ug/L		61	35 - 120
alpha-BHC	ND		0.201	0.112		ug/L		56	40 - 120
beta-BHC	ND		0.201	0.113		ug/L		56	50 - 120
delta-BHC	ND		0.201	0.111		ug/L		55	50 - 120
Dieldrin	ND		0.201	0.132		ug/L		66	50 - 120
Endosulfan I	ND		0.201	0.140		ug/L		70	50 - 120
Endosulfan II	ND		0.201	0.128		ug/L		64	50 - 125
Endosulfan sulfate	ND		0.201	0.113		ug/L		56	55 - 125
Endrin	ND		0.201	0.130		ug/L		65	50 - 120
Endrin aldehyde	ND		0.201	0.115		ug/L		57	45 - 125
gamma-BHC (Lindane)	ND		0.201	0.113		ug/L		56	40 - 120
Heptachlor	ND		0.201	0.129		ug/L		64	40 - 120
Heptachlor epoxide	ND		0.201	0.136		ug/L		68	50 - 120
4,4'-DDD	ND		0.201	0.131		ug/L		65	50 - 125
4,4'-DDE	ND		0.201	0.123		ug/L		61	45 - 125
4,4'-DDT	ND		0.201	0.122		ug/L		61	50 - 125
Surrogate		MS %Recovery		MS Qualifier					Limits
Tetrachloro-m-xylene		64							10 - 150

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Comp

TestAmerica Job ID: 440-140288-1

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

Lab Sample ID: 440-140288-1 MSD

Matrix: Water

Analysis Batch: 317358

Client Sample ID: Outfall009_20160308_Comp

Prep Type: Total/NA

Prep Batch: 317195

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier				Limits	RPD	
Aldrin	ND		0.194	0.126		ug/L		65	35 - 120	3	30
alpha-BHC	ND		0.194	0.116		ug/L		60	40 - 120	4	30
beta-BHC	ND		0.194	0.118		ug/L		61	50 - 120	4	30
delta-BHC	ND		0.194	0.116		ug/L		60	50 - 120	5	30
Dieldrin	ND		0.194	0.138		ug/L		71	50 - 120	5	30
Endosulfan I	ND		0.194	0.146		ug/L		75	50 - 120	5	30
Endosulfan II	ND		0.194	0.138		ug/L		71	50 - 125	8	30
Endosulfan sulfate	ND		0.194	0.120		ug/L		62	55 - 125	6	30
Endrin	ND		0.194	0.138		ug/L		71	50 - 120	6	30
Endrin aldehyde	ND		0.194	0.124		ug/L		64	45 - 125	7	30
gamma-BHC (Lindane)	ND		0.194	0.117		ug/L		60	40 - 120	4	30
Heptachlor	ND		0.194	0.131		ug/L		67	40 - 120	1	30
Heptachlor epoxide	ND		0.194	0.144		ug/L		74	50 - 120	5	30
4,4'-DDD	ND		0.194	0.142		ug/L		73	50 - 125	8	30
4,4'-DDE	ND		0.194	0.129		ug/L		66	45 - 125	5	30
4,4'-DDT	ND		0.194	0.129		ug/L		66	50 - 125	5	30
Surrogate		MSD	MSD								
		%Recovery	Qualifier	Limits							
Tetrachloro-m-xylene		70		10 - 150							

Method: 218.6 - Chromium, Hexavalent (Ion Chromatography)

Lab Sample ID: MB 440-315946/3

Matrix: Water

Analysis Batch: 315946

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil	Fac
	Result	Qualifier								
Chromium, hexavalent	ND		1.0	0.25	ug/L			03/08/16 20:37		1

Lab Sample ID: LCS 440-315946/2

Matrix: Water

Analysis Batch: 315946

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike	LCS	LCS	Unit	D	%Rec	%Rec.
	Added	Result	Qualifier				Limits
Chromium, hexavalent	50.0	50.3		ug/L		101	90 - 110

Lab Sample ID: MRL 440-315946/4

Matrix: Water

Analysis Batch: 315946

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike	MRL	MRL	Unit	D	%Rec	%Rec.
	Added	Result	Qualifier				Limits
Chromium, hexavalent	1.00	1.04		ug/L		104	50 - 150

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Comp

TestAmerica Job ID: 440-140288-1

Method: 218.6 - Chromium, Hexavalent (Ion Chromatography) (Continued)

Lab Sample ID: 440-140288-1 MS
Matrix: Water
Analysis Batch: 315946

Client Sample ID: Outfall009_20160308_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chromium, hexavalent	ND		50.0	50.7		ug/L		101	90 - 110

Lab Sample ID: 440-140288-1 MSD
Matrix: Water
Analysis Batch: 315946

Client Sample ID: Outfall009_20160308_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chromium, hexavalent	ND		50.0	50.5		ug/L		101	90 - 110	0	10

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 440-316245/7
Matrix: Water
Analysis Batch: 316245

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50	0.25	mg/L			03/09/16 17:02	1
Fluoride	ND		0.50	0.25	mg/L			03/09/16 17:02	1
Sulfate	ND		0.50	0.25	mg/L			03/09/16 17:02	1

Lab Sample ID: LCS 440-316245/6
Matrix: Water
Analysis Batch: 316245

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	5.00	4.62		mg/L		92	90 - 110
Fluoride	5.00	5.25		mg/L		105	90 - 110
Sulfate	5.00	5.16		mg/L		103	90 - 110

Lab Sample ID: 440-140288-1 MS
Matrix: Water
Analysis Batch: 316245

Client Sample ID: Outfall009_20160308_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	4.0		5.00	8.82		mg/L		96	80 - 120
Fluoride	ND		5.00	5.20		mg/L		104	80 - 120
Sulfate	6.9		5.00	11.9		mg/L		100	80 - 120

Lab Sample ID: 440-140288-1 MSD
Matrix: Water
Analysis Batch: 316245

Client Sample ID: Outfall009_20160308_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	4.0		5.00	8.62		mg/L		92	80 - 120	2	20
Fluoride	ND		5.00	5.01		mg/L		100	80 - 120	4	20
Sulfate	6.9		5.00	11.8		mg/L		98	80 - 120	1	20

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Comp

TestAmerica Job ID: 440-140288-1

Method: 314.0 - Perchlorate (IC)

Lab Sample ID: MB 440-320123/3
Matrix: Water
Analysis Batch: 320123

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		4.0	0.95	ug/L			03/25/16 09:32	1

Lab Sample ID: LCS 440-320123/2
Matrix: Water
Analysis Batch: 320123

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	25.0	24.9		ug/L		99	85 - 115

Lab Sample ID: MRL 440-320123/5
Matrix: Water
Analysis Batch: 320123

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

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	4.00	3.83	J,DX	ug/L		96	75 - 125

Lab Sample ID: 440-140288-1 MS
Matrix: Water
Analysis Batch: 320123

Client Sample ID: Outfall009_20160308_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	ND		25.0	25.5		ug/L		102	80 - 120

Lab Sample ID: 440-140288-1 MSD
Matrix: Water
Analysis Batch: 320123

Client Sample ID: Outfall009_20160308_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perchlorate	ND		25.0	25.3		ug/L		101	80 - 120	1	20

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

Lab Sample ID: MB 320-103052/1-A
Matrix: Water
Analysis Batch: 103469

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 103052

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000010	0.0000003	ug/L		03/11/16 08:55	03/15/16 23:27	1
2,3,7,8-TCDF	ND		0.000010	0.0000004	ug/L		03/11/16 08:55	03/15/16 23:27	1
1,2,3,7,8-PeCDD	ND		0.000050	0.0000012	ug/L		03/11/16 08:55	03/15/16 23:27	1
1,2,3,7,8-PeCDF	ND		0.000050	0.0000008	ug/L		03/11/16 08:55	03/15/16 23:27	1
2,3,4,7,8-PeCDF	ND		0.000050	0.0000008	ug/L		03/11/16 08:55	03/15/16 23:27	1
1,2,3,4,7,8-HxCDD	ND		0.000050	0.0000004	ug/L		03/11/16 08:55	03/15/16 23:27	1
1,2,3,6,7,8-HxCDD	ND		0.000050	0.0000003	ug/L		03/11/16 08:55	03/15/16 23:27	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Comp

TestAmerica Job ID: 440-140288-1

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

Lab Sample ID: MB 320-103052/1-A
Matrix: Water
Analysis Batch: 103469

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 103052

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,7,8,9-HxCDD	ND		0.000050	0.0000003	ug/L		03/11/16 08:55	03/15/16 23:27	1
1,2,3,4,7,8-HxCDF	0.000000539	J,DX	0.000050	0.0000003	ug/L		03/11/16 08:55	03/15/16 23:27	1
1,2,3,6,7,8-HxCDF	ND		0.000050	0.0000003	ug/L		03/11/16 08:55	03/15/16 23:27	1
1,2,3,7,8,9-HxCDF	ND		0.000050	0.0000002	ug/L		03/11/16 08:55	03/15/16 23:27	1
2,3,4,6,7,8-HxCDF	ND		0.000050	0.0000002	ug/L		03/11/16 08:55	03/15/16 23:27	1
1,2,3,4,6,7,8-HpCDD	0.00000108	J,DX	0.000050	0.0000003	ug/L		03/11/16 08:55	03/15/16 23:27	1
1,2,3,4,6,7,8-HpCDF	0.000000667	J,DX q	0.000050	0.0000003	ug/L		03/11/16 08:55	03/15/16 23:27	1
1,2,3,4,7,8,9-HpCDF	ND		0.000050	0.0000005	ug/L		03/11/16 08:55	03/15/16 23:27	1
OCDD	0.00000596	J,DX	0.00010	0.0000005	ug/L		03/11/16 08:55	03/15/16 23:27	1
OCDF	0.00000171	J,DX q	0.00010	0.0000004	ug/L		03/11/16 08:55	03/15/16 23:27	1
Total TCDD	0.000000924	J,DX q	0.000010	0.0000003	ug/L		03/11/16 08:55	03/15/16 23:27	1
Total TCDF	ND		0.000010	0.0000004	ug/L		03/11/16 08:55	03/15/16 23:27	1
Total PeCDD	ND		0.000050	0.0000012	ug/L		03/11/16 08:55	03/15/16 23:27	1
Total PeCDF	ND		0.000050	0.0000008	ug/L		03/11/16 08:55	03/15/16 23:27	1
Total HxCDD	0.00000200	J,DX q	0.000050	0.0000003	ug/L		03/11/16 08:55	03/15/16 23:27	1
Total HxCDF	0.000000539	J,DX	0.000050	0.0000002	ug/L		03/11/16 08:55	03/15/16 23:27	1
Total HpCDD	0.00000233	J,DX q	0.000050	0.0000003	ug/L		03/11/16 08:55	03/15/16 23:27	1
Total HpCDF	0.000000667	J,DX q	0.000050	0.0000004	ug/L		03/11/16 08:55	03/15/16 23:27	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	71		25 - 164	03/11/16 08:55	03/15/16 23:27	1
13C-2,3,7,8-TCDF	72		24 - 169	03/11/16 08:55	03/15/16 23:27	1
13C-1,2,3,7,8-PeCDD	51		25 - 181	03/11/16 08:55	03/15/16 23:27	1
13C-1,2,3,7,8-PeCDF	71		24 - 185	03/11/16 08:55	03/15/16 23:27	1
13C-2,3,4,7,8-PeCDF	74		21 - 178	03/11/16 08:55	03/15/16 23:27	1
13C-1,2,3,4,7,8-HxCDD	72		32 - 141	03/11/16 08:55	03/15/16 23:27	1
13C-1,2,3,6,7,8-HxCDD	76		28 - 130	03/11/16 08:55	03/15/16 23:27	1
13C-1,2,3,4,7,8-HxCDF	72		26 - 152	03/11/16 08:55	03/15/16 23:27	1
13C-1,2,3,6,7,8-HxCDF	72		26 - 123	03/11/16 08:55	03/15/16 23:27	1
13C-1,2,3,7,8,9-HxCDF	72		29 - 147	03/11/16 08:55	03/15/16 23:27	1
13C-2,3,4,6,7,8-HxCDF	75		28 - 136	03/11/16 08:55	03/15/16 23:27	1
13C-1,2,3,4,6,7,8-HpCDD	65		23 - 140	03/11/16 08:55	03/15/16 23:27	1
13C-1,2,3,4,6,7,8-HpCDF	70		28 - 143	03/11/16 08:55	03/15/16 23:27	1
13C-1,2,3,4,7,8,9-HpCDF	64		26 - 138	03/11/16 08:55	03/15/16 23:27	1
13C-OCDD	52		17 - 157	03/11/16 08:55	03/15/16 23:27	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Comp

TestAmerica Job ID: 440-140288-1

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

Lab Sample ID: MB 320-103052/1-A
Matrix: Water
Analysis Batch: 103469

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 103052

Surrogate	MB MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery Qualifier				
37Cl4-2,3,7,8-TCDD	109	35 - 197	03/11/16 08:55	03/15/16 23:27	1

Lab Sample ID: LCS 320-103052/2-A
Matrix: Water
Analysis Batch: 103469

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 103052

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2,3,7,8-TCDD	0.000200	0.000252		ug/L		126	67 - 158
2,3,7,8-TCDF	0.000200	0.000242		ug/L		121	75 - 158
1,2,3,7,8-PeCDD	0.00100	0.00146	LQ	ug/L		146	70 - 142
1,2,3,7,8-PeCDF	0.00100	0.00119		ug/L		119	80 - 134
2,3,4,7,8-PeCDF	0.00100	0.00119		ug/L		119	68 - 160
1,2,3,4,7,8-HxCDD	0.00100	0.00111		ug/L		111	70 - 164
1,2,3,6,7,8-HxCDD	0.00100	0.00112		ug/L		112	76 - 134
1,2,3,7,8,9-HxCDD	0.00100	0.00104		ug/L		104	64 - 162
1,2,3,4,7,8-HxCDF	0.00100	0.00118	MB	ug/L		118	72 - 134
1,2,3,6,7,8-HxCDF	0.00100	0.00119		ug/L		119	84 - 130
1,2,3,7,8,9-HxCDF	0.00100	0.00118		ug/L		118	78 - 130
2,3,4,6,7,8-HxCDF	0.00100	0.00120		ug/L		120	70 - 156
1,2,3,4,6,7,8-HpCDD	0.00100	0.00117	MB	ug/L		117	70 - 140
1,2,3,4,6,7,8-HpCDF	0.00100	0.00113	MB	ug/L		113	82 - 122
1,2,3,4,7,8,9-HpCDF	0.00100	0.00114		ug/L		114	78 - 138
OCDD	0.00200	0.00214	MB	ug/L		107	78 - 144
OCDF	0.00200	0.00227	MB	ug/L		113	63 - 170

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C-2,3,7,8-TCDD	67		20 - 175
13C-2,3,7,8-TCDF	68		22 - 152
13C-1,2,3,7,8-PeCDD	42		21 - 227
13C-1,2,3,7,8-PeCDF	67		21 - 192
13C-2,3,4,7,8-PeCDF	69		13 - 328
13C-1,2,3,4,7,8-HxCDD	67		21 - 193
13C-1,2,3,6,7,8-HxCDD	73		25 - 163
13C-1,2,3,4,7,8-HxCDF	66		19 - 202
13C-1,2,3,6,7,8-HxCDF	65		21 - 159
13C-1,2,3,7,8,9-HxCDF	68		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	66		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	62		20 - 186
13C-OCDD	52		13 - 199

Surrogate	LCS %Recovery	LCS Qualifier	Limits
37Cl4-2,3,7,8-TCDD	105		35 - 197

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Comp

TestAmerica Job ID: 440-140288-1

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

Lab Sample ID: LCSD 320-103052/3-A
Matrix: Water
Analysis Batch: 103469

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 103052

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2,3,7,8-TCDD	0.000200	0.000250		ug/L		125	67 - 158	1	50
2,3,7,8-TCDF	0.000200	0.000241		ug/L		120	75 - 158	1	50
1,2,3,7,8-PeCDD	0.00100	0.00147	LQ	ug/L		147	70 - 142	1	50
1,2,3,7,8-PeCDF	0.00100	0.00116		ug/L		116	80 - 134	3	50
2,3,4,7,8-PeCDF	0.00100	0.00118		ug/L		118	68 - 160	1	50
1,2,3,4,7,8-HxCDD	0.00100	0.00106		ug/L		106	70 - 164	5	50
1,2,3,6,7,8-HxCDD	0.00100	0.00107		ug/L		107	76 - 134	4	50
1,2,3,7,8,9-HxCDD	0.00100	0.000982		ug/L		98	64 - 162	6	50
1,2,3,4,7,8-HxCDF	0.00100	0.00113	MB	ug/L		113	72 - 134	4	50
1,2,3,6,7,8-HxCDF	0.00100	0.00114		ug/L		114	84 - 130	4	50
1,2,3,7,8,9-HxCDF	0.00100	0.00114		ug/L		114	78 - 130	4	50
2,3,4,6,7,8-HxCDF	0.00100	0.00116		ug/L		116	70 - 156	4	50
1,2,3,4,6,7,8-HpCDD	0.00100	0.00112	MB	ug/L		112	70 - 140	4	50
1,2,3,4,6,7,8-HpCDF	0.00100	0.00104	MB	ug/L		104	82 - 122	8	50
1,2,3,4,7,8,9-HpCDF	0.00100	0.00109		ug/L		109	78 - 138	5	50
OCDD	0.00200	0.00206	MB	ug/L		103	78 - 144	3	50
OCDF	0.00200	0.00216	MB	ug/L		108	63 - 170	5	50

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	LCSD Limits
13C-2,3,7,8-TCDD	71		20 - 175
13C-2,3,7,8-TCDF	72		22 - 152
13C-1,2,3,7,8-PeCDD	43		21 - 227
13C-1,2,3,7,8-PeCDF	72		21 - 192
13C-2,3,4,7,8-PeCDF	72		13 - 328
13C-1,2,3,4,7,8-HxCDD	75		21 - 193
13C-1,2,3,6,7,8-HxCDD	80		25 - 163
13C-1,2,3,4,7,8-HxCDF	77		19 - 202
13C-1,2,3,6,7,8-HxCDF	76		21 - 159
13C-1,2,3,7,8,9-HxCDF	75		17 - 205
13C-2,3,4,6,7,8-HxCDF	76		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	68		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	74		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	67		20 - 186
13C-OCDD	55		13 - 199

Surrogate	LCSD %Recovery	LCSD Qualifier	LCSD Limits
37Cl4-2,3,7,8-TCDD	105		35 - 197

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: MB 440-321131/1-A
Matrix: Water
Analysis Batch: 321604

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 321131

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		10	5.0	ug/L		03/30/16 10:28	03/31/16 21:20	1
Beryllium	ND		2.0	1.0	ug/L		03/30/16 10:28	03/31/16 21:20	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Comp

TestAmerica Job ID: 440-140288-1

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

Lab Sample ID: MB 440-321131/1-A
Matrix: Water
Analysis Batch: 321604

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 321131

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	ND		5.0	2.5	ug/L		03/30/16 10:28	03/31/16 21:20	1
Iron	ND		0.040	0.010	mg/L		03/30/16 10:28	03/31/16 21:20	1
Nickel	ND		10	5.0	ug/L		03/30/16 10:28	03/31/16 21:20	1
Vanadium	ND		10	5.0	ug/L		03/30/16 10:28	03/31/16 21:20	1
Zinc	ND		20	10	ug/L		03/30/16 10:28	03/31/16 21:20	1
Silver	ND		10	5.0	ug/L		03/30/16 10:28	03/31/16 21:20	1

Lab Sample ID: MB 440-321131/1-A
Matrix: Water
Analysis Batch: 321907

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 321131

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	39.0	J,DX	50	25	ug/L		03/30/16 10:28	04/02/16 12:41	1
Boron	ND		0.050	0.010	mg/L		03/30/16 10:28	04/02/16 12:41	1

Lab Sample ID: LCS 440-321131/2-A
Matrix: Water
Analysis Batch: 321604

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 321131

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Arsenic	500	466		ug/L		93	85 - 115
Beryllium	500	465		ug/L		93	85 - 115
Calcium	2.50	2.43		mg/L		97	85 - 115
Chromium	500	514		ug/L		103	85 - 115
Iron	0.500	0.465		mg/L		93	85 - 115
Magnesium	2.50	2.41		mg/L		96	85 - 115
Nickel	500	470		ug/L		94	85 - 115
Vanadium	500	465		ug/L		93	85 - 115
Zinc	500	457		ug/L		91	85 - 115
Silver	250	233		ug/L		93	85 - 115

Lab Sample ID: LCS 440-321131/2-A
Matrix: Water
Analysis Batch: 321907

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 321131

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Aluminum	500	517		ug/L		103	85 - 115
Boron	0.500	0.484		mg/L		97	85 - 115

Lab Sample ID: 440-140288-1 MS
Matrix: Water
Analysis Batch: 321604

Client Sample ID: Outfall009_20160308_Comp
Prep Type: Total Recoverable
Prep Batch: 321131

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Arsenic	ND		500	504		ug/L		101	70 - 130
Beryllium	ND		500	508		ug/L		102	70 - 130
Calcium	9.3		2.50	11.8		mg/L		101	70 - 130
Chromium	5.4		500	530		ug/L		105	70 - 130
Iron	3.9		0.500	5.29	BB	mg/L		280	70 - 130

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Comp

TestAmerica Job ID: 440-140288-1

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

Lab Sample ID: 440-140288-1 MS
Matrix: Water
Analysis Batch: 321604

Client Sample ID: Outfall009_20160308_Comp
Prep Type: Total Recoverable
Prep Batch: 321131

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec.	Limits
	Result	Qualifier	Added	Result	Qualifier					
Magnesium	3.1		2.50	5.81		mg/L		107		70 - 130
Nickel	6.2	J,DX	500	516		ug/L		102		70 - 130
Vanadium	8.1	J,DX	500	508		ug/L		100		70 - 130
Zinc	22		500	523		ug/L		100		70 - 130
Silver	ND		250	254		ug/L		102		70 - 130

Lab Sample ID: 440-140288-1 MS
Matrix: Water
Analysis Batch: 321907

Client Sample ID: Outfall009_20160308_Comp
Prep Type: Total Recoverable
Prep Batch: 321131

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec.	Limits
	Result	Qualifier	Added	Result	Qualifier					
Aluminum	3400	MB	500	7760	BB	ug/L		877		70 - 130
Boron	0.053		0.500	0.553		mg/L		100		70 - 130

Lab Sample ID: 440-140288-1 MSD
Matrix: Water
Analysis Batch: 321604

Client Sample ID: Outfall009_20160308_Comp
Prep Type: Total Recoverable
Prep Batch: 321131

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	Limits	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier							
Arsenic	ND		500	465		ug/L		93		70 - 130	8	20
Beryllium	ND		500	485		ug/L		97		70 - 130	5	20
Calcium	9.3		2.50	11.4		mg/L		83		70 - 130	4	20
Chromium	5.4		500	539		ug/L		107		70 - 130	2	20
Iron	3.9		0.500	5.05	BB	mg/L		231		70 - 130	5	20
Magnesium	3.1		2.50	5.44		mg/L		92		70 - 130	7	20
Nickel	6.2	J,DX	500	488		ug/L		96		70 - 130	6	20
Vanadium	8.1	J,DX	500	489		ug/L		96		70 - 130	4	20
Zinc	22		500	491		ug/L		94		70 - 130	6	20
Silver	ND		250	241		ug/L		96		70 - 130	5	20

Lab Sample ID: 440-140288-1 MSD
Matrix: Water
Analysis Batch: 321907

Client Sample ID: Outfall009_20160308_Comp
Prep Type: Total Recoverable
Prep Batch: 321131

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	Limits	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier							
Aluminum	3400	MB	500	7350	BB	ug/L		795		70 - 130	5	20
Boron	0.053		0.500	0.531		mg/L		96		70 - 130	4	20

Lab Sample ID: MB 440-318971/1-B
Matrix: Water
Analysis Batch: 321084

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 320831

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil	Fac
	Result	Qualifier								
Arsenic	ND		10	5.0	ug/L		03/29/16 08:39	03/30/16 00:32		1
Beryllium	ND		2.0	1.0	ug/L		03/29/16 08:39	03/30/16 00:32		1
Chromium	ND		5.0	2.5	ug/L		03/29/16 08:39	03/30/16 00:32		1
Iron	ND		0.040	0.010	mg/L		03/29/16 08:39	03/30/16 00:32		1
Vanadium	ND		10	5.0	ug/L		03/29/16 08:39	03/30/16 00:32		1
Zinc	ND		20	10	ug/L		03/29/16 08:39	03/30/16 00:32		1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Comp

TestAmerica Job ID: 440-140288-1

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

Lab Sample ID: MB 440-318971/1-B
Matrix: Water
Analysis Batch: 321084

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 320831

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	ND		10	5.0	ug/L		03/29/16 08:39	03/30/16 00:32	1

Lab Sample ID: MB 440-318971/1-B
Matrix: Water
Analysis Batch: 321166

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 320831

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	36.1	J,DX	50	25	ug/L		03/29/16 08:39	03/30/16 11:14	1
Boron	ND		0.050	0.010	mg/L		03/29/16 08:39	03/30/16 11:14	1
Nickel	ND		10	5.0	ug/L		03/29/16 08:39	03/30/16 11:14	1

Lab Sample ID: LCS 440-318971/2-B
Matrix: Water
Analysis Batch: 321084

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 320831

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Arsenic	500	544		ug/L		109	85 - 115
Beryllium	500	530		ug/L		106	85 - 115
Calcium	2.50	2.70		mg/L		108	85 - 115
Chromium	500	550		ug/L		110	85 - 115
Iron	0.500	0.551		mg/L		110	85 - 115
Magnesium	2.50	2.73		mg/L		109	85 - 115
Vanadium	500	532		ug/L		106	85 - 115
Zinc	500	525		ug/L		105	85 - 115
Silver	250	261		ug/L		104	85 - 115

Lab Sample ID: LCS 440-318971/2-B
Matrix: Water
Analysis Batch: 321166

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 320831

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Aluminum	500	541		ug/L		108	85 - 115
Boron	0.500	0.503		mg/L		101	85 - 115
Nickel	500	521		ug/L		104	85 - 115

Lab Sample ID: 440-140288-2 MS
Matrix: Water
Analysis Batch: 321084

Client Sample ID: Outfall009_20160308_Comp_F
Prep Type: Dissolved
Prep Batch: 320831

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Arsenic	ND	QP	500	495		ug/L		99	70 - 130
Beryllium	ND	QP	500	504		ug/L		101	70 - 130
Calcium	8.9	MB QP	2.50	11.5		mg/L		102	70 - 130
Chromium	2.5	J,DX QP	500	557		ug/L		111	70 - 130
Iron	0.95	QP	0.500	1.52		mg/L		114	70 - 130
Magnesium	2.5	QP	2.50	4.81		mg/L		91	70 - 130
Vanadium	ND	QP	500	503		ug/L		101	70 - 130
Zinc	14	J,DX QP	500	503		ug/L		98	70 - 130
Silver	ND	QP	250	252		ug/L		101	70 - 130

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Comp

TestAmerica Job ID: 440-140288-1

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

Lab Sample ID: 440-140288-2 MS
Matrix: Water
Analysis Batch: 321166

Client Sample ID: Outfall009_20160308_Comp_F
Prep Type: Dissolved
Prep Batch: 320831

Analyte	Sample	Sample	Spike	MS		Unit	D	%Rec	Limits	%Rec.
	Result	Qualifier		Result	Qualifier					
Aluminum	920	MB QP	500	2010	LM	ug/L		219	70 - 130	
Boron	0.050	QP	0.500	0.532		mg/L		96	70 - 130	
Nickel	ND	QP	500	500		ug/L		100	70 - 130	

Lab Sample ID: 440-140288-2 MSD
Matrix: Water
Analysis Batch: 321084

Client Sample ID: Outfall009_20160308_Comp_F
Prep Type: Dissolved
Prep Batch: 320831

Analyte	Sample	Sample	Spike	MSD		Unit	D	%Rec	Limits	RPD	Limit
	Result	Qualifier		Result	Qualifier						
Arsenic	ND	QP	500	512		ug/L		102	70 - 130	3	20
Beryllium	ND	QP	500	519		ug/L		104	70 - 130	3	20
Calcium	8.9	MB QP	2.50	11.5		mg/L		104	70 - 130	1	20
Chromium	2.5	J,DX QP	500	554		ug/L		111	70 - 130	1	20
Iron	0.95	QP	0.500	1.61	LM	mg/L		133	70 - 130	6	20
Magnesium	2.5	QP	2.50	4.96		mg/L		97	70 - 130	3	20
Vanadium	ND	QP	500	519		ug/L		104	70 - 130	3	20
Zinc	14	J,DX QP	500	519		ug/L		101	70 - 130	3	20
Silver	ND	QP	250	259		ug/L		104	70 - 130	3	20

Lab Sample ID: 440-140288-2 MSD
Matrix: Water
Analysis Batch: 321166

Client Sample ID: Outfall009_20160308_Comp_F
Prep Type: Dissolved
Prep Batch: 320831

Analyte	Sample	Sample	Spike	MSD		Unit	D	%Rec	Limits	RPD	Limit
	Result	Qualifier		Result	Qualifier						
Aluminum	920	MB QP	500	2130	LM	ug/L		243	70 - 130	6	20
Boron	0.050	QP	0.500	0.540		mg/L		98	70 - 130	2	20
Nickel	ND	QP	500	510		ug/L		102	70 - 130	2	20

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 440-321133/1-A
Matrix: Water
Analysis Batch: 322225

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 321133

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Cadmium	ND		1.0	0.25	ug/L		03/30/16 10:30	04/04/16 20:32	1
Copper	ND		2.0	0.50	ug/L		03/30/16 10:30	04/04/16 20:32	1
Lead	ND		1.0	0.50	ug/L		03/30/16 10:30	04/04/16 20:32	1
Antimony	ND		2.0	0.50	ug/L		03/30/16 10:30	04/04/16 20:32	1
Selenium	ND		2.0	0.50	ug/L		03/30/16 10:30	04/04/16 20:32	1
Thallium	ND		1.0	0.50	ug/L		03/30/16 10:30	04/04/16 20:32	1

Lab Sample ID: LCS 440-321133/2-A
Matrix: Water
Analysis Batch: 322225

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 321133

Analyte	Spike	LCS		Unit	D	%Rec	Limits
		Result	Qualifier				
Cadmium	80.0	83.8		ug/L		105	85 - 115
Copper	80.0	83.7		ug/L		105	85 - 115

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Comp

TestAmerica Job ID: 440-140288-1

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

Lab Sample ID: LCS 440-321133/2-A
Matrix: Water
Analysis Batch: 322225

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 321133

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Lead	80.0	83.3		ug/L		104	85 - 115
Antimony	80.0	85.2		ug/L		107	85 - 115
Selenium	80.0	86.7		ug/L		108	85 - 115
Thallium	80.0	84.6		ug/L		106	85 - 115

Lab Sample ID: 440-140288-1 MS
Matrix: Water
Analysis Batch: 322225

Client Sample ID: Outfall009_20160308_Comp
Prep Type: Total Recoverable
Prep Batch: 321133

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	ND		80.0	85.7		ug/L		107	70 - 130
Copper	8.8		80.0	89.9		ug/L		101	70 - 130
Lead	5.9		80.0	89.7		ug/L		105	70 - 130
Antimony	0.97	J,DX	80.0	86.1		ug/L		106	70 - 130
Selenium	ND		80.0	81.5		ug/L		102	70 - 130
Thallium	ND		80.0	83.2		ug/L		104	70 - 130

Lab Sample ID: 440-140288-1 MSD
Matrix: Water
Analysis Batch: 322225

Client Sample ID: Outfall009_20160308_Comp
Prep Type: Total Recoverable
Prep Batch: 321133

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
Cadmium	ND		80.0	83.5		ug/L		104	70 - 130	3	20
Copper	8.8		80.0	90.2		ug/L		102	70 - 130	0	20
Lead	5.9		80.0	89.5		ug/L		104	70 - 130	0	20
Antimony	0.97	J,DX	80.0	84.9		ug/L		105	70 - 130	1	20
Selenium	ND		80.0	80.8		ug/L		101	70 - 130	1	20
Thallium	ND		80.0	82.6		ug/L		103	70 - 130	1	20

Lab Sample ID: MB 440-318971/1-C
Matrix: Water
Analysis Batch: 322224

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 320890

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		03/29/16 11:14	04/04/16 20:14	1
Copper	ND		2.0	0.50	ug/L		03/29/16 11:14	04/04/16 20:14	1
Lead	ND		1.0	0.50	ug/L		03/29/16 11:14	04/04/16 20:14	1
Antimony	ND		2.0	0.50	ug/L		03/29/16 11:14	04/04/16 20:14	1
Selenium	ND		2.0	0.50	ug/L		03/29/16 11:14	04/04/16 20:14	1
Thallium	ND		1.0	0.50	ug/L		03/29/16 11:14	04/04/16 20:14	1

Lab Sample ID: LCS 440-318971/2-C
Matrix: Water
Analysis Batch: 322224

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 320890

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	80.0	75.6		ug/L		95	85 - 115
Copper	80.0	77.5		ug/L		97	85 - 115
Lead	80.0	77.2		ug/L		96	85 - 115

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Comp

TestAmerica Job ID: 440-140288-1

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

Lab Sample ID: LCS 440-318971/2-C
Matrix: Water
Analysis Batch: 322224

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 320890

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Antimony	80.0	78.2		ug/L		98	85 - 115
Selenium	80.0	78.9		ug/L		99	85 - 115
Thallium	80.0	78.6		ug/L		98	85 - 115

Lab Sample ID: 440-140288-2 MS
Matrix: Water
Analysis Batch: 322224

Client Sample ID: Outfall009_20160308_Comp_F
Prep Type: Dissolved
Prep Batch: 320890

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Cadmium	ND	QP	80.0	80.8		ug/L		101	70 - 130
Copper	5.4	QP	80.0	85.6		ug/L		100	70 - 130
Lead	1.4	QP	80.0	81.9		ug/L		101	70 - 130
Antimony	0.77	J,DX QP	80.0	83.9		ug/L		104	70 - 130
Selenium	ND	QP	80.0	79.1		ug/L		99	70 - 130
Thallium	ND	QP	80.0	80.9		ug/L		101	70 - 130

Lab Sample ID: 440-140288-2 MSD
Matrix: Water
Analysis Batch: 322224

Client Sample ID: Outfall009_20160308_Comp_F
Prep Type: Dissolved
Prep Batch: 320890

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Cadmium	ND	QP	80.0	77.5		ug/L		97	70 - 130	4	20
Copper	5.4	QP	80.0	82.4		ug/L		96	70 - 130	4	20
Lead	1.4	QP	80.0	79.0		ug/L		97	70 - 130	4	20
Antimony	0.77	J,DX QP	80.0	80.1		ug/L		99	70 - 130	5	20
Selenium	ND	QP	80.0	79.1		ug/L		99	70 - 130	0	20
Thallium	ND	QP	80.0	77.9		ug/L		97	70 - 130	4	20

Method: 245.1 - Mercury (CVAA)

Lab Sample ID: MB 440-319385/1-A
Matrix: Water
Analysis Batch: 319620

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 319385

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		03/22/16 16:25	03/23/16 00:36	1

Lab Sample ID: LCS 440-319385/2-A
Matrix: Water
Analysis Batch: 319620

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 319385

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	8.00	8.36		ug/L		105	85 - 115

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Comp

TestAmerica Job ID: 440-140288-1

Method: 245.1 - Mercury (CVAA) (Continued)

Lab Sample ID: 440-140288-1 MS

Matrix: Water

Analysis Batch: 319620

Client Sample ID: Outfall009_20160308_Comp

Prep Type: Total/NA

Prep Batch: 319385

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Mercury	ND		8.00	8.40		ug/L		105	70 - 130

Lab Sample ID: 440-140288-1 MSD

Matrix: Water

Analysis Batch: 319620

Client Sample ID: Outfall009_20160308_Comp

Prep Type: Total/NA

Prep Batch: 319385

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	ND		8.00	8.47		ug/L		106	70 - 130	1	20

Lab Sample ID: MRL 440-318643/4-C

Matrix: Water

Analysis Batch: 319620

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 319397

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	Limits
Mercury	10.0	10.1		ug/L		101	

Lab Sample ID: MB 440-318971/1-D

Matrix: Water

Analysis Batch: 321503

Client Sample ID: Method Blank

Prep Type: Dissolved

Prep Batch: 321294

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		03/30/16 17:33	03/31/16 13:42	1

Lab Sample ID: LCS 440-318971/2-D

Matrix: Water

Analysis Batch: 321503

Client Sample ID: Lab Control Sample

Prep Type: Dissolved

Prep Batch: 321294

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	8.00	7.88		ug/L		98	85 - 115

Lab Sample ID: 440-140288-2 MS

Matrix: Water

Analysis Batch: 321503

Client Sample ID: Outfall009_20160308_Comp_F

Prep Type: Dissolved

Prep Batch: 321294

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Mercury	ND		8.00	8.45		ug/L		106	70 - 130

Lab Sample ID: 440-140288-2 MSD

Matrix: Water

Analysis Batch: 321503

Client Sample ID: Outfall009_20160308_Comp_F

Prep Type: Dissolved

Prep Batch: 321294

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	ND		8.00	7.89		ug/L		99	70 - 130	7	20

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Comp

TestAmerica Job ID: 440-140288-1

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

Lab Sample ID: MB 440-317303/1
Matrix: Water
Analysis Batch: 317303

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10	5.0	mg/L			03/14/16 11:57	1

Lab Sample ID: LCS 440-317303/2
Matrix: Water
Analysis Batch: 317303

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	1000	988		mg/L		99	90 - 110

Lab Sample ID: 440-140476-C-1 DU
Matrix: Water
Analysis Batch: 317303

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	310		323		mg/L		3	5

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

Lab Sample ID: MB 440-317612/1
Matrix: Water
Analysis Batch: 317612

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		1.0	0.50	mg/L			03/15/16 14:10	1

Lab Sample ID: LCS 440-317612/2
Matrix: Water
Analysis Batch: 317612

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	1000	1080		mg/L		108	85 - 115

Lab Sample ID: 440-140525-A-2 DU
Matrix: Water
Analysis Batch: 317612

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Suspended Solids	66		66.0		mg/L		0	10

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

Lab Sample ID: MB 440-317433/1-A
Matrix: Water
Analysis Batch: 318026

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 317433

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	ND		5.0	2.5	ug/L		03/14/16 21:37	03/16/16 18:17	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Comp

TestAmerica Job ID: 440-140288-1

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

Lab Sample ID: LCS 440-317433/2-A
Matrix: Water
Analysis Batch: 318026

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 317433

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Cyanide, Total	100	104		ug/L		104	90 - 110

Lab Sample ID: LCSD 440-317433/3-A
Matrix: Water
Analysis Batch: 318026

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 317433

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Cyanide, Total	100	97.0		ug/L		97	90 - 110	7	10

Lab Sample ID: 440-140288-1 MS
Matrix: Water
Analysis Batch: 318026

Client Sample ID: Outfall009_20160308_Comp
Prep Type: Total/NA
Prep Batch: 317433

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Cyanide, Total	ND		100	102		ug/L		102	70 - 115

Lab Sample ID: 440-140288-1 MSD
Matrix: Water
Analysis Batch: 318026

Client Sample ID: Outfall009_20160308_Comp
Prep Type: Total/NA
Prep Batch: 317433

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Cyanide, Total	ND		100	102		ug/L		102	70 - 115	1	15

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Lab Sample ID: MB 160-241360/1-A
Matrix: Water
Analysis Batch: 242410

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 241360

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	-0.1410	U	0.390	0.390	3.00	0.849	pCi/L	03/21/16 12:29	03/27/16 18:18	1
Gross Beta	-0.3169	U	0.444	0.446	4.00	0.863	pCi/L	03/21/16 12:29	03/27/16 18:18	1

Lab Sample ID: LCS 160-241360/2-A
Matrix: Water
Analysis Batch: 242410

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 241360

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	Limits
Gross Alpha	50.0	44.68		6.51	3.00	1.65	pCi/L	89	73 - 133

Lab Sample ID: LCSB 160-241360/3-A
Matrix: Water
Analysis Batch: 242410

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 241360

Analyte	Spike Added	LCSB Result	LCSB Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	Limits
Gross Beta	93.1	93.26		9.85	4.00	0.898	pCi/L	100	75 - 125

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Comp

TestAmerica Job ID: 440-140288-1

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity (Continued)

Lab Sample ID: 440-140288-1 MS
Matrix: Water
Analysis Batch: 242410

Client Sample ID: Outfall009_20160308_Comp
Prep Type: Total/NA
Prep Batch: 241360

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
											60	140
Gross Alpha	0.938	U G	1430	1342		178	3.00	31.0	pCi/L	94	60 - 140	

Lab Sample ID: 440-140288-1 MSBT
Matrix: Water
Analysis Batch: 242410

Client Sample ID: Outfall009_20160308_Comp
Prep Type: Total/NA
Prep Batch: 241360

Analyte	Sample Result	Sample Qual	Spike Added	MSBT Result	MSBT Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
											60	140
Gross Beta	-1.14	U G	2660	2389	G	253	4.00	25.8	pCi/L	90	60 - 140	

Lab Sample ID: 440-140288-1 MSBTD
Matrix: Water
Analysis Batch: 242410

Client Sample ID: Outfall009_20160308_Comp
Prep Type: Total/NA
Prep Batch: 241360

Analyte	Sample Result	Sample Qual	Spike Added	MSBTD Result	MSBTD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		RER	Limit
											60	140	0.07	1
Gross Beta	-1.14	U G	2660	2423	G	256	4.00	21.8	pCi/L	91	60 - 140	0.07	1	

Lab Sample ID: 440-140288-1 MSD
Matrix: Water
Analysis Batch: 242410

Client Sample ID: Outfall009_20160308_Comp
Prep Type: Total/NA
Prep Batch: 241360

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		RER	Limit
											60	140	0.10	1
Gross Alpha	0.938	U G	1430	1306		173	3.00	25.7	pCi/L	91	60 - 140	0.10	1	

Lab Sample ID: 440-141065-C-1-E MS
Matrix: Water
Analysis Batch: 242410

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 241360

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
											60	140
Gross Alpha	0.762	U	50.0	40.96		5.72	3.00	0.929	pCi/L	82	60 - 140	

Lab Sample ID: 440-141065-C-1-F MSD
Matrix: Water
Analysis Batch: 242410

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 241360

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		RER	Limit
											60	140	0.07	1
Gross Alpha	0.762	U	50.0	41.74		5.82	3.00	1.03	pCi/L	84	60 - 140	0.07	1	

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Comp

TestAmerica Job ID: 440-140288-1

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity (Continued)

Lab Sample ID: 440-141065-C-1-G MSBT
Matrix: Water
Analysis Batch: 242410

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 241360

Analyte	Sample Result	Sample Qual	Spike Added	MSBT Result	MSBT Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Gross Beta	1.52		93.1	91.88		9.70	4.00	0.960	pCi/L	97	60 - 140

Lab Sample ID: 440-141065-C-1-H MSBTD
Matrix: Water
Analysis Batch: 242410

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 241360

Analyte	Sample Result	Sample Qual	Spike Added	MSBTD Result	MSBTD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Gross Beta	1.52		93.1	89.77		9.49	4.00	1.00	pCi/L	95	60 - 140	0.11	1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Lab Sample ID: MB 160-240679/1-A
Matrix: Water
Analysis Batch: 240824

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 240679

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Count Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	-2.515	U	25.2	25.2	20.0	12.8	pCi/L	03/16/16 04:47	03/16/16 15:40	1
Potassium-40	-71.05	U	237	237		199	pCi/L	03/16/16 04:47	03/16/16 15:40	1

Lab Sample ID: LCS 160-240679/2-A
Matrix: Water
Analysis Batch: 240823

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 240679

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Americium-241	137000	132600		15300		440	pCi/L	97	90 - 111
Cesium-137	48000	47230		4740	20.0	149	pCi/L	98	90 - 111
Cobalt-60	44900	43610		4310		86.5	pCi/L	97	89 - 110

Lab Sample ID: 440-140288-1 DU
Matrix: Water
Analysis Batch: 240822

Client Sample ID: Outfall009_20160308_Comp
Prep Type: Total/NA
Prep Batch: 240679

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Cesium-137	0.000	U	-0.3085	U	5.86	20.0	10.8	pCi/L	0.03	1
Potassium-40	15.5	U	-42.76	U	231		145	pCi/L	0.18	1

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Comp

TestAmerica Job ID: 440-140288-1

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-240169/1-A
Matrix: Water
Analysis Batch: 243362

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 240169

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	-0.01060	U	0.0700	0.0700	1.00	0.138	pCi/L	03/11/16 15:35	04/04/16 07:35	1
Carrier	MB MB		Limits		Prepared	Analyzed	Dil Fac			
Ba Carrier	%Yield	Qualifier	Limits							
Ba Carrier	95.2		40 - 110		03/11/16 15:35	04/04/16 07:35	1			

Lab Sample ID: LCS 160-240169/2-A
Matrix: Water
Analysis Batch: 243362

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 240169

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Radium-226	11.2	13.21		1.32	1.00	0.0908	pCi/L	118	68 - 137
Carrier	LCS LCS		Limits		Prepared	Analyzed	Dil Fac		
Ba Carrier	%Yield	Qualifier	Limits						
Ba Carrier	103		40 - 110						

Lab Sample ID: 440-140288-1 MS
Matrix: Water
Analysis Batch: 243362

Client Sample ID: Outfall009_20160308_Comp
Prep Type: Total/NA
Prep Batch: 240169

Analyte	Sample Sample		Spike Added	MS	MS	Total	RL	MDC	Unit	%Rec	%Rec. Limits
	Result	Qual		Result	Qual	Uncert. (2σ+/-)					
Radium-226	0.511	U	22.3	26.48		2.77	1.00	0.408	pCi/L	119	75 - 138
Carrier	MS MS		Limits		Prepared	Analyzed	Dil Fac				
Ba Carrier	%Yield	Qualifier	Limits								
Ba Carrier	58.7		40 - 110								

Lab Sample ID: 440-140288-1 MSD
Matrix: Water
Analysis Batch: 243362

Client Sample ID: Outfall009_20160308_Comp
Prep Type: Total/NA
Prep Batch: 240169

Analyte	Sample Sample		Spike Added	MSD	MSD	Total	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
	Result	Qual		Result	Qual	Uncert. (2σ+/-)							
Radium-226	0.511	U	22.3	26.22		2.86	1.00	0.388	pCi/L	118	75 - 138	0.05	1
Carrier	MSD MSD		Limits		Prepared	Analyzed	Dil Fac						
Ba Carrier	%Yield	Qualifier	Limits										
Ba Carrier	42.5		40 - 110										

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Comp

TestAmerica Job ID: 440-140288-1

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-240400/1-A
Matrix: Water
Analysis Batch: 243314

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 240400

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.2542	U	0.192	0.193	1.00	0.395	pCi/L	03/14/16 13:57	04/01/16 10:47	1

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	95.2		40 - 110	03/14/16 13:57	04/01/16 10:47	1
Y Carrier	83.7		40 - 110	03/14/16 13:57	04/01/16 10:47	1

Lab Sample ID: LCS 160-240400/2-A
Matrix: Water
Analysis Batch: 243314

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 240400

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	15.4	18.51		1.93	1.00	0.386	pCi/L	120	56 - 140

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	103		40 - 110
Y Carrier	81.5		40 - 110

Lab Sample ID: 440-140288-1 MS
Matrix: Water
Analysis Batch: 243314

Client Sample ID: Outfall009_20160308_Comp
Prep Type: Total/NA
Prep Batch: 240400

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	1.84	U G F	30.8	35.62		4.11	1.00	1.58	pCi/L	116	45 - 150

Carrier	MS %Yield	MS Qualifier	Limits
Ba Carrier	58.7		40 - 110
Y Carrier	81.5		40 - 110

Lab Sample ID: 440-140288-1 MSD
Matrix: Water
Analysis Batch: 243314

Client Sample ID: Outfall009_20160308_Comp
Prep Type: Total/NA
Prep Batch: 240400

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228	1.84	U G F	30.8	47.78	F1 F	5.52	1.00	1.74	pCi/L	155	45 - 150	1.26	1

Carrier	MSD %Yield	MSD Qualifier	Limits
Ba Carrier	42.5		40 - 110
Y Carrier	78.9		40 - 110

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Comp

TestAmerica Job ID: 440-140288-1

Method: 905 - Strontium-90 (GFPC)

Lab Sample ID: MB 160-240665/1-A
Matrix: Water
Analysis Batch: 241800

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 240665

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.09544	U	0.173	0.173	3.00	0.294	pCi/L	03/15/16 20:05	03/23/16 13:23	1

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	88.2		40 - 110	03/15/16 20:05	03/23/16 13:23	1
Y Carrier	90.8		40 - 110	03/15/16 20:05	03/23/16 13:23	1

Lab Sample ID: LCS 160-240665/2-A
Matrix: Water
Analysis Batch: 241800

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 240665

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Strontium-90	8.69	8.800		0.923	3.00	0.320	pCi/L	101	75 - 125

Carrier	LCS %Yield	LCS Qualifier	Limits
Sr Carrier	85.9		40 - 110
Y Carrier	89.7		40 - 110

Lab Sample ID: 440-140288-1 MS
Matrix: Water
Analysis Batch: 241800

Client Sample ID: Outfall009_20160308_Comp
Prep Type: Total/NA
Prep Batch: 240665

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Strontium-90	0.133	U	34.8	34.03		3.61	3.00	1.31	pCi/L	98	19 - 150

Carrier	MS %Yield	MS Qualifier	Limits
Sr Carrier	84.8		40 - 110
Y Carrier	92.0		40 - 110

Lab Sample ID: 440-140288-1 MSD
Matrix: Water
Analysis Batch: 241800

Client Sample ID: Outfall009_20160308_Comp
Prep Type: Total/NA
Prep Batch: 240665

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Strontium-90	0.133	U	34.9	33.69		3.55	3.00	1.17	pCi/L	97	19 - 150	0.05	1

Carrier	MSD %Yield	MSD Qualifier	Limits
Sr Carrier	86.7		40 - 110
Y Carrier	92.0		40 - 110

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Comp

TestAmerica Job ID: 440-140288-1

Method: 906.0 - Tritium, Total (LSC)

Lab Sample ID: MB 160-243061/1-A
Matrix: Water
Analysis Batch: 243338

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 243061

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	76.13	U	231	231	500	414	pCi/L	03/31/16 13:49	04/01/16 11:40	1

Lab Sample ID: LCS 160-243061/2-A
Matrix: Water
Analysis Batch: 243338

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 243061

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	4650	4346		662	500	387	pCi/L	93	74 - 114

Lab Sample ID: 440-140288-1 MS
Matrix: Water
Analysis Batch: 243338

Client Sample ID: Outfall009_20160308_Comp
Prep Type: Total/NA
Prep Batch: 243061

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	76.1	U	4650	4166		642	500	382	pCi/L	90	67 - 130

Lab Sample ID: 440-140288-1 MSD
Matrix: Water
Analysis Batch: 243338

Client Sample ID: Outfall009_20160308_Comp
Prep Type: Total/NA
Prep Batch: 243061

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Tritium	76.1	U	4650	4166		651	500	395	pCi/L	90	67 - 130	0	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Lab Sample ID: MB 160-241443/1-A
Matrix: Water
Analysis Batch: 242626

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 241443

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Total Uranium	0.03834	U	0.09763	0.09769	1.00	0.121	pCi/L	03/22/16 10:06	03/29/16 11:19	1

Lab Sample ID: LCS 160-241443/2-A
Matrix: Water
Analysis Batch: 242666

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 241443

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Uranium-234	12.7	11.59		1.19	1.00	0.0903	pCi/L	91	84 - 120
Uranium-238	13.0	12.74		1.28	1.00	0.0950	pCi/L	98	83 - 121

Tracer	LCS %Yield	LCS Qualifier	Limits
Uranium-232	93.4		30 - 110

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Comp

TestAmerica Job ID: 440-140288-1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Lab Sample ID: 440-140288-1 MS

Matrix: Water

Analysis Batch: 242669

Client Sample ID: Outfall009_20160308_Comp

Prep Type: Total/NA

Prep Batch: 241443

Analyte	Sample	Sample	Spike	MS	MS	Total	RL	MDC	Unit	%Rec	%Rec.		
	Result	Qual		Result	Qual								
Uranium-234	0.244		31.8	31.28		3.24	1.00	0.213	pCi/L	98	65 - 146		
Uranium-238	0.127	U	32.5	31.04		3.22	1.00	0.232	pCi/L	96	68 - 143		
MS MS													
Tracer	%Yield	Qualifier	Limits										
Uranium-232	74.5		30 - 110										

Lab Sample ID: 440-140288-1 MSD

Matrix: Water

Analysis Batch: 242670

Client Sample ID: Outfall009_20160308_Comp

Prep Type: Total/NA

Prep Batch: 241443

Analyte	Sample	Sample	Spike	MSD	MSD	Total	RL	MDC	Unit	%Rec	%Rec.	RER	
	Result	Qual		Result	Qual							Uncert.	Limits
Uranium-234	0.244		31.8	33.48		3.52	1.00	0.219	pCi/L	105	65 - 146	0.32	1
Uranium-238	0.127	U	32.5	34.20		3.58	1.00	0.0996	pCi/L	105	68 - 143	0.47	1
MSD MSD													
Tracer	%Yield	Qualifier	Limits										
Uranium-232	68.6		30 - 110										

Lab Sample ID: 440-141065-C-1-I MS

Matrix: Water

Analysis Batch: 242665

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Prep Batch: 241443

Analyte	Sample	Sample	Spike	MS	MS	Total	RL	MDC	Unit	%Rec	%Rec.		
	Result	Qual		Result	Qual								
Uranium-234	0.107		31.8	33.50		3.43	1.00	0.293	pCi/L	105	65 - 146		
Uranium-238	0.0733		32.5	34.61		3.53	1.00	0.212	pCi/L	106	68 - 143		
MS MS													
Tracer	%Yield	Qualifier	Limits										
Uranium-232	78.4		30 - 110										

Lab Sample ID: 440-141065-C-1-J MSD

Matrix: Water

Analysis Batch: 242667

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Prep Batch: 241443

Analyte	Sample	Sample	Spike	MSD	MSD	Total	RL	MDC	Unit	%Rec	%Rec.	RER	
	Result	Qual		Result	Qual							Uncert.	Limits
Uranium-234	0.107		31.8	30.63		3.18	1.00	0.262	pCi/L	96	65 - 146	0.43	1
Uranium-238	0.0733		32.5	33.55		3.43	1.00	0.230	pCi/L	103	68 - 143	0.15	1
MSD MSD													
Tracer	%Yield	Qualifier	Limits										
Uranium-232	75.1		30 - 110										

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Comp

TestAmerica Job ID: 440-140288-1

GC/MS Semi VOA

Prep Batch: 316215

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-140288-1	Outfall009_20160308_Comp	Total/NA	Water	525.2	
LCS 440-316215/2-A	Lab Control Sample	Total/NA	Water	525.2	
LCSD 440-316215/3-A	Lab Control Sample Dup	Total/NA	Water	525.2	
MB 440-316215/1-A	Method Blank	Total/NA	Water	525.2	

Analysis Batch: 316232

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-140288-1	Outfall009_20160308_Comp	Total/NA	Water	525.2	316215
LCS 440-316215/2-A	Lab Control Sample	Total/NA	Water	525.2	316215
LCSD 440-316215/3-A	Lab Control Sample Dup	Total/NA	Water	525.2	316215
MB 440-316215/1-A	Method Blank	Total/NA	Water	525.2	316215

Prep Batch: 317330

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-140288-1	Outfall009_20160308_Comp	Total/NA	Water	625	
LCS 440-317330/2-A	Lab Control Sample	Total/NA	Water	625	
LCSD 440-317330/3-A	Lab Control Sample Dup	Total/NA	Water	625	
MB 440-317330/1-A	Method Blank	Total/NA	Water	625	

Analysis Batch: 318612

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-140288-1	Outfall009_20160308_Comp	Total/NA	Water	625	317330
LCS 440-317330/2-A	Lab Control Sample	Total/NA	Water	625	317330
LCSD 440-317330/3-A	Lab Control Sample Dup	Total/NA	Water	625	317330
MB 440-317330/1-A	Method Blank	Total/NA	Water	625	317330

GC Semi VOA

Prep Batch: 317195

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-140288-1	Outfall009_20160308_Comp	Total/NA	Water	608	
440-140288-1 MS	Outfall009_20160308_Comp	Total/NA	Water	608	
440-140288-1 MS	Outfall009_20160308_Comp	Total/NA	Water	608	
440-140288-1 MSD	Outfall009_20160308_Comp	Total/NA	Water	608	
440-140288-1 MSD	Outfall009_20160308_Comp	Total/NA	Water	608	
LCS 440-317195/2-A	Lab Control Sample	Total/NA	Water	608	
LCS 440-317195/7-A	Lab Control Sample	Total/NA	Water	608	
MB 440-317195/1-A	Method Blank	Total/NA	Water	608	

Analysis Batch: 317358

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-140288-1	Outfall009_20160308_Comp	Total/NA	Water	608 Pesticides	317195
440-140288-1 MS	Outfall009_20160308_Comp	Total/NA	Water	608 Pesticides	317195
440-140288-1 MSD	Outfall009_20160308_Comp	Total/NA	Water	608 Pesticides	317195
LCS 440-317195/2-A	Lab Control Sample	Total/NA	Water	608 Pesticides	317195
MB 440-317195/1-A	Method Blank	Total/NA	Water	608 Pesticides	317195

Analysis Batch: 317502

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-140288-1	Outfall009_20160308_Comp	Total/NA	Water	608 PCB LL	317195

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Comp

TestAmerica Job ID: 440-140288-1

GC Semi VOA (Continued)

Analysis Batch: 317502 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-140288-1 MS	Outfall009_20160308_Comp	Total/NA	Water	608 PCB LL	317195
440-140288-1 MSD	Outfall009_20160308_Comp	Total/NA	Water	608 PCB LL	317195
LCS 440-317195/7-A	Lab Control Sample	Total/NA	Water	608 PCB LL	317195
MB 440-317195/1-A	Method Blank	Total/NA	Water	608 PCB LL	317195

HPLC/IC

Analysis Batch: 315946

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-140288-1	Outfall009_20160308_Comp	Total/NA	Water	218.6	
440-140288-1 MS	Outfall009_20160308_Comp	Total/NA	Water	218.6	
440-140288-1 MSD	Outfall009_20160308_Comp	Total/NA	Water	218.6	
LCS 440-315946/2	Lab Control Sample	Total/NA	Water	218.6	
MB 440-315946/3	Method Blank	Total/NA	Water	218.6	
MRL 440-315946/4	Lab Control Sample	Total/NA	Water	218.6	

Analysis Batch: 316245

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-140288-1	Outfall009_20160308_Comp	Total/NA	Water	300.0	
440-140288-1 MS	Outfall009_20160308_Comp	Total/NA	Water	300.0	
440-140288-1 MSD	Outfall009_20160308_Comp	Total/NA	Water	300.0	
LCS 440-316245/6	Lab Control Sample	Total/NA	Water	300.0	
MB 440-316245/7	Method Blank	Total/NA	Water	300.0	

Analysis Batch: 320123

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-140288-1	Outfall009_20160308_Comp	Total/NA	Water	314.0	
440-140288-1 MS	Outfall009_20160308_Comp	Total/NA	Water	314.0	
440-140288-1 MSD	Outfall009_20160308_Comp	Total/NA	Water	314.0	
LCS 440-320123/2	Lab Control Sample	Total/NA	Water	314.0	
MB 440-320123/3	Method Blank	Total/NA	Water	314.0	
MRL 440-320123/5	Lab Control Sample	Total/NA	Water	314.0	

Analysis Batch: 321488

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-140288-1	Outfall009_20160308_Comp	Total/NA	Water	NO3NO2 Calc	

Specialty Organics

Prep Batch: 103052

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-140288-1	Outfall009_20160308_Comp	Total/NA	Water	1613B	
LCS 320-103052/2-A	Lab Control Sample	Total/NA	Water	1613B	
LCSD 320-103052/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	
MB 320-103052/1-A	Method Blank	Total/NA	Water	1613B	

Analysis Batch: 103469

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-140288-1	Outfall009_20160308_Comp	Total/NA	Water	1613B	103052
LCS 320-103052/2-A	Lab Control Sample	Total/NA	Water	1613B	103052

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Comp

TestAmerica Job ID: 440-140288-1

Specialty Organics (Continued)

Analysis Batch: 103469 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCSD 320-103052/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	103052
MB 320-103052/1-A	Method Blank	Total/NA	Water	1613B	103052

Metals

Leach Batch: 318643

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MRL 440-318643/4-C	Lab Control Sample	Total/NA	Water	1311	

Filtration Batch: 318971

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-140288-2	Outfall009_20160308_Comp_F	Dissolved	Water	FILTRATION	
440-140288-2 MS	Outfall009_20160308_Comp_F	Dissolved	Water	FILTRATION	
440-140288-2 MSD	Outfall009_20160308_Comp_F	Dissolved	Water	FILTRATION	
LCS 440-318971/2-B	Lab Control Sample	Dissolved	Water	FILTRATION	
LCS 440-318971/2-C	Lab Control Sample	Dissolved	Water	FILTRATION	
LCS 440-318971/2-D	Lab Control Sample	Dissolved	Water	FILTRATION	
MB 440-318971/1-B	Method Blank	Dissolved	Water	FILTRATION	
MB 440-318971/1-C	Method Blank	Dissolved	Water	FILTRATION	
MB 440-318971/1-D	Method Blank	Dissolved	Water	FILTRATION	

Prep Batch: 319385

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-140288-1	Outfall009_20160308_Comp	Total/NA	Water	245.1	
440-140288-1 MS	Outfall009_20160308_Comp	Total/NA	Water	245.1	
440-140288-1 MSD	Outfall009_20160308_Comp	Total/NA	Water	245.1	
LCS 440-319385/2-A	Lab Control Sample	Total/NA	Water	245.1	
MB 440-319385/1-A	Method Blank	Total/NA	Water	245.1	

Prep Batch: 319397

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MRL 440-318643/4-C	Lab Control Sample	Total/NA	Water	7470A	318643

Analysis Batch: 319620

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-140288-1	Outfall009_20160308_Comp	Total/NA	Water	245.1	319385
440-140288-1 MS	Outfall009_20160308_Comp	Total/NA	Water	245.1	319385
440-140288-1 MSD	Outfall009_20160308_Comp	Total/NA	Water	245.1	319385
LCS 440-319385/2-A	Lab Control Sample	Total/NA	Water	245.1	319385
MB 440-319385/1-A	Method Blank	Total/NA	Water	245.1	319385
MRL 440-318643/4-C	Lab Control Sample	Total/NA	Water	245.1	319397

Prep Batch: 320831

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-140288-2	Outfall009_20160308_Comp_F	Dissolved	Water	200.2	318971
440-140288-2 MS	Outfall009_20160308_Comp_F	Dissolved	Water	200.2	318971
440-140288-2 MSD	Outfall009_20160308_Comp_F	Dissolved	Water	200.2	318971
LCS 440-318971/2-B	Lab Control Sample	Dissolved	Water	200.2	318971
MB 440-318971/1-B	Method Blank	Dissolved	Water	200.2	318971

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Comp

TestAmerica Job ID: 440-140288-1

Metals (Continued)

Prep Batch: 320890

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-140288-2	Outfall009_20160308_Comp_F	Dissolved	Water	200.2	318971
440-140288-2 MS	Outfall009_20160308_Comp_F	Dissolved	Water	200.2	318971
440-140288-2 MSD	Outfall009_20160308_Comp_F	Dissolved	Water	200.2	318971
LCS 440-318971/2-C	Lab Control Sample	Dissolved	Water	200.2	318971
MB 440-318971/1-C	Method Blank	Dissolved	Water	200.2	318971

Analysis Batch: 321084

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-140288-2	Outfall009_20160308_Comp_F	Dissolved	Water	200.7 Rev 4.4	320831
440-140288-2 MS	Outfall009_20160308_Comp_F	Dissolved	Water	200.7 Rev 4.4	320831
440-140288-2 MSD	Outfall009_20160308_Comp_F	Dissolved	Water	200.7 Rev 4.4	320831
LCS 440-318971/2-B	Lab Control Sample	Dissolved	Water	200.7 Rev 4.4	320831
MB 440-318971/1-B	Method Blank	Dissolved	Water	200.7 Rev 4.4	320831

Prep Batch: 321131

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-140288-1	Outfall009_20160308_Comp	Total Recoverable	Water	200.2	
440-140288-1 MS	Outfall009_20160308_Comp	Total Recoverable	Water	200.2	
440-140288-1 MSD	Outfall009_20160308_Comp	Total Recoverable	Water	200.2	
LCS 440-321131/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
MB 440-321131/1-A	Method Blank	Total Recoverable	Water	200.2	

Prep Batch: 321133

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-140288-1	Outfall009_20160308_Comp	Total Recoverable	Water	200.2	
440-140288-1 MS	Outfall009_20160308_Comp	Total Recoverable	Water	200.2	
440-140288-1 MSD	Outfall009_20160308_Comp	Total Recoverable	Water	200.2	
LCS 440-321133/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
MB 440-321133/1-A	Method Blank	Total Recoverable	Water	200.2	

Analysis Batch: 321166

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-140288-2	Outfall009_20160308_Comp_F	Dissolved	Water	200.7 Rev 4.4	320831
440-140288-2 MS	Outfall009_20160308_Comp_F	Dissolved	Water	200.7 Rev 4.4	320831
440-140288-2 MSD	Outfall009_20160308_Comp_F	Dissolved	Water	200.7 Rev 4.4	320831
LCS 440-318971/2-B	Lab Control Sample	Dissolved	Water	200.7 Rev 4.4	320831
MB 440-318971/1-B	Method Blank	Dissolved	Water	200.7 Rev 4.4	320831

Prep Batch: 321294

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-140288-2	Outfall009_20160308_Comp_F	Dissolved	Water	245.1	318971
440-140288-2 MS	Outfall009_20160308_Comp_F	Dissolved	Water	245.1	318971
440-140288-2 MSD	Outfall009_20160308_Comp_F	Dissolved	Water	245.1	318971
LCS 440-318971/2-D	Lab Control Sample	Dissolved	Water	245.1	318971
MB 440-318971/1-D	Method Blank	Dissolved	Water	245.1	318971

Analysis Batch: 321298

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-140288-1	Outfall009_20160308_Comp	Total Recoverable	Water	SM 2340B	
440-140288-1 MS	Outfall009_20160308_Comp	Total Recoverable	Water	SM 2340B	
440-140288-1 MSD	Outfall009_20160308_Comp	Total Recoverable	Water	SM 2340B	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Comp

TestAmerica Job ID: 440-140288-1

Metals (Continued)

Analysis Batch: 321298 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-140288-2	Outfall009_20160308_Comp_F	Dissolved	Water	SM 2340B	
440-140288-2 MS	Outfall009_20160308_Comp_F	Dissolved	Water	SM 2340B	
440-140288-2 MSD	Outfall009_20160308_Comp_F	Dissolved	Water	SM 2340B	

Analysis Batch: 321503

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-140288-2	Outfall009_20160308_Comp_F	Dissolved	Water	245.1	321294
440-140288-2 MS	Outfall009_20160308_Comp_F	Dissolved	Water	245.1	321294
440-140288-2 MSD	Outfall009_20160308_Comp_F	Dissolved	Water	245.1	321294
LCS 440-318971/2-D	Lab Control Sample	Dissolved	Water	245.1	321294
MB 440-318971/1-D	Method Blank	Dissolved	Water	245.1	321294

Analysis Batch: 321604

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-140288-1	Outfall009_20160308_Comp	Total Recoverable	Water	200.7 Rev 4.4	321131
440-140288-1 MS	Outfall009_20160308_Comp	Total Recoverable	Water	200.7 Rev 4.4	321131
440-140288-1 MSD	Outfall009_20160308_Comp	Total Recoverable	Water	200.7 Rev 4.4	321131
LCS 440-321131/2-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	321131
MB 440-321131/1-A	Method Blank	Total Recoverable	Water	200.7 Rev 4.4	321131

Analysis Batch: 321907

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-140288-1	Outfall009_20160308_Comp	Total Recoverable	Water	200.7 Rev 4.4	321131
440-140288-1 MS	Outfall009_20160308_Comp	Total Recoverable	Water	200.7 Rev 4.4	321131
440-140288-1 MSD	Outfall009_20160308_Comp	Total Recoverable	Water	200.7 Rev 4.4	321131
LCS 440-321131/2-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	321131
MB 440-321131/1-A	Method Blank	Total Recoverable	Water	200.7 Rev 4.4	321131

Analysis Batch: 322224

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-140288-2	Outfall009_20160308_Comp_F	Dissolved	Water	200.8	320890
440-140288-2 MS	Outfall009_20160308_Comp_F	Dissolved	Water	200.8	320890
440-140288-2 MSD	Outfall009_20160308_Comp_F	Dissolved	Water	200.8	320890
LCS 440-318971/2-C	Lab Control Sample	Dissolved	Water	200.8	320890
MB 440-318971/1-C	Method Blank	Dissolved	Water	200.8	320890

Analysis Batch: 322225

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-140288-1	Outfall009_20160308_Comp	Total Recoverable	Water	200.8	321133
440-140288-1 MS	Outfall009_20160308_Comp	Total Recoverable	Water	200.8	321133
440-140288-1 MSD	Outfall009_20160308_Comp	Total Recoverable	Water	200.8	321133
LCS 440-321133/2-A	Lab Control Sample	Total Recoverable	Water	200.8	321133
MB 440-321133/1-A	Method Blank	Total Recoverable	Water	200.8	321133

General Chemistry

Analysis Batch: 317303

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-140288-1	Outfall009_20160308_Comp	Total/NA	Water	SM 2540C	
440-140476-C-1 DU	Duplicate	Total/NA	Water	SM 2540C	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Comp

TestAmerica Job ID: 440-140288-1

General Chemistry (Continued)

Analysis Batch: 317303 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 440-317303/2	Lab Control Sample	Total/NA	Water	SM 2540C	
MB 440-317303/1	Method Blank	Total/NA	Water	SM 2540C	

Prep Batch: 317433

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-140288-1	Outfall009_20160308_Comp	Total/NA	Water	Distill/CN	
440-140288-1 MS	Outfall009_20160308_Comp	Total/NA	Water	Distill/CN	
440-140288-1 MSD	Outfall009_20160308_Comp	Total/NA	Water	Distill/CN	
LCS 440-317433/2-A	Lab Control Sample	Total/NA	Water	Distill/CN	
LCSD 440-317433/3-A	Lab Control Sample Dup	Total/NA	Water	Distill/CN	
MB 440-317433/1-A	Method Blank	Total/NA	Water	Distill/CN	

Analysis Batch: 317612

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-140288-1	Outfall009_20160308_Comp	Total/NA	Water	SM 2540D	
440-140525-A-2 DU	Duplicate	Total/NA	Water	SM 2540D	
LCS 440-317612/2	Lab Control Sample	Total/NA	Water	SM 2540D	
MB 440-317612/1	Method Blank	Total/NA	Water	SM 2540D	

Analysis Batch: 318026

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-140288-1	Outfall009_20160308_Comp	Total/NA	Water	SM 4500 CN E	317433
440-140288-1 MS	Outfall009_20160308_Comp	Total/NA	Water	SM 4500 CN E	317433
440-140288-1 MSD	Outfall009_20160308_Comp	Total/NA	Water	SM 4500 CN E	317433
LCS 440-317433/2-A	Lab Control Sample	Total/NA	Water	SM 4500 CN E	317433
LCSD 440-317433/3-A	Lab Control Sample Dup	Total/NA	Water	SM 4500 CN E	317433
MB 440-317433/1-A	Method Blank	Total/NA	Water	SM 4500 CN E	317433

Rad

Prep Batch: 240169

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-140288-1	Outfall009_20160308_Comp	Total/NA	Water	PrecSep-21	
440-140288-1 MS	Outfall009_20160308_Comp	Total/NA	Water	PrecSep-21	
440-140288-1 MSD	Outfall009_20160308_Comp	Total/NA	Water	PrecSep-21	
LCS 160-240169/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
MB 160-240169/1-A	Method Blank	Total/NA	Water	PrecSep-21	

Prep Batch: 240400

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-140288-1	Outfall009_20160308_Comp	Total/NA	Water	PrecSep_0	
440-140288-1 MS	Outfall009_20160308_Comp	Total/NA	Water	PrecSep_0	
440-140288-1 MSD	Outfall009_20160308_Comp	Total/NA	Water	PrecSep_0	
LCS 160-240400/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
MB 160-240400/1-A	Method Blank	Total/NA	Water	PrecSep_0	

Prep Batch: 240665

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-140288-1	Outfall009_20160308_Comp	Total/NA	Water	PrecSep-7	
440-140288-1 MS	Outfall009_20160308_Comp	Total/NA	Water	PrecSep-7	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Comp

TestAmerica Job ID: 440-140288-1

Rad (Continued)

Prep Batch: 240665 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-140288-1 MSD	Outfall009_20160308_Comp	Total/NA	Water	PrecSep-7	
LCS 160-240665/2-A	Lab Control Sample	Total/NA	Water	PrecSep-7	
MB 160-240665/1-A	Method Blank	Total/NA	Water	PrecSep-7	

Prep Batch: 240679

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-140288-1	Outfall009_20160308_Comp	Total/NA	Water	Fill_Geo-0	
440-140288-1 DU	Outfall009_20160308_Comp	Total/NA	Water	Fill_Geo-0	
LCS 160-240679/2-A	Lab Control Sample	Total/NA	Water	Fill_Geo-0	
MB 160-240679/1-A	Method Blank	Total/NA	Water	Fill_Geo-0	

Prep Batch: 241360

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-140288-1	Outfall009_20160308_Comp	Total/NA	Water	Evaporation	
440-140288-1 MS	Outfall009_20160308_Comp	Total/NA	Water	Evaporation	
440-140288-1 MSBT	Outfall009_20160308_Comp	Total/NA	Water	Evaporation	
440-140288-1 MSBTD	Outfall009_20160308_Comp	Total/NA	Water	Evaporation	
440-140288-1 MSD	Outfall009_20160308_Comp	Total/NA	Water	Evaporation	
440-141065-C-1-E MS	Matrix Spike	Total/NA	Water	Evaporation	
440-141065-C-1-F MSD	Matrix Spike Duplicate	Total/NA	Water	Evaporation	
440-141065-C-1-G MSBT	Matrix Spike	Total/NA	Water	Evaporation	
440-141065-C-1-H MSBTD	Matrix Spike Duplicate	Total/NA	Water	Evaporation	
LCS 160-241360/2-A	Lab Control Sample	Total/NA	Water	Evaporation	
LCSB 160-241360/3-A	Lab Control Sample	Total/NA	Water	Evaporation	
MB 160-241360/1-A	Method Blank	Total/NA	Water	Evaporation	

Prep Batch: 241443

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-140288-1	Outfall009_20160308_Comp	Total/NA	Water	ExtChrom	
440-140288-1 MS	Outfall009_20160308_Comp	Total/NA	Water	ExtChrom	
440-140288-1 MSD	Outfall009_20160308_Comp	Total/NA	Water	ExtChrom	
440-141065-C-1-I MS	Matrix Spike	Total/NA	Water	ExtChrom	
440-141065-C-1-J MSD	Matrix Spike Duplicate	Total/NA	Water	ExtChrom	
LCS 160-241443/2-A	Lab Control Sample	Total/NA	Water	ExtChrom	
MB 160-241443/1-A	Method Blank	Total/NA	Water	ExtChrom	

Prep Batch: 243061

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-140288-1	Outfall009_20160308_Comp	Total/NA	Water	LSC_Dist_Susp	
440-140288-1 MS	Outfall009_20160308_Comp	Total/NA	Water	LSC_Dist_Susp	
440-140288-1 MSD	Outfall009_20160308_Comp	Total/NA	Water	LSC_Dist_Susp	
LCS 160-243061/2-A	Lab Control Sample	Total/NA	Water	LSC_Dist_Susp	
MB 160-243061/1-A	Method Blank	Total/NA	Water	LSC_Dist_Susp	

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Comp

TestAmerica Job ID: 440-140288-1

Qualifiers

GC/MS Semi VOA

Qualifier	Qualifier Description
GR	Internal Standard out of range
LH	Surrogate Recoveries were higher than QC limits
BA	Relative percent difference out of control
LR	LCS/LCSD recovery below method control limits
LQ	LCS/LCSD recovery above method control limits
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL

HPLC/IC

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.
LQ	LCS/LCSD recovery above method control limits

Metals

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
MB	Analyte present in the method blank
BB	Sample > 4X spike concentration
QP	Holding time Immediate. Analyzed as close to receipt as possible
LM	MS and/or MSD above acceptance limits. See Blank Spike (LCS)

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.
G	The Sample MDC is greater than the requested RL.
X	Carrier is outside acceptance limits.
F	MS/MSD Recovery and/or RPD exceeds the control limits
F1	MS and/or MSD Recovery is outside acceptance limits.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Comp

TestAmerica Job ID: 440-140288-1

Glossary (Continued)

Abbreviation	These commonly used abbreviations may or may not be present in this report.
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
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)

- 1
- 2
- 3
- 4
- 5
- 6
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- 9
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- 14
- 15
- 16

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Comp

TestAmerica Job ID: 440-140288-1

Laboratory: TestAmerica Irvine

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

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-16
Arizona	State Program	9	AZ0671	10-13-16
California	LA Cty Sanitation Districts	9	10256	01-31-17 *
California	State Program	9	CA ELAP 2706	06-30-16
Guam	State Program	9	Cert. No. 12.002r	01-23-17
Hawaii	State Program	9	N/A	01-29-17
Kansas	NELAP Secondary AB	7	E-10420	07-31-16
Nevada	State Program	9	CA015312016-2	07-31-16
New Mexico	State Program	6	N/A	01-29-17
Northern Mariana Islands	State Program	9	MP0002	01-29-16 *
Oregon	NELAP	10	4028	01-29-17
USDA	Federal		P330-09-00080	07-08-18
Washington	State Program	10	C900	09-03-16

Laboratory: TestAmerica Sacramento

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

Authority	Program	EPA Region	Certification ID	Expiration Date
A2LA	DoD ELAP		2928-01	01-31-17
Alaska (UST)	State Program	10	UST-055	12-18-16
Arizona	State Program	9	AZ0708	08-11-16
Arkansas DEQ	State Program	6	88-0691	06-17-16
California	State Program	9	2897	01-31-17
Colorado	State Program	8	CA00044	08-31-16
Connecticut	State Program	1	PH-0691	06-30-17
Florida	NELAP	4	E87570	06-30-16
Hawaii	State Program	9	N/A	01-31-17
Illinois	NELAP	5	200060	03-17-17
Kansas	NELAP	7	E-10375	05-31-16
Louisiana	NELAP	6	30612	06-30-16
Michigan	State Program	5	9947	01-31-18
Nevada	State Program	9	CA00044	07-31-16
New Jersey	NELAP	2	CA005	06-30-16
New York	NELAP	2	11666	04-01-17
Oregon	NELAP	10	4040	01-29-17
Pennsylvania	NELAP	3	68-01272	03-31-17
Texas	NELAP	6	T104704399	05-31-16
US Fish & Wildlife	Federal		LE148388-0	10-31-16
USDA	Federal		P330-11-00436	12-30-17
USEPA UCMR	Federal	1	CA00044	11-06-16
Utah	NELAP	8	CA00044	02-28-17
Virginia	NELAP Secondary AB	3	460278	03-14-17
Washington	State Program	10	C581	05-04-16
West Virginia (DW)	State Program	3	9930C	12-31-16
Wyoming	State Program	8	8TMS-L	01-29-17

Laboratory: TestAmerica St. Louis

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

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	MO00054	06-30-16

* Certification renewal pending - certification considered valid.

TestAmerica Irvine

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Comp

TestAmerica Job ID: 440-140288-1

Laboratory: TestAmerica St. Louis (Continued)

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

Authority	Program	EPA Region	Certification ID	Expiration Date
California	State Program	9	2886	03-31-18
Connecticut	State Program	1	PH-0241	03-31-17
Florida	NELAP	4	E87689	06-30-16
Illinois	NELAP	5	003757	11-30-16
Iowa	State Program	7	373	12-01-16
Kansas	NELAP	7	E-10236	05-31-16
Kentucky (DW)	State Program	4	90125	12-31-16
L-A-B	DoD ELAP		L2305	04-06-19
Louisiana	NELAP	6	04080	06-30-16 *
Louisiana (DW)	NELAP	6	LA160008	12-31-16
Maryland	State Program	3	310	09-30-16
Missouri	State Program	7	780	06-30-16
Nevada	State Program	9	MO000542016-1	07-31-16
New Jersey	NELAP	2	MO002	06-30-16
New York	NELAP	2	11616	03-31-17
North Dakota	State Program	8	R207	06-30-16
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-16
Pennsylvania	NELAP	3	68-00540	02-28-17 *
South Carolina	State Program	4	85002001	06-30-16
Texas	NELAP	6	T104704193-15-9	07-31-16
USDA	Federal		P330-07-00122	01-09-17
Utah	NELAP	8	MO000542015-7	07-31-16
Virginia	NELAP	3	460230	06-14-16
Washington	State Program	10	C592	08-30-16
West Virginia DEP	State Program	3	381	08-31-16

* Certification renewal pending - certification considered valid.

INVOICE NO. TAM0316.0257

March 23, 2016

Accounts Payable
TestAmerica Irvine
17461 Derian Avenue, Suite 100
Irvine, CA 92614

SAMPLE I.D.: Outfall 009
DATE RECEIVED: 8 March – 16
ABC LAB NO.: TAM0316.054
PROJECT NAME: BOEING-SSFL NPDES PERMIT 2016

NPDES CHRONIC BIOASSAY Senastrum Algae-(1 @ 770.00)	\$770.00
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TOTAL	\$770.00
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Make checks payable to: Aquatic Bioassay & Consulting
29 N. Olive St.
Ventura, CA 93001

Terms are net 30 days.



March 23, 2016

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

Dear Ms. Patel:

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

CLIENT: Haley & Aldrich
SAMPLE ID.: Outfall 009
DATE RECEIVED: 8 March - 16
ABC LAB NO.: TAM0316.054

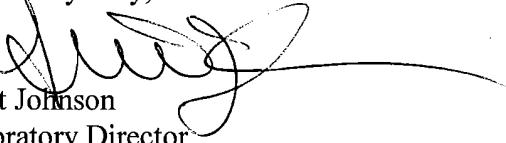
CHRONIC SELENASTRUM ALGAE GROWTH BIOASSAY

IWC = 100.00 %

TST RESULT

GROWTH = PASS % EFFECT = 16.10 %

Yours very truly,


Scott Johnson
Laboratory Director

TST Summary Sheet

Lab Name	Aquatic Bioassay Labs.	Client Name	TestAmerica Irvine
Test ID	Outfall 009	Test Species	<i>S. capricornutum (green algae)</i>
Test Date	3/8/2016	Test Type	Chronic
Test Duration	96 hours	Endpoint	Growth
Critical Conc.	100%		

Statistic	Control	Critical Concentration
Mean of Raw Data	1.38	1.15
Mean used in Calculation (non-transformed)	1.38	1.15
Variance used in Calculation (non-transformed)	0.002	0.004
Standard Deviation of Raw Data	0.047	0.062
CV of Raw Data	0.034	0.054
n	8	8

Mean % Effect at Critical Conc.

16.10

Calculated t-value	Degrees of Freedom	Table t-value	Percent Difference
4.8395	11	0.6974	

Results

Pass Sample is Non-toxic

Raw Data

Control Data		Critical Concentration Data	
No. of Organisms Exposed or Counted	Response (Final Count, Weight, Length, etc.)	No. of Organisms Exposed or Counted	Response (Final Count, Weight, Length, etc.)
	1.447		1.206
	1.286		1.203
	1.382		1.077
	1.386		1.122
	1.374		1.163
	1.342		1.054
	1.405		1.214
	1.381		1.192

CETIS Summary Report

Report Date: 23 Mar-16 12:04 (p 1 of 1)
 Test Code: TAM0316.054 | 00-0604-9577

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 02-9197-2127	Test Type: Cell Growth	Analyst:
Start Date: 08 Mar-16 15:00	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 12 Mar-16 13:00	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 94h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 19-4672-8377	Code: TAM0316.054	Client: Test America Irvine
Sample Date: 08 Mar-16 09:46	Material: Sample Water	Project: Boeing-SSFL NPDES
Receive Date: 08 Mar-16 14:21	Source: Bioassay Report	
Sample Age: 5h (2.9 °C)	Station: Outfall 009	

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
02-2038-8063	Cell Density	100	>100	NA	1.28%	1	TST-Welch's t Test

Point Estimate Summary

Analysis ID	Endpoint	Level	%	95% LCL	95% UCL	TU	Method
04-1855-5637	Cell Density	IC5	31.05	25.56	39.15	3.221	Linear Interpolation (ICPIN)
		IC10	62.09	51.13	78.29	1.61	
		IC15	93.14	76.69	N/A	1.074	
		IC20	>100	N/A	N/A	<1	
		IC25	>100	N/A	N/A	<1	
		IC40	>100	N/A	N/A	<1	
		IC50	>100	N/A	N/A	<1	

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
02-2038-8063	Cell Density	Control CV	0.03399	NL - 0.2	Yes	Passes Acceptability Criteria
04-1855-5637	Cell Density	Control CV	0.03399	NL - 0.2	Yes	Passes Acceptability Criteria
02-2038-8063	Cell Density	Control Resp	1.38E+6	1.00E+6 - NL	Yes	Passes Acceptability Criteria
04-1855-5637	Cell Density	Control Resp	1.38E+6	1.00E+6 - NL	Yes	Passes Acceptability Criteria
02-2038-8063	Cell Density	PMSD	0.01282	0.091 - 0.29	Yes	Below Acceptability Criteria

Cell Density Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	8	1.375E+6	1.336E+6	1.414E+6	1.286E+6	1.447E+6	1.653E+4	4.675E+4	3.4%	0.0%
100		8	1.154E+6	1.102E+6	1.206E+6	1.054E+6	1.214E+6	2.203E+4	6.232E+4	5.4%	16.1%

Cell Density Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	Negative Control	1.447E+6	1.286E+6	1.382E+6	1.386E+6	1.374E+6	1.342E+6	1.405E+6	1.381E+6
100		1.206E+6	1.203E+6	1.077E+6	1.122E+6	1.163E+6	1.054E+6	1.214E+6	1.192E+6

CETIS Analytical Report

Report Date: 23 Mar-16 12:04 (p 1 of 1)

Test Code: TAM0316.054 | 00-0604-9577

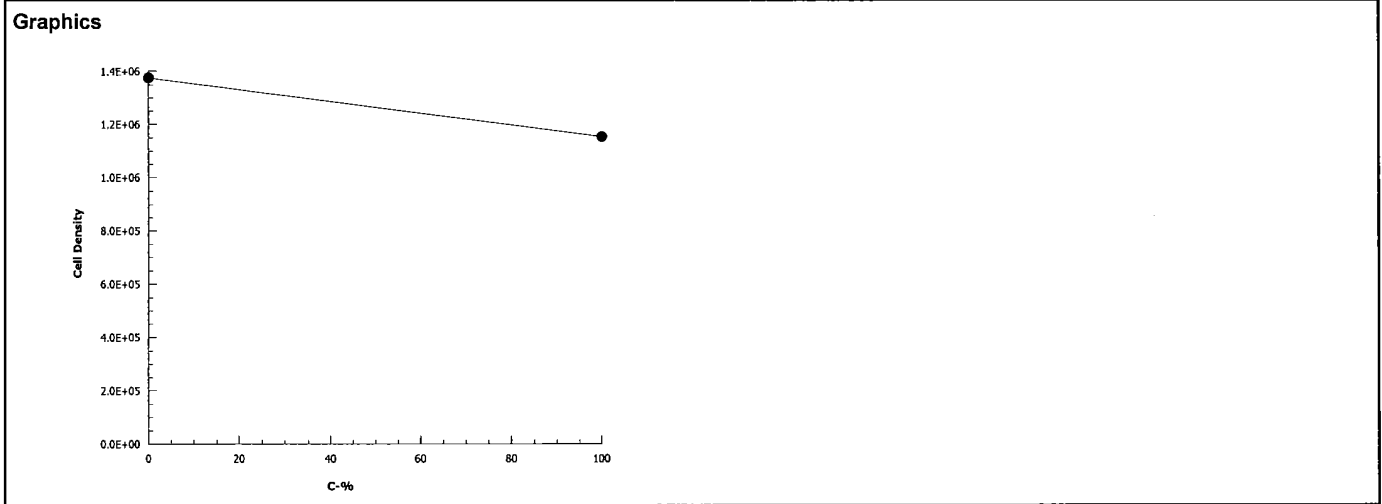
Selenastrum Growth Test		Aquatic Bioassay & Consulting Labs, Inc.	
Analysis ID: 04-1855-5637	Endpoint: Cell Density	CETIS Version: CETISv1.8.7	
Analyzed: 23 Mar-16 12:03	Analysis: Linear Interpolation (ICPIN)	Official Results: Yes	

Linear Interpolation Options					
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	0	280	Yes	Two-Point Interpolation

Point Estimates						
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC5	31.05	25.56	39.15	3.221	2.554	3.912
IC10	62.09	51.13	78.29	1.61	1.277	1.956
IC15	93.14	76.69	N/A	1.074	NA	1.304
IC20	>100	N/A	N/A	<1	NA	NA
IC25	>100	N/A	N/A	<1	NA	NA
IC40	>100	N/A	N/A	<1	NA	NA
IC50	>100	N/A	N/A	<1	NA	NA

Cell Density Summary			Calculated Variate						
C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	8	1.375E+6	1.286E+6	1.447E+6	1.653E+4	4.675E+4	3.4%	0.0%
100		8	1.154E+6	1.054E+6	1.214E+6	2.203E+4	6.232E+4	5.4%	16.1%

Cell Density Detail										
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	
0	Negative Control	1.447E+6	1.286E+6	1.382E+6	1.386E+6	1.374E+6	1.342E+6	1.405E+6	1.381E+6	
100		1.206E+6	1.203E+6	1.077E+6	1.122E+6	1.163E+6	1.054E+6	1.214E+6	1.192E+6	



CETIS Measurement Report

Report Date: 23 Mar-16 12:04 (p 1 of 2)
 Test Code: TAM0316.054 | 00-0604-9577

Selenastrum Growth Test				Aquatic Bioassay & Consulting Labs, Inc.			
Batch ID:	02-9197-2127	Test Type:	Cell Growth	Analyst:			
Start Date:	08 Mar-16 15:00	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water		
Ending Date:	12 Mar-16 13:00	Species:	Selenastrum capricornutum	Brine:	Not Applicable		
Duration:	94h	Source:	Aquatic Biosystems, CO	Age:			
Sample ID:	19-4672-8377	Code:	TAM0316.054	Client:	Test America Irvine		
Sample Date:	08 Mar-16 09:46	Material:	Sample Water	Project:	Boeing-SSFL NPDES		
Receive Date:	08 Mar-16 14:21	Source:	Bioassay Report				
Sample Age:	5h (2.9 °C)	Station:	Outfall 009				

Alkalinity (CaCO3)-mg/L											
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	1	62			62	62	0	0	0.0%	0
100		1	55			55	55	0	0	0.0%	0
Overall		2	58.5			55	62				0 (0%)

Conductivity-µmhos											
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	5	419.4	414.2	424.6	414	424	1.86	4.159	0.99%	0
100		5	216.4	208.9	223.9	206	221	2.694	6.025	2.78%	0
Overall		10	317.9			206	424				0 (0%)

Hardness (CaCO3)-mg/L											
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	1	98			98	98	0	0	0.0%	0
100		1	64			64	64	0	0	0.0%	0
Overall		2	81			64	98				0 (0%)

pH-Units											
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	5	7.62	7.416	7.824	7.4	7.8	0.07349	0.1643	2.16%	0
100		5	7.88	7.438	8.322	7.5	8.3	0.1594	0.3564	4.52%	0
Overall		10	7.75			7.4	8.3				0 (0%)

Temperature-°C											
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	5	24.5	24.32	24.68	24.3	24.7	0.06325	0.1414	0.58%	0
100		5	24.5	24.32	24.68	24.3	24.7	0.06325	0.1414	0.58%	0
Overall		10	24.5			24.3	24.7				0 (0%)



CHRONIC SELENASTRUM GROWTH BIOASSAY

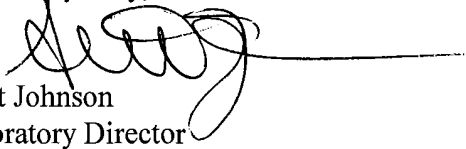
DATE: 3 March - 2016

STANDARD TOXICANT: Cadmium Chloride

NOEC = 80.00 ug/l

IC25 = 106.30 ug/l
IC50 = 158.40 ug/l

Yours very truly,



Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 22 Mar-16 14:36 (p 1 of 1)
 Test Code: SEL030315 | 04-3020-3875

Selenastrum Growth Test			Aquatic Bioassay & Consulting Labs, Inc.		
Batch ID:	17-4200-2423	Test Type:	Cell Growth	Analyst:	
Start Date:	03 Mar-16 09:09	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water
Ending Date:	07 Mar-16 10:15	Species:	Selenastrum capricornutum	Brine:	Not Applicable
Duration:	4d 1h	Source:	Aquatic Biosystems, CO	Age:	
Sample ID:	08-0479-8875	Code:	SEL030316	Client:	Internal Lab
Sample Date:	03 Mar-16 09:09	Material:	Cadmium chloride	Project:	
Receive Date:		Source:	Reference Toxicant		
Sample Age:	NA	Station:	REF TOX		

Comparison Summary							
Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
06-0412-4817	Cell Density	80	140	105.8	10.0%		Dunnett Multiple Comparison Test

Point Estimate Summary							
Analysis ID	Endpoint	Level	µg/L	95% LCL	95% UCL	TU	Method
04-6245-4041	Cell Density	IC5	57.98	45.53	73.49		Linear Interpolation (ICPIN)
		IC10	75.96	60.22	90.19		
		IC15	87.35	74.96	97.17		
		IC20	96.83	85.57	106.5		
		IC25	106.3	95.15	115.8		
		IC40	134.7	121.4	147.4		
		IC50	158.4	138.3	167.8		

Test Acceptability						
Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
04-6245-4041	Cell Density	Control CV	0.0515	NL - 0.2	Yes	Passes Acceptability Criteria
06-0412-4817	Cell Density	Control CV	0.0515	NL - 0.2	Yes	Passes Acceptability Criteria
04-6245-4041	Cell Density	Control Resp	1.11E+6	1.00E+6 - NL	Yes	Passes Acceptability Criteria
06-0412-4817	Cell Density	Control Resp	1.11E+6	1.00E+6 - NL	Yes	Passes Acceptability Criteria
06-0412-4817	Cell Density	PMSD	0.1001	0.091 - 0.29	Yes	Passes Acceptability Criteria

Cell Density Summary											
C-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	4	1.110E+6	1.019E+6	1.200E+6	1.049E+6	1.183E+6	2.857E+4	5.714E+4	5.15%	0.0%
20		4	1.243E+6	1.095E+6	1.391E+6	1.136E+6	1.360E+6	4.654E+4	9.307E+4	7.49%	-12.03%
40		4	1.221E+6	1.083E+6	1.359E+6	1.164E+6	1.350E+6	4.335E+4	8.671E+4	7.1%	-10.07%
80		4	1.059E+6	9.879E+5	1.130E+6	1.015E+6	1.106E+6	2.227E+4	4.454E+4	4.21%	4.57%
140		4	6.818E+5	5.827E+5	7.808E+5	5.900E+5	7.270E+5	3.112E+4	6.223E+4	9.13%	38.55%
180		4	4.945E+5	4.702E+5	5.188E+5	4.770E+5	5.140E+5	7.643E+3	1.529E+4	3.09%	55.43%

Cell Density Detail						
C-µg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	
0	Negative Control	1.085E+6	1.183E+6	1.049E+6	1.121E+6	
20		1.258E+6	1.136E+6	1.360E+6	1.218E+6	
40		1.164E+6	1.350E+6	1.177E+6	1.194E+6	
80		1.106E+6	1.087E+6	1.015E+6	1.027E+6	
140		7.110E+5	5.900E+5	6.990E+5	7.270E+5	
180		4.910E+5	4.770E+5	5.140E+5	4.960E+5	

CETIS Analytical Report

Report Date: 22 Mar-16 14:36 (p 1 of 2)

Test Code: SEL030315 | 04-3020-3875

Selenastrum Growth Test				Aquatic Bioassay & Consulting Labs, Inc.			
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Analysis ID: 06-0412-4817	Endpoint: Cell Density	CETIS Version: CETISv1.8.7
Analyzed: 19 Mar-16 23:13	Analysis: Parametric-Control vs Treatments	Official Results: Yes

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU
Untransformed	NA	C > T	NA	NA	10.0%	80	140	105.8	

Dunnett Multiple Comparison Test									
Control	vs	C-µg/L	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Negative Control		20	-2.894	2.407	1E+05	6	0.9999	CDF	Non-Significant Effect
		40	-2.422	2.407	1E+05	6	0.9998	CDF	Non-Significant Effect
		80	1.1	2.407	1E+05	6	0.3785	CDF	Non-Significant Effect
		140*	9.273	2.407	1E+05	6	<0.0001	CDF	Significant Effect
		180*	13.33	2.407	1E+05	6	<0.0001	CDF	Significant Effect

ANOVA Table						
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1.896638E+12	3.793277E+11	5	89.13	<0.0001	Significant Effect
Error	76610250000	4256125000	18			
Total	1.973249E+12		23			

Distributional Tests						
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)	
Variances	Bartlett Equality of Variance	7.29	15.09	0.1999	Equal Variances	
Variances	Mod Levene Equality of Variance	0.6435	4.248	0.6698	Equal Variances	
Variances	Levene Equality of Variance	1.428	4.248	0.2619	Equal Variances	
Distribution	Shapiro-Wilk W Normality	0.9734	0.884	0.7512	Normal Distribution	
Distribution	Kolmogorov-Smirnov D	0.09781	0.2056	0.8751	Normal Distribution	
Distribution	D'Agostino Skewness	0.9447	2.576	0.3448	Normal Distribution	
Distribution	D'Agostino Kurtosis	0.5856	2.576	0.5582	Normal Distribution	
Distribution	D'Agostino-Pearson K2 Omnibus	1.235	9.21	0.5392	Normal Distribution	
Distribution	Anderson-Darling A2 Normality	0.2759	3.878	0.6864	Normal Distribution	

Cell Density Summary											
C-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Negative Control	4	1.110E+6	1.019E+6	1.200E+6	1103000	1.049E+6	1.183E+6	2.857E+4	5.15%	0.0%
20		4	1.243E+6	1.095E+6	1.391E+6	1238000	1.136E+6	1.360E+6	4.654E+4	7.49%	-12.03%
40		4	1.221E+6	1.083E+6	1.359E+6	1186000	1.164E+6	1.350E+6	4.335E+4	7.1%	-10.07%
80		4	1.059E+6	9.879E+5	1.130E+6	1057000	1.015E+6	1.106E+6	2.227E+4	4.21%	4.57%
140		4	6.818E+5	5.827E+5	7.808E+5	705000	5.900E+5	7.270E+5	3.112E+4	9.13%	38.55%
180		4	4.945E+5	4.702E+5	5.188E+5	493500	4.770E+5	5.140E+5	7.643E+3	3.09%	55.43%

Cell Density Detail						
C-µg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	
0	Negative Control	1.085E+6	1.183E+6	1.049E+6	1.121E+6	
20		1.258E+6	1.136E+6	1.360E+6	1.218E+6	
40		1.164E+6	1.350E+6	1.177E+6	1.194E+6	
80		1.106E+6	1.087E+6	1.015E+6	1.027E+6	
140		7.110E+5	5.900E+5	6.990E+5	7.270E+5	
180		4.910E+5	4.770E+5	5.140E+5	4.960E+5	

CETIS Measurement Report

Report Date: 22 Mar-16 14:36 (p 1 of 2)
 Test Code: SEL030315 | 04-3020-3875

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 17-4200-2423	Test Type: Cell Growth	Analyst:
Start Date: 03 Mar-16 09:09	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 07 Mar-16 10:15	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 4d 1h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 08-0479-8875	Code: SEL030316	Client: Internal Lab
Sample Date: 03 Mar-16 09:09	Material: Cadmium chloride	Project:
Receive Date:	Source: Reference Toxicant	
Sample Age: NA	Station: REF TOX	

Alkalinity (CaCO3)-mg/L

C-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	1	60			60	60	0	0	0.0%	0
20		1	60			60	60	0	0	0.0%	0
40		1	62			62	62	0	0	0.0%	0
80		1	60			60	60	0	0	0.0%	0
140		1	69			69	69	0	0	0.0%	0
180		1	63			63	63	0	0	0.0%	0
Overall		6	62.33			60	69				0 (0%)

Conductivity-µmhos

C-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	5	419.2	412.7	425.7	414	426	2.332	5.215	1.24%	0
20		5	451	430.3	471.7	437	480	7.463	16.69	3.7%	0
40		5	418.4	412.7	424.1	413	423	2.064	4.615	1.1%	0
80		5	390	385.8	394.2	386	395	1.517	3.391	0.87%	0
140		5	361	333.4	388.6	322	377	9.93	22.2	6.15%	0
180		5	350.8	345.8	355.8	349	358	1.8	4.025	1.15%	0
Overall		30	398.4			322	480				0 (0%)

Hardness (CaCO3)-mg/L

C-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	1	99			99	99	0	0	0.0%	0
20		1	99			99	99	0	0	0.0%	0
40		1	98			98	98	0	0	0.0%	0
80		1	89			89	89	0	0	0.0%	0
140		1	96			96	96	0	0	0.0%	0
180		1	81			81	81	0	0	0.0%	0
Overall		6	93.67			81	99				0 (0%)

pH-Units

C-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	5	7.62	7.324	7.916	7.4	8	0.1068	0.2387	3.13%	0
20		5	7.8	7.522	8.078	7.7	8.2	0.1	0.2236	2.87%	0
40		5	7.76	7.436	8.084	7.5	8.2	0.1166	0.2608	3.36%	0
80		5	7.72	7.498	7.942	7.5	8	0.08	0.1789	2.32%	0
140		5	7.7	7.468	7.932	7.5	8	0.08367	0.1871	2.43%	0
180		5	7.7	7.468	7.932	7.5	8	0.08367	0.1871	2.43%	0
Overall		30	7.717			7.4	8.2				0 (0%)

Temperature-°C

C-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	5	24.5	24.35	24.65	24.4	24.7	0.05477	0.1225	0.5%	0
20		5	24.5	24.35	24.65	24.4	24.7	0.05477	0.1225	0.5%	0
40		5	24.5	24.35	24.65	24.4	24.7	0.05477	0.1225	0.5%	0
80		5	24.46	24.39	24.53	24.4	24.5	0.0245	0.05479	0.22%	0
140		5	24.46	24.39	24.53	24.4	24.5	0.0245	0.05479	0.22%	0
180		5	24.46	24.39	24.53	24.4	24.5	0.0245	0.05479	0.22%	0
Overall		30	24.48			24.4	24.7				0 (0%)

CETIS Measurement Report

Report Date: 22 Mar-16 14:36 (p 2 of 2)
 Test Code: SEL030315 | 04-3020-3875

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Alkalinity (CaCO3)-mg/L

C-µg/L	Control Type	1
0	Negative Contr	60
20		60
40		62
80		60
140		69
180		63

Conductivity-µmhos

C-µg/L	Control Type	1	2	3	4	5
0	Negative Contr	414	414	420	422	426
20		437	447	445	446	480
40		413	422	423	420	414
80		391	390	388	386	395
140		366	372	322	377	368
180		349	349	349	349	358

Hardness (CaCO3)-mg/L

C-µg/L	Control Type	1
0	Negative Contr	99
20		99
40		98
80		89
140		96
180		81

pH-Units

C-µg/L	Control Type	1	2	3	4	5
0	Negative Contr	7.7	7.4	7.5	7.5	8
20		7.7	7.7	7.7	7.7	8.2
40		7.5	7.7	7.7	7.7	8.2
80		7.5	7.7	7.7	7.7	8
140		7.5	7.6	7.7	7.7	8
180		7.5	7.6	7.7	7.7	8

Temperature-°C

C-µg/L	Control Type	1	2	3	4	5
0	Negative Contr	24.4	24.5	24.7	24.5	24.4
20		24.4	24.5	24.7	24.5	24.4
40		24.4	24.5	24.7	24.5	24.4
80		24.4	24.5	24.5	24.5	24.4
140		24.4	24.5	24.5	24.5	24.4
180		24.4	24.5	24.5	24.5	24.4



LA Testing

520 Mission Street South Pasadena, CA 91030
Phone/Fax: (323) 254-9960 / (323) 254-9982
<http://www.LATesting.com> / pasadenalab@latesting.com

LA Testing Order ID: 321605166
Customer ID: TEST72
Customer PO:
Project ID:

Attn: Urvashi Patel
TestAmerica - Irvine, CA
17461 Derian Avenue
Suite 100
Irvine, CA 92614
Phone: (949) 261-1022
Fax: (949) 260-3297
Collected: 03/08/2016
Received: 03/10/2016
Analyzed: 03/24/2016
Proj: 440-140288-1/Boeing NPDES SS FL outfalls

Test Report: Determination of Asbestos Structures >10µm in Drinking Water Performed by the 100.2 Method (EPA 600/R-94/134)

Sample ID Client / EMSL	Sample Filtration Date/Time	Original Sample Vol. Filtered (ml)	Effective Filter Area (mm ²)	Area Analyzed (mm ²)	ASBESTOS				
					Asbestos Types	Fibers Detected	Analytical Sensitivity	Concentration MFL (million fibers per liter)	Confidence Limits
Outfall 009_20160308_C 321605166-0001	3/10/2016 01:35 PM	3	1288	0.2600	None Detected	ND	1.70	<1.70	0.00 - 6.10

Analytical sensitivity could not be met due to the excessive particulates.
Sample received past 48 hours hold time. UV Ozonated.

Analyst(s)
Sherrie Ahmad (1)

Jerry Drapala Ph.D, Laboratory Manager
or Other Approved Signatory

Any questions please contact Jerry Drapala.

Report amended: 03/27/2016 09:23:38 Replaces initial report from:03/24/2016 13:32:24 Reason Code: Data Entry-Change to Sample ID

Sample collection and containers provided by the client, acceptable bottle blank level is defined as ≤0.01MFL>10µm. ND=None Detected. This report relates only to those items tested. This report may not be reproduced, except in full, without written permission by LA Testing. Samples received in good condition unless otherwise noted.

Samples analyzed by LA Testing South Pasadena, CA CA ELAP 2283

CHAIN OF CUSTODY FORM

2 of 3
incl gross
3/8/16

Client Name/Address: Haley & Aldrich 5035 Mission Center Rd Suite 300 San Diego, CA 92108 Test America Contact: Unvashi Patel 17461 Derian Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055		Project: Boeing-SSFL NPDES Permit 2016 Annual Outfall 003-007, 008, 010J Outfall 009 Comp		Project Manager: Nancy Gardiner 619.285.7132, 858.337.4061 (cell) Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)		Total Recoverable Metals: Cu, Pb, Hg, B, Fe, Cd, Cr, Ni, Se, Ag, Tl, Zn, V, Al, Hardness as CaCO3 TDD (and all congeners) Cr, F-, SO4, NO3+NO2-N, Perchlorate TSS TSS Total Dissolved Metals: Cu, Pb, Hg, B, Fe, Al, As, Be, Cd, Cr, Ni, Se, Ag, Tl, Zn, V, Al, Hardness as CaCO3 Gross Alpha (90.0), Gross Beta (90.0), Tritium (H-3) (906.0), Sr-90 (905.0), Total Complied Radium 226 (903.0 or 903.1) & Radium 228 (904.0), Uranium (908.0), K-40, CS-137 (901.0 or 901.1)		Total Recoverable Metals: Mercury (245.1) Priority Pollutants-Pesticides+PCBs Cyanide Chronic Toxicity - Selenium		Total Dissolved Metals: Mercury (245.1)		Comments	
Sample Description	Sample I.D.	Sampling Date/Time	Sample Matrix	Container Type	# of Cont.	Preservative	MS/MSD Bottle #	Yes	No	Yes	No	48 hours Holding Time NO3 & NO2	
Outfall 009	Outfall009_20160308_Comp	3/8/2016	WM	500 mL Poly	3	HNO3	85						
			WM	1 L Glass Amber	2	None	110						
			WM	500 mL Poly	6	None	155						
			WM	500 mL Poly	1	None	155						
			WM	1 L Poly	1	None	155						
			WM	500 mL Poly	3	NaOH	220						
			WM	2.5 Gal Cube	3	None	225						
			WM	1 L Glass Amber	3	None	230						
			WM	1 Gal Cube	6	None	235						
			WM	1 L Glass Amber	6	None	250						
			WM	bore-silicate vials	2	HNO3	315						
			WM	1 L Poly	3	None	195						
			WM	bore-silicate vials	2	None	320						
			WM	1 L Glass Amber	2	None	110						
			WM	500 mL Poly	2	None	135						
			WM	1 L Glass Amber	2	None	250						

COC Page 2 of 3 and Page 3 of 3 are the composite samples for Outfall 009 for this storm event. These must be added to the same work order for COC Page 1 of 3 for Outfall 009 for the same event.

Relinquished By	51 Dawson	Date/Time	08-08-16 1135	Company	THA	Received By	Bill Clarke	Date/Time	3-8-16/1135	Company	Weston	Received By	Bill Clarke	Date/Time	3/8/16 1240	Company	THA
Relinquished By	Bill Clarke	Date/Time	3-8-16/1240	Company	Weston	Received By	Bill Clarke	Date/Time	3/8/16 1845	Company	THA	Received By	Bill Clarke	Date/Time	3/8/16 1845	Company	THA

Turn-around time: (Check)
 24 Hour: _____ 72 Hour: _____ 10 Day: _____
 48 Hour: _____ 5 Day: _____ Normal: _____
 Sample Integrity: (Check)
 Intact: _____ On Ice: _____
 Data Requirements: (Check)
 No Level IV: _____ All Level IV: _____

MSDC
 3/8/16 1845
 3/8/16 1845
 2-2/1.2 + 80.9
 1.8/0.3
 2-2/1.8 2-2/1.7 2-1/1.4



440-140288 Chain of Custody

Chain of Custody Record



Client Information (Sub Contract Lab)		Lab P/M Patef, Urvashi		Carrier Tracking No(s)	
Client Contact Shipping/Receiving		E-Mail urvashi.patef@testamericainc.com		COC No 440-95563.1	
Company TestAmerica Laboratories, Inc		Address 880 Riverside Parkway, City West Sacramento State, Zip CA, 95605		Page Page 1 of 1	
Phone 916-373-5600(Tel) 916-372-1059(Fax)		PO #		Job # 440-140288-1	
Email		WO #		Preservation Codes: A - HCL M - Hexane B - NaOH N - None C - Zn Acetate O - AsNaO2 D - Nitric Acid P - Na2O4S E - NaHSO4 Q - Na2SO3 F - MeOH R - Na2S2O3 G - Amchlor S - H2SO4 H - Ascorbic Acid T - TSP Dodecahydralle I - Ice U - Acetone J - DI Water V - MCAA K - EDTA W - ph 4-5 L - EDA Z - other (specify) Other:	
Project Name Boeing NIPDES SSFL outfalls		Project # 44009879		Analysis Requested	
Site		SSOW#		Total Number of Containers	
Sample Identification - Client ID (Lab ID)		Sample Date		Field Filtered Sample (Yes or No)	
Outfall009_20160308_Comp (440-140288-1)		3/8/16		X	
Sample Type		Sample Time		Perform MS/MSD (Yes/No)	
G=grab		09:46 Pacific		X	
Matrix		Preservation Code:		Special Instructions/Note:	
Water		Water		2 See QAS, Boeing_wtu to zero	
<p>Possible Hazard Identification Unconfirmed Deliverable Requested. I, II, III, IV, Other (specify)</p>					
<p>Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months</p>					
Special Instructions/QC Requirements.					
Empty Kit Relinquished by:		Date:		Method of Shipment	
Relinquished by VuBank		3/9/16 17:00		Date/Time 3/9/16 17:00 Company TAT	
Relinquished by		Date/Time		Date/Time 3-10-16 10:05 Company TAT	
Relinquished by		Date/Time		Date/Time	
Custody Seals Intact Δ Yes Δ No		Custody Seal No		Cooler Temperature(s) °C and Other Remarks 2.0	



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-140288-1

Login Number: 140288

List Source: TestAmerica Irvine

List Number: 1

Creator: Soderblom, Tim

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	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?	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 <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-140288-1

Login Number: 140288

List Number: 2

Creator: Hytrek, Cheryl

List Source: TestAmerica Sacramento

List Creation: 03/10/16 06:20 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	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	
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.	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	

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-140288-1

Login Number: 140288

List Number: 3

Creator: McKinney, Gerrod E

List Source: TestAmerica St. Louis

List Creation: 03/11/16 09:30 AM

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	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	0.3, 1.2
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 <math><6\text{mm}</math> (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Comp

TestAmerica Job ID: 440-140288-1

Method: 903.0 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (40-110)
440-140288-1	Outfall009_20160308_Comp	25.9 X
440-140288-1 MS	Outfall009_20160308_Comp	58.7
440-140288-1 MSD	Outfall009_20160308_Comp	42.5
LCS 160-240169/2-A	Lab Control Sample	103
MB 160-240169/1-A	Method Blank	95.2

Tracer/Carrier Legend

Ba = Ba Carrier

Method: 904.0 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (40-110)	Y (40-110)
440-140288-1	Outfall009_20160308_Comp	25.9 X	82.6
440-140288-1 MS	Outfall009_20160308_Comp	58.7	81.5
440-140288-1 MSD	Outfall009_20160308_Comp	42.5	78.9
LCS 160-240400/2-A	Lab Control Sample	103	81.5
MB 160-240400/1-A	Method Blank	95.2	83.7

Tracer/Carrier Legend

Ba = Ba Carrier

Y = Y Carrier

Method: 905 - Strontium-90 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Sr (C) (40-110)	Y (40-110)
440-140288-1	Outfall009_20160308_Comp	87.1	93.1
440-140288-1 MS	Outfall009_20160308_Comp	84.8	92.0
440-140288-1 MSD	Outfall009_20160308_Comp	86.7	92.0
LCS 160-240665/2-A	Lab Control Sample	85.9	89.7
MB 160-240665/1-A	Method Blank	88.2	90.8

Tracer/Carrier Legend

Sr (C) = Sr Carrier

Y = Y Carrier

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	U-232 (30-110)
440-140288-1 MS	Outfall009_20160308_Comp	74.5
440-140288-1 MSD	Outfall009_20160308_Comp	68.6
440-141065-C-1-I MS	Matrix Spike	78.4

TestAmerica Irvine

Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Comp

TestAmerica Job ID: 440-140288-1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	U-232 (30-110)
440-141065-C-1-J MSD	Matrix Spike Duplicate	75.1
LCS 160-241443/2-A	Lab Control Sample	93.4
MB 160-241443/1-A	Method Blank	82.7

Tracer/Carrier Legend

U-232 = Uranium-232

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16

Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Comp

TestAmerica Job ID: 440-140288-1

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

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (25-164)	TCDF (24-169)	PeCDD (25-181)	PeCDF1 (24-185)	PeCDF2 (21-178)	HxCDD1 (32-141)	HxCDD2 (28-130)	HxCDF1 (26-152)
440-140288-1	Outfall009_20160308_Comp	76	78	52	77	76	78	87	82
MB 320-103052/1-A	Method Blank	71	72	51	71	74	72	76	72

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (26-123)	HxCDF4 (29-147)	HxCDF3 (28-136)	HpCDD (23-140)	HpCDF1 (28-143)	HpCDF2 (26-138)	OCDD (17-157)
440-140288-1	Outfall009_20160308_Comp	81	76	81	70	77	70	58
MB 320-103052/1-A	Method Blank	72	72	75	65	70	64	52

Surrogate Legend

- TCDD = 13C-2,3,7,8-TCDD
- TCDF = 13C-2,3,7,8-TCDF
- PeCDD = 13C-1,2,3,7,8-PeCDD
- PeCDF1 = 13C-1,2,3,7,8-PeCDF
- PeCDF2 = 13C-2,3,4,7,8-PeCDF
- HxCDD1 = 13C-1,2,3,4,7,8-HxCDD
- HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
- HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
- HxCDF2 = 13C-1,2,3,6,7,8-HxCDF
- HxCDF4 = 13C-1,2,3,7,8,9-HxCDF
- HxCDF3 = 13C-2,3,4,6,7,8-HxCDF
- HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
- HpCDF1 = 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)

Lab Sample ID	Client Sample ID	TCDD (20-175)	TCDF (22-152)	PeCDD (21-227)	PeCDF1 (21-192)	PeCDF2 (13-328)	HxCDD1 (21-193)	HxCDD2 (25-163)	HxCDF1 (19-202)
LCS 320-103052/2-A	Lab Control Sample	67	68	42	67	69	67	73	66
LCS 320-103052/3-A	Lab Control Sample Dup	71	72	43	72	72	75	80	77

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (21-159)	HxCDF4 (17-205)	HxCDF3 (22-176)	HpCDD (26-166)	HpCDF1 (21-158)	HpCDF2 (20-186)	OCDD (13-199)
LCS 320-103052/2-A	Lab Control Sample	65	68	67	62	66	62	52
LCS 320-103052/3-A	Lab Control Sample Dup	76	75	76	68	74	67	55

Surrogate Legend

- TCDD = 13C-2,3,7,8-TCDD
- TCDF = 13C-2,3,7,8-TCDF
- PeCDD = 13C-1,2,3,7,8-PeCDD
- PeCDF1 = 13C-1,2,3,7,8-PeCDF
- PeCDF2 = 13C-2,3,4,7,8-PeCDF
- HxCDD1 = 13C-1,2,3,4,7,8-HxCDD
- HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
- HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
- HxCDF2 = 13C-1,2,3,6,7,8-HxCDF

TestAmerica Irvine

Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Comp

TestAmerica Job ID: 440-140288-1

HxCDF4 = 13C-1,2,3,7,8,9-HxCDF
HxCDF3 = 13C-2,3,4,6,7,8-HxCDF
HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF
HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
OCDD = 13C-OCDD

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DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-140976-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

April 5, 2016

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





TABLE OF CONTENTS

I. INTRODUCTION..... 1

II. Sample Management..... 2

III. EPA METHOD 1664A—Oil and Grease (HEM)..... 6

 III.1. Holding Times 6

 III.2. Calibration..... 6

 III.3. Quality Control Samples 6

 III.3.1. Method Blanks 6

 III.3.2. Laboratory Control Samples 6

 III.3.3. Laboratory Duplicates..... 6

 III.3.4. Matrix Spike/Matrix Spike Duplicate 6

 III.3.5. Sample Result Verification..... 6

 III.4. Field QC Samples..... 6

 III.4.1. Field Blanks and Equipment Blanks 6

 III.4.2. Field Duplicates..... 7

TABLES

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



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-140976-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 2

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall009_20160311_Grab	440-140976-1	N/A	Water	3/11/2016 2:20:00 PM	E1664
Outfall009_20160311_Grab _Extra	440-140976-2	N/A	Water	3/11/2016 2:20:00 PM	E1664



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-140976-1:

- The laboratory received the sample in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Laboratory and field personnel signed and dated the COC.
- According to the laboratory sample receipt checklist, custody seals were intact.



TABLE 2 - DATA QUALIFIER REFERENCE

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



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	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.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) 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.
B	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.
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.
P	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.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



III. EPA METHOD 1664A—OIL AND GREASE (HEM)

Michael Cherny of MEC^X reviewed the SDG on April 5, 2016

The samples listed in Table 1 for this analysis were validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, EPA Method 1664A, and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

III.1. HOLDING TIMES

The analytical holding time for n-hexane extractable material (HEM; oil and grease), 28 days from collection, was met.

III.2. CALIBRATION

Calibration criteria were met. The analytical balance calibration was verified before and after the analytical batch, as per the method requirements.

III.3. QUALITY CONTROL SAMPLES

III.3.1. METHOD BLANKS

The method blank had no detects for HEM (Oil and Grease).

III.3.2. LABORATORY CONTROL SAMPLES

Recoveries were within the method control limits of 78-114% and the RPD was $\leq 11\%$.

III.3.3. LABORATORY DUPLICATES

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

III.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the sample in the SDG, as there was insufficient sample volume available and the COC did not request a MS/MSD. MEC^X evaluated method accuracy and precision based on LCS/LCSD results.

III.3.5. 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. When the sample results were qualified and the reviewer was able to clearly determine bias, detected results were qualified as either "J+" or "J-"; otherwise, bias was not indicated in the qualification. Any detects between the method detection limit and the reporting limit were qualified as estimated, "J," and coded with "DNQ," in order to comply with the NPDES permit. Reported nondetects are valid to the MDL.

III.4. FIELD QC SAMPLES

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

III.4.1. FIELD BLANKS AND EQUIPMENT BLANKS

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



III.4.2. *FIELD DUPLICATES*

Sample Outfall009_20160311_Grab_Extra was collected to be extra sample volume, should the need arise. However, the lab analyzed this extra volume as a separate sample; therefore, it was treated as the field duplicate of sample Outfall009_20160311_Grab. HEM was not detected in either site sample and the pair was considered to be in good agreement.

Validated Sample Result Forms: 440-140976-1

Analysis Method *E1664*

Sample Name Outfall009_20160311_Grab **Matrix Type:** WM **Result Type:** TRG

Sample Date: 3/11/2016 2:20:00 PM **Validation Level:** 8

Lab Sample Name: 440-140976-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Oil and Grease (HEM), Total	N	HEMOILGR EASE	1.3	4.7	1.3	mg/L	U	U	

Sample Name Outfall009_20160311_Grab_Extra **Matrix Type:** WM **Result Type:** TRG

Sample Date: 3/11/2016 2:20:00 PM **Validation Level:** 8

Lab Sample Name: 440-140976-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Oil and Grease (HEM), Total	N	HEMOILGR EASE	1.3	4.7	1.3	mg/L	U	U	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-140976-1

Client Project/Site: Boeing NPDES SSFL outfalls

For:

Haley & Aldrich, Inc.

5333 Mission Center Road

Suite 300

San Diego, California 92108

Attn: Nancy Gardiner



Authorized for release by:

3/29/2016 10:06:49 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

LINKS

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results through

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Visit us at:

www.testamericainc.com

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

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

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

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



Urvashi Patel
Manager of Project Management
3/29/2016 10:06:49 PM



Table of Contents

Cover Page	1
Table of Contents	3
Sample Summary	4
Case Narrative	5
Client Sample Results	6
Method Summary	7
Lab Chronicle	8
QC Sample Results	9
QC Association Summary	10
Definitions/Glossary	11
Certification Summary	12
Chain of Custody	13
Receipt Checklists	14

Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-140976-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-140976-1	Outfall009_20160311_Grab	Water	03/11/16 14:20	03/11/16 19:20
440-140976-2	Outfall009_20160311_Grab_Extra	Water	03/11/16 14:20	03/11/16 19:20

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-140976-1

Job ID: 440-140976-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-140976-1

Comments

No additional comments.

Receipt

The samples were received on 3/11/2016 7:20 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.2° C.

Organic Prep

Method(s) 1664A: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-320571 and analytical batch 440-320754. 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.



Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-140976-1

Client Sample ID: Outfall009_20160311_Grab

Lab Sample ID: 440-140976-1

Date Collected: 03/11/16 14:20

Matrix: Water

Date Received: 03/11/16 19:20

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		4.7	1.3	mg/L		03/28/16 08:57	03/28/16 21:45	1

Client Sample ID: Outfall009_20160311_Grab_Extra

Lab Sample ID: 440-140976-2

Date Collected: 03/11/16 14:20

Matrix: Water

Date Received: 03/11/16 19:20

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		4.7	1.3	mg/L		03/28/16 08:57	03/28/16 21:45	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-140976-1

Method	Method Description	Protocol	Laboratory
1664A	HEM and SGT-HEM	1664A	TAL IRV

Protocol References:

1664A = EPA-821-98-002

Laboratory References:

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



Lab Chronicle

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-140976-1

Client Sample ID: Outfall009_20160311_Grab

Lab Sample ID: 440-140976-1

Date Collected: 03/11/16 14:20

Matrix: Water

Date Received: 03/11/16 19:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1664A			1065 mL	1000 mL	320571	03/28/16 08:57	L1A	TAL IRV
Total/NA	Analysis	1664A		1	1065 mL	1000 mL	320754	03/28/16 21:45	BEJ	TAL IRV

Client Sample ID: Outfall009_20160311_Grab_Extra

Lab Sample ID: 440-140976-2

Date Collected: 03/11/16 14:20

Matrix: Water

Date Received: 03/11/16 19:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1664A			1055 mL	1000 mL	320571	03/28/16 08:57	L1A	TAL IRV
Total/NA	Analysis	1664A		1	1055 mL	1000 mL	320754	03/28/16 21:45	BEJ	TAL IRV

Laboratory References:

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

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-140976-1

Method: 1664A - HEM and SGT-HEM

Lab Sample ID: MB 440-320571/1-A
 Matrix: Water
 Analysis Batch: 320754

Client Sample ID: Method Blank
 Prep Type: Total/NA
 Prep Batch: 320571

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		5.0	1.4	mg/L		03/28/16 08:57	03/28/16 21:45	1

Lab Sample ID: LCS 440-320571/2-A
 Matrix: Water
 Analysis Batch: 320754

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA
 Prep Batch: 320571

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
HEM (Oil & Grease)	40.0	36.7		mg/L		92	78 - 114

Lab Sample ID: LCSD 440-320571/3-A
 Matrix: Water
 Analysis Batch: 320754

Client Sample ID: Lab Control Sample Dup
 Prep Type: Total/NA
 Prep Batch: 320571

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
HEM (Oil & Grease)	40.0	34.8		mg/L		87	78 - 114	5	11

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-140976-1

General Chemistry

Prep Batch: 320571

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-140976-1	Outfall009_20160311_Grab	Total/NA	Water	1664A	
440-140976-2	Outfall009_20160311_Grab_Extra	Total/NA	Water	1664A	
LCS 440-320571/2-A	Lab Control Sample	Total/NA	Water	1664A	
LCSD 440-320571/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	
MB 440-320571/1-A	Method Blank	Total/NA	Water	1664A	

Analysis Batch: 320754

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-140976-1	Outfall009_20160311_Grab	Total/NA	Water	1664A	320571
440-140976-2	Outfall009_20160311_Grab_Extra	Total/NA	Water	1664A	320571
LCS 440-320571/2-A	Lab Control Sample	Total/NA	Water	1664A	320571
LCSD 440-320571/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	320571
MB 440-320571/1-A	Method Blank	Total/NA	Water	1664A	320571

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-140976-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
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
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)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-140976-1

Laboratory: TestAmerica Irvine

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

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-16
Arizona	State Program	9	AZ0671	10-13-16
California	LA Cty Sanitation Districts	9	10256	01-31-17 *
California	State Program	9	CA ELAP 2706	06-30-16
Guam	State Program	9	Cert. No. 12.002r	01-23-17
Hawaii	State Program	9	N/A	01-29-17
Kansas	NELAP Secondary AB	7	E-10420	07-31-16
Nevada	State Program	9	CA015312007A	07-31-16
New Mexico	State Program	6	N/A	01-29-17
Northern Mariana Islands	State Program	9	MP0002	01-29-16 *
Oregon	NELAP	10	4005	01-29-17
USDA	Federal		P330-09-00080	07-08-18
Washington	State Program	10	900	09-03-16

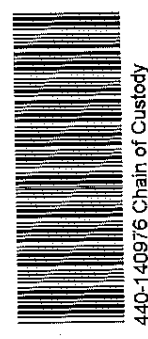
* Certification renewal pending - certification considered valid.

TestAmerica Irvine

CHAIN OF CUSTODY FORM

Test America

Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108 Test America Contact: Debby Wilson 17461 Derian Ave Suite #100 Irvine CA 92614 Tel 949 261 1022 X228 Cell 949 237 0603		Project: Boeing-SSFL NPDES Permit 2016 Routine Outfall 003-007, 009, 010 Outfall 009 Grab		Project Manager: Nancy Gardiner 619.285.7132, 858.337.4061 (cell) Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)		Project: Mark Birney John Parkes Bill Clarke		Sample I.D. Outfall008_20160311_Grab Outfall009_20160311_L.Grab_Extra		Sampling Date/Time 3-11-16/1420 3-11-16/1420		Sample Matrix WM WM		Container Type 1L Glass Amber 1L Glass Amber		# of Cont. 2 2		Preservative HCl HCl		Bottle # 15 15		MS/MSD No No		Oil & Grease (1664-HEM) X X		Project Manager: Nancy Gardiner 619.285.7132, 858.337.4061 (cell) Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)		Project: Mark Birney John Parkes Bill Clarke		Sample I.D. Outfall008_20160311_Grab Outfall009_20160311_L.Grab_Extra		Sampling Date/Time 3-11-16/1420 3-11-16/1420		Sample Matrix WM WM		Container Type 1L Glass Amber 1L Glass Amber		# of Cont. 2 2		Preservative HCl HCl		Bottle # 15 15		MS/MSD No No		Oil & Grease (1664-HEM) X X	
Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108 Test America Contact: Debby Wilson 17461 Derian Ave Suite #100 Irvine CA 92614 Tel 949 261 1022 X228 Cell 949 237 0603		Project: Boeing-SSFL NPDES Permit 2016 Routine Outfall 003-007, 009, 010 Outfall 009 Grab		Project Manager: Nancy Gardiner 619.285.7132, 858.337.4061 (cell) Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)		Project: Mark Birney John Parkes Bill Clarke		Sample I.D. Outfall008_20160311_Grab Outfall009_20160311_L.Grab_Extra		Sampling Date/Time 3-11-16/1420 3-11-16/1420		Sample Matrix WM WM		Container Type 1L Glass Amber 1L Glass Amber		# of Cont. 2 2		Preservative HCl HCl		Bottle # 15 15		MS/MSD No No		Oil & Grease (1664-HEM) X X																							
Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108 Test America Contact: Debby Wilson 17461 Derian Ave Suite #100 Irvine CA 92614 Tel 949 261 1022 X228 Cell 949 237 0603		Project: Boeing-SSFL NPDES Permit 2016 Routine Outfall 003-007, 009, 010 Outfall 009 Grab		Project Manager: Nancy Gardiner 619.285.7132, 858.337.4061 (cell) Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)		Project: Mark Birney John Parkes Bill Clarke		Sample I.D. Outfall008_20160311_Grab Outfall009_20160311_L.Grab_Extra		Sampling Date/Time 3-11-16/1420 3-11-16/1420		Sample Matrix WM WM		Container Type 1L Glass Amber 1L Glass Amber		# of Cont. 2 2		Preservative HCl HCl		Bottle # 15 15		MS/MSD No No		Oil & Grease (1664-HEM) X X																							



Relinquished By Bill Clarke Date/Time: 3-11-16/15:30 Company: Westonsolutions	Received By Dimitri Papantopoulos Date/Time: 3/11/16 Company: Westonsolutions	Turn-around time: (Check) 24 Hour: 72 Hour: 5 Day: 10 Day: X 48 Hour: 5 Day: 10 Day: X Normal: X
Relinquished By Dimitri P Date/Time: 3/11/16 7:14pm Company: DCS	Received By Bill Clarke Date/Time: 3/11/16 Company: DCS	Sample Integrity: (Check) Intact: On Ice:
Relinquished By Bill Clarke Date/Time: 3-11-16/15:30 Company: Westonsolutions	Received By Dimitri P Date/Time: 3/11/16 Company: Westonsolutions	Data Requirements: (Check) No Level IV: All Level IV:

IR-77 4.9/4.2

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-140976-1

Login Number: 140976

List Number: 1

Creator: Garcia, Veronica G

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	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?	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	



DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-141065-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

April 19, 2016

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





TABLE OF CONTENTS

I. INTRODUCTION 1

II. Sample Management 2

IV. EPA METHOD 1613B — Dioxin/Furans 6

 IV.1. Holding Times 6

 IV.2. Instrument Performance 6

 IV.2.1. GC Column Performance 6

 IV.2.2. Mass Spectrometer Performance 6

 IV.3. Calibration 6

 IV.4. Quality Control Samples 6

 IV.4.1. Method Blanks 6

 IV.4.2. Laboratory Control Samples 7

 IV.5. Field QC Samples 7

 IV.5.1. Field Blanks and Equipment Blanks 7

 IV.5.2. Field Duplicates 7

 IV.6. Internal Standards Performance 7

 IV.7. Compound Identification 7

 IV.8. Compound Quantification and Reported Detection Limits 7

V. VARIOUS METHODS — Metals 7

 V.1. Holding Times 8

 V.2. GC/MS Tuning and Calibration 8

 V.3. Quality Control Samples 8

 V.3.1. Method Blanks 8

 V.3.2. Interference Check Samples: 8

 V.3.3. Laboratory Control Samples 8

 V.3.4. Laboratory Duplicates: 8

 V.3.5. Matrix Spike/Matrix Spike Duplicate 8



V.4. Serial Dilution:..... 8

V.5. Internal Standards Performance..... 8

V.6. Compound Quantification and Reported Detection Limits 9

V.7. Field QC Samples..... 9

 V.7.1. Field Blanks and Equipment Blanks 9

 V.7.2. Field Duplicates 9

VI. VARIOUS METHODS — GENERAL CHEMISTRY..... 9

 VI.1. Holding Times 10

 VI.2. Calibration..... 10

 VI.3. Quality Control Samples 10

 VI.3.1. Method Blanks 10

 VI.3.2. Laboratory Control Samples 10

 VI.3.3. Laboratory Duplicates..... 10

 VI.3.4. Matrix Spike/Matrix Spike Duplicate 10

 VI.4. Sample Result Verification 10

 VI.5. Field QC Samples..... 10

 VI.5.1. Field Blanks and Equipment Blanks 11

 VI.5.2. Field Duplicates..... 11

TABLES

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



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-141065-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 2

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall009_20160312_Comp	440-137347-1	N/A	Water	3/12/2016 9:00:00 AM	E1613B, E200.7, E200.8, E245.1, E300, SM2540C, SM4500-CN-E
Outfall009_20160312_Comp_F	440-141065-2	N/A	Water	3/12/2016 9:00:00 AM	E200.7, E200.8, E245.1



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-141065-1:

- The laboratories received the samples in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius ($^{\circ}\text{C}$) and greater than 0°C .
- The laboratories received the sample containers intact and properly preserved, as applicable.
- The sample receipt checklist indicated more sample containers were received than were listed on the transfer COC to TestAmerica-West Sacramento.
- Field and laboratory personnel signed and dated the COCs.
- According to the laboratories' sample receipt checklists, custody seals were intact.

MECX noted anomalies regarding sample management identified below.

- Several corrections to the COCs were not initialed or dated.



TABLE 2 - DATA QUALIFIER REFERENCE

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



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	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.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) 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.
B	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.
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.
P	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.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



IV. EPA METHOD 1613B — DIOXIN/FURANS

Lynn Calvin of MEC^X reviewed the SDG on April 6, 2016

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^X Data Validation Procedure for Dioxins and Furans (DVP-19, Rev. 0), USEPA Method 1613B, and the National Functional Guidelines Chlorinated Dioxin/Furan Data Review (2011).

IV.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample was extracted and analyzed within one year of collection.

IV.2. INSTRUMENT PERFORMANCE

Instrument performance criteria were met. Following are findings associated with instrument performance:

IV.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 less than 25%.

IV.2.2. MASS SPECTROMETER PERFORMANCE

The mass spectrometer performance was acceptable with the static resolving power greater than 10,000.

IV.3. CALIBRATION

Calibration criteria were met. The initial calibration was acceptable with %RSDs $\leq 20\%$ for the 15 native compounds (calibration by isotope dilution) and $\leq 35\%$ for the two native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the Method 1613B control limits for all standards.

Continuing Calibration: Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning of the analytical sequence. The VER was acceptable with the concentrations within the acceptance criteria listed in Table 6 of EPA Method 1613B. The ion abundance ratios and relative retention times were within the method control limits.

IV.4. QUALITY CONTROL SAMPLES

IV.4.1. METHOD BLANKS

The method blank had detects above the EDL and below the reporting limit for all isomers except 2,3,7,8-TCDD and for all totals except TCDD. Isomer results for the method blank contaminants detected below the reporting limit in the samples were qualified as nondetects (U) at the level of contamination based upon professional judgement and the guidance for blank qualification in the National Functional Guidelines for Dioxin Review.

Isomers 1,2,3,7,8,9-HxCDD and 2,3,4,6,7,8-HxCDF, qualified as nondetected for method blank contamination, were equal to the concentrations of the respective totals HxCDD and HxCDF. The reviewer



verified that peaks comprising totals HpCDD and HpCDF in the method blank were the same peaks at similar concentrations comprising totals HpCDD and HpCDF in sample Outfall009_20160312_Comp. Total results for HpCDD, HpCDF, HxCDD, and HxCDF were therefore qualified as nondetects (U) at the level of contamination.

IV.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 $\leq 50\%$.

IV.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. 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.

IV.6. INTERNAL STANDARDS PERFORMANCE

The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613B.

IV.7. COMPOUND IDENTIFICATION

Compound identification was verified. All 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. As 2,3,7,8-TCDF was not detected in the sample, confirmation analysis was not necessary.

IV.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. Any detects below the laboratory lower calibration level were qualified as estimated (J). Any detects between the EDL and the reporting limit (RL), or reported below the EDL, were qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Nondetects are valid to the EDL.

V. VARIOUS METHODS — METALS

Elizabeth Wessling of MEC^X reviewed the SDG on April 6 and April 19, 2016

The samples listed in Table 1 for this analysis were validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for Metals (DVP-5, Rev. 0 and DVP-21, Rev. 0)*, EPA Methods 200.7, 200.8, and 245.1, Standard Method 2340B, and the *National Functional Guidelines for Inorganic Data Review (2014)*.



V.1. HOLDING TIMES

The analytical holding times, 28 days for mercury and six months for the remaining metals, were met.

V.2. GC/MS TUNING AND CALIBRATION

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

Calibration criteria were met. The initial calibration r values were ≥ 0.995 and CRI recoveries were within the control limits of 70-130%. The mercury initial (ICV) and continuing (CCV) recoveries were within NFG control limits of 85-115%. ICV and CCV recoveries for the remaining analytes were within NFG control limits of 90-110%.

V.3. QUALITY CONTROL SAMPLES

V.3.1. METHOD BLANKS

Dissolved copper was detected in the method blank at $-1.031 \mu\text{g/L}$; therefore, dissolved copper in Outfall009_20160312_Comp_F was qualified as an estimated detect with a potential negative bias (J-). There were other detects in the method blanks and CCBs, but none of sufficient concentration to qualify any additional site sample results.

V.3.2. INTERFERENCE CHECK SAMPLES:

Recoveries were within 80-120%. Although interferents were present in the ICSA solution, there was no recognized effect on matrix interference, as sample detections were less than half of the ICSAB spike amounts.

V.3.3. LABORATORY CONTROL SAMPLES

The recoveries were within the method control limits of 85-115%.

V.3.4. LABORATORY DUPLICATES:

No laboratory duplicate analyses were performed on the sample in this SDG.

V.3.5. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on sample Outfall009_20160312_Comp and Outfall009_20160312_Comp_F for total and dissolved metals and mercury. Results were not assessed when the parent sample concentration exceeded the spike amount by 4x. Recoveries and RPDs were within the method control limits of 70-130% and $\leq 20\%$, respectively.

V.4. SERIAL DILUTION:

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

V.5. INTERNAL STANDARDS PERFORMANCE

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

V.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Calculations were verified and the sample results reported on the sample result summary were verified against the raw data. No transcription errors or calculation errors were noted. When the sample results were qualified and the reviewer was able to clearly determine bias, detected results were qualified as either J+ or J-; otherwise, bias was not indicated in the qualification. Detects below the RL were qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Nondetects are valid to the MDL.

The original analysis of the total and dissolved fractions of the 200.8 analysis of the sample indicated that the dissolved fraction was significantly different from the total fraction with the detected concentrations of the target compounds in the dissolved fraction being reported at much greater concentrations. The 200.7 and 245.1 analyses did not indicate a similar discrepancy. The reviewer requested that the laboratory reanalyze the 200.8 analyses of the samples. The reanalysis of the samples confirmed the total fraction but the dissolved fraction was not confirmed. The dissolved and total fractions were therefore re-prepped and reanalyzed. The total fraction was confirmed and the re-prepped and reanalyzed dissolved fraction was consistent with the total fraction. The reviewer chose the original total preparation and analysis as the definitive data and chose the re-prepped and reanalyzed data for the dissolved fraction as the definitive data. The reviewer rejected the re-prepped and reanalyzed total fraction and rejected the original dissolved fraction.

V.7. FIELD QC SAMPLES

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

V.7.1. FIELD BLANKS AND EQUIPMENT BLANKS

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

V.7.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

VI. VARIOUS METHODS — GENERAL CHEMISTRY

Elizabeth Wessling of MEC^X reviewed the SDG on April 6, 2016

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

VI.1. HOLDING TIMES

The method analytical holding time for nitrate/nitrite as nitrogen, 48 hours from collection, was exceeded; therefore, nitrate/nitrite as nitrogen measured in sample Outfall009_20160312_Comp was qualified as estimated with potential low bias (J-). Remaining analytical holding times as listed below were met:

- 48 hours for nitrate/nitrite as nitrogen
- 7 days for total dissolved solids (TDS)
- 14 days for total cyanide
- 28 days for chloride and sulfate

VI.2. CALIBRATION

Calibration criteria were met. The initial calibration r^2 values were ≥ 0.995 and all initial and continuing calibration recoveries were within 90-110%. Analytical balance calibration logs were provided by the lab.

VI.3. QUALITY CONTROL SAMPLES

VI.3.1. *METHOD BLANKS*

The method blanks and CCBs had no detects affecting sample results.

VI.3.2. *LABORATORY CONTROL SAMPLES*

Recoveries were within the control limits of 90-110% for anions and cyanide and the RPD for total cyanide was within the control limits of 10%.

VI.3.3. *LABORATORY DUPLICATES*

Laboratory duplicate analyses were performed on the sample from this SDG for TDS. The RPD was less than 10%.

VI.3.4. *MATRIX SPIKE/MATRIX SPIKE DUPLICATE*

MS/MSD analyses were performed on Outfall009_20160312_Comp for anions and total cyanide. Recoveries were within the control limit of 80-120% and RPDs were within the laboratory-established control limits. No qualifications were required.

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. When the sample results were qualified and the reviewer was able to clearly determine bias, detected results were qualified as either J+ or J-; otherwise, bias was not indicated in the qualification. Any detects between the method detection limit and the reporting limit were qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Reported nondetects are valid to the MDL.

VI.5. FIELD QC SAMPLES

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



VI.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

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

VI.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms 4401410651

Analysis Method E1613B

Sample Name Outfall009_20160312_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 3/12/2016 9:00:00 AM **Validation Level:** 8

Lab Sample Name: 440-141065-1

Analyte	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	0.000015	0.000095	0.00000035	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	N	3268-87-9	0.000039	0.000095	0.00000034	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	N	67562-39-4	0.0000025	0.000047	0.00000029	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	N	35822-46-9	0.0000047	0.000047	0.00000026	ug/L	J,DXMB	U	B
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	N	55673-89-7	0.00000041	0.000047	0.00000041	ug/L	U	U	
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	N	70648-26-9	0.00000041	0.000047	0.00000041	ug/L	U	U	
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	39227-28-6	0.00000031	0.000047	0.00000031	ug/L	U	U	
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	57117-44-9	0.00000032	0.000047	0.00000032	ug/L	U	U	
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	57653-85-7	0.00000028	0.000047	0.00000028	ug/L	U	U	
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	N	72918-21-9	0.00000023	0.000047	0.00000023	ug/L	U	U	
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	N	19408-74-3	0.00000040	0.000047	0.00000025	ug/L	J,DXqMB	U	B
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-41-6	0.00000026	0.000047	0.00000026	ug/L	U	U	
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	N	40321-76-4	0.00000033	0.000047	0.00000033	ug/L	U	U	
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	60851-34-5	0.00000050	0.000047	0.00000024	ug/L	J,DXMB	U	B
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-31-4	0.00000029	0.000047	0.00000029	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	0.00000020	0.000095	0.00000020	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	N	1746-01-6	0.00000027	0.000095	0.00000027	ug/L	U	U	
Total Heptachlorodibenzofuran (HpCDF)	N	38998-75-3	0.0000045	0.000047	0.00000035	ug/L	J,DXMB	U	B
Total Heptachlorodibenzo-p-dioxin (HpCDD)	N	37871-00-4	0.000011	0.000047	0.00000026	ug/L	J,DXMB	U	B
Total Hexachlorodibenzofuran (HxCDF)	N	55684-94-1	0.00000050	0.000047	0.00000030	ug/L	J,DXMB	U	B
Total Hexachlorodibenzo-p-dioxin (HxCDD), Mixture	N	34465-46-8	0.00000040	0.000047	0.00000028	ug/L	J,DXqMB	U	B

Analysis Method E1613B

Total Pentachlorodibenzofuran (PeCDF)	N	30402-15-4	0.00000026	0.000047	0.00000026	ug/L	U	U
Total Pentachlorodibenzo-p-dioxin (PeCDD)	N	36088-22-9	0.00000033	0.000047	0.00000033	ug/L	U	U
Total Tetrachlorodibenzofuran (TCDF)	N	55722-27-5	0.00000020	0.0000095	0.00000020	ug/L	U	U
Total Tetrachlorodibenzo-p-dioxin (TCDD)	N	41903-57-5	0.00000027	0.0000095	0.00000027	ug/L	U	U

Analysis Method E200.7

Sample Name Outfall009_20160312_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 3/12/2016 9:00:00 AM **Validation Level:** 8

Lab Sample Name: 440-141065-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Nickel	T	7440-02-0	5.0	10	5.0	ug/L	U	U	
Silver	T	7440-22-4	5.0	10	5.0	ug/L	U	U	
Zinc	T	7440-66-6	41	20	10	ug/L			

Sample Name Outfall009_20160312_Comp_F **Matrix Type:** WM **Result Type:** TRG

Sample Date: 3/12/2016 9:00:00 AM **Validation Level:** 8

Lab Sample Name: 440-141065-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Nickel	D	7440-02-0	5.0	10	5.0	ug/L	U	U	
Silver	D	7440-22-4	5.0	10	5.0	ug/L	U	U	
Zinc	D	7440-66-6	10	20	10	ug/L	U	U	

Analysis Method E200.8

Sample Name Outfall009_20160312_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 3/12/2016 9:00:00 AM **Validation Level:** 8

Lab Sample Name: 440-141065-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Antimony	T	7440-36-0	0.51	2.0	0.50	ug/L	J,DX	R	D
Antimony	T	7440-36-0	0.56	2.0	0.50	ug/L	J,DX	J	DNQ
Cadmium	T	7440-43-9	0.25	1.0	0.25	ug/L	U	R	D
Cadmium	T	7440-43-9	0.25	1.0	0.25	ug/L	U	U	
Copper	T	7440-50-8	3.1	2.0	0.50	ug/L		R	D
Copper	T	7440-50-8	3.5	2.0	0.50	ug/L			
Lead	T	7439-92-1	0.70	1.0	0.50	ug/L	J,DX	R	D
Lead	T	7439-92-1	0.74	1.0	0.50	ug/L	J,DX	J	DNQ
Selenium	T	7782-49-2	0.50	2.0	0.50	ug/L	U	R	D
Selenium	T	7782-49-2	0.50	2.0	0.50	ug/L	U	U	
Thallium	T	7440-28-0	0.50	1.0	0.50	ug/L	U	R	D

Analysis Method E200.8

Thallium	T	7440-28-0	0.50	1.0	0.50	ug/L	U	U	
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Sample Name: Outfall009_20160312_Comp_F **Matrix Type:** WM **Result Type:** TRG

Sample Date: 3/12/2016 9:00:00 AM **Validation Level:** 8

Lab Sample Name: 440-141065-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Antimony	D	7440-36-0	0.50	2.0	0.50	ug/L	U	U	
Antimony	D	7440-36-0	10	2.0	0.50	ug/L	QP	R	D
Cadmium	D	7440-43-9	0.25	1.0	0.25	ug/L	U	U	
Cadmium	D	7440-43-9	0.92	1.0	0.25	ug/L	J,DXQP	R	D
Copper	D	7440-50-8	2.6	2.0	0.50	ug/L		J-	B
Copper	D	7440-50-8	78	2.0	0.50	ug/L	QP	R	D
Lead	D	7439-92-1	0.50	1.0	0.50	ug/L	U	U	
Lead	D	7439-92-1	1.7	1.0	0.50	ug/L	QP	R	D
Selenium	D	7782-49-2	0.50	2.0	0.50	ug/L	U	U	
Selenium	D	7782-49-2	3.5	2.0	0.50	ug/L	QP	R	D
Thallium	D	7440-28-0	0.50	1.0	0.50	ug/L	U	U	
Thallium	D	7440-28-0	0.50	1.0	0.50	ug/L	UQP	R	D

Analysis Method E245.1

Sample Name: Outfall009_20160312_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 3/12/2016 9:00:00 AM **Validation Level:** 8

Lab Sample Name: 440-141065-1

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

Sample Name: Outfall009_20160312_Comp_F **Matrix Type:** WM **Result Type:** TRG

Sample Date: 3/12/2016 9:00:00 AM **Validation Level:** 8

Lab Sample Name: 440-141065-2

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

Analysis Method E300

Sample Name: Outfall009_20160312_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 3/12/2016 9:00:00 AM **Validation Level:** 8

Lab Sample Name: 440-141065-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chloride	N	16887-00-6	4.5	0.50	0.25	mg/L			
Nitrite/Nitrate	N	NO2NO3	0.56	0.15	0.070	mg/L		J-	H

TestAmerica

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ANALYTICAL REPORT

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TestAmerica Irvine

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Suite 100

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Tel: (949)261-1022

TestAmerica Job ID: 440-141065-1

Client Project/Site: Boeing NPDES SSFL outfalls

Revision: 1

For:

Haley & Aldrich, Inc.

5333 Mission Center Road

Suite 300

San Diego, California 92108

Attn: Nancy Gardiner



Authorized for release by:

4/14/2016 2:07:45 PM

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

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

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



Urvashi Patel
Manager of Project Management
4/14/2016 2:07:45 PM



Table of Contents

Cover Page	1
Table of Contents	3
Sample Summary	4
Case Narrative	5
Client Sample Results	7
Method Summary	10
Lab Chronicle	11
QC Sample Results	12
QC Association Summary	23
Definitions/Glossary	27
Certification Summary	28
Chain of Custody	29
Receipt Checklists	31
Isotope Dilution Summary	33

Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-141065-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-141065-1	Outfall009_20160312_Comp	Water	03/12/16 09:00	03/13/16 11:20
440-141065-2	Outfall009_20160312_Comp_F	Water	03/12/16 09:00	03/13/16 11:20

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-141065-1

Job ID: 440-141065-1

Laboratory: TestAmerica Irvine

Narrative

**Job Narrative
440-141065-1**

Comments

Revision created to confirm total and dissolved metals. Total metals confirmed but original dissolved results may have been contaminated as re-digestion didn't confirm original result.

Receipt

The samples were received on 3/13/2016 11:20 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 5 coolers at receipt time were 0.1° C, 0.3° C, 0.4° C, 0.5° C and 0.8° C.

Receipt Exceptions

The container label for the following sample did not match the information listed on the Chain-of-Custody (COC): Outfall009_20160312_Comp (440-141065-1). Received #3 not listed on coc.

The following samples were received unpreserved and were preserved upon receipt to the laboratory: Outfall009_20160312_Comp (440-141065-1), Outfall009_20160312_Comp (440-141065-1[MS]), Outfall009_20160312_Comp (440-141065-1[MSD]), Outfall009_20160312_Comp_F (440-141065-2), Outfall009_20160312_Comp_F (440-141065-2[MS]), Outfall009_20160312_Comp_F (440-141065-2[MSD]), Outfall009_20160312_comp_extra (440-141065-3) and Trip Blank (440-141065-4). Regulatory documents require a 24-hour waiting period from the time of the addition of the acid preservative to the time of digestion.

The following samples were received unpreserved and were preserved upon receipt to the laboratory: Split and preserved in SC for metals on 4/7/16 for sample -02 @ 1530 acid lot # 0000129810

Client questioned metals results and requested re-analysis for 200.8 total and dissolved.

HPLC/IC

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

Dioxin

Method(s) 1613B: EPA Method 1613B specifies a +/- 15 second retention time difference between the recovery standard in the initial calibration (ICAL) and the continuing calibration verification (CCV). 13C-1,2,3,4-TCDD and 13C-1,2,3,7,8,9-HxCDD associated with the following samples run on instrument 3D5 exceeded this criteria: (CCV 320-103731/2), (LCS 320-103479/2-A), (LCSD 320-103479/3-A) and (MB 320-103479/1-A). This retention time shift is due to normal and reasonable column maintenance and does not affect the instrument chromatography resolution, sensitivity, or identification of target analytes. System retention times have been updated for proper analyte identification.

Method(s) 1613B: EPA Method 1613B specifies a +/- 15 second retention time difference between the recovery standard in the initial calibration (ICAL) and the continuing calibration verification (CCV). The 13C-1,2,3,4-TCDD and 13C-1,2,3,7,8,9-HxCDD associated with the following samples run on instrument 3D5 exceeded this criteria: Outfall009_20160312_Comp (440-141065-1) and (CCV 320-103733/16). This retention time shift is due to normal and reasonable column maintenance and does not affect the instrument chromatography resolution, sensitivity, or identification of target analytes. System retention times have been updated for proper analyte identification.

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

Metals

Method(s) 200.7 Rev 4.4: The ICSAB for batch 440-318901 was outside the acceptance limits for element: Silver. The sample associated with this ICSAB was ND for this analyte, therefore; the data have been reported.

Method(s) 200.8: The interference check standard solution (ICSA) associated with batch 440-323342 had results for Cadmium at a level greater than 2 times the reporting limit. Sample was non-detect, therefore data not impacted. Sample has been qualified and reported.

Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-141065-1

Job ID: 440-141065-1 (Continued)

Laboratory: TestAmerica Irvine (Continued)

Method(s) 200.8: Sample was re-filtered, and re-digested due to contamination. (Diss>Tot). After re-digestion, samples now reported.

Outfall009_20160312_Comp_F (440-141065-2)

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

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

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Client Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-141065-1

Client Sample ID: Outfall009_20160312_Comp

Lab Sample ID: 440-141065-1

Date Collected: 03/12/16 09:00

Matrix: Water

Date Received: 03/13/16 11:20

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	4.5		0.50	0.25	mg/L			03/14/16 08:35	1
Sulfate	5.3		0.50	0.25	mg/L			03/14/16 08:35	1

Method: NO3NO2 Calc - Nitrogen, Nitrate-Nitrite

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	0.56		0.15	0.070	mg/L			03/27/16 14:31	1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.0000095	0.0000002	ug/L		03/16/16 09:05	03/18/16 05:44	1
2,3,7,8-TCDF	ND		0.0000095	0.0000002	ug/L		03/16/16 09:05	03/18/16 05:44	1
1,2,3,7,8-PeCDD	ND		0.000047	0.0000003	ug/L		03/16/16 09:05	03/18/16 05:44	1
1,2,3,7,8-PeCDF	ND		0.000047	0.0000002	ug/L		03/16/16 09:05	03/18/16 05:44	1
2,3,4,7,8-PeCDF	ND		0.000047	0.0000002	ug/L		03/16/16 09:05	03/18/16 05:44	1
1,2,3,4,7,8-HxCDD	ND		0.000047	0.0000003	ug/L		03/16/16 09:05	03/18/16 05:44	1
1,2,3,6,7,8-HxCDD	ND		0.000047	0.0000002	ug/L		03/16/16 09:05	03/18/16 05:44	1
1,2,3,7,8,9-HxCDD	0.0000040	J,DX q MB	0.000047	0.0000002	ug/L		03/16/16 09:05	03/18/16 05:44	1
1,2,3,4,7,8-HxCDF	ND		0.000047	0.0000004	ug/L		03/16/16 09:05	03/18/16 05:44	1
1,2,3,6,7,8-HxCDF	ND		0.000047	0.0000003	ug/L		03/16/16 09:05	03/18/16 05:44	1
1,2,3,7,8,9-HxCDF	ND		0.000047	0.0000002	ug/L		03/16/16 09:05	03/18/16 05:44	1
2,3,4,6,7,8-HxCDF	0.0000050	J,DX MB	0.000047	0.0000002	ug/L		03/16/16 09:05	03/18/16 05:44	1
1,2,3,4,6,7,8-HpCDD	0.0000047	J,DX MB	0.000047	0.0000002	ug/L		03/16/16 09:05	03/18/16 05:44	1
1,2,3,4,6,7,8-HpCDF	0.0000025	J,DX MB	0.000047	0.0000002	ug/L		03/16/16 09:05	03/18/16 05:44	1
1,2,3,4,7,8,9-HpCDF	ND		0.000047	0.0000004	ug/L		03/16/16 09:05	03/18/16 05:44	1
OCDD	0.000039	J,DX MB	0.000095	0.0000003	ug/L		03/16/16 09:05	03/18/16 05:44	1
OCDF	0.000015	J,DX MB	0.000095	0.0000003	ug/L		03/16/16 09:05	03/18/16 05:44	1
Total TCDD	ND		0.0000095	0.0000002	ug/L		03/16/16 09:05	03/18/16 05:44	1
Total TCDF	ND		0.0000095	0.0000002	ug/L		03/16/16 09:05	03/18/16 05:44	1
Total PeCDD	ND		0.000047	0.0000003	ug/L		03/16/16 09:05	03/18/16 05:44	1
Total PeCDF	ND		0.000047	0.0000002	ug/L		03/16/16 09:05	03/18/16 05:44	1
Total HxCDD	0.0000040	J,DX q MB	0.000047	0.0000002	ug/L		03/16/16 09:05	03/18/16 05:44	1
Total HxCDF	0.0000050	J,DX MB	0.000047	0.0000003	ug/L		03/16/16 09:05	03/18/16 05:44	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-141065-1

Client Sample ID: Outfall009_20160312_Comp

Lab Sample ID: 440-141065-1

Date Collected: 03/12/16 09:00

Matrix: Water

Date Received: 03/13/16 11:20

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
Total HpCDD	0.000011	J,DX MB	0.000047	0.0000002	ug/L		03/16/16 09:05	03/18/16 05:44	1
				6					
Total HpCDF	0.0000045	J,DX MB	0.000047	0.0000003	ug/L		03/16/16 09:05	03/18/16 05:44	1
				5					
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	65		25 - 164				03/16/16 09:05	03/18/16 05:44	1
13C-2,3,7,8-TCDF	64		24 - 169				03/16/16 09:05	03/18/16 05:44	1
13C-1,2,3,7,8-PeCDD	70		25 - 181				03/16/16 09:05	03/18/16 05:44	1
13C-1,2,3,7,8-PeCDF	64		24 - 185				03/16/16 09:05	03/18/16 05:44	1
13C-2,3,4,7,8-PeCDF	64		21 - 178				03/16/16 09:05	03/18/16 05:44	1
13C-1,2,3,4,7,8-HxCDD	72		32 - 141				03/16/16 09:05	03/18/16 05:44	1
13C-1,2,3,6,7,8-HxCDD	71		28 - 130				03/16/16 09:05	03/18/16 05:44	1
13C-1,2,3,4,7,8-HxCDF	74		26 - 152				03/16/16 09:05	03/18/16 05:44	1
13C-1,2,3,6,7,8-HxCDF	69		26 - 123				03/16/16 09:05	03/18/16 05:44	1
13C-1,2,3,7,8,9-HxCDF	72		29 - 147				03/16/16 09:05	03/18/16 05:44	1
13C-2,3,4,6,7,8-HxCDF	72		28 - 136				03/16/16 09:05	03/18/16 05:44	1
13C-1,2,3,4,6,7,8-HpCDD	74		23 - 140				03/16/16 09:05	03/18/16 05:44	1
13C-1,2,3,4,6,7,8-HpCDF	72		28 - 143				03/16/16 09:05	03/18/16 05:44	1
13C-1,2,3,4,7,8,9-HpCDF	65		26 - 138				03/16/16 09:05	03/18/16 05:44	1
13C-OCDD	64		17 - 157				03/16/16 09:05	03/18/16 05:44	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	111		35 - 197				03/16/16 09:05	03/18/16 05:44	1

Method: 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nickel	ND		10	5.0	ug/L		03/22/16 12:26	03/23/16 12:45	1
Zinc	41		20	10	ug/L		03/22/16 12:26	03/23/16 12:45	1
Silver	ND		10	5.0	ug/L		03/22/16 12:26	03/23/16 12:45	1

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		03/27/16 11:57	03/28/16 14:19	1
Cadmium	ND		1.0	0.25	ug/L		04/08/16 12:58	04/10/16 14:10	1
Copper	3.5		2.0	0.50	ug/L		03/27/16 11:57	03/28/16 14:19	1
Copper	3.1		2.0	0.50	ug/L		04/08/16 12:58	04/10/16 14:10	1
Lead	0.74	J,DX	1.0	0.50	ug/L		03/27/16 11:57	03/28/16 14:19	1
Lead	0.70	J,DX	1.0	0.50	ug/L		04/08/16 12:58	04/10/16 14:10	1
Antimony	0.56	J,DX	2.0	0.50	ug/L		03/27/16 11:57	03/28/16 14:19	1
Antimony	0.51	J,DX	2.0	0.50	ug/L		04/08/16 12:58	04/10/16 14:10	1
Selenium	ND		2.0	0.50	ug/L		03/27/16 11:57	03/28/16 14:19	1
Selenium	ND		2.0	0.50	ug/L		04/08/16 12:58	04/10/16 14:10	1
Thallium	ND		1.0	0.50	ug/L		03/27/16 11:57	03/28/16 14:19	1
Thallium	ND		1.0	0.50	ug/L		04/08/16 12:58	04/10/16 14:10	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		03/20/16 11:21	03/21/16 01:35	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-141065-1

Client Sample ID: Outfall009_20160312_Comp

Lab Sample ID: 440-141065-1

Date Collected: 03/12/16 09:00

Matrix: Water

Date Received: 03/13/16 11:20

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	85		10	5.0	mg/L			03/18/16 06:07	1
Cyanide, Total	ND		5.0	2.5	ug/L		03/14/16 21:37	03/16/16 18:17	1

Client Sample ID: Outfall009_20160312_Comp_F

Lab Sample ID: 440-141065-2

Date Collected: 03/12/16 09:00

Matrix: Water

Date Received: 03/13/16 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		03/18/16 11:01	03/20/16 18:11	1
Zinc	ND		20	10	ug/L		03/18/16 11:01	03/20/16 18:11	1
Silver	ND		10	5.0	ug/L		03/18/16 11:01	03/20/16 18:11	1

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		04/12/16 21:48	04/13/16 17:38	1
Copper	2.6		2.0	0.50	ug/L		04/12/16 21:48	04/13/16 17:38	1
Lead	ND		1.0	0.50	ug/L		04/12/16 21:48	04/13/16 17:38	1
Antimony	ND		2.0	0.50	ug/L		04/12/16 21:48	04/13/16 17:38	1
Selenium	ND		2.0	0.50	ug/L		04/12/16 21:48	04/13/16 17:38	1
Thallium	ND		1.0	0.50	ug/L		04/12/16 21:48	04/13/16 17:38	1

Method: 245.1 - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND	QP	0.20	0.10	ug/L		03/20/16 13:52	03/20/16 21:57	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-141065-1

Method	Method Description	Protocol	Laboratory
300.0	Anions, Ion Chromatography	MCAWW	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
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL IRV
SM 4500 CN E	Cyanide, Total (Low Level)	SM	TAL IRV

Protocol References:

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

EPA = US Environmental Protection Agency

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

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

Laboratory References:

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

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-141065-1

Client Sample ID: Outfall009_20160312_Comp

Lab Sample ID: 440-141065-1

Date Collected: 03/12/16 09:00

Matrix: Water

Date Received: 03/13/16 11:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1	5 mL		317223	03/14/16 08:35	NN	TAL IRV
Total/NA	Analysis	NO3NO2 Calc		1			320482	03/27/16 14:31	TN	TAL IRV
Total/NA	Prep	1613B			1053 mL	20 uL	103479	03/16/16 09:05	DXD	TAL SAC
Total/NA	Analysis	1613B		1	1053 mL	20 uL	103733	03/18/16 05:44	ALM	TAL SAC
Total Recoverable	Prep	200.2			25 mL	25 mL	319311	03/22/16 12:26	Q1N	TAL IRV
Total Recoverable	Analysis	200.7 Rev 4.4		1	25 mL	25 mL	319687	03/23/16 12:45	TK	TAL IRV
Total Recoverable	Prep	200.2			25 mL	25 mL	320460	03/27/16 11:57	K1E	TAL IRV
Total Recoverable	Analysis	200.8		1	25 mL	25 mL	320693	03/28/16 14:19	RC	TAL IRV
Total Recoverable	Prep	200.2			25 mL	25 mL	323064	04/08/16 12:58	Q1N	TAL IRV
Total Recoverable	Analysis	200.8		1	25 mL	25 mL	323342	04/10/16 14:10	RC	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	318809	03/20/16 11:21	B1H	TAL IRV
Total/NA	Analysis	245.1		1	20 mL	20 mL	319030	03/21/16 01:35	DB	TAL IRV
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	318444	03/18/16 06:07	XL	TAL IRV
Total/NA	Prep	Distill/CN			50 mL	50 mL	317433	03/14/16 21:37	SN	TAL IRV
Total/NA	Analysis	SM 4500 CN E		1	50 mL	50 mL	318026	03/16/16 18:17	SN	TAL IRV

Client Sample ID: Outfall009_20160312_Comp_F

Lab Sample ID: 440-141065-2

Date Collected: 03/12/16 09:00

Matrix: Water

Date Received: 03/13/16 11:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			150 mL	150 mL	317501	03/15/16 09:02	K1E	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	318522	03/18/16 11:01	K1E	TAL IRV
Dissolved	Analysis	200.7 Rev 4.4		1	25 mL	25 mL	318901	03/20/16 18:11	EN	TAL IRV
Dissolved	Filtration	FILTRATION			100 mL	100 mL	323848	04/12/16 20:25	K1E	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	323855	04/12/16 21:48	K1E	TAL IRV
Dissolved	Analysis	200.8		1	25 mL	25 mL	324114	04/13/16 17:38	RC	TAL IRV
Dissolved	Filtration	FILTRATION			150 mL	150 mL	317501	03/15/16 09:02	K1E	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	318853	03/20/16 13:52	DB	TAL IRV
Dissolved	Analysis	245.1		1	20 mL	20 mL	319029	03/20/16 21:57	DB	TAL IRV

Laboratory References:

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

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-141065-1

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 440-317223/1
Matrix: Water
Analysis Batch: 317223

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50	0.25	mg/L			03/14/16 08:06	1
Sulfate	ND		0.50	0.25	mg/L			03/14/16 08:06	1

Lab Sample ID: LCS 440-317223/2
Matrix: Water
Analysis Batch: 317223

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	5.00	4.84		mg/L		97	90 - 110
Sulfate	5.00	4.72		mg/L		94	90 - 110

Lab Sample ID: 440-141065-1 MS
Matrix: Water
Analysis Batch: 317223

Client Sample ID: Outfall009_20160312_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	4.5		5.00	9.70		mg/L		104	80 - 120
Sulfate	5.3		5.00	10.2		mg/L		98	80 - 120

Lab Sample ID: 440-141065-1 MSD
Matrix: Water
Analysis Batch: 317223

Client Sample ID: Outfall009_20160312_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	4.5		5.00	9.74		mg/L		105	80 - 120	0	20
Sulfate	5.3		5.00	10.2		mg/L		97	80 - 120	0	20

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

Lab Sample ID: MB 320-103479/1-A
Matrix: Water
Analysis Batch: 103731

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 103479

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000010	0.0000004	ug/L		03/16/16 09:05	03/17/16 14:42	1
2,3,7,8-TCDF	0.00000105	J,DX	0.000010	0.0000003	ug/L		03/16/16 09:05	03/17/16 14:42	1
1,2,3,7,8-PeCDD	0.00000280	J,DX	0.000050	0.0000004	ug/L		03/16/16 09:05	03/17/16 14:42	1
1,2,3,7,8-PeCDF	0.00000285	J,DX	0.000050	0.0000003	ug/L		03/16/16 09:05	03/17/16 14:42	1
2,3,4,7,8-PeCDF	0.00000272	J,DX	0.000050	0.0000004	ug/L		03/16/16 09:05	03/17/16 14:42	1
1,2,3,4,7,8-HxCDD	0.00000226	J,DX q	0.000050	0.0000003	ug/L		03/16/16 09:05	03/17/16 14:42	1
1,2,3,6,7,8-HxCDD	0.00000272	J,DX	0.000050	0.0000003	ug/L		03/16/16 09:05	03/17/16 14:42	1
1,2,3,7,8,9-HxCDD	0.00000261	J,DX q	0.000050	0.0000002	ug/L		03/16/16 09:05	03/17/16 14:42	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-141065-1

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

Lab Sample ID: MB 320-103479/1-A
Matrix: Water
Analysis Batch: 103731

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 103479

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,7,8-HxCDF	0.0000256	J,DX	0.000050	0.0000005	ug/L		03/16/16 09:05	03/17/16 14:42	1
1,2,3,6,7,8-HxCDF	0.0000210	J,DX q	0.000050	0.0000004	ug/L		03/16/16 09:05	03/17/16 14:42	1
1,2,3,7,8,9-HxCDF	0.0000307	J,DX	0.000050	0.0000003	ug/L		03/16/16 09:05	03/17/16 14:42	1
2,3,4,6,7,8-HxCDF	0.0000222	J,DX	0.000050	0.0000003	ug/L		03/16/16 09:05	03/17/16 14:42	1
1,2,3,4,6,7,8-HpCDD	0.0000389	J,DX q	0.000050	0.0000003	ug/L		03/16/16 09:05	03/17/16 14:42	1
1,2,3,4,6,7,8-HpCDF	0.0000469	J,DX	0.000050	0.0000003	ug/L		03/16/16 09:05	03/17/16 14:42	1
1,2,3,4,7,8,9-HpCDF	0.0000299	J,DX	0.000050	0.0000005	ug/L		03/16/16 09:05	03/17/16 14:42	1
OCDD	0.0000141	J,DX q	0.00010	0.0000003	ug/L		03/16/16 09:05	03/17/16 14:42	1
OCDF	0.0000578	J,DX	0.00010	0.0000004	ug/L		03/16/16 09:05	03/17/16 14:42	1
Total TCDD	ND		0.000010	0.0000004	ug/L		03/16/16 09:05	03/17/16 14:42	1
Total TCDF	0.0000105	J,DX	0.000010	0.0000003	ug/L		03/16/16 09:05	03/17/16 14:42	1
Total PeCDD	0.0000280	J,DX	0.000050	0.0000004	ug/L		03/16/16 09:05	03/17/16 14:42	1
Total PeCDF	0.0000557	J,DX	0.000050	0.0000003	ug/L		03/16/16 09:05	03/17/16 14:42	1
Total HxCDD	0.0000760	J,DX q	0.000050	0.0000003	ug/L		03/16/16 09:05	03/17/16 14:42	1
Total HxCDF	0.0000994	J,DX q	0.000050	0.0000004	ug/L		03/16/16 09:05	03/17/16 14:42	1
Total HpCDD	0.0000812	J,DX q	0.000050	0.0000003	ug/L		03/16/16 09:05	03/17/16 14:42	1
Total HpCDF	0.0000889	J,DX	0.000050	0.0000004	ug/L		03/16/16 09:05	03/17/16 14:42	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	56		25 - 164	03/16/16 09:05	03/17/16 14:42	1
13C-2,3,7,8-TCDF	56		24 - 169	03/16/16 09:05	03/17/16 14:42	1
13C-1,2,3,7,8-PeCDD	65		25 - 181	03/16/16 09:05	03/17/16 14:42	1
13C-1,2,3,7,8-PeCDF	57		24 - 185	03/16/16 09:05	03/17/16 14:42	1
13C-2,3,4,7,8-PeCDF	59		21 - 178	03/16/16 09:05	03/17/16 14:42	1
13C-1,2,3,4,7,8-HxCDD	64		32 - 141	03/16/16 09:05	03/17/16 14:42	1
13C-1,2,3,6,7,8-HxCDD	63		28 - 130	03/16/16 09:05	03/17/16 14:42	1
13C-1,2,3,4,7,8-HxCDF	63		26 - 152	03/16/16 09:05	03/17/16 14:42	1
13C-1,2,3,6,7,8-HxCDF	59		26 - 123	03/16/16 09:05	03/17/16 14:42	1
13C-1,2,3,7,8,9-HxCDF	62		29 - 147	03/16/16 09:05	03/17/16 14:42	1
13C-2,3,4,6,7,8-HxCDF	63		28 - 136	03/16/16 09:05	03/17/16 14:42	1
13C-1,2,3,4,6,7,8-HpCDD	60		23 - 140	03/16/16 09:05	03/17/16 14:42	1
13C-1,2,3,4,6,7,8-HpCDF	62		28 - 143	03/16/16 09:05	03/17/16 14:42	1
13C-1,2,3,4,7,8,9-HpCDF	54		26 - 138	03/16/16 09:05	03/17/16 14:42	1
13C-OCDD	55		17 - 157	03/16/16 09:05	03/17/16 14:42	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-141065-1

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

Lab Sample ID: MB 320-103479/1-A
Matrix: Water
Analysis Batch: 103731

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 103479

Surrogate	MB MB %Recovery Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	105	35 - 197	03/16/16 09:05	03/17/16 14:42	1

Lab Sample ID: LCS 320-103479/2-A
Matrix: Water
Analysis Batch: 103731

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 103479

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2,3,7,8-TCDD	0.000200	0.000208		ug/L		104	67 - 158
2,3,7,8-TCDF	0.000200	0.000218	MB	ug/L		109	75 - 158
1,2,3,7,8-PeCDD	0.00100	0.00104	MB	ug/L		104	70 - 142
1,2,3,7,8-PeCDF	0.00100	0.00113	MB	ug/L		113	80 - 134
2,3,4,7,8-PeCDF	0.00100	0.00112	MB	ug/L		112	68 - 160
1,2,3,4,7,8-HxCDD	0.00100	0.00110	MB	ug/L		110	70 - 164
1,2,3,6,7,8-HxCDD	0.00100	0.00111	MB	ug/L		111	76 - 134
1,2,3,7,8,9-HxCDD	0.00100	0.00107	MB	ug/L		107	64 - 162
1,2,3,4,7,8-HxCDF	0.00100	0.00113	MB	ug/L		113	72 - 134
1,2,3,6,7,8-HxCDF	0.00100	0.00114	MB	ug/L		114	84 - 130
1,2,3,7,8,9-HxCDF	0.00100	0.00116	MB	ug/L		116	78 - 130
2,3,4,6,7,8-HxCDF	0.00100	0.00116	MB	ug/L		116	70 - 156
1,2,3,4,6,7,8-HpCDD	0.00100	0.00110	MB	ug/L		110	70 - 140
1,2,3,4,6,7,8-HpCDF	0.00100	0.00108	MB	ug/L		108	82 - 122
1,2,3,4,7,8,9-HpCDF	0.00100	0.00114	MB	ug/L		114	78 - 138
OCDD	0.00200	0.00205	MB	ug/L		103	78 - 144
OCDF	0.00200	0.00193	MB	ug/L		97	63 - 170

Isotope Dilution	LCS LCS %Recovery Qualifier	Limits
13C-2,3,7,8-TCDD	63	20 - 175
13C-2,3,7,8-TCDF	60	22 - 152
13C-1,2,3,7,8-PeCDD	70	21 - 227
13C-1,2,3,7,8-PeCDF	63	21 - 192
13C-2,3,4,7,8-PeCDF	64	13 - 328
13C-1,2,3,4,7,8-HxCDD	75	21 - 193
13C-1,2,3,6,7,8-HxCDD	70	25 - 163
13C-1,2,3,4,7,8-HxCDF	73	19 - 202
13C-1,2,3,6,7,8-HxCDF	66	21 - 159
13C-1,2,3,7,8,9-HxCDF	70	17 - 205
13C-2,3,4,6,7,8-HxCDF	71	22 - 176
13C-1,2,3,4,6,7,8-HpCDD	69	26 - 166
13C-1,2,3,4,6,7,8-HpCDF	70	21 - 158
13C-1,2,3,4,7,8,9-HpCDF	62	20 - 186
13C-OCDD	64	13 - 199

Surrogate	LCS LCS %Recovery Qualifier	Limits
37Cl4-2,3,7,8-TCDD	102	35 - 197

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-141065-1

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

Lab Sample ID: LCSD 320-103479/3-A
Matrix: Water
Analysis Batch: 103731

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 103479

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2,3,7,8-TCDD	0.000200	0.000204		ug/L		102	67 - 158	2	50
2,3,7,8-TCDF	0.000200	0.000205	MB	ug/L		103	75 - 158	6	50
1,2,3,7,8-PeCDD	0.00100	0.00102	MB	ug/L		102	70 - 142	2	50
1,2,3,7,8-PeCDF	0.00100	0.00110	MB	ug/L		110	80 - 134	3	50
2,3,4,7,8-PeCDF	0.00100	0.00107	MB	ug/L		107	68 - 160	5	50
1,2,3,4,7,8-HxCDD	0.00100	0.00107	MB	ug/L		107	70 - 164	3	50
1,2,3,6,7,8-HxCDD	0.00100	0.00108	MB	ug/L		108	76 - 134	3	50
1,2,3,7,8,9-HxCDD	0.00100	0.00103	MB	ug/L		103	64 - 162	5	50
1,2,3,4,7,8-HxCDF	0.00100	0.00109	MB	ug/L		109	72 - 134	4	50
1,2,3,6,7,8-HxCDF	0.00100	0.00108	MB	ug/L		108	84 - 130	5	50
1,2,3,7,8,9-HxCDF	0.00100	0.00111	MB	ug/L		111	78 - 130	4	50
2,3,4,6,7,8-HxCDF	0.00100	0.00113	MB	ug/L		113	70 - 156	3	50
1,2,3,4,6,7,8-HpCDD	0.00100	0.00107	MB	ug/L		107	70 - 140	3	50
1,2,3,4,6,7,8-HpCDF	0.00100	0.00105	MB	ug/L		105	82 - 122	3	50
1,2,3,4,7,8,9-HpCDF	0.00100	0.00109	MB	ug/L		109	78 - 138	4	50
OCDD	0.00200	0.00204	MB	ug/L		102	78 - 144	1	50
OCDF	0.00200	0.00194	MB	ug/L		97	63 - 170	0	50

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	LCSD Limits
13C-2,3,7,8-TCDD	68		20 - 175
13C-2,3,7,8-TCDF	68		22 - 152
13C-1,2,3,7,8-PeCDD	77		21 - 227
13C-1,2,3,7,8-PeCDF	68		21 - 192
13C-2,3,4,7,8-PeCDF	71		13 - 328
13C-1,2,3,4,7,8-HxCDD	77		21 - 193
13C-1,2,3,6,7,8-HxCDD	73		25 - 163
13C-1,2,3,4,7,8-HxCDF	76		19 - 202
13C-1,2,3,6,7,8-HxCDF	70		21 - 159
13C-1,2,3,7,8,9-HxCDF	75		17 - 205
13C-2,3,4,6,7,8-HxCDF	73		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	73		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	73		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	66		20 - 186
13C-OCDD	67		13 - 199

Surrogate	LCSD %Recovery	LCSD Qualifier	LCSD Limits
37Cl4-2,3,7,8-TCDD	110		35 - 197

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

Lab Sample ID: MB 320-103479/1-A
Matrix: Water
Analysis Batch: 104027

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 103479

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF - RA	ND		0.000010	0.000016	ug/L		03/16/16 09:05	03/21/16 21:23	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-141065-1

<i>Isotope Dilution</i>	<i>MB</i>	<i>MB</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C-2,3,7,8-TCDF - RA	70	Qualifier	24 - 169	03/16/16 09:05	03/21/16 21:23	1

<i>Surrogate</i>	<i>MB</i>	<i>MB</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
37Cl4-2,3,7,8-TCDD - RA	105	Qualifier	35 - 197	03/16/16 09:05	03/21/16 21:23	1

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: MB 440-319311/1-A
Matrix: Water
Analysis Batch: 319687

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 319311

<i>Analyte</i>	<i>MB</i>	<i>MB</i>	<i>RL</i>	<i>MDL</i>	<i>Unit</i>	<i>D</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
Nickel	ND	Qualifier	10	5.0	ug/L	-	03/22/16 12:26	03/23/16 12:40	1
Zinc	ND	Qualifier	20	10	ug/L	-	03/22/16 12:26	03/23/16 12:40	1
Silver	ND	Qualifier	10	5.0	ug/L	-	03/22/16 12:26	03/23/16 12:40	1

Lab Sample ID: LCS 440-319311/2-A
Matrix: Water
Analysis Batch: 319687

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 319311

<i>Analyte</i>	<i>Spike</i>	<i>LCS</i>	<i>LCS</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>Limits</i>
Nickel	500	Result	556	ug/L	-	111	85 - 115
Zinc	500	Result	554	ug/L	-	111	85 - 115
Silver	250	Result	266	ug/L	-	106	85 - 115

Lab Sample ID: 440-141065-1 MS
Matrix: Water
Analysis Batch: 319687

Client Sample ID: Outfall009_20160312_Comp
Prep Type: Total Recoverable
Prep Batch: 319311

<i>Analyte</i>	<i>Sample</i>	<i>Sample</i>	<i>Spike</i>	<i>MS</i>	<i>MS</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>Limits</i>
Nickel	ND	Qualifier	500	Result	565	ug/L	-	113	70 - 130
Zinc	41	Qualifier	500	Result	601	ug/L	-	112	70 - 130
Silver	ND	Qualifier	250	Result	274	ug/L	-	109	70 - 130

Lab Sample ID: 440-141065-1 MSD
Matrix: Water
Analysis Batch: 319687

Client Sample ID: Outfall009_20160312_Comp
Prep Type: Total Recoverable
Prep Batch: 319311

<i>Analyte</i>	<i>Sample</i>	<i>Sample</i>	<i>Spike</i>	<i>MSD</i>	<i>MSD</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>Limits</i>	<i>RPD</i>	<i>Limit</i>
Nickel	ND	Qualifier	500	Result	561	ug/L	-	112	70 - 130	1	20
Zinc	41	Qualifier	500	Result	555	ug/L	-	103	70 - 130	8	20
Silver	ND	Qualifier	250	Result	268	ug/L	-	107	70 - 130	2	20

Lab Sample ID: MB 440-317501/1-E
Matrix: Water
Analysis Batch: 318901

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 318522

<i>Analyte</i>	<i>MB</i>	<i>MB</i>	<i>RL</i>	<i>MDL</i>	<i>Unit</i>	<i>D</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
Nickel	ND	Qualifier	10	5.0	ug/L	-	03/18/16 11:01	03/20/16 18:06	1
Zinc	ND	Qualifier	20	10	ug/L	-	03/18/16 11:01	03/20/16 18:06	1
Silver	ND	Qualifier	10	5.0	ug/L	-	03/18/16 11:01	03/20/16 18:06	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-141065-1

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

Lab Sample ID: LCS 440-317501/2-E
Matrix: Water
Analysis Batch: 318901

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 318522

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Nickel	500	481		ug/L		96	85 - 115
Zinc	500	483		ug/L		97	85 - 115
Silver	250	231		ug/L		92	85 - 115

Lab Sample ID: 440-141065-2 MS
Matrix: Water
Analysis Batch: 318901

Client Sample ID: Outfall009_20160312_Comp_F
Prep Type: Dissolved
Prep Batch: 318522

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Nickel	ND		500	475		ug/L		95	70 - 130
Zinc	ND		500	472		ug/L		94	70 - 130
Silver	ND		250	224		ug/L		90	70 - 130

Lab Sample ID: 440-141065-2 MSD
Matrix: Water
Analysis Batch: 318901

Client Sample ID: Outfall009_20160312_Comp_F
Prep Type: Dissolved
Prep Batch: 318522

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Nickel	ND		500	484		ug/L		97	70 - 130	2	20
Zinc	ND		500	481		ug/L		96	70 - 130	2	20
Silver	ND		250	237		ug/L		95	70 - 130	6	20

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 440-320460/1-A
Matrix: Water
Analysis Batch: 320693

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 320460

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		03/27/16 11:57	03/28/16 14:13	1
Copper	ND		2.0	0.50	ug/L		03/27/16 11:57	03/28/16 14:13	1
Lead	ND		1.0	0.50	ug/L		03/27/16 11:57	03/28/16 14:13	1
Antimony	ND		2.0	0.50	ug/L		03/27/16 11:57	03/28/16 14:13	1
Selenium	ND		2.0	0.50	ug/L		03/27/16 11:57	03/28/16 14:13	1
Thallium	ND		1.0	0.50	ug/L		03/27/16 11:57	03/28/16 14:13	1

Lab Sample ID: LCS 440-320460/2-A
Matrix: Water
Analysis Batch: 320693

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 320460

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Cadmium	80.0	73.6		ug/L		92	85 - 115
Copper	80.0	71.8		ug/L		90	85 - 115
Lead	80.0	75.2		ug/L		94	85 - 115
Antimony	80.0	80.1		ug/L		100	85 - 115
Selenium	80.0	75.5		ug/L		94	85 - 115
Thallium	80.0	74.7		ug/L		93	85 - 115

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-141065-1

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

Lab Sample ID: 440-141065-1 MS
Matrix: Water
Analysis Batch: 320693

Client Sample ID: Outfall009_20160312_Comp
Prep Type: Total Recoverable
Prep Batch: 320460

Analyte	Sample	Sample	Spike	MS		Unit	D	%Rec	%Rec.	
	Result	Qualifier		Result	Qualifier				Limits	Limits
Cadmium	ND		80.0	73.6		ug/L		92	70 - 130	
Copper	3.5		80.0	75.4		ug/L		90	70 - 130	
Lead	0.74	J,DX	80.0	76.7		ug/L		95	70 - 130	
Antimony	0.56	J,DX	80.0	81.6		ug/L		101	70 - 130	
Selenium	ND		80.0	73.2		ug/L		92	70 - 130	
Thallium	ND		80.0	75.0		ug/L		94	70 - 130	

Lab Sample ID: 440-141065-1 MSD
Matrix: Water
Analysis Batch: 320693

Client Sample ID: Outfall009_20160312_Comp
Prep Type: Total Recoverable
Prep Batch: 320460

Analyte	Sample	Sample	Spike	MSD		Unit	D	%Rec	%Rec.		RPD	
	Result	Qualifier		Result	Qualifier				Limits	RPD	Limit	
Cadmium	ND		80.0	75.0		ug/L		94	70 - 130	2	20	
Copper	3.5		80.0	75.3		ug/L		90	70 - 130	0	20	
Lead	0.74	J,DX	80.0	77.2		ug/L		96	70 - 130	1	20	
Antimony	0.56	J,DX	80.0	82.0		ug/L		102	70 - 130	0	20	
Selenium	ND		80.0	72.8		ug/L		91	70 - 130	1	20	
Thallium	ND		80.0	75.3		ug/L		94	70 - 130	0	20	

Lab Sample ID: MB 440-323064/1-A
Matrix: Water
Analysis Batch: 323342

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 323064

Analyte	MB		RL	MDL	Unit	D	Prepared		Analyzed		Dil Fac
	Result	Qualifier					Time	Time	Time	Time	
Cadmium	ND		1.0	0.25	ug/L		04/08/16 12:58	04/10/16 14:04			1
Copper	ND		2.0	0.50	ug/L		04/08/16 12:58	04/10/16 14:04			1
Lead	ND		1.0	0.50	ug/L		04/08/16 12:58	04/10/16 14:04			1
Antimony	ND		2.0	0.50	ug/L		04/08/16 12:58	04/10/16 14:04			1
Selenium	ND		2.0	0.50	ug/L		04/08/16 12:58	04/10/16 14:04			1
Thallium	ND		1.0	0.50	ug/L		04/08/16 12:58	04/10/16 14:04			1

Lab Sample ID: LCS 440-323064/2-A
Matrix: Water
Analysis Batch: 323342

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 323064

Analyte	Spike	LCS		Unit	D	%Rec	%Rec.	
		Added	Result				Qualifier	Limits
Cadmium	80.0	77.6		ug/L		97	85 - 115	
Copper	80.0	80.1		ug/L		100	85 - 115	
Lead	80.0	75.0		ug/L		94	85 - 115	
Antimony	80.0	80.5		ug/L		101	85 - 115	
Selenium	80.0	79.4		ug/L		99	85 - 115	
Thallium	80.0	73.9		ug/L		92	85 - 115	

Lab Sample ID: 440-141065-1 MS
Matrix: Water
Analysis Batch: 323342

Client Sample ID: Outfall009_20160312_Comp
Prep Type: Total Recoverable
Prep Batch: 323064

Analyte	Sample	Sample	Spike	MS		Unit	D	%Rec	%Rec.	
	Result	Qualifier		Result	Qualifier				Limits	Limits
Cadmium	ND		80.0	76.9		ug/L		96	70 - 130	

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-141065-1

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

Lab Sample ID: 440-141065-1 MS
Matrix: Water
Analysis Batch: 323342

Client Sample ID: Outfall009_20160312_Comp
Prep Type: Total Recoverable
Prep Batch: 323064

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Copper	3.1		80.0	82.1		ug/L		99	70 - 130
Lead	0.70	J,DX	80.0	74.9		ug/L		93	70 - 130
Antimony	0.51	J,DX	80.0	79.1		ug/L		98	70 - 130
Selenium	ND		80.0	77.6		ug/L		97	70 - 130
Thallium	ND		80.0	72.8		ug/L		91	70 - 130

Lab Sample ID: 440-141065-1 MSD
Matrix: Water
Analysis Batch: 323342

Client Sample ID: Outfall009_20160312_Comp
Prep Type: Total Recoverable
Prep Batch: 323064

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Cadmium	ND		80.0	76.6		ug/L		96	70 - 130	0	20
Copper	3.1		80.0	81.6		ug/L		98	70 - 130	1	20
Lead	0.70	J,DX	80.0	75.2		ug/L		93	70 - 130	0	20
Antimony	0.51	J,DX	80.0	78.8		ug/L		98	70 - 130	0	20
Selenium	ND		80.0	77.0		ug/L		96	70 - 130	1	20
Thallium	ND		80.0	73.2		ug/L		92	70 - 130	1	20

Lab Sample ID: MB 440-323848/1-B
Matrix: Water
Analysis Batch: 324114

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 323855

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		04/12/16 21:48	04/13/16 17:31	1
Copper	ND		2.0	0.50	ug/L		04/12/16 21:48	04/13/16 17:31	1
Lead	ND		1.0	0.50	ug/L		04/12/16 21:48	04/13/16 17:31	1
Antimony	ND		2.0	0.50	ug/L		04/12/16 21:48	04/13/16 17:31	1
Selenium	ND		2.0	0.50	ug/L		04/12/16 21:48	04/13/16 17:31	1
Thallium	ND		1.0	0.50	ug/L		04/12/16 21:48	04/13/16 17:31	1

Lab Sample ID: LCS 440-323848/2-B
Matrix: Water
Analysis Batch: 324114

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 323855

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Cadmium	80.0	76.0		ug/L		95	85 - 115
Copper	80.0	75.7		ug/L		95	85 - 115
Lead	80.0	75.5		ug/L		94	85 - 115
Antimony	80.0	79.1		ug/L		99	85 - 115
Selenium	80.0	71.9		ug/L		90	85 - 115
Thallium	80.0	75.9		ug/L		95	85 - 115

Lab Sample ID: 440-141065-2 MS
Matrix: Water
Analysis Batch: 324114

Client Sample ID: Outfall009_20160312_Comp_F
Prep Type: Dissolved
Prep Batch: 323855

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Cadmium	ND		80.0	70.7		ug/L		88	70 - 130
Copper	2.6		80.0	75.5		ug/L		91	70 - 130

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-141065-1

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

Lab Sample ID: 440-141065-2 MS
Matrix: Water
Analysis Batch: 324114

Client Sample ID: Outfall009_20160312_Comp_F
Prep Type: Dissolved
Prep Batch: 323855

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Lead	ND		80.0	72.3		ug/L		90	70 - 130
Antimony	ND		80.0	75.6		ug/L		95	70 - 130
Selenium	ND		80.0	63.9		ug/L		80	70 - 130
Thallium	ND		80.0	73.0		ug/L		91	70 - 130

Lab Sample ID: 440-141065-2 MSD
Matrix: Water
Analysis Batch: 324114

Client Sample ID: Outfall009_20160312_Comp_F
Prep Type: Dissolved
Prep Batch: 323855

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Cadmium	ND		80.0	72.5		ug/L		91	70 - 130	2	20
Copper	2.6		80.0	74.8		ug/L		90	70 - 130	1	20
Lead	ND		80.0	72.6		ug/L		91	70 - 130	1	20
Antimony	ND		80.0	76.6		ug/L		96	70 - 130	1	20
Selenium	ND		80.0	64.5		ug/L		81	70 - 130	1	20
Thallium	ND		80.0	73.7		ug/L		92	70 - 130	1	20

Method: 245.1 - Mercury (CVAA)

Lab Sample ID: MB 440-318809/1-A
Matrix: Water
Analysis Batch: 319030

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 318809

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		03/20/16 11:21	03/21/16 01:30	1

Lab Sample ID: LCS 440-318809/2-A
Matrix: Water
Analysis Batch: 319030

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 318809

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	8.00	7.59		ug/L		95	85 - 115

Lab Sample ID: 440-141065-1 MS
Matrix: Water
Analysis Batch: 319030

Client Sample ID: Outfall009_20160312_Comp
Prep Type: Total/NA
Prep Batch: 318809

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Mercury	ND		8.00	7.09		ug/L		89	70 - 130

Lab Sample ID: 440-141065-1 MSD
Matrix: Water
Analysis Batch: 319030

Client Sample ID: Outfall009_20160312_Comp
Prep Type: Total/NA
Prep Batch: 318809

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	ND		8.00	7.37		ug/L		92	70 - 130	4	20

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-141065-1

Method: 245.1 - Mercury (CVAA) (Continued)

Lab Sample ID: MB 440-318853/1-A
Matrix: Water
Analysis Batch: 319029

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 318853

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		03/20/16 13:52	03/20/16 21:52	1

Lab Sample ID: LCS 440-318853/2-A
Matrix: Water
Analysis Batch: 319029

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 318853

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	8.00	7.49		ug/L		94	85 - 115

Lab Sample ID: 440-141065-2 MS
Matrix: Water
Analysis Batch: 319029

Client Sample ID: Outfall009_20160312_Comp_F
Prep Type: Dissolved
Prep Batch: 318853

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	ND	QP	8.00	7.23		ug/L		90	70 - 130

Lab Sample ID: 440-141065-2 MSD
Matrix: Water
Analysis Batch: 319029

Client Sample ID: Outfall009_20160312_Comp_F
Prep Type: Dissolved
Prep Batch: 318853

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	ND	QP	8.00	7.02		ug/L		88	70 - 130	3	20

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

Lab Sample ID: MB 440-318444/1
Matrix: Water
Analysis Batch: 318444

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10	5.0	mg/L			03/18/16 06:07	1

Lab Sample ID: LCS 440-318444/2
Matrix: Water
Analysis Batch: 318444

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	1000	956		mg/L		96	90 - 110

Lab Sample ID: 440-141065-1 DU
Matrix: Water
Analysis Batch: 318444

Client Sample ID: Outfall009_20160312_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	85		84.0		mg/L		1	5

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-141065-1

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

Lab Sample ID: MB 440-317433/1-A
Matrix: Water
Analysis Batch: 318026

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 317433

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	ND		5.0	2.5	ug/L		03/14/16 21:37	03/16/16 18:17	1

Lab Sample ID: LCS 440-317433/2-A
Matrix: Water
Analysis Batch: 318026

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 317433

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Cyanide, Total	100	104		ug/L		104	90 - 110

Lab Sample ID: LCSD 440-317433/3-A
Matrix: Water
Analysis Batch: 318026

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 317433

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Cyanide, Total	100	97.0		ug/L		97	90 - 110	7	10

Lab Sample ID: 440-141065-1 MS
Matrix: Water
Analysis Batch: 318026

Client Sample ID: Outfall009_20160312_Comp
Prep Type: Total/NA
Prep Batch: 317433

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Cyanide, Total	ND		100	102		ug/L		102	70 - 115

Lab Sample ID: 440-141065-1 MSD
Matrix: Water
Analysis Batch: 318026

Client Sample ID: Outfall009_20160312_Comp
Prep Type: Total/NA
Prep Batch: 317433

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Cyanide, Total	ND		100	105		ug/L		105	70 - 115	4	15

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-141065-1

HPLC/IC

Analysis Batch: 317223

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-141065-1	Outfall009_20160312_Comp	Total/NA	Water	300.0	
440-141065-1 MS	Outfall009_20160312_Comp	Total/NA	Water	300.0	
440-141065-1 MSD	Outfall009_20160312_Comp	Total/NA	Water	300.0	
LCS 440-317223/2	Lab Control Sample	Total/NA	Water	300.0	
MB 440-317223/1	Method Blank	Total/NA	Water	300.0	

Analysis Batch: 320482

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-141065-1	Outfall009_20160312_Comp	Total/NA	Water	NO3NO2 Calc	

Specialty Organics

Prep Batch: 103479

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-141065-1	Outfall009_20160312_Comp	Total/NA	Water	1613B	
LCS 320-103479/2-A	Lab Control Sample	Total/NA	Water	1613B	
LCS 320-103479/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	
MB 320-103479/1-A	Method Blank	Total/NA	Water	1613B	
MB 320-103479/1-A - RA	Method Blank	Total/NA	Water	1613B	

Analysis Batch: 103731

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 320-103479/2-A	Lab Control Sample	Total/NA	Water	1613B	103479
LCS 320-103479/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	103479
MB 320-103479/1-A	Method Blank	Total/NA	Water	1613B	103479

Analysis Batch: 103733

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-141065-1	Outfall009_20160312_Comp	Total/NA	Water	1613B	103479

Analysis Batch: 104027

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 320-103479/1-A - RA	Method Blank	Total/NA	Water	1613B	103479

Metals

Filtration Batch: 317501

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-141065-2	Outfall009_20160312_Comp_F	Dissolved	Water	FILTRATION	
440-141065-2 MS	Outfall009_20160312_Comp_F	Dissolved	Water	FILTRATION	
440-141065-2 MSD	Outfall009_20160312_Comp_F	Dissolved	Water	FILTRATION	
LCS 440-317501/2-E	Lab Control Sample	Dissolved	Water	FILTRATION	
MB 440-317501/1-E	Method Blank	Dissolved	Water	FILTRATION	

Prep Batch: 318522

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-141065-2	Outfall009_20160312_Comp_F	Dissolved	Water	200.2	317501
440-141065-2 MS	Outfall009_20160312_Comp_F	Dissolved	Water	200.2	317501
440-141065-2 MSD	Outfall009_20160312_Comp_F	Dissolved	Water	200.2	317501
LCS 440-317501/2-E	Lab Control Sample	Dissolved	Water	200.2	317501

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-141065-1

Metals (Continued)

Prep Batch: 318522 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 440-317501/1-E	Method Blank	Dissolved	Water	200.2	317501

Prep Batch: 318809

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-141065-1	Outfall009_20160312_Comp	Total/NA	Water	245.1	
440-141065-1 MS	Outfall009_20160312_Comp	Total/NA	Water	245.1	
440-141065-1 MSD	Outfall009_20160312_Comp	Total/NA	Water	245.1	
LCS 440-318809/2-A	Lab Control Sample	Total/NA	Water	245.1	
MB 440-318809/1-A	Method Blank	Total/NA	Water	245.1	

Prep Batch: 318853

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-141065-2	Outfall009_20160312_Comp_F	Dissolved	Water	245.1	317501
440-141065-2 MS	Outfall009_20160312_Comp_F	Dissolved	Water	245.1	317501
440-141065-2 MSD	Outfall009_20160312_Comp_F	Dissolved	Water	245.1	317501
LCS 440-318853/2-A	Lab Control Sample	Total/NA	Water	245.1	
MB 440-318853/1-A	Method Blank	Total/NA	Water	245.1	

Analysis Batch: 318901

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-141065-2	Outfall009_20160312_Comp_F	Dissolved	Water	200.7 Rev 4.4	318522
440-141065-2 MS	Outfall009_20160312_Comp_F	Dissolved	Water	200.7 Rev 4.4	318522
440-141065-2 MSD	Outfall009_20160312_Comp_F	Dissolved	Water	200.7 Rev 4.4	318522
LCS 440-317501/2-E	Lab Control Sample	Dissolved	Water	200.7 Rev 4.4	318522
MB 440-317501/1-E	Method Blank	Dissolved	Water	200.7 Rev 4.4	318522

Analysis Batch: 319029

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-141065-2	Outfall009_20160312_Comp_F	Dissolved	Water	245.1	318853
440-141065-2 MS	Outfall009_20160312_Comp_F	Dissolved	Water	245.1	318853
440-141065-2 MSD	Outfall009_20160312_Comp_F	Dissolved	Water	245.1	318853
LCS 440-318853/2-A	Lab Control Sample	Total/NA	Water	245.1	318853
MB 440-318853/1-A	Method Blank	Total/NA	Water	245.1	318853

Analysis Batch: 319030

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-141065-1	Outfall009_20160312_Comp	Total/NA	Water	245.1	318809
440-141065-1 MS	Outfall009_20160312_Comp	Total/NA	Water	245.1	318809
440-141065-1 MSD	Outfall009_20160312_Comp	Total/NA	Water	245.1	318809
LCS 440-318809/2-A	Lab Control Sample	Total/NA	Water	245.1	318809
MB 440-318809/1-A	Method Blank	Total/NA	Water	245.1	318809

Prep Batch: 319311

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-141065-1	Outfall009_20160312_Comp	Total Recoverable	Water	200.2	
440-141065-1 MS	Outfall009_20160312_Comp	Total Recoverable	Water	200.2	
440-141065-1 MSD	Outfall009_20160312_Comp	Total Recoverable	Water	200.2	
LCS 440-319311/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
MB 440-319311/1-A	Method Blank	Total Recoverable	Water	200.2	

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-141065-1

Metals (Continued)

Analysis Batch: 319687

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-141065-1	Outfall009_20160312_Comp	Total Recoverable	Water	200.7 Rev 4.4	319311
440-141065-1 MS	Outfall009_20160312_Comp	Total Recoverable	Water	200.7 Rev 4.4	319311
440-141065-1 MSD	Outfall009_20160312_Comp	Total Recoverable	Water	200.7 Rev 4.4	319311
LCS 440-319311/2-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	319311
MB 440-319311/1-A	Method Blank	Total Recoverable	Water	200.7 Rev 4.4	319311

Prep Batch: 320460

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-141065-1	Outfall009_20160312_Comp	Total Recoverable	Water	200.2	
440-141065-1 MS	Outfall009_20160312_Comp	Total Recoverable	Water	200.2	
440-141065-1 MSD	Outfall009_20160312_Comp	Total Recoverable	Water	200.2	
LCS 440-320460/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
MB 440-320460/1-A	Method Blank	Total Recoverable	Water	200.2	

Analysis Batch: 320693

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-141065-1	Outfall009_20160312_Comp	Total Recoverable	Water	200.8	320460
440-141065-1 MS	Outfall009_20160312_Comp	Total Recoverable	Water	200.8	320460
440-141065-1 MSD	Outfall009_20160312_Comp	Total Recoverable	Water	200.8	320460
LCS 440-320460/2-A	Lab Control Sample	Total Recoverable	Water	200.8	320460
MB 440-320460/1-A	Method Blank	Total Recoverable	Water	200.8	320460

Prep Batch: 323064

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-141065-1	Outfall009_20160312_Comp	Total Recoverable	Water	200.2	
440-141065-1 MS	Outfall009_20160312_Comp	Total Recoverable	Water	200.2	
440-141065-1 MSD	Outfall009_20160312_Comp	Total Recoverable	Water	200.2	
LCS 440-323064/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
MB 440-323064/1-A	Method Blank	Total Recoverable	Water	200.2	

Analysis Batch: 323342

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-141065-1	Outfall009_20160312_Comp	Total Recoverable	Water	200.8	323064
440-141065-1 MS	Outfall009_20160312_Comp	Total Recoverable	Water	200.8	323064
440-141065-1 MSD	Outfall009_20160312_Comp	Total Recoverable	Water	200.8	323064
LCS 440-323064/2-A	Lab Control Sample	Total Recoverable	Water	200.8	323064
MB 440-323064/1-A	Method Blank	Total Recoverable	Water	200.8	323064

Filtration Batch: 323848

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-141065-2	Outfall009_20160312_Comp_F	Dissolved	Water	FILTRATION	
440-141065-2 MS	Outfall009_20160312_Comp_F	Dissolved	Water	FILTRATION	
440-141065-2 MSD	Outfall009_20160312_Comp_F	Dissolved	Water	FILTRATION	
LCS 440-323848/2-B	Lab Control Sample	Dissolved	Water	FILTRATION	
MB 440-323848/1-B	Method Blank	Dissolved	Water	FILTRATION	

Prep Batch: 323855

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-141065-2	Outfall009_20160312_Comp_F	Dissolved	Water	200.2	323848
440-141065-2 MS	Outfall009_20160312_Comp_F	Dissolved	Water	200.2	323848
440-141065-2 MSD	Outfall009_20160312_Comp_F	Dissolved	Water	200.2	323848

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-141065-1

Metals (Continued)

Prep Batch: 323855 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 440-323848/2-B	Lab Control Sample	Dissolved	Water	200.2	323848
MB 440-323848/1-B	Method Blank	Dissolved	Water	200.2	323848

Analysis Batch: 324114

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-141065-2	Outfall009_20160312_Comp_F	Dissolved	Water	200.8	323855
440-141065-2 MS	Outfall009_20160312_Comp_F	Dissolved	Water	200.8	323855
440-141065-2 MSD	Outfall009_20160312_Comp_F	Dissolved	Water	200.8	323855
LCS 440-323848/2-B	Lab Control Sample	Dissolved	Water	200.8	323855
MB 440-323848/1-B	Method Blank	Dissolved	Water	200.8	323855

General Chemistry

Prep Batch: 317433

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-141065-1	Outfall009_20160312_Comp	Total/NA	Water	Distill/CN	
440-141065-1 MS	Outfall009_20160312_Comp	Total/NA	Water	Distill/CN	
440-141065-1 MSD	Outfall009_20160312_Comp	Total/NA	Water	Distill/CN	
LCS 440-317433/2-A	Lab Control Sample	Total/NA	Water	Distill/CN	
LCSD 440-317433/3-A	Lab Control Sample Dup	Total/NA	Water	Distill/CN	
MB 440-317433/1-A	Method Blank	Total/NA	Water	Distill/CN	

Analysis Batch: 318026

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-141065-1	Outfall009_20160312_Comp	Total/NA	Water	SM 4500 CN E	317433
440-141065-1 MS	Outfall009_20160312_Comp	Total/NA	Water	SM 4500 CN E	317433
440-141065-1 MSD	Outfall009_20160312_Comp	Total/NA	Water	SM 4500 CN E	317433
LCS 440-317433/2-A	Lab Control Sample	Total/NA	Water	SM 4500 CN E	317433
LCSD 440-317433/3-A	Lab Control Sample Dup	Total/NA	Water	SM 4500 CN E	317433
MB 440-317433/1-A	Method Blank	Total/NA	Water	SM 4500 CN E	317433

Analysis Batch: 318444

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-141065-1	Outfall009_20160312_Comp	Total/NA	Water	SM 2540C	
440-141065-1 DU	Outfall009_20160312_Comp	Total/NA	Water	SM 2540C	
LCS 440-318444/2	Lab Control Sample	Total/NA	Water	SM 2540C	
MB 440-318444/1	Method Blank	Total/NA	Water	SM 2540C	

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-141065-1

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.

Metals

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
QP	Holding time Immediate. Analyzed as close to receipt as possible

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
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
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)

Certification Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-141065-1

Laboratory: TestAmerica Irvine

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

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-16
Arizona	State Program	9	AZ0671	10-13-16
California	LA Cty Sanitation Districts	9	10256	01-31-17 *
California	State Program	9	CA ELAP 2706	06-30-16
Guam	State Program	9	Cert. No. 12.002r	01-23-17
Hawaii	State Program	9	N/A	01-29-17
Kansas	NELAP Secondary AB	7	E-10420	07-31-16
Nevada	State Program	9	CA015312016-2	07-31-16
New Mexico	State Program	6	N/A	01-29-17
Northern Mariana Islands	State Program	9	MP0002	01-29-16 *
Oregon	NELAP	10	4028	01-29-17
USDA	Federal		P330-09-00080	07-08-18
Washington	State Program	10	C900	09-03-16

Laboratory: TestAmerica Sacramento

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

Authority	Program	EPA Region	Certification ID	Expiration Date
A2LA	DoD ELAP		2928-01	01-31-17
Alaska (UST)	State Program	10	UST-055	12-18-16
Arizona	State Program	9	AZ0708	08-11-16
Arkansas DEQ	State Program	6	88-0691	06-17-16
California	State Program	9	2897	01-31-17
Colorado	State Program	8	CA00044	08-31-16
Connecticut	State Program	1	PH-0691	06-30-17
Florida	NELAP	4	E87570	06-30-16
Hawaii	State Program	9	N/A	01-31-17
Illinois	NELAP	5	200060	03-17-17
Kansas	NELAP	7	E-10375	05-31-16
Louisiana	NELAP	6	30612	06-30-16
Michigan	State Program	5	9947	01-31-18
Nevada	State Program	9	CA00044	07-31-16
New Jersey	NELAP	2	CA005	06-30-16
New York	NELAP	2	11666	04-01-17
Oregon	NELAP	10	4040	01-29-17
Pennsylvania	NELAP	3	68-01272	03-31-17
Texas	NELAP	6	T104704399	05-31-16
US Fish & Wildlife	Federal		LE148388-0	10-31-16
USDA	Federal		P330-11-00436	12-30-17
USEPA UCMR	Federal	1	CA00044	11-06-16
Utah	NELAP	8	CA00044	02-28-17
Virginia	NELAP Secondary AB	3	460278	03-14-17
Washington	State Program	10	C581	05-04-16
West Virginia (DW)	State Program	3	9930C	12-31-16
Wyoming	State Program	8	8TMS-L	01-29-17

* Certification renewal pending - certification considered valid.

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-141065-1

Login Number: 141065

List Number: 1

Creator: Avila, Stephanie 1

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	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?	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 <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-141065-1

Login Number: 141065

List Number: 2

Creator: Hytrek, Cheryl

List Source: TestAmerica Sacramento

List Creation: 03/15/16 02:41 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	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	
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.	False	Received extra samples not listed on COC.
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: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-141065-1

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

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (20-175)	TCDD (25-164)	TCDF (22-152)	TCDF (24-169)	PeCDD (21-227)	PeCDD (25-181)	PeCDF1 (21-192)	PeCDF1 (24-185)
440-141065-1	Outfall009_20160312_Comp		65		64		70		64
MB 320-103479/1-A	Method Blank		56		56		65		57
MB 320-103479/1-A - RA	Method Blank				70				

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PeCDF2 (13-328)	PeCDF2 (21-178)	HxCDD1 (21-193)	HxCDD1 (32-141)	HxCDD2 (25-163)	HxCDD2 (28-130)	HxCDF1 (19-202)	HxCDF1 (26-152)
440-141065-1	Outfall009_20160312_Comp		64		72		71		74
MB 320-103479/1-A	Method Blank		59		64		63		63
MB 320-103479/1-A - RA	Method Blank								

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (21-159)	HxCDF2 (26-123)	HxCDF4 (17-205)	HxCDF4 (29-147)	HxCDF3 (22-176)	HxCDF3 (28-136)	HpCDD (23-140)	HpCDD (26-166)
440-141065-1	Outfall009_20160312_Comp		69		72		72	74	
MB 320-103479/1-A	Method Blank		59		62		63	60	
MB 320-103479/1-A - RA	Method Blank								

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HpCDF1 (21-158)	HpCDF1 (28-143)	HpCDF2 (20-186)	HpCDF2 (26-138)	OCDD (13-199)	OCDD (17-157)		
440-141065-1	Outfall009_20160312_Comp		72		65		64		
MB 320-103479/1-A	Method Blank		62		54		55		
MB 320-103479/1-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
- PeCDF1 = 13C-1,2,3,7,8-PeCDF
- PeCDF2 = 13C-2,3,4,7,8-PeCDF
- HxCDD1 = 13C-1,2,3,4,7,8-HxCDD
- HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
- HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
- HxCDF2 = 13C-1,2,3,6,7,8-HxCDF
- HxCDF4 = 13C-1,2,3,7,8,9-HxCDF
- HxCDF3 = 13C-2,3,4,6,7,8-HxCDF
- HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
- HpCDF1 = 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)

Lab Sample ID	Client Sample ID	TCDD (20-175)	TCDF (22-152)	PeCDD (21-227)	PeCDF1 (21-192)	PeCDF2 (13-328)	HxCDD1 (21-193)	HxCDD2 (25-163)	HxCDF1 (19-202)
LCS 320-103479/2-A	Lab Control Sample	63	60	70	63	64	75	70	73
LCSD 320-103479/3-A	Lab Control Sample Dup	68	68	77	68	71	77	73	76

TestAmerica Irvine

Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-141065-1

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

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (21-159)	HxCDF4 (17-205)	HxCDF3 (22-176)	HpCDD (26-166)	HpCDF1 (21-158)	HpCDF2 (20-186)	OCDD (13-199)
LCS 320-103479/2-A	Lab Control Sample	66	70	71	69	70	62	64
LCSD 320-103479/3-A	Lab Control Sample Dup	70	75	73	73	73	66	67

Surrogate Legend

- TCDD = 13C-2,3,7,8-TCDD
- TCDF = 13C-2,3,7,8-TCDF
- PeCDD = 13C-1,2,3,7,8-PeCDD
- PeCDF1 = 13C-1,2,3,7,8-PeCDF
- PeCDF2 = 13C-2,3,4,7,8-PeCDF
- HxCDD1 = 13C-1,2,3,4,7,8-HxCDD
- HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
- HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
- HxCDF2 = 13C-1,2,3,6,7,8-HxCDF
- HxCDF4 = 13C-1,2,3,7,8,9-HxCDF
- HxCDF3 = 13C-2,3,4,6,7,8-HxCDF
- HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
- HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF
- HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
- OCDD = 13C-OCDD

DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-141065-2

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

April 18, 2016

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





TABLE OF CONTENTS

I. INTRODUCTION..... 1

II. Sample Management..... 2

IV. VARIOUS EPA METHODS —Radionuclides..... 6

 IV.1. Holding Times:..... 6

 IV.2. Calibration: 6

 IV.3. Quality Control Samples 6

 IV.3.1. Method Blanks 6

 IV.3.2. Laboratory Control Samples: 6

 IV.3.3. Laboratory Duplicates:..... 6

 IV.3.4. Matrix Spike/Matrix Spike Duplicate: 6

 IV.4. Sample Result Verification:..... 7

 IV.5. Field QC Samples: 7

 IV.5.1. Field Blanks and Equipment Rinsates: 7

 IV.5.2. Field Duplicates:..... 7

TABLES

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



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-141065-2

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall009_20160312_ Comp	440-141065-1	N/A	Water	3/12/2016 9:00:00 AM	E900, E901.1, E903.0, E904.0, E905.0 E906.0, HASL-300U Mod, RADIUM



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-141065-2:

- The laboratories received the sample in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratories received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs.
- Several corrections to the COCs were not initialed or dated.
- According to the laboratories' sample receipt checklists, custody seals were intact.



TABLE 2 - DATA QUALIFIER REFERENCE

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



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	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.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) 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.
B	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.
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.
P	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.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



IV. VARIOUS EPA METHODS — RADIONUCLIDES

Elizabeth Wessling of MEC^X reviewed the SDG on April 18, 2016

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *EPA Methods 900.0, 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)*.

IV.1. HOLDING TIMES:

The tritium sample was analyzed within 180 days of collection. Remaining aliquots were prepared within the five-day analytical holding time for unpreserved samples.

IV.2. CALIBRATION:

The laboratory calibration information included the standard certificates and applicable preparation/dilutions logs for NIST-traceability.

The gross alpha, radium-226 and tritium detector efficiencies were less than 20%; therefore, the nondetected results for these analytes including combined radium were qualified as estimated (UJ) in the sample. The remaining detector efficiencies were greater than 20%. Carrier/tracer recoveries were within the laboratory control limits of 40-110%. All calibration checks were acceptable.

IV.3. QUALITY CONTROL SAMPLES

IV.3.1. METHOD BLANKS

There were no analytes detected in the method blanks and no qualifications were required with the exception of total uranium and gross beta. Total uranium was not different from the method blank at the 1% level of confidence and was therefore qualified as a nondetect (U) in the site sample. Gross Beta was not different from the method blank at the 5% level of confidence and was therefore qualified as an estimated detect (J) in the site sample.

IV.3.2. LABORATORY CONTROL SAMPLES:

The recoveries were within laboratory-established control limits with the exception of Ra-228. Ra-228 was recovered above the control limits but no qualifications were required since Ra-228 was not detected in the site samples.

IV.3.3. LABORATORY DUPLICATES:

Laboratory duplicate analyses were performed on the sample in this SDG for cesium-137 and potassium-40. The relative error ratio was within the laboratory control limit of ≤ 1 .

IV.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE:

A matrix spike (MS)/MSD analysis was performed for the total uranium, gross alpha, gross beta, Ra-226, Ra-228, Sr-90 and tritium analysis. MSD analyses were performed for gross alpha, gross beta, Ra-226, and Sr-90. Recoveries and RPDs were within QC limits.

**IV.4. SAMPLE RESULT VERIFICATION:**

An EPA Level IV review was performed for the sample in this data package. The sample results and MDCs reported on the sample result form were verified against the raw data and no calculation or transcription errors were noted. Reported nondetects are valid to the MDC.

IV.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:

IV.5.1. FIELD BLANKS AND EQUIPMENT RINSATES:

This SDG had no identified field blank or equipment rinsate samples.

IV.5.2. FIELD DUPLICATES:

There were no field duplicate samples identified for this SDG.

Validated Sample Result Forms: 440-141065-2

Analysis Method E900

Sample Name Outfall009_20160312_Comp Matrix Type: WM Result Type: TRG

Sample Date: 3/12/2016 9:00:00 AM Validation Level: 8

Lab Sample Name: 440-141065-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Gross Alpha Analytes	GROSSALPHA	0.762	0.700	1.05	1.05	pCi/L	U	UJ	C
Gross Beta Analytes	GROSSBETA	1.52	0.672	0.913	0.913	pCi/L		J	B

Analysis Method E901.1

Sample Name Outfall009_20160312_Comp Matrix Type: WM Result Type: TRG

Sample Date: 3/12/2016 9:00:00 AM Validation Level: 8

Lab Sample Name: 440-141065-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cesium-137	10045-97-3	1.42	6.24	11.3	11.3	pCi/L	U	U	
Potassium-40	13966-00-2	-45.8	196	235	235	pCi/L	U	U	

Analysis Method E903.0

Sample Name Outfall009_20160312_Comp Matrix Type: WM Result Type: TRG

Sample Date: 3/12/2016 9:00:00 AM Validation Level: 8

Lab Sample Name: 440-141065-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-226	13982-63-3	0.0442	0.0328	0.0449	0.0449	pCi/L	U	UJ	C

Analysis Method E904.0

Sample Name Outfall009_20160312_Comp Matrix Type: WM Result Type: TRG

Sample Date: 3/12/2016 9:00:00 AM Validation Level: 8

Lab Sample Name: 440-141065-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-228	15262-20-1	0.120	0.229	0.389	0.389	pCi/L	U *	U	

Analysis Method E905.0**Sample Name** Outfall009_20160312_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 3/12/2016 9:00:00 AM **Validation Level:** 8**Lab Sample Name:** 440-141065-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Strontium-90	10098-97-2	0.242	0.339	0.565	0.565	pCi/L	U	U	

Analysis Method E906.0**Sample Name** Outfall009_20160312_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 3/12/2016 9:00:00 AM **Validation Level:** 8**Lab Sample Name:** 440-141065-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Tritium	10028-17-8	117	218	376	376	pCi/L	U	UJ	C

Analysis Method HASL-300 U Mod**Sample Name** Outfall009_20160312_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 3/12/2016 9:00:00 AM **Validation Level:** 8**Lab Sample Name:** 440-141065-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Uranium	URANIUM	0.167	0.1059	0.108	0.108	pCi/L		U	B

Analysis Method RADIUM**Sample Name** Outfall009_20160312_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 3/12/2016 9:00:00 AM **Validation Level:** 8**Lab Sample Name:** 440-141065-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-226 & 228	RADIUM226228	0.1642	0.231337			pCi/L	U	UJ	C

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THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

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Tel: (949)261-1022

TestAmerica Job ID: 440-141065-2

Client Project/Site: Boeing NPDES SSFL outfalls

For:

Haley & Aldrich, Inc.

5333 Mission Center Road

Suite 300

San Diego, California 92108

Attn: Nancy Gardiner



Authorized for release by:

4/12/2016 7:13:27 PM

Urvashi Patel, Manager of Project Management

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

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

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



Urvashi Patel
Manager of Project Management
4/12/2016 7:13:27 PM



Table of Contents

Cover Page	1
Table of Contents	3
Sample Summary	4
Case Narrative	5
Client Sample Results	6
Method Summary	8
Lab Chronicle	9
QC Sample Results	10
QC Association Summary	18
Definitions/Glossary	20
Certification Summary	21
Chain of Custody	22
Receipt Checklists	24
Tracer Carrier Summary	26

Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-141065-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-141065-1	Outfall009_20160312_Comp	Water	03/12/16 09:00	03/13/16 11:20

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- 2
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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-141065-2

Job ID: 440-141065-2

Laboratory: TestAmerica Irvine

Narrative

Job Narrative 440-141065-2

Comments

No additional comments.

Receipt

The samples were received on 3/13/2016 11:20 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 5 coolers at receipt time were 0.1° C, 0.3° C, 0.4° C, 0.5° C and 0.8° C.

Receipt Exceptions

The container label for the following sample did not match the information listed on the Chain-of-Custody (COC):
Outfall009_20160312_Comp (440-141065-1). Received #3 not listed on coc.

The following samples were received unpreserved and were preserved upon receipt to the laboratory: Outfall009_20160312_Comp (440-141065-1), Outfall009_20160312_Comp (440-141065-1[MSJ]), Outfall009_20160312_Comp (440-141065-1[MSD]), Outfall009_20160312_Comp_F (440-141065-2), Outfall009_20160312_Comp_F (440-141065-2[MS]), Outfall009_20160312_Comp_F (440-141065-2[MSD]), Outfall009_20160312_comp_extra (440-141065-3) and Trip Blank (440-141065-4). Regulatory documents require a 24-hour waiting period from the time of the addition of the acid preservative to the time of digestion.

The following samples were received unpreserved and were preserved upon receipt to the laboratory:
Split and preserved in SC for metals on 4/7/16 for sample -02 @ 1530
acid lot # 0000129810

RAD

Method(s) 900.0: Gross Alpha/Beta Prep Batch 160-241360:

The gross alpha and beta detection goal was not met for the following samples due to a reduction of the sample size attributed to high residual mass: (440-140288-P-1-J). Analytical results are reported with the detection limit achieved.

Method(s) 904.0: Radium-228 Prep Batch 160-241097:

The Laboratory Control Sample (LCS) spike recovery (151%) associated with the following samples is outside the upper QC limit of 140% indicating a potential positive bias for that analyte : Outfall009_20160312_Comp (440-141065-1), Outfall009_20160312_Comp (440-141065-1[MSJ]), Outfall009_20160312_Comp (440-141065-1[MSD]), (LCS 160-241097/2-A) and (MB 160-241097/1-A). This analyte was not observed above the requested limit in the associated samples; therefore the sample data was not adversely affected by this excursion. The data have been qualified and reported.

Method(s) ExtChrom: Uranium Prep Batch (241443): Samples are beige and contain debris, therefore a reduced aliquot was used to prevent matrix interference.

Outfall009_20160312_Comp (440-141065-1[MSJ]) and Outfall009_20160312_Comp (440-141065-1[MSD])

Method(s) PrecSep-7: Strontium-90 Prep Batch 160-243086:

The following samples were prepared at a reduced aliquot due to sediment and discoloration: Outfall009_20160312_Comp (440-141065-1), Outfall009_20160312_Comp (440-141065-1[MSJ]) and Outfall009_20160312_Comp (440-141065-1[MSD]).

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: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-141065-2

Client Sample ID: Outfall009_20160312_Comp

Lab Sample ID: 440-141065-1

Date Collected: 03/12/16 09:00

Matrix: Water

Date Received: 03/13/16 11:20

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	0.762	U	0.695	0.700	3.00	1.05	pCi/L	03/21/16 12:29	03/27/16 18:19	1
Gross Beta	1.52		0.655	0.672	4.00	0.913	pCi/L	03/21/16 12:29	03/27/16 18:19	1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	1.42	U	6.24	6.24	20.0	11.3	pCi/L	03/17/16 15:34	03/17/16 19:03	1
Potassium-40	-45.8	U	195	196		235	pCi/L	03/17/16 15:34	03/17/16 19:03	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0442	U	0.0325	0.0328	1.00	0.0449	pCi/L	03/17/16 16:09	04/08/16 06:58	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	95.2		40 - 110					03/17/16 16:09	04/08/16 06:58	1

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.120	U *	0.229	0.229	1.00	0.389	pCi/L	03/18/16 10:18	03/22/16 10:14	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	95.2		40 - 110					03/18/16 10:18	03/22/16 10:14	1
Y Carrier	88.6		40 - 110					03/18/16 10:18	03/22/16 10:14	1

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.242	U	0.338	0.339	3.00	0.565	pCi/L	03/31/16 20:07	04/08/16 17:11	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	86.8		40 - 110					03/31/16 20:07	04/08/16 17:11	1
Y Carrier	89.7		40 - 110					03/31/16 20:07	04/08/16 17:11	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	117	U	218	218	500	376	pCi/L	03/29/16 12:57	03/30/16 18:32	1

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Client Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-141065-2

Client Sample ID: Outfall009_20160312_Comp

Lab Sample ID: 440-141065-1

Date Collected: 03/12/16 09:00

Matrix: Water

Date Received: 03/13/16 11:20

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Total Uranium	0.167		0.1053	0.1059	1.00	0.108	pCi/L	03/22/16 10:06	03/29/16 11:19	1

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Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-141065-2

Method	Method Description	Protocol	Laboratory
900.0	Gross Alpha and Gross Beta Radioactivity	EPA	TAL SL
901.1	Cesium 137 & Other Gamma Emitters (GS)	EPA	TAL SL
903.0	Radium-226 (GFPC)	EPA	TAL SL
904.0	Radium-228 (GFPC)	EPA	TAL SL
905	Strontium-90 (GFPC)	EPA	TAL SL
906.0	Tritium, Total (LSC)	EPA	TAL SL
A-01-R	Isotopic Uranium (Alpha Spectrometry)	DOE	TAL SL

Protocol References:

DOE = U.S. Department of Energy
EPA = US Environmental Protection Agency

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566



Lab Chronicle

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-141065-2

Client Sample ID: Outfall009_20160312_Comp

Lab Sample ID: 440-141065-1

Date Collected: 03/12/16 09:00

Matrix: Water

Date Received: 03/13/16 11:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Evaporation			200 mL	1.0 g	241360	03/21/16 12:29	SCB	TAL SL
Total/NA	Analysis	900.0		1	200 mL		242410	03/27/16 18:19	ALS	TAL SL
Total/NA	Prep	Fill_Geo-0			1000 mL	1.0 g	241032	03/17/16 15:34	R1S	TAL SL
Total/NA	Analysis	901.1		1	1000 mL		241061	03/17/16 19:03	ALS	TAL SL
Total/NA	Prep	PrecSep-21			1000.18 mL	1.0 g	241039	03/17/16 16:09	MRB	TAL SL
Total/NA	Analysis	903.0		1	1000.18 mL		244970	04/08/16 06:58	RTM	TAL SL
Total/NA	Prep	PrecSep_0			1000.18 mL	1.0 g	241097	03/18/16 10:18	CMC	TAL SL
Total/NA	Analysis	904.0		1	1000.18 mL		241439	03/22/16 10:14	SMP	TAL SL
Total/NA	Prep	PrecSep-7			500.49 mL	1.0 g	243086	03/31/16 20:07	CMC	TAL SL
Total/NA	Analysis	905		1	500.49 mL		244970	04/08/16 17:11	RTM	TAL SL
Total/NA	Prep	LSC_Dist_Susp			100.00 mL	1.0 g	242738	03/29/16 12:57	JDL	TAL SL
Total/NA	Analysis	906.0		1	100.00 mL		243016	03/30/16 18:32	ALD	TAL SL
Total/NA	Prep	ExtChrom			500.28 mL	1.0 mL	241443	03/22/16 10:06	SEK	TAL SL
Total/NA	Analysis	A-01-R		1	500.28 mL		242664	03/29/16 11:19	ALD	TAL SL

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-141065-2

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Lab Sample ID: MB 160-241360/1-A
Matrix: Water
Analysis Batch: 242410

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 241360

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Gross Alpha	-0.1410	U	0.390	0.390	3.00	0.849	pCi/L	03/21/16 12:29	03/27/16 18:18	1
Gross Beta	-0.3169	U	0.444	0.446	4.00	0.863	pCi/L	03/21/16 12:29	03/27/16 18:18	1

Lab Sample ID: LCS 160-241360/2-A
Matrix: Water
Analysis Batch: 242410

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 241360

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Gross Alpha	50.0	44.68		6.51	3.00	1.65	pCi/L	89	73 - 133

Lab Sample ID: LCSB 160-241360/3-A
Matrix: Water
Analysis Batch: 242410

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 241360

Analyte	Spike Added	LCSB Result	LCSB Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Gross Beta	93.1	93.26		9.85	4.00	0.898	pCi/L	100	75 - 125

Lab Sample ID: 440-140288-J-1-C MS
Matrix: Water
Analysis Batch: 242410

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 241360

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
						Uncert. (2σ+/-)					
Gross Alpha	0.938	U G	1430	1342		178	3.00	31.0	pCi/L	94	60 - 140

Lab Sample ID: 440-140288-J-1-D MSD
Matrix: Water
Analysis Batch: 242410

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 241360

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
						Uncert. (2σ+/-)							
Gross Alpha	0.938	U G	1430	1306		173	3.00	25.7	pCi/L	91	60 - 140	0.10	1

Lab Sample ID: 440-140288-J-1-E MSBT
Matrix: Water
Analysis Batch: 242410

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 241360

Analyte	Sample Result	Sample Qual	Spike Added	MSBT Result	MSBT Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
						Uncert. (2σ+/-)					
Gross Beta	-1.14	U G	2660	2389	G	253	4.00	25.8	pCi/L	90	60 - 140

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-141065-2

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity (Continued)

Lab Sample ID: 440-140288-J-1-F MSBTD
Matrix: Water
Analysis Batch: 242410

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 241360

Analyte	Sample Result	Sample Qual	Spike Added	MSBTD Result	MSBTD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		RER	Limit
											60 - 140	0.07	1	
Gross Beta	-1.14	U	2660	2423	G	256	4.00	21.8	pCi/L	91	60 - 140	0.07	1	

Lab Sample ID: 440-141065-1 MS
Matrix: Water
Analysis Batch: 242410

Client Sample ID: Outfall009_20160312_Comp
Prep Type: Total/NA
Prep Batch: 241360

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		RER	Limit
											60 - 140			
Gross Alpha	0.762	U	50.0	40.96		5.72	3.00	0.929	pCi/L	82	60 - 140			

Lab Sample ID: 440-141065-1 MSBT
Matrix: Water
Analysis Batch: 242410

Client Sample ID: Outfall009_20160312_Comp
Prep Type: Total/NA
Prep Batch: 241360

Analyte	Sample Result	Sample Qual	Spike Added	MSBT Result	MSBT Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		RER	Limit
											60 - 140			
Gross Beta	1.52		93.1	91.88		9.70	4.00	0.960	pCi/L	97	60 - 140			

Lab Sample ID: 440-141065-1 MSBTD
Matrix: Water
Analysis Batch: 242410

Client Sample ID: Outfall009_20160312_Comp
Prep Type: Total/NA
Prep Batch: 241360

Analyte	Sample Result	Sample Qual	Spike Added	MSBTD Result	MSBTD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		RER	Limit
											60 - 140	0.11	1	
Gross Beta	1.52		93.1	89.77		9.49	4.00	1.00	pCi/L	95	60 - 140	0.11	1	

Lab Sample ID: 440-141065-1 MSD
Matrix: Water
Analysis Batch: 242410

Client Sample ID: Outfall009_20160312_Comp
Prep Type: Total/NA
Prep Batch: 241360

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		RER	Limit
											60 - 140	0.07	1	
Gross Alpha	0.762	U	50.0	41.74		5.82	3.00	1.03	pCi/L	84	60 - 140	0.07	1	

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Lab Sample ID: MB 160-241032/1-A
Matrix: Water
Analysis Batch: 241052

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 241032

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared		Analyzed		Dil Fac
								03/17/16 15:34	03/17/16 20:22	03/17/16 15:34	03/17/16 20:22	
Cesium-137	0.8246	U	8.21	8.22	20.0	15.3	pCi/L	03/17/16 15:34	03/17/16 20:22	03/17/16 15:34	03/17/16 20:22	1
Potassium-40	-62.43	U	2500	2500		291	pCi/L	03/17/16 15:34	03/17/16 20:22	03/17/16 15:34	03/17/16 20:22	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-141065-2

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS) (Continued)

Lab Sample ID: LCS 160-241032/2-A
Matrix: Water
Analysis Batch: 241061

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 241032

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
Americium-241	137000	137400		15900		459	pCi/L	101	90 - 111	
Cesium-137	48000	48240		4800	20.0	159	pCi/L	100	90 - 111	
Cobalt-60	44900	43870		4330		107	pCi/L	98	89 - 110	

Lab Sample ID: 440-141065-1 DU
Matrix: Water
Analysis Batch: 241058

Client Sample ID: Outfall009_20160312_Comp
Prep Type: Total/NA
Prep Batch: 241032

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit	
Cesium-137	1.42	U	1.762	U	5.16	20.0	9.18	pCi/L	0.03	1	
Potassium-40	-45.8	U	3.816	U	77.1		163	pCi/L	0.18	1	

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-241039/1-A
Matrix: Water
Analysis Batch: 244970

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 241039

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Carrier	MB %Yield	MB Qualifier	Limits		Prepared	Analyzed	Dil Fac			
Ba Carrier	101		40 - 110		03/17/16 16:09	04/08/16 06:56	1			

Lab Sample ID: LCS 160-241039/2-A
Matrix: Water
Analysis Batch: 244970

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 241039

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
Radium-226	11.2	11.66		1.12	1.00	0.0617	pCi/L	104	68 - 137	
Carrier	LCS %Yield	LCS Qualifier	Limits							
Ba Carrier	109		40 - 110							

Lab Sample ID: 440-141065-1 MS
Matrix: Water
Analysis Batch: 244970

Client Sample ID: Outfall009_20160312_Comp
Prep Type: Total/NA
Prep Batch: 241039

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
Radium-226	0.0442	U	11.2	12.69		1.22	1.00	0.0811	pCi/L	114	75 - 138	

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-141065-2

Method: 903.0 - Radium-226 (GFPC) (Continued)

Lab Sample ID: 440-141065-1 MS
Matrix: Water
Analysis Batch: 244970

Client Sample ID: Outfall009_20160312_Comp
Prep Type: Total/NA
Prep Batch: 241039

Carrier	MS %Yield	MS Qualifier	Limits
Ba Carrier	99.1		40 - 110

Lab Sample ID: 440-141065-1 MSD
Matrix: Water
Analysis Batch: 244970

Client Sample ID: Outfall009_20160312_Comp
Prep Type: Total/NA
Prep Batch: 241039

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226	0.0442	U	11.2	12.93		1.24	1.00	0.0554	pCi/L	116	75 - 138	0.1	1

Carrier	MSD %Yield	MSD Qualifier	Limits
Ba Carrier	95.2		40 - 110

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-241097/1-A
Matrix: Water
Analysis Batch: 241439

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 241097

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.3663	U	0.280	0.282	1.00	0.446	pCi/L	03/18/16 10:18	03/22/16 10:11	1

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	101		40 - 110	03/18/16 10:18	03/22/16 10:11	1
Y Carrier	82.6		40 - 110	03/18/16 10:18	03/22/16 10:11	1

Lab Sample ID: LCS 160-241097/2-A
Matrix: Water
Analysis Batch: 241439

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 241097

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	15.4	23.26	*	2.35	1.00	0.366	pCi/L	151	56 - 140

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	109		40 - 110
Y Carrier	82.6		40 - 110

Lab Sample ID: 440-141065-1 MS
Matrix: Water
Analysis Batch: 241439

Client Sample ID: Outfall009_20160312_Comp
Prep Type: Total/NA
Prep Batch: 241097

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	0.120	U *	15.4	20.30		2.07	1.00	0.361	pCi/L	132	45 - 150

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-141065-2

Method: 904.0 - Radium-228 (GFPC) (Continued)

Lab Sample ID: 440-141065-1 MS
Matrix: Water
Analysis Batch: 241439

Client Sample ID: Outfall009_20160312_Comp
Prep Type: Total/NA
Prep Batch: 241097

	MS	MS	
Carrier	%Yield	Qualifier	Limits
Ba Carrier	99.1		40 - 110
Y Carrier	94.6		40 - 110

Lab Sample ID: 440-141065-1 MSD
Matrix: Water
Analysis Batch: 241439

Client Sample ID: Outfall009_20160312_Comp
Prep Type: Total/NA
Prep Batch: 241097

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228	0.120	U *	15.4	18.49		1.94	1.00	0.388	pCi/L	120	45 - 150	0.45	1

	MSD	MSD	
Carrier	%Yield	Qualifier	Limits
Ba Carrier	95.2		40 - 110
Y Carrier	83.0		40 - 110

Method: 905 - Strontium-90 (GFPC)

Lab Sample ID: MB 160-243086/1-A
Matrix: Water
Analysis Batch: 244970

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 243086

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.03175	U	0.153	0.153	3.00	0.268	pCi/L	03/31/16 20:07	04/08/16 17:09	1

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	90.7		40 - 110	03/31/16 20:07	04/08/16 17:09	1
Y Carrier	98.3		40 - 110	03/31/16 20:07	04/08/16 17:09	1

Lab Sample ID: LCS 160-243086/2-A
Matrix: Water
Analysis Batch: 244970

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 243086

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Strontium-90	8.68	9.516		0.985	3.00	0.323	pCi/L	110	75 - 125

	LCS	LCS	
Carrier	%Yield	Qualifier	Limits
Sr Carrier	85.3		40 - 110
Y Carrier	86.7		40 - 110

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-141065-2

Method: 905 - Strontium-90 (GFPC) (Continued)

Lab Sample ID: 440-141065-1 MS
Matrix: Water
Analysis Batch: 244970

Client Sample ID: Outfall009_20160312_Comp
Prep Type: Total/NA
Prep Batch: 243086

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Strontium-90	0.242	U	17.4	17.03		1.77	3.00	0.601	pCi/L	98	19 - 150
Carrier											
	%Yield	MS Qualifier	Limits								
Sr Carrier	83.0		40 - 110								
Y Carrier	98.3		40 - 110								

Lab Sample ID: 440-141065-1 MSD
Matrix: Water
Analysis Batch: 244970

Client Sample ID: Outfall009_20160312_Comp
Prep Type: Total/NA
Prep Batch: 243086

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Strontium-90	0.242	U	17.3	16.57		1.71	3.00	0.533	pCi/L	96	19 - 150	0.13	1
Carrier													
	%Yield	MSD Qualifier	Limits										
Sr Carrier	86.1		40 - 110										
Y Carrier	99.1		40 - 110										

Method: 906.0 - Tritium, Total (LSC)

Lab Sample ID: MB 160-242738/1-A
Matrix: Water
Analysis Batch: 243016

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 242738

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	39.64	U	206	206	500	376	pCi/L	03/29/16 12:57	03/30/16 13:19	1

Lab Sample ID: LCS 160-242738/2-A
Matrix: Water
Analysis Batch: 243016

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 242738

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	4660	4723		708	500	369	pCi/L	101	74 - 114

Lab Sample ID: 440-141065-1 MS
Matrix: Water
Analysis Batch: 243016

Client Sample ID: Outfall009_20160312_Comp
Prep Type: Total/NA
Prep Batch: 242738

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	117	U	4650	4498		685	500	369	pCi/L	97	67 - 130

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QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-141065-2

Method: 906.0 - Tritium, Total (LSC) (Continued)

Lab Sample ID: 440-141065-1 MSD
Matrix: Water
Analysis Batch: 243016

Client Sample ID: Outfall009_20160312_Comp
Prep Type: Total/NA
Prep Batch: 242738

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Tritium	117	U	4650	4588		693	500	369	pCi/L	99	67 - 130	0.07	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Lab Sample ID: MB 160-241443/1-A
Matrix: Water
Analysis Batch: 242626

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 241443

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Total Uranium	0.03834	U	0.09763	0.09769	1.00	0.121	pCi/L	03/22/16 10:06	03/29/16 11:19	1

Lab Sample ID: LCS 160-241443/2-A
Matrix: Water
Analysis Batch: 242666

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 241443

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Uranium-234	12.7	11.59		1.19	1.00	0.0903	pCi/L	91	84 - 120
Uranium-238	13.0	12.74		1.28	1.00	0.0950	pCi/L	98	83 - 121

Tracer	LCS %Yield	LCS Qualifier	Limits
Uranium-232	93.4		30 - 110

Lab Sample ID: 440-140288-J-1-A MS
Matrix: Water
Analysis Batch: 242669

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 241443

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Uranium-234	0.244		31.8	31.28		3.24	1.00	0.213	pCi/L	98	65 - 146
Uranium-238	0.127	U	32.5	31.04		3.22	1.00	0.232	pCi/L	96	68 - 143

Tracer	MS %Yield	MS Qualifier	Limits
Uranium-232	74.5		30 - 110

Lab Sample ID: 440-140288-J-1-B MSD
Matrix: Water
Analysis Batch: 242670

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 241443

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Uranium-234	0.244		31.8	33.48		3.52	1.00	0.219	pCi/L	105	65 - 146	0.32	1
Uranium-238	0.127	U	32.5	34.20		3.58	1.00	0.0996	pCi/L	105	68 - 143	0.47	1

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QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-141065-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Lab Sample ID: 440-140288-J-1-B MSD
Matrix: Water
Analysis Batch: 242670

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 241443

	<i>MSD</i>	<i>MSD</i>	
<i>Tracer</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>
Uranium-232	68.6		30 - 110

Lab Sample ID: 440-141065-1 MS
Matrix: Water
Analysis Batch: 242665

Client Sample ID: Outfall009_20160312_Comp
Prep Type: Total/NA
Prep Batch: 241443

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
Uranium-234	0.107		31.8	33.50		3.43	1.00	0.293	pCi/L	105	65 - 146	
Uranium-238	0.0733		32.5	34.61		3.53	1.00	0.212	pCi/L	106	68 - 143	

	<i>MS</i>	<i>MS</i>	
<i>Tracer</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>
Uranium-232	78.4		30 - 110

Lab Sample ID: 440-141065-1 MSD
Matrix: Water
Analysis Batch: 242667

Client Sample ID: Outfall009_20160312_Comp
Prep Type: Total/NA
Prep Batch: 241443

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		RER	Limit
Uranium-234	0.107		31.8	30.63		3.18	1.00	0.262	pCi/L	96	65 - 146	0.43	1	
Uranium-238	0.0733		32.5	33.55		3.43	1.00	0.230	pCi/L	103	68 - 143	0.15	1	

	<i>MSD</i>	<i>MSD</i>	
<i>Tracer</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>
Uranium-232	75.1		30 - 110

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-141065-2

Rad

Prep Batch: 241032

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-141065-1	Outfall009_20160312_Comp	Total/NA	Water	Fill_Geo-0	
440-141065-1 DU	Outfall009_20160312_Comp	Total/NA	Water	Fill_Geo-0	
LCS 160-241032/2-A	Lab Control Sample	Total/NA	Water	Fill_Geo-0	
MB 160-241032/1-A	Method Blank	Total/NA	Water	Fill_Geo-0	

Prep Batch: 241039

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-141065-1	Outfall009_20160312_Comp	Total/NA	Water	PrecSep-21	
440-141065-1 MS	Outfall009_20160312_Comp	Total/NA	Water	PrecSep-21	
440-141065-1 MSD	Outfall009_20160312_Comp	Total/NA	Water	PrecSep-21	
LCS 160-241039/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
MB 160-241039/1-A	Method Blank	Total/NA	Water	PrecSep-21	

Prep Batch: 241097

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-141065-1	Outfall009_20160312_Comp	Total/NA	Water	PrecSep_0	
440-141065-1 MS	Outfall009_20160312_Comp	Total/NA	Water	PrecSep_0	
440-141065-1 MSD	Outfall009_20160312_Comp	Total/NA	Water	PrecSep_0	
LCS 160-241097/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
MB 160-241097/1-A	Method Blank	Total/NA	Water	PrecSep_0	

Prep Batch: 241360

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-140288-J-1-C MS	Matrix Spike	Total/NA	Water	Evaporation	
440-140288-J-1-D MSD	Matrix Spike Duplicate	Total/NA	Water	Evaporation	
440-140288-J-1-E MSBT	Matrix Spike	Total/NA	Water	Evaporation	
440-140288-J-1-F MSBTD	Matrix Spike Duplicate	Total/NA	Water	Evaporation	
440-141065-1	Outfall009_20160312_Comp	Total/NA	Water	Evaporation	
440-141065-1 MS	Outfall009_20160312_Comp	Total/NA	Water	Evaporation	
440-141065-1 MSBT	Outfall009_20160312_Comp	Total/NA	Water	Evaporation	
440-141065-1 MSBTD	Outfall009_20160312_Comp	Total/NA	Water	Evaporation	
440-141065-1 MSD	Outfall009_20160312_Comp	Total/NA	Water	Evaporation	
LCS 160-241360/2-A	Lab Control Sample	Total/NA	Water	Evaporation	
LCSB 160-241360/3-A	Lab Control Sample	Total/NA	Water	Evaporation	
MB 160-241360/1-A	Method Blank	Total/NA	Water	Evaporation	

Prep Batch: 241443

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-140288-J-1-A MS	Matrix Spike	Total/NA	Water	ExtChrom	
440-140288-J-1-B MSD	Matrix Spike Duplicate	Total/NA	Water	ExtChrom	
440-141065-1	Outfall009_20160312_Comp	Total/NA	Water	ExtChrom	
440-141065-1 MS	Outfall009_20160312_Comp	Total/NA	Water	ExtChrom	
440-141065-1 MSD	Outfall009_20160312_Comp	Total/NA	Water	ExtChrom	
LCS 160-241443/2-A	Lab Control Sample	Total/NA	Water	ExtChrom	
MB 160-241443/1-A	Method Blank	Total/NA	Water	ExtChrom	

Prep Batch: 242738

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-141065-1	Outfall009_20160312_Comp	Total/NA	Water	LSC_Dist_Susp	
440-141065-1 MS	Outfall009_20160312_Comp	Total/NA	Water	LSC_Dist_Susp	
440-141065-1 MSD	Outfall009_20160312_Comp	Total/NA	Water	LSC_Dist_Susp	

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QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-141065-2

Rad (Continued)

Prep Batch: 242738 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 160-242738/2-A	Lab Control Sample	Total/NA	Water	LSC_Dist_Susp	
MB 160-242738/1-A	Method Blank	Total/NA	Water	LSC_Dist_Susp	

Prep Batch: 243086

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-141065-1	Outfall009_20160312_Comp	Total/NA	Water	PrecSep-7	
440-141065-1 MS	Outfall009_20160312_Comp	Total/NA	Water	PrecSep-7	
440-141065-1 MSD	Outfall009_20160312_Comp	Total/NA	Water	PrecSep-7	
LCS 160-243086/2-A	Lab Control Sample	Total/NA	Water	PrecSep-7	
MB 160-243086/1-A	Method Blank	Total/NA	Water	PrecSep-7	

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-141065-2

Qualifiers

Rad

Qualifier	Qualifier Description
G	The Sample MDC is greater than the requested RL.
U	Result is less than the sample detection limit.
*	LCS or LCSD is outside acceptance limits.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
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
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)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-141065-2

Laboratory: TestAmerica Irvine

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

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-16
Arizona	State Program	9	AZ0671	10-13-16
California	LA Cty Sanitation Districts	9	10256	01-31-17 *
California	State Program	9	CA ELAP 2706	06-30-16
Guam	State Program	9	Cert. No. 12.002r	01-23-17
Hawaii	State Program	9	N/A	01-29-17
Kansas	NELAP Secondary AB	7	E-10420	07-31-16
Nevada	State Program	9	CA015312016-2	07-31-16
New Mexico	State Program	6	N/A	01-29-17
Northern Mariana Islands	State Program	9	MP0002	01-29-16 *
Oregon	NELAP	10	4028	01-29-17
USDA	Federal		P330-09-00080	07-08-18
Washington	State Program	10	C900	09-03-16

Laboratory: TestAmerica St. Louis

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

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	MO00054	06-30-16
California	State Program	9	2886	03-31-18
Connecticut	State Program	1	PH-0241	03-31-17
Florida	NELAP	4	E87689	06-30-16
Illinois	NELAP	5	003757	11-30-16
Iowa	State Program	7	373	12-01-16
Kansas	NELAP	7	E-10236	05-31-16
Kentucky (DW)	State Program	4	90125	12-31-16
L-A-B	DoD ELAP		L2305	04-06-19
Louisiana	NELAP	6	04080	06-30-16 *
Louisiana (DW)	NELAP	6	LA160008	12-31-16
Maryland	State Program	3	310	09-30-16
Missouri	State Program	7	780	06-30-16
Nevada	State Program	9	MO000542016-1	07-31-16
New Jersey	NELAP	2	MO002	06-30-16
New York	NELAP	2	11616	03-31-17
North Dakota	State Program	8	R207	06-30-16
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-16
Pennsylvania	NELAP	3	68-00540	02-28-17 *
South Carolina	State Program	4	85002001	06-30-16
Texas	NELAP	6	T104704193-15-9	07-31-16
USDA	Federal		P330-07-00122	01-09-17
Utah	NELAP	8	MO000542015-7	07-31-16
Virginia	NELAP	3	460230	06-14-16
Washington	State Program	10	C592	08-30-16
West Virginia DEP	State Program	3	381	08-31-16

* Certification renewal pending - certification considered valid.

TestAmerica Irvine

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-141065-2

Login Number: 141065

List Source: TestAmerica Irvine

List Number: 1

Creator: Avila, Stephanie 1

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	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?	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 <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-141065-2

Login Number: 141065

List Number: 3

Creator: McKinney, Gerrod E

List Source: TestAmerica St. Louis

List Creation: 03/16/16 01:44 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	10.5, 11.0
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	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.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-141065-2

Method: 903.0 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (40-110)
440-141065-1	Outfall009_20160312_Comp	95.2
440-141065-1 MS	Outfall009_20160312_Comp	99.1
440-141065-1 MSD	Outfall009_20160312_Comp	95.2
LCS 160-241039/2-A	Lab Control Sample	109
MB 160-241039/1-A	Method Blank	101

Tracer/Carrier Legend

Ba = Ba Carrier

Method: 904.0 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (40-110)	Y (40-110)
440-141065-1	Outfall009_20160312_Comp	95.2	88.6
440-141065-1 MS	Outfall009_20160312_Comp	99.1	94.6
440-141065-1 MSD	Outfall009_20160312_Comp	95.2	83.0
LCS 160-241097/2-A	Lab Control Sample	109	82.6
MB 160-241097/1-A	Method Blank	101	82.6

Tracer/Carrier Legend

Ba = Ba Carrier

Y = Y Carrier

Method: 905 - Strontium-90 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Sr (C) (40-110)	Y (40-110)
440-141065-1	Outfall009_20160312_Comp	86.8	89.7
440-141065-1 MS	Outfall009_20160312_Comp	83.0	98.3
440-141065-1 MSD	Outfall009_20160312_Comp	86.1	99.1
LCS 160-243086/2-A	Lab Control Sample	85.3	86.7
MB 160-243086/1-A	Method Blank	90.7	98.3

Tracer/Carrier Legend

Sr (C) = Sr Carrier

Y = Y Carrier

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	U-232 (30-110)
440-140288-J-1-A MS	Matrix Spike	74.5
440-140288-J-1-B MSD	Matrix Spike Duplicate	68.6
440-141065-1 MS	Outfall009_20160312_Comp	78.4

TestAmerica Irvine

Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-141065-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	U-232 (30-110)
440-141065-1 MSD	Outfall009_20160312_Comp	75.1
LCS 160-241443/2-A	Lab Control Sample	93.4
MB 160-241443/1-A	Method Blank	82.7

Tracer/Carrier Legend

U-232 = Uranium-232

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-137026-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 8, 2016

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





TABLE OF CONTENTS

I. INTRODUCTION..... 1

II. Sample Management..... 2

IV. EPA METHOD 8015B— Purgeable (GRO) and Extractable (DRO) Total Petroleum Hydrocarbons (TPHs) 6

IV.1. Holding Times 6

IV.2. Calibration..... 6

IV.3. Quality Control Samples 6

IV.3.1. Method Blanks 6

IV.3.2. Laboratory Control Samples 6

IV.3.3. Surrogate Recovery..... 6

IV.3.4. Matrix Spike/Matrix Spike Duplicate 6

IV.4. Field QC Samples..... 6

IV.5. Compound Identification 6

IV.6. Compound Quantification and Reported Detection Limits 7

V. EPA METHOD 624—Volatile Organic Compounds (VOCs)..... 7

V.1. Holding Times 7

V.2. GC/MS Tuning and Calibration 7

V.3. Quality Control Samples 7

V.3.1. Method Blanks 7

V.3.2. Laboratory Control Samples 7

V.3.3. Surrogate Recovery..... 7

V.3.4. Matrix Spike/Matrix Spike Duplicate 8

V.4. Field QC Samples..... 8

V.5. Internal Standards Performance..... 8

V.6. Compound Identification 8

V.7. Compound Quantification and Reported Detection Limits 8



V.8. Tentatively Identified Compounds 8

V.9. System Performance..... 8

VI. VARIOUS METHODS GENERAL CHEMISTRY 9

VI.1. Holding Times 9

VI.2. Calibration..... 9

VI.1. Quality Control Samples 9

VI.1.1. Method Blanks 9

VI.1.2. Laboratory Control Samples 9

VI.1.3. Laboratory Duplicates..... 9

VI.1.4. Matrix Spike/Matrix Spike Duplicate 9

VI.1.5. Sample Result Verification 9

VI.2. Field QC Samples..... 10

TABLES

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



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-137026-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 2

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall018_20160203_ Grab	440-137026-1	N/A	Water	2/3/2016 10:19:00 AM	E120.1, E1664, E624, SM2540F, SM9221F, SW8015D, SW8015V
TB-20160203	440-137026-3	N/A	Water	2/3/2016 10:19:00 AM	E624



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chain-of-custody (COC) provided by the laboratory for sample delivery group (SDG) 440-137026-1:

- The laboratory received the samples in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Unpreserved aliquots of the samples were provided for analysis of acrolein, acrylonitrile, and 2-chloroethyl vinyl ether.
- The case narrative noted that the pH was 5 for the vials listed as preserved for sample TB-20160203, indicating insufficient preservation (see Holding Time section).
- Field and laboratory personnel signed and dated the COC.
- According to the laboratory sample receipt checklist, custody seals were intact.



TABLE 2 - DATA QUALIFIER REFERENCE

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



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	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.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) 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.
B	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.
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.
P	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.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



IV. EPA METHOD 8015B— PURGEABLE (GRO) AND EXTRACTABLE (DRO) TOTAL PETROLEUM HYDROCARBONS (TPHS)

Lynn S. Calvin of MEC^X reviewed the SDG on March 8, 2016

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for Total Fuel Hydrocarbons (DVP-8, Rev. 0)*, *EPA Method 8015B*, and the *National Functional Guidelines for Superfund Organic Methods Data Review (2014)*.

IV.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample for DRO was extracted within seven days of collection and analyzed within 40 days of extraction. The preserved water sample for GRO was analyzed within 14 days of collection.

IV.2. CALIBRATION

Calibration criteria were met. Initial calibration %RSDs were $\leq 20\%$ and continuing calibration %Ds $\leq 15\%$.

IV.3. QUALITY CONTROL SAMPLES

IV.3.1. METHOD BLANKS

Target compounds were not detected in the method blanks.

IV.3.2. LABORATORY CONTROL SAMPLES

LCS recoveries were within the control limits of 80-120% and 40-115% for GRO and DRO, respectively.

IV.3.3. SURROGATE RECOVERY

Recoveries were within the control limits of 65-140% for surrogates 4-bromofluorobenzene (GRO) and 45-120% for n-octacosane (DRO).

IV.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on the site sample from this SDG for the GRO analysis. Recoveries and the RPD were within the control limits of 65-140% and $\leq 20\%$, respectively. MEC^X evaluated method accuracy for DRO based on the LCS result.

IV.4. FIELD QC SAMPLES

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

- Field Blanks and Equipment Blanks: Field blank or equipment blank samples were not identified for this SDG.
- Field Duplicates: Field duplicate samples were not identified in this SDG.

IV.5. COMPOUND IDENTIFICATION

Compound identification was verified. The laboratory reported two hydrocarbon ranges by Method 8015B: C4-C12 (GRO) and C13-C28 (DRO). The hydrocarbon ranges were reported on the electronic data



deliverable (EDD) as follows: PHC as Unknown/Waste Product, Light Range C4-C12, and Total Petroleum Hydrocarbons (C13-C28) (DRO). Review of the sample chromatograms and retention times indicated no problems with target compound identification.

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. Any result reported between the MDL and the reporting limit was qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Reported nondetects are valid to the reporting limit.

V. EPA METHOD 624—VOLATILE ORGANIC COMPOUNDS (VOCs)

Lynn S. Calvin of MEC^X reviewed the SDG on March 8, 2016

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

V.1. HOLDING TIMES

With one exception, analytical holding times were met. The preserved water sample was analyzed within 14 days of collection, and the unpreserved aliquots provided for analysis of acrolein, acrylonitrile and 2-chloroethyl vinyl ether were analyzed within seven days of collection. The pH of 5 for the vials labeled as preserved for sample TB-20160203 indicated insufficient preservation (see Sample Management section). As the sample was analyzed 14 days from collection, results for all target compounds (except acrolein, acrylonitrile and 2-chloroethyl vinyl ether) were qualified as estimated nondetects (UJ).

V.2. GC/MS TUNING AND CALIBRATION

The BFB tunes met the method abundance criteria. The 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 ≥ 0.05 for all applicable target compounds. The initial calibration %RSDs were $\leq 35\%$, or r^2 values ≥ 0.990 . The second source ICV and all applicable CCV recoveries were within the method control limits.

V.3. QUALITY CONTROL SAMPLES

V.3.1. METHOD BLANKS

Target compounds were not detected in the method blanks.

V.3.2. LABORATORY CONTROL SAMPLES

Acrolein was recovered above the control limits of 10-145% at 146% in the LCS. As acrolein was not detected in the associated samples, no qualification was necessary. Remaining recoveries were within the laboratory control limits.

V.3.3. SURROGATE RECOVERY

Recoveries were within the laboratory control limits.



V.3.4. *MATRIX SPIKE/MATRIX SPIKE DUPLICATE*

MS/MSD analyses were performed on the site sample from this SDG. Recoveries and RPDs were within the laboratory control limits.

V.4. FIELD QC SAMPLES

MECX 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.

- Trip Blanks: Sample TB-20160203 was identified as the trip blank associated with the site sample in this SDG. Target compounds were not detected in the trip blank.
- Field Blanks and Equipment Blanks: Field blank or equipment blank samples were not identified for this SDG.
- 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 continuing calibration standards: ± 30 seconds for retention times and $-50\%/+100\%$ for internal standard areas.

V.6. COMPOUND IDENTIFICATION

Compound identification was verified. Review of the sample chromatograms, retention times, and spectra indicated no problems 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. Any result reported between the MDL and the reporting limit was qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Reported nondetects are valid to the reporting limit.

V.8. TENTATIVELY IDENTIFIED COMPOUNDS

The laboratory did not report TICs for this SDG.

V.9. SYSTEM PERFORMANCE

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



VI. VARIOUS METHODS GENERAL CHEMISTRY

Michael Cherny of MEC^X reviewed the SDG on March 8th, 2016

The sample listed in Table 1 for these analysis was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *EPA Methods 120.1 and 1664A*, *Standard Methods for the Examination of Water and Wastewater 2540F and 9221F*, and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

VI.1. HOLDING TIMES

As there was no preservative used or lab prep utilized for the specific conductance analysis, the method analytical holding time, 24 hours from collection, was exceeded by 15 days; therefore, specific conductance measured in sample Outfall018_20160203_Grab was qualified as estimated with potential low bias (J-). Remaining analytical holding times as noted below were met:

- 8 hours from collection for Escherichia coli (as per the COC)
- 48 hours from collection for settleable solids
- 28 days from collection for n-hexane extractable material (HEM; oil and grease)

VI.2. CALIBRATION

Calibration criteria were met. The CCV for specific conductance was recovered within the laboratory-established control limits of 90-110%.

VI.1. QUALITY CONTROL SAMPLES

VI.1.1. METHOD BLANKS

The method blanks had no detects for HEM or specific conductance.

VI.1.2. LABORATORY CONTROL SAMPLES

Recoveries for HEM were within the method control limits of 78-114% and the RPD was $\leq 11\%$. The recovery for specific conductance was within the laboratory-established QC limits of 90-110%.

VI.1.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were performed on sample Outfall018_20160203_Grab for specific conductance. The RPD was within the laboratory-established QC limit of $\leq 5\%$.

VI.1.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the sample in the SDG. MEC^X evaluated method accuracy and precision based on LCS/LCSD results.

VI.1.5. 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. When the sample results were qualified and the reviewer was able to clearly determine bias, detected results were qualified as either J+ or J-; otherwise, bias was not indicated in the qualification. Any detects between the method detection limit and the reporting limit were qualified as estimated (J) and coded with DNQ in order to comply with



the NPDES permit. Reported nondetects are valid to the MDL.

VI.2. FIELD QC SAMPLES

MECX 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. MECX used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

- Field Blanks and Equipment Blanks: Field blank or equipment blank samples were not identified for this SDG.
- Field Duplicates: Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms: 4401370261

Analysis Method E120.1

Sample Name Outfall018_20160203_Grab Matrix Type: WM Result Type: TRG

Sample Date: 2/3/2016 10:19:00 AM Validation Level: 8

Lab Sample Name: 440-137026-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Specific Conductance	N	CONDSPEC	750	1.0	1.0	umhos/		J-	H

Analysis Method E1664

Sample Name Outfall018_20160203_Grab Matrix Type: WM Result Type: TRG

Sample Date: 2/3/2016 10:19:00 AM Validation Level: 8

Lab Sample Name: 440-137026-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Oil and Grease	N	OILGREASE	1.3	4.7	1.3	mg/L	U	U	

Analysis Method E624

Sample Name Outfall018_20160203_Grab Matrix Type: WM Result Type: TRG

Sample Date: 2/3/2016 10:19:00 AM Validation Level: 8

Lab Sample Name: 440-137026-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,1,1-Trichloroethane	N	71-55-6	0.50	0.50	0.25	ug/L	U	U	
1,1,2,2-Tetrachloroethane	N	79-34-5	0.50	0.50	0.25	ug/L	U	U	
1,1,2-Trichloroethane	N	79-00-5	0.50	0.50	0.25	ug/L	U	U	
1,1-Dichloroethane	N	75-34-3	0.50	0.50	0.25	ug/L	U	U	
1,1-Dichloroethene	N	75-35-4	0.50	0.50	0.25	ug/L	U	U	
1,2-Dichloro-1,1,2-trifluoroethane	N	354-23-4	2.0	2.0	1.0	ug/L	U	U	
1,2-Dichlorobenzene	N	95-50-1	0.50	0.50	0.25	ug/L	U	U	
1,2-Dichloroethane	N	107-06-2	0.50	0.50	0.25	ug/L	U	U	
1,2-Dichloropropane	N	78-87-5	0.50	0.50	0.25	ug/L	U	U	
1,3-Dichlorobenzene	N	541-73-1	0.50	0.50	0.25	ug/L	U	U	
1,4-Dichlorobenzene	N	106-46-7	0.50	0.50	0.25	ug/L	U	U	
2-Chloroethyl vinyl ether	N	110-75-8	2.0	2.0	1.0	ug/L	U	U	
Acrolein	N	107-02-8	5.0	5.0	2.5	ug/L	ULQ	U	
Acrylonitrile	N	107-13-1	2.0	2.0	1.0	ug/L	U	U	
Benzene	N	71-43-2	0.50	0.50	0.25	ug/L	U	U	
Bromodichloromethane	N	75-27-4	0.50	0.50	0.25	ug/L	U	U	
Bromoform	N	75-25-2	1.0	1.0	0.40	ug/L	U	U	
Bromomethane (Methyl Bromide)	N	74-83-9	0.50	0.50	0.25	ug/L	U	U	

Analysis Method E624

Carbon tetrachloride	N	56-23-5	0.50	0.50	0.25	ug/L	U	U
Chlorobenzene	N	108-90-7	0.50	0.50	0.25	ug/L	U	U
Chloroethane	N	75-00-3	1.0	1.0	0.40	ug/L	U	U
Chloroform (Trichloromethane)	N	67-66-3	0.50	0.50	0.25	ug/L	U	U
Chloromethane (Methyl Chloride)	N	74-87-3	0.50	0.50	0.25	ug/L	U	U
cis-1,2-Dichloroethene	N	156-59-2	0.50	0.50	0.25	ug/L	U	U
cis-1,3-Dichloropropene	N	10061-01-5	0.50	0.50	0.25	ug/L	U	U
Cyclohexane	N	110-82-7	2.0	2.0	1.0	ug/L	U	U
Dibromochloromethane	N	124-48-1	0.50	0.50	0.25	ug/L	U	U
Ethylbenzene	N	100-41-4	0.50	0.50	0.25	ug/L	U	U
m,p-Xylenes	N	179601-23-1	1.0	1.0	0.50	ug/L	U	U
Methylene chloride	N	75-09-2	2.0	2.0	0.88	ug/L	U	U
Naphthalene	N	91-20-3	1.0	1.0	0.40	ug/L	U	U
o-Xylene	N	95-47-6	0.50	0.50	0.25	ug/L	U	U
Tetrachloroethene	N	127-18-4	0.50	0.50	0.25	ug/L	U	U
Toluene	N	108-88-3	0.50	0.50	0.25	ug/L	U	U
trans-1,2-Dichloroethene	N	156-60-5	0.50	0.50	0.25	ug/L	U	U
trans-1,3-Dichloropropene	N	10061-02-6	0.50	0.50	0.25	ug/L	U	U
Trichloroethene	N	79-01-6	0.50	0.50	0.25	ug/L	U	U
Trichlorofluoromethane (CFC-11)	N	75-69-4	0.50	0.50	0.25	ug/L	U	U
Trifluorotrichloroethane (Freon 113)	N	76-13-1	2.0	2.0	0.50	ug/L	U	U
Vinyl chloride	N	75-01-4	0.50	0.50	0.25	ug/L	U	U
Xylene (total)	N	1330-20-7	1.0	1.0	0.50	ug/L	U	U

Sample Name TB-20160203

Matrix Type: WMQ

Result Type: TRG

Sample Date: 2/3/2016 10:19:00 AM

Validation Level: 8

Lab Sample Name: 440-137026-3

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,1,1-Trichloroethane	N	71-55-6	0.50	0.50	0.25	ug/L	U	UJ	H
1,1,2,2-Tetrachloroethane	N	79-34-5	0.50	0.50	0.25	ug/L	U	UJ	H
1,1,2-Trichloroethane	N	79-00-5	0.50	0.50	0.25	ug/L	U	UJ	H
1,1-Dichloroethane	N	75-34-3	0.50	0.50	0.25	ug/L	U	UJ	H
1,1-Dichloroethene	N	75-35-4	0.50	0.50	0.25	ug/L	U	UJ	H
1,2-Dichloro-1,1,2-trifluoroethane	N	354-23-4	2.0	2.0	1.0	ug/L	U	UJ	H
1,2-Dichlorobenzene	N	95-50-1	0.50	0.50	0.25	ug/L	U	UJ	H
1,2-Dichloroethane	N	107-06-2	0.50	0.50	0.25	ug/L	U	UJ	H
1,2-Dichloropropane	N	78-87-5	0.50	0.50	0.25	ug/L	U	UJ	H
1,3-Dichlorobenzene	N	541-73-1	0.50	0.50	0.25	ug/L	U	UJ	H
1,4-Dichlorobenzene	N	106-46-7	0.50	0.50	0.25	ug/L	U	UJ	H
2-Chloroethyl vinyl ether	N	110-75-8	2.0	2.0	1.0	ug/L	U	U	
Acrolein	N	107-02-8	5.0	5.0	2.5	ug/L	ULQ	U	
Acrylonitrile	N	107-13-1	2.0	2.0	1.0	ug/L	U	U	

Analysis Method E624

Benzene	N	71-43-2	0.50	0.50	0.25	ug/L	U	UJ	H
Bromodichloromethane	N	75-27-4	0.50	0.50	0.25	ug/L	U	UJ	H
Bromoform	N	75-25-2	1.0	1.0	0.40	ug/L	U	UJ	H
Bromomethane (Methyl Bromide)	N	74-83-9	0.50	0.50	0.25	ug/L	U	UJ	H
Carbon tetrachloride	N	56-23-5	0.50	0.50	0.25	ug/L	U	UJ	H
Chlorobenzene	N	108-90-7	0.50	0.50	0.25	ug/L	U	UJ	H
Chloroethane	N	75-00-3	1.0	1.0	0.40	ug/L	U	UJ	H
Chloroform (Trichloromethane)	N	67-66-3	0.50	0.50	0.25	ug/L	U	UJ	H
Chloromethane (Methyl Chloride)	N	74-87-3	0.50	0.50	0.25	ug/L	U	UJ	H
cis-1,2-Dichloroethene	N	156-59-2	0.50	0.50	0.25	ug/L	U	UJ	H
cis-1,3-Dichloropropene	N	10061-01-5	0.50	0.50	0.25	ug/L	U	UJ	H
Cyclohexane	N	110-82-7	2.0	2.0	1.0	ug/L	U	UJ	H
Dibromochloromethane	N	124-48-1	0.50	0.50	0.25	ug/L	U	UJ	H
Ethylbenzene	N	100-41-4	0.50	0.50	0.25	ug/L	U	UJ	H
m,p-Xylenes	N	179601-23-1	1.0	1.0	0.50	ug/L	U	UJ	H
Methylene chloride	N	75-09-2	2.0	2.0	0.88	ug/L	U	UJ	H
Naphthalene	N	91-20-3	1.0	1.0	0.40	ug/L	U	UJ	H
o-Xylene	N	95-47-6	0.50	0.50	0.25	ug/L	U	UJ	H
Tetrachloroethene	N	127-18-4	0.50	0.50	0.25	ug/L	U	UJ	H
Toluene	N	108-88-3	0.50	0.50	0.25	ug/L	U	UJ	H
trans-1,2-Dichloroethene	N	156-60-5	0.50	0.50	0.25	ug/L	U	UJ	H
trans-1,3-Dichloropropene	N	10061-02-6	0.50	0.50	0.25	ug/L	U	UJ	H
Trichloroethene	N	79-01-6	0.50	0.50	0.25	ug/L	U	UJ	H
Trichlorofluoromethane (CFC-11)	N	75-69-4	0.50	0.50	0.25	ug/L	U	UJ	H
Trifluorotrichloroethane (Freon 113)	N	76-13-1	2.0	2.0	0.50	ug/L	U	UJ	H
Vinyl chloride	N	75-01-4	0.50	0.50	0.25	ug/L	U	UJ	H
Xylene (total)	N	1330-20-7	1.0	1.0	0.50	ug/L	U	UJ	H

Analysis Method SM2540F

Sample Name	Outfall018_20160203_Grab			Matrix Type:	WM	Result Type:	TRG		
Sample Date:	2/3/2016 10:19:00 AM		Validation Level:	8					
Lab Sample Name:	440-137026-1								
Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Settleable solids	N	SETTLEABLSO LIDS	0.10	0.10	0.10	ml/l/hr	U	U	

Analysis Method SM9221F

Sample Name Outfall018_20160203_Grab **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/3/2016 10:19:00 AM **Validation Level:** 8

Lab Sample Name: 440-137026-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Escherichia coli	N	ECOLI	1.8	1.8	1.8	mpn/10	U	U	

Analysis Method SW8015D

Sample Name Outfall018_20160203_Grab **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/3/2016 10:19:00 AM **Validation Level:** 8

Lab Sample Name: 440-137026-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Petroleum Hydrocarbons (C13-C28)(DRO)	N	PHC1328	0.13	0.47	0.094	mg/L	J,DX	J	DNQ

Analysis Method SW8015V

Sample Name Outfall018_20160203_Grab **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/3/2016 10:19:00 AM **Validation Level:** 8

Lab Sample Name: 440-137026-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
PHC as Unknown/Waste Product, Light Range C4-C12	N	PHCML	0.036	0.050	0.025	mg/L	J,DX	J	DNQ

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

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Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-137026-1

Client Project/Site: Boeing NPDES SSFL outfalls

For:

Haley & Aldrich, Inc.

5333 Mission Center Road

Suite 300

San Diego, California 92108

Attn: Nancy Gardiner



Authorized for release by:

3/6/2016 10:03:35 PM

Urvashi Patel, Manager of Project Management

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LINKS

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

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

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

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



Urvashi Patel
Manager of Project Management
3/6/2016 10:03:35 PM



Table of Contents

Cover Page	1
Table of Contents	3
Sample Summary	4
Case Narrative	5
Client Sample Results	7
Method Summary	10
Lab Chronicle	11
QC Sample Results	12
QC Association Summary	20
Definitions/Glossary	22
Certification Summary	23
Subcontract Data	24
Chain of Custody	25
Receipt Checklists	27

Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137026-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-137026-1	Outfall018_20160203_Grab	Water	02/03/16 10:19	02/03/16 13:47
440-137026-3	TB-20160203	Water	02/03/16 10:19	02/03/16 13:47

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137026-1

Job ID: 440-137026-1

Laboratory: TestAmerica Irvine

Narrative

**Job Narrative
440-137026-1**

Comments

No additional comments.

Receipt

The samples were received on 2/3/2016 1:47 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 1.0° C, 1.2° C and 3.9° C.

Receipt Exceptions

COC listed 1 of 3 pages but only received 1 page,
received more than need containers required for analysis:
Voas X 9-40ml voa unpreserved 12-40ml voa with hcl
Ambers X 6-1l Unpreserved
Bactis X 3-125ml sterile

Please verify, Thank you!

Outfall018_20160203_Grab (440-137026-1), Outfall018_20160203_Grab (440-137026-1[MS]), Outfall018_20160203_Grab (440-137026-1[MSD]), Outfall018_20160203_Grab_Extra (440-137026-2) and TB-20160203 (440-137026-3)

GC/MS VOA

Method(s) 624: The following sample(s) were collected in properly preserved vials for analysis of volatile organic compounds (VOCs). However, the pH of 5 was outside the required criteria when verified by the laboratory, and corrective action was not possible: TB-20160203 (440-137026-3).

Method(s) 624: The laboratory control sample (LCS) for batch analytical batch 440-310218 recovered outside control limits for the following analyte: Acrolein. This analyte was biased high in the LCS and was 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.

GC VOA

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

GC Semi VOA

Method(s) 8015B: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD/DUP) associated with batch preparation batch 440-311835 and analytical batch 440-312058. The laboratory control sample (LCS) was performed in duplicate to provide precision data for this batch.(LCS 440-311835/11-A)

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.

Biology

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

Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137026-1

Job ID: 440-137026-1 (Continued)

Laboratory: TestAmerica Irvine (Continued)

Method(s) 1664A: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-310339 and analytical batch 440-310340. The laboratory control sample (LCS) was performed in duplicate to provide precision data on this batch.

Method(s) 3510C: The following samples was received outside of holding time: Outfall018_20160203_Grab (440-137026-1), Outfall018_20160203_Grab (440-137026-1[MS]) and Outfall018_20160203_Grab (440-137026-1[MSD]).- MS/MSD added at a later date.

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.

Subcontract Work

Method Human Bacteriodales: This method was subcontracted to EMSL Analytical, Inc.. The subcontract laboratory certification is different from that of the facility issuing the final report.

Client Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137026-1

Client Sample ID: Outfall018_20160203_Grab

Lab Sample ID: 440-137026-1

Date Collected: 02/03/16 10:19

Matrix: Water

Date Received: 02/03/16 13:47

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		0.50	0.25	ug/L			02/17/16 09:49	1
2-Chloroethyl vinyl ether	ND		2.0	1.0	ug/L			02/05/16 18:23	1
1,1,1,2-Tetrachloroethane	ND		0.50	0.25	ug/L			02/17/16 09:49	1
Acrolein	ND	LQ	5.0	2.5	ug/L			02/05/16 18:23	1
1,1,2-Trichloroethane	ND		0.50	0.25	ug/L			02/17/16 09:49	1
Acrylonitrile	ND		2.0	1.0	ug/L			02/05/16 18:23	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		2.0	0.50	ug/L			02/17/16 09:49	1
1,1-Dichloroethane	ND		0.50	0.25	ug/L			02/17/16 09:49	1
1,1-Dichloroethene	ND		0.50	0.25	ug/L			02/17/16 09:49	1
1,2-Dichlorobenzene	ND		0.50	0.25	ug/L			02/17/16 09:49	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			02/17/16 09:49	1
1,2-Dichloropropane	ND		0.50	0.25	ug/L			02/17/16 09:49	1
1,3-Dichlorobenzene	ND		0.50	0.25	ug/L			02/17/16 09:49	1
1,4-Dichlorobenzene	ND		0.50	0.25	ug/L			02/17/16 09:49	1
Benzene	ND		0.50	0.25	ug/L			02/17/16 09:49	1
Bromoform	ND		1.0	0.40	ug/L			02/17/16 09:49	1
1,2-Dichloro-1,1,2-trifluoroethane	ND		2.0	1.0	ug/L			02/17/16 09:49	1
Bromomethane	ND		0.50	0.25	ug/L			02/17/16 09:49	1
Carbon tetrachloride	ND		0.50	0.25	ug/L			02/17/16 09:49	1
Chlorobenzene	ND		0.50	0.25	ug/L			02/17/16 09:49	1
Dibromochloromethane	ND		0.50	0.25	ug/L			02/17/16 09:49	1
Chloroethane	ND		1.0	0.40	ug/L			02/17/16 09:49	1
Chloroform	ND		0.50	0.25	ug/L			02/17/16 09:49	1
Chloromethane	ND		0.50	0.25	ug/L			02/17/16 09:49	1
cis-1,3-Dichloropropene	ND		0.50	0.25	ug/L			02/17/16 09:49	1
Bromodichloromethane	ND		0.50	0.25	ug/L			02/17/16 09:49	1
Ethylbenzene	ND		0.50	0.25	ug/L			02/17/16 09:49	1
Methylene Chloride	ND		2.0	0.88	ug/L			02/17/16 09:49	1
Tetrachloroethene	ND		0.50	0.25	ug/L			02/17/16 09:49	1
Toluene	ND		0.50	0.25	ug/L			02/17/16 09:49	1
trans-1,2-Dichloroethene	ND		0.50	0.25	ug/L			02/17/16 09:49	1
trans-1,3-Dichloropropene	ND		0.50	0.25	ug/L			02/17/16 09:49	1
Trichlorofluoromethane	ND		0.50	0.25	ug/L			02/17/16 09:49	1
Vinyl chloride	ND		0.50	0.25	ug/L			02/17/16 09:49	1
Trichloroethene	ND		0.50	0.25	ug/L			02/17/16 09:49	1
cis-1,2-Dichloroethene	ND		0.50	0.25	ug/L			02/17/16 09:49	1
Cyclohexane	ND		2.0	1.0	ug/L			02/17/16 09:49	1
m,p-Xylene	ND		1.0	0.50	ug/L			02/17/16 09:49	1
Naphthalene	ND		1.0	0.40	ug/L			02/17/16 09:49	1
o-Xylene	ND		0.50	0.25	ug/L			02/17/16 09:49	1
Xylenes, Total	ND		1.0	0.50	ug/L			02/17/16 09:49	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	104		80 - 128		02/05/16 18:23	1
Dibromofluoromethane (Surr)	101		76 - 132		02/05/16 18:23	1
4-Bromofluorobenzene (Surr)	97		80 - 120		02/05/16 18:23	1
4-Bromofluorobenzene (Surr)	96		80 - 120		02/17/16 09:49	1
Dibromofluoromethane (Surr)	99		76 - 132		02/17/16 09:49	1
Toluene-d8 (Surr)	102		80 - 128		02/17/16 09:49	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137026-1

Client Sample ID: Outfall018_20160203_Grab

Lab Sample ID: 440-137026-1

Date Collected: 02/03/16 10:19

Matrix: Water

Date Received: 02/03/16 13:47

Method: 8015B - Gasoline Range Organics - (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
GRO (C4-C12)	0.036	J,DX	0.050	0.025	mg/L	-		02/13/16 16:00	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	112		65 - 140		02/13/16 16:00	1

Method: 8015B - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C13-C28	0.13	J,DX	0.47	0.094	mg/L	-	02/05/16 07:18	02/13/16 08:07	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
n-Octacosane	74		45 - 120	02/05/16 07:18	02/13/16 08:07	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM	ND		4.7	1.3	mg/L	-	02/09/16 07:46	02/09/16 08:01	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Specific Conductance	750		1.0	1.0	umhos/cm	-		02/19/16 11:37	1
Settleable Solids	ND		0.10	0.10	mL/L/Hr	-		02/04/16 14:55	1

Method: SM 9221F - E.Coli (Multiple-Tube Fermentation; EC-MUG)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Escherichia coli	ND		1.8	1.8	MPN/100mL	-		02/03/16 15:17	1

Client Sample ID: TB-20160203

Lab Sample ID: 440-137026-3

Date Collected: 02/03/16 10:19

Matrix: Water

Date Received: 02/03/16 13:47

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		0.50	0.25	ug/L	-		02/17/16 09:21	1
2-Chloroethyl vinyl ether	ND		2.0	1.0	ug/L	-		02/05/16 10:43	1
1,1,2,2-Tetrachloroethane	ND		0.50	0.25	ug/L	-		02/17/16 09:21	1
Acrolein	ND	LQ	5.0	2.5	ug/L	-		02/05/16 10:43	1
1,1,2-Trichloroethane	ND		0.50	0.25	ug/L	-		02/17/16 09:21	1
Acrylonitrile	ND		2.0	1.0	ug/L	-		02/05/16 10:43	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		2.0	0.50	ug/L	-		02/17/16 09:21	1
1,1-Dichloroethane	ND		0.50	0.25	ug/L	-		02/17/16 09:21	1
1,1-Dichloroethene	ND		0.50	0.25	ug/L	-		02/17/16 09:21	1
1,2-Dichlorobenzene	ND		0.50	0.25	ug/L	-		02/17/16 09:21	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L	-		02/17/16 09:21	1
1,2-Dichloropropane	ND		0.50	0.25	ug/L	-		02/17/16 09:21	1
1,3-Dichlorobenzene	ND		0.50	0.25	ug/L	-		02/17/16 09:21	1
1,4-Dichlorobenzene	ND		0.50	0.25	ug/L	-		02/17/16 09:21	1
Benzene	ND		0.50	0.25	ug/L	-		02/17/16 09:21	1
Bromoform	ND		1.0	0.40	ug/L	-		02/17/16 09:21	1
1,2-Dichloro-1,1,2-trifluoroethane	ND		2.0	1.0	ug/L	-		02/17/16 09:21	1
Bromomethane	ND		0.50	0.25	ug/L	-		02/17/16 09:21	1
Carbon tetrachloride	ND		0.50	0.25	ug/L	-		02/17/16 09:21	1
Chlorobenzene	ND		0.50	0.25	ug/L	-		02/17/16 09:21	1
Dibromochloromethane	ND		0.50	0.25	ug/L	-		02/17/16 09:21	1
Chloroethane	ND		1.0	0.40	ug/L	-		02/17/16 09:21	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137026-1

Client Sample ID: TB-20160203

Lab Sample ID: 440-137026-3

Date Collected: 02/03/16 10:19

Matrix: Water

Date Received: 02/03/16 13:47

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroform	ND		0.50	0.25	ug/L			02/17/16 09:21	1
Chloromethane	ND		0.50	0.25	ug/L			02/17/16 09:21	1
cis-1,3-Dichloropropene	ND		0.50	0.25	ug/L			02/17/16 09:21	1
Bromodichloromethane	ND		0.50	0.25	ug/L			02/17/16 09:21	1
Ethylbenzene	ND		0.50	0.25	ug/L			02/17/16 09:21	1
Methylene Chloride	ND		2.0	0.88	ug/L			02/17/16 09:21	1
Tetrachloroethene	ND		0.50	0.25	ug/L			02/17/16 09:21	1
Toluene	ND		0.50	0.25	ug/L			02/17/16 09:21	1
trans-1,2-Dichloroethene	ND		0.50	0.25	ug/L			02/17/16 09:21	1
trans-1,3-Dichloropropene	ND		0.50	0.25	ug/L			02/17/16 09:21	1
Trichlorofluoromethane	ND		0.50	0.25	ug/L			02/17/16 09:21	1
Vinyl chloride	ND		0.50	0.25	ug/L			02/17/16 09:21	1
Trichloroethene	ND		0.50	0.25	ug/L			02/17/16 09:21	1
cis-1,2-Dichloroethene	ND		0.50	0.25	ug/L			02/17/16 09:21	1
Cyclohexane	ND		2.0	1.0	ug/L			02/17/16 09:21	1
m,p-Xylene	ND		1.0	0.50	ug/L			02/17/16 09:21	1
Naphthalene	ND		1.0	0.40	ug/L			02/17/16 09:21	1
o-Xylene	ND		0.50	0.25	ug/L			02/17/16 09:21	1
Xylenes, Total	ND		1.0	0.50	ug/L			02/17/16 09:21	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	103		80 - 128		02/05/16 10:43	1
Dibromofluoromethane (Surr)	98		76 - 132		02/05/16 10:43	1
4-Bromofluorobenzene (Surr)	96		80 - 120		02/05/16 10:43	1
4-Bromofluorobenzene (Surr)	97		80 - 120		02/17/16 09:21	1
Dibromofluoromethane (Surr)	100		76 - 132		02/17/16 09:21	1
Toluene-d8 (Surr)	103		80 - 128		02/17/16 09:21	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137026-1

Method	Method Description	Protocol	Laboratory
624	Volatile Organic Compounds (GC/MS)	40CFR136A	TAL IRV
8015B	Gasoline Range Organics - (GC)	SW846	TAL IRV
8015B	Diesel Range Organics (DRO) (GC)	SW846	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
SM 9221F	E.Coli (Multiple-Tube Fermentation; EC-MUG)	SM	TAL IRV
Human Bacteroidales	General Sub Contract Method	NONE	EMSL

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.

NONE = NONE

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

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EMSL = EMSL Analytical, Inc., 200 Rt 130 North, Cinnaminson, NJ 08077

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

Lab Chronicle

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137026-1

Client Sample ID: Outfall018_20160203_Grab

Lab Sample ID: 440-137026-1

Date Collected: 02/03/16 10:19

Matrix: Water

Date Received: 02/03/16 13:47

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	10 mL	10 mL	310218	02/05/16 18:23	GK	TAL IRV
Total/NA	Analysis	624		1	10 mL	10 mL	311763	02/17/16 09:49	MM1	TAL IRV
Total/NA	Analysis	8015B		1	10 mL	10 mL	311147	02/13/16 16:00	JB	TAL IRV
Total/NA	Prep	3510C			1065 mL	1 mL	310224	02/05/16 07:18	L2A	TAL IRV
Total/NA	Analysis	8015B		1	1065 mL	1 mL	311062	02/13/16 08:07	CN	TAL IRV
Total/NA	Analysis	120.1		1			312390	02/19/16 11:37	BVL	TAL IRV
Total/NA	Prep	1664A			1075 mL	1000 mL	310339	02/09/16 07:46	L1A	TAL IRV
Total/NA	Analysis	1664A		1	1075 mL	1000 mL	310340	02/09/16 08:01	L1A	TAL IRV
Total/NA	Analysis	SM 2540F		1	1000 mL	1000 mL	310079	02/04/16 14:55	AMH	TAL IRV
Total/NA	Analysis	SM 9221F		1	100 mL	100 mL	310899		B1H	TAL IRV
								(Start) 02/03/16 15:17		
								(End) 02/06/16 11:27		

Client Sample ID: TB-20160203

Lab Sample ID: 440-137026-3

Date Collected: 02/03/16 10:19

Matrix: Water

Date Received: 02/03/16 13:47

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	10 mL	10 mL	310218	02/05/16 10:43	GK	TAL IRV
Total/NA	Analysis	624		1	10 mL	10 mL	311763	02/17/16 09:21	MM1	TAL IRV

Laboratory References:

EMSL = EMSL Analytical, Inc., 200 Rt 130 North, Cinnaminson, NJ 08077

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

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137026-1

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

Lab Sample ID: MB 440-310218/4

Matrix: Water

Analysis Batch: 310218

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Chloroethyl vinyl ether	ND		2.0	1.0	ug/L			02/05/16 09:11	1
Acrolein	ND		5.0	2.5	ug/L			02/05/16 09:11	1
Acrylonitrile	ND		2.0	1.0	ug/L			02/05/16 09:11	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	112		80 - 128		02/05/16 09:11	1
Dibromofluoromethane (Surr)	108		76 - 132		02/05/16 09:11	1
4-Bromofluorobenzene (Surr)	105		80 - 120		02/05/16 09:11	1

Lab Sample ID: LCS 440-310218/5

Matrix: Water

Analysis Batch: 310218

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2-Chloroethyl vinyl ether	25.0	30.9		ug/L		124	37 - 150
Acrolein	25.0	36.5	LQ	ug/L		146	10 - 145
Acrylonitrile	250	321		ug/L		129	48 - 140

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Toluene-d8 (Surr)	106		80 - 128
Dibromofluoromethane (Surr)	109		76 - 132
4-Bromofluorobenzene (Surr)	106		80 - 120

Lab Sample ID: LCSD 440-310218/6

Matrix: Water

Analysis Batch: 310218

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2-Chloroethyl vinyl ether	25.0	29.0		ug/L		116	37 - 150	6	25
Acrolein	25.0	35.2		ug/L		141	10 - 145	4	30
Acrylonitrile	250	313		ug/L		125	48 - 140	3	30

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
Toluene-d8 (Surr)	106		80 - 128
Dibromofluoromethane (Surr)	109		76 - 132
4-Bromofluorobenzene (Surr)	106		80 - 120

Lab Sample ID: 550-58227-N-1 MS

Matrix: Water

Analysis Batch: 310218

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
2-Chloroethyl vinyl ether	ND		25.0	27.1		ug/L		108	10 - 140
Acrolein	ND	LQ	25.0	4.37	J,DX	ug/L		17	10 - 147
Acrylonitrile	ND		250	328		ug/L		131	38 - 144

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137026-1

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

Lab Sample ID: 550-58227-N-1 MS
Matrix: Water
Analysis Batch: 310218

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

Surrogate	MS %Recovery	MS Qualifier	Limits
Toluene-d8 (Surr)	99		80 - 128
Dibromofluoromethane (Surr)	99		76 - 132
4-Bromofluorobenzene (Surr)	97		80 - 120

Lab Sample ID: 550-58227-N-1 MSD
Matrix: Water
Analysis Batch: 310218

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

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2-Chloroethyl vinyl ether	ND		25.0	27.2		ug/L		109	10 - 140	0	25
Acrolein	ND	LQ	25.0	3.26	J,DX	ug/L		13	10 - 147	29	40
Acrylonitrile	ND		250	305		ug/L		122	38 - 144	7	40

Surrogate	MSD %Recovery	MSD Qualifier	Limits
Toluene-d8 (Surr)	99		80 - 128
Dibromofluoromethane (Surr)	98		76 - 132
4-Bromofluorobenzene (Surr)	97		80 - 120

Lab Sample ID: MB 440-311763/4
Matrix: Water
Analysis Batch: 311763

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		0.50	0.25	ug/L			02/17/16 08:26	1
1,1,2,2-Tetrachloroethane	ND		0.50	0.25	ug/L			02/17/16 08:26	1
1,1,2-Trichloroethane	ND		0.50	0.25	ug/L			02/17/16 08:26	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		2.0	0.50	ug/L			02/17/16 08:26	1
1,1-Dichloroethane	ND		0.50	0.25	ug/L			02/17/16 08:26	1
1,1-Dichloroethene	ND		0.50	0.25	ug/L			02/17/16 08:26	1
1,2-Dichlorobenzene	ND		0.50	0.25	ug/L			02/17/16 08:26	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			02/17/16 08:26	1
1,2-Dichloropropane	ND		0.50	0.25	ug/L			02/17/16 08:26	1
1,3-Dichlorobenzene	ND		0.50	0.25	ug/L			02/17/16 08:26	1
1,4-Dichlorobenzene	ND		0.50	0.25	ug/L			02/17/16 08:26	1
Benzene	ND		0.50	0.25	ug/L			02/17/16 08:26	1
Bromoform	ND		1.0	0.40	ug/L			02/17/16 08:26	1
1,2-Dichloro-1,1,2-trifluoroethane	ND		2.0	1.0	ug/L			02/17/16 08:26	1
Bromomethane	ND		0.50	0.25	ug/L			02/17/16 08:26	1
Carbon tetrachloride	ND		0.50	0.25	ug/L			02/17/16 08:26	1
Chlorobenzene	ND		0.50	0.25	ug/L			02/17/16 08:26	1
Dibromochloromethane	ND		0.50	0.25	ug/L			02/17/16 08:26	1
Chloroethane	ND		1.0	0.40	ug/L			02/17/16 08:26	1
Chloroform	ND		0.50	0.25	ug/L			02/17/16 08:26	1
Chloromethane	ND		0.50	0.25	ug/L			02/17/16 08:26	1
cis-1,3-Dichloropropene	ND		0.50	0.25	ug/L			02/17/16 08:26	1
Bromodichloromethane	ND		0.50	0.25	ug/L			02/17/16 08:26	1
Ethylbenzene	ND		0.50	0.25	ug/L			02/17/16 08:26	1
Methylene Chloride	ND		2.0	0.88	ug/L			02/17/16 08:26	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137026-1

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

Lab Sample ID: MB 440-311763/4
Matrix: Water
Analysis Batch: 311763

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrachloroethene	ND		0.50	0.25	ug/L			02/17/16 08:26	1
Toluene	ND		0.50	0.25	ug/L			02/17/16 08:26	1
trans-1,2-Dichloroethene	ND		0.50	0.25	ug/L			02/17/16 08:26	1
trans-1,3-Dichloropropene	ND		0.50	0.25	ug/L			02/17/16 08:26	1
Trichlorofluoromethane	ND		0.50	0.25	ug/L			02/17/16 08:26	1
Vinyl chloride	ND		0.50	0.25	ug/L			02/17/16 08:26	1
Trichloroethene	ND		0.50	0.25	ug/L			02/17/16 08:26	1
cis-1,2-Dichloroethene	ND		0.50	0.25	ug/L			02/17/16 08:26	1
Cyclohexane	ND		2.0	1.0	ug/L			02/17/16 08:26	1
m,p-Xylene	ND		1.0	0.50	ug/L			02/17/16 08:26	1
Naphthalene	ND		1.0	0.40	ug/L			02/17/16 08:26	1
o-Xylene	ND		0.50	0.25	ug/L			02/17/16 08:26	1
Xylenes, Total	ND		1.0	0.50	ug/L			02/17/16 08:26	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	97		80 - 120		02/17/16 08:26	1
Dibromofluoromethane (Surr)	99		76 - 132		02/17/16 08:26	1
Toluene-d8 (Surr)	103		80 - 128		02/17/16 08:26	1

Lab Sample ID: LCS 440-311763/5
Matrix: Water
Analysis Batch: 311763

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	25.0	25.7		ug/L		103	70 - 130
1,1,1,2-Tetrachloroethane	25.0	27.7		ug/L		111	63 - 130
1,1,2-Trichloroethane	25.0	25.1		ug/L		101	70 - 130
1,1-Dichloroethane	25.0	24.8		ug/L		99	64 - 130
1,1-Dichloroethene	25.0	23.7		ug/L		95	70 - 130
1,2-Dichlorobenzene	25.0	26.8		ug/L		107	70 - 130
1,2-Dichloroethane	25.0	25.6		ug/L		102	57 - 138
1,2-Dichloropropane	25.0	26.5		ug/L		106	67 - 130
1,3-Dichlorobenzene	25.0	26.2		ug/L		105	70 - 130
1,4-Dichlorobenzene	25.0	26.0		ug/L		104	70 - 130
Benzene	25.0	25.0		ug/L		100	68 - 130
Bromoform	25.0	29.7		ug/L		119	60 - 148
Bromomethane	25.0	25.6		ug/L		103	64 - 139
Carbon tetrachloride	25.0	26.0		ug/L		104	60 - 150
Chlorobenzene	25.0	24.1		ug/L		97	70 - 130
Dibromochloromethane	25.0	26.9		ug/L		108	69 - 145
Chloroethane	25.0	25.4		ug/L		101	64 - 135
Chloroform	25.0	25.6		ug/L		102	70 - 130
Chloromethane	25.0	25.8		ug/L		103	47 - 140
cis-1,3-Dichloropropene	25.0	27.4		ug/L		110	70 - 133
Bromodichloromethane	25.0	26.3		ug/L		105	70 - 132
Ethylbenzene	25.0	25.2		ug/L		101	70 - 130
Methylene Chloride	25.0	23.5		ug/L		94	52 - 130
Tetrachloroethene	25.0	25.1		ug/L		101	70 - 130

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137026-1

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

Lab Sample ID: LCS 440-311763/5

Matrix: Water

Analysis Batch: 311763

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Toluene	25.0	25.2		ug/L		101	70 - 130
trans-1,2-Dichloroethene	25.0	26.0		ug/L		104	70 - 130
trans-1,3-Dichloropropene	25.0	26.2		ug/L		105	70 - 132
Trichlorofluoromethane	25.0	25.4		ug/L		102	60 - 150
Vinyl chloride	25.0	25.8		ug/L		103	59 - 133
Trichloroethene	25.0	24.5		ug/L		98	70 - 130
cis-1,2-Dichloroethene	25.0	26.2		ug/L		105	70 - 133
m,p-Xylene	25.0	25.9		ug/L		104	70 - 130
Naphthalene	25.0	30.9		ug/L		124	60 - 140
o-Xylene	25.0	25.3		ug/L		101	70 - 130
Xylenes, Total	50.0	51.2		ug/L		102	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	98		80 - 120
Dibromofluoromethane (Surr)	99		76 - 132
Toluene-d8 (Surr)	96		80 - 128

Lab Sample ID: 440-137026-1 MS

Matrix: Water

Analysis Batch: 311763

Client Sample ID: Outfall018_20160203_Grab

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	ND		25.0	26.4		ug/L		106	70 - 130
1,1,1,2-Tetrachloroethane	ND		25.0	28.2		ug/L		113	63 - 130
1,1,1,2-Trichloroethane	ND		25.0	27.0		ug/L		108	70 - 130
1,1-Dichloroethane	ND		25.0	25.2		ug/L		101	65 - 130
1,1-Dichloroethene	ND		25.0	23.9		ug/L		96	70 - 130
1,2-Dichlorobenzene	ND		25.0	27.1		ug/L		108	70 - 130
1,2-Dichloroethane	ND		25.0	27.1		ug/L		108	56 - 146
1,2-Dichloropropane	ND		25.0	27.5		ug/L		110	69 - 130
1,3-Dichlorobenzene	ND		25.0	26.3		ug/L		105	70 - 130
1,4-Dichlorobenzene	ND		25.0	26.1		ug/L		104	70 - 130
Benzene	ND		25.0	25.3		ug/L		101	66 - 130
Bromoform	ND		25.0	30.9		ug/L		124	59 - 150
Bromomethane	ND		25.0	25.6		ug/L		102	62 - 131
Carbon tetrachloride	ND		25.0	26.5		ug/L		106	60 - 150
Chlorobenzene	ND		25.0	24.3		ug/L		97	70 - 130
Dibromochloromethane	ND		25.0	28.1		ug/L		112	70 - 148
Chloroethane	ND		25.0	25.8		ug/L		103	68 - 130
Chloroform	ND		25.0	26.1		ug/L		104	70 - 130
Chloromethane	ND		25.0	26.3		ug/L		105	39 - 144
cis-1,3-Dichloropropene	ND		25.0	27.9		ug/L		112	70 - 133
Bromodichloromethane	ND		25.0	27.4		ug/L		110	70 - 138
Ethylbenzene	ND		25.0	25.4		ug/L		102	70 - 130
Methylene Chloride	ND		25.0	24.2		ug/L		97	52 - 130
Tetrachloroethene	ND		25.0	25.7		ug/L		103	70 - 137
Toluene	ND		25.0	25.2		ug/L		101	70 - 130
trans-1,2-Dichloroethene	ND		25.0	26.2		ug/L		105	70 - 130

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137026-1

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

Lab Sample ID: 440-137026-1 MS

Matrix: Water

Analysis Batch: 311763

Client Sample ID: Outfall018_20160203_Grab

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
trans-1,3-Dichloropropene	ND		25.0	27.2		ug/L		109	70 - 138
Trichlorofluoromethane	ND		25.0	25.7		ug/L		103	60 - 150
Vinyl chloride	ND		25.0	25.6		ug/L		102	50 - 137
Trichloroethene	ND		25.0	24.9		ug/L		100	70 - 130
cis-1,2-Dichloroethene	ND		25.0	26.4		ug/L		106	70 - 130
m,p-Xylene	ND		25.0	26.2		ug/L		105	70 - 133
Naphthalene	ND		25.0	32.3		ug/L		129	60 - 140
o-Xylene	ND		25.0	25.8		ug/L		103	70 - 133
Xylenes, Total	ND		50.0	52.0		ug/L		104	70 - 133

Surrogate	MS %Recovery	MS Qualifier	MS Limits
4-Bromofluorobenzene (Surr)	97		80 - 120
Dibromofluoromethane (Surr)	98		76 - 132
Toluene-d8 (Surr)	96		80 - 128

Lab Sample ID: 440-137026-1 MSD

Matrix: Water

Analysis Batch: 311763

Client Sample ID: Outfall018_20160203_Grab

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1,1-Trichloroethane	ND		25.0	27.1		ug/L		108	70 - 130	2	20
1,1,2,2-Tetrachloroethane	ND		25.0	27.4		ug/L		110	63 - 130	3	30
1,1,2-Trichloroethane	ND		25.0	26.5		ug/L		106	70 - 130	2	25
1,1-Dichloroethane	ND		25.0	25.7		ug/L		103	65 - 130	2	20
1,1-Dichloroethene	ND		25.0	24.6		ug/L		98	70 - 130	3	20
1,2-Dichlorobenzene	ND		25.0	27.4		ug/L		110	70 - 130	1	20
1,2-Dichloroethane	ND		25.0	27.0		ug/L		108	56 - 146	0	20
1,2-Dichloropropane	ND		25.0	27.8		ug/L		111	69 - 130	1	20
1,3-Dichlorobenzene	ND		25.0	27.1		ug/L		108	70 - 130	3	20
1,4-Dichlorobenzene	ND		25.0	26.9		ug/L		107	70 - 130	3	20
Benzene	ND		25.0	25.9		ug/L		104	66 - 130	2	20
Bromoform	ND		25.0	30.3		ug/L		121	59 - 150	2	25
Bromomethane	ND		25.0	26.3		ug/L		105	62 - 131	3	25
Carbon tetrachloride	ND		25.0	27.4		ug/L		109	60 - 150	3	25
Chlorobenzene	ND		25.0	24.6		ug/L		98	70 - 130	1	20
Dibromochloromethane	ND		25.0	27.7		ug/L		111	70 - 148	2	25
Chloroethane	ND		25.0	26.7		ug/L		107	68 - 130	3	25
Chloroform	ND		25.0	26.1		ug/L		104	70 - 130	0	20
Chloromethane	ND		25.0	27.0		ug/L		108	39 - 144	2	25
cis-1,3-Dichloropropene	ND		25.0	28.0		ug/L		112	70 - 133	1	20
Bromodichloromethane	ND		25.0	27.6		ug/L		110	70 - 138	1	20
Ethylbenzene	ND		25.0	26.1		ug/L		104	70 - 130	3	20
Methylene Chloride	ND		25.0	24.7		ug/L		99	52 - 130	2	20
Tetrachloroethene	ND		25.0	26.3		ug/L		105	70 - 137	2	20
Toluene	ND		25.0	25.9		ug/L		104	70 - 130	3	20
trans-1,2-Dichloroethene	ND		25.0	26.8		ug/L		107	70 - 130	2	20
trans-1,3-Dichloropropene	ND		25.0	27.1		ug/L		109	70 - 138	0	25
Trichlorofluoromethane	ND		25.0	26.6		ug/L		107	60 - 150	4	25

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137026-1

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

Lab Sample ID: 440-137026-1 MSD
Matrix: Water
Analysis Batch: 311763

Client Sample ID: Outfall018_20160203_Grab
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Vinyl chloride	ND		25.0	27.0		ug/L		108	50 - 137	5	30
Trichloroethene	ND		25.0	25.7		ug/L		103	70 - 130	3	20
cis-1,2-Dichloroethene	ND		25.0	26.8		ug/L		107	70 - 130	2	20
m,p-Xylene	ND		25.0	26.6		ug/L		106	70 - 133	1	25
Naphthalene	ND		25.0	31.6		ug/L		126	60 - 140	2	30
o-Xylene	ND		25.0	26.1		ug/L		104	70 - 133	1	20
Xylenes, Total	ND		50.0	52.7		ug/L		105	70 - 133	1	20
MSD MSD											
Surrogate	%Recovery	Qualifier	Limits								
4-Bromofluorobenzene (Surr)	99		80 - 120								
Dibromofluoromethane (Surr)	99		76 - 132								
Toluene-d8 (Surr)	97		80 - 128								

Method: 8015B - Gasoline Range Organics - (GC)

Lab Sample ID: MB 440-311147/4
Matrix: Water
Analysis Batch: 311147

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
GRO (C4-C12)	ND		0.050	0.025	mg/L			02/13/16 14:36	1
MB MB									
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	113		65 - 140					02/13/16 14:36	1

Lab Sample ID: LCS 440-311147/3
Matrix: Water
Analysis Batch: 311147

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
GRO (C4-C12)	0.800	0.803		mg/L		100	80 - 120
LCS LCS							
Surrogate	%Recovery	Qualifier	Limits				
4-Bromofluorobenzene (Surr)	94		65 - 140				

Lab Sample ID: 440-137026-1 MS
Matrix: Water
Analysis Batch: 311147

Client Sample ID: Outfall018_20160203_Grab
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
GRO (C4-C12)	0.036	J,DX	0.800	0.817		mg/L		98	65 - 140
MS MS									
Surrogate	%Recovery	Qualifier	Limits						
4-Bromofluorobenzene (Surr)	111		65 - 140						

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137026-1

Method: 8015B - Gasoline Range Organics - (GC) (Continued)

Lab Sample ID: 440-137026-1 MSD

Matrix: Water

Analysis Batch: 311147

Client Sample ID: Outfall018_20160203_Grab

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
GRO (C4-C12)	0.036	J,DX	0.800	0.813		mg/L		97	65 - 140	1	20
Surrogate	%Recovery	MSD Qualifier	MSD Limits								
4-Bromofluorobenzene (Surr)	111		65 - 140								

Method: 8015B - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 440-310224/1-A

Matrix: Water

Analysis Batch: 311062

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 310224

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac	
C13-C28	ND		0.50	0.10	mg/L		02/05/16 07:18	02/13/16 03:31	1	
Surrogate	%Recovery	MB Qualifier	MB Limits	Prepared	Analyzed	Dil Fac				
n-Octacosane	75		45 - 120	02/05/16 07:18	02/13/16 03:31	1				

Lab Sample ID: LCS 440-310224/2-A

Matrix: Water

Analysis Batch: 311062

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 310224

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
C10-C28	1.00	0.762		mg/L		76	40 - 115
Surrogate	LCS %Recovery	LCS Qualifier	LCS Limits				
n-Octacosane	90		45 - 120				

Lab Sample ID: 440-137200-G-1-A MSD

Matrix: Water

Analysis Batch: 311062

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Prep Batch: 310224

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
C10-C28	ND		0.939	0.668		mg/L		71	40 - 120	11	30
Surrogate	MSD %Recovery	MSD Qualifier	MSD Limits								
n-Octacosane	74		45 - 120								

Lab Sample ID: 440-137200-H-1-A MS

Matrix: Water

Analysis Batch: 311062

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Prep Batch: 310224

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
C10-C28	ND		0.980	0.743		mg/L		76	40 - 120
Surrogate	MS %Recovery	MS Qualifier	MS Limits						
n-Octacosane	80		45 - 120						

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QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137026-1

Method: 120.1 - Conductivity, Specific Conductance

Lab Sample ID: MB 440-312390/3
Matrix: Water
Analysis Batch: 312390

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

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Specific Conductance	ND		1.0	1.0	umhos/cm			02/19/16 11:37	1

Lab Sample ID: LCS 440-312390/4
Matrix: Water
Analysis Batch: 312390

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Specific Conductance	1060	1050		umhos/cm		99	90 - 110

Lab Sample ID: 440-137026-1 DU
Matrix: Water
Analysis Batch: 312390

Client Sample ID: Outfall018_20160203_Grab
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Specific Conductance	750		758		umhos/cm		0.7	5

Method: 1664A - HEM and SGT-HEM

Lab Sample ID: MB 440-310339/1-A
Matrix: Water
Analysis Batch: 310340

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 310339

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM	ND		5.0	1.4	mg/L		02/09/16 07:46	02/09/16 08:01	1

Lab Sample ID: LCS 440-310339/2-A
Matrix: Water
Analysis Batch: 310340

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 310339

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
HEM	40.0	34.8		mg/L		87	78 - 114

Lab Sample ID: LCSD 440-310339/3-A
Matrix: Water
Analysis Batch: 310340

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 310339

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
HEM	40.0	34.4		mg/L		86	78 - 114	1	11

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137026-1

GC/MS VOA

Analysis Batch: 310218

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137026-1	Outfall018_20160203_Grab	Total/NA	Water	624	
440-137026-3	TB-20160203	Total/NA	Water	624	
550-58227-N-1 MS	Matrix Spike	Total/NA	Water	624	
550-58227-N-1 MSD	Matrix Spike Duplicate	Total/NA	Water	624	
LCS 440-310218/5	Lab Control Sample	Total/NA	Water	624	
LCS 440-310218/6	Lab Control Sample Dup	Total/NA	Water	624	
MB 440-310218/4	Method Blank	Total/NA	Water	624	

Analysis Batch: 311763

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137026-1	Outfall018_20160203_Grab	Total/NA	Water	624	
440-137026-1 MS	Outfall018_20160203_Grab	Total/NA	Water	624	
440-137026-1 MSD	Outfall018_20160203_Grab	Total/NA	Water	624	
440-137026-3	TB-20160203	Total/NA	Water	624	
LCS 440-311763/5	Lab Control Sample	Total/NA	Water	624	
MB 440-311763/4	Method Blank	Total/NA	Water	624	

GC VOA

Analysis Batch: 311147

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137026-1	Outfall018_20160203_Grab	Total/NA	Water	8015B	
440-137026-1 MS	Outfall018_20160203_Grab	Total/NA	Water	8015B	
440-137026-1 MSD	Outfall018_20160203_Grab	Total/NA	Water	8015B	
LCS 440-311147/3	Lab Control Sample	Total/NA	Water	8015B	
MB 440-311147/4	Method Blank	Total/NA	Water	8015B	

GC Semi VOA

Prep Batch: 310224

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137026-1	Outfall018_20160203_Grab	Total/NA	Water	3510C	
440-137200-G-1-A MSD	Matrix Spike Duplicate	Total/NA	Water	3510C	
440-137200-H-1-A MS	Matrix Spike	Total/NA	Water	3510C	
LCS 440-310224/2-A	Lab Control Sample	Total/NA	Water	3510C	
MB 440-310224/1-A	Method Blank	Total/NA	Water	3510C	

Analysis Batch: 311062

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137026-1	Outfall018_20160203_Grab	Total/NA	Water	8015B	310224
440-137200-G-1-A MSD	Matrix Spike Duplicate	Total/NA	Water	8015B	310224
440-137200-H-1-A MS	Matrix Spike	Total/NA	Water	8015B	310224
LCS 440-310224/2-A	Lab Control Sample	Total/NA	Water	8015B	310224
MB 440-310224/1-A	Method Blank	Total/NA	Water	8015B	310224

General Chemistry

Analysis Batch: 310079

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137026-1	Outfall018_20160203_Grab	Total/NA	Water	SM 2540F	

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QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137026-1

Prep Batch: 310339

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137026-1	Outfall018_20160203_Grab	Total/NA	Water	1664A	
LCS 440-310339/2-A	Lab Control Sample	Total/NA	Water	1664A	
LCSD 440-310339/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	
MB 440-310339/1-A	Method Blank	Total/NA	Water	1664A	

Analysis Batch: 310340

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137026-1	Outfall018_20160203_Grab	Total/NA	Water	1664A	310339
LCS 440-310339/2-A	Lab Control Sample	Total/NA	Water	1664A	310339
LCSD 440-310339/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	310339
MB 440-310339/1-A	Method Blank	Total/NA	Water	1664A	310339

Analysis Batch: 312390

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137026-1	Outfall018_20160203_Grab	Total/NA	Water	120.1	
440-137026-1 DU	Outfall018_20160203_Grab	Total/NA	Water	120.1	
LCS 440-312390/4	Lab Control Sample	Total/NA	Water	120.1	
MB 440-312390/3	Method Blank	Total/NA	Water	120.1	

Biology

Analysis Batch: 310899

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137026-1	Outfall018_20160203_Grab	Total/NA	Water	SM 9221F	

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137026-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
LQ	LCS/LCSD recovery above method control limits
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL

GC 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

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
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
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)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137026-1

Laboratory: TestAmerica Irvine

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

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-16
Arizona	State Program	9	AZ0671	10-13-16
California	LA Cty Sanitation Districts	9	10256	01-31-17 *
California	State Program	9	CA ELAP 2706	06-30-16
Guam	State Program	9	Cert. No. 12.002r	01-23-17
Hawaii	State Program	9	N/A	01-29-17
Kansas	NELAP Secondary AB	7	E-10420	07-31-16
Nevada	State Program	9	CA015312007A	07-31-16
New Mexico	State Program	6	N/A	01-29-17
Northern Mariana Islands	State Program	9	MP0002	01-29-16 *
Oregon	NELAP	10	4005	01-29-17
USDA	Federal		P330-09-00080	07-08-18
Washington	State Program	10	900	09-03-16

* Certification renewal pending - certification considered valid.

TestAmerica Irvine

CHAIN OF CUSTODY FORM



440-137026 Chain of Custody

Client Name/Address:
Hailey & Aldrich
5333 Mission Center Rd Suite 300
San Diego, CA 92108

Test America Contact: Debby Wilson
17461 Deiran Ave Suite #100
Irvine CA 92614
Tel 949 261 1022 x228
Cell 949 237 0603

Sampler: John Parkes
Neal Smith

Project: Boeing-SSFL NPDES
Permit 2016
Annual Outfall 001, 002, 011, 018
Outfall 018
Grab

Project Manager: Nancy Gardiner
619.285.7132, 858.337.4061 (cell)
Field Manager: Mark Dominick
818.350.7312, 818.599.0702 (cell)

Table with columns: ANALYSIS REQUIRED, Field Readings, Meter serial #. Includes rows for VOCs, Oil & Grease, Conductivity, etc.

Table with columns: Sample Description, Sample Matrix, Sampling Date/Time, Container Type, # of Cont., Preservative, Bottle #, MS/MSD. Includes rows for Outfall 018, Trip Blanks.

Legend: R-Routine, A-Annual, Q-Quarterly. Received By: Bill Clarke, Date/Time: 2/3/16 11:50. Includes signature and date for Bill Clarke and Bill Perry.





440-137026 Chain of Custody

CHAIN OF CUSTODY FORM

<p>Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108</p>		<p>Project: Boeing-SSFL NPDES Permit 2016 Annual Outfall [001, 002, 011, 018] Outfall 018 Grab</p>		<p>Project Manager: Nancy Gardiner 619.285.7132, 858.337.4061 (cell)</p>		<p>Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)</p>		<p>Field Readings (Include units) Time of Readings: 1052 DO: 8.98 mg/L pH: 7.19 pH unit Temp: 8.9 °C TRC: 0.03 mg/L WYA7059L W1290CE876D</p>		<p>Meter serial #</p>			
<p>Sample Description</p>		<p>Sample Matrix</p>		<p>Container Type</p>		<p># of Cont.</p>		<p>Preservative</p>		<p>Bottle #</p>		<p>MS/MSD</p>	
<p>Outfall 018</p>		<p>WM</p>		<p>125mL Sterile Poly</p>		<p>1</p>		<p>None</p>		<p>5</p>		<p>No</p>	
<p>Outfall 018, 20160203_Grab</p>		<p>WM</p>		<p>125mL Sterile Poly</p>		<p>3</p>		<p>NazS203</p>		<p>10</p>		<p>No</p>	
<p>Outfall 018, 20160203_Grab_Extra</p>		<p>WM</p>		<p>40 mL VOA</p>		<p>3</p>		<p>HCl</p>		<p>45</p>		<p>No</p>	
<p>Trip Blanks TB-20160203</p>		<p>WM</p>		<p>40 mL VOA</p>		<p>9</p>		<p>None</p>		<p>55</p>		<p>Yes</p>	
<p></p>		<p>WM</p>		<p>40 mL VOA</p>		<p>8</p>		<p>HCl</p>		<p>80</p>		<p>Yes</p>	
<p></p>		<p>WM</p>		<p>1 L Glass Amber</p>		<p>6</p>		<p>None</p>		<p>65</p>		<p>Yes</p>	
<p></p>		<p>WM</p>		<p>1 L Poly</p>		<p>1</p>		<p>None</p>		<p>70</p>		<p>No</p>	
<p></p>		<p>WM</p>		<p>500 mL Poly</p>		<p>1</p>		<p>None</p>		<p>75</p>		<p>No</p>	
<p></p>		<p>WM</p>		<p>1 L Glass Amber</p>		<p>2</p>		<p>HCl</p>		<p>15</p>		<p>No</p>	
<p></p>		<p>WM</p>		<p>40 mL VOA</p>		<p>3</p>		<p>HCl</p>		<p>45</p>		<p>No</p>	
<p></p>		<p>WM</p>		<p>40 mL VOA</p>		<p>3</p>		<p>None</p>		<p>55</p>		<p>No</p>	
<p></p>		<p>WM</p>		<p>500 mL Poly</p>		<p>1</p>		<p>None</p>		<p>75</p>		<p>No</p>	
<p></p>		<p>WQ</p>		<p>40 mL VOA</p>		<p>2</p>		<p>HCl</p>		<p>45</p>		<p>No</p>	
<p></p>		<p>WQ</p>		<p>40 mL VOA</p>		<p>2</p>		<p>None</p>		<p>55</p>		<p>No</p>	

MST-Bacteroides, Human	X												
E. coli (SM9221)	X												
Settleable Solids													
Conductivity													
Oil & Grease (1664-HEM)													
VOCs + VOCs PP + xylenes, Freon 11, Freon 12, Cyclohexane, cis-1,2-DCE													
VOCs (624) - only A+A+2C/E													
8015 - gas (GRO/C4-C12)													
8015 - diesel/jet fuel (DRO (C13-C28))													

These Samples at the Grab Portion of Outfall 018 for this storm event. Composite samples will follow and are to be added to this work order.

Legend: R=Routine, A=Annual, Q=Quarterly

Relinquished By: <i>Bill Clarke</i>	Date/Time: 2/3/16	Company: SHA ENV INC.	Received By: <i>Bill Clarke</i>	Date/Time: 2-3-16/1150
Relinquished By: <i>Bill Clarke</i>	Date/Time: 2-3-16/1151	Company: Weston Solutions	Received By: <i>Bill Perry</i>	Date/Time: 2/3/16 1151
Relinquished By: <i>Bill Perry</i>	Date/Time: 2/3/16 1347	Company: DCS	Received By: <i>Supervisor</i>	Date/Time: 2/3/16 1347

Turn-around time: (Check) 24 Hour: _____ 72 Hour: _____ 10 Day: _____
 48 Hour: _____ 5 Day: _____ Normal: _____

Sample Integrity: (Check) Intact: _____ On Ice: _____

Data Requirements: (Check) No Level I: _____ All Level IV: _____

3.6/3.9 0.7/1.0 1.4/1.7 - 1.8-7.8

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-137026-1

Login Number: 137026

List Source: TestAmerica Irvine

List Number: 1

Creator: Skinner, Alma

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	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?	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 <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-137200-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 31, 2016

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





TABLE OF CONTENTS

I. INTRODUCTION..... 1

II. Sample Management..... 2

IV. EPA METHOD 1613B — Dioxin/Furans..... 6

 IV.1. Holding Times 6

 IV.2. Instrument Performance: 6

 IV.2.1. GC Column Performance: 6

 IV.2.2. Mass Spectrometer Performance:..... 6

 IV.3. Calibration..... 6

 IV.4. Quality Control Samples 6

 IV.4.1. Method Blanks 6

 IV.4.2. Laboratory Control Samples 7

 IV.5. Field QC Samples..... 7

 IV.5.1. Field Blanks and Equipment Blanks 7

 IV.5.2. Field Duplicates..... 7

 IV.6. Internal Standards Performance:..... 7

 IV.7. Compound Identification 7

 IV.8. Compound Quantification and Reported Detection Limits 7

V. VARIOUS METHODS — Metals 7

 V.1. Holding Times 8

 V.2. GC/MS Tuning and Calibration 8

 V.3. Quality Control Samples 8

 V.3.1. Method Blanks 8

 V.3.2. Interference Check Samples: 8

 V.3.3. Laboratory Control Samples 8

 V.3.4. Laboratory Duplicates:..... 8

 V.3.5. Matrix Spike/Matrix Spike Duplicate 8



V.4. Serial Dilution..... 8

V.5. Internal Standards Performance..... 8

V.6. Compound Quantification and Reported Detection Limits 9

V.7. Field QC Samples..... 9

 V.7.1. Field Blanks and Equipment Blanks 9

 V.7.2. Field Duplicates 9

VI. EPA METHOD 608 — Pesticides and PCBs 9

 VI.1. Holding Times 9

 VI.2. Calibration..... 9

 VI.3. Quality Control Samples 9

 VI.3.1. Method Blanks 9

 VI.3.2. Laboratory Control Samples 10

 VI.3.3. Surrogate Recovery..... 10

 VI.3.4. Matrix Spike/Matrix Spike Duplicate 10

 VI.4. Field QC Samples..... 10

 VI.5. Compound Identification 10

 VI.6. Compound Quantification and Reported Detection Limits 10

VII. EPA METHOD 314.0 — PERCHLORATE 10

 VII.1. Holding Times 10

 VII.2. Calibration..... 11

 VII.3. Quality Control Samples 11

 VII.3.1. Method Blanks 11

 VII.3.2. Laboratory Control Samples 11

 VII.3.3. Laboratory Duplicates..... 11

 VII.3.4. Matrix Spike/Matrix Spike Duplicate 11

 VII.4. Sample Result Verification..... 11

 VII.5. Field QC Samples..... 11

 VII.5.1. Field Blanks and Equipment Blanks 11

 VII.5.2. Field Duplicates..... 11



VIII. VARIOUS EPA METHODS — Radionuclides 11

VIII.1. Holding Times 12

VIII.2. Calibration 12

VIII.3. Quality Control Samples 12

VIII.3.1. Method Blanks 12

VIII.3.2. Laboratory Control Samples 12

VIII.3.3. Laboratory Duplicates 12

VIII.3.4. Matrix Spike/Matrix Spike Duplicate 12

VIII.4. Sample Result Verification 12

VIII.5. Field QC Samples 12

VIII.5.1. Field Blanks and Equipment Rinsates 12

VIII.5.2. Field Duplicates 12

IX. EPA METHOD 625 — Semivolatile Organic Compounds (SVOCs) 13

IX.1. Holding Times 13

IX.2. GC/MS Tuning and Calibration 13

IX.3. Quality Control Samples 13

IX.3.1. Method Blanks 13

IX.3.2. Laboratory Control Samples 13

IX.3.3. Surrogate Recovery 13

IX.3.4. Matrix Spike/Matrix Spike Duplicate 13

IX.4. Field QC Samples 13

IX.4.1. Field Blanks and Equipment Blanks: 14

IX.4.2. Field Duplicates: 14

IX.5. Internal Standards Performance 14

IX.6. Compound Identification 14

IX.7. Compound Quantification and Reported Detection Limits 14

IX.8. Tentatively Identified Compounds (TICs) 14

IX.9. System Performance 14

X. EPA METHODS 624 and 8260 SIM — Volatile Organic Compounds (VOCs) and 1,4-Dioxane



..... 14

X.1. Holding Times 14

X.2. GC/MS Tuning and Calibration 14

X.3. Quality Control Samples 15

 X.3.1. Method Blanks 15

 X.3.2. Laboratory Control Samples 15

 X.3.3. Surrogate Recovery..... 15

 X.3.4. Matrix Spike/Matrix Spike Duplicate 15

X.4. Field QC Samples..... 15

 X.4.1. Trip Blanks..... 15

 X.4.2. Field Blanks and Equipment Blanks 15

 X.4.3. Field Duplicates..... 15

X.5. Internal Standards Performance..... 15

X.6. Compound Identification 16

X.7. Compound Quantification and Reported Detection Limits 16

X.8. Tentatively Identified Compounds 16

X.9. System Performance..... 16

XI. DV-WC-0077 — Hydrazine..... 16

 XI.1. Holding Times 16

 XI.2. Calibration..... 16

 XI.3. Quality Control Samples 16

 XI.3.1. Method Blanks 16

 XI.3.2. Laboratory Control Samples 16

 XI.3.3. Laboratory Duplicates..... 16

 XI.3.4. Matrix Spike/Matrix Spike Duplicate 17

 XI.4. Sample Result Verification..... 17

 XI.5. Field QC Samples..... 17

XII. VARIOUS METHODS — GENERAL CHEMISTRY..... 17

 XII.1. Holding Times 17



XII.2. Calibration..... 17

XII.3. Quality Control Samples 18

 XII.3.1. Method Blanks 18

 XII.3.2. Laboratory Control Samples 18

 XII.3.3. Laboratory Duplicates..... 18

 XII.3.4. Matrix Spike/Matrix Spike Duplicate 18

XII.4. Sample Result Verification 18

XII.5. Field QC Samples..... 18

 XII.5.1. Field Blanks and Equipment Blanks 18

 XII.5.2. Field Duplicates..... 18

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

MECX Project No.: 1272.003H.01

Sample Delivery Group: 440-137200-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 3

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
TB-20160204	440-137200-2	N/A	Water	2/4/2016 8:25:00 AM	E624
Outfall018_20160204_ Comp	440-137200-3	N/A	Water	2/4/2016 10:15:00 AM	E1613B, E180.1, E200.7, E200.8, E218.6, E245.1, E300, E314.0, E350.2, E608, E625, EPA-821-R-02-013, HASL-300 U Mod, SM2340, SM2540C/D, SM4500-CN-E, SM5210B, SM5310B, SM5540, SW8260SIM, DV- WC-0077
Outfall018_20160204_ Comp_F	440-137200-4	N/A	Water	2/4/2016 12:01:00 PM	E200.7, E200.8, E245.1, SM2340



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-137200-1:

- The laboratories received the samples in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratories received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs.
- According to the laboratories' sample receipt checklists, custody seals were intact.
- The collection time was not listed on the COC for sample Outfall018_20150204_Comp. The sample was logged per the time of 10:15 on the sample label.
- The sample for the DV-WC-0077 analysis (monomethyl hydrazine) was received at the subcontract laboratory five days beyond the preparation holding time. As the holding time was grossly exceeded (>3×), the nondetected sample result was rejected (R). (See Holding Times section also).
- The case narrative noted headspace in the vial for TB-20160204. Results for the sample, all nondetects, were qualified as estimated (UJ). As the site sample was not analyzed for the same method, the trip blank was not used to evaluate sample data.

MECX noted anomalies regarding sample management identified below.

- Several corrections to the COCs were not initialed or dated.



TABLE 2 - DATA QUALIFIER REFERENCE

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



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	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.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) 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.
B	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.
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.
P	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.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



IV. EPA METHOD 1613B — DIOXIN/FURANS

Lynn Calvin of MEC^X reviewed the SDG on March 23, 2016

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^X Data Validation Procedure for Dioxins and Furans (DVP-19, Rev. 0), USEPA Method 1613B, and the National Functional Guidelines Chlorinated Dioxin/Furan Data Review (2011).

IV.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample was extracted and analyzed within one year of collection.

IV.2. INSTRUMENT PERFORMANCE:

Instrument performance criteria were met. Following are findings associated with instrument performance:

IV.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 less than 25%.

IV.2.2. MASS SPECTROMETER PERFORMANCE:

The mass spectrometer performance was acceptable with the static resolving power greater than 10,000.

IV.3. CALIBRATION

Calibration criteria were met. The initial calibration was acceptable with %RSDs $\leq 20\%$ for the 15 native compounds (calibration by isotope dilution) and $\leq 35\%$ for the two native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the Method 1613B control limits for all standards.

Continuing Calibration: Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning of the analytical sequence. The VER was acceptable with the concentrations within the acceptance criteria listed in Table 6 of EPA Method 1613B. The ion abundance ratios and relative retention times were within the method control limits.

IV.4. QUALITY CONTROL SAMPLES

IV.4.1. METHOD BLANKS

The method blank had detects above the EDL for isomers 1,2,3,4,6,7,8-HpCDD, 1,2,3,4,6,7,8-HpCDF, OCDD, and OCDF, and for totals HpCDD, HpCDF, and TCDD. Isomer results for the method blank contaminants detected below the reporting limit in the samples were qualified as nondetects (U) at the level of contamination based upon professional judgement and the guidance for blank qualification in the National Functional Guidelines for Dioxin Review.

Qualified isomer 1,2,3,4,6,7,8-HpCDF was equal to total HpCDF, and the reviewer verified that peaks comprising total HpCDD in the method blank were the same peaks at similar concentrations comprising



total HpCDD in sample Outfall018_20160204_Comp; therefore, results for totals HpCDD and HpCDF were qualified as nondetects (U) at the level of contamination.

IV.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 $\leq 50\%$.

IV.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. 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.

IV.6. INTERNAL STANDARDS PERFORMANCE:

The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613B.

IV.7. COMPOUND IDENTIFICATION

Compound identification was verified. All results were reviewed to ensure that 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. As 2,3,7,8-TCDF was not detected in the sample, confirmation analysis was not necessary.

IV.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. Any detects below the laboratory lower calibration level were qualified as estimated (J). Any detects between the EDL and the reporting limit (RL), or reported below the EDL, were qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Nondetects are valid to the EDL.

Results previously qualified as a nondetect for method blank contamination were not further qualified as an estimated maximum possible concentration (EMPC). Total HxCDD consisted of a single EMPC peak, and was therefore qualified as estimated (J).

V. VARIOUS METHODS — METALS

Michael Cherny of MEC^X reviewed the SDG on March 24, 2016

The samples listed in Table 1 for this analysis were validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for Metals (DVP-5, Rev. 0 and DVP-21, Rev. 0)*, EPA Methods 200.7, 200.8, and 245.1, Standard Method 2340, and the *National Functional Guidelines for Inorganic Data Review (2014)*.



V.1. HOLDING TIMES

The analytical holding times, 28 days for mercury and six months for the remaining metals, were met.

V.2. GC/MS TUNING AND CALIBRATION

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

Calibration criteria were met. The initial calibration r values were ≥ 0.995 and CRI recoveries were within the control limits of 70-130%. Although there was a mercury CCV recovered above the control limit, mercury was not detected in either site sample so no qualifications were necessary. The remaining mercury initial (ICV) and continuing (CCV) recoveries were within NFG control limits of 85-115%. ICV and CCV recoveries for the remaining analytes were within NFG control limits of 90-110%.

V.3. QUALITY CONTROL SAMPLES

V.3.1. METHOD BLANKS

Total antimony was detected in a bracketing CCB at 0.764 $\mu\text{g/L}$; therefore, total antimony in Outfall018_20160204_Comp was qualified as nondetected (U), at the level of contamination. There were other detects in the method blanks and CCBs, but none of sufficient concentration to qualify any additional site sample results.

V.3.2. INTERFERENCE CHECK SAMPLES:

Recoveries were within 80-120%. Although interferences were present in the ICSA solution, there was no recognized effect on matrix interference, as sample detections were less than half of the ICSAB spike amounts.

V.3.3. LABORATORY CONTROL SAMPLES

The recoveries were within the method control limits of 85-115%.

V.3.4. LABORATORY DUPLICATES:

Laboratory duplicate analyses were performed on Outfall018_20160204_Comp and Outfall018_20160204_Comp_F for hardness. The RPD was within the laboratory-established control limit.

V.3.5. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on sample Outfall018_20160204_Comp and Outfall018_20160204_Comp_F. Results were not assessed when the parent sample concentration exceeded the spike amount by 4 \times . Recoveries and RPDs were within the method control limits of 70-130% and $\leq 20\%$, respectively.

V.4. SERIAL DILUTION

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

V.5. INTERNAL STANDARDS PERFORMANCE

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



V.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Calculations were verified and the sample results reported on the sample result summary were verified against the raw data. No transcription errors or calculation errors were noted. When the sample results were qualified and the reviewer was able to clearly determine bias, detected results were qualified as either J+ or J-; otherwise, bias was not indicated in the qualification. Detects below the RL were qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Nondetects are valid to the MDL.

V.7. FIELD QC SAMPLES

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

V.7.1. FIELD BLANKS AND EQUIPMENT BLANKS

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

V.7.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

VI. EPA METHOD 608 — PESTICIDES AND PCBs

Lynn Calvin of MEC^X reviewed the SDG on March 23, 2016

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

VI.1. HOLDING TIMES

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

VI.2. CALIBRATION

The initial calibrations had %RSDs of $\leq 10\%$ or r^2 of ≥ 0.990 on both analytical columns. The initial calibration verifications (ICVs) and continuing calibration verifications (CCVs) bracketing the sample analysis had %Ds within the control limit of $\leq 15\%$, with the exception of the %D for endosulfan II of 20.8% in the ending pesticide CCV, with a low response on the secondary column. The beginning PCB CCV had high responses for three Aroclor 1016 peaks and four Aroclor 1260 peaks on the primary column. The nondetects for endosulfan II and all Aroclors in sample Outfall018_20160204_Comp were qualified as estimated (UJ). The breakdown totals for endrin and 4,4'-DDT were $\leq 15\%$.

VI.3. QUALITY CONTROL SAMPLES

VI.3.1. METHOD BLANKS

Target compounds were not detected in method blanks.

VI.3.2. LABORATORY CONTROL SAMPLES

Recoveries were within the laboratory-established control limits. Chlordane and toxaphene were not spiked in the pesticide LCS.

VI.3.3. SURROGATE RECOVERY

Pesticide surrogate tetrachloro-m-xylene (TCMX) and PCB surrogate decachlorobiphenyl (DCB) were recovered within the laboratory control limits of 10-150% and 29-115%, respectively, in the site sample.

VI.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Matrix spike (MS)/MS duplicate (MSD) analyses were performed on sample Outfall018_20160204_Comp for pesticides and PCBs. Chlordane and toxaphene were not spiked in the pesticide MS/MSD. The recoveries and RPDs were within the laboratory control limits. Chlordane and toxaphene were not spiked in the pesticide MS/MSD.

VI.4. FIELD QC SAMPLES

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

- Field Blanks and Equipment Blanks: Field blank or equipment blank samples were not identified for this SDG.
- Field Duplicates: Field duplicate samples were not identified in this SDG.

VI.5. COMPOUND IDENTIFICATION

Compound identification was verified. Review of the sample chromatograms and retention times indicated no problems with target compound identification. The laboratory analyzed for select pesticides and seven Aroclors by EPA Method 608.

VI.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. Results reported below the reporting limit were qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Reported nondetects are valid to the reporting limit.

VII. EPA METHOD 314.0 — PERCHLORATE

Michael Cherny of MEC^x reviewed the SDG on March 24, 2016

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

VII.1. HOLDING TIMES

The analytical holding time, 28 days, was met.



VII.2. CALIBRATION

Calibration criteria were met. The initial calibration r^2 value was ≥ 0.995 and all initial and continuing calibration recoveries were within 90-110%. The MRL was recovered in the method QC limits of 90-110%. IPC recoveries were within the method-established control limit of 80-120%.

VII.3. QUALITY CONTROL SAMPLES

VII.3.1. METHOD BLANKS

Method blanks and CCBs had no detects.

VII.3.2. LABORATORY CONTROL SAMPLES

Recoveries were within the method-established QC limits of 85-115%.

VII.3.3. LABORATORY DUPLICATES

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

VII.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Recoveries and RPDs were within method-established QC limits of 80-120% and $\leq 15\%$, respectively.

VII.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. When the sample results were qualified and the reviewer was able to clearly determine bias, detected results were qualified as either J+ or J-; otherwise, bias was not indicated in the qualification. Any detects between the method detection limit and the reporting limit were qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Reported nondetects are valid to the MDL.

VII.5. FIELD QC SAMPLES

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

VII.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

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

VII.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

VIII. VARIOUS EPA METHODS — RADIONUCLIDES

Elizabeth Wessling of MEC^X reviewed the SDG on March 28, 2016

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *EPA Methods 901.1 and HASL-300 U Mod*, and the *National Functional Guidelines for Inorganic Data Review* (2014).

**VIII.1. HOLDING TIMES**

Aliquots were prepared within the five-day analytical holding time for unpreserved samples.

VIII.2. CALIBRATION

The laboratory calibration information included the standard certificates and applicable preparation/dilutions logs for NIST-traceability.

The total uranium detector efficiencies were greater than 20%. Carrier/tracer recoveries were within the laboratory control limits of 40-110%. All calibration checks were acceptable.

VIII.3. QUALITY CONTROL SAMPLES**VIII.3.1. METHOD BLANKS**

There were no analytes detected in the method blanks great enough to qualify the site sample.

VIII.3.2. LABORATORY CONTROL SAMPLES

The recoveries were within laboratory-established control limits.

VIII.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were performed on the sample in this SDG for total uranium, cesium-137, and potassium-40. The relative error ratio was within the laboratory control limit of ≤ 1 .

VIII.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

A matrix spike (MS)/MS duplicate pair was performed for the total uranium analysis. Recoveries and RPD were within the laboratory control limits.

VIII.4. SAMPLE RESULT VERIFICATION

An EPA Level IV review was performed for the sample in this data package. The sample results and MDCs reported on the sample result form were verified against the raw data and no calculation or transcription errors were noted. Reported nondetects are valid to the MDC.

VIII.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:

VIII.5.1. FIELD BLANKS AND EQUIPMENT RINSATES

This SDG had no identified field blank or equipment rinsate samples.

VIII.5.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.



IX. EPA METHOD 625 — SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

Lynn Calvin of MEC^X reviewed the SDG on March 24, 2016

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

IX.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.

IX.2. GC/MS TUNING AND CALIBRATION

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

Calibration criteria were met, with several exceptions noted below. The initial calibration average RRFs were ≥ 0.05 and $\%RSD \leq 35\%$ or r^2 of ≥ 0.990 . An ICV was analyzed (though not specifically required by the method), with the following $\%D$ outliers: 2,4-dinitrophenol (24.4%), 2,4-dinitrotoluene (20.9%), 4-nitrophenol (23.0%), and naphthalene (28.1%). The $\%D$ for 4,6-dinitro-2-methylphenol was 27.0% in the CCV. Results for the $\%D$ outliers, all nondetects, were qualified as estimated (UJ) in sample Outfall018_20160204_Comp. The ICV and CCV RRFs were ≥ 0.05 and remaining $\%Ds$ were within the method control limit of $\leq 20\%$.

IX.3. QUALITY CONTROL SAMPLES

IX.3.1. METHOD BLANKS

Target compounds were not detected in the method blank.

IX.3.2. LABORATORY CONTROL SAMPLES

Recoveries were within the laboratory control limits.

IX.3.3. SURROGATE RECOVERY

Recoveries were within the laboratory control limits.

IX.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on sample Outfall018_20160204_Comp. Benzidine and 3,3'-dichlorobenzidine were not recovered in the MS or MSD; therefore, the nondetected parent sample results for both compounds were rejected (R). Hexachlorocyclopentadiene was not recovered in the MS but was within the control limits in the MSD; however, no qualifications were assigned for the single outlier or inconsistent results. The remaining recoveries and calculated RPDs were within the laboratory control limits.

IX.4. FIELD QC SAMPLES

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



IX.4.1. FIELD BLANKS AND EQUIPMENT BLANKS:

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

IX.4.2. FIELD DUPLICATES:

Field duplicate samples were not identified in this SDG.

IX.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.

IX.6. COMPOUND IDENTIFICATION

Compound identification was verified. The laboratory analyzed for semivolatile target compounds by EPA Method 625. Review of the sample chromatogram, retention times, and spectra indicated no problems with target compound identification.

IX.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. Results reported below the reporting limit were qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Reported nondetects are valid to the reporting limit.

IX.8. TENTATIVELY IDENTIFIED COMPOUNDS (TICs)

The laboratory did not report TICs for this SDG.

IX.9. SYSTEM PERFORMANCE

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

X. EPA METHODS 624 AND 8260 SIM — VOLATILE ORGANIC COMPOUNDS (VOCs) AND 1,4-DIOXANE

Lynn S. Calvin of MEC^x reviewed the SDG on March 24, 2016

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC^x *Data Validation Procedure for Volatile Organics (DVP-2, Rev. 2)*, *EPA Methods 624 and 8260 SIM*, and the *National Functional Guidelines for Superfund Organic Methods Data Review (2014)*.

X.1. HOLDING TIMES

Analytical holding times were met. The unpreserved aliquot of water sample TB-20160204 was analyzed for acrolein, acrylonitrile, and 2-chloroethyl vinyl ether within seven days of collection. The preserved aliquots of the water samples were analyzed within 14 days of collection.

X.2. GC/MS TUNING AND CALIBRATION

The BFB tunes met the method abundance criteria. The 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 ≥ 0.05 for all applicable target compounds. The Method 624 initial calibration %RSDs were $\leq 35\%$, or r^2 values ≥ 0.990 , and second source ICV and all applicable CCV recoveries were within the method control limits, with the exception of the %Ds of 30.5% for cis-1,2-dichloropropene and 20.9% for 1,2-dichloropropane. The nondetected results for both compounds were qualified as estimated (UJ) in sample TB-20160204. The Method 8260B initial calibration %RSD was $\leq 15\%$ for 1,4-dioxane, and the ICV and CCV %Ds were $\leq 20\%$.

X.3. QUALITY CONTROL SAMPLES

X.3.1. METHOD BLANKS

Target compound were not detected in the method blanks.

X.3.2. LABORATORY CONTROL SAMPLES

Recoveries were within the laboratory control limits

X.3.3. SURROGATE RECOVERY

Recoveries were within the laboratory control limits.

X.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on sample Outfall018_20160204_Comp. for the Method 624 unpreserved analytes acrolein, acrylonitrile, and 2-chloroethyl vinyl ether, and Method 8260B for 1,4-dioxane. Recoveries and RPDs were within the laboratory control limits.

X.4. FIELD QC SAMPLES

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

X.4.1. TRIP BLANKS

Sample TB-20160204 was identified as a trip blank in this SDG; however, the trip blank and site sample were not analyzed by the same method, and the trip blank was not used to evaluate sample data.

X.4.2. FIELD BLANKS AND EQUIPMENT BLANKS

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

X.4.3. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

X.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.



X.6. COMPOUND IDENTIFICATION

Compound identification was verified. The laboratory analyzed for volatile organic target compounds by EPA Method 624, and for 1,4-dioxane by EPA Method 8260 (SIM). Review of the sample chromatograms, retention times, and spectra indicated no problems with target compound identification.

X.7. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limit was supported by the low point of the initial calibrations and the laboratory MDLs. Any result reported between the MDL and the reporting limit was qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Reported nondetects are valid to the reporting limit.

X.8. TENTATIVELY IDENTIFIED COMPOUNDS

The laboratory did not report TICs for this SDG.

X.9. SYSTEM PERFORMANCE

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

XI. DV-WC-0077 — MONOMETHYL HYDRAZINE

Lynn S. Calvin of MEC^X reviewed the SDG on March 24, 2016

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for Polynuclear Aromatic Hydrocarbons by HPLC (DVP-15, Rev. 0)*, *EPA Method 8315A* and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

XI.1. HOLDING TIMES

The water sample was acidified 11 days past the holding time of 48 hours from the time of collection. Although the analytical holding time of within 28 days of acidification was met, the preparation holding time was grossly exceeded (>3×) and the nondetected sample result was rejected (R).

XI.2. CALIBRATION

As the sample result for Outfall018_20160204_Comp was previously rejected (see Holding Times section) further evaluation was not performed.

XI.3. QUALITY CONTROL SAMPLES

XI.3.1. METHOD BLANKS

As the sample result for Outfall018_20160204_Comp was previously rejected (see Holding Times section) further evaluation was not performed.

XI.3.2. LABORATORY CONTROL SAMPLES

As the sample result for Outfall018_20160204_Comp was previously rejected (see Holding Times section) further evaluation was not performed.

XI.3.3. LABORATORY DUPLICATES



As the sample result for Outfall018_20160204_Comp was previously rejected (see Holding Times section) further evaluation was not performed.

XI.3.4. **MATRIX SPIKE/MATRIX SPIKE DUPLICATE**

As the sample result for Outfall018_20160204_Comp was previously rejected (see Holding Times section) further evaluation was not performed.

XI.4. **SAMPLE RESULT VERIFICATION**

As the sample result for Outfall018_20160204_Comp was previously rejected (see Holding Times section) further evaluation was not performed.

XI.5. **FIELD QC SAMPLES**

As the sample result for Outfall018_20160204_Comp was previously rejected (see Holding Times section) further evaluation was not performed.

XII. **VARIOUS METHODS — GENERAL CHEMISTRY**

Michael Cherny of MEC^X reviewed the SDG on March 24, 2016 and March 26, 2016

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, EPA Methods 180.1, 218.6, 300.0, 350.2 and 821-R-02-013, *Standard Methods for the Examination of Water and Wastewater 2540C, 2540D, 4500-CN-E, 5210B, 5310B, and 5540*, and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

XII.1. **HOLDING TIMES**

The method analytical holding time for hexavalent chromium, 24 hours from collection, was exceeded by about three hours; therefore, hexavalent chromium detected in sample Outfall018_20160204_Comp was qualified as estimated with potential low bias (J-). Remaining analytical holding times as listed below were met:

- 24 hours from collection for biochemical oxygen demand (BOD)
- 36 hours for chronic toxicity
- 48 hours for nitrate/nitrite as nitrogen, Methyl Blue Active Substances (MBAs), and turbidity
- 7 days for total dissolved solids (TDS) and total suspended solids (TSS)
- 14 days for total cyanide
- 28 days for ammonia (as N), chloride, fluoride, sulfate, and total organic carbon (TOC)

XII.2. **CALIBRATION**

Calibration criteria were met. The initial calibration r^2 values were ≥ 0.995 and all initial and continuing calibration recoveries were within 90-110%. The MRL recovery for hexavalent chromium was within the reasonable control limits of 50-150%. Analytical balance calibration logs were provided by the lab. For chronic toxicity, instruments were calibrated as per the manufacturer requirements and standard reference toxicant testing was performed to verify culture health and sensitivity



XII.3. QUALITY CONTROL SAMPLES

XII.3.1. METHOD BLANKS

The method blanks and CCBs had no detects affecting sample results.

XII.3.2. LABORATORY CONTROL SAMPLES

Recoveries were within the laboratory control limits and RPDs for anions, total cyanide and BOD were within the laboratory control limits.

XII.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were performed on Outfall018_20160204_Comp for TDS. The RPD was within the laboratory-established control limit of $\leq 5\%$.

XII.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on Outfall018_20160204_Comp for ammonia (as N), anions, and hexavalent chromium. Sulfate (60% / 61%) and chloride (74% / 75%) recoveries were below the control limit of 80-120%; therefore, sulfate and chloride detected in the site sample were qualified as estimated with potential low bias (J-). Remaining recoveries and RPDs were within the laboratory-established control limits.

XII.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. When the sample results were qualified and the reviewer was able to clearly determine bias, detected results were qualified as either J+ or J-; otherwise, bias was not indicated in the qualification. Any detects between the method detection limit and the reporting limit were qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Reported nondetects are valid to the MDL. The lab reported both the undiluted and diluted results for anions in the EDD; therefore, the reviewer rejected, "R", undiluted results for chloride, as well as diluted results for nitrate, nitrite, and fluoride. Sulfate and chloride were reported from 20x dilutions.

XII.5. FIELD QC SAMPLES

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

XII.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

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

XII.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms: 440-137200-1

Analysis Method DV-WC-0077

Sample Name Outfall018_20160204_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/4/2016 10:15:00 AM **Validation Level:** 8

Lab Sample Name: 440-137200-3

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Monomethyl hydrazine	N	60-34-4	0.25	10	0.25	ug/L	UBU	R	H

Analysis Method E1613B

Sample Name Outfall018_20160204_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/4/2016 10:15:00 AM **Validation Level:** 8

Lab Sample Name: 440-137200-3

Analyte	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	0.0000017	0.000096	0.0000017	ug/L	U	U	
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	N	3268-87-9	0.000018	0.000096	0.0000013	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	N	67562-39-4	0.0000025	0.000048	0.0000010	ug/L	J,DXqMB	U	B
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	N	35822-46-9	0.0000041	0.000048	0.00000084	ug/L	J,DXMB	U	B
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	N	55673-89-7	0.0000017	0.000048	0.0000017	ug/L	U	U	
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	N	70648-26-9	0.0000015	0.000048	0.0000015	ug/L	U	U	
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	39227-28-6	0.0000012	0.000048	0.0000012	ug/L	U	U	
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	57117-44-9	0.0000012	0.000048	0.0000012	ug/L	U	U	
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	57653-85-7	0.0000011	0.000048	0.0000011	ug/L	U	U	
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	N	72918-21-9	0.00000088	0.000048	0.00000088	ug/L	U	U	
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	N	19408-74-3	0.00000093	0.000048	0.00000093	ug/L	U	U	
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-41-6	0.0000025	0.000048	0.0000025	ug/L	U	U	
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	N	40321-76-4	0.0000016	0.000048	0.0000016	ug/L	U	U	
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	60851-34-5	0.00000085	0.000048	0.00000085	ug/L	U	U	
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-31-4	0.0000029	0.000048	0.0000029	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	0.0000012	0.000096	0.0000012	ug/L	U	U	

Analysis Method E1613B

2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	N	1746-01-6	0.0000011	0.0000096	0.0000011	ug/L	U	U	
Total Heptachlorodibenzofuran (HpCDF)	N	38998-75-3	0.0000025	0.000048	0.0000014	ug/L	J,DXqMB	U	B
Total Heptachlorodibenzo-p-dioxin (HpCDD)	N	37871-00-4	0.0000080	0.000048	0.00000084	ug/L	J,DXqMB	U	B
Total Hexachlorodibenzofuran (HxCDF)	N	55684-94-1	0.0000085	0.000048	0.00000085	ug/L	U	U	
Total Hexachlorodibenzo-p-dioxin (HxCDD)	N	34465-46-8	0.0000019	0.000048	0.0000011	ug/L	J,DXq	J	DNQ, *III
Total Pentachlorodibenzofuran (PeCDF)	N	30402-15-4	0.0000025	0.000048	0.0000025	ug/L	U	U	
Total Pentachlorodibenzo-p-dioxin (PeCDD)	N	36088-22-9	0.0000016	0.000048	0.0000016	ug/L	U	U	
Total Tetrachlorodibenzofuran (TCDF)	N	55722-27-5	0.0000012	0.0000096	0.0000012	ug/L	U	U	
Total Tetrachlorodibenzo-p-dioxin (TCDD)	N	41903-57-5	0.0000011	0.0000096	0.0000011	ug/L	U	U	

Analysis Method E180.1

Sample Name	Outfall018_20160204_Comp		Matrix Type:	WM	Result Type:	TRG
Sample Date:	2/4/2016 10:15:00 AM		Validation Level:	8		
Lab Sample Name:	440-137200-3					

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Turbidity	N	TURBIDITY	0.22	0.10	0.040	NTU			

Analysis Method E200.7

Sample Name	Outfall018_20160204_Comp		Matrix Type:	WM	Result Type:	TRG
Sample Date:	2/4/2016 10:15:00 AM		Validation Level:	8		
Lab Sample Name:	440-137200-3					

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Arsenic	T	7440-38-2	5.0	10	5.0	ug/L	U	U	
Barium	T	7440-39-3	0.014	0.010	0.0050	mg/L			
Beryllium	T	7440-41-7	1.0	2.0	1.0	ug/L	U	U	
Boron	T	7440-42-8	0.052	0.050	0.010	mg/L			
Calcium	T	7440-70-2	81000	100	50	ug/L			
Chromium	T	7440-47-3	2.5	5.0	2.5	ug/L	U	U	
Cobalt	T	7440-48-4	2.5	10	2.5	ug/L	U	U	
Iron	T	7439-89-6	0.010	0.040	0.010	mg/L	U	U	
Magnesium	T	7439-95-4	10000	20	10	ug/L			
Manganese	T	7439-96-5	10	20	10	ug/L	U	U	
Nickel	T	7440-02-0	5.0	10	5.0	ug/L	U	U	
Silver	T	7440-22-4	5.0	10	5.0	ug/L	U	U	
Vanadium	T	7440-62-2	5.0	10	5.0	ug/L	U	U	

Analysis Method E200.7

Zinc	T	7440-66-6	10	20	10	ug/L	U	U
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Sample Name: Outfall018_20160204_Comp_F **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/4/2016 12:01:00 PM **Validation Level:** 8

Lab Sample Name: 440-137200-4

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Arsenic	D	7440-38-2	5.0	10	5.0	ug/L	UQP	U	
Barium	D	7440-39-3	0.015	0.010	0.0050	mg/L	QP		
Beryllium	D	7440-41-7	1.0	2.0	1.0	ug/L	UQP	U	
Boron	D	7440-42-8	0.053	0.050	0.010	mg/L	QP		
Chromium	D	7440-47-3	2.5	5.0	2.5	ug/L	UQP	U	
Cobalt	D	7440-48-4	2.5	10	2.5	ug/L	UQP	U	
Iron	D	7439-89-6	0.010	0.040	0.010	mg/L	UQP	U	
Manganese	D	7439-96-5	10	20	10	ug/L	UQP	U	
Nickel	D	7440-02-0	5.0	10	5.0	ug/L	UQP	U	
Silver	D	7440-22-4	5.0	10	5.0	ug/L	UQP	U	
Vanadium	D	7440-62-2	5.0	10	5.0	ug/L	UQP	U	
Zinc	D	7440-66-6	10	20	10	ug/L	UQP	U	

Analysis Method E200.8

Sample Name: Outfall018_20160204_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/4/2016 10:15:00 AM **Validation Level:** 8

Lab Sample Name: 440-137200-3

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Antimony	T	7440-36-0	0.84	2.0	0.50	ug/L	J,DX	U	B
Cadmium	T	7440-43-9	0.25	1.0	0.25	ug/L	U	U	
Copper	T	7440-50-8	0.94	2.0	0.50	ug/L	J,DX	J	DNQ
Lead	T	7439-92-1	0.50	1.0	0.50	ug/L	U	U	
Selenium	T	7782-49-2	0.50	2.0	0.50	ug/L	U	U	
Thallium	T	7440-28-0	0.50	1.0	0.50	ug/L	U	U	

Sample Name: Outfall018_20160204_Comp_F **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/4/2016 12:01:00 PM **Validation Level:** 8

Lab Sample Name: 440-137200-4

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Antimony	D	7440-36-0	0.50	2.0	0.50	ug/L	UQP	U	
Cadmium	D	7440-43-9	0.25	1.0	0.25	ug/L	UQP	U	
Copper	D	7440-50-8	1.3	2.0	0.50	ug/L	J,DXQP	J	DNQ
Lead	D	7439-92-1	0.50	1.0	0.50	ug/L	UQP	U	
Selenium	D	7782-49-2	0.50	2.0	0.50	ug/L	UQP	U	

Analysis Method E200.8

Thallium	D	7440-28-0	0.50	1.0	0.50	ug/L	UQP	U	
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Analysis Method E218.6

Sample Name Outfall018_20160204_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/4/2016 10:15:00 AM **Validation Level:** 8

Lab Sample Name: 440-137200-3

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
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Chromium VI (Hexavalent)	T	18540-29-9	0.26	1.0	0.25	ug/L	J,DX	J-	DNQ, H
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Analysis Method E245.1

Sample Name Outfall018_20160204_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/4/2016 10:15:00 AM **Validation Level:** 8

Lab Sample Name: 440-137200-3

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
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Mercury	T	7439-97-6	0.10	0.20	0.10	ug/L	U	U	
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Sample Name Outfall018_20160204_Comp_F **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/4/2016 12:01:00 PM **Validation Level:** 8

Lab Sample Name: 440-137200-4

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
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Mercury	D	7439-97-6	0.10	0.20	0.10	ug/L	UIBQP	U	
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Analysis Method E300

Sample Name Outfall018_20160204_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/4/2016 10:15:00 AM **Validation Level:** 8

Lab Sample Name: 440-137200-3

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
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Chloride	N	16887-00-6	19	10	5.0	mg/L		J-	Q
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Chloride	N	16887-00-6	16	0.50	0.25	mg/L		R	D
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Fluoride	N	16984-48-8	5.0	10	5.0	mg/L	U	R	D
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Fluoride	N	16984-48-8	0.25	0.50	0.25	mg/L	U	U	
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Nitrate (as N)	N	14797-55-8	1.1	2.2	1.1	mg/L	U	R	D
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Nitrate (as N)	N	14797-55-8	0.24	0.11	0.055	mg/L			
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Nitrite (as N)	N	14797-65-0	1.4	3.0	1.4	mg/L	U	R	D
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Nitrite (as N)	N	14797-65-0	0.11	0.15	0.070	mg/L	J,DX	J	DNQ
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Nitrite/Nitrate	N	NO2NO3	0.35	0.15	0.070	mg/L			
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Sulfate	N	14808-79-8	240	10	5.0	mg/L		J-	Q
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Analysis Method E314.0**Sample Name** Outfall018_20160204_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/4/2016 10:15:00 AM **Validation Level:** 8**Lab Sample Name:** 440-137200-3

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Perchlorate	N	14797-73-0	0.95	4.0	0.95	ug/L	U	U	

Analysis Method E350.2**Sample Name** Outfall018_20160204_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/4/2016 10:15:00 AM **Validation Level:** 8**Lab Sample Name:** 440-137200-3

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Ammonia (as N)	N	7664-41-7N	0.411	0.500	0.100	mg/L	J,DX	J	DNQ

Analysis Method E608**Sample Name** Outfall018_20160204_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/4/2016 10:15:00 AM **Validation Level:** 8**Lab Sample Name:** 440-137200-3

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
4,4'-DDD	N	72-54-8	0.0048	0.0048	0.0038	ug/L	U	U	
4,4'-DDE	N	72-55-9	0.0048	0.0048	0.0029	ug/L	U	U	
4,4'-DDT	N	50-29-3	0.0096	0.0096	0.0038	ug/L	U	U	
Aldrin	N	309-00-2	0.0048	0.0048	0.0014	ug/L	U	U	
alpha-BHC	N	319-84-6	0.0048	0.0048	0.0024	ug/L	U	U	
Aroclor-1016 (PCB-1016)	N	12674-11-2	0.48	0.48	0.24	ug/L	U	UJ	C
Aroclor-1221 (PCB-1221)	N	11104-28-2	0.48	0.48	0.24	ug/L	U	UJ	C
Aroclor-1232 (PCB-1232)	N	11141-16-5	0.48	0.48	0.24	ug/L	U	UJ	C
Aroclor-1242 (PCB-1242)	N	53469-21-9	0.48	0.48	0.24	ug/L	U	UJ	C
Aroclor-1248 (PCB-1248)	N	12672-29-6	0.48	0.48	0.24	ug/L	U	UJ	C
Aroclor-1254 (PCB-1254)	N	11097-69-1	0.48	0.48	0.24	ug/L	U	UJ	C
Aroclor-1260 (PCB-1260)	N	11096-82-5	0.48	0.48	0.24	ug/L	U	UJ	C
beta-BHC	N	319-85-7	0.0096	0.0096	0.0038	ug/L	U	U	
Chlordane	N	57-74-9	0.096	0.096	0.077	ug/L	U	U	
delta-BHC	N	319-86-8	0.0048	0.0048	0.0033	ug/L	U	U	
Dieldrin	N	60-57-1	0.0048	0.0048	0.0019	ug/L	U	U	
Endosulfan I	N	959-98-8	0.0048	0.0048	0.0029	ug/L	U	U	
Endosulfan II	N	33213-65-9	0.0048	0.0048	0.0019	ug/L	U	UJ	C
Endosulfan sulfate	N	1031-07-8	0.0096	0.0096	0.0029	ug/L	U	U	
Endrin	N	72-20-8	0.0048	0.0048	0.0019	ug/L	U	U	

Analysis Method E608

Endrin aldehyde	N	7421-93-4	0.0096	0.0096	0.0019	ug/L	U	U
gamma-BHC (Lindane)	N	58-89-9	0.0096	0.0096	0.0029	ug/L	U	U
Heptachlor	N	76-44-8	0.0096	0.0096	0.0029	ug/L	U	U
Heptachlor epoxide	N	1024-57-3	0.0048	0.0048	0.0024	ug/L	U	U
Toxaphene	N	8001-35-2	0.48	0.48	0.24	ug/L	U	U

Analysis Method E624

Sample Name: TB-20160204 **Matrix Type:** WMQ **Result Type:** TRG
Sample Date: 2/4/2016 8:25:00 AM **Validation Level:** 8
Lab Sample Name: 440-137200-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,1,1-Trichloroethane	N	71-55-6	0.50	0.50	0.25	ug/L	U	UJ	*II
1,1,2,2-Tetrachloroethane	N	79-34-5	0.50	0.50	0.25	ug/L	U	UJ	*II
1,1,2-Trichloroethane	N	79-00-5	0.50	0.50	0.25	ug/L	U	UJ	*II
1,1-Dichloroethane	N	75-34-3	0.50	0.50	0.25	ug/L	U	UJ	*II
1,1-Dichloroethene	N	75-35-4	0.50	0.50	0.25	ug/L	U	UJ	*II
1,2-Dichloro-1,1,2-trifluoroethane	N	354-23-4	2.0	2.0	1.0	ug/L	U	UJ	*II
1,2-Dichlorobenzene	N	95-50-1	0.50	0.50	0.25	ug/L	U	UJ	*II
1,2-Dichloroethane	N	107-06-2	0.50	0.50	0.25	ug/L	U	UJ	*II
1,2-Dichloropropane	N	78-87-5	0.50	0.50	0.25	ug/L	U	UJ	*II, C
1,3-Dichlorobenzene	N	541-73-1	0.50	0.50	0.25	ug/L	U	UJ	*II
1,4-Dichlorobenzene	N	106-46-7	0.50	0.50	0.25	ug/L	U	UJ	*II
2-Chloroethyl vinyl ether	N	110-75-8	2.0	2.0	1.0	ug/L	UBU	UJ	*II
Acrolein	N	107-02-8	5.0	5.0	2.5	ug/L	UBU	UJ	*II
Acrylonitrile	N	107-13-1	2.0	2.0	1.0	ug/L	UBU	UJ	*II
Benzene	N	71-43-2	0.50	0.50	0.25	ug/L	U	UJ	*II
Bromodichloromethane	N	75-27-4	0.50	0.50	0.25	ug/L	U	UJ	*II
Bromoform	N	75-25-2	1.0	1.0	0.40	ug/L	U	UJ	*II
Bromomethane (Methyl Bromide)	N	74-83-9	0.50	0.50	0.25	ug/L	U	UJ	*II
Carbon tetrachloride	N	56-23-5	0.50	0.50	0.25	ug/L	U	UJ	*II
Chlorobenzene	N	108-90-7	0.50	0.50	0.25	ug/L	U	UJ	*II
Chloroethane	N	75-00-3	1.0	1.0	0.40	ug/L	U	UJ	*II
Chloroform (Trichloromethane)	N	67-66-3	0.50	0.50	0.25	ug/L	U	UJ	*II
Chloromethane (Methyl Chloride)	N	74-87-3	0.50	0.50	0.25	ug/L	U	UJ	*II
cis-1,2-Dichloroethene	N	156-59-2	0.50	0.50	0.25	ug/L	U	UJ	*II
cis-1,3-Dichloropropene	N	10061-01-5	0.50	0.50	0.25	ug/L	U	UJ	*II, C
Cyclohexane	N	110-82-7	2.0	2.0	1.0	ug/L	U	UJ	*II
Dibromochloromethane	N	124-48-1	0.50	0.50	0.25	ug/L	U	UJ	*II
Ethylbenzene	N	100-41-4	0.50	0.50	0.25	ug/L	U	UJ	*II
m,p-Xylenes	N	179601-23-1	1.0	1.0	0.50	ug/L	U	UJ	*II
Methylene chloride	N	75-09-2	2.0	2.0	0.88	ug/L	U	UJ	*II

Analysis Method E624

Naphthalene	N	91-20-3	1.0	1.0	0.40	ug/L	U	UJ	*II
o-Xylene	N	95-47-6	0.50	0.50	0.25	ug/L	U	UJ	*II
Tetrachloroethene	N	127-18-4	0.50	0.50	0.25	ug/L	U	UJ	*II
Toluene	N	108-88-3	0.50	0.50	0.25	ug/L	U	UJ	*II
trans-1,2-Dichloroethene	N	156-60-5	0.50	0.50	0.25	ug/L	U	UJ	*II
trans-1,3-Dichloropropene	N	10061-02-6	0.50	0.50	0.25	ug/L	U	UJ	*II
Trichloroethene	N	79-01-6	0.50	0.50	0.25	ug/L	U	UJ	*II
Trichlorofluoromethane (CFC-11)	N	75-69-4	0.50	0.50	0.25	ug/L	U	UJ	*II
Trifluorotrichloroethane (Freon 113)	N	76-13-1	2.0	2.0	0.50	ug/L	U	UJ	*II
Vinyl chloride	N	75-01-4	0.50	0.50	0.25	ug/L	U	UJ	*II
Xylene (total)	N	1330-20-7	1.0	1.0	0.50	ug/L	U	UJ	*II

Analysis Method E625

Sample Name Outfall018_20160204_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/4/2016 10:15:00 AM Validation Level: 8

Lab Sample Name: 440-137200-3

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,2,4-Trichlorobenzene	N	120-82-1	0.952	0.952	0.476	ug/L	U	U	
1,2-Dichlorobenzene	N	95-50-1	0.476	0.476	0.190	ug/L	U	U	
1,2-Diphenylhydrazine	N	122-66-7	0.952	0.952	0.476	ug/L	U	U	
1,3-Dichlorobenzene	N	541-73-1	0.476	0.476	0.190	ug/L	U	U	
1,4-Dichlorobenzene	N	106-46-7	0.476	0.476	0.190	ug/L	U	U	
2,2'-oxybis(1-Chloropropane)	N	108-60-1	0.476	0.476	0.190	ug/L	U	U	
2,4,6-Trichlorophenol	N	88-06-2	0.952	0.952	0.476	ug/L	U	U	
2,4-Dichlorophenol	N	120-83-2	1.90	1.90	0.952	ug/L	U	U	
2,4-Dimethylphenol	N	105-67-9	1.90	1.90	0.952	ug/L	U	U	
2,4-Dinitrophenol	N	51-28-5	4.76	4.76	1.90	ug/L	U	UJ	C
2,4-Dinitrotoluene	N	121-14-2	4.76	4.76	1.90	ug/L	U	UJ	C
2,6-Dinitrotoluene	N	606-20-2	4.76	4.76	1.90	ug/L	U	U	
2-Chloronaphthalene	N	91-58-7	0.476	0.476	0.190	ug/L	U	U	
2-Chlorophenol	N	95-57-8	0.952	0.952	0.476	ug/L	U	U	
2-Nitrophenol	N	88-75-5	1.90	1.90	0.952	ug/L	U	U	
3,3'-Dichlorobenzidine	N	91-94-1	4.76	4.76	1.90	ug/L	U	R	Q
4,6-Dinitro-2-methylphenol	N	534-52-1	4.76	4.76	1.90	ug/L	U	UJ	C
4-Bromophenyl phenyl ether	N	101-55-3	0.952	0.952	0.476	ug/L	U	U	
4-Chloro-3-methylphenol	N	59-50-7	1.90	1.90	0.190	ug/L	U	U	
4-Chlorophenyl phenyl ether	N	7005-72-3	0.476	0.476	0.190	ug/L	U	U	
4-Nitrophenol	N	100-02-7	4.76	4.76	1.90	ug/L	U	UJ	C
Acenaphthene	N	83-32-9	0.476	0.476	0.190	ug/L	U	U	
Acenaphthylene	N	208-96-8	0.476	0.476	0.190	ug/L	U	U	
Anthracene	N	120-12-7	0.476	0.476	0.190	ug/L	U	U	

Analysis Method E625

Benidine	N	92-87-5	9.52	9.52	4.76	ug/L	U	R	Q
Benzo(a)anthracene	N	56-55-3	4.76	4.76	1.90	ug/L	U	U	
Benzo(a)pyrene	N	50-32-8	1.90	1.90	0.476	ug/L	U	U	
Benzo(b)fluoranthene	N	205-99-2	1.90	1.90	0.952	ug/L	U	U	
Benzo(g,h,i)perylene	N	191-24-2	4.76	4.76	1.90	ug/L	U	U	
Benzo(k)fluoranthene	N	207-08-9	0.476	0.476	0.238	ug/L	U	U	
bis(2-Chloroethoxy)methane	N	111-91-1	0.476	0.476	0.190	ug/L	U	U	
bis(2-Chloroethyl)ether	N	111-44-4	0.476	0.476	0.190	ug/L	U	U	
bis(2-Ethylhexyl)phthalate	N	117-81-7	4.76	4.76	1.90	ug/L	U	U	
Butyl benzylphthalate	N	85-68-7	3.28	4.76	1.90	ug/L	J,DX	J	DNQ
Chrysene	N	218-01-9	0.476	0.476	0.190	ug/L	U	U	
Dibenz(a,h)anthracene	N	53-70-3	0.476	0.476	0.238	ug/L	U	U	
Diethyl phthalate	N	84-66-2	0.952	0.952	0.476	ug/L	U	U	
Dimethyl phthalate	N	131-11-3	0.476	0.476	0.238	ug/L	U	U	
Di-n-butylphthalate	N	84-74-2	1.90	1.90	0.952	ug/L	U	U	
Di-n-octyl phthalate	N	117-84-0	4.76	4.76	1.90	ug/L	U	U	
Fluoranthene	N	206-44-0	0.476	0.476	0.190	ug/L	U	U	
Fluorene	N	86-73-7	0.476	0.476	0.190	ug/L	U	U	
Hexachlorobenzene	N	118-74-1	0.952	0.952	0.476	ug/L	U	U	
Hexachlorobutadiene	N	87-68-3	1.90	1.90	0.476	ug/L	U	U	
Hexachlorocyclopentadiene	N	77-47-4	4.76	4.76	1.90	ug/L	U	U	
Hexachloroethane	N	67-72-1	2.86	2.86	0.476	ug/L	U	U	
Indeno(1,2,3-cd)pyrene	N	193-39-5	1.90	1.90	0.952	ug/L	U	U	
Isophorone	N	78-59-1	0.952	0.952	0.476	ug/L	U	U	
Naphthalene	N	91-20-3	0.952	0.952	0.476	ug/L	U	UJ	C
Nitrobenzene	N	98-95-3	0.952	0.952	0.476	ug/L	U	U	
N-Nitrosodimethylamine	N	62-75-9	1.90	1.90	0.952	ug/L	U	U	
N-Nitrosodi-n-propylamine	N	621-64-7	1.90	1.90	0.952	ug/L	U	U	
N-Nitrosodiphenylamine	N	86-30-6	0.952	0.952	0.476	ug/L	U	U	
Pentachlorophenol	N	87-86-5	1.90	1.90	0.952	ug/L	U	U	
Phenanthrene	N	85-01-8	0.476	0.476	0.190	ug/L	U	U	
Phenol	N	108-95-2	0.952	0.952	0.476	ug/L	U	U	
Pyrene	N	129-00-0	0.476	0.476	0.190	ug/L	U	U	

Analysis Method EPA-821-R-02-013

Sample Name	Outfall018_20160204_Comp		Matrix Type:	WM	Result Type:	TRG			
Sample Date:	2/4/2016 10:15:00 AM		Validation Level:	8					
Lab Sample Name:	440-137200-3								
Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chronic Toxicity, Selenastrum	N	CHRTOXSELEN33.37 A							

Analysis Method SM2340

Sample Name Outfall018_20160204_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/4/2016 10:15:00 AM **Validation Level:** 8

Lab Sample Name: 440-137200-3

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Hardness as CaCO3	T	HARDNESSCA CO3	250	0.33	0.17	mg/L			

Sample Name Outfall018_20160204_Comp_F **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/4/2016 12:01:00 PM **Validation Level:** 8

Lab Sample Name: 440-137200-4

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Hardness as CaCO3	D	HARDNESSCA CO3	250	0.33	0.17	mg/L			

Analysis Method SM2540C

Sample Name Outfall018_20160204_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/4/2016 10:15:00 AM **Validation Level:** 8

Lab Sample Name: 440-137200-3

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Dissolved Solids (TDS)	N	TDS	540	10	5.0	mg/L			

Analysis Method SM2540D

Sample Name Outfall018_20160204_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/4/2016 10:15:00 AM **Validation Level:** 8

Lab Sample Name: 440-137200-3

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Suspended Solids (TSS)	N	TSS	0.50	1.0	0.50	mg/L	U	U	

Analysis Method SM4500-CN-E

Sample Name Outfall018_20160204_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/4/2016 10:15:00 AM **Validation Level:** 8

Lab Sample Name: 440-137200-3

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cyanide	N	57-12-5	2.5	5.0	2.5	ug/L	U	U	

Analysis Method SM5210B**Sample Name** Outfall018_20160204_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/4/2016 10:15:00 AM **Validation Level:** 8**Lab Sample Name:** 440-137200-3

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Biochemical Oxygen Demand (BOD)	N	BOD	2.0	2.0	0.50	mg/L			

Analysis Method SM5310B**Sample Name** Outfall018_20160204_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/4/2016 10:15:00 AM **Validation Level:** 8**Lab Sample Name:** 440-137200-3

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Organic Carbon (TOC)	N	TOC	5.9	1.0	0.65	mg/L			

Analysis Method SM5540**Sample Name** Outfall018_20160204_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/4/2016 10:15:00 AM **Validation Level:** 8**Lab Sample Name:** 440-137200-3

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Surfactants as MBAS	N	SURFASMBAS	0.095	0.10	0.050	mg/L	J,DX	J	DNQ

Analysis Method SW8260SIM**Sample Name** Outfall018_20160204_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/4/2016 10:15:00 AM **Validation Level:** 8**Lab Sample Name:** 440-137200-3

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,4-Dioxane	N	123-91-1	2.0	2.0	0.50	ug/L	U	U	

Validated Sample Result Forms: 440-137200-1

Analysis Method E901.1

Sample Name Outfall018_20160204_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/4/2016 10:15:00 AM Validation Level: 8

Lab Sample Name: 440-137200-3

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cesium-137	10045-97-3	-1.85	7.50	13.3	13.3	pCi/L	U	U	
Potassium-40	13966-00-2	21.4	90.5	196	196	pCi/L	U	U	

Analysis Method HASL-300 U Mod

Sample Name Outfall018_20160204_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/4/2016 10:15:00 AM Validation Level: 8

Lab Sample Name: 440-137200-3

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Uranium	URANIUM	0.194	0.140	0.131	0.131	pCi/L			

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

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Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-137200-1

Client Project/Site: Boeing NPDES SSFL outfalls

Revision: 2

For:

Haley & Aldrich, Inc.

5333 Mission Center Road

Suite 300

San Diego, California 92108

Attn: Nancy Gardiner



Authorized for release by:

4/26/2016 9:17:14 PM

Urvashi Patel, Manager of Project Management

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LINKS

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

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

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

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



Urvashi Patel
Manager of Project Management
4/26/2016 9:17:14 PM



Table of Contents

Cover Page	1
Table of Contents	3
Sample Summary	4
Case Narrative	5
Client Sample Results	8
Method Summary	15
Lab Chronicle	16
QC Sample Results	18
QC Association Summary	53
Definitions/Glossary	62
Certification Summary	64
Subcontract Data	67
Chain of Custody	83
Receipt Checklists	88
Tracer Carrier Summary	93
Isotope Dilution Summary	94

Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-137200-2	TB-20160204	Water	02/04/16 08:25	02/04/16 13:55
440-137200-3	Outfall018_20160204_Comp	Water	02/04/16 10:15	02/04/16 13:55
440-137200-4	Outfall018_20160204_CompF	Water	02/04/16 00:01	02/04/16 13:55

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-1

Job ID: 440-137200-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative 440-137200-1

Comments

Revision created to add Hydrazine analyte to the report.

Receipt

The samples were received on 2/4/2016 1:55 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 2.1° C, 2.2° C and 2.7° C.

Receipt Exceptions

The following samples was received at the laboratory without a sample collection time documented on the chain of custody: Outfall002_20160204_Grab (440-137200-1), Outfall002_20160204_Grab (440-137200-1[MSJ]), Outfall002_20160204_Grab (440-137200-1[MSD]), TB-20160204 (440-137200-2), Outfall018_20160204_Comp (440-137200-3), Outfall018_20160204_Comp (440-137200-3[DUJ]), Outfall018_20160204_Comp (440-137200-3[MSJ]), Outfall018_20160204_Comp (440-137200-3[MSD]), Outfall018_20160204_CompF (440-137200-4), Outfall018_20160204_CompF (440-137200-4[DUJ]), Outfall018_20160204_CompF (440-137200-4[MSJ]), Outfall018_20160204_CompF (440-137200-4[MSD]) and TRIP BLANK (440-137200-5). Samples were logged in per container label.

sample 3 had no collection time on the coc but on the containers the time was 1015.

Cleint wants Hydrazine reported instead of monomethyl hydrazine.

GC/MS VOA

Method(s) 624: The following volatile sample was analyzed with significant headspace in the sample vial(s): TB-20160204 (440-137200-2). Significant headspace is defined as a bubble greater than 6 mm in diameter.

Method(s) 624, 8260B: The continuing calibration verification (CCV) associated with batch 440-310522 recovered above the upper control limit for Continuing Calibration Check Compound (CCC) 1,2-Dichloropropane. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The following samples are impacted: TB-20160204 (440-137200-2) and (CCVIS 440-310522/3).

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

GC/MS Semi VOA

Method(s) 625: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-310608 and analytical batch 440-311203. The laboratory control sample (LCS) was performed in duplicate to provide precision data for this batch.

Method(s) 625: The continuing calibration verification (CCV) associated with batch 440-311513 recovered above the upper control limit for 4,6-dinitro-2-methylphenol. The samples associated with this CCV were non-detects for the affected analyte; 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.

HPLC/IC

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

GC VOA

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

Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-1

Job ID: 440-137200-1 (Continued)

Laboratory: TestAmerica Irvine (Continued)

GC Semi VOA

Method(s) 608, 8082: The continuing calibration verification (CCV) associated with batch 440-311150 recovered above the upper control limit for Aroclors 1016/1260. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The following samples are impacted: Outfall018_20160204_Comp (440-137200-3) and (CCVIS 440-311150/12).

Method(s) 608: The continuing calibration verification (CCV) associated with batch 440-311149 recovered above the upper control limit for Aroclors 1016/1260. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The following samples are impacted: Outfall018_20160204_Comp (440-137200-3) and (CCVIS 440-311149/12).

Method(s) 608, 8081A: The continuing calibration verification (CCV) associated with batch 440-311420 recovered outside acceptance criteria, low biased, for Endosulfan II, Endrin ketone, and Mirex. A reporting limit (RL) standard was analyzed, and the target analyte was detected. Since the associated samples were non-detect for this analyte, the data have been reported. (CCV 440-311420/32)

Method(s) 608: The continuing calibration verification (CCV) associated with batch 440-311421 recovered outside acceptance criteria, low biased, for Endosulfan II. A reporting limit (RL) standard was analyzed, and the target analyte was detected. Since the associated samples were non-detect for this analyte, the data have been reported. Outfall018_20160204_Comp (440-137200-3) and (CCV 440-311421/32)

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

Dioxin

Method(s) 1613B: EPA Method 1613B specifies a +/- 15 second retention time difference between the recovery standard in the initial calibration (ICAL) and the continuing calibration verification (CCV). The 13C-1,2,3,4-TCDD and 13C-1,2,3,7,8,9-HxCDD associated with the following samples run on instrument 4D5 exceeded this criteria: Outfall018_20160204_Comp (440-137200-3), (CCV 320-101275/1), (LCS 320-100312/2-A), (LCSD 320-100312/3-A) and (MB 320-100312/1-A). This retention time shift is due to normal and reasonable column maintenance and does not affect the instrument chromatography resolution, sensitivity, or identification of target analytes. System retention times have been updated for proper analyte identification.

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

RAD

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

Metals

Method(s) 200.7 Rev 4.4: The matrix spike / matrix spike duplicate (MS/MSD) recoveries and precision for preparation batch 440-311595 and 440-314338 and analytical batch 440-314704 were outside control limits for Calcium and Magnesium. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample / laboratory sample control duplicate (LCS/LCSD) precision was within acceptance limits. Outfall018_20160204_CompF (440-137200-4[MS]) and Outfall018_20160204_CompF (440-137200-4[MSD])

Method(s) 245.1: The continuing calibration verification (CCV) associated with batch 440-314651 recovered above the upper control limit for Mercury. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The following sample is impacted: Outfall018_20160204_CompF (440-137200-4).

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

General Chemistry

Method(s) Filtration: The following sample was received in the Denver lab outside of preparation holding time: Outfall018_20160204_Comp (440-137200-3). Hydrazines by IC prep batch, Filtration_P_48 <PrepBatch>

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

Subcontract non-Sister

Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-1

Job ID: 440-137200-1 (Continued)

Laboratory: TestAmerica Irvine (Continued)

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.

VOA Prep

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

Dioxin Prep

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

Subcontract Work

Method Chronic Cerio, EPA/821-R02-013: This method was subcontracted to Aquatic Bioassay - Ventura, CA. The subcontract laboratory certification is different from that of the facility issuing the final report.

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Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-1

Client Sample ID: TB-20160204

Lab Sample ID: 440-137200-2

Date Collected: 02/04/16 08:25

Matrix: Water

Date Received: 02/04/16 13:55

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		0.50	0.25	ug/L			02/17/16 12:36	1
2-Chloroethyl vinyl ether	ND	BU	2.0	1.0	ug/L			02/08/16 20:22	1
1,1,1,2-Tetrachloroethane	ND		0.50	0.25	ug/L			02/17/16 12:36	1
Acrolein	ND	BU	5.0	2.5	ug/L			02/08/16 20:22	1
1,1,2-Trichloroethane	ND		0.50	0.25	ug/L			02/17/16 12:36	1
Acrylonitrile	ND	BU	2.0	1.0	ug/L			02/08/16 20:22	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		2.0	0.50	ug/L			02/17/16 12:36	1
1,1-Dichloroethane	ND		0.50	0.25	ug/L			02/17/16 12:36	1
1,1-Dichloroethene	ND		0.50	0.25	ug/L			02/17/16 12:36	1
1,2-Dichlorobenzene	ND		0.50	0.25	ug/L			02/17/16 12:36	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			02/17/16 12:36	1
1,2-Dichloropropane	ND		0.50	0.25	ug/L			02/17/16 12:36	1
1,3-Dichlorobenzene	ND		0.50	0.25	ug/L			02/17/16 12:36	1
1,4-Dichlorobenzene	ND		0.50	0.25	ug/L			02/17/16 12:36	1
Benzene	ND		0.50	0.25	ug/L			02/17/16 12:36	1
Bromoform	ND		1.0	0.40	ug/L			02/17/16 12:36	1
1,2-Dichloro-1,1,2-trifluoroethane	ND		2.0	1.0	ug/L			02/17/16 12:36	1
Bromomethane	ND		0.50	0.25	ug/L			02/17/16 12:36	1
Carbon tetrachloride	ND		0.50	0.25	ug/L			02/17/16 12:36	1
Chlorobenzene	ND		0.50	0.25	ug/L			02/17/16 12:36	1
Dibromochloromethane	ND		0.50	0.25	ug/L			02/17/16 12:36	1
Chloroethane	ND		1.0	0.40	ug/L			02/17/16 12:36	1
Chloroform	ND		0.50	0.25	ug/L			02/17/16 12:36	1
Chloromethane	ND		0.50	0.25	ug/L			02/17/16 12:36	1
cis-1,3-Dichloropropene	ND		0.50	0.25	ug/L			02/17/16 12:36	1
Bromodichloromethane	ND		0.50	0.25	ug/L			02/17/16 12:36	1
Ethylbenzene	ND		0.50	0.25	ug/L			02/17/16 12:36	1
Methylene Chloride	ND		2.0	0.88	ug/L			02/17/16 12:36	1
Tetrachloroethene	ND		0.50	0.25	ug/L			02/17/16 12:36	1
Toluene	ND		0.50	0.25	ug/L			02/17/16 12:36	1
trans-1,2-Dichloroethene	ND		0.50	0.25	ug/L			02/17/16 12:36	1
trans-1,3-Dichloropropene	ND		0.50	0.25	ug/L			02/17/16 12:36	1
Trichlorofluoromethane	ND		0.50	0.25	ug/L			02/17/16 12:36	1
Vinyl chloride	ND		0.50	0.25	ug/L			02/17/16 12:36	1
Trichloroethene	ND		0.50	0.25	ug/L			02/17/16 12:36	1
cis-1,2-Dichloroethene	ND		0.50	0.25	ug/L			02/17/16 12:36	1
Cyclohexane	ND		2.0	1.0	ug/L			02/17/16 12:36	1
m,p-Xylene	ND		1.0	0.50	ug/L			02/17/16 12:36	1
Naphthalene	ND		1.0	0.40	ug/L			02/17/16 12:36	1
o-Xylene	ND		0.50	0.25	ug/L			02/17/16 12:36	1
Xylenes, Total	ND		1.0	0.50	ug/L			02/17/16 12:36	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	115		80 - 128		02/08/16 20:22	1
Dibromofluoromethane (Surr)	112		76 - 132		02/08/16 20:22	1
4-Bromofluorobenzene (Surr)	111		80 - 120		02/08/16 20:22	1
4-Bromofluorobenzene (Surr)	96		80 - 120		02/17/16 12:36	1
Dibromofluoromethane (Surr)	99		76 - 132		02/17/16 12:36	1
Toluene-d8 (Surr)	103		80 - 128		02/17/16 12:36	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-1

Client Sample ID: Outfall018_20160204_Comp

Lab Sample ID: 440-137200-3

Date Collected: 02/04/16 10:15

Matrix: Water

Date Received: 02/04/16 13:55

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	ND		2.0	0.50	ug/L			02/16/16 16:46	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	90		80 - 120					02/16/16 16:46	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		0.476	0.190	ug/L		02/09/16 15:30	02/15/16 23:26	1
Acenaphthylene	ND		0.476	0.190	ug/L		02/09/16 15:30	02/15/16 23:26	1
Anthracene	ND		0.476	0.190	ug/L		02/09/16 15:30	02/15/16 23:26	1
Benzidine	ND		9.52	4.76	ug/L		02/09/16 15:30	02/15/16 23:26	1
Benzo[a]anthracene	ND		4.76	1.90	ug/L		02/09/16 15:30	02/15/16 23:26	1
Benzo[b]fluoranthene	ND		1.90	0.952	ug/L		02/09/16 15:30	02/15/16 23:26	1
Benzo[k]fluoranthene	ND		0.476	0.238	ug/L		02/09/16 15:30	02/15/16 23:26	1
Benzo[a]pyrene	ND		1.90	0.476	ug/L		02/09/16 15:30	02/15/16 23:26	1
Bis(2-chloroethoxy)methane	ND		0.476	0.190	ug/L		02/09/16 15:30	02/15/16 23:26	1
Bis(2-chloroethyl)ether	ND		0.476	0.190	ug/L		02/09/16 15:30	02/15/16 23:26	1
Bis(2-ethylhexyl) phthalate	ND		4.76	1.90	ug/L		02/09/16 15:30	02/15/16 23:26	1
4-Bromophenyl phenyl ether	ND		0.952	0.476	ug/L		02/09/16 15:30	02/15/16 23:26	1
Butyl benzyl phthalate	3.28	J,DX	4.76	1.90	ug/L		02/09/16 15:30	02/15/16 23:26	1
4-Chloro-3-methylphenol	ND		1.90	0.190	ug/L		02/09/16 15:30	02/15/16 23:26	1
2-Chloronaphthalene	ND		0.476	0.190	ug/L		02/09/16 15:30	02/15/16 23:26	1
2-Chlorophenol	ND		0.952	0.476	ug/L		02/09/16 15:30	02/15/16 23:26	1
4-Chlorophenyl phenyl ether	ND		0.476	0.190	ug/L		02/09/16 15:30	02/15/16 23:26	1
Chrysene	ND		0.476	0.190	ug/L		02/09/16 15:30	02/15/16 23:26	1
Dibenz(a,h)anthracene	ND		0.476	0.238	ug/L		02/09/16 15:30	02/15/16 23:26	1
Di-n-butyl phthalate	ND		1.90	0.952	ug/L		02/09/16 15:30	02/15/16 23:26	1
1,2-Dichlorobenzene	ND		0.476	0.190	ug/L		02/09/16 15:30	02/15/16 23:26	1
1,3-Dichlorobenzene	ND		0.476	0.190	ug/L		02/09/16 15:30	02/15/16 23:26	1
1,4-Dichlorobenzene	ND		0.476	0.190	ug/L		02/09/16 15:30	02/15/16 23:26	1
3,3'-Dichlorobenzidine	ND		4.76	1.90	ug/L		02/09/16 15:30	02/15/16 23:26	1
2,4-Dichlorophenol	ND		1.90	0.952	ug/L		02/09/16 15:30	02/15/16 23:26	1
Diethyl phthalate	ND		0.952	0.476	ug/L		02/09/16 15:30	02/15/16 23:26	1
2,4-Dimethylphenol	ND		1.90	0.952	ug/L		02/09/16 15:30	02/15/16 23:26	1
Dimethyl phthalate	ND		0.476	0.238	ug/L		02/09/16 15:30	02/15/16 23:26	1
4,6-Dinitro-2-methylphenol	ND		4.76	1.90	ug/L		02/09/16 15:30	02/15/16 23:26	1
2,4-Dinitrophenol	ND		4.76	1.90	ug/L		02/09/16 15:30	02/15/16 23:26	1
2,4-Dinitrotoluene	ND		4.76	1.90	ug/L		02/09/16 15:30	02/15/16 23:26	1
2,6-Dinitrotoluene	ND		4.76	1.90	ug/L		02/09/16 15:30	02/15/16 23:26	1
Di-n-octyl phthalate	ND		4.76	1.90	ug/L		02/09/16 15:30	02/15/16 23:26	1
1,2-Diphenylhydrazine(as Azobenzene)	ND		0.952	0.476	ug/L		02/09/16 15:30	02/15/16 23:26	1
Fluoranthene	ND		0.476	0.190	ug/L		02/09/16 15:30	02/15/16 23:26	1
Fluorene	ND		0.476	0.190	ug/L		02/09/16 15:30	02/15/16 23:26	1
Hexachlorobenzene	ND		0.952	0.476	ug/L		02/09/16 15:30	02/15/16 23:26	1
Hexachlorobutadiene	ND		1.90	0.476	ug/L		02/09/16 15:30	02/15/16 23:26	1
Hexachloroethane	ND		2.86	0.476	ug/L		02/09/16 15:30	02/15/16 23:26	1
Hexachlorocyclopentadiene	ND		4.76	1.90	ug/L		02/09/16 15:30	02/15/16 23:26	1
Indeno[1,2,3-cd]pyrene	ND		1.90	0.952	ug/L		02/09/16 15:30	02/15/16 23:26	1
Isophorone	ND		0.952	0.476	ug/L		02/09/16 15:30	02/15/16 23:26	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-1

Client Sample ID: Outfall018_20160204_Comp

Lab Sample ID: 440-137200-3

Date Collected: 02/04/16 10:15

Matrix: Water

Date Received: 02/04/16 13:55

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		0.952	0.476	ug/L		02/09/16 15:30	02/15/16 23:26	1
Nitrobenzene	ND		0.952	0.476	ug/L		02/09/16 15:30	02/15/16 23:26	1
2-Nitrophenol	ND		1.90	0.952	ug/L		02/09/16 15:30	02/15/16 23:26	1
4-Nitrophenol	ND		4.76	1.90	ug/L		02/09/16 15:30	02/15/16 23:26	1
N-Nitrosodimethylamine	ND		1.90	0.952	ug/L		02/09/16 15:30	02/15/16 23:26	1
N-Nitrosodiphenylamine	ND		0.952	0.476	ug/L		02/09/16 15:30	02/15/16 23:26	1
N-Nitrosodi-n-propylamine	ND		1.90	0.952	ug/L		02/09/16 15:30	02/15/16 23:26	1
Pentachlorophenol	ND		1.90	0.952	ug/L		02/09/16 15:30	02/15/16 23:26	1
Phenanthrene	ND		0.476	0.190	ug/L		02/09/16 15:30	02/15/16 23:26	1
Phenol	ND		0.952	0.476	ug/L		02/09/16 15:30	02/15/16 23:26	1
Pyrene	ND		0.476	0.190	ug/L		02/09/16 15:30	02/15/16 23:26	1
1,2,4-Trichlorobenzene	ND		0.952	0.476	ug/L		02/09/16 15:30	02/15/16 23:26	1
2,4,6-Trichlorophenol	ND		0.952	0.476	ug/L		02/09/16 15:30	02/15/16 23:26	1
Benzo[g,h,i]perylene	ND		4.76	1.90	ug/L		02/09/16 15:30	02/15/16 23:26	1
bis (2-chloroisopropyl) ether	ND		0.476	0.190	ug/L		02/09/16 15:30	02/15/16 23:26	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl	73		50 - 120				02/09/16 15:30	02/15/16 23:26	1
2-Fluorophenol	56		30 - 120				02/09/16 15:30	02/15/16 23:26	1
2,4,6-Tribromophenol	87		40 - 120				02/09/16 15:30	02/15/16 23:26	1
Nitrobenzene-d5	81		45 - 120				02/09/16 15:30	02/15/16 23:26	1
Terphenyl-d14	82		37 - 144				02/09/16 15:30	02/15/16 23:26	1
Phenol-d6	66		35 - 120				02/09/16 15:30	02/15/16 23:26	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor 1016	ND		0.48	0.24	ug/L		02/11/16 06:40	02/13/16 14:31	1
Aroclor 1221	ND		0.48	0.24	ug/L		02/11/16 06:40	02/13/16 14:31	1
Aroclor 1232	ND		0.48	0.24	ug/L		02/11/16 06:40	02/13/16 14:31	1
Aroclor 1242	ND		0.48	0.24	ug/L		02/11/16 06:40	02/13/16 14:31	1
Aroclor 1248	ND		0.48	0.24	ug/L		02/11/16 06:40	02/13/16 14:31	1
Aroclor 1254	ND		0.48	0.24	ug/L		02/11/16 06:40	02/13/16 14:31	1
Aroclor 1260	ND		0.48	0.24	ug/L		02/11/16 06:40	02/13/16 14:31	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl (Surr)	113		29 - 115				02/11/16 06:40	02/13/16 14:31	1

Method: 608 Pesticides - Organochlorine Pesticides Low level

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	ND		0.0048	0.0014	ug/L		02/11/16 06:40	02/15/16 20:42	1
alpha-BHC	ND		0.0048	0.0024	ug/L		02/11/16 06:40	02/15/16 20:42	1
beta-BHC	ND		0.0096	0.0038	ug/L		02/11/16 06:40	02/15/16 20:42	1
Chlordane (technical)	ND		0.096	0.077	ug/L		02/11/16 06:40	02/15/16 20:42	1
delta-BHC	ND		0.0048	0.0033	ug/L		02/11/16 06:40	02/15/16 20:42	1
Dieldrin	ND		0.0048	0.0019	ug/L		02/11/16 06:40	02/15/16 20:42	1
Endosulfan I	ND		0.0048	0.0029	ug/L		02/11/16 06:40	02/15/16 20:42	1
Endosulfan II	ND		0.0048	0.0019	ug/L		02/11/16 06:40	02/15/16 20:42	1
Endosulfan sulfate	ND		0.0096	0.0029	ug/L		02/11/16 06:40	02/15/16 20:42	1
Endrin	ND		0.0048	0.0019	ug/L		02/11/16 06:40	02/15/16 20:42	1
Endrin aldehyde	ND		0.0096	0.0019	ug/L		02/11/16 06:40	02/15/16 20:42	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-1

Client Sample ID: Outfall018_20160204_Comp

Lab Sample ID: 440-137200-3

Date Collected: 02/04/16 10:15

Matrix: Water

Date Received: 02/04/16 13:55

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
gamma-BHC (Lindane)	ND		0.0096	0.0029	ug/L		02/11/16 06:40	02/15/16 20:42	1
Heptachlor	ND		0.0096	0.0029	ug/L		02/11/16 06:40	02/15/16 20:42	1
Heptachlor epoxide	ND		0.0048	0.0024	ug/L		02/11/16 06:40	02/15/16 20:42	1
Toxaphene	ND		0.48	0.24	ug/L		02/11/16 06:40	02/15/16 20:42	1
4,4'-DDD	ND		0.0048	0.0038	ug/L		02/11/16 06:40	02/15/16 20:42	1
4,4'-DDE	ND		0.0048	0.0029	ug/L		02/11/16 06:40	02/15/16 20:42	1
4,4'-DDT	ND		0.0096	0.0038	ug/L		02/11/16 06:40	02/15/16 20:42	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	60		10 - 150	02/11/16 06:40	02/15/16 20:42	1

Method: 218.6 - Chromium, Hexavalent (Ion Chromatography)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	0.26	J,DX	1.0	0.25	ug/L			02/05/16 01:21	1

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	16		0.50	0.25	mg/L			02/05/16 20:43	1
Nitrate as N	0.24		0.11	0.055	mg/L			02/05/16 20:43	1
Fluoride	ND		0.50	0.25	mg/L			02/05/16 20:43	1
Nitrite as N	0.11	J,DX	0.15	0.070	mg/L			02/05/16 20:43	1

Method: 300.0 - Anions, Ion Chromatography - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	240		10	5.0	mg/L			02/05/16 20:57	20

Method: 314.0 - Perchlorate (IC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		4.0	0.95	ug/L			02/18/16 10:59	1

Method: NO3NO2 Calc - Nitrogen, Nitrate-Nitrite

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	0.35		0.15	0.070	mg/L			02/29/16 16:56	1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000096	0.000011	ug/L		02/12/16 11:55	02/21/16 16:07	1
2,3,7,8-TCDF	ND		0.000096	0.000012	ug/L		02/12/16 11:55	02/21/16 16:07	1
1,2,3,7,8-PeCDD	ND		0.000048	0.000016	ug/L		02/12/16 11:55	02/21/16 16:07	1
1,2,3,7,8-PeCDF	ND		0.000048	0.000025	ug/L		02/12/16 11:55	02/21/16 16:07	1
2,3,4,7,8-PeCDF	ND		0.000048	0.000029	ug/L		02/12/16 11:55	02/21/16 16:07	1
1,2,3,4,7,8-HxCDD	ND		0.000048	0.000012	ug/L		02/12/16 11:55	02/21/16 16:07	1
1,2,3,6,7,8-HxCDD	ND		0.000048	0.000011	ug/L		02/12/16 11:55	02/21/16 16:07	1
1,2,3,7,8,9-HxCDD	ND		0.000048	0.000009	ug/L		02/12/16 11:55	02/21/16 16:07	1
1,2,3,4,7,8-HxCDF	ND		0.000048	0.000015	ug/L		02/12/16 11:55	02/21/16 16:07	1
1,2,3,6,7,8-HxCDF	ND		0.000048	0.000012	ug/L		02/12/16 11:55	02/21/16 16:07	1
1,2,3,7,8,9-HxCDF	ND		0.000048	0.000008	ug/L		02/12/16 11:55	02/21/16 16:07	1
2,3,4,6,7,8-HxCDF	ND		0.000048	0.000008	ug/L		02/12/16 11:55	02/21/16 16:07	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-1

Client Sample ID: Outfall018_20160204_Comp

Lab Sample ID: 440-137200-3

Date Collected: 02/04/16 10:15

Matrix: Water

Date Received: 02/04/16 13:55

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,6,7,8-HpCDD	0.0000041	J,DX MB	0.000048	0.0000008	ug/L		02/12/16 11:55	02/21/16 16:07	1
				4					
1,2,3,4,6,7,8-HpCDF	0.0000025	J,DX q MB	0.000048	0.0000010	ug/L		02/12/16 11:55	02/21/16 16:07	1
1,2,3,4,7,8,9-HpCDF	ND		0.000048	0.0000017	ug/L		02/12/16 11:55	02/21/16 16:07	1
OCDD	0.000018	J,DX MB	0.000096	0.0000013	ug/L		02/12/16 11:55	02/21/16 16:07	1
OCDF	ND		0.000096	0.0000017	ug/L		02/12/16 11:55	02/21/16 16:07	1
Total TCDD	ND		0.000096	0.0000011	ug/L		02/12/16 11:55	02/21/16 16:07	1
Total TCDF	ND		0.000096	0.0000012	ug/L		02/12/16 11:55	02/21/16 16:07	1
Total PeCDD	ND		0.000048	0.0000016	ug/L		02/12/16 11:55	02/21/16 16:07	1
Total PeCDF	ND		0.000048	0.0000025	ug/L		02/12/16 11:55	02/21/16 16:07	1
Total HxCDD	0.0000019	J,DX q	0.000048	0.0000011	ug/L		02/12/16 11:55	02/21/16 16:07	1
Total HxCDF	ND		0.000048	0.0000008	ug/L		02/12/16 11:55	02/21/16 16:07	1
				5					
Total HpCDD	0.0000080	J,DX q MB	0.000048	0.0000008	ug/L		02/12/16 11:55	02/21/16 16:07	1
				4					
Total HpCDF	0.0000025	J,DX q MB	0.000048	0.0000014	ug/L		02/12/16 11:55	02/21/16 16:07	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	56		25 - 164				02/12/16 11:55	02/21/16 16:07	1
13C-2,3,7,8-TCDF	58		24 - 169				02/12/16 11:55	02/21/16 16:07	1
13C-1,2,3,7,8-PeCDD	54		25 - 181				02/12/16 11:55	02/21/16 16:07	1
13C-1,2,3,7,8-PeCDF	60		24 - 185				02/12/16 11:55	02/21/16 16:07	1
13C-2,3,4,7,8-PeCDF	56		21 - 178				02/12/16 11:55	02/21/16 16:07	1
13C-1,2,3,4,7,8-HxCDD	57		32 - 141				02/12/16 11:55	02/21/16 16:07	1
13C-1,2,3,6,7,8-HxCDD	63		28 - 130				02/12/16 11:55	02/21/16 16:07	1
13C-1,2,3,4,7,8-HxCDF	56		26 - 152				02/12/16 11:55	02/21/16 16:07	1
13C-1,2,3,6,7,8-HxCDF	58		26 - 123				02/12/16 11:55	02/21/16 16:07	1
13C-1,2,3,7,8,9-HxCDF	57		29 - 147				02/12/16 11:55	02/21/16 16:07	1
13C-2,3,4,6,7,8-HxCDF	60		28 - 136				02/12/16 11:55	02/21/16 16:07	1
13C-1,2,3,4,6,7,8-HpCDD	60		23 - 140				02/12/16 11:55	02/21/16 16:07	1
13C-1,2,3,4,6,7,8-HpCDF	60		28 - 143				02/12/16 11:55	02/21/16 16:07	1
13C-1,2,3,4,7,8,9-HpCDF	59		26 - 138				02/12/16 11:55	02/21/16 16:07	1
13C-OCDD	58		17 - 157				02/12/16 11:55	02/21/16 16:07	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	91		35 - 197				02/12/16 11:55	02/21/16 16:07	1

Method: 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		10	5.0	ug/L		02/29/16 15:36	03/01/16 18:55	1
Boron	0.052		0.050	0.010	mg/L		02/29/16 10:08	03/02/16 09:50	1
Barium	0.014		0.010	0.0050	mg/L		02/29/16 15:36	03/01/16 18:55	1
Beryllium	ND		2.0	1.0	ug/L		02/29/16 15:36	03/01/16 18:55	1
Cobalt	ND		10	2.5	ug/L		02/29/16 15:36	03/01/16 18:55	1
Chromium	ND		5.0	2.5	ug/L		02/29/16 15:36	03/01/16 18:55	1
Iron	ND		0.040	0.010	mg/L		02/29/16 15:36	03/01/16 18:55	1
Manganese	ND		20	10	ug/L		02/29/16 15:36	03/01/16 18:55	1
Nickel	ND		10	5.0	ug/L		02/29/16 15:36	03/01/16 18:55	1
Vanadium	ND		10	5.0	ug/L		02/29/16 15:36	03/01/16 18:55	1
Zinc	ND		20	10	ug/L		02/29/16 15:36	03/01/16 18:55	1
Silver	ND		10	5.0	ug/L		02/29/16 15:36	03/01/16 18:55	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-1

Client Sample ID: Outfall018_20160204_Comp

Lab Sample ID: 440-137200-3

Date Collected: 02/04/16 10:15

Matrix: Water

Date Received: 02/04/16 13:55

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	81000		100	50	ug/L		02/29/16 15:36	03/01/16 18:55	1
Magnesium	10000		20	10	ug/L		02/29/16 15:36	03/01/16 18:55	1

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		02/16/16 12:33	02/24/16 03:04	1
Copper	0.94	J,DX	2.0	0.50	ug/L		02/16/16 12:33	02/24/16 03:04	1
Lead	ND		1.0	0.50	ug/L		02/16/16 12:33	02/24/16 03:04	1
Antimony	0.84	J,DX	2.0	0.50	ug/L		02/16/16 12:33	02/24/16 03:04	1
Selenium	ND		2.0	0.50	ug/L		02/16/16 12:33	02/24/16 03:04	1
Thallium	ND		1.0	0.50	ug/L		02/16/16 12:33	02/24/16 03:04	1
Silver	ND		1.0	0.50	ug/L		02/16/16 12:33	02/24/16 03:04	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		02/29/16 16:17	03/01/16 00:23	1

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	250		0.33	0.17	mg/L			02/26/16 10:09	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Turbidity	0.22		0.10	0.040	NTU			02/05/16 10:18	1
Hydrazine	ND	BU	5.0	0.67	ug/L		02/17/16 18:46	02/26/16 01:05	1
Total Dissolved Solids	540		10	5.0	mg/L			02/10/16 13:41	1
Total Suspended Solids	ND		1.0	0.50	mg/L			02/05/16 17:00	1
Cyanide, Total	ND		5.0	2.5	ug/L		02/11/16 01:16	02/12/16 03:48	1
Ammonia (as N)	0.411	J,DX	0.500	0.100	mg/L		02/17/16 03:00	02/17/16 07:00	1
Total Organic Carbon	5.9		1.0	0.65	mg/L			02/29/16 05:18	1
Methylene Blue Active Substances	0.095	J,DX	0.10	0.050	mg/L			02/05/16 20:40	1
Biochemical Oxygen Demand	2.0		2.0	0.50	mg/L			02/05/16 10:00	1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Cesium-137	-1.85	U	7.50	7.50	20.0	13.3	pCi/L	02/12/16 07:46	02/16/16 21:49	1
Potassium-40	21.4	U	90.5	90.5		196	pCi/L	02/12/16 07:46	02/16/16 21:49	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Total Uranium	0.194		0.140	0.140	1.00	0.131	pCi/L	02/18/16 11:31	02/25/16 17:19	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-1

Client Sample ID: Outfall018_20160204_CompF

Lab Sample ID: 440-137200-4

Date Collected: 02/04/16 00:01

Matrix: Water

Date Received: 02/04/16 13:55

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND	QP	10	5.0	ug/L		02/29/16 15:53	03/01/16 19:10	1
Boron	0.053	QP	0.050	0.010	mg/L		02/29/16 15:53	03/02/16 09:34	1
Barium	0.015	QP	0.010	0.0050	mg/L		02/29/16 15:53	03/01/16 19:10	1
Beryllium	ND	QP	2.0	1.0	ug/L		02/29/16 15:53	03/01/16 19:10	1
Cobalt	ND	QP	10	2.5	ug/L		02/29/16 15:53	03/01/16 19:10	1
Chromium	ND	QP	5.0	2.5	ug/L		02/29/16 15:53	03/01/16 19:10	1
Iron	ND	QP	0.040	0.010	mg/L		02/29/16 15:53	03/01/16 19:10	1
Manganese	ND	QP	20	10	ug/L		02/29/16 15:53	03/01/16 19:10	1
Nickel	ND	QP	10	5.0	ug/L		02/29/16 15:53	03/01/16 19:10	1
Vanadium	ND	QP	10	5.0	ug/L		02/29/16 15:53	03/01/16 19:10	1
Zinc	ND	QP	20	10	ug/L		02/29/16 15:53	03/01/16 19:10	1
Silver	ND	QP	10	5.0	ug/L		02/29/16 15:53	03/01/16 19:10	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND	QP	1.0	0.25	ug/L		03/01/16 09:34	03/03/16 03:23	1
Copper	1.3	J,DX QP	2.0	0.50	ug/L		03/01/16 09:34	03/03/16 03:23	1
Lead	ND	QP	1.0	0.50	ug/L		03/01/16 09:34	03/03/16 03:23	1
Antimony	ND	QP	2.0	0.50	ug/L		03/01/16 09:34	03/03/16 03:23	1
Selenium	ND	QP	2.0	0.50	ug/L		03/01/16 09:34	03/03/16 03:23	1
Thallium	ND	QP	1.0	0.50	ug/L		03/01/16 09:34	03/03/16 03:23	1
Silver	ND		1.0	0.50	ug/L		04/22/16 14:44	04/25/16 08:47	1

Method: 245.1 - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND	IB QP	0.20	0.10	ug/L		02/29/16 16:51	03/01/16 00:20	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hardness, as CaCO3	250		0.33	0.17	mg/L			03/07/16 09:06	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-1

Method	Method Description	Protocol	Laboratory
624	Volatile Organic Compounds (GC/MS)	40CFR136A	TAL IRV
8260B SIM	Volatile Organic Compounds (GC/MS)	SW846	TAL IRV
625	Semivolatile Organic Compounds (GC/MS)	EPA	TAL IRV
608 PCB LL	Polychlorinated Biphenyls (PCBs) Low level	40CFR136A	TAL IRV
608 Pesticides	Organochlorine Pesticides Low level	40CFR136A	TAL IRV
218.6	Chromium, Hexavalent (Ion Chromatography)	EPA	TAL IRV
300.0	Anions, Ion Chromatography	MCAWW	TAL IRV
314.0	Perchlorate (IC)	EPA	TAL IRV
NO3NO2 Calc	Nitrogen, Nitrate-Nitrite	EPA	TAL IRV
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
SM 2340B	Total Hardness (as CaCO3) by calculation	SM	TAL IRV
180.1	Turbidity, Nephelometric	MCAWW	TAL IRV
DV-WC-0077	Hydrazine, Ion Chromatography	TAL-DEN	TAL DEN
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 D	Ammonia	SM	TAL IRV
SM 5310B	Organic Carbon, Total (TOC)	SM	TAL IRV
SM 5540C	Methylene Blue Active Substances (MBAS)	SM	TAL IRV
SM5210B	BOD, 5 Day	SM	TAL IRV
901.1	Cesium 137 & Other Gamma Emitters (GS)	EPA	TAL SL
A-01-R	Isotopic Uranium (Alpha Spectrometry)	DOE	TAL SL
Chronic Cerio, EPA/821-R02-013	Bioassay	NONE	ABC

Protocol References:

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.
DOE = U.S. Department of Energy
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",
SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.
TAL-DEN = TestAmerica Laboratories, Denver, Facility Standard Operating Procedure.

Laboratory References:

ABC = Aquatic Bioassay - Ventura, CA, 29 North Olive Street, Ventura, CA 93001
TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100
TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022
TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600
TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-1

Client Sample ID: TB-20160204

Date Collected: 02/04/16 08:25

Date Received: 02/04/16 13:55

Lab Sample ID: 440-137200-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	10 mL	10 mL	310522	02/08/16 20:22	RM	TAL IRV
Total/NA	Analysis	624		1	10 mL	10 mL	311763	02/17/16 12:36	MM1	TAL IRV

Client Sample ID: Outfall018_20160204_Comp

Date Collected: 02/04/16 10:15

Date Received: 02/04/16 13:55

Lab Sample ID: 440-137200-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B SIM		1	10 mL	10 mL	311648	02/16/16 16:46	GK	TAL IRV
Total/NA	Prep	625			1050 mL	2 mL	310608	02/09/16 15:30	IVA	TAL IRV
Total/NA	Analysis	625		1	1050 mL	2 mL	311513	02/15/16 23:26	VS	TAL IRV
Total/NA	Prep	608			1045 mL	2 mL	310722	02/11/16 06:40	FTD	TAL IRV
Total/NA	Analysis	608 PCB LL		1	1045 mL	2 mL	311149	02/13/16 14:31	CN	TAL IRV
Total/NA	Prep	608			1045 mL	2 mL	310722	02/11/16 06:40	FTD	TAL IRV
Total/NA	Analysis	608 Pesticides		1	1045 mL	2 mL	311421	02/15/16 20:42	KS	TAL IRV
Total/NA	Analysis	218.6		1	10 mL		309925	02/05/16 01:21	MN	TAL IRV
Total/NA	Analysis	300.0		1	5 mL	1.0 mL	310250	02/05/16 20:43	NTN	TAL IRV
Total/NA	Analysis	300.0		1	5 mL	1.0 mL	310251	02/05/16 20:43	NTN	TAL IRV
Total/NA	Analysis	300.0	DL	20	5 mL	1.0 mL	310250	02/05/16 20:57	NTN	TAL IRV
Total/NA	Analysis	300.0	DL	20	5 mL	1.0 mL	310251	02/05/16 20:57	NTN	TAL IRV
Total/NA	Analysis	314.0		1	1 mL		312057	02/18/16 10:59	CH	TAL IRV
Total/NA	Analysis	NO3NO2 Calc		1			314365	02/29/16 16:56	TN	TAL IRV
Total/NA	Prep	1613B			1044.9 mL	20 uL	100312	02/12/16 11:55	DXD	TAL SAC
Total/NA	Analysis	1613B		1	1044.9 mL	20 uL	101275	02/21/16 16:07	KSS	TAL SAC
Total Recoverable	Prep	200.2			25 mL	25 mL	314336	02/29/16 15:36	GK	TAL IRV
Total Recoverable	Analysis	200.7 Rev 4.4		1	25 mL	25 mL	314703	03/01/16 18:55	EN	TAL IRV
Total Recoverable	Prep	200.2			25 mL	25 mL	314214	02/29/16 10:08	ND	TAL IRV
Total Recoverable	Analysis	200.7 Rev 4.4		1	25 mL	25 mL	314801	03/02/16 09:50	EN	TAL IRV
Total Recoverable	Prep	200.2			25 mL	25 mL	311632	02/16/16 12:33	Q1N	TAL IRV
Total Recoverable	Analysis	200.8		1	25 mL	25 mL	313278	02/24/16 03:04	DP	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	314349	02/29/16 16:17	DB	TAL IRV
Total/NA	Analysis	245.1		1	20 mL	20 mL	314591	03/01/16 00:23	DB	TAL IRV
Total Recoverable	Analysis	SM 2340B		1			313844	02/26/16 10:09	DP	TAL IRV
Total/NA	Analysis	180.1		1		20 mL	310354	02/05/16 10:18	AMH	TAL IRV
Total/NA	Prep	Filtration			30 mL	30 mL	313831	02/17/16 18:46	MPS	TAL DEN
Total/NA	Analysis	DV-WC-0077		1	30 mL	30 mL	314901	02/26/16 01:05	MPS	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	310622	02/10/16 13:41	XL	TAL IRV
Total/NA	Analysis	SM 2540D		1	1000 mL	1000 mL	310271	02/05/16 17:00	MMH	TAL IRV
Total/NA	Prep	Distill/CN			50 mL	50 mL	310712	02/11/16 01:16	ECK	TAL IRV
Total/NA	Analysis	SM 4500 CN E		1	50 mL	50 mL	311066	02/12/16 03:48	EN	TAL IRV
Total/NA	Prep	SM 4500 NH3 B			50 mL	50 mL	311755	02/17/16 03:00	YZ	TAL IRV
Total/NA	Analysis	SM 4500 NH3 D		1	50 mL	50 mL	311783	02/17/16 07:00	YZ	TAL IRV

TestAmerica Irvine

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-1

Client Sample ID: Outfall018_20160204_Comp

Lab Sample ID: 440-137200-3

Date Collected: 02/04/16 10:15

Matrix: Water

Date Received: 02/04/16 13:55

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 5310B		1		100 mL	314213	02/29/16 05:18	YZ	TAL IRV
Total/NA	Analysis	SM 5540C		1	100 mL	100 mL	310241	02/05/16 20:40	EN	TAL IRV
Total/NA	Analysis	SM5210B		1		300 mL	310278	02/05/16 10:00	KYP	TAL IRV
Total/NA	Prep	Fill_Geo-0			1000 mL	1.0 g	236466	02/12/16 07:46	R1S	TAL SL
Total/NA	Analysis	901.1		1	1000 mL		238216	02/16/16 21:49	ALS	TAL SL
Total/NA	Prep	ExtChrom			499.61 mL	1.0 mL	237126	02/18/16 11:31	SCB	TAL SL
Total/NA	Analysis	A-01-R		1	499.61 mL		237916	02/25/16 17:19	ALD	TAL SL

Client Sample ID: Outfall018_20160204_CompF

Lab Sample ID: 440-137200-4

Date Collected: 02/04/16 00:01

Matrix: Water

Date Received: 02/04/16 13:55

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			150 mL	150 mL	311595	02/16/16 10:09	K1E	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	314338	02/29/16 15:53	GK	TAL IRV
Dissolved	Analysis	200.7 Rev 4.4		1	25 mL	25 mL	314704	03/01/16 19:10	EN	TAL IRV
Dissolved	Filtration	FILTRATION			150 mL	150 mL	311595	02/16/16 10:09	K1E	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	314338	02/29/16 15:53	GK	TAL IRV
Dissolved	Analysis	200.7 Rev 4.4		1	25 mL	25 mL	314800	03/02/16 09:34	EN	TAL IRV
Dissolved	Filtration	FILTRATION			150 mL	150 mL	311595	02/16/16 10:09	K1E	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	314470	03/01/16 09:34	Q1N	TAL IRV
Dissolved	Analysis	200.8		1	25 mL	25 mL	315056	03/03/16 03:23	RC	TAL IRV
Dissolved	Filtration	FILTRATION			150 mL	150 mL	311595	02/16/16 10:09	K1E	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	325993	04/22/16 14:44	K1E	TAL IRV
Dissolved	Analysis	200.8		1	25 mL	25 mL	326313	04/25/16 08:47	RC	TAL IRV
Dissolved	Filtration	FILTRATION			150 mL	150 mL	311595	02/16/16 10:09	K1E	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	314364	02/29/16 16:51	DB	TAL IRV
Dissolved	Analysis	245.1		1	20 mL	20 mL	314651	03/01/16 00:20	DB	TAL IRV
Dissolved	Analysis	SM 2340B		1			315730	03/07/16 09:06	VS	TAL IRV

Laboratory References:

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

TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

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

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-1

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

Lab Sample ID: MB 440-310522/4
Matrix: Water
Analysis Batch: 310522

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Chloroethyl vinyl ether	ND		2.0	1.0	ug/L			02/08/16 15:29	1
Acrolein	ND		5.0	2.5	ug/L			02/08/16 15:29	1
Acrylonitrile	ND		2.0	1.0	ug/L			02/08/16 15:29	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	119		80 - 128		02/08/16 15:29	1
Dibromofluoromethane (Surr)	111		76 - 132		02/08/16 15:29	1
4-Bromofluorobenzene (Surr)	110		80 - 120		02/08/16 15:29	1

Lab Sample ID: LCS 440-310522/5
Matrix: Water
Analysis Batch: 310522

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2-Chloroethyl vinyl ether	25.0	27.0		ug/L		108	37 - 150
Acrolein	25.0	19.1		ug/L		76	10 - 145
Acrylonitrile	250	282		ug/L		113	48 - 140

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Toluene-d8 (Surr)	112		80 - 128
Dibromofluoromethane (Surr)	110		76 - 132
4-Bromofluorobenzene (Surr)	111		80 - 120

Lab Sample ID: 440-137200-R-1 MS
Matrix: Water
Analysis Batch: 310522

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

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
2-Chloroethyl vinyl ether	ND		25.0	27.6		ug/L		111	10 - 140
Acrolein	ND		25.0	11.0		ug/L		44	10 - 147
Acrylonitrile	ND		250	272		ug/L		109	38 - 144

Surrogate	MS %Recovery	MS Qualifier	Limits
Toluene-d8 (Surr)	115		80 - 128
Dibromofluoromethane (Surr)	112		76 - 132
4-Bromofluorobenzene (Surr)	110		80 - 120

Lab Sample ID: 440-137200-R-1 MSD
Matrix: Water
Analysis Batch: 310522

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

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2-Chloroethyl vinyl ether	ND		25.0	28.6		ug/L		114	10 - 140	3	25
Acrolein	ND		25.0	11.8		ug/L		47	10 - 147	7	40
Acrylonitrile	ND		250	282		ug/L		113	38 - 144	4	40

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-1

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

Lab Sample ID: 440-137200-R-1 MSD
Matrix: Water
Analysis Batch: 310522

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

Surrogate	MSD %Recovery	MSD Qualifier	Limits
Toluene-d8 (Surr)	114		80 - 128
Dibromofluoromethane (Surr)	112		76 - 132
4-Bromofluorobenzene (Surr)	110		80 - 120

Lab Sample ID: MB 440-311763/4
Matrix: Water
Analysis Batch: 311763

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		0.50	0.25	ug/L			02/17/16 08:26	1
1,1,2,2-Tetrachloroethane	ND		0.50	0.25	ug/L			02/17/16 08:26	1
1,1,2-Trichloroethane	ND		0.50	0.25	ug/L			02/17/16 08:26	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		2.0	0.50	ug/L			02/17/16 08:26	1
1,1-Dichloroethane	ND		0.50	0.25	ug/L			02/17/16 08:26	1
1,1-Dichloroethene	ND		0.50	0.25	ug/L			02/17/16 08:26	1
1,2-Dichlorobenzene	ND		0.50	0.25	ug/L			02/17/16 08:26	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			02/17/16 08:26	1
1,2-Dichloropropane	ND		0.50	0.25	ug/L			02/17/16 08:26	1
1,3-Dichlorobenzene	ND		0.50	0.25	ug/L			02/17/16 08:26	1
1,4-Dichlorobenzene	ND		0.50	0.25	ug/L			02/17/16 08:26	1
Benzene	ND		0.50	0.25	ug/L			02/17/16 08:26	1
Bromoform	ND		1.0	0.40	ug/L			02/17/16 08:26	1
1,2-Dichloro-1,1,2-trifluoroethane	ND		2.0	1.0	ug/L			02/17/16 08:26	1
Bromomethane	ND		0.50	0.25	ug/L			02/17/16 08:26	1
Carbon tetrachloride	ND		0.50	0.25	ug/L			02/17/16 08:26	1
Chlorobenzene	ND		0.50	0.25	ug/L			02/17/16 08:26	1
Dibromochloromethane	ND		0.50	0.25	ug/L			02/17/16 08:26	1
Chloroethane	ND		1.0	0.40	ug/L			02/17/16 08:26	1
Chloroform	ND		0.50	0.25	ug/L			02/17/16 08:26	1
Chloromethane	ND		0.50	0.25	ug/L			02/17/16 08:26	1
cis-1,3-Dichloropropene	ND		0.50	0.25	ug/L			02/17/16 08:26	1
Bromodichloromethane	ND		0.50	0.25	ug/L			02/17/16 08:26	1
Ethylbenzene	ND		0.50	0.25	ug/L			02/17/16 08:26	1
Methylene Chloride	ND		2.0	0.88	ug/L			02/17/16 08:26	1
Tetrachloroethene	ND		0.50	0.25	ug/L			02/17/16 08:26	1
Toluene	ND		0.50	0.25	ug/L			02/17/16 08:26	1
trans-1,2-Dichloroethene	ND		0.50	0.25	ug/L			02/17/16 08:26	1
trans-1,3-Dichloropropene	ND		0.50	0.25	ug/L			02/17/16 08:26	1
Trichlorofluoromethane	ND		0.50	0.25	ug/L			02/17/16 08:26	1
Vinyl chloride	ND		0.50	0.25	ug/L			02/17/16 08:26	1
Trichloroethene	ND		0.50	0.25	ug/L			02/17/16 08:26	1
cis-1,2-Dichloroethene	ND		0.50	0.25	ug/L			02/17/16 08:26	1
Cyclohexane	ND		2.0	1.0	ug/L			02/17/16 08:26	1
m,p-Xylene	ND		1.0	0.50	ug/L			02/17/16 08:26	1
Naphthalene	ND		1.0	0.40	ug/L			02/17/16 08:26	1
o-Xylene	ND		0.50	0.25	ug/L			02/17/16 08:26	1
Xylenes, Total	ND		1.0	0.50	ug/L			02/17/16 08:26	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-1

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

Lab Sample ID: MB 440-311763/4
Matrix: Water
Analysis Batch: 311763

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

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
4-Bromofluorobenzene (Surr)	97		80 - 120		02/17/16 08:26	1
Dibromofluoromethane (Surr)	99		76 - 132		02/17/16 08:26	1
Toluene-d8 (Surr)	103		80 - 128		02/17/16 08:26	1

Lab Sample ID: LCS 440-311763/5
Matrix: Water
Analysis Batch: 311763

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec.
							Limits
1,1,1-Trichloroethane	25.0	25.7		ug/L		103	70 - 130
1,1,2,2-Tetrachloroethane	25.0	27.7		ug/L		111	63 - 130
1,1,2-Trichloroethane	25.0	25.1		ug/L		101	70 - 130
1,1-Dichloroethane	25.0	24.8		ug/L		99	64 - 130
1,1-Dichloroethene	25.0	23.7		ug/L		95	70 - 130
1,2-Dichlorobenzene	25.0	26.8		ug/L		107	70 - 130
1,2-Dichloroethane	25.0	25.6		ug/L		102	57 - 138
1,2-Dichloropropane	25.0	26.5		ug/L		106	67 - 130
1,3-Dichlorobenzene	25.0	26.2		ug/L		105	70 - 130
1,4-Dichlorobenzene	25.0	26.0		ug/L		104	70 - 130
Benzene	25.0	25.0		ug/L		100	68 - 130
Bromoform	25.0	29.7		ug/L		119	60 - 148
Bromomethane	25.0	25.6		ug/L		103	64 - 139
Carbon tetrachloride	25.0	26.0		ug/L		104	60 - 150
Chlorobenzene	25.0	24.1		ug/L		97	70 - 130
Dibromochloromethane	25.0	26.9		ug/L		108	69 - 145
Chloroethane	25.0	25.4		ug/L		101	64 - 135
Chloroform	25.0	25.6		ug/L		102	70 - 130
Chloromethane	25.0	25.8		ug/L		103	47 - 140
cis-1,3-Dichloropropene	25.0	27.4		ug/L		110	70 - 133
Bromodichloromethane	25.0	26.3		ug/L		105	70 - 132
Ethylbenzene	25.0	25.2		ug/L		101	70 - 130
Methylene Chloride	25.0	23.5		ug/L		94	52 - 130
Tetrachloroethene	25.0	25.1		ug/L		101	70 - 130
Toluene	25.0	25.2		ug/L		101	70 - 130
trans-1,2-Dichloroethene	25.0	26.0		ug/L		104	70 - 130
trans-1,3-Dichloropropene	25.0	26.2		ug/L		105	70 - 132
Trichlorofluoromethane	25.0	25.4		ug/L		102	60 - 150
Vinyl chloride	25.0	25.8		ug/L		103	59 - 133
Trichloroethene	25.0	24.5		ug/L		98	70 - 130
cis-1,2-Dichloroethene	25.0	26.2		ug/L		105	70 - 133
m,p-Xylene	25.0	25.9		ug/L		104	70 - 130
Naphthalene	25.0	30.9		ug/L		124	60 - 140
o-Xylene	25.0	25.3		ug/L		101	70 - 130
Xylenes, Total	50.0	51.2		ug/L		102	70 - 130

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	98		80 - 120

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-1

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

Lab Sample ID: LCS 440-311763/5

Matrix: Water

Analysis Batch: 311763

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

<i>Surrogate</i>	<i>LCS %Recovery</i>	<i>LCS Qualifier</i>	<i>Limits</i>
<i>Dibromofluoromethane (Surr)</i>	99		76 - 132
<i>Toluene-d8 (Surr)</i>	96		80 - 128

Lab Sample ID: 440-137026-E-1 MS

Matrix: Water

Analysis Batch: 311763

Client Sample ID: Matrix Spike

Prep Type: Total/NA

<i>Analyte</i>	<i>Sample Result</i>	<i>Sample Qualifier</i>	<i>Spike Added</i>	<i>MS Result</i>	<i>MS Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>%Rec. Limits</i>
1,1,1-Trichloroethane	ND		25.0	26.4		ug/L		106	70 - 130
1,1,2,2-Tetrachloroethane	ND		25.0	28.2		ug/L		113	63 - 130
1,1,2-Trichloroethane	ND		25.0	27.0		ug/L		108	70 - 130
1,1-Dichloroethane	ND		25.0	25.2		ug/L		101	65 - 130
1,1-Dichloroethene	ND		25.0	23.9		ug/L		96	70 - 130
1,2-Dichlorobenzene	ND		25.0	27.1		ug/L		108	70 - 130
1,2-Dichloroethane	ND		25.0	27.1		ug/L		108	56 - 146
1,2-Dichloropropane	ND		25.0	27.5		ug/L		110	69 - 130
1,3-Dichlorobenzene	ND		25.0	26.3		ug/L		105	70 - 130
1,4-Dichlorobenzene	ND		25.0	26.1		ug/L		104	70 - 130
Benzene	ND		25.0	25.3		ug/L		101	66 - 130
Bromoform	ND		25.0	30.9		ug/L		124	59 - 150
Bromomethane	ND		25.0	25.6		ug/L		102	62 - 131
Carbon tetrachloride	ND		25.0	26.5		ug/L		106	60 - 150
Chlorobenzene	ND		25.0	24.3		ug/L		97	70 - 130
Dibromochloromethane	ND		25.0	28.1		ug/L		112	70 - 148
Chloroethane	ND		25.0	25.8		ug/L		103	68 - 130
Chloroform	ND		25.0	26.1		ug/L		104	70 - 130
Chloromethane	ND		25.0	26.3		ug/L		105	39 - 144
cis-1,3-Dichloropropene	ND		25.0	27.9		ug/L		112	70 - 133
Bromodichloromethane	ND		25.0	27.4		ug/L		110	70 - 138
Ethylbenzene	ND		25.0	25.4		ug/L		102	70 - 130
Methylene Chloride	ND		25.0	24.2		ug/L		97	52 - 130
Tetrachloroethene	ND		25.0	25.7		ug/L		103	70 - 137
Toluene	ND		25.0	25.2		ug/L		101	70 - 130
trans-1,2-Dichloroethene	ND		25.0	26.2		ug/L		105	70 - 130
trans-1,3-Dichloropropene	ND		25.0	27.2		ug/L		109	70 - 138
Trichlorofluoromethane	ND		25.0	25.7		ug/L		103	60 - 150
Vinyl chloride	ND		25.0	25.6		ug/L		102	50 - 137
Trichloroethene	ND		25.0	24.9		ug/L		100	70 - 130
cis-1,2-Dichloroethene	ND		25.0	26.4		ug/L		106	70 - 130
m,p-Xylene	ND		25.0	26.2		ug/L		105	70 - 133
Naphthalene	ND		25.0	32.3		ug/L		129	60 - 140
o-Xylene	ND		25.0	25.8		ug/L		103	70 - 133
Xylenes, Total	ND		50.0	52.0		ug/L		104	70 - 133

<i>Surrogate</i>	<i>MS %Recovery</i>	<i>MS Qualifier</i>	<i>Limits</i>
<i>4-Bromofluorobenzene (Surr)</i>	97		80 - 120
<i>Dibromofluoromethane (Surr)</i>	98		76 - 132

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-1

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

Lab Sample ID: 440-137026-E-1 MS
Matrix: Water
Analysis Batch: 311763

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

Surrogate	MS %Recovery	MS Qualifier	Limits
Toluene-d8 (Surr)	96		80 - 128

Lab Sample ID: 440-137026-E-1 MSD
Matrix: Water
Analysis Batch: 311763

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

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1,1-Trichloroethane	ND		25.0	27.1		ug/L		108	70 - 130	2	20
1,1,2,2-Tetrachloroethane	ND		25.0	27.4		ug/L		110	63 - 130	3	30
1,1,2-Trichloroethane	ND		25.0	26.5		ug/L		106	70 - 130	2	25
1,1-Dichloroethane	ND		25.0	25.7		ug/L		103	65 - 130	2	20
1,1-Dichloroethene	ND		25.0	24.6		ug/L		98	70 - 130	3	20
1,2-Dichlorobenzene	ND		25.0	27.4		ug/L		110	70 - 130	1	20
1,2-Dichloroethane	ND		25.0	27.0		ug/L		108	56 - 146	0	20
1,2-Dichloropropane	ND		25.0	27.8		ug/L		111	69 - 130	1	20
1,3-Dichlorobenzene	ND		25.0	27.1		ug/L		108	70 - 130	3	20
1,4-Dichlorobenzene	ND		25.0	26.9		ug/L		107	70 - 130	3	20
Benzene	ND		25.0	25.9		ug/L		104	66 - 130	2	20
Bromoform	ND		25.0	30.3		ug/L		121	59 - 150	2	25
Bromomethane	ND		25.0	26.3		ug/L		105	62 - 131	3	25
Carbon tetrachloride	ND		25.0	27.4		ug/L		109	60 - 150	3	25
Chlorobenzene	ND		25.0	24.6		ug/L		98	70 - 130	1	20
Dibromochloromethane	ND		25.0	27.7		ug/L		111	70 - 148	2	25
Chloroethane	ND		25.0	26.7		ug/L		107	68 - 130	3	25
Chloroform	ND		25.0	26.1		ug/L		104	70 - 130	0	20
Chloromethane	ND		25.0	27.0		ug/L		108	39 - 144	2	25
cis-1,3-Dichloropropene	ND		25.0	28.0		ug/L		112	70 - 133	1	20
Bromodichloromethane	ND		25.0	27.6		ug/L		110	70 - 138	1	20
Ethylbenzene	ND		25.0	26.1		ug/L		104	70 - 130	3	20
Methylene Chloride	ND		25.0	24.7		ug/L		99	52 - 130	2	20
Tetrachloroethene	ND		25.0	26.3		ug/L		105	70 - 137	2	20
Toluene	ND		25.0	25.9		ug/L		104	70 - 130	3	20
trans-1,2-Dichloroethene	ND		25.0	26.8		ug/L		107	70 - 130	2	20
trans-1,3-Dichloropropene	ND		25.0	27.1		ug/L		109	70 - 138	0	25
Trichlorofluoromethane	ND		25.0	26.6		ug/L		107	60 - 150	4	25
Vinyl chloride	ND		25.0	27.0		ug/L		108	50 - 137	5	30
Trichloroethene	ND		25.0	25.7		ug/L		103	70 - 130	3	20
cis-1,2-Dichloroethene	ND		25.0	26.8		ug/L		107	70 - 130	2	20
m,p-Xylene	ND		25.0	26.6		ug/L		106	70 - 133	1	25
Naphthalene	ND		25.0	31.6		ug/L		126	60 - 140	2	30
o-Xylene	ND		25.0	26.1		ug/L		104	70 - 133	1	20
Xylenes, Total	ND		50.0	52.7		ug/L		105	70 - 133	1	20

Surrogate	MSD %Recovery	MSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	99		80 - 120
Dibromofluoromethane (Surr)	99		76 - 132
Toluene-d8 (Surr)	97		80 - 128

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-1

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-311648/2

Matrix: Water

Analysis Batch: 311648

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	ND		2.0	0.50	ug/L			02/16/16 15:01	1
Surrogate	%Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	84		80 - 120					02/16/16 15:01	1

Lab Sample ID: LCS 440-311648/3

Matrix: Water

Analysis Batch: 311648

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	10.0	9.33		ug/L		93	70 - 125
Surrogate	%Recovery	LCS Qualifier	Limits				
Dibromofluoromethane (Surr)	84		80 - 120				

Lab Sample ID: 440-137200-3 MS

Matrix: Water

Analysis Batch: 311648

Client Sample ID: Outfall018_20160204_Comp

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	ND		10.0	9.59		ug/L		96	70 - 130
Surrogate	%Recovery	MS Qualifier	Limits						
Dibromofluoromethane (Surr)	90		80 - 120						

Lab Sample ID: 440-137200-3 MSD

Matrix: Water

Analysis Batch: 311648

Client Sample ID: Outfall018_20160204_Comp

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,4-Dioxane	ND		10.0	9.23		ug/L		92	70 - 130	4	30
Surrogate	%Recovery	MSD Qualifier	Limits								
Dibromofluoromethane (Surr)	90		80 - 120								

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

Lab Sample ID: MB 440-310608/1-A

Matrix: Water

Analysis Batch: 311203

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 310608

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		0.500	0.200	ug/L		02/09/16 15:30	02/13/16 19:38	1
Acenaphthylene	ND		0.500	0.200	ug/L		02/09/16 15:30	02/13/16 19:38	1
Anthracene	ND		0.500	0.200	ug/L		02/09/16 15:30	02/13/16 19:38	1
Benzidine	ND		10.0	5.00	ug/L		02/09/16 15:30	02/13/16 19:38	1
Benzo[a]anthracene	ND		5.00	2.00	ug/L		02/09/16 15:30	02/13/16 19:38	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-1

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

Lab Sample ID: MB 440-310608/1-A
Matrix: Water
Analysis Batch: 311203

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 310608

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzo[b]fluoranthene	ND		2.00	1.00	ug/L		02/09/16 15:30	02/13/16 19:38	1
Benzo[k]fluoranthene	ND		0.500	0.250	ug/L		02/09/16 15:30	02/13/16 19:38	1
Benzo[a]pyrene	ND		2.00	0.500	ug/L		02/09/16 15:30	02/13/16 19:38	1
Bis(2-chloroethoxy)methane	ND		0.500	0.200	ug/L		02/09/16 15:30	02/13/16 19:38	1
Bis(2-chloroethyl)ether	ND		0.500	0.200	ug/L		02/09/16 15:30	02/13/16 19:38	1
Bis(2-ethylhexyl) phthalate	ND		5.00	2.00	ug/L		02/09/16 15:30	02/13/16 19:38	1
4-Bromophenyl phenyl ether	ND		1.00	0.500	ug/L		02/09/16 15:30	02/13/16 19:38	1
Butyl benzyl phthalate	ND		5.00	2.00	ug/L		02/09/16 15:30	02/13/16 19:38	1
4-Chloro-3-methylphenol	ND		2.00	0.200	ug/L		02/09/16 15:30	02/13/16 19:38	1
2-Chloronaphthalene	ND		0.500	0.200	ug/L		02/09/16 15:30	02/13/16 19:38	1
2-Chlorophenol	ND		1.00	0.500	ug/L		02/09/16 15:30	02/13/16 19:38	1
4-Chlorophenyl phenyl ether	ND		0.500	0.200	ug/L		02/09/16 15:30	02/13/16 19:38	1
Chrysene	ND		0.500	0.200	ug/L		02/09/16 15:30	02/13/16 19:38	1
Dibenz(a,h)anthracene	ND		0.500	0.250	ug/L		02/09/16 15:30	02/13/16 19:38	1
Di-n-butyl phthalate	ND		2.00	1.00	ug/L		02/09/16 15:30	02/13/16 19:38	1
1,2-Dichlorobenzene	ND		0.500	0.200	ug/L		02/09/16 15:30	02/13/16 19:38	1
1,3-Dichlorobenzene	ND		0.500	0.200	ug/L		02/09/16 15:30	02/13/16 19:38	1
1,4-Dichlorobenzene	ND		0.500	0.200	ug/L		02/09/16 15:30	02/13/16 19:38	1
3,3'-Dichlorobenzidine	ND		5.00	2.00	ug/L		02/09/16 15:30	02/13/16 19:38	1
2,4-Dichlorophenol	ND		2.00	1.00	ug/L		02/09/16 15:30	02/13/16 19:38	1
Diethyl phthalate	ND		1.00	0.500	ug/L		02/09/16 15:30	02/13/16 19:38	1
2,4-Dimethylphenol	ND		2.00	1.00	ug/L		02/09/16 15:30	02/13/16 19:38	1
Dimethyl phthalate	ND		0.500	0.250	ug/L		02/09/16 15:30	02/13/16 19:38	1
4,6-Dinitro-2-methylphenol	ND		5.00	2.00	ug/L		02/09/16 15:30	02/13/16 19:38	1
2,4-Dinitrophenol	ND		5.00	2.00	ug/L		02/09/16 15:30	02/13/16 19:38	1
2,4-Dinitrotoluene	ND		5.00	2.00	ug/L		02/09/16 15:30	02/13/16 19:38	1
2,6-Dinitrotoluene	ND		5.00	2.00	ug/L		02/09/16 15:30	02/13/16 19:38	1
Di-n-octyl phthalate	ND		5.00	2.00	ug/L		02/09/16 15:30	02/13/16 19:38	1
1,2-Diphenylhydrazine(as Azobenzene)	ND		1.00	0.500	ug/L		02/09/16 15:30	02/13/16 19:38	1
Fluoranthene	ND		0.500	0.200	ug/L		02/09/16 15:30	02/13/16 19:38	1
Fluorene	ND		0.500	0.200	ug/L		02/09/16 15:30	02/13/16 19:38	1
Hexachlorobenzene	ND		1.00	0.500	ug/L		02/09/16 15:30	02/13/16 19:38	1
Hexachlorobutadiene	ND		2.00	0.500	ug/L		02/09/16 15:30	02/13/16 19:38	1
Hexachloroethane	ND		3.00	0.500	ug/L		02/09/16 15:30	02/13/16 19:38	1
Hexachlorocyclopentadiene	ND		5.00	2.00	ug/L		02/09/16 15:30	02/13/16 19:38	1
Indeno[1,2,3-cd]pyrene	ND		2.00	1.00	ug/L		02/09/16 15:30	02/13/16 19:38	1
Isophorone	ND		1.00	0.500	ug/L		02/09/16 15:30	02/13/16 19:38	1
Naphthalene	ND		1.00	0.500	ug/L		02/09/16 15:30	02/13/16 19:38	1
Nitrobenzene	ND		1.00	0.500	ug/L		02/09/16 15:30	02/13/16 19:38	1
2-Nitrophenol	ND		2.00	1.00	ug/L		02/09/16 15:30	02/13/16 19:38	1
4-Nitrophenol	ND		5.00	2.00	ug/L		02/09/16 15:30	02/13/16 19:38	1
N-Nitrosodimethylamine	ND		2.00	1.00	ug/L		02/09/16 15:30	02/13/16 19:38	1
N-Nitrosodiphenylamine	ND		1.00	0.500	ug/L		02/09/16 15:30	02/13/16 19:38	1
N-Nitrosodi-n-propylamine	ND		2.00	1.00	ug/L		02/09/16 15:30	02/13/16 19:38	1
Pentachlorophenol	ND		2.00	1.00	ug/L		02/09/16 15:30	02/13/16 19:38	1
Phenanthrene	ND		0.500	0.200	ug/L		02/09/16 15:30	02/13/16 19:38	1
Phenol	ND		1.00	0.500	ug/L		02/09/16 15:30	02/13/16 19:38	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-1

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

Lab Sample ID: MB 440-310608/1-A
Matrix: Water
Analysis Batch: 311203

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 310608

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Pyrene	ND		0.500	0.200	ug/L		02/09/16 15:30	02/13/16 19:38	1
1,2,4-Trichlorobenzene	ND		1.00	0.500	ug/L		02/09/16 15:30	02/13/16 19:38	1
2,4,6-Trichlorophenol	ND		1.00	0.500	ug/L		02/09/16 15:30	02/13/16 19:38	1
Benzo[g,h,i]perylene	ND		5.00	2.00	ug/L		02/09/16 15:30	02/13/16 19:38	1
bis (2-chloroisopropyl) ether	ND		0.500	0.200	ug/L		02/09/16 15:30	02/13/16 19:38	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl	83		50 - 120	02/09/16 15:30	02/13/16 19:38	1
2-Fluorophenol	57		30 - 120	02/09/16 15:30	02/13/16 19:38	1
2,4,6-Tribromophenol	66		40 - 120	02/09/16 15:30	02/13/16 19:38	1
Nitrobenzene-d5	77		45 - 120	02/09/16 15:30	02/13/16 19:38	1
Terphenyl-d14	91		37 - 144	02/09/16 15:30	02/13/16 19:38	1
Phenol-d6	64		35 - 120	02/09/16 15:30	02/13/16 19:38	1

Lab Sample ID: LCS 440-310608/2-A
Matrix: Water
Analysis Batch: 311203

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 310608

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Acenaphthene	10.0	7.079		ug/L		71	47 - 145
Acenaphthylene	10.0	7.314		ug/L		73	33 - 145
Anthracene	10.0	7.245		ug/L		72	27 - 133
Benzidine	10.0	ND		ug/L		18	5 - 66
Benzo[a]anthracene	10.0	7.960		ug/L		80	33 - 143
Benzo[b]fluoranthene	10.0	8.045		ug/L		80	24 - 150
Benzo[k]fluoranthene	10.0	7.791		ug/L		78	11 - 150
Benzo[a]pyrene	10.0	7.590		ug/L		76	17 - 150
Bis(2-chloroethoxy)methane	10.0	7.041		ug/L		70	33 - 150
Bis(2-chloroethyl)ether	10.0	7.014		ug/L		70	12 - 150
Bis(2-ethylhexyl) phthalate	10.0	8.248		ug/L		82	10 - 150
4-Bromophenyl phenyl ether	10.0	7.534		ug/L		75	53 - 127
Butyl benzyl phthalate	10.0	8.436		ug/L		84	10 - 150
4-Chloro-3-methylphenol	10.0	7.601		ug/L		76	22 - 147
2-Chloronaphthalene	10.0	6.842		ug/L		68	60 - 118
2-Chlorophenol	10.0	6.656		ug/L		67	23 - 134
4-Chlorophenyl phenyl ether	10.0	6.825		ug/L		68	25 - 150
Chrysene	10.0	7.744		ug/L		77	17 - 150
Dibenz(a,h)anthracene	10.0	8.145		ug/L		81	10 - 150
Di-n-butyl phthalate	10.0	8.212		ug/L		82	10 - 118
1,2-Dichlorobenzene	10.0	6.393		ug/L		64	32 - 129
1,3-Dichlorobenzene	10.0	6.184		ug/L		62	10 - 150
1,4-Dichlorobenzene	10.0	6.201		ug/L		62	20 - 124
3,3'-Dichlorobenzidine	10.0	9.910		ug/L		99	10 - 150
2,4-Dichlorophenol	10.0	6.903		ug/L		69	39 - 135
Diethyl phthalate	10.0	7.532		ug/L		75	10 - 114
2,4-Dimethylphenol	10.0	5.907		ug/L		59	32 - 119
Dimethyl phthalate	10.0	7.260		ug/L		73	10 - 112
4,6-Dinitro-2-methylphenol	20.0	16.02		ug/L		80	10 - 150

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-1

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

Lab Sample ID: LCS 440-310608/2-A
Matrix: Water
Analysis Batch: 311203

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 310608

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2,4-Dinitrophenol	20.0	14.34		ug/L		72	50 - 150
2,4-Dinitrotoluene	10.0	7.772		ug/L		78	39 - 139
2,6-Dinitrotoluene	10.0	7.572		ug/L		76	50 - 150
Di-n-octyl phthalate	10.0	8.338		ug/L		83	10 - 146
1,2-Diphenylhydrazine(as Azobenzene)	10.1	7.054		ug/L		70	47 - 116
Fluoranthene	10.0	7.894		ug/L		79	26 - 137
Fluorene	10.0	7.171		ug/L		72	59 - 121
Hexachlorobenzene	10.0	7.468		ug/L		75	10 - 150
Hexachlorobutadiene	10.0	5.099		ug/L		51	24 - 116
Hexachloroethane	10.0	5.799		ug/L		58	40 - 113
Hexachlorocyclopentadiene	10.0	ND		ug/L		17	10 - 67
Indeno[1,2,3-cd]pyrene	10.0	9.619		ug/L		96	10 - 150
Isophorone	10.0	7.701		ug/L		77	21 - 150
Naphthalene	10.0	6.894		ug/L		69	21 - 133
Nitrobenzene	10.0	6.917		ug/L		69	35 - 150
2-Nitrophenol	10.0	7.473		ug/L		75	29 - 150
4-Nitrophenol	20.0	13.11		ug/L		66	10 - 132
N-Nitrosodimethylamine	10.0	7.097		ug/L		71	26 - 117
N-Nitrosodiphenylamine	20.0	14.27		ug/L		71	54 - 110
N-Nitrosodi-n-propylamine	10.0	6.917		ug/L		69	10 - 150
Pentachlorophenol	20.0	11.87		ug/L		59	14 - 150
Phenanthrene	10.0	7.627		ug/L		76	54 - 120
Phenol	10.0	6.568		ug/L		66	10 - 112
Pyrene	10.0	8.084		ug/L		81	52 - 115
1,2,4-Trichlorobenzene	10.0	6.277		ug/L		63	44 - 142
2,4,6-Trichlorophenol	10.0	7.407		ug/L		74	37 - 144
Benzo[g,h,i]perylene	10.0	11.31		ug/L		113	10 - 150
bis (2-chloroisopropyl) ether	10.0	6.770		ug/L		68	47 - 103

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2-Fluorobiphenyl	70		50 - 120
2-Fluorophenol	49		30 - 120
2,4,6-Tribromophenol	78		40 - 120
Nitrobenzene-d5	71		45 - 120
Terphenyl-d14	82		37 - 144
Phenol-d6	64		35 - 120

Lab Sample ID: 440-137200-3 MS
Matrix: Water
Analysis Batch: 311513

Client Sample ID: Outfall018_20160204_Comp
Prep Type: Total/NA
Prep Batch: 310608

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Acenaphthene	ND		9.48	6.701		ug/L		71	47 - 145
Acenaphthylene	ND		9.48	6.702		ug/L		71	33 - 145
Anthracene	ND		9.48	6.456		ug/L		68	27 - 133
Benzidine	ND		9.48	ND	LN	ug/L		0	30 - 160
Benzo[a]anthracene	ND		9.48	7.052		ug/L		74	33 - 143

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-1

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

Lab Sample ID: 440-137200-3 MS

Matrix: Water

Analysis Batch: 311513

Client Sample ID: Outfall018_20160204_Comp

Prep Type: Total/NA

Prep Batch: 310608

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec. Limits
	Result	Qualifier	Added	Result	Qualifier				
Benzo[b]fluoranthene	ND		9.48	6.558		ug/L		69	24 - 150
Benzo[k]fluoranthene	ND		9.48	6.366		ug/L		67	11 - 150
Benzo[a]pyrene	ND		9.48	6.237		ug/L		66	17 - 150
Bis(2-chloroethoxy)methane	ND		9.48	6.719		ug/L		71	33 - 150
Bis(2-chloroethyl)ether	ND		9.48	6.373		ug/L		67	12 - 150
Bis(2-ethylhexyl) phthalate	ND		9.48	8.001		ug/L		84	10 - 150
4-Bromophenyl phenyl ether	ND		9.48	7.250		ug/L		76	53 - 127
Butyl benzyl phthalate	3.28	J,DX	9.48	8.399		ug/L		54	10 - 150
4-Chloro-3-methylphenol	ND		9.48	9.233		ug/L		97	22 - 147
2-Chloronaphthalene	ND		9.48	6.272		ug/L		66	60 - 118
2-Chlorophenol	ND		9.48	6.443		ug/L		68	23 - 134
4-Chlorophenyl phenyl ether	ND		9.48	6.008		ug/L		63	25 - 150
Chrysene	ND		9.48	6.923		ug/L		73	17 - 150
Dibenz(a,h)anthracene	ND		9.48	7.303		ug/L		77	10 - 150
Di-n-butyl phthalate	ND		9.48	7.871		ug/L		83	10 - 118
1,2-Dichlorobenzene	ND		9.48	6.280		ug/L		66	32 - 129
1,3-Dichlorobenzene	ND		9.48	5.615		ug/L		59	10 - 150
1,4-Dichlorobenzene	ND		9.48	5.846		ug/L		62	20 - 124
3,3'-Dichlorobenzidine	ND		9.48	ND	LN	ug/L		0	10 - 150
2,4-Dichlorophenol	ND		9.48	6.948		ug/L		73	39 - 135
Diethyl phthalate	ND		9.48	6.392		ug/L		67	10 - 114
2,4-Dimethylphenol	ND		9.48	6.129		ug/L		65	32 - 119
Dimethyl phthalate	ND		9.48	6.010		ug/L		63	10 - 112
4,6-Dinitro-2-methylphenol	ND		19.0	18.76		ug/L		99	10 - 150
2,4-Dinitrophenol	ND		19.0	16.73		ug/L		88	50 - 150
2,4-Dinitrotoluene	ND		9.48	7.416		ug/L		78	39 - 139
2,6-Dinitrotoluene	ND		9.48	6.997		ug/L		74	50 - 150
Di-n-octyl phthalate	ND		9.48	8.246		ug/L		87	10 - 146
1,2-Diphenylhydrazine(as Azobenzene)	ND		9.57	5.824		ug/L		61	60 - 120
Fluoranthene	ND		9.48	7.562		ug/L		80	26 - 137
Fluorene	ND		9.48	6.086		ug/L		64	59 - 121
Hexachlorobenzene	ND		9.48	6.716		ug/L		71	10 - 150
Hexachlorobutadiene	ND		9.48	5.272		ug/L		56	24 - 116
Hexachloroethane	ND		9.48	5.710		ug/L		60	40 - 113
Hexachlorocyclopentadiene	ND		9.48	ND	LN	ug/L		0	25 - 120
Indeno[1,2,3-cd]pyrene	ND		9.48	8.084		ug/L		85	10 - 150
Isophorone	ND		9.48	8.454		ug/L		89	21 - 150
Naphthalene	ND		9.48	6.515		ug/L		69	21 - 133
Nitrobenzene	ND		9.48	8.834		ug/L		93	35 - 150
2-Nitrophenol	ND		9.48	8.715		ug/L		92	29 - 150
4-Nitrophenol	ND		19.0	15.27		ug/L		81	10 - 132
N-Nitrosodimethylamine	ND		9.48	6.871		ug/L		72	12 - 123
N-Nitrosodiphenylamine	ND		19.0	11.96		ug/L		63	60 - 120
N-Nitrosodi-n-propylamine	ND		9.48	6.882		ug/L		73	10 - 150
Pentachlorophenol	ND		19.0	14.82		ug/L		78	14 - 150
Phenanthrene	ND		9.48	7.310		ug/L		77	54 - 120
Phenol	ND		9.48	6.308		ug/L		67	10 - 112

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-1

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

Lab Sample ID: 440-137200-3 MS

Matrix: Water

Analysis Batch: 311513

Client Sample ID: Outfall018_20160204_Comp

Prep Type: Total/NA

Prep Batch: 310608

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Pyrene	ND		9.48	7.705		ug/L		81	52 - 115
1,2,4-Trichlorobenzene	ND		9.48	5.893		ug/L		62	44 - 142
2,4,6-Trichlorophenol	ND		9.48	7.768		ug/L		82	37 - 144
Benzo[g,h,i]perylene	ND		9.48	10.05		ug/L		106	10 - 150
bis (2-chloroisopropyl) ether	ND		9.48	6.355		ug/L		67	45 - 120

Surrogate	MS %Recovery	MS Qualifier	Limits
2-Fluorobiphenyl	65		50 - 120
2-Fluorophenol	55		30 - 120
2,4,6-Tribromophenol	83		40 - 120
Nitrobenzene-d5	77		45 - 120
Terphenyl-d14	76		37 - 144
Phenol-d6	68		35 - 120

Lab Sample ID: 440-137200-3 MSD

Matrix: Water

Analysis Batch: 311513

Client Sample ID: Outfall018_20160204_Comp

Prep Type: Total/NA

Prep Batch: 310608

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Acenaphthene	ND		9.71	7.007		ug/L		72	47 - 145	4	25
Acenaphthylene	ND		9.71	7.093		ug/L		73	33 - 145	6	25
Anthracene	ND		9.71	6.773		ug/L		70	27 - 133	5	25
Benzidine	ND		9.71	ND	LN	ug/L		0	30 - 160	NC	35
Benzo[a]anthracene	ND		9.71	7.669		ug/L		79	33 - 143	8	20
Benzo[b]fluoranthene	ND		9.71	7.273		ug/L		75	24 - 150	10	25
Benzo[k]fluoranthene	ND		9.71	6.811		ug/L		70	11 - 150	7	30
Benzo[a]pyrene	ND		9.71	6.959		ug/L		72	17 - 150	11	25
Bis(2-chloroethoxy)methane	ND		9.71	7.473		ug/L		77	33 - 150	11	25
Bis(2-chloroethyl)ether	ND		9.71	7.180		ug/L		74	12 - 150	12	25
Bis(2-ethylhexyl) phthalate	ND		9.71	8.574		ug/L		88	10 - 150	7	25
4-Bromophenyl phenyl ether	ND		9.71	7.489		ug/L		77	53 - 127	3	25
Butyl benzyl phthalate	3.28	J,DX	9.71	8.834		ug/L		57	10 - 150	5	25
4-Chloro-3-methylphenol	ND		9.71	9.970		ug/L		103	22 - 147	8	25
2-Chloronaphthalene	ND		9.71	6.430		ug/L		66	60 - 118	2	20
2-Chlorophenol	ND		9.71	6.953		ug/L		72	23 - 134	8	25
4-Chlorophenyl phenyl ether	ND		9.71	6.333		ug/L		65	25 - 150	5	25
Chrysene	ND		9.71	7.232		ug/L		74	17 - 150	4	25
Dibenz(a,h)anthracene	ND		9.71	7.680		ug/L		79	10 - 150	5	30
Di-n-butyl phthalate	ND		9.71	8.368		ug/L		86	10 - 118	6	25
1,2-Dichlorobenzene	ND		9.71	6.720		ug/L		69	32 - 129	7	25
1,3-Dichlorobenzene	ND		9.71	6.100		ug/L		63	10 - 150	8	25
1,4-Dichlorobenzene	ND		9.71	6.331		ug/L		65	20 - 124	8	25
3,3'-Dichlorobenzidine	ND		9.71	ND	LN	ug/L		0	10 - 150	NC	25
2,4-Dichlorophenol	ND		9.71	7.607		ug/L		78	39 - 135	9	25
Diethyl phthalate	ND		9.71	6.834		ug/L		70	10 - 114	7	30
2,4-Dimethylphenol	ND		9.71	7.127		ug/L		73	32 - 119	15	25
Dimethyl phthalate	ND		9.71	6.527		ug/L		67	10 - 112	8	30
4,6-Dinitro-2-methylphenol	ND		19.4	20.13		ug/L		104	10 - 150	7	25

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-1

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

Lab Sample ID: 440-137200-3 MSD

Matrix: Water

Analysis Batch: 311513

Client Sample ID: Outfall018_20160204_Comp

Prep Type: Total/NA

Prep Batch: 310608

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier				Limits		
2,4-Dinitrophenol	ND		19.4	18.39		ug/L		95	50 - 150	9	25
2,4-Dinitrotoluene	ND		9.71	8.175		ug/L		84	39 - 139	10	25
2,6-Dinitrotoluene	ND		9.71	7.804		ug/L		80	50 - 150	11	20
Di-n-octyl phthalate	ND		9.71	8.867		ug/L		91	10 - 146	7	20
1,2-Diphenylhydrazine(as Azobenzene)	ND		9.81	6.262		ug/L		64	60 - 120	7	25
Fluoranthene	ND		9.71	8.022		ug/L		83	26 - 137	6	25
Fluorene	ND		9.71	6.431		ug/L		66	59 - 121	6	25
Hexachlorobenzene	ND		9.71	7.049		ug/L		73	10 - 150	5	25
Hexachlorobutadiene	ND		9.71	5.628		ug/L		58	24 - 116	7	25
Hexachloroethane	ND		9.71	6.047		ug/L		62	40 - 113	6	25
Hexachlorocyclopentadiene	ND		9.71	2.678	J,DX	ug/L		28	25 - 120	NC	30
Indeno[1,2,3-cd]pyrene	ND		9.71	9.062		ug/L		93	10 - 150	11	30
Isophorone	ND		9.71	8.804		ug/L		91	21 - 150	4	25
Naphthalene	ND		9.71	7.050		ug/L		73	21 - 133	8	25
Nitrobenzene	ND		9.71	9.395		ug/L		97	35 - 150	6	25
2-Nitrophenol	ND		9.71	9.589		ug/L		99	29 - 150	10	25
4-Nitrophenol	ND		19.4	16.73		ug/L		86	10 - 132	9	30
N-Nitrosodimethylamine	ND		9.71	7.900		ug/L		81	12 - 123	14	35
N-Nitrosodiphenylamine	ND		19.4	13.11		ug/L		68	60 - 120	9	25
N-Nitrosodi-n-propylamine	ND		9.71	7.752		ug/L		80	10 - 150	12	25
Pentachlorophenol	ND		19.4	16.40		ug/L		84	14 - 150	10	25
Phenanthrene	ND		9.71	7.706		ug/L		79	54 - 120	5	25
Phenol	ND		9.71	6.905		ug/L		71	10 - 112	9	25
Pyrene	ND		9.71	8.091		ug/L		83	52 - 115	5	25
1,2,4-Trichlorobenzene	ND		9.71	6.330		ug/L		65	44 - 142	7	20
2,4,6-Trichlorophenol	ND		9.71	7.962		ug/L		82	37 - 144	2	30
Benzo[g,h,i]perylene	ND		9.71	10.56		ug/L		109	10 - 150	5	30
bis (2-chloroisopropyl) ether	ND		9.71	7.059		ug/L		73	45 - 120	10	25

Surrogate	MSD	MSD	Limits
	%Recovery	Qualifier	
2-Fluorobiphenyl	65		50 - 120
2-Fluorophenol	64		30 - 120
2,4,6-Tribromophenol	86		40 - 120
Nitrobenzene-d5	81		45 - 120
Terphenyl-d14	77		37 - 144
Phenol-d6	70		35 - 120

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

Lab Sample ID: MB 440-310722/1-A

Matrix: Water

Analysis Batch: 311149

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 310722

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Aroclor 1016	ND		0.50	0.25	ug/L		02/11/16 06:40	02/13/16 13:36	1
Aroclor 1221	ND		0.50	0.25	ug/L		02/11/16 06:40	02/13/16 13:36	1
Aroclor 1232	ND		0.50	0.25	ug/L		02/11/16 06:40	02/13/16 13:36	1

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QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-1

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

Lab Sample ID: MB 440-310722/1-A
Matrix: Water
Analysis Batch: 311149

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 310722

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Aroclor 1242	ND		0.50	0.25	ug/L		02/11/16 06:40	02/13/16 13:36	1
Aroclor 1248	ND		0.50	0.25	ug/L		02/11/16 06:40	02/13/16 13:36	1
Aroclor 1254	ND		0.50	0.25	ug/L		02/11/16 06:40	02/13/16 13:36	1
Aroclor 1260	ND		0.50	0.25	ug/L		02/11/16 06:40	02/13/16 13:36	1

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
DCB Decachlorobiphenyl (Surr)	112		29 - 115	02/11/16 06:40	02/13/16 13:36	1

Lab Sample ID: LCS 440-310722/5-A
Matrix: Water
Analysis Batch: 311149

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 310722

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aroclor 1260	4.00	4.55		ug/L		114	10 - 127

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

Lab Sample ID: 440-137200-3 MS
Matrix: Water
Analysis Batch: 311149

Client Sample ID: Outfall018_20160204_Comp
Prep Type: Total/NA
Prep Batch: 310722

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Aroclor 1260	ND		3.81	3.91		ug/L		103	55 - 125

Surrogate	MS MS		Limits
	%Recovery	Qualifier	
DCB Decachlorobiphenyl (Surr)	114		29 - 115

Lab Sample ID: 440-137200-3 MSD
Matrix: Water
Analysis Batch: 311149

Client Sample ID: Outfall018_20160204_Comp
Prep Type: Total/NA
Prep Batch: 310722

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	
										RPD	Limit
Aroclor 1016	ND		3.81	4.31		ug/L		113	45 - 120	0	30
Aroclor 1260	ND		3.81	3.92		ug/L		103	55 - 125	0	25

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

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-1

Method: 608 Pesticides - Organochlorine Pesticides Low level

Lab Sample ID: MB 440-310722/1-A

Matrix: Water

Analysis Batch: 311421

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 310722

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	ND		0.0050	0.0015	ug/L		02/11/16 06:40	02/15/16 19:47	1
alpha-BHC	ND		0.0050	0.0025	ug/L		02/11/16 06:40	02/15/16 19:47	1
beta-BHC	ND		0.010	0.0040	ug/L		02/11/16 06:40	02/15/16 19:47	1
Chlordane (technical)	ND		0.10	0.080	ug/L		02/11/16 06:40	02/15/16 19:47	1
delta-BHC	ND		0.0050	0.0035	ug/L		02/11/16 06:40	02/15/16 19:47	1
Dieldrin	ND		0.0050	0.0020	ug/L		02/11/16 06:40	02/15/16 19:47	1
Endosulfan I	ND		0.0050	0.0030	ug/L		02/11/16 06:40	02/15/16 19:47	1
Endosulfan II	ND		0.0050	0.0020	ug/L		02/11/16 06:40	02/15/16 19:47	1
Endosulfan sulfate	ND		0.010	0.0030	ug/L		02/11/16 06:40	02/15/16 19:47	1
Endrin	ND		0.0050	0.0020	ug/L		02/11/16 06:40	02/15/16 19:47	1
Endrin aldehyde	ND		0.010	0.0020	ug/L		02/11/16 06:40	02/15/16 19:47	1
gamma-BHC (Lindane)	ND		0.010	0.0030	ug/L		02/11/16 06:40	02/15/16 19:47	1
Heptachlor	ND		0.010	0.0030	ug/L		02/11/16 06:40	02/15/16 19:47	1
Heptachlor epoxide	ND		0.0050	0.0025	ug/L		02/11/16 06:40	02/15/16 19:47	1
Toxaphene	ND		0.50	0.25	ug/L		02/11/16 06:40	02/15/16 19:47	1
4,4'-DDD	ND		0.0050	0.0040	ug/L		02/11/16 06:40	02/15/16 19:47	1
4,4'-DDE	ND		0.0050	0.0030	ug/L		02/11/16 06:40	02/15/16 19:47	1
4,4'-DDT	ND		0.010	0.0040	ug/L		02/11/16 06:40	02/15/16 19:47	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	62		10 - 150	02/11/16 06:40	02/15/16 19:47	1

Lab Sample ID: LCS 440-310722/2-A

Matrix: Water

Analysis Batch: 311421

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 310722

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aldrin	0.200	0.146		ug/L		73	19 - 115
alpha-BHC	0.200	0.153		ug/L		77	42 - 115
beta-BHC	0.200	0.170		ug/L		85	48 - 115
delta-BHC	0.200	0.161		ug/L		80	48 - 115
Dieldrin	0.200	0.155		ug/L		77	51 - 117
Endosulfan I	0.200	0.159		ug/L		79	47 - 117
Endosulfan II	0.200	0.132		ug/L		66	32 - 128
Endosulfan sulfate	0.200	0.156		ug/L		78	50 - 117
Endrin	0.200	0.180		ug/L		90	51 - 120
Endrin aldehyde	0.200	0.143		ug/L		71	49 - 115
gamma-BHC (Lindane)	0.200	0.160		ug/L		80	43 - 115
Heptachlor	0.200	0.147		ug/L		74	44 - 115
Heptachlor epoxide	0.200	0.158		ug/L		79	35 - 131
4,4'-DDD	0.200	0.182		ug/L		91	53 - 126
4,4'-DDE	0.200	0.166		ug/L		83	48 - 115
4,4'-DDT	0.200	0.169		ug/L		84	10 - 150

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Tetrachloro-m-xylene	68		10 - 150

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-1

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

Lab Sample ID: 440-137200-3 MS

Matrix: Water

Analysis Batch: 311421

Client Sample ID: Outfall018_20160204_Comp

Prep Type: Total/NA

Prep Batch: 310722

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	Limits
	Result	Qualifier		Result	Qualifier				
Aldrin	ND		0.190	0.134		ug/L		70	35 - 120
alpha-BHC	ND		0.190	0.134		ug/L		71	40 - 120
beta-BHC	ND		0.190	0.160		ug/L		84	50 - 120
delta-BHC	ND		0.190	0.158		ug/L		83	50 - 120
Dieldrin	ND		0.190	0.138		ug/L		73	50 - 120
Endosulfan I	ND		0.190	0.143		ug/L		75	50 - 120
Endosulfan II	ND		0.190	0.114		ug/L		60	50 - 125
Endosulfan sulfate	ND		0.190	0.155		ug/L		81	55 - 125
Endrin	ND		0.190	0.162		ug/L		85	50 - 120
Endrin aldehyde	ND		0.190	0.134		ug/L		71	45 - 125
gamma-BHC (Lindane)	ND		0.190	0.153		ug/L		80	40 - 120
Heptachlor	ND		0.190	0.135		ug/L		71	40 - 120
Heptachlor epoxide	ND		0.190	0.147		ug/L		77	50 - 120
4,4'-DDD	ND		0.190	0.161		ug/L		84	50 - 125
4,4'-DDE	ND		0.190	0.147		ug/L		77	45 - 125
4,4'-DDT	ND		0.190	0.154		ug/L		81	50 - 125

Surrogate	MS %Recovery	MS Qualifier	Limits
Tetrachloro-m-xylene	64		10 - 150

Lab Sample ID: 440-137200-3 MSD

Matrix: Water

Analysis Batch: 311421

Client Sample ID: Outfall018_20160204_Comp

Prep Type: Total/NA

Prep Batch: 310722

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	Limits	RPD	Limit
	Result	Qualifier		Result	Qualifier						
Aldrin	ND		0.190	0.124		ug/L		65	35 - 120	7	30
alpha-BHC	ND		0.190	0.125		ug/L		66	40 - 120	7	30
beta-BHC	ND		0.190	0.155		ug/L		81	50 - 120	3	30
delta-BHC	ND		0.190	0.152		ug/L		80	50 - 120	4	30
Dieldrin	ND		0.190	0.128		ug/L		67	50 - 120	8	30
Endosulfan I	ND		0.190	0.133		ug/L		70	50 - 120	7	30
Endosulfan II	ND		0.190	0.107		ug/L		56	50 - 125	6	30
Endosulfan sulfate	ND		0.190	0.136		ug/L		72	55 - 125	7	30
Endrin	ND		0.190	0.157		ug/L		82	50 - 120	3	30
Endrin aldehyde	ND		0.190	0.123		ug/L		65	45 - 125	6	30
gamma-BHC (Lindane)	ND		0.190	0.143		ug/L		75	40 - 120	7	30
Heptachlor	ND		0.190	0.132		ug/L		69	40 - 120	2	30
Heptachlor epoxide	ND		0.190	0.138		ug/L		73	50 - 120	6	30
4,4'-DDD	ND		0.190	0.154		ug/L		81	50 - 125	4	30
4,4'-DDE	ND		0.190	0.135		ug/L		71	45 - 125	9	30
4,4'-DDT	ND		0.190	0.145		ug/L		76	50 - 125	6	30

Surrogate	MSD %Recovery	MSD Qualifier	Limits
Tetrachloro-m-xylene	58		10 - 150

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-1

Method: 218.6 - Chromium, Hexavalent (Ion Chromatography)

Lab Sample ID: MB 440-309925/3
Matrix: Water
Analysis Batch: 309925

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	ND		1.0	0.25	ug/L			02/04/16 18:34	1

Lab Sample ID: LCS 440-309925/2
Matrix: Water
Analysis Batch: 309925

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chromium, hexavalent	50.0	49.5		ug/L		99	90 - 110

Lab Sample ID: MRL 440-309925/4
Matrix: Water
Analysis Batch: 309925

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

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chromium, hexavalent	1.00	1.28		ug/L		128	50 - 150

Lab Sample ID: 440-137200-3 MS
Matrix: Water
Analysis Batch: 309925

Client Sample ID: Outfall018_20160204_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chromium, hexavalent	0.26	J,DX	50.0	50.7		ug/L		101	90 - 110

Lab Sample ID: 440-137200-3 MSD
Matrix: Water
Analysis Batch: 309925

Client Sample ID: Outfall018_20160204_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
Chromium, hexavalent	0.26	J,DX	50.0	48.5		ug/L		96	90 - 110	4	10

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 440-310250/4
Matrix: Water
Analysis Batch: 310250

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	ND		0.11	0.055	mg/L			02/05/16 12:13	1
Nitrite as N	ND		0.15	0.070	mg/L			02/05/16 12:13	1

Lab Sample ID: LCS 440-310250/2
Matrix: Water
Analysis Batch: 310250

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	1.13	1.11		mg/L		98	90 - 110
Nitrite as N	1.52	1.62		mg/L		107	90 - 110

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCSD 440-310250/6
Matrix: Water
Analysis Batch: 310250

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Nitrate as N	1.13	1.13		mg/L		100	90 - 110	1	20
Nitrite as N	1.52	1.61		mg/L		106	90 - 110	1	20

Lab Sample ID: MB 440-310251/4
Matrix: Water
Analysis Batch: 310251

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50	0.25	mg/L			02/05/16 12:13	1
Fluoride	ND		0.50	0.25	mg/L			02/05/16 12:13	1
Sulfate	ND		0.50	0.25	mg/L			02/05/16 12:13	1

Lab Sample ID: LCS 440-310251/2
Matrix: Water
Analysis Batch: 310251

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	5.00	4.84		mg/L		97	90 - 110
Fluoride	5.00	4.70		mg/L		94	90 - 110
Sulfate	5.00	4.93		mg/L		99	90 - 110

Lab Sample ID: LCSD 440-310251/6
Matrix: Water
Analysis Batch: 310251

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	5.00	4.86		mg/L		97	90 - 110	1	20
Fluoride	5.00	4.75		mg/L		95	90 - 110	1	20
Sulfate	5.00	4.98		mg/L		100	90 - 110	1	20

Method: 300.0 - Anions, Ion Chromatography - DL

Lab Sample ID: 440-137200-3 MS
Matrix: Water
Analysis Batch: 310250

Client Sample ID: Outfall018_20160204_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N - DL	ND		11.3	10.2		mg/L		90	80 - 120
Nitrite as N - DL	ND		15.2	13.6		mg/L		90	80 - 120

Lab Sample ID: 440-137200-3 MSD
Matrix: Water
Analysis Batch: 310250

Client Sample ID: Outfall018_20160204_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Nitrate as N - DL	ND		11.3	10.2		mg/L		90	80 - 120	0	20
Nitrite as N - DL	ND		15.2	13.6		mg/L		89	80 - 120	0	20

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-1

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

Lab Sample ID: 440-137200-3 MS
Matrix: Water
Analysis Batch: 310251

Client Sample ID: Outfall018_20160204_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride - DL	19		50.0	55.9	LN	mg/L		74	80 - 120
Fluoride - DL	ND		50.0	42.0		mg/L		84	80 - 120
Sulfate - DL	240		50.0	265	BB	mg/L		60	80 - 120

Lab Sample ID: 440-137200-3 MSD
Matrix: Water
Analysis Batch: 310251

Client Sample ID: Outfall018_20160204_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride - DL	19		50.0	55.9	LN	mg/L		75	80 - 120	0	20
Fluoride - DL	ND		50.0	42.0		mg/L		84	80 - 120	0	20
Sulfate - DL	240		50.0	266	BB	mg/L		61	80 - 120	0	20

Method: 314.0 - Perchlorate (IC)

Lab Sample ID: MB 440-312057/3
Matrix: Water
Analysis Batch: 312057

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		4.0	0.95	ug/L			02/18/16 08:04	1

Lab Sample ID: LCS 440-312057/2
Matrix: Water
Analysis Batch: 312057

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	25.0	24.6		ug/L		98	85 - 115

Lab Sample ID: MRL 440-312057/5
Matrix: Water
Analysis Batch: 312057

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

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	4.00	3.61	J,DX	ug/L		90	75 - 125

Lab Sample ID: 440-137200-3 MS
Matrix: Water
Analysis Batch: 312057

Client Sample ID: Outfall018_20160204_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	ND		25.0	21.8		ug/L		87	80 - 120

Lab Sample ID: 440-137200-3 MSD
Matrix: Water
Analysis Batch: 312057

Client Sample ID: Outfall018_20160204_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perchlorate	ND		25.0	21.3		ug/L		85	80 - 120	2	20

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-1

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

Lab Sample ID: MB 320-100312/1-A
Matrix: Water
Analysis Batch: 101275

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 100312

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000010	0.0000008	ug/L		02/12/16 11:55	02/21/16 13:57	1
2,3,7,8-TCDF	ND		0.000010	0.0000009	ug/L		02/12/16 11:55	02/21/16 13:57	1
1,2,3,7,8-PeCDD	ND		0.000050	0.0000016	ug/L		02/12/16 11:55	02/21/16 13:57	1
1,2,3,7,8-PeCDF	ND		0.000050	0.0000019	ug/L		02/12/16 11:55	02/21/16 13:57	1
2,3,4,7,8-PeCDF	ND		0.000050	0.0000022	ug/L		02/12/16 11:55	02/21/16 13:57	1
1,2,3,4,7,8-HxCDD	ND		0.000050	0.0000012	ug/L		02/12/16 11:55	02/21/16 13:57	1
1,2,3,6,7,8-HxCDD	ND		0.000050	0.0000012	ug/L		02/12/16 11:55	02/21/16 13:57	1
1,2,3,7,8,9-HxCDD	ND		0.000050	0.0000009	ug/L		02/12/16 11:55	02/21/16 13:57	1
1,2,3,4,7,8-HxCDF	ND		0.000050	0.0000014	ug/L		02/12/16 11:55	02/21/16 13:57	1
1,2,3,6,7,8-HxCDF	ND		0.000050	0.0000011	ug/L		02/12/16 11:55	02/21/16 13:57	1
1,2,3,7,8,9-HxCDF	ND		0.000050	0.0000008	ug/L		02/12/16 11:55	02/21/16 13:57	1
2,3,4,6,7,8-HxCDF	ND		0.000050	0.0000008	ug/L		02/12/16 11:55	02/21/16 13:57	1
1,2,3,4,6,7,8-HpCDD	0.00000303	J,DX q	0.000050	0.0000014	ug/L		02/12/16 11:55	02/21/16 13:57	1
1,2,3,4,6,7,8-HpCDF	0.00000222	J,DX	0.000050	0.0000006	ug/L		02/12/16 11:55	02/21/16 13:57	1
1,2,3,4,7,8,9-HpCDF	ND		0.000050	0.0000011	ug/L		02/12/16 11:55	02/21/16 13:57	1
OCDD	0.0000226	J,DX	0.00010	0.0000012	ug/L		02/12/16 11:55	02/21/16 13:57	1
OCDF	0.00000357	J,DX	0.00010	0.0000010	ug/L		02/12/16 11:55	02/21/16 13:57	1
Total TCDD	0.00000264	J,DX q	0.000010	0.0000008	ug/L		02/12/16 11:55	02/21/16 13:57	1
Total TCDF	ND		0.000010	0.0000009	ug/L		02/12/16 11:55	02/21/16 13:57	1
Total PeCDD	ND		0.000050	0.0000016	ug/L		02/12/16 11:55	02/21/16 13:57	1
Total PeCDF	ND		0.000050	0.0000019	ug/L		02/12/16 11:55	02/21/16 13:57	1
Total HxCDD	ND		0.000050	0.0000009	ug/L		02/12/16 11:55	02/21/16 13:57	1
Total HxCDF	ND		0.000050	0.0000008	ug/L		02/12/16 11:55	02/21/16 13:57	1
Total HpCDD	0.0000102	J,DX q	0.000050	0.0000014	ug/L		02/12/16 11:55	02/21/16 13:57	1
Total HpCDF	0.00000329	J,DX q	0.000050	0.0000008	ug/L		02/12/16 11:55	02/21/16 13:57	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	59		25 - 164	02/12/16 11:55	02/21/16 13:57	1
13C-2,3,7,8-TCDF	60		24 - 169	02/12/16 11:55	02/21/16 13:57	1
13C-1,2,3,7,8-PeCDD	50		25 - 181	02/12/16 11:55	02/21/16 13:57	1
13C-1,2,3,7,8-PeCDF	59		24 - 185	02/12/16 11:55	02/21/16 13:57	1
13C-2,3,4,7,8-PeCDF	57		21 - 178	02/12/16 11:55	02/21/16 13:57	1
13C-1,2,3,4,7,8-HxCDD	59		32 - 141	02/12/16 11:55	02/21/16 13:57	1
13C-1,2,3,6,7,8-HxCDD	62		28 - 130	02/12/16 11:55	02/21/16 13:57	1
13C-1,2,3,4,7,8-HxCDF	56		26 - 152	02/12/16 11:55	02/21/16 13:57	1
13C-1,2,3,6,7,8-HxCDF	57		26 - 123	02/12/16 11:55	02/21/16 13:57	1
13C-1,2,3,7,8,9-HxCDF	56		29 - 147	02/12/16 11:55	02/21/16 13:57	1
13C-2,3,4,6,7,8-HxCDF	59		28 - 136	02/12/16 11:55	02/21/16 13:57	1
13C-1,2,3,4,6,7,8-HpCDD	60		23 - 140	02/12/16 11:55	02/21/16 13:57	1
13C-1,2,3,4,6,7,8-HpCDF	59		28 - 143	02/12/16 11:55	02/21/16 13:57	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-1

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

Lab Sample ID: MB 320-100312/1-A
Matrix: Water
Analysis Batch: 101275

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 100312

<i>Isotope Dilution</i>	<i>MB MB</i>		<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
	<i>%Recovery</i>	<i>Qualifier</i>				
13C-1,2,3,4,7,8,9-HpCDF	56		26 - 138	02/12/16 11:55	02/21/16 13:57	1
13C-OCDD	57		17 - 157	02/12/16 11:55	02/21/16 13:57	1

<i>Surrogate</i>	<i>MB MB</i>		<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
	<i>%Recovery</i>	<i>Qualifier</i>				
37Cl4-2,3,7,8-TCDD	91		35 - 197	02/12/16 11:55	02/21/16 13:57	1

Lab Sample ID: LCS 320-100312/2-A
Matrix: Water
Analysis Batch: 101275

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 100312

<i>Analyte</i>	<i>Spike Added</i>	<i>LCS Result</i>	<i>LCS Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>%Rec. Limits</i>
2,3,7,8-TCDF	0.000200	0.000260		ug/L		130	75 - 158
1,2,3,7,8-PeCDD	0.00100	0.00132		ug/L		132	70 - 142
1,2,3,7,8-PeCDF	0.00100	0.00117		ug/L		117	80 - 134
2,3,4,7,8-PeCDF	0.00100	0.00119		ug/L		119	68 - 160
1,2,3,4,7,8-HxCDD	0.00100	0.00122		ug/L		122	70 - 164
1,2,3,6,7,8-HxCDD	0.00100	0.00111		ug/L		111	76 - 134
1,2,3,7,8,9-HxCDD	0.00100	0.00108		ug/L		108	64 - 162
1,2,3,4,7,8-HxCDF	0.00100	0.00121		ug/L		121	72 - 134
1,2,3,6,7,8-HxCDF	0.00100	0.00120		ug/L		120	84 - 130
1,2,3,7,8,9-HxCDF	0.00100	0.00119		ug/L		119	78 - 130
2,3,4,6,7,8-HxCDF	0.00100	0.00120		ug/L		120	70 - 156
1,2,3,4,6,7,8-HpCDD	0.00100	0.00114	MB	ug/L		114	70 - 140
1,2,3,4,6,7,8-HpCDF	0.00100	0.00106	MB	ug/L		106	82 - 122
1,2,3,4,7,8,9-HpCDF	0.00100	0.00110		ug/L		110	78 - 138
OCDD	0.00200	0.00197	MB	ug/L		98	78 - 144
OCDF	0.00200	0.00193	MB	ug/L		97	63 - 170

<i>Isotope Dilution</i>	<i>LCS LCS</i>		<i>Limits</i>
	<i>%Recovery</i>	<i>Qualifier</i>	
13C-2,3,7,8-TCDD	68		20 - 175
13C-2,3,7,8-TCDF	69		22 - 152
13C-1,2,3,7,8-PeCDD	61		21 - 227
13C-1,2,3,7,8-PeCDF	69		21 - 192
13C-2,3,4,7,8-PeCDF	69		13 - 328
13C-1,2,3,4,7,8-HxCDD	67		21 - 193
13C-1,2,3,6,7,8-HxCDD	76		25 - 163
13C-1,2,3,4,7,8-HxCDF	67		19 - 202
13C-1,2,3,6,7,8-HxCDF	69		21 - 159
13C-1,2,3,7,8,9-HxCDF	67		17 - 205
13C-2,3,4,6,7,8-HxCDF	69		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	71		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	71		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	70		20 - 186
13C-OCDD	68		13 - 199

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-1

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

Lab Sample ID: LCS 320-100312/2-A
Matrix: Water
Analysis Batch: 101275

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 100312

Surrogate	LCS %Recovery	LCS Qualifier	Limits
37Cl4-2,3,7,8-TCDD	92		35 - 197

Lab Sample ID: LCSD 320-100312/3-A
Matrix: Water
Analysis Batch: 101275

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 100312

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2,3,7,8-TCDD	0.000200	0.000259		ug/L		130	67 - 158	4	50
2,3,7,8-TCDF	0.000200	0.000257		ug/L		128	75 - 158	1	50
1,2,3,7,8-PeCDD	0.00100	0.00124		ug/L		124	70 - 142	6	50
1,2,3,7,8-PeCDF	0.00100	0.00113		ug/L		113	80 - 134	4	50
2,3,4,7,8-PeCDF	0.00100	0.00115		ug/L		115	68 - 160	4	50
1,2,3,4,7,8-HxCDD	0.00100	0.00101		ug/L		101	70 - 164	18	50
1,2,3,6,7,8-HxCDD	0.00100	0.00103		ug/L		103	76 - 134	8	50
1,2,3,7,8,9-HxCDD	0.00100	0.000965		ug/L		96	64 - 162	11	50
1,2,3,4,7,8-HxCDF	0.00100	0.00109		ug/L		109	72 - 134	10	50
1,2,3,6,7,8-HxCDF	0.00100	0.00108		ug/L		108	84 - 130	10	50
1,2,3,7,8,9-HxCDF	0.00100	0.00108		ug/L		108	78 - 130	9	50
2,3,4,6,7,8-HxCDF	0.00100	0.00111		ug/L		111	70 - 156	7	50
1,2,3,4,6,7,8-HpCDD	0.00100	0.000948	MB	ug/L		95	70 - 140	19	50
1,2,3,4,6,7,8-HpCDF	0.00100	0.000876	MB	ug/L		88	82 - 122	19	50
1,2,3,4,7,8,9-HpCDF	0.00100	0.000912		ug/L		91	78 - 138	18	50
OCDD	0.00200	0.00161	MB	ug/L		81	78 - 144	20	50
OCDF	0.00200	0.00160	MB	ug/L		80	63 - 170	19	50

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
13C-2,3,7,8-TCDD	56		20 - 175
13C-2,3,7,8-TCDF	59		22 - 152
13C-1,2,3,7,8-PeCDD	51		21 - 227
13C-1,2,3,7,8-PeCDF	56		21 - 192
13C-2,3,4,7,8-PeCDF	56		13 - 328
13C-1,2,3,4,7,8-HxCDD	60		21 - 193
13C-1,2,3,6,7,8-HxCDD	60		25 - 163
13C-1,2,3,4,7,8-HxCDF	56		19 - 202
13C-1,2,3,6,7,8-HxCDF	57		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	61		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	59		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	59		20 - 186
13C-OCDD	58		13 - 199

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
37Cl4-2,3,7,8-TCDD	91		35 - 197

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-1

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: MB 440-314214/1-A
Matrix: Water
Analysis Batch: 314801

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 314214

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.050	0.010	mg/L		02/29/16 10:08	03/02/16 09:45	1

Lab Sample ID: LCS 440-314214/2-A
Matrix: Water
Analysis Batch: 314801

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 314214

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Boron	0.500	0.506		mg/L		101	85 - 115

Lab Sample ID: 440-137200-3 MS
Matrix: Water
Analysis Batch: 314801

Client Sample ID: Outfall018_20160204_Comp
Prep Type: Total Recoverable
Prep Batch: 314214

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Boron	0.052		0.500	0.573		mg/L		104	70 - 130

Lab Sample ID: 440-137200-3 MSD
Matrix: Water
Analysis Batch: 314801

Client Sample ID: Outfall018_20160204_Comp
Prep Type: Total Recoverable
Prep Batch: 314214

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	RPD Limit
Boron	0.052		0.500	0.575		mg/L		105	70 - 130	0	20

Lab Sample ID: MB 440-314336/1-A
Matrix: Water
Analysis Batch: 314703

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 314336

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		10	5.0	ug/L		02/29/16 15:36	03/01/16 18:49	1
Barium	ND		0.010	0.0050	mg/L		02/29/16 15:36	03/01/16 18:49	1
Beryllium	ND		2.0	1.0	ug/L		02/29/16 15:36	03/01/16 18:49	1
Cobalt	ND		10	2.5	ug/L		02/29/16 15:36	03/01/16 18:49	1
Chromium	ND		5.0	2.5	ug/L		02/29/16 15:36	03/01/16 18:49	1
Iron	ND		0.040	0.010	mg/L		02/29/16 15:36	03/01/16 18:49	1
Manganese	ND		20	10	ug/L		02/29/16 15:36	03/01/16 18:49	1
Nickel	ND		10	5.0	ug/L		02/29/16 15:36	03/01/16 18:49	1
Vanadium	ND		10	5.0	ug/L		02/29/16 15:36	03/01/16 18:49	1
Zinc	ND		20	10	ug/L		02/29/16 15:36	03/01/16 18:49	1
Calcium	ND		100	50	ug/L		02/29/16 15:36	03/01/16 18:49	1
Silver	ND		10	5.0	ug/L		02/29/16 15:36	03/01/16 18:49	1
Magnesium	ND		20	10	ug/L		02/29/16 15:36	03/01/16 18:49	1

Lab Sample ID: LCS 440-314336/2-A
Matrix: Water
Analysis Batch: 314703

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 314336

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Arsenic	500	538		ug/L		108	85 - 115
Barium	0.500	0.543		mg/L		109	85 - 115

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-1

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

Lab Sample ID: LCS 440-314336/2-A
Matrix: Water
Analysis Batch: 314703

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 314336

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Beryllium	500	527		ug/L		105	85 - 115
Cobalt	500	568		ug/L		114	85 - 115
Chromium	500	556		ug/L		111	85 - 115
Iron	0.500	0.540		mg/L		108	85 - 115
Manganese	500	533		ug/L		107	85 - 115
Nickel	500	555		ug/L		111	85 - 115
Vanadium	500	524		ug/L		105	85 - 115
Zinc	500	527		ug/L		105	85 - 115
Calcium	2500	2650		ug/L		106	85 - 115
Silver	250	219		ug/L		88	85 - 115
Magnesium	2500	2710		ug/L		108	85 - 115

Lab Sample ID: 440-137200-3 MS
Matrix: Water
Analysis Batch: 314703

Client Sample ID: Outfall018_20160204_Comp
Prep Type: Total Recoverable
Prep Batch: 314336

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	ND		500	524		ug/L		105	70 - 130
Barium	0.014		0.500	0.533		mg/L		104	70 - 130
Beryllium	ND		500	518		ug/L		104	70 - 130
Cobalt	ND		500	546		ug/L		109	70 - 130
Chromium	ND		500	540		ug/L		108	70 - 130
Iron	ND		0.500	0.532		mg/L		106	70 - 130
Manganese	ND		500	515		ug/L		103	70 - 130
Nickel	ND		500	536		ug/L		107	70 - 130
Vanadium	ND		500	508		ug/L		102	70 - 130
Zinc	ND		500	511		ug/L		102	70 - 130
Silver	ND		250	228		ug/L		91	70 - 130
Calcium	81000		2500	80600	BB	ug/L		-23	70 - 130
Magnesium	10000		2500	12700	BB	ug/L		89	70 - 130

Lab Sample ID: 440-137200-3 MSD
Matrix: Water
Analysis Batch: 314703

Client Sample ID: Outfall018_20160204_Comp
Prep Type: Total Recoverable
Prep Batch: 314336

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	ND		500	530		ug/L		106	70 - 130	1	20
Barium	0.014		0.500	0.542		mg/L		106	70 - 130	2	20
Beryllium	ND		500	520		ug/L		104	70 - 130	0	20
Cobalt	ND		500	547		ug/L		109	70 - 130	0	20
Chromium	ND		500	540		ug/L		108	70 - 130	0	20
Iron	ND		0.500	0.533		mg/L		107	70 - 130	0	20
Manganese	ND		500	525		ug/L		105	70 - 130	2	20
Nickel	ND		500	539		ug/L		108	70 - 130	0	20
Vanadium	ND		500	517		ug/L		103	70 - 130	2	20
Zinc	ND		500	521		ug/L		104	70 - 130	2	20
Silver	ND		250	244		ug/L		98	70 - 130	7	20
Calcium	81000		2500	81500	BB	ug/L		13	70 - 130	1	20
Magnesium	10000		2500	13000	BB	ug/L		102	70 - 130	3	20

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-1

Lab Sample ID: 440-137200-3 DU
Matrix: Water
Analysis Batch: 314703

Client Sample ID: Outfall018_20160204_Comp
Prep Type: Total Recoverable
Prep Batch: 314336

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Calcium	81000		77.1		mg/L		200	20
Magnesium	10000		9.88		mg/L		200	20

Lab Sample ID: MB 440-311595/1-F
Matrix: Water
Analysis Batch: 314704

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 314338

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		10	5.0	ug/L		02/29/16 15:53	03/01/16 19:05	1
Barium	ND		0.010	0.0050	mg/L		02/29/16 15:53	03/01/16 19:05	1
Beryllium	ND		2.0	1.0	ug/L		02/29/16 15:53	03/01/16 19:05	1
Cobalt	ND		10	2.5	ug/L		02/29/16 15:53	03/01/16 19:05	1
Chromium	ND		5.0	2.5	ug/L		02/29/16 15:53	03/01/16 19:05	1
Iron	ND		0.040	0.010	mg/L		02/29/16 15:53	03/01/16 19:05	1
Manganese	ND		20	10	ug/L		02/29/16 15:53	03/01/16 19:05	1
Nickel	ND		10	5.0	ug/L		02/29/16 15:53	03/01/16 19:05	1
Vanadium	ND		10	5.0	ug/L		02/29/16 15:53	03/01/16 19:05	1
Zinc	ND		20	10	ug/L		02/29/16 15:53	03/01/16 19:05	1
Silver	ND		10	5.0	ug/L		02/29/16 15:53	03/01/16 19:05	1

Lab Sample ID: MB 440-311595/1-F
Matrix: Water
Analysis Batch: 314800

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 314338

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.050	0.010	mg/L		02/29/16 15:53	03/02/16 09:28	1

Lab Sample ID: LCS 440-311595/2-G
Matrix: Water
Analysis Batch: 314704

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 314338

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	500	525		ug/L		105	85 - 115
Barium	0.500	0.533		mg/L		107	85 - 115
Beryllium	500	520		ug/L		104	85 - 115
Cobalt	500	560		ug/L		112	85 - 115
Chromium	500	548		ug/L		110	85 - 115
Iron	0.500	0.532		mg/L		106	85 - 115
Manganese	500	522		ug/L		104	85 - 115
Nickel	500	547		ug/L		109	85 - 115
Vanadium	500	513		ug/L		103	85 - 115
Zinc	500	517		ug/L		103	85 - 115
Silver	250	246		ug/L		98	85 - 115

Lab Sample ID: LCS 440-311595/2-G
Matrix: Water
Analysis Batch: 314800

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 314338

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	0.500	0.517		mg/L		103	85 - 115

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-1

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

Lab Sample ID: 440-137200-4 MS
Matrix: Water
Analysis Batch: 314704

Client Sample ID: Outfall018_20160204_CompF
Prep Type: Dissolved
Prep Batch: 314338

Analyte	Sample		Spike Added	MS MS		Unit	D	%Rec	%Rec.	
	Result	Qualifier		Result	Qualifier				Limits	Limits
Arsenic	ND	QP	500	527		ug/L		105	70 - 130	
Barium	0.015	QP	0.500	0.543		mg/L		106	70 - 130	
Beryllium	ND	QP	500	517		ug/L		103	70 - 130	
Cobalt	ND	QP	500	550		ug/L		110	70 - 130	
Chromium	ND	QP	500	541		ug/L		108	70 - 130	
Iron	ND	QP	0.500	0.530		mg/L		106	70 - 130	
Manganese	ND	QP	500	519		ug/L		104	70 - 130	
Nickel	ND	QP	500	540		ug/L		108	70 - 130	
Vanadium	ND	QP	500	516		ug/L		103	70 - 130	
Zinc	ND	QP	500	523		ug/L		105	70 - 130	
Silver	ND	QP	250	240		ug/L		96	70 - 130	

Lab Sample ID: 440-137200-4 MS
Matrix: Water
Analysis Batch: 314800

Client Sample ID: Outfall018_20160204_CompF
Prep Type: Dissolved
Prep Batch: 314338

Analyte	Sample		Spike Added	MS MS		Unit	D	%Rec	%Rec.	
	Result	Qualifier		Result	Qualifier				Limits	Limits
Boron	0.053	QP	0.500	0.568		mg/L		103	70 - 130	

Lab Sample ID: 440-137200-4 MSD
Matrix: Water
Analysis Batch: 314704

Client Sample ID: Outfall018_20160204_CompF
Prep Type: Dissolved
Prep Batch: 314338

Analyte	Sample		Spike Added	MSD MSD		Unit	D	%Rec	%Rec.		RPD	
	Result	Qualifier		Result	Qualifier				Limits	RPD	Limit	Limit
Arsenic	ND	QP	500	526		ug/L		105	70 - 130	0	20	
Barium	0.015	QP	0.500	0.538		mg/L		105	70 - 130	1	20	
Beryllium	ND	QP	500	516		ug/L		103	70 - 130	0	20	
Cobalt	ND	QP	500	550		ug/L		110	70 - 130	0	20	
Chromium	ND	QP	500	542		ug/L		108	70 - 130	0	20	
Iron	ND	QP	0.500	0.532		mg/L		106	70 - 130	0	20	
Manganese	ND	QP	500	517		ug/L		103	70 - 130	0	20	
Nickel	ND	QP	500	540		ug/L		108	70 - 130	0	20	
Vanadium	ND	QP	500	514		ug/L		103	70 - 130	1	20	
Zinc	ND	QP	500	522		ug/L		104	70 - 130	0	20	
Silver	ND	QP	250	241		ug/L		96	70 - 130	1	20	

Lab Sample ID: 440-137200-4 MSD
Matrix: Water
Analysis Batch: 314800

Client Sample ID: Outfall018_20160204_CompF
Prep Type: Dissolved
Prep Batch: 314338

Analyte	Sample		Spike Added	MSD MSD		Unit	D	%Rec	%Rec.		RPD	
	Result	Qualifier		Result	Qualifier				Limits	RPD	Limit	Limit
Boron	0.053	QP	0.500	0.587		mg/L		107	70 - 130	3	20	

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-1

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 440-311632/1-A
Matrix: Water
Analysis Batch: 313278

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 311632

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil	Fac
Cadmium	ND		1.0	0.25	ug/L		02/16/16 12:33	02/24/16 02:59		1
Copper	ND		2.0	0.50	ug/L		02/16/16 12:33	02/24/16 02:59		1
Lead	ND		1.0	0.50	ug/L		02/16/16 12:33	02/24/16 02:59		1
Antimony	ND		2.0	0.50	ug/L		02/16/16 12:33	02/24/16 02:59		1
Selenium	ND		2.0	0.50	ug/L		02/16/16 12:33	02/24/16 02:59		1
Thallium	ND		1.0	0.50	ug/L		02/16/16 12:33	02/24/16 02:59		1
Silver	ND		1.0	0.50	ug/L		02/16/16 12:33	02/24/16 02:59		1

Lab Sample ID: LCS 440-311632/2-A
Matrix: Water
Analysis Batch: 313278

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 311632

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Cadmium	80.0	76.9		ug/L		96	85 - 115
Copper	80.0	78.6		ug/L		98	85 - 115
Lead	80.0	77.6		ug/L		97	85 - 115
Antimony	80.0	78.8		ug/L		98	85 - 115
Selenium	80.0	77.3		ug/L		97	85 - 115
Thallium	80.0	76.8		ug/L		96	85 - 115
Silver	80.0	77.7		ug/L		97	85 - 115

Lab Sample ID: 440-137200-3 MS
Matrix: Water
Analysis Batch: 313278

Client Sample ID: Outfall018_20160204_Comp
Prep Type: Total Recoverable
Prep Batch: 311632

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Cadmium	ND		80.0	76.4		ug/L		95	70 - 130
Copper	0.94	J,DX	80.0	75.0		ug/L		93	70 - 130
Lead	ND		80.0	74.1		ug/L		93	70 - 130
Antimony	0.84	J,DX	80.0	83.7		ug/L		104	70 - 130
Selenium	ND		80.0	76.3		ug/L		95	70 - 130
Thallium	ND		80.0	74.4		ug/L		93	70 - 130
Silver	ND		80.0	76.6		ug/L		96	70 - 130

Lab Sample ID: 440-137200-3 MSD
Matrix: Water
Analysis Batch: 313278

Client Sample ID: Outfall018_20160204_Comp
Prep Type: Total Recoverable
Prep Batch: 311632

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	RPD Limit
Cadmium	ND		80.0	75.1		ug/L		94	70 - 130	2	20
Copper	0.94	J,DX	80.0	75.0		ug/L		93	70 - 130	0	20
Lead	ND		80.0	72.7		ug/L		91	70 - 130	2	20
Antimony	0.84	J,DX	80.0	83.7		ug/L		104	70 - 130	0	20
Selenium	ND		80.0	77.3		ug/L		97	70 - 130	1	20
Thallium	ND		80.0	74.0		ug/L		93	70 - 130	1	20
Silver	ND		80.0	76.6		ug/L		96	70 - 130	0	20

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-1

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

Lab Sample ID: MB 440-311595/1-H
Matrix: Water
Analysis Batch: 315056

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 314470

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		03/01/16 09:34	03/03/16 03:17	1
Copper	ND		2.0	0.50	ug/L		03/01/16 09:34	03/03/16 03:17	1
Lead	ND		1.0	0.50	ug/L		03/01/16 09:34	03/03/16 03:17	1
Antimony	ND		2.0	0.50	ug/L		03/01/16 09:34	03/03/16 03:17	1
Selenium	ND		2.0	0.50	ug/L		03/01/16 09:34	03/03/16 03:17	1
Thallium	ND		1.0	0.50	ug/L		03/01/16 09:34	03/03/16 03:17	1

Lab Sample ID: LCS 440-311595/2-I
Matrix: Water
Analysis Batch: 315056

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 314470

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Cadmium	80.0	77.6		ug/L		97	85 - 115
Copper	80.0	78.7		ug/L		98	85 - 115
Lead	80.0	81.1		ug/L		101	85 - 115
Antimony	80.0	77.3		ug/L		97	85 - 115
Selenium	80.0	78.3		ug/L		98	85 - 115
Thallium	80.0	81.3		ug/L		102	85 - 115

Lab Sample ID: 440-137200-4 MS
Matrix: Water
Analysis Batch: 315056

Client Sample ID: Outfall018_20160204_CompF
Prep Type: Dissolved
Prep Batch: 314470

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Cadmium	ND	QP	80.0	75.3		ug/L		94	70 - 130
Copper	1.3	J,DX QP	80.0	75.2		ug/L		92	70 - 130
Lead	ND	QP	80.0	77.8		ug/L		97	70 - 130
Antimony	ND	QP	80.0	80.4		ug/L		100	70 - 130
Selenium	ND	QP	80.0	77.7		ug/L		97	70 - 130
Thallium	ND	QP	80.0	78.2		ug/L		98	70 - 130

Lab Sample ID: 440-137200-4 MSD
Matrix: Water
Analysis Batch: 315056

Client Sample ID: Outfall018_20160204_CompF
Prep Type: Dissolved
Prep Batch: 314470

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Cadmium	ND	QP	80.0	74.2		ug/L		93	70 - 130	1	20
Copper	1.3	J,DX QP	80.0	73.9		ug/L		91	70 - 130	2	20
Lead	ND	QP	80.0	75.1		ug/L		94	70 - 130	4	20
Antimony	ND	QP	80.0	76.7		ug/L		96	70 - 130	5	20
Selenium	ND	QP	80.0	75.4		ug/L		94	70 - 130	3	20
Thallium	ND	QP	80.0	77.5		ug/L		97	70 - 130	1	20

Lab Sample ID: MB 440-311595/1-J
Matrix: Water
Analysis Batch: 326313

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 325993

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	ND		1.0	0.50	ug/L		04/22/16 14:44	04/25/16 08:42	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-1

Lab Sample ID: LCS 440-311595/2-K
Matrix: Water
Analysis Batch: 326313

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 325993

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Silver	80.0	80.1		ug/L		100	85 - 115

Lab Sample ID: 440-137200-4 MS
Matrix: Water
Analysis Batch: 326313

Client Sample ID: Outfall018_20160204_CompF
Prep Type: Dissolved
Prep Batch: 325993

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Silver	ND		80.0	77.6		ug/L		97	70 - 130

Lab Sample ID: 440-137200-4 MSD
Matrix: Water
Analysis Batch: 326313

Client Sample ID: Outfall018_20160204_CompF
Prep Type: Dissolved
Prep Batch: 325993

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Silver	ND		80.0	77.9		ug/L		97	70 - 130	0	20

Method: 245.1 - Mercury (CVAA)

Lab Sample ID: MB 440-314349/1-A
Matrix: Water
Analysis Batch: 314591

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 314349

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		02/29/16 16:17	03/01/16 00:18	1

Lab Sample ID: LCS 440-314349/2-A
Matrix: Water
Analysis Batch: 314591

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 314349

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	8.00	8.21		ug/L		103	85 - 115

Lab Sample ID: 440-137200-3 MS
Matrix: Water
Analysis Batch: 314591

Client Sample ID: Outfall018_20160204_Comp
Prep Type: Total/NA
Prep Batch: 314349

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Mercury	ND		8.00	7.87		ug/L		98	70 - 130

Lab Sample ID: 440-137200-3 MSD
Matrix: Water
Analysis Batch: 314591

Client Sample ID: Outfall018_20160204_Comp
Prep Type: Total/NA
Prep Batch: 314349

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	ND		8.00	7.84		ug/L		98	70 - 130	0	20

Lab Sample ID: MB 440-311595/1-G
Matrix: Water
Analysis Batch: 314651

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 314364

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND	IB	0.20	0.10	ug/L		02/29/16 16:51	03/01/16 00:14	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-1

Lab Sample ID: LCS 440-311595/2-H
Matrix: Water
Analysis Batch: 314651

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 314364
 %Rec.

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	8.00	9.11	IB	ug/L		114	85 - 115

Lab Sample ID: 440-137200-4 MS
Matrix: Water
Analysis Batch: 314651

Client Sample ID: Outfall018_20160204_CompF
Prep Type: Dissolved
Prep Batch: 314364
 %Rec.

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Mercury	ND	IB QP	8.00	9.15	IB	ug/L			

Lab Sample ID: 440-137200-4 MSD
Matrix: Water
Analysis Batch: 314651

Client Sample ID: Outfall018_20160204_CompF
Prep Type: Dissolved
Prep Batch: 314364
 %Rec.

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	ND	IB QP	8.00	9.11	IB	ug/L					

Method: SM 2340B - Total Hardness (as CaCO3) by calculation

Lab Sample ID: 440-137200-3 DU
Matrix: Water
Analysis Batch: 313844

Client Sample ID: Outfall018_20160204_Comp
Prep Type: Total Recoverable

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Hardness, as CaCO3	250		233		mg/L		5	

Lab Sample ID: 440-137200-4DU
Matrix: Water
Analysis Batch: 313844

Client Sample ID: Outfall018_20160204_CompF
Prep Type: Dissolved

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Hardness, as CaCO3			245		mg/L			

Method: 180.1 - Turbidity, Nephelometric

Lab Sample ID: MB 440-310354/5
Matrix: Water
Analysis Batch: 310354

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Turbidity	ND		0.10	0.040	NTU			02/05/16 10:18	1

Lab Sample ID: 370-223-H-1 DU
Matrix: Water
Analysis Batch: 310354

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Turbidity	1.7		1.69		NTU		2	20

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-1

Method: DV-WC-0077 - Hydrazine, Ion Chromatography

Lab Sample ID: MB 280-313831/1-A
Matrix: Water
Analysis Batch: 314901

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 313831

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hydrazine	ND		5.0	0.67	ug/L		02/17/16 18:46	02/26/16 00:48	1

Lab Sample ID: LCS 280-313831/2-A
Matrix: Water
Analysis Batch: 314901

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 313831

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Monomethyl Hydrazine	50.1	54.2		ug/L		108	82 - 122
Hydrazine	50.0	49.6		ug/L		99	81 - 121

Lab Sample ID: LCSD 280-313831/3-A
Matrix: Water
Analysis Batch: 314901

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 313831

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Monomethyl Hydrazine	50.1	54.4		ug/L		109	82 - 122	0	20
Hydrazine	50.0	49.1		ug/L		98	81 - 121	1	20

Lab Sample ID: 440-137347-R-1-B MS
Matrix: Water
Analysis Batch: 314901

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 313831

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Monomethyl Hydrazine	ND		50.1	49.8		ug/L		99	81 - 121
Hydrazine	ND		50.0	22.7	LN	ug/L		45	82 - 122

Lab Sample ID: 440-137347-R-1-C MSD
Matrix: Water
Analysis Batch: 314901

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 313831

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Monomethyl Hydrazine	ND		50.1	47.6		ug/L		95	81 - 121	4	20
Hydrazine	ND		50.0	19.6	LN	ug/L		39	82 - 122	15	20

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

Lab Sample ID: MB 440-310622/1
Matrix: Water
Analysis Batch: 310622

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10	5.0	mg/L			02/10/16 13:41	1

Lab Sample ID: LCS 440-310622/2
Matrix: Water
Analysis Batch: 310622

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

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

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-1

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

Lab Sample ID: 440-137200-3 DU
Matrix: Water
Analysis Batch: 310622

Client Sample ID: Outfall018_20160204_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	540		533		mg/L		2	5

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

Lab Sample ID: MB 440-310271/1
Matrix: Water
Analysis Batch: 310271

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		1.0	0.50	mg/L			02/05/16 17:00	1

Lab Sample ID: LCS 440-310271/2
Matrix: Water
Analysis Batch: 310271

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	1000	963		mg/L		96	85 - 115

Lab Sample ID: 440-136943-A-2 DU
Matrix: Water
Analysis Batch: 310271

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Suspended Solids	780		791		mg/L		1	10

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

Lab Sample ID: MB 440-310712/1-A
Matrix: Water
Analysis Batch: 311066

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 310712

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	ND		5.0	2.5	ug/L		02/11/16 01:16	02/12/16 03:48	1

Lab Sample ID: LCS 440-310712/2-A
Matrix: Water
Analysis Batch: 311066

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 310712

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	100	105		ug/L		105	90 - 110

Lab Sample ID: LCSD 440-310712/3-A
Matrix: Water
Analysis Batch: 311066

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 310712

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cyanide, Total	100	105		ug/L		105	90 - 110	1	10

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-1

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

Lab Sample ID: 440-137200-3 MS

Matrix: Water

Analysis Batch: 311066

Client Sample ID: Outfall018_20160204_Comp

Prep Type: Total/NA

Prep Batch: 310712

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Cyanide, Total	ND		100	103		ug/L		103	70 - 115

Lab Sample ID: 440-137200-3 MSD

Matrix: Water

Analysis Batch: 311066

Client Sample ID: Outfall018_20160204_Comp

Prep Type: Total/NA

Prep Batch: 310712

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Cyanide, Total	ND		100	103		ug/L		103	70 - 115	0	15

Method: SM 4500 NH3 D - Ammonia

Lab Sample ID: MB 440-311755/2-A

Matrix: Water

Analysis Batch: 311783

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 311755

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia (as N)	ND		0.500	0.100	mg/L		02/17/16 03:00	02/17/16 07:00	1

Lab Sample ID: LCS 440-311755/1-A

Matrix: Water

Analysis Batch: 311783

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 311755

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Ammonia (as N)	2.50	2.488		mg/L		100	85 - 115

Lab Sample ID: 440-137200-3 MS

Matrix: Water

Analysis Batch: 311783

Client Sample ID: Outfall018_20160204_Comp

Prep Type: Total/NA

Prep Batch: 311755

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Ammonia (as N)	0.411	J,DX	2.50	2.488		mg/L		83	75 - 125

Lab Sample ID: 440-137200-3 MSD

Matrix: Water

Analysis Batch: 311783

Client Sample ID: Outfall018_20160204_Comp

Prep Type: Total/NA

Prep Batch: 311755

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Ammonia (as N)	0.411	J,DX	2.50	2.587		mg/L		87	75 - 125	4	15

Method: SM 5310B - Organic Carbon, Total (TOC)

Lab Sample ID: MB 440-314213/8

Matrix: Water

Analysis Batch: 314213

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	ND		1.0	0.65	mg/L			02/29/16 00:23	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-1

Method: SM 5310B - Organic Carbon, Total (TOC) (Continued)

Lab Sample ID: LCS 440-314213/7
Matrix: Water
Analysis Batch: 314213

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon	10.0	10.2		mg/L		102	90 - 110

Lab Sample ID: 440-137367-C-24 MS
Matrix: Water
Analysis Batch: 314213

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

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon	1.3		5.00	6.21		mg/L		97	80 - 120

Lab Sample ID: 440-137367-C-24 MSD
Matrix: Water
Analysis Batch: 314213

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

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Organic Carbon	1.3		5.00	6.33		mg/L		100	80 - 120	2	20

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

Lab Sample ID: MB 440-310241/9
Matrix: Water
Analysis Batch: 310241

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methylene Blue Active Substances	ND		0.10	0.050	mg/L			02/05/16 20:40	1

Lab Sample ID: LCS 440-310241/10
Matrix: Water
Analysis Batch: 310241

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methylene Blue Active Substances	0.250	0.252		mg/L		101	90 - 110

Lab Sample ID: 440-137200-3 MS
Matrix: Water
Analysis Batch: 310241

Client Sample ID: Outfall018_20160204_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Methylene Blue Active Substances	0.095	J,DX	0.250	0.379		mg/L		114	50 - 125

Lab Sample ID: 440-137200-3 MSD
Matrix: Water
Analysis Batch: 310241

Client Sample ID: Outfall018_20160204_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Methylene Blue Active Substances	0.095	J,DX	0.250	0.363		mg/L		108	50 - 125	4	20

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-1

Method: SM5210B - BOD, 5 Day

Lab Sample ID: USB 440-310278/1
Matrix: Water
Analysis Batch: 310278

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

Analyte	USB Result	USB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Biochemical Oxygen Demand	ND		2.0	0.50	mg/L			02/05/16 10:00	1

Lab Sample ID: LCS 440-310278/4
Matrix: Water
Analysis Batch: 310278

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Biochemical Oxygen Demand	199	199		mg/L		100	85 - 115

Lab Sample ID: LCSD 440-310278/5
Matrix: Water
Analysis Batch: 310278

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Biochemical Oxygen Demand	199	196		mg/L		99	85 - 115	1	20

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Lab Sample ID: MB 160-236466/1-A
Matrix: Water
Analysis Batch: 238221

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 236466

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	0.1556	U	7.65	7.65	20.0	13.9	pCi/L	02/12/16 07:46	02/20/16 19:18	1
Potassium-40	-41.16	U	164	164		199	pCi/L	02/12/16 07:46	02/20/16 19:18	1

Lab Sample ID: LCS 160-236466/2-A
Matrix: Water
Analysis Batch: 238213

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 236466

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Americium-241	137000	138200		16000		453	pCi/L	101	90 - 111
Cesium-137	48100	48920		4870	20.0	154	pCi/L	102	90 - 111
Cobalt-60	45400	44590		4400		119	pCi/L	98	89 - 110

Lab Sample ID: 160-16061-F-4-B DU
Matrix: Water
Analysis Batch: 238213

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 236466

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Cesium-137	3.04	U	-1.010	U	7.14	20.0	12.9	pCi/L	0.32	1
Potassium-40	-70.9	U	-56.96	U	232		207	pCi/L	0.01	1

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QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Lab Sample ID: MB 160-237126/1-A
Matrix: Water
Analysis Batch: 237914

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 237126

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Total Uranium	0.009460	U	0.04671	0.04675	1.00	0.124	pCi/L	02/18/16 11:31	02/25/16 17:19	1

Lab Sample ID: LCS 160-237126/2-A
Matrix: Water
Analysis Batch: 237915

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 237126

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Uranium-234	12.7	11.05		1.34	1.00	0.111	pCi/L	87	84 - 120
Uranium-238	13.0	12.48		1.47	1.00	0.0638	pCi/L	96	83 - 121

Tracer	LCS %Yield	LCS Qualifier	Limits
Uranium-232	92.2		30 - 110

Lab Sample ID: 440-137200-3 MS
Matrix: Water
Analysis Batch: 237917

Client Sample ID: Outfall018_20160204_Comp
Prep Type: Total/NA
Prep Batch: 237126

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Uranium-234	0.162		12.8	12.39		1.54	1.00	0.146	pCi/L	96	65 - 146
Uranium-238	0.0375	U	13.0	13.81		1.66	1.00	0.133	pCi/L	106	68 - 143

Tracer	MS %Yield	MS Qualifier	Limits
Uranium-232	76.9		30 - 110

Lab Sample ID: 440-137200-3 MSD
Matrix: Water
Analysis Batch: 237918

Client Sample ID: Outfall018_20160204_Comp
Prep Type: Total/NA
Prep Batch: 237126

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Uranium-234	0.162		12.7	13.70		1.70	1.00	0.194	pCi/L	106	65 - 146	0.40	1
Uranium-238	0.0375	U	13.0	12.88		1.62	1.00	0.0853	pCi/L	99	68 - 143	0.28	1

Tracer	MSD %Yield	MSD Qualifier	Limits
Uranium-232	73.4		30 - 110

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-1

GC/MS VOA

Analysis Batch: 310522

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137200-2	TB-20160204	Total/NA	Water	624	
440-137200-R-1 MS	Matrix Spike	Total/NA	Water	624	
440-137200-R-1 MSD	Matrix Spike Duplicate	Total/NA	Water	624	
LCS 440-310522/5	Lab Control Sample	Total/NA	Water	624	
MB 440-310522/4	Method Blank	Total/NA	Water	624	

Analysis Batch: 311648

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137200-3	Outfall018_20160204_Comp	Total/NA	Water	8260B SIM	
440-137200-3 MS	Outfall018_20160204_Comp	Total/NA	Water	8260B SIM	
440-137200-3 MSD	Outfall018_20160204_Comp	Total/NA	Water	8260B SIM	
LCS 440-311648/3	Lab Control Sample	Total/NA	Water	8260B SIM	
MB 440-311648/2	Method Blank	Total/NA	Water	8260B SIM	

Analysis Batch: 311763

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137026-E-1 MS	Matrix Spike	Total/NA	Water	624	
440-137026-E-1 MSD	Matrix Spike Duplicate	Total/NA	Water	624	
440-137200-2	TB-20160204	Total/NA	Water	624	
LCS 440-311763/5	Lab Control Sample	Total/NA	Water	624	
MB 440-311763/4	Method Blank	Total/NA	Water	624	

GC/MS Semi VOA

Prep Batch: 310608

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137200-3	Outfall018_20160204_Comp	Total/NA	Water	625	
440-137200-3 MS	Outfall018_20160204_Comp	Total/NA	Water	625	
440-137200-3 MSD	Outfall018_20160204_Comp	Total/NA	Water	625	
LCS 440-310608/2-A	Lab Control Sample	Total/NA	Water	625	
MB 440-310608/1-A	Method Blank	Total/NA	Water	625	

Analysis Batch: 311203

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 440-310608/2-A	Lab Control Sample	Total/NA	Water	625	310608
MB 440-310608/1-A	Method Blank	Total/NA	Water	625	310608

Analysis Batch: 311513

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137200-3	Outfall018_20160204_Comp	Total/NA	Water	625	310608
440-137200-3 MS	Outfall018_20160204_Comp	Total/NA	Water	625	310608
440-137200-3 MSD	Outfall018_20160204_Comp	Total/NA	Water	625	310608

GC Semi VOA

Prep Batch: 310722

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137200-3	Outfall018_20160204_Comp	Total/NA	Water	608	
440-137200-3 MS	Outfall018_20160204_Comp	Total/NA	Water	608	
440-137200-3 MS	Outfall018_20160204_Comp	Total/NA	Water	608	

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QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-1

GC Semi VOA (Continued)

Prep Batch: 310722 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137200-3 MSD	Outfall018_20160204_Comp	Total/NA	Water	608	
440-137200-3 MSD	Outfall018_20160204_Comp	Total/NA	Water	608	
LCS 440-310722/2-A	Lab Control Sample	Total/NA	Water	608	
LCS 440-310722/5-A	Lab Control Sample	Total/NA	Water	608	
MB 440-310722/1-A	Method Blank	Total/NA	Water	608	

Analysis Batch: 311149

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137200-3	Outfall018_20160204_Comp	Total/NA	Water	608 PCB LL	310722
440-137200-3 MS	Outfall018_20160204_Comp	Total/NA	Water	608 PCB LL	310722
440-137200-3 MSD	Outfall018_20160204_Comp	Total/NA	Water	608 PCB LL	310722
LCS 440-310722/5-A	Lab Control Sample	Total/NA	Water	608 PCB LL	310722
MB 440-310722/1-A	Method Blank	Total/NA	Water	608 PCB LL	310722

Analysis Batch: 311421

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137200-3	Outfall018_20160204_Comp	Total/NA	Water	608 Pesticides	310722
440-137200-3 MS	Outfall018_20160204_Comp	Total/NA	Water	608 Pesticides	310722
440-137200-3 MSD	Outfall018_20160204_Comp	Total/NA	Water	608 Pesticides	310722
LCS 440-310722/2-A	Lab Control Sample	Total/NA	Water	608 Pesticides	310722
MB 440-310722/1-A	Method Blank	Total/NA	Water	608 Pesticides	310722

HPLC/IC

Analysis Batch: 309925

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137200-3	Outfall018_20160204_Comp	Total/NA	Water	218.6	
440-137200-3 MS	Outfall018_20160204_Comp	Total/NA	Water	218.6	
440-137200-3 MSD	Outfall018_20160204_Comp	Total/NA	Water	218.6	
LCS 440-309925/2	Lab Control Sample	Total/NA	Water	218.6	
MB 440-309925/3	Method Blank	Total/NA	Water	218.6	
MRL 440-309925/4	Lab Control Sample	Total/NA	Water	218.6	

Analysis Batch: 310250

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137200-3	Outfall018_20160204_Comp	Total/NA	Water	300.0	
440-137200-3 - DL	Outfall018_20160204_Comp	Total/NA	Water	300.0	
440-137200-3 MS - DL	Outfall018_20160204_Comp	Total/NA	Water	300.0	
440-137200-3 MSD - DL	Outfall018_20160204_Comp	Total/NA	Water	300.0	
LCS 440-310250/2	Lab Control Sample	Total/NA	Water	300.0	
LCSD 440-310250/6	Lab Control Sample Dup	Total/NA	Water	300.0	
MB 440-310250/4	Method Blank	Total/NA	Water	300.0	

Analysis Batch: 310251

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137200-3	Outfall018_20160204_Comp	Total/NA	Water	300.0	
440-137200-3 - DL	Outfall018_20160204_Comp	Total/NA	Water	300.0	
440-137200-3 MS - DL	Outfall018_20160204_Comp	Total/NA	Water	300.0	
440-137200-3 MSD - DL	Outfall018_20160204_Comp	Total/NA	Water	300.0	
LCS 440-310251/2	Lab Control Sample	Total/NA	Water	300.0	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-1

HPLC/IC (Continued)

Analysis Batch: 310251 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCSD 440-310251/6	Lab Control Sample Dup	Total/NA	Water	300.0	
MB 440-310251/4	Method Blank	Total/NA	Water	300.0	

Analysis Batch: 312057

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137200-3	Outfall018_20160204_Comp	Total/NA	Water	314.0	
440-137200-3 MS	Outfall018_20160204_Comp	Total/NA	Water	314.0	
440-137200-3 MSD	Outfall018_20160204_Comp	Total/NA	Water	314.0	
LCS 440-312057/2	Lab Control Sample	Total/NA	Water	314.0	
MB 440-312057/3	Method Blank	Total/NA	Water	314.0	
MRL 440-312057/5	Lab Control Sample	Total/NA	Water	314.0	

Analysis Batch: 314365

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137200-3	Outfall018_20160204_Comp	Total/NA	Water	NO3NO2 Calc	

Specialty Organics

Prep Batch: 100312

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137200-3	Outfall018_20160204_Comp	Total/NA	Water	1613B	
LCS 320-100312/2-A	Lab Control Sample	Total/NA	Water	1613B	
LCSD 320-100312/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	
MB 320-100312/1-A	Method Blank	Total/NA	Water	1613B	

Analysis Batch: 101275

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137200-3	Outfall018_20160204_Comp	Total/NA	Water	1613B	100312
LCS 320-100312/2-A	Lab Control Sample	Total/NA	Water	1613B	100312
LCSD 320-100312/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	100312
MB 320-100312/1-A	Method Blank	Total/NA	Water	1613B	100312

Metals

Filtration Batch: 311595

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137200-4	Outfall018_20160204_CompF	Dissolved	Water	FILTRATION	
440-137200-4 MS	Outfall018_20160204_CompF	Dissolved	Water	FILTRATION	
440-137200-4 MSD	Outfall018_20160204_CompF	Dissolved	Water	FILTRATION	
LCS 440-311595/2-G	Lab Control Sample	Dissolved	Water	FILTRATION	
LCS 440-311595/2-H	Lab Control Sample	Dissolved	Water	FILTRATION	
LCS 440-311595/2-I	Lab Control Sample	Dissolved	Water	FILTRATION	
LCS 440-311595/2-K	Lab Control Sample	Dissolved	Water	FILTRATION	
MB 440-311595/1-F	Method Blank	Dissolved	Water	FILTRATION	
MB 440-311595/1-G	Method Blank	Dissolved	Water	FILTRATION	
MB 440-311595/1-H	Method Blank	Dissolved	Water	FILTRATION	
MB 440-311595/1-J	Method Blank	Dissolved	Water	FILTRATION	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-1

Metals (Continued)

Prep Batch: 311632

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137200-3	Outfall018_20160204_Comp	Total Recoverable	Water	200.2	
440-137200-3 MS	Outfall018_20160204_Comp	Total Recoverable	Water	200.2	
440-137200-3 MSD	Outfall018_20160204_Comp	Total Recoverable	Water	200.2	
LCS 440-311632/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
MB 440-311632/1-A	Method Blank	Total Recoverable	Water	200.2	

Analysis Batch: 313278

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137200-3	Outfall018_20160204_Comp	Total Recoverable	Water	200.8	311632
440-137200-3 MS	Outfall018_20160204_Comp	Total Recoverable	Water	200.8	311632
440-137200-3 MSD	Outfall018_20160204_Comp	Total Recoverable	Water	200.8	311632
LCS 440-311632/2-A	Lab Control Sample	Total Recoverable	Water	200.8	311632
MB 440-311632/1-A	Method Blank	Total Recoverable	Water	200.8	311632

Analysis Batch: 313844

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137200-3	Outfall018_20160204_Comp	Total Recoverable	Water	SM 2340B	
440-137200-3 DU	Outfall018_20160204_Comp	Total Recoverable	Water	SM 2340B	
440-137200-4DU	Outfall018_20160204_CompF	Dissolved	Water	SM 2340B	

Prep Batch: 314214

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137200-3	Outfall018_20160204_Comp	Total Recoverable	Water	200.2	
440-137200-3 MS	Outfall018_20160204_Comp	Total Recoverable	Water	200.2	
440-137200-3 MSD	Outfall018_20160204_Comp	Total Recoverable	Water	200.2	
LCS 440-314214/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
MB 440-314214/1-A	Method Blank	Total Recoverable	Water	200.2	

Prep Batch: 314336

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137200-3	Outfall018_20160204_Comp	Total Recoverable	Water	200.2	
440-137200-3 DU	Outfall018_20160204_Comp	Total Recoverable	Water	200.2	
440-137200-3 MS	Outfall018_20160204_Comp	Total Recoverable	Water	200.2	
440-137200-3 MSD	Outfall018_20160204_Comp	Total Recoverable	Water	200.2	
LCS 440-314336/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
MB 440-314336/1-A	Method Blank	Total Recoverable	Water	200.2	

Prep Batch: 314338

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137200-4	Outfall018_20160204_CompF	Dissolved	Water	200.2	311595
440-137200-4 MS	Outfall018_20160204_CompF	Dissolved	Water	200.2	311595
440-137200-4 MSD	Outfall018_20160204_CompF	Dissolved	Water	200.2	311595
LCS 440-311595/2-G	Lab Control Sample	Dissolved	Water	200.2	311595
MB 440-311595/1-F	Method Blank	Dissolved	Water	200.2	311595

Prep Batch: 314349

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137200-3	Outfall018_20160204_Comp	Total/NA	Water	245.1	
440-137200-3 MS	Outfall018_20160204_Comp	Total/NA	Water	245.1	
440-137200-3 MSD	Outfall018_20160204_Comp	Total/NA	Water	245.1	
LCS 440-314349/2-A	Lab Control Sample	Total/NA	Water	245.1	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-1

Metals (Continued)

Prep Batch: 314349 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 440-314349/1-A	Method Blank	Total/NA	Water	245.1	

Prep Batch: 314364

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137200-4	Outfall018_20160204_CompF	Dissolved	Water	245.1	311595
440-137200-4 MS	Outfall018_20160204_CompF	Dissolved	Water	245.1	311595
440-137200-4 MSD	Outfall018_20160204_CompF	Dissolved	Water	245.1	311595
LCS 440-311595/2-H	Lab Control Sample	Dissolved	Water	245.1	311595
MB 440-311595/1-G	Method Blank	Dissolved	Water	245.1	311595

Prep Batch: 314470

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137200-4	Outfall018_20160204_CompF	Dissolved	Water	200.2	311595
440-137200-4 MS	Outfall018_20160204_CompF	Dissolved	Water	200.2	311595
440-137200-4 MSD	Outfall018_20160204_CompF	Dissolved	Water	200.2	311595
LCS 440-311595/2-I	Lab Control Sample	Dissolved	Water	200.2	311595
MB 440-311595/1-H	Method Blank	Dissolved	Water	200.2	311595

Analysis Batch: 314591

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137200-3	Outfall018_20160204_Comp	Total/NA	Water	245.1	314349
440-137200-3 MS	Outfall018_20160204_Comp	Total/NA	Water	245.1	314349
440-137200-3 MSD	Outfall018_20160204_Comp	Total/NA	Water	245.1	314349
LCS 440-314349/2-A	Lab Control Sample	Total/NA	Water	245.1	314349
MB 440-314349/1-A	Method Blank	Total/NA	Water	245.1	314349

Analysis Batch: 314651

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137200-4	Outfall018_20160204_CompF	Dissolved	Water	245.1	314364
440-137200-4 MS	Outfall018_20160204_CompF	Dissolved	Water	245.1	314364
440-137200-4 MSD	Outfall018_20160204_CompF	Dissolved	Water	245.1	314364
LCS 440-311595/2-H	Lab Control Sample	Dissolved	Water	245.1	314364
MB 440-311595/1-G	Method Blank	Dissolved	Water	245.1	314364

Analysis Batch: 314703

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137200-3	Outfall018_20160204_Comp	Total Recoverable	Water	200.7 Rev 4.4	314336
440-137200-3 DU	Outfall018_20160204_Comp	Total Recoverable	Water	200.7 Rev 4.4	314336
440-137200-3 MS	Outfall018_20160204_Comp	Total Recoverable	Water	200.7 Rev 4.4	314336
440-137200-3 MSD	Outfall018_20160204_Comp	Total Recoverable	Water	200.7 Rev 4.4	314336
LCS 440-314336/2-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	314336
MB 440-314336/1-A	Method Blank	Total Recoverable	Water	200.7 Rev 4.4	314336

Analysis Batch: 314704

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137200-4	Outfall018_20160204_CompF	Dissolved	Water	200.7 Rev 4.4	314338
440-137200-4 MS	Outfall018_20160204_CompF	Dissolved	Water	200.7 Rev 4.4	314338
440-137200-4 MSD	Outfall018_20160204_CompF	Dissolved	Water	200.7 Rev 4.4	314338
LCS 440-311595/2-G	Lab Control Sample	Dissolved	Water	200.7 Rev 4.4	314338
MB 440-311595/1-F	Method Blank	Dissolved	Water	200.7 Rev 4.4	314338

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-1

Metals (Continued)

Analysis Batch: 314800

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137200-4	Outfall018_20160204_CompF	Dissolved	Water	200.7 Rev 4.4	314338
440-137200-4 MS	Outfall018_20160204_CompF	Dissolved	Water	200.7 Rev 4.4	314338
440-137200-4 MSD	Outfall018_20160204_CompF	Dissolved	Water	200.7 Rev 4.4	314338
LCS 440-311595/2-G	Lab Control Sample	Dissolved	Water	200.7 Rev 4.4	314338
MB 440-311595/1-F	Method Blank	Dissolved	Water	200.7 Rev 4.4	314338

Analysis Batch: 314801

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137200-3	Outfall018_20160204_Comp	Total Recoverable	Water	200.7 Rev 4.4	314214
440-137200-3 MS	Outfall018_20160204_Comp	Total Recoverable	Water	200.7 Rev 4.4	314214
440-137200-3 MSD	Outfall018_20160204_Comp	Total Recoverable	Water	200.7 Rev 4.4	314214
LCS 440-314214/2-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	314214
MB 440-314214/1-A	Method Blank	Total Recoverable	Water	200.7 Rev 4.4	314214

Analysis Batch: 315056

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137200-4	Outfall018_20160204_CompF	Dissolved	Water	200.8	314470
440-137200-4 MS	Outfall018_20160204_CompF	Dissolved	Water	200.8	314470
440-137200-4 MSD	Outfall018_20160204_CompF	Dissolved	Water	200.8	314470
LCS 440-311595/2-I	Lab Control Sample	Dissolved	Water	200.8	314470
MB 440-311595/1-H	Method Blank	Dissolved	Water	200.8	314470

Analysis Batch: 315730

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137200-4	Outfall018_20160204_CompF	Dissolved	Water	SM 2340B	

Prep Batch: 325993

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137200-4	Outfall018_20160204_CompF	Dissolved	Water	200.2	311595
440-137200-4 MS	Outfall018_20160204_CompF	Dissolved	Water	200.2	311595
440-137200-4 MSD	Outfall018_20160204_CompF	Dissolved	Water	200.2	311595
LCS 440-311595/2-K	Lab Control Sample	Dissolved	Water	200.2	311595
MB 440-311595/1-J	Method Blank	Dissolved	Water	200.2	311595

Analysis Batch: 326313

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137200-4	Outfall018_20160204_CompF	Dissolved	Water	200.8	325993
440-137200-4 MS	Outfall018_20160204_CompF	Dissolved	Water	200.8	325993
440-137200-4 MSD	Outfall018_20160204_CompF	Dissolved	Water	200.8	325993
LCS 440-311595/2-K	Lab Control Sample	Dissolved	Water	200.8	325993
MB 440-311595/1-J	Method Blank	Dissolved	Water	200.8	325993

General Chemistry

Analysis Batch: 310241

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137200-3	Outfall018_20160204_Comp	Total/NA	Water	SM 5540C	
440-137200-3 MS	Outfall018_20160204_Comp	Total/NA	Water	SM 5540C	
440-137200-3 MSD	Outfall018_20160204_Comp	Total/NA	Water	SM 5540C	
LCS 440-310241/10	Lab Control Sample	Total/NA	Water	SM 5540C	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-1

General Chemistry (Continued)

Analysis Batch: 310241 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 440-310241/9	Method Blank	Total/NA	Water	SM 5540C	

Analysis Batch: 310271

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-136943-A-2 DU	Duplicate	Total/NA	Water	SM 2540D	
440-137200-3	Outfall018_20160204_Comp	Total/NA	Water	SM 2540D	
LCS 440-310271/2	Lab Control Sample	Total/NA	Water	SM 2540D	
MB 440-310271/1	Method Blank	Total/NA	Water	SM 2540D	

Analysis Batch: 310278

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137200-3	Outfall018_20160204_Comp	Total/NA	Water	SM5210B	
LCS 440-310278/4	Lab Control Sample	Total/NA	Water	SM5210B	
LCSD 440-310278/5	Lab Control Sample Dup	Total/NA	Water	SM5210B	
USB 440-310278/1	Method Blank	Total/NA	Water	SM5210B	

Analysis Batch: 310354

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
370-223-H-1 DU	Duplicate	Total/NA	Water	180.1	
440-137200-3	Outfall018_20160204_Comp	Total/NA	Water	180.1	
MB 440-310354/5	Method Blank	Total/NA	Water	180.1	

Analysis Batch: 310622

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137200-3	Outfall018_20160204_Comp	Total/NA	Water	SM 2540C	
440-137200-3 DU	Outfall018_20160204_Comp	Total/NA	Water	SM 2540C	
LCS 440-310622/2	Lab Control Sample	Total/NA	Water	SM 2540C	
MB 440-310622/1	Method Blank	Total/NA	Water	SM 2540C	

Prep Batch: 310712

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137200-3	Outfall018_20160204_Comp	Total/NA	Water	Distill/CN	
440-137200-3 MS	Outfall018_20160204_Comp	Total/NA	Water	Distill/CN	
440-137200-3 MSD	Outfall018_20160204_Comp	Total/NA	Water	Distill/CN	
LCS 440-310712/2-A	Lab Control Sample	Total/NA	Water	Distill/CN	
LCSD 440-310712/3-A	Lab Control Sample Dup	Total/NA	Water	Distill/CN	
MB 440-310712/1-A	Method Blank	Total/NA	Water	Distill/CN	

Analysis Batch: 311066

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137200-3	Outfall018_20160204_Comp	Total/NA	Water	SM 4500 CN E	310712
440-137200-3 MS	Outfall018_20160204_Comp	Total/NA	Water	SM 4500 CN E	310712
440-137200-3 MSD	Outfall018_20160204_Comp	Total/NA	Water	SM 4500 CN E	310712
LCS 440-310712/2-A	Lab Control Sample	Total/NA	Water	SM 4500 CN E	310712
LCSD 440-310712/3-A	Lab Control Sample Dup	Total/NA	Water	SM 4500 CN E	310712
MB 440-310712/1-A	Method Blank	Total/NA	Water	SM 4500 CN E	310712

Prep Batch: 311755

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137200-3	Outfall018_20160204_Comp	Total/NA	Water	SM 4500 NH3 B	
440-137200-3 MS	Outfall018_20160204_Comp	Total/NA	Water	SM 4500 NH3 B	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-1

General Chemistry (Continued)

Prep Batch: 311755 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137200-3 MSD	Outfall018_20160204_Comp	Total/NA	Water	SM 4500 NH3 B	
LCS 440-311755/1-A	Lab Control Sample	Total/NA	Water	SM 4500 NH3 B	
MB 440-311755/2-A	Method Blank	Total/NA	Water	SM 4500 NH3 B	

Analysis Batch: 311783

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137200-3	Outfall018_20160204_Comp	Total/NA	Water	SM 4500 NH3 D	311755
440-137200-3 MS	Outfall018_20160204_Comp	Total/NA	Water	SM 4500 NH3 D	311755
440-137200-3 MSD	Outfall018_20160204_Comp	Total/NA	Water	SM 4500 NH3 D	311755
LCS 440-311755/1-A	Lab Control Sample	Total/NA	Water	SM 4500 NH3 D	311755
MB 440-311755/2-A	Method Blank	Total/NA	Water	SM 4500 NH3 D	311755

Prep Batch: 313831

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137200-3	Outfall018_20160204_Comp	Total/NA	Water	Filtration	
440-137347-R-1-B MS	Matrix Spike	Total/NA	Water	Filtration	
440-137347-R-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	Filtration	
LCS 280-313831/2-A	Lab Control Sample	Total/NA	Water	Filtration	
LCSD 280-313831/3-A	Lab Control Sample Dup	Total/NA	Water	Filtration	
MB 280-313831/1-A	Method Blank	Total/NA	Water	Filtration	

Analysis Batch: 314213

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137200-3	Outfall018_20160204_Comp	Total/NA	Water	SM 5310B	
440-137367-C-24 MS	Matrix Spike	Total/NA	Water	SM 5310B	
440-137367-C-24 MSD	Matrix Spike Duplicate	Total/NA	Water	SM 5310B	
LCS 440-314213/7	Lab Control Sample	Total/NA	Water	SM 5310B	
MB 440-314213/8	Method Blank	Total/NA	Water	SM 5310B	

Analysis Batch: 314901

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137200-3	Outfall018_20160204_Comp	Total/NA	Water	DV-WC-0077	313831
440-137347-R-1-B MS	Matrix Spike	Total/NA	Water	DV-WC-0077	313831
440-137347-R-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	DV-WC-0077	313831
LCS 280-313831/2-A	Lab Control Sample	Total/NA	Water	DV-WC-0077	313831
LCSD 280-313831/3-A	Lab Control Sample Dup	Total/NA	Water	DV-WC-0077	313831
MB 280-313831/1-A	Method Blank	Total/NA	Water	DV-WC-0077	313831

Rad

Prep Batch: 236466

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-16061-F-4-B DU	Duplicate	Total/NA	Water	Fill_Geo-0	
440-137200-3	Outfall018_20160204_Comp	Total/NA	Water	Fill_Geo-0	
LCS 160-236466/2-A	Lab Control Sample	Total/NA	Water	Fill_Geo-0	
MB 160-236466/1-A	Method Blank	Total/NA	Water	Fill_Geo-0	

Prep Batch: 237126

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137200-3	Outfall018_20160204_Comp	Total/NA	Water	ExtChrom	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-1

Rad (Continued)

Prep Batch: 237126 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137200-3 MS	Outfall018_20160204_Comp	Total/NA	Water	ExtChrom	
440-137200-3 MSD	Outfall018_20160204_Comp	Total/NA	Water	ExtChrom	
LCS 160-237126/2-A	Lab Control Sample	Total/NA	Water	ExtChrom	
MB 160-237126/1-A	Method Blank	Total/NA	Water	ExtChrom	

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Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
BU	Analyzed out of holding time

GC/MS Semi VOA

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)

HPLC/IC

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)
BB	Sample > 4X spike concentration

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
BB	Sample > 4X spike concentration
IB	CCV recovery above limit; analyte not detected
QP	Holding time Immediate. Analyzed as close to receipt as possible

General Chemistry

Qualifier	Qualifier Description
BU	Sample was prepped beyond the specified holding time
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
LN	MS and/or MSD below acceptance limits. See Blank Spike (LCS)

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-1

Glossary (Continued)

Abbreviation	These commonly used abbreviations may or may not be present in this report.
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
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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Certification Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-1

Laboratory: TestAmerica Irvine

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

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-16
Arizona	State Program	9	AZ0671	10-13-16
California	LA Cty Sanitation Districts	9	10256	01-31-17 *
California	State Program	9	CA ELAP 2706	06-30-16
Guam	State Program	9	Cert. No. 12.002r	01-23-17
Hawaii	State Program	9	N/A	01-29-17
Kansas	NELAP Secondary AB	7	E-10420	07-31-16
Nevada	State Program	9	CA015312016-2	07-31-16
New Mexico	State Program	6	N/A	01-29-17
Northern Mariana Islands	State Program	9	MP0002	01-29-16 *
Oregon	NELAP	10	4028	01-29-17
USDA	Federal		P330-09-00080	07-08-18
Washington	State Program	10	C900	09-03-16

Laboratory: TestAmerica Denver

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

Authority	Program	EPA Region	Certification ID	Expiration Date
A2LA	DoD ELAP		2907.01	10-31-17
A2LA	ISO/IEC 17025		2907.01	10-31-17
Alabama	State Program	4	40730	09-30-12 *
Alaska (UST)	State Program	10	UST-30	04-05-17
Arizona	State Program	9	AZ0713	12-19-16
Arkansas DEQ	State Program	6	88-0687	06-01-16
California	State Program	9	2513	08-31-16
Connecticut	State Program	1	PH-0686	09-30-16
Florida	NELAP	4	E87667	06-30-16
Georgia	State Program	4	N/A	01-09-17
Illinois	NELAP	5	200017	04-30-17
Iowa	State Program	7	370	11-30-16
Kansas	NELAP	7	E-10166	04-30-16
Louisiana	NELAP	6	02096	06-30-16
Maine	State Program	1	CO0002	03-03-17
Minnesota	NELAP	5	8-999-405	12-31-16
Nevada	State Program	9	CO0026	07-31-16
New Hampshire	NELAP	1	205310	04-28-16
New Jersey	NELAP	2	CO004	06-30-16
New York	NELAP	2	11964	04-01-17
North Carolina (WW/SW)	State Program	4	358	12-31-16
North Dakota	State Program	8	R-034	01-09-17
Oklahoma	State Program	6	8614	08-31-16
Oregon	NELAP	10	4025	01-09-17
Pennsylvania	NELAP	3	68-00664	07-31-16
South Carolina	State Program	4	72002001	01-09-16 *
Texas	NELAP	6	T104704183-15-11	09-30-16
USDA	Federal		P330-13-00202	07-02-16
Utah	NELAP	8	CO00026	07-31-16
Virginia	NELAP	3	460232	06-14-16
Washington	State Program	10	C583	08-03-16
West Virginia DEP	State Program	3	354	11-30-16

* Certification renewal pending - certification considered valid.

TestAmerica Irvine

Certification Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-1

Laboratory: TestAmerica Denver (Continued)

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

Authority	Program	EPA Region	Certification ID	Expiration Date
Wisconsin	State Program	5	999615430	08-31-16
Wyoming (UST)	A2LA	8	2907.01	10-31-17

Laboratory: TestAmerica Sacramento

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

Authority	Program	EPA Region	Certification ID	Expiration Date
A2LA	DoD ELAP		2928-01	01-31-17
Alaska (UST)	State Program	10	UST-055	12-18-16
Arizona	State Program	9	AZ0708	08-11-16
Arkansas DEQ	State Program	6	88-0691	06-17-16
California	State Program	9	2897	01-31-17
Colorado	State Program	8	CA00044	08-31-16
Connecticut	State Program	1	PH-0691	06-30-17
Florida	NELAP	4	E87570	06-30-16
Hawaii	State Program	9	N/A	01-31-17
Illinois	NELAP	5	200060	03-17-17
Kansas	NELAP	7	E-10375	05-31-16
Louisiana	NELAP	6	30612	06-30-16
Maine	State Program	1	CA0004	04-18-16
Michigan	State Program	5	9947	01-31-18
Nevada	State Program	9	CA00044	07-31-16
New Jersey	NELAP	2	CA005	06-30-16
New York	NELAP	2	11666	04-01-17
Oregon	NELAP	10	4040	01-29-17
Pennsylvania	NELAP	3	68-01272	03-31-17
Texas	NELAP	6	T104704399	05-31-16
US Fish & Wildlife	Federal		LE148388-0	10-31-16
USDA	Federal		P330-11-00436	12-30-17
USEPA UCMR	Federal	1	CA00044	11-06-16
Utah	NELAP	8	CA00044	02-28-17
Virginia	NELAP	3	460278	03-14-17
Washington	State Program	10	C581	05-04-16
West Virginia (DW)	State Program	3	9930C	12-31-16
Wyoming	State Program	8	8TMS-L	01-29-17

Laboratory: TestAmerica St. Louis

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

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	MO00054	06-30-16
California	State Program	9	2886	03-31-18
Connecticut	State Program	1	PH-0241	03-31-17
Florida	NELAP	4	E87689	06-30-16
Illinois	NELAP	5	003757	11-30-16
Iowa	State Program	7	373	12-01-16
Kansas	NELAP	7	E-10236	05-31-16
Kentucky (DW)	State Program	4	90125	12-31-16
L-A-B	DoD ELAP		L2305	04-06-19
Louisiana	NELAP	6	04080	06-30-16 *
Louisiana (DW)	NELAP	6	LA160008	12-31-16

* Certification renewal pending - certification considered valid.

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-1

Laboratory: TestAmerica St. Louis (Continued)

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

Authority	Program	EPA Region	Certification ID	Expiration Date
Maryland	State Program	3	310	09-30-16
Missouri	State Program	7	780	06-30-16
Nevada	State Program	9	MO000542016-1	07-31-16
New Jersey	NELAP	2	MO002	06-30-16
New York	NELAP	2	11616	03-31-17
North Dakota	State Program	8	R207	06-30-16
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-16
Pennsylvania	NELAP	3	68-00540	02-28-17 *
South Carolina	State Program	4	85002001	06-30-16
Texas	NELAP	6	T104704193-15-9	07-31-16
USDA	Federal		P330-07-00122	01-09-17
Utah	NELAP	8	MO000542015-7	07-31-16
Virginia	NELAP	3	460230	06-14-16
Washington	State Program	10	C592	08-30-16
West Virginia DEP	State Program	3	381	08-31-16

* Certification renewal pending - certification considered valid.

TestAmerica Irvine

INVOICE NO. TAM0216.0156

February 29, 2016

Accounts Payable
TestAmerica Irvine
17461 Derian Avenue, Suite 100
Irvine, CA 92614

SAMPLE I.D.: Outfall 018
DATE RECEIVED: 4 Feb - 16
ABC LAB NO.: TAM0216.120
PROJECT NAME: BOEING-SSFL NPDES PERMIT 2016

NPDES CHRONIC BIOASSAY	
Selenastrum Algae-(1 @ 735.00)	\$735.00

TOTAL	\$735.00
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Make checks payable to: Aquatic Bioassay & Consulting
29 N. Olive St.
Ventura, CA 93001

Terms are net 30 days.



February 29, 2016

Ms. Debbie Wilson
TestAmerica Irvine
17461 Derian Avenue, Suite 100
Irvine, CA 92614

Dear Ms. Wilson:

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

CLIENT: Haley & Aldrich
SAMPLE ID.: Outfall 018
DATE RECEIVED: 4 Feb - 16
ABC LAB NO.: TAM0216.120

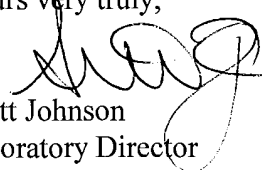
CHRONIC SELENASTRUM ALGAE GROWTH BIOASSAY

IWC = 100.00 %

TST RESULT

GROWTH = FAIL % EFFECT = 33.37 %

Yours very truly,



Scott Johnson
Laboratory Director

TST Summary Sheet

Lab Name	Aquatic Bioassay Labs.	Client Name	TestAmerica Irvine
Test ID	Outfall 018	Test Species	<i>S. capricornutum (green algae)</i>
Test Date	2/4/2016	Test Type	Chronic
Test Duration	96 hours	Endpoint	Growth
Critical Conc.	100		

Statistic	Control	Critical Concentration
Mean of Raw Data	1.44	0.96
Mean used in Calculation (non-transformed)	1.44	0.96
Variance used in Calculation (non-transformed)	0.007	0.007
Standard Deviation of Raw Data	0.082	0.082
CV of Raw Data	0.057	0.086
n	8	8

Mean % Effect at Critical Conc.

33.37

Calculated t-value	Degrees of Freedom	Table t-value	Percent Difference
-3.3093	12	0.6955	

Results

Fail Sample is Toxic

Raw Data

Control Data		Critical Concentration Data	
No. of Organisms Exposed or Counted	Response (Final Count, Weight, Length, etc.)	No. of Organisms Exposed or Counted	Response (Final Count, Weight, Length, etc.)
	1.35		0.952
	1.454		0.817
	1.398		1.026
	1.524		0.921
	1.502		1.036
	1.544		1.034
	1.394		0.869
	1.326		1.002

CETIS Summary Report

Report Date: 25 Feb-16 15:29 (p 1 of 1)
 Test Code: TAM0216.120 | 20-2913-9125

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 08-0093-0315	Test Type: Cell Growth	Analyst:
Start Date: 04 Feb-16 16:20	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 08 Feb-16 11:20	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 91h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 16-5466-9524	Code: TAM0216.120	Client: Test America Irvine
Sample Date: 04 Feb-16	Material: Sample Water	Project: Boeing-SSFL NPDES
Receive Date: 04 Feb-16 15:40	Source: Bioassay Report	
Sample Age: 16h (3 °C)	Station: Outfall 018	

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
11-7345-4715	Cell Density	<100	100	NA	1.76%	>1	TST-Welch's t Test

Point Estimate Summary

Analysis ID	Endpoint	Level	%	95% LCL	95% UCL	TU	Method
02-8452-1862	Cell Density	IC5	14.98	13.3	17.23	6.674	Linear Interpolation (ICPIN)
		IC10	29.97	26.6	34.47	3.337	
		IC15	44.95	39.9	51.7	2.225	
		IC20	59.93	53.19	68.94	1.669	
		IC25	74.92	66.49	86.17	1.335	
		IC40	>100	N/A	N/A	<1	
		IC50	>100	N/A	N/A	<1	

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
02-8452-1862	Cell Density	Control CV	0.05691	NL - 0.2	Yes	Passes Acceptability Criteria
11-7345-4715	Cell Density	Control CV	0.05691	NL - 0.2	Yes	Passes Acceptability Criteria
02-8452-1862	Cell Density	Control Resp	1.44E+6	1.00E+6 - NL	Yes	Passes Acceptability Criteria
11-7345-4715	Cell Density	Control Resp	1.44E+6	1.00E+6 - NL	Yes	Passes Acceptability Criteria
11-7345-4715	Cell Density	PMSD	0.01759	0.091 - 0.29	Yes	Below Acceptability Criteria

Cell Density Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	8	1.437E+6	1.368E+6	1.505E+6	1.326E+6	1.544E+6	2.891E+4	8.176E+4	5.69%	0.0%
100		8	9.571E+5	8.882E+5	1.026E+6	8.170E+5	1.036E+6	2.916E+4	8.248E+4	8.62%	33.37%

Cell Density Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	Negative Control	1.350E+6	1.454E+6	1.398E+6	1.524E+6	1.502E+6	1.544E+6	1.394E+6	1.326E+6
100		9.520E+5	8.170E+5	1.026E+6	9.210E+5	1.036E+6	1.034E+6	8.690E+5	1.002E+6

CETIS Analytical Report

Report Date: 25 Feb-16 15:28 (p 1 of 1)
 Test Code: TAM0216.120 | 20-2913-9125

Selenastrum Growth Test				Aquatic Bioassay & Consulting Labs, Inc.			
Analysis ID:	11-7345-4715	Endpoint:	Cell Density	CETIS Version:	CETISv1.8.7		
Analyzed:	25 Feb-16 15:28	Analysis:	Parametric Bioequivalence-Two Sample	Official Results:	Yes		

Data Transform	Zeta	Alt Hyp	Trials	Seed	TST b	PMSD	Test Result
Untransformed	NA	C*b < T	NA	NA	0.75	1.76%	Fails cell density

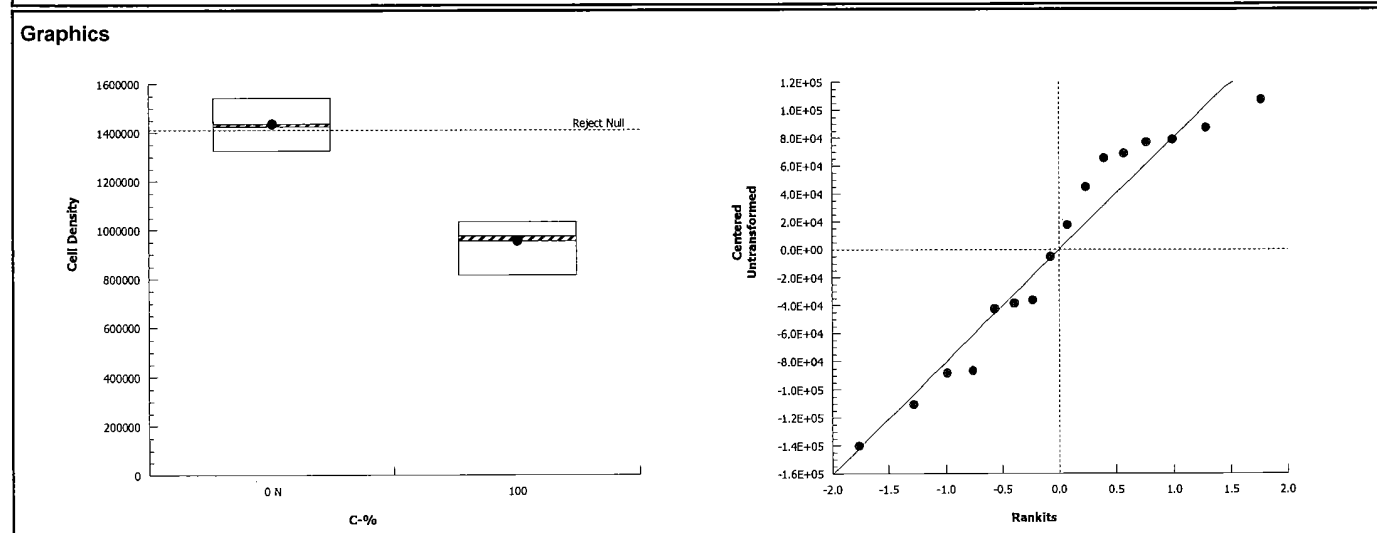
TST-Welch's t Test									
Control	vs	C-%	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:25%)
Negative Control		100	-3.309	0.6955	25270	12	0.9969	CDF	Significant Effect

ANOVA Table							
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)	
Between	9.192016E+11	9.192016E+11	1	136.3	<0.0001	Significant Effect	
Error	94410870000	6743634000	14				
Total	1.013612E+12		15				

Distributional Tests						
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)	
Variances	Variance Ratio F	1.018	8.885	0.9821	Equal Variances	
Variances	Mod Levene Equality of Variance	0.01076	8.862	0.9188	Equal Variances	
Variances	Levene Equality of Variance	0.013	8.862	0.9108	Equal Variances	
Distribution	Shapiro-Wilk W Normality	0.9277	0.8408	0.2244	Normal Distribution	
Distribution	Kolmogorov-Smirnov D	0.1705	0.2471	0.2496	Normal Distribution	
Distribution	D'Agostino Skewness	0.5843	2.576	0.5590	Normal Distribution	
Distribution	Anderson-Darling A2 Normality	0.5292	3.878	0.1804	Normal Distribution	

Cell Density Summary											
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Negative Control	8	1.437E+6	1.368E+6	1.505E+6	1426000	1.326E+6	1.544E+6	2.891E+4	5.69%	0.0%
100		8	9.571E+5	8.882E+5	1.026E+6	977000	8.170E+5	1.036E+6	2.916E+4	8.62%	33.37%

Cell Density Detail										
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	
0	Negative Control	1.350E+6	1.454E+6	1.398E+6	1.524E+6	1.502E+6	1.544E+6	1.394E+6	1.326E+6	
100		9.520E+5	8.170E+5	1.026E+6	9.210E+5	1.036E+6	1.034E+6	8.690E+5	1.002E+6	



CETIS Analytical Report

Report Date: 25 Feb-16 15:29 (p 1 of 1)
 Test Code: TAM0216.120 | 20-2913-9125

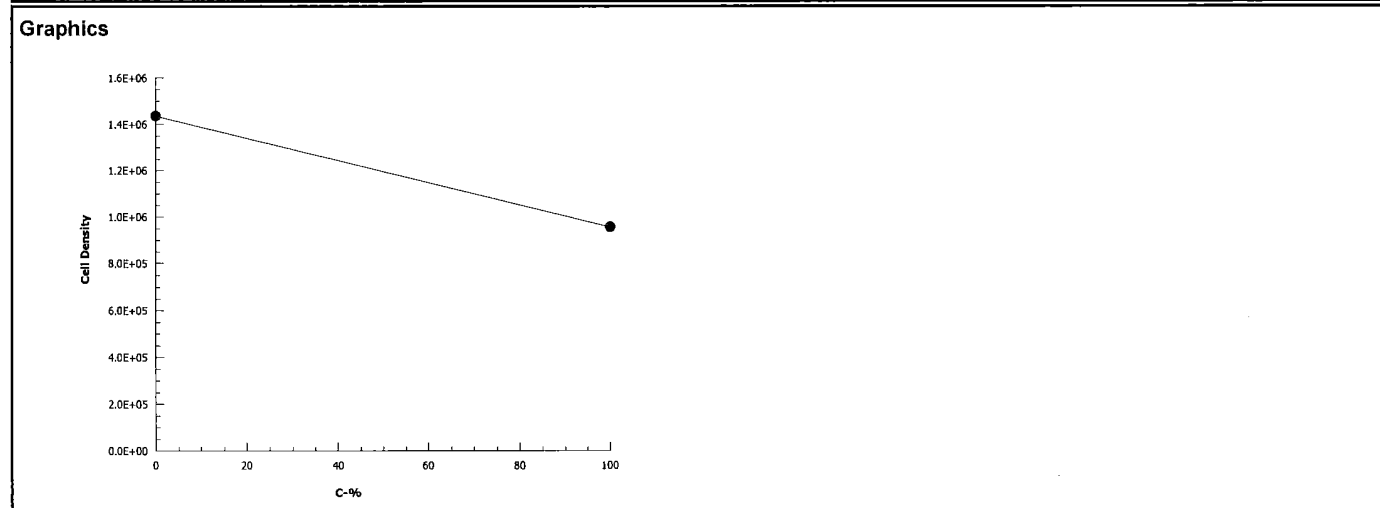
Selenastrum Growth Test		Aquatic Bioassay & Consulting Labs, Inc.	
Analysis ID: 02-8452-1862	Endpoint: Cell Density	CETIS Version: CETISv1.8.7	
Analyzed: 25 Feb-16 15:28	Analysis: Linear Interpolation (ICPIN)	Official Results: Yes	

Linear Interpolation Options					
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	0	280	Yes	Two-Point Interpolation

Point Estimates						
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC5	14.98	13.3	17.23	6.674	5.802	7.52
IC10	29.97	26.6	34.47	3.337	2.901	3.76
IC15	44.95	39.9	51.7	2.225	1.934	2.507
IC20	59.93	53.19	68.94	1.669	1.451	1.88
IC25	74.92	66.49	86.17	1.335	1.16	1.504
IC40	>100	N/A	N/A	<1	NA	NA
IC50	>100	N/A	N/A	<1	NA	NA

Cell Density Summary			Calculated Variate						
C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	8	1.437E+6	1.326E+6	1.544E+6	2.891E+4	8.176E+4	5.69%	0.0%
100		8	9.571E+5	8.170E+5	1.036E+6	2.916E+4	8.248E+4	8.62%	33.37%

Cell Density Detail										
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	
0	Negative Control	1.350E+6	1.454E+6	1.398E+6	1.524E+6	1.502E+6	1.544E+6	1.394E+6	1.326E+6	
100		9.520E+5	8.170E+5	1.026E+6	9.210E+5	1.036E+6	1.034E+6	8.690E+5	1.002E+6	



CETIS Measurement Report

Report Date: 25 Feb-16 15:29 (p 1 of 2)
 Test Code: TAM0216.120 | 20-2913-9125

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 08-0093-0315	Test Type: Cell Growth	Analyst:
Start Date: 04 Feb-16 16:20	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 08 Feb-16 11:20	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 91h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 16-5466-9524	Code: TAM0216.120	Client: Test America Irvine
Sample Date: 04 Feb-16	Material: Sample Water	Project: Boeing-SSFL NPDES
Receive Date: 04 Feb-16 15:40	Source: Bioassay Report	
Sample Age: 16h (3 °C)	Station: Outfall 018	

Alkalinity (CaCO3)-mg/L

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	1	63			63	63	0	0	0.0%	0
100		1	111			111	111	0	0	0.0%	0
Overall		2	87			63	111				0 (0%)

Conductivity-µmhos

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	5	428	408.4	447.6	418	456	7.071	15.81	3.69%	0
100		5	852.8	846.7	858.9	847	857	2.2	4.919	0.58%	0
Overall		10	640.4			418	857				0 (0%)

Hardness (CaCO3)-mg/L

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	1	99			99	99	0	0	0.0%	0
100		1	211			211	211	0	0	0.0%	0
Overall		2	155			99	211				0 (0%)

pH-Units

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	5	7.54	7.398	7.682	7.4	7.7	0.05099	0.114	1.51%	0
100		5	8.1	8.098	8.102	8.1	8.1	0	0	0.0%	0
Overall		10	7.82			7.4	8.1				0 (0%)

Temperature-°C

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	5	24.1	24.01	24.19	24	24.2	0.03156	0.07056	0.29%	0
100		5	24.1	24.01	24.19	24	24.2	0.03156	0.07056	0.29%	0
Overall		10	24.1			24	24.2				0 (0%)

CETIS Measurement Report

Report Date: 25 Feb-16 15:29 (p 2 of 2)
 Test Code: TAM0216.120 | 20-2913-9125

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Alkalinity (CaCO3)-mg/L

C-%	Control Type	1
0	Negative Contr	63
100		111

Conductivity-µmhos

C-%	Control Type	1	2	3	4	5
0	Negative Contr	424	422	420	418	456
100		848	857	855	857	847

Hardness (CaCO3)-mg/L

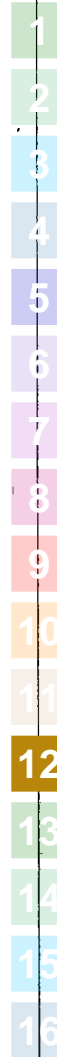
C-%	Control Type	1
0	Negative Contr	99
100		211

pH-Units

C-%	Control Type	1	2	3	4	5
0	Negative Contr	7.7	7.4	7.5	7.5	7.6
100		8.1	8.1	8.1	8.1	8.1

Temperature-°C

C-%	Control Type	1	2	3	4	5
0	Negative Contr	24	24.1	24.1	24.1	24.2
100		24	24.1	24.1	24.1	24.2



CHAIN OF CUSTODY FORM

R/A R R R A A A A

ANALYSIS REQUIRED

Client Name/Address:
Haley & Aldrich
 5333 Mission Center Rd Suite 300
 San Diego, CA 92108

Project:
 Boeing-SSFL NPDES
 Permit 2016
 Annual Outfall 001, 002, 011, 018
 Outfall 018
 Comp

Test America Contact: Debby Wilson
 17461 Derfan Ave Suite #100
 Irvine CA 92614
 Tel 949 261 1022 x228
 Cell 949 237 0603

Project Manager: Nancy Gardiner
 619.285.7132, 858.337.4061 (cell)

Field Manager: Mark Dominick
 818.350.7312, 818.589.0702 (cell)

Sampler: *Don Smith*

Sample Description	Sample I.D.	Sampling Date/Time	Sample Matrix	Combiner Type	# of Cont.	Preservative	Bottle #	MS/MSD	Total Dissolved Metals: Cu, Pb, Hg, B, Ba, Fe, Mn, Sb, As, Be, Cd, Cr, Ni, Se, Ag, Ti, Zn, Co, V, Hardness as CaCO3	Cyanide	Gross Alpha(900.0), Gross Beta(900.0), Tritium (H-3) (906.0), Sr-90 (905.0), Total Combined Radium 226 (903.0 or 903.1) & Radium 228 (904.0), Uranium (908.0), K-40, CS-137 (901.0 or 901.1)	Chronic Toxicity	1,4-Dioxane	Total Organic Carbon	Monomethyl Hydrazine	Cr (VI), Total (218.6)	Asbestos (100.2)	Total Dissolved Metals: Mercury (245.1)	Filter and preserve w/in 24hrs of receipt at lab Sample receiving DO NOT OPEN BAG. Bag to be opened in Mercury Prep using clean procedures. Unfiltered and unpreserved analysis. Separate RAD onto another workorder. Only test if first or second rain events of the year		
Outfall 018	Outfall018_20160204_Comp_F	2/4/2016	VM	biosilicate vials	3	None	320	Yes	X												
			VM	500 mL Poly	3	NaOH	220	Yes													
			VM	2.5 Gall Cube	3	None	225	Yes													
			VM	1 L Glass Amber	3	None	230	Yes													
			VM	1 Gall Cube	6	None	235	No													
			VM	40 mL VOA	9	HCl	240	Yes													
			VM	1 L Glass Amber	1	HCl	245	No													
			VM	1 L Glass Amber	2	None	255	No													
			VM	500 mL Poly	3	None	260	Yes													
			VM	1 L Poly	1	None	271	No													
VM	40 mL VOA	3	HCl	240	No																
VM	1 L Glass Amber	2	None	255	No																

COC Page 2 of 3 and Page 3 of 3 are the composite samples for Outfall 018 for this storm event.
 These must be added to the same work order for COC Page 1 of 3 for Outfall 018 for the same event.

Legend: R=Routine, A=Annual, Q=Quarterly

Relinquished By: *Don Smith* Date/Time: 2/4/16 1325
 Company: *SSHA*

Relinquished By: *Bill Clarke* Date/Time: 2-4-16/1355
 Company: *Western Robotics*

Relinquished By: *Don Smith* Date/Time: 2/4/16 1540
 Company: *Temp*

Received By: *Bill Clarke* Date/Time: 2-4-16/1325
 Date/Time: 2-4-16/1355

Received By: *Don Smith* Date/Time: 2/4/16 1540

Turn-around time: (Check)
 24 Hour: 72 Hour: 10 Day:
 48 Hour: 5 Day: Normal:

Sample Integrity: (Check)
 Intact: On Ice:

Data Requirements: (Check)
 All Level IV:

Chlorine (mg/L) = 40.1
 NH3 (mg/L) = 0.0



CHRONIC SELENASTRUM GROWTH BIOASSAY

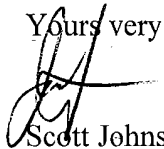
DATE: 4 February - 2016

STANDARD TOXICANT: Cadmium Chloride

NOEC = 80.00 ug/l

IC25 = 109.40 ug/l
IC50 = 171.10 ug/l

Yours very truly,


Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 01 Mar-16 15:51 (p 1 of 1)
 Test Code: SEL020416 | 20-2574-1811

Selenastrum Growth Test			Aquatic Bioassay & Consulting Labs, Inc.		
Batch ID:	20-9351-9588	Test Type:	Cell Growth	Analyst:	
Start Date:	04 Feb-16 11:30	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water
Ending Date:	08 Feb-16 11:40	Species:	Selenastrum capricornutum	Brine:	Not Applicable
Duration:	4d 0h	Source:	Aquatic Biosystems, CO	Age:	
Sample ID:	11-7087-0424	Code:	SEL020416	Client:	Internal Lab
Sample Date:	04 Feb-16 11:30	Material:	Cadmium chloride	Project:	
Receive Date:		Source:	Reference Toxicant		
Sample Age:	NA	Station:	REF TOX		

Comparison Summary							
Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
08-9694-6006	Cell Density	80	140	105.8	8.94%		Dunnett Multiple Comparison Test

Point Estimate Summary							
Analysis ID	Endpoint	Level	µg/L	95% LCL	95% UCL	TU	Method
01-3787-1617	Cell Density	IC5	57.07	32.78	79.02		Linear Interpolation (ICPIN)
		IC10	75.89	48.76	93.56		
		IC15	88.25	64.89	101.7		
		IC20	98.8	79.36	112.1		
		IC25	109.4	92.53	121.8		
		IC40	141.4	127.2	158.3		
		IC50	171.1	157.8	182.4		

Test Acceptability						
Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
01-3787-1617	Cell Density	Control CV	0.08128	NL - 0.2	Yes	Passes Acceptability Criteria
08-9694-6006	Cell Density	Control CV	0.08128	NL - 0.2	Yes	Passes Acceptability Criteria
01-3787-1617	Cell Density	Control Resp	1.32E+6	1.00E+6 - NL	Yes	Passes Acceptability Criteria
08-9694-6006	Cell Density	Control Resp	1.32E+6	1.00E+6 - NL	Yes	Passes Acceptability Criteria
08-9694-6006	Cell Density	PMSD	0.08942	0.091 - 0.29	Yes	Below Acceptability Criteria

Cell Density Summary											
C-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	4	1.325E+6	1.153E+6	1.496E+6	1.184E+6	1.411E+6	5.384E+4	1.077E+5	8.13%	0.0%
20		4	1.419E+6	1.292E+6	1.545E+6	1.315E+6	1.482E+6	3.978E+4	7.956E+4	5.61%	-7.08%
40		4	1.365E+6	1.320E+6	1.410E+6	1.326E+6	1.389E+6	1.410E+4	2.821E+4	2.07%	-3.06%
80		4	1.220E+6	1.108E+6	1.331E+6	1.125E+6	1.294E+6	3.508E+4	7.015E+4	5.75%	7.95%
140		4	8.295E+5	7.254E+5	9.336E+5	7.810E+5	9.260E+5	3.270E+4	6.539E+4	7.88%	37.38%
180		4	6.445E+5	5.906E+5	6.984E+5	6.230E+5	6.950E+5	1.693E+4	3.387E+4	5.26%	51.35%

Cell Density Detail						
C-µg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	
0	Negative Control	1.297E+6	1.184E+6	1.411E+6	1.407E+6	
20		1.315E+6	1.480E+6	1.482E+6	1.397E+6	
40		1.382E+6	1.326E+6	1.389E+6	1.364E+6	
80		1.125E+6	1.236E+6	1.223E+6	1.294E+6	
140		8.080E+5	7.810E+5	9.260E+5	8.030E+5	
180		6.950E+5	6.280E+5	6.230E+5	6.320E+5	

CETIS Analytical Report

Report Date: 01 Mar-16 15:51 (p 1 of 2)
 Test Code: SEL020416 | 20-2574-1811

Selenastrum Growth Test				Aquatic Bioassay & Consulting Labs, Inc.			
Analysis ID: 08-9694-6006	Endpoint: Cell Density			CETIS Version: CETISv1.8.7			
Analyzed: 01 Mar-16 15:51	Analysis: Parametric-Control vs Treatments			Official Results: Yes			

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU
Untransformed	NA	C > T	NA	NA	8.94%	80	140	105.8	

Dunnett Multiple Comparison Test									
Control	vs	C-µg/L	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Negative Control		20	-1.905	2.407	1E+05	6	0.9988	CDF	Non-Significant Effect
		40	-0.8229	2.407	1E+05	6	0.9725	CDF	Non-Significant Effect
		80	2.139	2.407	1E+05	6	0.0819	CDF	Non-Significant Effect
		140*	10.06	2.407	1E+05	6	<0.0001	CDF	Significant Effect
		180*	13.82	2.407	1E+05	6	<0.0001	CDF	Significant Effect

ANOVA Table						
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	2.04177E+12	4.08354E+11	5	84.3	<0.0001	Significant Effect
Error	87195500000	4844194000	18			
Total	2.128965E+12		23			

Distributional Tests						
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)	
Variances	Bartlett Equality of Variance	5.884	15.09	0.3176	Equal Variances	
Variances	Mod Levene Equality of Variance	1.331	4.248	0.2960	Equal Variances	
Variances	Levene Equality of Variance	1.952	4.248	0.1352	Equal Variances	
Distribution	Shapiro-Wilk W Normality	0.9571	0.884	0.3822	Normal Distribution	
Distribution	Kolmogorov-Smirnov D	0.1178	0.2056	0.5315	Normal Distribution	
Distribution	D'Agostino Skewness	0.8309	2.576	0.4060	Normal Distribution	
Distribution	D'Agostino Kurtosis	0.1315	2.576	0.8954	Normal Distribution	
Distribution	D'Agostino-Pearson K2 Omnibus	0.7076	9.21	0.7020	Normal Distribution	
Distribution	Anderson-Darling A2 Normality	0.4262	3.878	0.3191	Normal Distribution	

Cell Density Summary											
C-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Negative Control	4	1.325E+6	1.153E+6	1.496E+6	1352000	1.184E+6	1.411E+6	5.384E+4	8.13%	0.0%
20		4	1.419E+6	1.292E+6	1.545E+6	1439000	1.315E+6	1.482E+6	3.978E+4	5.61%	-7.08%
40		4	1.365E+6	1.320E+6	1.410E+6	1373000	1.326E+6	1.389E+6	1.410E+4	2.07%	-3.06%
80		4	1.220E+6	1.108E+6	1.331E+6	1230000	1.125E+6	1.294E+6	3.508E+4	5.75%	7.95%
140		4	8.295E+5	7.254E+5	9.336E+5	805500	7.810E+5	9.260E+5	3.270E+4	7.88%	37.38%
180		4	6.445E+5	5.906E+5	6.984E+5	630000	6.230E+5	6.950E+5	1.693E+4	5.26%	51.35%

Cell Density Detail						
C-µg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	
0	Negative Control	1.297E+6	1.184E+6	1.411E+6	1.407E+6	
20		1.315E+6	1.480E+6	1.482E+6	1.397E+6	
40		1.382E+6	1.326E+6	1.389E+6	1.364E+6	
80		1.125E+6	1.236E+6	1.223E+6	1.294E+6	
140		8.080E+5	7.810E+5	9.260E+5	8.030E+5	
180		6.950E+5	6.280E+5	6.230E+5	6.320E+5	

CETIS Analytical Report

Report Date: 01 Mar-16 15:51 (p 2 of 2)
Test Code: SEL020416 | 20-2574-1811

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 08-9694-6006

Endpoint: Cell Density

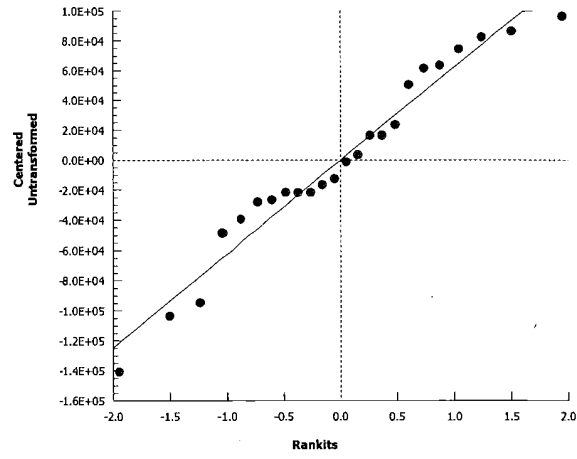
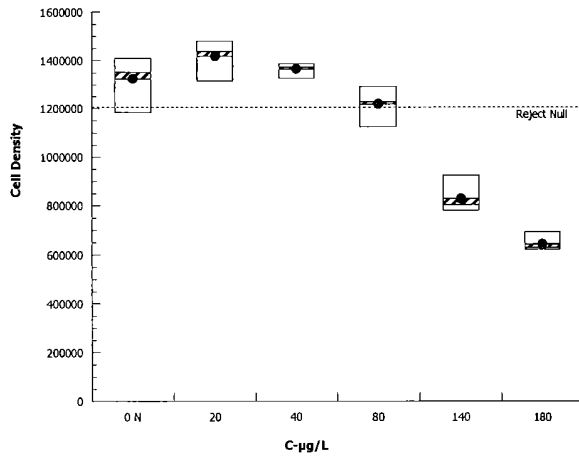
CETIS Version: CETISv1.8.7

Analyzed: 01 Mar-16 15:51

Analysis: Parametric-Control vs Treatments

Official Results: Yes

Graphics



Analyst: _____ QA: _____

CETIS Measurement Report

Report Date: 01 Mar-16 15:51 (p 1 of 2)

Test Code: SEL020416 | 20-2574-1811

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 20-9351-9588	Test Type: Cell Growth	Analyst:
Start Date: 04 Feb-16 11:30	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 08 Feb-16 11:40	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 4d 0h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 11-7087-0424	Code: SEL020416	Client: Internal Lab
Sample Date: 04 Feb-16 11:30	Material: Cadmium chloride	Project:
Receive Date:	Source: Reference Toxicant	
Sample Age: NA	Station: REF TOX	

Alkalinity (CaCO3)-mg/L

C-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	1	63			63	63	0	0	0.0%	0
20		1	70			70	70	0	0	0.0%	0
40		1	72			72	72	0	0	0.0%	0
80		1	73			73	73	0	0	0.0%	0
140		1	66			66	66	0	0	0.0%	0
180		1	63			63	63	0	0	0.0%	0
Overall		6	67.83			63	73				0 (0%)

Conductivity-µmhos

C-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	5	428	408.4	447.6	418	456	7.071	15.81	3.69%	0
20		5	422.6	402	443.2	412	452	7.407	16.56	3.92%	0
40		5	422.6	402	443.2	412	452	7.407	16.56	3.92%	0
80		5	403	397.1	408.9	399	411	2.121	4.743	1.18%	0
140		5	387.8	384.2	391.4	384	392	1.281	2.864	0.74%	0
180		5	378.8	368.9	388.7	371	390	3.569	7.981	2.11%	0
Overall		30	407.1			371	456				0 (0%)

Hardness (CaCO3)-mg/L

C-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	1	99			99	99	0	0	0.0%	0
20		1	93			93	93	0	0	0.0%	0
40		1	105			105	105	0	0	0.0%	0
80		1	109			109	109	0	0	0.0%	0
140		1	93			93	93	0	0	0.0%	0
180		1	87			87	87	0	0	0.0%	0
Overall		6	97.67			87	109				0 (0%)

pH-Units

C-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	5	7.54	7.398	7.682	7.4	7.7	0.05099	0.114	1.51%	0
20		5	7.84	7.632	8.048	7.7	8.1	0.07483	0.1673	2.13%	0
40		5	7.82	7.616	8.024	7.6	8	0.07348	0.1643	2.1%	0
80		5	7.84	7.652	8.028	7.6	8	0.06782	0.1517	1.93%	0
140		5	7.86	7.672	8.048	7.6	8	0.06782	0.1517	1.93%	0
180		5	7.84	7.673	8.007	7.6	7.9	0.06	0.1342	1.71%	0
Overall		30	7.79			7.4	8.1				0 (0%)

Temperature-°C

C-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contr	5	24.1	24.01	24.19	24	24.2	0.03156	0.07056	0.29%	0
20		5	24.1	24.01	24.19	24	24.2	0.03156	0.07056	0.29%	0
40		5	24.1	24.01	24.19	24	24.2	0.03156	0.07056	0.29%	0
80		5	24.1	24.01	24.19	24	24.2	0.03156	0.07056	0.29%	0
140		5	24.1	24.01	24.19	24	24.2	0.03156	0.07056	0.29%	0
180		5	24.1	24.01	24.19	24	24.2	0.03156	0.07056	0.29%	0
Overall		30	24.1			24	24.2				0 (0%)

CHAIN OF CUSTODY FORM



440-137200 Chain of Custody

R/A R R R R/A R R R A A R R

Sample Description	Sample Matrix	Sampling Date/Time	Container Type	# of Cont.	Preservative	Bottle #	MS/MSD	Total Recoverable Metals: Cu, Pb, Hg, B, Ba, Fe, Mn, Sb, As, Be, Cd, Cr, Ni, Se, Ag, Ti, Zn, Co, V, Hardness as CaCO3	TCCD (and all congeners)	BOD5 (20 degrees C)	Surfactants (MBAS)	Chl. F, SO4 Nitrate-N, Nitrite-N, NO3+NO2-N, Perchlorate	Turbidity, TDS	TSS	Ammonia-N (350.2)	Priority Pollutants-Pesticides+PCBs	SVOCs PP (625)	Total Recoverable Metals: Mercury (245.1)	Comments
Outfall 018	WM		500 mL Poly	3	HNO3	80	Yes	X											
	WM		1 L Glass Amber	2	None	110	No		X										
	WM		1 L Poly	1	None	115	No			X									
	WM		500 mL Poly	6	None	120	Yes												
	WM		500 mL Poly	9	None	125	Yes												
	WM	2/4/2018	500 mL Poly	1	None	150	No					X							48 hours Holding Time NO3 & NO2
	WM		500 mL Poly	3	H2SO4	180	Yes					X							48 hour holding time for turbidity
	WM		1 L Glass Amber	6	None	250	Yes					X							
	WM		1 L Glass Amber	9	None	175	Yes												
	WM		1 L Poly	1	None	185	No					X							
	WM		borecalicate vials	12	HNO3	915	Yes (low)											X	Sample receiving DO NOT OPEN BAG. Bag to be opened in Mercury Prep using clean procedures.
	WM		1 L Glass Amber	2	None	110	No		X										Hold
	WM		500 mL Poly	2	None	120	No				X								Hold
	WM		500 mL Poly	2	None	125	No					X							Hold
	WM		1 L Glass Amber	2	None	250	No						X						Hold
	WM		1 L Glass Amber	2	None	175	No										X		Hold

COC Page 2 of 3 and Page 3 of 3 are the composite samples for Outfall 018 for this storm event. These must be added to the same work order for COC Page 1 of 3 for Outfall 018 for the same event.

Legend: R-Routine, A-Annual, Q-Quarterly

Relinquished By: *[Signature]* Date/Time: 2/4/16 13:25 Company: JHA
 Relinquished By: *[Signature]* Date/Time: 2-7-16/13:55 Company: Watson Solutions
 Relinquished By: *[Signature]* Date/Time: 2/4/16 20:20 Company: THA

Received By: *[Signature]* Date/Time: 2-4-16/13:25
 Received By: *[Signature]* Date/Time: 2/4/16 13:55
 Received By: *[Signature]* Date/Time: 2/4/16 20:20

Turn-around time: (Check) 10 Day: 24 Hour: 72 Hour: 5 Day: Normal:
 Sample integrity: (Check) Intact: On Ice:
 Data Requirements: (Check) No Level IV: All Level IV:

#R 78 1.4/17 0.5/0.8 0.2/0.5
 0.6/0.9 0.8/1.1

CHAIN OF CUSTODY FORM

<p>Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108</p>		<p>Project: Boeing-SSFL NPDES Permit 2016 Annual Outfall [001, 002, 011, 018] Outfall 018 Comp</p>		<p style="text-align: center;">ANALYSIS REQUIRED</p> <p style="text-align: center;">R / A R R R A A A A A</p>										<p>Comments</p>																						
<p>Test America Contact: Debby Wilson 17461 Derian Ave Suite #100 Irvine CA 92614 Tel 949 261 1022 x228 Call 949 237 0693</p>		<p>Project Manager: Nancy Gardiner 619.265.7132, 858.337.4061 (cell)</p>		<p>Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)</p>		<p>Sample Description</p>		<p>Sample Matrix</p>		<p>Container Type</p>		<p>Preservative</p>		<p>Bottle #</p>		<p>MS/MSD</p>		<p>Total Dissolved Metals: Cu, Pb, Hg, Ba, Fe, Mn, Sb, As, Bi, Cd, Cr, Ni, Se, Ag, Ti, Zn, Co, V, Hardness as CaCO3</p>		<p>Cyanide</p>		<p>Gross Alpha (900.0), Gross Beta (900.0), Tritium (4-3) (906.0), Sr-90 (905.0), Total Radium 226 (904.0), Uranium (908.0), K-40, CS-137 (901.0 or 901.1)</p>		<p>Chronic Toxicity</p>		<p>1,4-Dioxane</p>		<p>Total Organic Carbon</p>		<p>Cr (VI), Total (218.6)</p>		<p>Asbestos (100.2)</p>		<p>Total Dissolved Metals: Mercury (245.1)</p>		<p>Filter and preserve w/in 24hrs of receipt at lab Sample receiving DO NOT OPEN BAG. Bag to be opened in Mercury Prep using clean procedures. Unfiltered and unpreserved analysis. Separate PAD onto another workorder. Only test if first or second rain events of the year</p>
<p>Outfall 018</p>		<p>Outfall018_20160204_Comp_F</p>		<p>2/4/2016</p>		<p>WM</p>		<p>1 L Poly</p>		<p>None</p>		<p>150</p>		<p>Yes</p>		<p>X</p>		<p>X</p>		<p>X</p>		<p>X</p>		<p>X</p>		<p>X</p>		<p>X</p>		<p>X</p>		<p>X</p>		<p>X</p>		
<p>Outfall 018</p>		<p>Outfall018_20160204_Comp</p>		<p>2/4/2016</p>		<p>WM</p>		<p>500 mL Poly</p>		<p>NaOH</p>		<p>220</p>		<p>Yes</p>		<p>X</p>		<p>X</p>		<p>X</p>		<p>X</p>		<p>X</p>		<p>X</p>		<p>X</p>		<p>X</p>		<p>X</p>		<p>X</p>		
<p>Outfall 018</p>		<p>Outfall018_20160204_Comp_Extra</p>		<p>2/4/2016</p>		<p>WM</p>		<p>40 mL VOA</p>		<p>HCl</p>		<p>240</p>		<p>Yes</p>		<p>X</p>		<p>X</p>		<p>X</p>		<p>X</p>		<p>X</p>		<p>X</p>		<p>X</p>		<p>X</p>		<p>X</p>		<p>X</p>		

COC Page 2 of 3 and Page 3 of 3 are the composite samples for Outfall 018 for this storm event. These must be added to the same work order for COC Page 1 of 3 for Outfall 018 for the same event.

Legend: R=Routine, A=Annual, Q=Quarterly

<p>Relinquished By: <i>[Signature]</i></p>	<p>Date/Time: 2/4/16 1325 JHA</p>	<p>Company: JHA</p>	<p>Received By: <i>[Signature]</i></p>	<p>Date/Time: 2-4-16 1325</p>	<p>Company: JHA</p>	<p>Turn-around time: (Check) 24 Hour: _____ 72 Hour: _____ 10 Day: <input checked="" type="checkbox"/> 48 Hour: _____ 5 Day: _____ Normal: _____</p>
<p>Relinquished By: <i>[Signature]</i></p>	<p>Date/Time: 2-4-16/1355</p>	<p>Company: Western Solutions</p>	<p>Received By: <i>[Signature]</i></p>	<p>Date/Time: 2/4/16 1355</p>	<p>Company: Western Solutions</p>	<p>Sample integrity: (Check) Intact: _____ On Ice: _____</p>
<p>Relinquished By: <i>[Signature]</i></p>	<p>Date/Time: 2/4/16 1540</p>	<p>Company: [Blank]</p>	<p>Received By: <i>[Signature]</i></p>	<p>Date/Time: 2/4/16 1540</p>	<p>Company: [Blank]</p>	<p>Data Requirements: (Check) No Level IV: _____ All Level IV: _____</p>

HR 28 1.4/1.7 0.5/0.8 0.2/0.5
 0.6/0.9 0.8/1.1 0.4/0.7

REC: ~~2/4/16~~ 2/4/16 20:20



TestAmerica Irvine
 17461 Berrian Ave
 Suite 100
 Irvine, CA 92614
 Phone: 949.261.1022 Fax:

Chain of Custody Record


070095

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING
 TestAmerica Laboratories, Inc.
 TAL-8210 (0719)

TA-St. Louis

Regulatory Program: DW RCRA NPDES Other:

Company Name:		COC No.:	
Address:		Date:	
City/State/Zip:		Carrier:	
Phone:		Sampler:	
Fax:		For Lab Use Only:	
Project Name:		Walk-in Client:	
Site:		Lab Sampling:	
P O #		Job / SDG No.:	
Client Contact		COCs	
Project Manager:		Date:	
Tel/Fax:		Carrier:	
Analysis Turnaround Time		Date:	
<input type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS		Date:	
TAT if different from Below _____		Date:	
<input type="checkbox"/> 2 weeks		Date:	
<input type="checkbox"/> 1 week		Date:	
<input type="checkbox"/> 2 days		Date:	
<input type="checkbox"/> 1 day		Date:	
Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	# of Cont.
			6
			1
Sample Identification			
440-137200-3			
WV -5			
Sample Specific Notes:			
440-137200 Chain of Custody			
			
Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)			
<input type="checkbox"/> Return to Client <input type="checkbox"/> Disposal by Lab <input type="checkbox"/> Archive for _____ Months			
Preservation Used: 1= Ice, 2= HCl, 3= H2SO4, 4=HNO3, 5=NaOH, 6= Other _____		Cooler Temp. (°C): Obs'd: _____	
Possible Hazard Identification:		Therm ID No.:	
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.		Company:	
<input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Unknown		Received by: <i>W. Baul</i>	
<input type="checkbox"/> Polson B		Date/Time: 2/12/16 17:00	
Special Instructions/QC Requirements & Comments:		Company: TAI	
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Date/Time: 2/12/16 16:00	
Relinquished by: <i>W. Baul</i>		Company: GEL	
Date/Time: _____		Date/Time: 2/12/16 0915	
Relinquished by: <i>W. Baul</i>		Company: TA STL	
Date/Time: _____		Date/Time: 02/13/16 0850	
Relinquished by: _____		Company: _____	
Date/Time: _____		Date/Time: _____	



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-137200-1

Login Number: 137200

List Source: TestAmerica Irvine

List Number: 1

Creator: Soderblom, Tim

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	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.	False	No sample date and/or time on COC, logged in per container labels.
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-137200-1

Login Number: 137200

List Number: 4

Creator: Pottruff, Reed W

List Source: TestAmerica Denver

List Creation: 02/11/16 05:29 PM

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	N/A	
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	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.	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 <math><6\text{mm}</math> (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-137200-1

Login Number: 137200
List Number: 2
Creator: Sadler, Jeremy

List Source: TestAmerica Sacramento
List Creation: 02/11/16 10:10 AM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	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	
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	

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-137200-1

Login Number: 137200

List Number: 3

Creator: Daniels, Brian J

List Source: TestAmerica St. Louis

List Creation: 02/11/16 02:40 PM

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	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 <math><6\text{mm}</math> (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-137200-1

Login Number: 137200

List Number: 5

Creator: Clarke, Jill C

List Source: TestAmerica St. Louis

List Creation: 02/15/16 02:38 PM

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	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	3.7
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 <math><6\text{mm}</math> (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	U-232 (30-110)
440-137200-3 MS	Outfall018_20160204_Comp	76.9
440-137200-3 MSD	Outfall018_20160204_Comp	73.4
LCS 160-237126/2-A	Lab Control Sample	92.2
MB 160-237126/1-A	Method Blank	91.8

Tracer/Carrier Legend

U-232 = Uranium-232

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16

Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-1

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

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (25-164)	TCDF (24-169)	PeCDD (25-181)	PeCDF1 (24-185)	PeCDF2 (21-178)	HxCDD1 (32-141)	HxCDD2 (28-130)	HxCDF1 (26-152)
440-137200-3	Outfall018_20160204_Comp	56	58	54	60	56	57	63	56
MB 320-100312/1-A	Method Blank	59	60	50	59	57	59	62	56

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (26-123)	HxCDF4 (29-147)	HxCDF3 (28-136)	HpCDD (23-140)	HpCDF1 (28-143)	HpCDF2 (26-138)	OCDD (17-157)
440-137200-3	Outfall018_20160204_Comp	58	57	60	60	60	59	58
MB 320-100312/1-A	Method Blank	57	56	59	60	59	56	57

Surrogate Legend

- TCDD = 13C-2,3,7,8-TCDD
- TCDF = 13C-2,3,7,8-TCDF
- PeCDD = 13C-1,2,3,7,8-PeCDD
- PeCDF1 = 13C-1,2,3,7,8-PeCDF
- PeCDF2 = 13C-2,3,4,7,8-PeCDF
- HxCDD1 = 13C-1,2,3,4,7,8-HxCDD
- HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
- HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
- HxCDF2 = 13C-1,2,3,6,7,8-HxCDF
- HxCDF4 = 13C-1,2,3,7,8,9-HxCDF
- HxCDF3 = 13C-2,3,4,6,7,8-HxCDF
- HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
- HpCDF1 = 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)

Lab Sample ID	Client Sample ID	TCDD (20-175)	TCDF (22-152)	PeCDD (21-227)	PeCDF1 (21-192)	PeCDF2 (13-328)	HxCDD1 (21-193)	HxCDD2 (25-163)	HxCDF1 (19-202)
LCS 320-100312/2-A	Lab Control Sample	68	69	61	69	69	67	76	67
LCS 320-100312/3-A	Lab Control Sample Dup	56	59	51	56	56	60	60	56

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (21-159)	HxCDF4 (17-205)	HxCDF3 (22-176)	HpCDD (26-166)	HpCDF1 (21-158)	HpCDF2 (20-186)	OCDD (13-199)
LCS 320-100312/2-A	Lab Control Sample	69	67	69	71	71	70	68
LCS 320-100312/3-A	Lab Control Sample Dup	57	56	57	61	59	59	58

Surrogate Legend

- TCDD = 13C-2,3,7,8-TCDD
- TCDF = 13C-2,3,7,8-TCDF
- PeCDD = 13C-1,2,3,7,8-PeCDD
- PeCDF1 = 13C-1,2,3,7,8-PeCDF
- PeCDF2 = 13C-2,3,4,7,8-PeCDF
- HxCDD1 = 13C-1,2,3,4,7,8-HxCDD
- HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
- HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
- HxCDF2 = 13C-1,2,3,6,7,8-HxCDF

TestAmerica Irvine

Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-1

HxCDF4 = 13C-1,2,3,7,8,9-HxCDF
HxCDF3 = 13C-2,3,4,6,7,8-HxCDF
HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF
HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
OCDD = 13C-OCDD

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DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-137200-3

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 28, 2016

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





TABLE OF CONTENTS

I. INTRODUCTION..... 1

II. Sample Management..... 2

IV. VARIOUS EPA METHODS —Radionuclides..... 6

 IV.1. Holding Times:..... 6

 IV.2. Calibration: 6

 IV.3. Quality Control Samples 6

 IV.3.1. Method Blanks 6

 IV.3.2. Laboratory Control Samples: 6

 IV.3.3. Laboratory Duplicates:..... 6

 IV.3.4. Matrix Spike/Matrix Spike Duplicate: 6

 IV.4. Sample Result Verification:..... 6

 IV.5. Field QC Samples: 7

 IV.5.1. Field Blanks and Equipment Rinsates: 7

 IV.5.2. Field Duplicates:..... 7

TABLES

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



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-137200-3

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall018_20160204_ Comp	440-137200-3	N/A	Water	2/4/2016 10:15:00 AM	E900, E903.0, E904.0, E905.0 E906.0



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-137200-3:

- The laboratories received the sample in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratories received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs.
- Several corrections to the COCs were not initialed or dated.
- According to the laboratories' sample receipt checklists, custody seals were intact.



TABLE 2 - DATA QUALIFIER REFERENCE

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



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	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.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) 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.
B	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.
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.
P	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.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



IV. VARIOUS EPA METHODS — RADIONUCLIDES

Elizabeth Wessling of MEC^X reviewed the SDG on March 25, 2016

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *EPA Methods 900.0, 903.0, 904.0, 905.0, and 906.0*, and the *National Functional Guidelines for Inorganic Data Review* (2014).

IV.1. HOLDING TIMES:

The tritium sample was analyzed within 180 days of collection. Remaining aliquots were prepared within the five-day analytical holding time for unpreserved samples.

IV.2. CALIBRATION:

The laboratory calibration information included the standard certificates and applicable preparation/dilutions logs for NIST-traceability.

The gross alpha, radium-226 and tritium detector efficiencies were less than 20%; therefore, the nondetected results for these analytes were qualified as estimated (UJ) in the sample. The remaining detector efficiencies were greater than 20%. Carrier/tracer recoveries were within the laboratory control limits of 40-110%. All calibration checks were acceptable.

IV.3. QUALITY CONTROL SAMPLES

IV.3.1. METHOD BLANKS

There were no analytes detected in the method blanks and no qualifications were required.

IV.3.2. LABORATORY CONTROL SAMPLES:

The recoveries were within laboratory-established control limits.

IV.3.3. LABORATORY DUPLICATES:

No laboratory duplicate analyses were performed on the sample in this SDG.

IV.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE:

A matrix spike (MS) was performed for the gross alpha, gross beta, Ra-226, Ra-228, Sr-90 and tritium analysis. MSD analyses were performed for gross alpha, gross beta, Ra-226, and Sr-90. Gross alpha was recovered below QC limits in the MS and MSD. The sample result for gross alpha was qualified as an estimated nondetect (UJ). All other recoveries were within the laboratory control limits. Recoveries and RPDs were within QC limits. Precision was evaluated for the Ra-228 analysis based upon the LCS/LCSD analysis.

IV.4. SAMPLE RESULT VERIFICATION:

An EPA Level IV review was performed for the sample in this data package. The sample results and MDCs reported on the sample result form were verified against the raw data and no calculation or transcription errors were noted. Reported nondetects are valid to the MDC.



IV.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:

IV.5.1. FIELD BLANKS AND EQUIPMENT RINSATES:

This SDG had no identified field blank or equipment rinsate samples.

IV.5.2. FIELD DUPLICATES:

There were no field duplicate samples identified for this SDG.

Validated Sample Result Forms: 440-137200-3

Analysis Method E900

Sample Name Outfall018_20160204_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/4/2016 10:15:00 AM Validation Level: 8

Lab Sample Name: 440-137200-3

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Gross Alpha Analytes	GROSSALPHA	-0.152	1.21	2.51	2.51	pCi/L	U	UJ	C, Q
Gross Beta Analytes	GROSSBETA	5.70	1.43	1.62	1.62	pCi/L			

Analysis Method E903.0

Sample Name Outfall018_20160204_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/4/2016 10:15:00 AM Validation Level: 8

Lab Sample Name: 440-137200-3

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-226	13982-63-3	0.0215	0.0423	0.0747	0.0747	pCi/L	U	UJ	C

Analysis Method E904.0

Sample Name Outfall018_20160204_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/4/2016 10:15:00 AM Validation Level: 8

Lab Sample Name: 440-137200-3

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-228	15262-20-1	0.217	0.260	0.427	0.427	pCi/L	UF	U	

Analysis Method E905.0

Sample Name Outfall018_20160204_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/4/2016 10:15:00 AM Validation Level: 8

Lab Sample Name: 440-137200-3

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Strontium-90	10098-97-2	0.205	0.273	0.453	0.453	pCi/L	U	U	

Analysis Method *E906.0*

Sample Name Outfall018_20160204_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/4/2016 10:15:00 AM **Validation Level:** 8

Lab Sample Name: 440-137200-3

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Tritium	10028-17-8	-28.4	188	349	349	pCi/L	U	UJ	C

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-137200-3

Client Project/Site: Boeing NPDES SSFL outfalls

For:

Haley & Aldrich, Inc.

5333 Mission Center Road

Suite 300

San Diego, California 92108

Attn: Nancy Gardiner



Authorized for release by:

3/16/2016 7:59:54 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

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

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

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

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



Urvashi Patel
Manager of Project Management
3/16/2016 7:59:54 PM



Table of Contents

Cover Page	1
Table of Contents	3
Sample Summary	4
Case Narrative	5
Client Sample Results	6
Method Summary	7
Lab Chronicle	8
QC Sample Results	9
QC Association Summary	15
Definitions/Glossary	16
Certification Summary	17
Chain of Custody	18
Receipt Checklists	21
Tracer Carrier Summary	24

Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-3

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-137200-3	Outfall018_20160204_Comp	Water	02/04/16 10:15	02/04/16 13:55

- 1
- 2
- 3
- 4
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- 14

Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-3

Job ID: 440-137200-3

Laboratory: TestAmerica Irvine

Narrative

Job Narrative 440-137200-3

Comments

No additional comments.

Receipt

The samples were received on 2/4/2016 1:55 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 2.1° C, 2.2° C and 2.7° C.

Receipt Exceptions

The following samples was received at the laboratory without a sample collection time documented on the chain of custody: Samples were logged in per container label.

sample 3 had no collection time on the coc but on the containers the time was 1015.

RAD

Method(s) 900.0: Gross Alpha/Beta Prep Batch 160-239456:

The matrix spike and matrix spike duplicate (MS/MSD) recoveries are outside the QC lower control limits. Sample matrix interferences are suspected because the associated laboratory control sample (LCS) recovery is within acceptance limits.

Outfall018_20160204_Comp (440-137200-3), (LCS 160-239456/2-A), (LCSB 160-239456/3-A), (MB 160-239456/1-A), (440-137200-P-3-S MS), (440-137200-P-3-U MSB), (440-137200-P-3-V MSB), (440-137200-P-3-T MSD), (440-137347-AJ-1-L), (440-137347-K-1-V MS), (440-137347-K-1-X MSB), (440-137347-K-1-Y MSB) and (440-137347-K-1-W MSD)

Method(s) 904.0: Radium-228 Prep Batch 160-236549:

The following sample was inadvertently not spiked with radium-228 resulting in a failing spike recovery and a failing RPD/RER (440-137200-P-3-F MSD; 3%). The batch precision is demonstrated by passing RPD/RER for samples 440-137347-K-1-L MS and 440-137347-K-1-M MSD. The data have been qualified and reported.

Outfall018_20160204_Comp (440-137200-3), Outfall018_20160204_Comp (440-137200-3[MS]), Outfall018_20160204_Comp (440-137200-3[MSD]), (LCS 160-236549/2-A) and (MB 160-236549/1-A)

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: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-3

Client Sample ID: Outfall018_20160204_Comp

Lab Sample ID: 440-137200-3

Date Collected: 02/04/16 10:15

Matrix: Water

Date Received: 02/04/16 13:55

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	-0.152	U	1.21	1.21	3.00	2.51	pCi/L	03/08/16 09:12	03/11/16 15:16	1
Gross Beta	5.70		1.31	1.43	4.00	1.62	pCi/L	03/08/16 09:12	03/11/16 15:16	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0215	U	0.0422	0.0423	1.00	0.0747	pCi/L	02/12/16 11:51	03/09/16 06:23	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	101		40 - 110					02/12/16 11:51	03/09/16 06:23	1

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.217	U F	0.259	0.260	1.00	0.427	pCi/L	02/15/16 09:19	03/01/16 12:29	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	101		40 - 110					02/15/16 09:19	03/01/16 12:29	1
Y Carrier	85.6		40 - 110					02/15/16 09:19	03/01/16 12:29	1

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.205	U	0.272	0.273	3.00	0.453	pCi/L	02/12/16 13:36	02/25/16 21:41	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	63.9		40 - 110					02/12/16 13:36	02/25/16 21:41	1
Y Carrier	88.6		40 - 110					02/12/16 13:36	02/25/16 21:41	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-28.4	U	188	188	500	349	pCi/L	02/23/16 14:08	02/26/16 19:49	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-3

Method	Method Description	Protocol	Laboratory
900.0	Gross Alpha and Gross Beta Radioactivity	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

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566



Lab Chronicle

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-3

Client Sample ID: Outfall018_20160204_Comp

Lab Sample ID: 440-137200-3

Date Collected: 02/04/16 10:15

Matrix: Water

Date Received: 02/04/16 13:55

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Evaporation			142 mL	1.0 g	239456	03/08/16 09:12	CMT	TAL SL
Total/NA	Analysis	900.0		1	142 mL		240131	03/11/16 15:16	MFM	TAL SL
Total/NA	Prep	PrecSep-21			1000.54 mL	1.0 g	236495	02/12/16 11:51	CMS	TAL SL
Total/NA	Analysis	903.0		1	1000.54 mL		239757	03/09/16 06:23	RTM	TAL SL
Total/NA	Prep	PrecSep_0			1000.54 mL	1.0 g	236549	02/15/16 09:19	CMS	TAL SL
Total/NA	Analysis	904.0		1	1000.54 mL		238559	03/01/16 12:29	RTM	TAL SL
Total/NA	Prep	PrecSep-7			1000.90 mL	1.0 g	236508	02/12/16 13:36	CMS	TAL SL
Total/NA	Analysis	905		1	1000.90 mL		238036	02/25/16 21:41	ALS	TAL SL
Total/NA	Prep	LSC_Dist_Susp			100.04 mL	1.0 g	237768	02/23/16 14:08	JDL	TAL SL
Total/NA	Analysis	906.0		1	100.04 mL		238467	02/26/16 19:49	ALD	TAL SL

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-3

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Lab Sample ID: MB 160-239456/1-A
Matrix: Water
Analysis Batch: 240131

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 239456

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Gross Alpha	0.4899	U	0.477	0.480	3.00	0.738	pCi/L	03/08/16 09:12	03/11/16 15:15	1
Gross Beta	-0.1616	U	0.611	0.611	4.00	1.09	pCi/L	03/08/16 09:12	03/11/16 15:15	1

Lab Sample ID: LCS 160-239456/2-A
Matrix: Water
Analysis Batch: 240131

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 239456

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec.
				Uncert. (2σ+/-)					Limits
Gross Alpha	50.0	50.40		7.21	3.00	1.40	pCi/L	101	73 - 133

Lab Sample ID: LCSB 160-239456/3-A
Matrix: Water
Analysis Batch: 240131

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 239456

Analyte	Spike Added	LCSB Result	LCSB Qual	Total	RL	MDC	Unit	%Rec	%Rec.
				Uncert. (2σ+/-)					Limits
Gross Beta	93.2	97.00		10.2	4.00	1.06	pCi/L	104	75 - 125

Lab Sample ID: 440-137200-3 MS
Matrix: Water
Analysis Batch: 240131

Client Sample ID: Outfall018_20160204_Comp
Prep Type: Total/NA
Prep Batch: 239456

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total	RL	MDC	Unit	%Rec	%Rec.
						Uncert. (2σ+/-)					Limits
Gross Alpha	-0.152	U	71.9	38.50	F1	6.73	3.00	2.73	pCi/L	54	60 - 140

Lab Sample ID: 440-137200-3 MSBT
Matrix: Water
Analysis Batch: 240131

Client Sample ID: Outfall018_20160204_Comp
Prep Type: Total/NA
Prep Batch: 239456

Analyte	Sample Result	Sample Qual	Spike Added	MSBT Result	MSBT Qual	Total	RL	MDC	Unit	%Rec	%Rec.
						Uncert. (2σ+/-)					Limits
Gross Beta	5.70		134	143.3		15.1	4.00	1.43	pCi/L	103	60 - 140

Lab Sample ID: 440-137200-3 MSBTD
Matrix: Water
Analysis Batch: 240131

Client Sample ID: Outfall018_20160204_Comp
Prep Type: Total/NA
Prep Batch: 239456

Analyte	Sample Result	Sample Qual	Spike Added	MSBTD Result	MSBTD Qual	Total	RL	MDC	Unit	%Rec	%Rec.	RER	
						Uncert. (2σ+/-)					Limits	RER	Limit
Gross Beta	5.70		135	142.7		15.1	4.00	1.61	pCi/L	101	60 - 140	0.02	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-3

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity (Continued)

Lab Sample ID: 440-137200-3 MSD
Matrix: Water
Analysis Batch: 240131

Client Sample ID: Outfall018_20160204_Comp
Prep Type: Total/NA
Prep Batch: 239456

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		RER
											RER	Limit	
Gross Alpha	-0.152	U	72.4	34.14	F1	6.34	3.00	3.01	pCi/L	47	60 - 140	0.33	1

Lab Sample ID: 440-137347-K-1-V MS
Matrix: Water
Analysis Batch: 240131

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 239456

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		RER
											RER	Limit	
Gross Alpha	0.589	U	69.4	29.15	F1	5.74	3.00	3.37	pCi/L	42	60 - 140		

Lab Sample ID: 440-137347-K-1-W MSD
Matrix: Water
Analysis Batch: 240131

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 239456

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		RER
											RER	Limit	
Gross Alpha	0.589	U	69.4	34.47	F1	6.41	3.00	3.51	pCi/L	50	60 - 140	0.44	1

Lab Sample ID: 440-137347-K-1-X MSBT
Matrix: Water
Analysis Batch: 240131

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 239456

Analyte	Sample Result	Sample Qual	Spike Added	MSBT Result	MSBT Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		RER
											RER	Limit	
Gross Beta	3.34		129	130.3		13.8	4.00	1.45	pCi/L	98	60 - 140		

Lab Sample ID: 440-137347-K-1-Y MSBTD
Matrix: Water
Analysis Batch: 240131

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 239456

Analyte	Sample Result	Sample Qual	Spike Added	MSBTD Result	MSBTD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		RER
											RER	Limit	
Gross Beta	3.34		129	130.1		13.8	4.00	1.49	pCi/L	98	60 - 140	0.01	1

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-236495/1-A
Matrix: Water
Analysis Batch: 239757

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 236495

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Carrier	MB %Yield	MB Qualifier	Limits		Prepared	Analyzed	Dil Fac			
Ba Carrier	107		40 - 110		02/12/16 11:51	03/09/16 06:22	1			

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-3

Method: 903.0 - Radium-226 (GFPC) (Continued)

Lab Sample ID: LCS 160-236495/2-A
Matrix: Water
Analysis Batch: 239757

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 236495

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
Radium-226	11.2	10.86		1.06	1.00	0.0647	pCi/L	97	68 - 137	
Carrier	LCS %Yield	LCS Qualifier	Limits							
Ba Carrier	106		40 - 110							

Lab Sample ID: 440-137200-3 MS
Matrix: Water
Analysis Batch: 239757

Client Sample ID: Outfall018_20160204_Comp
Prep Type: Total/NA
Prep Batch: 236495

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226	0.0215	U	11.2	13.05		1.27	1.00	0.0774	pCi/L	117	75 - 138
Carrier	MS %Yield	MS Qualifier	Limits								
Ba Carrier	103		40 - 110								

Lab Sample ID: 440-137200-3 MSD
Matrix: Water
Analysis Batch: 239757

Client Sample ID: Outfall018_20160204_Comp
Prep Type: Total/NA
Prep Batch: 236495

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226	0.0215	U	11.2	12.29		1.20	1.00	0.0691	pCi/L	110	75 - 138	0.31	1
Carrier	MSD %Yield	MSD Qualifier	Limits										
Ba Carrier	98.6		40 - 110										

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-236549/1-A
Matrix: Water
Analysis Batch: 238559

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 236549

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.2184	U	0.221	0.222	1.00	0.360	pCi/L	02/15/16 09:19	03/01/16 12:29	1
Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac				
Ba Carrier	107		40 - 110	02/15/16 09:19	03/01/16 12:29	1				
Y Carrier	86.7		40 - 110	02/15/16 09:19	03/01/16 12:29	1				

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-3

Method: 904.0 - Radium-228 (GFPC) (Continued)

Lab Sample ID: LCS 160-236549/2-A
Matrix: Water
Analysis Batch: 238559

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 236549

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	9.33	9.588		1.09	1.00	0.365	pCi/L	103	56 - 140
LCS LCS									
Carrier	%Yield	Qualifier	Limits						
Ba Carrier	106		40 - 110						
Y Carrier	87.5		40 - 110						

Lab Sample ID: 440-137200-3 MS
Matrix: Water
Analysis Batch: 238559

Client Sample ID: Outfall018_20160204_Comp
Prep Type: Total/NA
Prep Batch: 236549

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	0.217	U F	9.32	8.901		1.03	1.00	0.375	pCi/L	95	45 - 150
MS MS											
Carrier	%Yield	Qualifier	Limits								
Ba Carrier	103		40 - 110								
Y Carrier	90.5		40 - 110								

Lab Sample ID: 440-137200-3 MSD
Matrix: Water
Analysis Batch: 238559

Client Sample ID: Outfall018_20160204_Comp
Prep Type: Total/NA
Prep Batch: 236549

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228	0.217	U F	9.32	0.2894	U F1 F	0.250	1.00	0.399	pCi/L	3	45 - 150	6.70	1
MSD MSD													
Carrier	%Yield	Qualifier	Limits										
Ba Carrier	98.6		40 - 110										
Y Carrier	87.5		40 - 110										

Method: 905 - Strontium-90 (GFPC)

Lab Sample ID: MB 160-236508/1-A
Matrix: Water
Analysis Batch: 238036

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 236508

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac			
Strontium-90	-0.04416	U	0.158	0.158	3.00	0.289	pCi/L	02/12/16 13:36	02/25/16 21:40	1			
MB MB													
Carrier	%Yield	Qualifier	Limits								Prepared	Analyzed	Dil Fac
Sr Carrier	94.6		40 - 110								02/12/16 13:36	02/25/16 21:40	1
Y Carrier	92.3		40 - 110								02/12/16 13:36	02/25/16 21:40	1

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QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-3

Method: 905 - Strontium-90 (GFPC) (Continued)

Lab Sample ID: LCS 160-236508/2-A
Matrix: Water
Analysis Batch: 238036

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 236508

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Strontium-90	8.71	8.927		0.925	3.00	0.332	pCi/L	103	75 - 125
Carrier									
	%Yield	LCS Qualifier	Limits						
Sr Carrier	86.8		40 - 110						
Y Carrier	92.7		40 - 110						

Lab Sample ID: 440-137200-3 MS
Matrix: Water
Analysis Batch: 238036

Client Sample ID: Outfall018_20160204_Comp
Prep Type: Total/NA
Prep Batch: 236508

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Strontium-90	0.205	U	8.70	9.066		0.949	3.00	0.305	pCi/L	104	19 - 150
Carrier											
	%Yield	MS Qualifier	Limits								
Sr Carrier	80.6		40 - 110								
Y Carrier	92.0		40 - 110								

Lab Sample ID: 440-137200-3 MSD
Matrix: Water
Analysis Batch: 238036

Client Sample ID: Outfall018_20160204_Comp
Prep Type: Total/NA
Prep Batch: 236508

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	Limit
Strontium-90	0.205	U	8.70	8.958		0.947	3.00	0.353	pCi/L	103	19 - 150	0.06	1
Carrier													
	%Yield	MSD Qualifier	Limits										
Sr Carrier	80.1		40 - 110										
Y Carrier	92.0		40 - 110										

Method: 906.0 - Tritium, Total (LSC)

Lab Sample ID: MB 160-237768/1-A
Matrix: Water
Analysis Batch: 238222

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 237768

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-18.02	U	254	254	500	474	pCi/L	02/23/16 14:08	02/25/16 14:47	1

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-3

Method: 906.0 - Tritium, Total (LSC) (Continued)

Lab Sample ID: LCS 160-237768/2-A
Matrix: Water
Analysis Batch: 238222

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 237768

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	4680	4365		701	500	471	pCi/L	93	74 - 114

Lab Sample ID: 440-137200-3 MS
Matrix: Water
Analysis Batch: 238222

Client Sample ID: Outfall018_20160204_Comp
Prep Type: Total/NA
Prep Batch: 237768

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	-28.4	U	4680	4275		702	500	488	pCi/L	91	67 - 130

Lab Sample ID: 440-137200-3 MSD
Matrix: Water
Analysis Batch: 238222

Client Sample ID: Outfall018_20160204_Comp
Prep Type: Total/NA
Prep Batch: 237768

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Tritium	-28.4	U	4680	4410		713	500	485	pCi/L	94	67 - 130	0.1	1

Lab Sample ID: 440-137347-M-1-A MS
Matrix: Water
Analysis Batch: 238222

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 237768

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium			4680	3941		656	500	461	pCi/L	84	67 - 130

Lab Sample ID: 440-137347-M-1-B MSD
Matrix: Water
Analysis Batch: 238222

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 237768

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Tritium			4680	4140		680	500	471	pCi/L	88	67 - 130	0.15	1

QC Association Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-3

Rad

Prep Batch: 236495

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137200-3	Outfall018_20160204_Comp	Total/NA	Water	PrecSep-21	
440-137200-3 MS	Outfall018_20160204_Comp	Total/NA	Water	PrecSep-21	
440-137200-3 MSD	Outfall018_20160204_Comp	Total/NA	Water	PrecSep-21	
LCS 160-236495/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
MB 160-236495/1-A	Method Blank	Total/NA	Water	PrecSep-21	

Prep Batch: 236508

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137200-3	Outfall018_20160204_Comp	Total/NA	Water	PrecSep-7	
440-137200-3 MS	Outfall018_20160204_Comp	Total/NA	Water	PrecSep-7	
440-137200-3 MSD	Outfall018_20160204_Comp	Total/NA	Water	PrecSep-7	
LCS 160-236508/2-A	Lab Control Sample	Total/NA	Water	PrecSep-7	
MB 160-236508/1-A	Method Blank	Total/NA	Water	PrecSep-7	

Prep Batch: 236549

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137200-3	Outfall018_20160204_Comp	Total/NA	Water	PrecSep_0	
440-137200-3 MS	Outfall018_20160204_Comp	Total/NA	Water	PrecSep_0	
440-137200-3 MSD	Outfall018_20160204_Comp	Total/NA	Water	PrecSep_0	
LCS 160-236549/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
MB 160-236549/1-A	Method Blank	Total/NA	Water	PrecSep_0	

Prep Batch: 237768

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137200-3	Outfall018_20160204_Comp	Total/NA	Water	LSC_Dist_Susp	
440-137200-3 MS	Outfall018_20160204_Comp	Total/NA	Water	LSC_Dist_Susp	
440-137200-3 MSD	Outfall018_20160204_Comp	Total/NA	Water	LSC_Dist_Susp	
440-137347-M-1-A MS	Matrix Spike	Total/NA	Water	LSC_Dist_Susp	
440-137347-M-1-B MSD	Matrix Spike Duplicate	Total/NA	Water	LSC_Dist_Susp	
LCS 160-237768/2-A	Lab Control Sample	Total/NA	Water	LSC_Dist_Susp	
MB 160-237768/1-A	Method Blank	Total/NA	Water	LSC_Dist_Susp	

Prep Batch: 239456

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-137200-3	Outfall018_20160204_Comp	Total/NA	Water	Evaporation	
440-137200-3 MS	Outfall018_20160204_Comp	Total/NA	Water	Evaporation	
440-137200-3 MSBT	Outfall018_20160204_Comp	Total/NA	Water	Evaporation	
440-137200-3 MSBTD	Outfall018_20160204_Comp	Total/NA	Water	Evaporation	
440-137200-3 MSD	Outfall018_20160204_Comp	Total/NA	Water	Evaporation	
440-137347-K-1-V MS	Matrix Spike	Total/NA	Water	Evaporation	
440-137347-K-1-W MSD	Matrix Spike Duplicate	Total/NA	Water	Evaporation	
440-137347-K-1-X MSBT	Matrix Spike	Total/NA	Water	Evaporation	
440-137347-K-1-Y MSBTD	Matrix Spike Duplicate	Total/NA	Water	Evaporation	
LCS 160-239456/2-A	Lab Control Sample	Total/NA	Water	Evaporation	
LCSB 160-239456/3-A	Lab Control Sample	Total/NA	Water	Evaporation	
MB 160-239456/1-A	Method Blank	Total/NA	Water	Evaporation	

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-3

Qualifiers

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.
F	MS/MSD Recovery and/or RPD exceeds the control limits
F1	MS and/or MSD Recovery is outside acceptance limits.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
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
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)

Certification Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-3

Laboratory: TestAmerica Irvine

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

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-16
Arizona	State Program	9	AZ0671	10-13-16
California	LA Cty Sanitation Districts	9	10256	01-31-17 *
California	State Program	9	CA ELAP 2706	06-30-16
Guam	State Program	9	Cert. No. 12.002r	01-23-17
Hawaii	State Program	9	N/A	01-29-17
Kansas	NELAP Secondary AB	7	E-10420	07-31-16
Nevada	State Program	9	CA015312007A	07-31-16
New Mexico	State Program	6	N/A	01-29-17
Northern Mariana Islands	State Program	9	MP0002	01-29-16 *
Oregon	NELAP	10	4005	01-29-17
USDA	Federal		P330-09-00080	07-08-18
Washington	State Program	10	900	09-03-16

Laboratory: TestAmerica St. Louis

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

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	MO00054	06-30-16
California	ELAP	9	2886	03-31-16 *
Connecticut	State Program	1	PH-0241	03-31-17
Florida	NELAP	4	E87689	06-30-16
Illinois	NELAP	5	003757	11-30-16
Iowa	State Program	7	373	12-01-16
Kansas	NELAP	7	E-10236	05-31-16
Kentucky (DW)	State Program	4	90125	12-31-16
L-A-B	DoD ELAP		L2305	04-10-16 *
Louisiana	NELAP	6	04080	06-30-16
Louisiana (DW)	NELAP	6	LA160008	12-31-16
Maryland	State Program	3	310	09-30-16
Missouri	State Program	7	780	06-30-16
Nevada	State Program	9	MO000542016-1	07-31-16
New Jersey	NELAP	2	MO002	06-30-16
New York	NELAP	2	11616	03-31-16 *
North Dakota	State Program	8	R207	06-30-16
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-16
Pennsylvania	NELAP	3	68-00540	02-28-17 *
South Carolina	State Program	4	85002001	06-30-16
Texas	NELAP	6	T104704193-15-9	07-31-16
USDA	Federal		P330-07-00122	01-09-17
Utah	NELAP	8	MO000542015-7	07-31-16
Virginia	NELAP	3	460230	06-14-16
Washington	State Program	10	C592	08-30-16
West Virginia DEP	State Program	3	381	08-31-16

* Certification renewal pending - certification considered valid.

CHAIN OF CUSTODY FORM



440-137200 Chain of Custody

R/A R R R R/A R R R A A R R R

Sample Description	Sample ID	Sampling Date/Time	Sample Matrix	Container Type	# of Cont.	Preservative	Bottle #	MS/MSD	Total Recoverable Metals: Cu, Pb, Hg, B, Ba, Fe, Mn, Sb, As, Be, Cd, Cr, Ni, Se, Ag, Ti, Zn, Co, V, Hardness as CaCO3	TCCD (and all congeners)	BOD5 (20 degrees C)	Surfactants (MBAS)	Ch, F, SO4, Nitrate-N, Nitrite-N, NO3+NO2-N, Perchlorate	Turbidity, TDS	TSS	Ammonia-N (350.2)	Priority Pollutants-Pesticides+PCBs	SVOCs PP (625)	Total Recoverable Metals: Mercury (245.1)	Comments
Outfall 018			WM	500 mL Poly	3	HNO3	80	Yes	X											
			WM	1 L Glass Amber	2	None	110	No		X										
			WM	1 L Poly	1	None	115	No			X									
			WM	500 mL Poly	6	None	120	Yes												
			WM	500 mL Poly	9	None	125	Yes												
			WM	500 mL Poly	1	None	150	No						X						48 hours Holding Time NO3 & NO2
			WM	500 mL Poly	3	H2SO4	180	Yes						X						48 hour holding time for turbidity
			WM	1 L Glass Amber	6	None	250	Yes						X						
			WM	1 L Glass Amber	9	None	175	Yes												
			WM	1 L Poly	1	None	185	No						X						
			WM	borecalcitate vials	12	HNO3	915	Yes (low)											X	Sample receiving DO NOT OPEN BAG. Bag to be opened in Mercury Prep using clean procedures.
			WM	1 L Glass Amber	2	None	110	No		X										Hold
			WM	500 mL Poly	2	None	120	No												Hold
			WM	500 mL Poly	2	None	125	No						X						Hold
			WM	1 L Glass Amber	2	None	250	No										X		Hold
			WM	1 L Glass Amber	2	None	175	No											X	Hold

COC Page 2 of 3 and Page 3 of 3 are the composite samples for Outfall 018 for this storm event. These must be added to the same work order for COC Page 1 of 3 for Outfall 018 for the same event.

Legend: R-Routine, A-Annual, Q-Quarterly

Relinquished By: *[Signature]* Date/Time: 2/4/16 13:25 Company: JHA
 Relinquished By: *[Signature]* Date/Time: 2-7-16/13:55 Company: Watson Solutions
 Relinquished By: *[Signature]* Date/Time: 2/4/16 20:20 Company: TAA

Received By: *[Signature]* Date/Time: 2-4-16/13:25
 Received By: *[Signature]* Date/Time: 2/4/16 13:55
 Received By: *[Signature]* Date/Time: 2/4/16 20:20

Turn-around time: (Check) 10 Day: 24 Hour: 72 Hour: 5 Day: Normal:
 Sample integrity: (Check) Intact: On Ice:
 Data Requirements: (Check) No Level IV: All Level IV:

FR 78 1.4/17 0.5/0.8 0.2/0.5
 0.6/0.9 0.8/1.1

CHAIN OF CUSTODY FORM

Client Name/Address: Halley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108		Project: Boeing-SSFL NPDES Permit 2016 Annual Outfall [001, 002, 011, 018] Outfall 018 Comp		R/A R R R A A A A A ANALYSIS REQUIRED					
Test America Contact: Debby Wilson 17461 Derian Ave Suite #100 Irvine CA 92614 Tel 949 261 1022 x228 Call 949 237 9693		Project Manager: Nancy Gardiner 619.265.7132, 858.337.4061 (cell)		Total Dissolved Metals: Mercury (245.1)					
Sampler: <i>Cornelius Johnson</i> <i>Dan Smith</i>		Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)		Asbestos (100.2)					
Sample Description	Sample I.D.	Sample Matrix	Container Type	# of Cont.	Preservative	Bottle #	MS/MSD	Yes	Comments
Outfall 018	Outfall018_20160204_Comp_F	WM	1 L Poly	3	None	190	Yes		Filter and preserve w/in 24hrs of receipt at lab
		WM	borosilicate vials	12	None	320	Yes		Sample receiving DO NOT OPEN BAG. Bag to be opened in Mercury Prep using clean procedures.
		WM	500 mL Poly	3	NaOH	220	Yes		Unfiltered and unpreserved analysis. Separate PAD onto another workorder.
		WM	2.5 Gal Cube	3	None	225	Yes		Only test if first or second rain events of the year
		WM	1 L Glass Amber	3	None	230	Yes		
		WM	1 Gal Cube	6	None	235	No		
	Outfall018_20160204_Comp	WM	40 mL VOA	9	HCl	240	Yes		
		WM	1 L Glass Amber	1	HCl	245	No		
		WM	1 L Glass Amber	2	None	255	No		
		WM	500 mL Poly	3	None	260	Yes		
		WM	1 L Poly	1	None	271	No		
		WM	40 mL VOA	3	HCl	240	No		
	Outfall018_20160204_Comp_Extra	WM	1 L Glass Amber	2	None	255	No		

COC Page 2 of 3 and Page 3 of 3 are the composite samples for Outfall 018 for this storm event.

These must be added to the same work order for COC Page 1 of 3 for Outfall 018 for the same event.

Relinquished By: <i>[Signature]</i>	Date/Time: 2/4/16 1325 JHA	Company: JHA	Received By: <i>Bill Clarke</i>	Date/Time: 2-4-16/1325	Company: [Blank]	Turn-around time: (Check) 24 Hour: _____ 72 Hour: _____ 48 Hour: _____ 5 Day: _____ 10 Day: _____
Relinquished By: <i>Bill Clarke</i>	Date/Time: 2-4-16/1355	Company: Western Solutions	Received By: <i>[Signature]</i>	Date/Time: 2/4/16 1355	Company: [Blank]	Sample integrity: (Check) Intact: _____ On Ice: _____
Relinquished By: <i>[Signature]</i>	Date/Time: 2/4/16 1540	Company: [Blank]	Received By: <i>[Signature]</i>	Date/Time: 2/4/16 1540	Company: [Blank]	Data Requirements: (Check) No Level IV: _____ All Level IV: _____

HR 28 1.4/1.7 0.5/0.8 0.2/0.5
 0.6/0.9 0.8/1.1 0.4/0.7
 2/4/16 2020
 Relinquished By: *[Signature]*
 REC: ~~[Signature]~~ 2/4/16 20:20

CHAIN OF CUSTODY FORM



440-137200 Chain of Custody



440-137200 Chain of Custody

Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108 Test America Contact: Debby Wilson 17461 Derian Ave Suite #100 Irvine CA 92614 Tel 949 261 1022 x228 Cell 949 237 0603		Project: Boeing-SSFL NPDES Permit 2016 Annual Outfall 001, 002, 011, 018 Outfall 002 Grab		Project Manager: Nancy Gardiner 619.285.7132, 858.337.4061 (cell)		Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)		Meter serial # EDEP164X 1129AC8760									
Sampler: John Parkes Corneilina Chisom		Sample I.D. Outfall002_20160204_Grab		Sampling Date/Time 2/4/2016		Sample Matrix WM		Container Type 125mL Sterile Poly		# of Cont. 1		Preservative None		Bottle # 5		MS/MSD No	
Outfall 002		2/4/2016		2/4/2016		WM		1 L Glass Amber		2		HCl		15		No	
2/4/2016		2/4/2016		2/4/2016		WM		40 mL VOA		3		HCl		45		No	
2/4/2016		2/4/2016		2/4/2016		WM		40 mL VOA		9		None		55		Yes	
2/4/2016		2/4/2016		2/4/2016		WM		40 mL VOA		9		HCl		60		Yes	
2/4/2016		2/4/2016		2/4/2016		WM		1 L Glass Amber		6		None		65		Yes	
2/4/2016		2/4/2016		2/4/2016		WM		1 L Poly		1		None		70		No	
2/4/2016		2/4/2016		2/4/2016		WM		500 mL Poly		1		None		75		No	
2/4/2016		2/4/2016		2/4/2016		WM		1 L Glass Amber		2		HCl		15		No	
2/4/2016		2/4/2016		2/4/2016		WM		40 mL VOA		3		HCl		45		No	
2/4/2016		2/4/2016		2/4/2016		WM		40 mL VOA		3		None		55		No	
2/4/2016		2/4/2016		2/4/2016		WM		500 mL Poly		1		None		75		No	
2/4/2016		2/4/2016		2/4/2016		WQ		40 mL VOA		2		HCl		45		No	
2/4/2016		2/4/2016		2/4/2016		WQ		40 mL VOA		2		None		55		No	

These Samples at the Grab Portion of Outfall 002 for this storm event. Composite samples will follow and are to be added to this work order.

Legend: R=Routine, A=Annual, Q=Quartry

Relinquished By: <i>John Parkes</i> Date/Time: 2/4/16 9:31 Company: SHAWAN INC	Received By: <i>Bill Clarke</i> Date/Time: 2-4-16/0931
Relinquished By: <i>Bill Clarke</i> Date/Time: 2-4-16/1109 Company: Weston Solutions	Received By: <i>John Parkes</i> Date/Time: 2/4/16 1109
Relinquished By: <i>John Parkes</i> Date/Time: 2-4-16 1355 Company: FAI	Received By: <i>John Parkes</i> Date/Time: 2-4-16 1209

Turn-around time: (Check)
 24 Hour: _____ 72 Hour: _____ 10 Day: _____
 48 Hour: _____ 5 Day: _____ Normal: _____

Sample Integrity: (Check)
 Intact: _____ On Ice: _____

Data Requirements: (Check)
 No Level IV: _____ All Level IV: _____

2.4/2.7 1.8/2.1 1.9/2.2 1R-78
 2/4/16 1355
 2/4/16 1209
 2/4/16 1058

71-17222



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-137200-3

Login Number: 137200

List Source: TestAmerica Irvine

List Number: 1

Creator: Soderblom, Tim

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	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.	False	No sample date and/or time on COC, logged in per container labels.
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-137200-3

Login Number: 137200

List Number: 3

Creator: Daniels, Brian J

List Source: TestAmerica St. Louis

List Creation: 02/11/16 02:40 PM

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	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 <math><6\text{mm}</math> (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-137200-3

Login Number: 137200

List Number: 5

Creator: Clarke, Jill C

List Source: TestAmerica St. Louis

List Creation: 02/15/16 02:38 PM

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	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	3.7
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 <math><6\text{mm}</math> (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-137200-3

Method: 903.0 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (40-110)
440-137200-3	Outfall018_20160204_Comp	101
440-137200-3 MS	Outfall018_20160204_Comp	103
440-137200-3 MSD	Outfall018_20160204_Comp	98.6
LCS 160-236495/2-A	Lab Control Sample	106
MB 160-236495/1-A	Method Blank	107

Tracer/Carrier Legend

Ba = Ba Carrier

Method: 904.0 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (40-110)	Y (40-110)
440-137200-3	Outfall018_20160204_Comp	101	85.6
440-137200-3 MS	Outfall018_20160204_Comp	103	90.5
440-137200-3 MSD	Outfall018_20160204_Comp	98.6	87.5
LCS 160-236549/2-A	Lab Control Sample	106	87.5
MB 160-236549/1-A	Method Blank	107	86.7

Tracer/Carrier Legend

Ba = Ba Carrier

Y = Y Carrier

Method: 905 - Strontium-90 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Sr (C) (40-110)	Y (40-110)
440-137200-3	Outfall018_20160204_Comp	63.9	88.6
440-137200-3 MS	Outfall018_20160204_Comp	80.6	92.0
440-137200-3 MSD	Outfall018_20160204_Comp	80.1	92.0
LCS 160-236508/2-A	Lab Control Sample	86.8	92.7
MB 160-236508/1-A	Method Blank	94.6	92.3

Tracer/Carrier Legend

Sr (C) = Sr Carrier

Y = Y Carrier

DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-140204-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

April 20, 2016

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





TABLE OF CONTENTS

- I. INTRODUCTION..... 1
- II. Sample Management..... 2
- IV. EPA METHOD 1613B — Dioxin/Furans..... 6
 - IV.1. Holding Times 6
 - IV.2. Instrument Performance 6
 - IV.2.1. GC Column Performance 6
 - IV.2.2. Mass Spectrometer Performance..... 6
 - IV.3. Calibration..... 6
 - IV.4. Quality Control Samples 6
 - IV.4.1. Method Blanks 6
 - IV.4.2. Laboratory Control Samples 7
 - IV.5. Field QC Samples..... 7
 - IV.5.1. Field Blanks and Equipment Blanks 7
 - IV.5.2. Field Duplicates..... 7
 - IV.6. Internal Standards Performance..... 7
 - IV.7. Compound Identification 7
 - IV.8. Compound Quantification and Reported Detection Limits 7
- V. Method Analyses – 608 Pesticides and PCBs..... 8
 - V.1. Holding Times 8
 - V.2. Calibration..... 8
 - V.3. Quality Control Samples 8
 - V.3.1. Method Blanks 8
 - V.3.2. Laboratory Control Samples 8
 - V.3.3. Surrogate Recovery..... 8
 - V.3.4. Matrix Spike/Matrix Spike Duplicate 8
 - V.4. Field QC Samples..... 9



V.4.1. Field Blanks and Equipment Blanks 9

V.4.2. Field Duplicates..... 9

V.5. Compound Identification 9

V.6. Compound Quantification and Reported Detection Limits 9

VI. EPA METHODS 525.2— Semivolatile Organic Compounds (SVOCs)..... 9

VI.1. Holding Times 9

VI.2. GC/MS Tuning and Calibration 9

VI.3. Quality Control Samples 9

VI.3.1. Method Blanks 9

VI.3.2. Laboratory Control Samples 10

VI.3.3. Surrogate Recovery..... 10

VI.3.4. Matrix Spike/Matrix Spike Duplicate 10

VI.4. Field QC Samples..... 10

VI.4.1. Field Blanks and Equipment Blanks 10

VI.4.2. Field Duplicates 10

VI.5. Internal Standards Performance..... 10

VI.6. Compound Identification 10

VI.7. Compound Quantification and Reported Detection Limits 10

VI.8. Tentatively Identified Compounds (TICs) 10

VI.9. System Performance..... 10

VII. VARIOUS METHODS — GENERAL CHEMISTRY 11

VII.1. Holding Times 11

VII.2. Calibration..... 11

VII.3. Quality Control Samples 11

VII.3.1. Method Blanks 11

VII.3.2. Interference Check Samples: 11

VII.3.3. Laboratory Control Samples 11

VII.3.4. Laboratory Duplicates..... 11

VII.3.5. Matrix Spike/Matrix Spike Duplicate 11



VII.4. Sample Result Verification 11

VII.5. Field QC Samples..... 12

 VII.5.1. Field Blanks and Equipment Blanks 12

 VII.5.2. Field Duplicates..... 12

TABLES

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



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-140204-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Arroyo Simi_20160307_Grab	440-140204-1	N/A	Water	3/7/2016 1:28:00 PM	E1613B, E525.2, E608, SM2340, SM2540D, SM9221F



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-140204-1:

- The laboratories received the samples in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius ($^{\circ}\text{C}$) and greater than 0°C .
- The laboratories received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs.
- According to the laboratories' sample receipt checklists, custody seals were intact.



TABLE 2 - DATA QUALIFIER REFERENCE

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



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	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.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) 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.
B	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.
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.
P	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.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



IV. EPA METHOD 1613B — DIOXIN/FURANS

Lynn Calvin of MEC^X reviewed the SDG on April 11, 2016

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^X Data Validation Procedure for Dioxins and Furans (DVP-19, Rev. 0), USEPA Method 1613B, and the National Functional Guidelines Chlorinated Dioxin/Furan Data Review (2011).

IV.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample was extracted and analyzed within one year of collection.

IV.2. INSTRUMENT PERFORMANCE

Instrument performance criteria were met. Following are findings associated with instrument performance:

IV.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 less than 25%.

IV.2.2. MASS SPECTROMETER PERFORMANCE

The mass spectrometer performance was acceptable with the static resolving power greater than 10,000.

IV.3. CALIBRATION

Calibration criteria were met. The initial calibration was acceptable with %RSDs $\leq 20\%$ for the 15 native compounds (calibration by isotope dilution) and $\leq 35\%$ for the two native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the Method 1613B control limits for all standards.

Continuing Calibration: Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning of the analytical sequence. The VER was acceptable with the concentrations within the acceptance criteria listed in Table 6 of EPA Method 1613B. The ion abundance ratios and relative retention times were within the method control limits.

IV.4. QUALITY CONTROL SAMPLES

IV.4.1. METHOD BLANKS

The method blank had detects above the EDL and below the reporting limit for 1,2,3,4,6,7,8-HpCDD, 1,2,3,4,6,7,8-HpCDF, 1,2,3,4,7,8,9-HpCDF, 1,2,3,6,7,8-HxCDD, 1,2,3,7,8,9-HxCDD, 1,2,3,7,8,9-HxCDF, OCDD, and OCDF, and for totals HpCDD, HpCDF, HxCDD, and HxCDF. Isomer results for the method blank contaminants detected below the reporting limit in the sample were qualified as nondetects (U) at the level of contamination based upon professional judgement and the guidance for blank qualification in the National Functional Guidelines for Dioxin Review. The method blank concentration of OCDD was not sufficient to qualify the sample result for OCDD above the reporting limit.

The reviewer verified that peaks comprising totals HpCDD and HpCDF in the method blank were the same peaks comprising totals HpCDD and HpCDF in sample Arroyo Simi_20160307_Grab. The results for totals HpCDD and HpCDF were therefore qualified as nondetects (U) at the level of contamination. A portion of total HxCDF was determined to be method blank contamination (see Compound Quantification and Reported Detection Limits section also). The result for total HxCDF was therefore qualified as a nondetect (U) at the level of contamination. The result for total HxCDD was qualified as estimated (J).

IV.4.2. LABORATORY CONTROL SAMPLES

Recoveries were above the control limits in the LCS for the following target compounds: 1,2,3,4,7,8-HxCDF at 136% (limits 72-134%), 1,2,3,6,7,8-HxCDF at 133% (84-130%), and 1,2,3,7,8,9-HxCDF at 135% (70-130%). As LCSD recoveries for the LCS recovery outliers were acceptable, qualifications were not assigned. Remaining recoveries were within the acceptance criteria listed in Table 6 of Method 1613B, and all RPDs were within the laboratory control limit of $\leq 50\%$.

IV.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. 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.

IV.6. INTERNAL STANDARDS PERFORMANCE

The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613B.

IV.7. COMPOUND IDENTIFICATION

Compound identification was verified. All 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. As 2,3,7,8-TCDF was not detected in the sample, confirmation analysis was unnecessary.

IV.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. Any detects below the laboratory lower calibration level were qualified as estimated (J). Any detects between the EDL and the reporting limit (RL), or reported below the EDL, were qualified as estimated (J) and coded with DNQ in order 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, for the sample in this SDG, results were not detected below the EDL.

A result previously qualified as a nondetect for method blank contamination was not further qualified as an estimated maximum possible concentration (EMPC). Remaining individual isomers flagged by the laboratory as EMPCs were qualified as estimated nondetects (UJ) at the level of the EMPC. Isomers



qualified as EMPCs and an additional EMPC peak in the sample comprised a portion of total HxCDF in sample Arroyo Simi_20160307_Grab. Total HxCDF was therefore qualified as an estimated nondetect (UJ) at the level of the EMPC (see Blanks section also). Remaining totals containing EMPC peaks were qualified as estimated (J).

V. METHOD ANALYSES – 608 PESTICIDES AND PCBs

Lynn Calvin of MEC^x reviewed the SDG on April 11, 2016

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

V.1. HOLDING TIMES

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

V.2. CALIBRATION

The initial calibrations had %RSDs of $\leq 10\%$ or r^2 of ≥ 0.990 on both analytical columns. One initial calibration verification (ICV) Aroclor 1221 peak and several continuing calibration verification (CCV) pesticide compounds had %Ds exceeding the control limit; however, as the outliers were associated with high responses and the compounds were not detected in the sample, no qualifications were applied. The remaining ICVs and CCVs associated with the sample analyses had %Ds within the control limit of $\leq 15\%$. The breakdown totals for endrin and 4,4'-DDT were $\leq 15\%$.

V.3. QUALITY CONTROL SAMPLES

V.3.1. METHOD BLANKS

Target compounds were not detected in method blanks.

V.3.2. LABORATORY CONTROL SAMPLES

Recoveries were within the laboratory-established control limits. Chlordane and toxaphene were not spiked in the pesticide LCS.

V.3.3. SURROGATE RECOVERY

Pesticide surrogate tetrachloro-m-xylene (TCMX) and PCB surrogate decachlorobiphenyl (DCB) were recovered within the laboratory control limits of 10-150% and 29-115%, respectively, in the site sample.

V.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Matrix spike (MS)/MS duplicate (MSD) analyses were performed on sample Arroyo Simi_20160307_Grab for pesticides and PCBs. Chlordane and toxaphene were not spiked in the pesticide MS/MSD. The recoveries and RPDs were within the laboratory control limits.



V.4. FIELD QC SAMPLES

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

V.4.1. FIELD BLANKS AND EQUIPMENT BLANKS

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

V.4.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

V.5. COMPOUND IDENTIFICATION

Compound identification was verified. Review of the sample chromatograms and retention times indicated no problems with target compound identification. The laboratory analyzed for select pesticides and seven Aroclors by Method 608.

V.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

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

VI. EPA METHODS 525.2— SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

Lynn Calvin of MEC^X reviewed the SDG on April 12, 2016

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^X Data Validation Procedure for Semivolatile Organics (DVP-3, Rev. 1), EPA Method 525.2, and the National Functional Guidelines for Superfund Organic Methods Data Review (2014).

VI.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample was extracted within 24 hours of collection and analyzed within 30 days of extraction.

VI.2. GC/MS TUNING AND CALIBRATION

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

Calibration criteria were met. The initial calibration average RRFs were ≥ 0.05 and %RSD $\leq 30\%$. The continuing calibration RRFs were ≥ 0.05 and recoveries were within the method QC limits of 70-130%.

VI.3. QUALITY CONTROL SAMPLES

VI.3.1. METHOD BLANKS

Target compounds were not detected in the method blank.



VI.3.2. LABORATORY CONTROL SAMPLES

The recoveries and RPDs were within the control limits of 70-130% and $\leq 30\%$, respectively.

VI.3.3. SURROGATE RECOVERY

Recoveries were within laboratory-established control limits of 70-130%.

VI.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^X evaluated method accuracy and precision based on the LCS/LCSD results.

VI.4. FIELD QC SAMPLES

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

VI.4.1. FIELD BLANKS AND EQUIPMENT BLANKS

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

VI.4.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

VI.5. INTERNAL STANDARDS PERFORMANCE

The internal standard area counts were within the method control limits established by the continuing calibration standards of $\pm 30\%$ for areas and ± 10 seconds for retention times.

VI.6. COMPOUND IDENTIFICATION

Compound identification was verified. The laboratory analyzed for chlorpyrifos and diazinon by Method 525.2. Review of the sample chromatogram, retention times, and spectra indicated no problems with target compound identification.

VI.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.

VI.8. TENTATIVELY IDENTIFIED COMPOUNDS (TICs)

The laboratory did not report TICs for this SDG.

VI.9. SYSTEM PERFORMANCE

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



VII. VARIOUS METHODS — GENERAL CHEMISTRY

Michael Cherny of MEC^X reviewed the SDG on April 20, 2016

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *Standard Methods for the Examination of Water and Wastewater 2340B, 2540D and 9221F*, and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

VII.1. HOLDING TIMES

Analytical holding times as listed below were met:

- 8 hours from collection for *e. coli*
- 7 days for total suspended solids (TSS)
- 6 months for hardness

VII.2. CALIBRATION

Calibration criteria were met. All initial and continuing calibration recoveries were within 90-110% for the hardness metals (calcium and magnesium). Analytical balance calibration logs were provided by the lab. The biological controls were acceptable.

VII.3. QUALITY CONTROL SAMPLES

VII.3.1. METHOD BLANKS

The method blanks and CCBs had no detects.

VII.3.2. INTERFERENCE CHECK SAMPLES:

Recoveries were within 80-120%.

VII.3.3. LABORATORY CONTROL SAMPLES

Recoveries were within the control limits of 85-115% for TSS and the hardness metals. The presumptive test was analyzed for the biological methods with the positive detects for the target bacteria.

VII.3.4. LABORATORY DUPLICATES

Laboratory duplicate analyses were performed on the sample from this SDG for TSS. The RPD was less than 10%.

VII.3.5. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on Arroyo Simi_20160307_Grab for the hardness metals. Results were not assessed when the parent sample concentration exceeded the spike amount by 4x; therefore, recoveries were not assessed. RPDs for the hardness metals were $\leq 20\%$.

VII.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. When the sample results were qualified and the reviewer was able to clearly determine bias, detected results were qualified as either J+ or J-; otherwise, bias was not indicated in the qualification. Reported nondetects are valid to the MDL.



VII.5. FIELD QC SAMPLES

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

VII.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

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

VII.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms 4401402041

Analysis Method E1613B

Sample Name Arroyo Simi_20160307_Grab **Matrix Type:** WS **Result Type:** TRG

Sample Date: 3/7/2016 1:28:00 PM **Validation Level:** 8

Lab Sample Name: 440-140204-1

Analyte	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	0.000030	0.000095	0.00000069	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	N	3268-87-9	0.00021	0.000095	0.00000083	ug/L	MB		
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	N	67562-39-4	0.000013	0.000047	0.00000060	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	N	35822-46-9	0.000028	0.000047	0.00000010	ug/L	J,DXMB	U	B
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	N	55673-89-7	0.0000016	0.000047	0.00000083	ug/L	J,DXqMB	U	B
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	N	70648-26-9	0.0000019	0.000047	0.00000074	ug/L	J,DXLQq	UJ	*III
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	39227-28-6	0.0000018	0.000047	0.00000041	ug/L	J,DX	J	DNQ
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	57117-44-9	0.0000015	0.000047	0.00000062	ug/L	J,DXLQq	UJ	*III
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	57653-85-7	0.0000027	0.000047	0.00000039	ug/L	J,DXMB	U	B
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	N	72918-21-9	0.0000013	0.000047	0.00000039	ug/L	JDXMLQq	U	B
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	N	19408-74-3	0.0000024	0.000047	0.00000034	ug/L	J,DXMB	U	B
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-41-6	0.0000016	0.000047	0.00000034	ug/L	J,DX	J	DNQ
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	N	40321-76-4	0.0000021	0.000047	0.00000046	ug/L	J,DX	J	DNQ
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	60851-34-5	0.0000017	0.000047	0.00000045	ug/L	J,DXq	UJ	*III
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-31-4	0.0000014	0.000047	0.00000036	ug/L	J,DX	J	DNQ
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	0.00000029	0.0000095	0.00000029	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	N	1746-01-6	0.00000031	0.0000095	0.00000031	ug/L	U	U	
Total Heptachlorodibenzofuran (HpCDF)	N	38998-75-3	0.000028	0.000047	0.00000071	ug/L	J,DXqMB	U	B
Total Heptachlorodibenzo-p-dioxin (HpCDD)	N	37871-00-4	0.000062	0.000047	0.00000010	ug/L	MB	U	B
Total Hexachlorodibenzofuran (HxCDF)	N	55684-94-1	0.000014	0.000047	0.00000055	ug/L	J,DXq	UJ	B, *III
Total Hexachlorodibenzo-p-dioxin (HxCDD), Mixture	N	34465-46-8	0.000014	0.000047	0.00000038	ug/L	J,DXqMB	J	B, DNQ, *III

Analysis Method E1613B

Total Pentachlorodibenzofuran (PeCDF)	N	30402-15-4	0.0000047	0.000047	0.00000035	ug/L	J,DXq	J	DNQ, *III
Total Pentachlorodibenzo-p-dioxin (PeCDD)	N	36088-22-9	0.0000021	0.000047	0.00000046	ug/L	J,DX	J	DNQ
Total Tetrachlorodibenzofuran (TCDF)	N	55722-27-5	0.00000029	0.0000095	0.00000029	ug/L	U	U	
Total Tetrachlorodibenzo-p-dioxin (TCDD)	N	41903-57-5	0.00000031	0.0000095	0.00000031	ug/L	U	U	

Analysis Method E525.2

Sample Name Arroyo Simi_20160307_Grab **Matrix Type:** WS **Result Type:** TRG

Sample Date: 3/7/2016 1:28:00 PM **Validation Level:** 8

Lab Sample Name: 440-140204-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chlorpyrifos	N	2921-88-2	1.1	1.1	0.54	ug/L	U	U	
Diazinon	N	333-41-5	0.27	0.27	0.13	ug/L	U	U	

Analysis Method E608

Sample Name Arroyo Simi_20160307_Grab **Matrix Type:** WS **Result Type:** TRG

Sample Date: 3/7/2016 1:28:00 PM **Validation Level:** 8

Lab Sample Name: 440-140204-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
4,4'-DDD	N	72-54-8	0.0048	0.0048	0.0038	ug/L	U	U	
4,4'-DDE	N	72-55-9	0.0048	0.0048	0.0029	ug/L	U	U	
4,4'-DDT	N	50-29-3	0.0096	0.0096	0.0038	ug/L	U	U	
Aroclor-1016 (PCB-1016)	N	12674-11-2	0.48	0.48	0.24	ug/L	U	U	
Aroclor-1221 (PCB-1221)	N	11104-28-2	0.48	0.48	0.24	ug/L	U	U	
Aroclor-1232 (PCB-1232)	N	11141-16-5	0.48	0.48	0.24	ug/L	U	U	
Aroclor-1242 (PCB-1242)	N	53469-21-9	0.48	0.48	0.24	ug/L	U	U	
Aroclor-1248 (PCB-1248)	N	12672-29-6	0.48	0.48	0.24	ug/L	U	U	
Aroclor-1254 (PCB-1254)	N	11097-69-1	0.48	0.48	0.24	ug/L	U	U	
Aroclor-1260 (PCB-1260)	N	11096-82-5	0.48	0.48	0.24	ug/L	U	U	
Chlordane	N	57-74-9	0.096	0.096	0.077	ug/L	U	U	
Dieldrin	N	60-57-1	0.0048	0.0048	0.0019	ug/L	U	U	
Toxaphene	N	8001-35-2	0.48	0.48	0.24	ug/L	U	U	

Analysis Method **SM2340**

Sample Name Arroyo Simi_20160307_Grab **Matrix Type:** WS **Result Type:** TRG

Sample Date: 3/7/2016 1:28:00 PM **Validation Level:** 8

Lab Sample Name: 440-140204-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Hardness as CaCO3	T	HARDNESS CACO3	300	0.33	0.17	mg/L			

Analysis Method **SM2540D**

Sample Name Arroyo Simi_20160307_Grab **Matrix Type:** WS **Result Type:** TRG

Sample Date: 3/7/2016 1:28:00 PM **Validation Level:** 8

Lab Sample Name: 440-140204-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Suspended Solids (TSS)	N	TSS	1000	40	20	mg/L			

Analysis Method **SM9221F**

Sample Name Arroyo Simi_20160307_Grab **Matrix Type:** WS **Result Type:** TRG

Sample Date: 3/7/2016 1:28:00 PM **Validation Level:** 8

Lab Sample Name: 440-140204-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Escherichia coli	N	ECOLI	35000	1.8	1.8	mpn/10			

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

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Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-140204-1

Client Project/Site: Annual Arroyo Simi-Frontier Park

Revision: 1

For:

Haley & Aldrich, Inc.

5333 Mission Center Road

Suite 300

San Diego, California 92108

Attn: Nancy Gardiner



Authorized for release by:

4/25/2016 7:36:47 PM

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

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

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



Urvashi Patel
Manager of Project Management
4/25/2016 7:36:47 PM



Table of Contents

Cover Page	1
Table of Contents	3
Sample Summary	4
Case Narrative	5
Client Sample Results	7
Method Summary	10
Lab Chronicle	11
QC Sample Results	12
QC Association Summary	20
Definitions/Glossary	22
Certification Summary	23
Chain of Custody	24
Receipt Checklists	26
Isotope Dilution Summary	28

Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-140204-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-140204-1	ArroyoSimi_20160307_Grab	Water	03/07/16 13:28	03/07/16 16:50

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-140204-1

Job ID: 440-140204-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative 440-140204-1

Comments

Revision created to remove extra analytes from Pesticide list, to match what was requested on the COC.

Receipt

The samples were received on 3/7/2016 4:50 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 8 coolers at receipt time were 1.2° C, 1.3° C, 1.4° C, 1.7° C, 2.0° C, 2.6° C, 2.7° C and 3.0° C.

GC/MS Semi VOA

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

GC Semi VOA

Method(s) 608: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with 316043. The laboratory control sample (LCS) was performed in duplicate to provide precision data for this batch. (LCS 440-316043/4-A)

Method(s) 608: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD/DUP) associated with preparation batch 440-316043 and analytical batch 440-316240. The laboratory control sample (LCS) was performed in duplicate to provide precision data for this batch.

Method(s) 608: The continuing calibration verification (CCV) associated with batch 440-316240 recovered above the upper control limit for Endrin. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The following samples are impacted: ArroyoSimi_20160307_Grab (440-140204-1) and (CCVIS 440-316240/11).

Method(s) 608: The continuing calibration verification (CCV) associated with batch 440-317358 recovered above the upper control limit for 2,4'-DDE, Aldrin, beta BHC, Dieldrin, Endosulfan I, Endosulfan II, Endrin, Endrin aldehyde, Heptachlor, and Heptachlor epoxide. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The following samples are impacted: ArroyoSimi_20160307_Grab (440-140204-1) and (CCVIS 440-317358/7).

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

Dioxin

Method(s) 1613B: EPA Method 1613B specifies a +/- 15 second retention time difference between the recovery standard in the initial calibration (ICAL) and the continuing calibration verification (CCV). The 13C-1,2,3,4-TCDD and 13C-1,2,3,7,8,9-HxCDD associated with the following samples run on instrument 3D5 exceeded this criteria: (CCV 320-103412/32). This retention time shift is due to normal and reasonable column maintenance and does not affect the instrument chromatography resolution, sensitivity, or identification of target analytes. System retention times have been updated for proper analyte identification.

Method(s) 1613B: EPA Method 1613B specifies a +/- 15 second retention time difference between the recovery standard in the initial calibration (ICAL) and the continuing calibration verification (CCV). The 13C-1,2,3,4-TCDD and 13C-1,2,3,7,8,9-HxCDD associated with the following samples run on instrument 3D5 exceeded this criteria: (CCV 320-103410/15). This retention time shift is due to normal and reasonable column maintenance and does not affect the instrument chromatography resolution, sensitivity, or identification of target analytes. System retention times have been updated for proper analyte identification.

Method(s) 1613B: The laboratory control sample (LCS) for prep batch 320-102933 recovered outside control limits for the following analytes: 1,2,3,4,7,8-HxCDF, 1,2,3,6,7,8-HxCDF and 1,2,3,7,8,9-HxCDF. These analytes were biased high in the LCS and were below the reporting limit 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.

Metals

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

Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-140204-1

Job ID: 440-140204-1 (Continued)

Laboratory: TestAmerica Irvine (Continued)

General Chemistry

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

Biology

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.

Dioxin Prep

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

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Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-140204-1

Client Sample ID: ArroyoSimi_20160307_Grab

Lab Sample ID: 440-140204-1

Date Collected: 03/07/16 13:28

Matrix: Water

Date Received: 03/07/16 16:50

Method: 525.2 - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlorpyrifos	ND		1.1	0.54	ug/L		03/08/16 12:24	03/09/16 11:42	1
Diazinon	ND		0.27	0.13	ug/L		03/08/16 12:24	03/09/16 11:42	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,3-Dimethyl-2-nitrobenzene	99		70 - 130				03/08/16 12:24	03/09/16 11:42	1
Perylene-d12	100		70 - 130				03/08/16 12:24	03/09/16 11:42	1
Triphenylphosphate	108		70 - 130				03/08/16 12:24	03/09/16 11:42	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor 1016	ND		0.48	0.24	ug/L		03/14/16 06:27	03/15/16 12:43	1
Aroclor 1221	ND		0.48	0.24	ug/L		03/14/16 06:27	03/15/16 12:43	1
Aroclor 1232	ND		0.48	0.24	ug/L		03/14/16 06:27	03/15/16 12:43	1
Aroclor 1242	ND		0.48	0.24	ug/L		03/14/16 06:27	03/15/16 12:43	1
Aroclor 1248	ND		0.48	0.24	ug/L		03/14/16 06:27	03/15/16 12:43	1
Aroclor 1254	ND		0.48	0.24	ug/L		03/14/16 06:27	03/15/16 12:43	1
Aroclor 1260	ND		0.48	0.24	ug/L		03/14/16 06:27	03/15/16 12:43	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl (Surr)	91		29 - 115				03/14/16 06:27	03/15/16 12:43	1

Method: 608 Pesticides - Organochlorine Pesticides Low level

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlordane (technical)	ND		0.096	0.077	ug/L		03/14/16 06:27	03/14/16 23:00	1
Dieldrin	ND		0.0048	0.0019	ug/L		03/14/16 06:27	03/14/16 23:00	1
Toxaphene	ND		0.48	0.24	ug/L		03/14/16 06:27	03/14/16 23:00	1
4,4'-DDD	ND		0.0048	0.0038	ug/L		03/14/16 06:27	03/14/16 23:00	1
4,4'-DDE	ND		0.0048	0.0029	ug/L		03/14/16 06:27	03/14/16 23:00	1
4,4'-DDT	ND		0.0096	0.0038	ug/L		03/14/16 06:27	03/14/16 23:00	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	62		10 - 150				03/14/16 06:27	03/14/16 23:00	1

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.0000095	0.0000003	ug/L		03/10/16 12:10	03/15/16 15:40	1
2,3,7,8-TCDF	ND		0.0000095	0.0000002	ug/L		03/10/16 12:10	03/15/16 15:40	1
1,2,3,7,8-PeCDD	0.0000021	J,DX	0.000047	0.0000004	ug/L		03/10/16 12:10	03/15/16 15:40	1
1,2,3,7,8-PeCDF	0.0000016	J,DX	0.000047	0.0000003	ug/L		03/10/16 12:10	03/15/16 15:40	1
2,3,4,7,8-PeCDF	0.0000014	J,DX	0.000047	0.0000003	ug/L		03/10/16 12:10	03/15/16 15:40	1
1,2,3,4,7,8-HxCDD	0.0000018	J,DX	0.000047	0.0000004	ug/L		03/10/16 12:10	03/15/16 15:40	1
1,2,3,6,7,8-HxCDD	0.0000027	J,DX MB	0.000047	0.0000003	ug/L		03/10/16 12:10	03/15/16 15:40	1
1,2,3,7,8,9-HxCDD	0.0000024	J,DX MB	0.000047	0.0000003	ug/L		03/10/16 12:10	03/15/16 15:40	1
1,2,3,4,7,8-HxCDF	0.0000019	J,DX LQ q	0.000047	0.0000007	ug/L		03/10/16 12:10	03/15/16 15:40	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-140204-1

Client Sample ID: ArroyoSimi_20160307_Grab

Lab Sample ID: 440-140204-1

Date Collected: 03/07/16 13:28

Matrix: Water

Date Received: 03/07/16 16:50

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

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,6,7,8-HxCDF	0.0000015	J,DX LQ q	0.000047	0.0000006	ug/L		03/10/16 12:10	03/15/16 15:40	1
1,2,3,7,8,9-HxCDF	0.0000013	J,DX MB LQ q	0.000047	0.0000003	ug/L		03/10/16 12:10	03/15/16 15:40	1
2,3,4,6,7,8-HxCDF	0.0000017	J,DX q	0.000047	0.0000004	ug/L		03/10/16 12:10	03/15/16 15:40	1
1,2,3,4,6,7,8-HpCDD	0.000028	J,DX MB	0.000047	0.0000010	ug/L		03/10/16 12:10	03/15/16 15:40	1
1,2,3,4,6,7,8-HpCDF	0.000013	J,DX MB	0.000047	0.0000006	ug/L		03/10/16 12:10	03/15/16 15:40	1
1,2,3,4,7,8,9-HpCDF	0.0000016	J,DX q MB	0.000047	0.0000008	ug/L		03/10/16 12:10	03/15/16 15:40	1
OCDD	0.00021	MB	0.000095	0.0000008	ug/L		03/10/16 12:10	03/15/16 15:40	1
OCDF	0.000030	J,DX MB	0.000095	0.0000006	ug/L		03/10/16 12:10	03/15/16 15:40	1
Total TCDD	ND		0.0000095	0.0000003	ug/L		03/10/16 12:10	03/15/16 15:40	1
Total TCDF	ND		0.0000095	0.0000002	ug/L		03/10/16 12:10	03/15/16 15:40	1
Total PeCDD	0.0000021	J,DX	0.000047	0.0000004	ug/L		03/10/16 12:10	03/15/16 15:40	1
Total PeCDF	0.0000047	J,DX q	0.000047	0.0000003	ug/L		03/10/16 12:10	03/15/16 15:40	1
Total HxCDD	0.000014	J,DX q MB	0.000047	0.0000003	ug/L		03/10/16 12:10	03/15/16 15:40	1
Total HxCDF	0.000014	J,DX q	0.000047	0.0000005	ug/L		03/10/16 12:10	03/15/16 15:40	1
Total HpCDD	0.000062	MB	0.000047	0.0000010	ug/L		03/10/16 12:10	03/15/16 15:40	1
Total HpCDF	0.000028	J,DX q MB	0.000047	0.0000007	ug/L		03/10/16 12:10	03/15/16 15:40	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	61		25 - 164	03/10/16 12:10	03/15/16 15:40	1
13C-2,3,7,8-TCDF	63		24 - 169	03/10/16 12:10	03/15/16 15:40	1
13C-1,2,3,7,8-PeCDD	63		25 - 181	03/10/16 12:10	03/15/16 15:40	1
13C-1,2,3,7,8-PeCDF	63		24 - 185	03/10/16 12:10	03/15/16 15:40	1
13C-2,3,4,7,8-PeCDF	66		21 - 178	03/10/16 12:10	03/15/16 15:40	1
13C-1,2,3,4,7,8-HxCDD	72		32 - 141	03/10/16 12:10	03/15/16 15:40	1
13C-1,2,3,6,7,8-HxCDD	70		28 - 130	03/10/16 12:10	03/15/16 15:40	1
13C-1,2,3,4,7,8-HxCDF	83		26 - 152	03/10/16 12:10	03/15/16 15:40	1
13C-1,2,3,6,7,8-HxCDF	74		26 - 123	03/10/16 12:10	03/15/16 15:40	1
13C-1,2,3,7,8,9-HxCDF	78		29 - 147	03/10/16 12:10	03/15/16 15:40	1
13C-2,3,4,6,7,8-HxCDF	79		28 - 136	03/10/16 12:10	03/15/16 15:40	1
13C-1,2,3,4,6,7,8-HpCDD	51		23 - 140	03/10/16 12:10	03/15/16 15:40	1
13C-1,2,3,4,6,7,8-HpCDF	57		28 - 143	03/10/16 12:10	03/15/16 15:40	1
13C-1,2,3,4,7,8,9-HpCDF	52		26 - 138	03/10/16 12:10	03/15/16 15:40	1
13C-OCDD	39		17 - 157	03/10/16 12:10	03/15/16 15:40	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	113		35 - 197	03/10/16 12:10	03/15/16 15:40	1

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	300		0.33	0.17	mg/L			03/31/16 12:09	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-140204-1

Client Sample ID: ArroyoSimi_20160307_Grab

Lab Sample ID: 440-140204-1

Date Collected: 03/07/16 13:28

Matrix: Water

Date Received: 03/07/16 16:50

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	1000		40	20	mg/L			03/11/16 18:13	1

Method: SM 9221F - E.Coli (Multiple-Tube Fermentation; EC-MUG)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Escherichia coli	35000		1.8	1.8	MPN/100mL			03/07/16 17:53	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-140204-1

Method	Method Description	Protocol	Laboratory
525.2	Semivolatile Organic Compounds (GC/MS)	EPA	TAL IRV
608	Organochlorine Pesticides in Water	40CFR136A	TAL IRV
608	Polychlorinated Biphenyls (PCBs) (GC)	40CFR136A	TAL IRV
608 PCB LL	Polychlorinated Biphenyls (PCBs) Low level	40CFR136A	TAL IRV
608 Pesticides	Organochlorine Pesticides Low level	40CFR136A	TAL IRV
1613B	Dioxins and Furans (HRGC/HRMS)	40CFR136A	TAL SAC
SM 2340B	Total Hardness (as CaCO3) by calculation	SM	TAL IRV
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL IRV
SM 9221F	E.Coli (Multiple-Tube Fermentation; EC-MUG)	SM	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

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

Laboratory References:

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

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-140204-1

Client Sample ID: ArroyoSimi_20160307_Grab

Lab Sample ID: 440-140204-1

Date Collected: 03/07/16 13:28

Matrix: Water

Date Received: 03/07/16 16:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	525.2			925 mL	1 mL	316054	03/08/16 12:24	AP	TAL IRV
Total/NA	Analysis	525.2		1	925 mL	1 mL	316232	03/09/16 11:42	MF	TAL IRV
Total/NA	Prep	608			1045 mL	2 mL	317195	03/14/16 06:27	FTD	TAL IRV
Total/NA	Analysis	608 PCB LL		1	1045 mL	2 mL	317502	03/15/16 12:43	JM	TAL IRV
Total/NA	Prep	608			1045 mL	2 mL	317195	03/14/16 06:27	FTD	TAL IRV
Total/NA	Analysis	608 Pesticides		1	1045 mL	2 mL	317358	03/14/16 23:00	KS	TAL IRV
Total/NA	Prep	1613B			1055.6 mL	20 uL	102933	03/10/16 12:10	DXD	TAL SAC
Total/NA	Analysis	1613B		1	1055.6 mL	20 uL	103412	03/15/16 15:40	ALM	TAL SAC
Total Recoverable	Analysis	SM 2340B		1			321298	03/31/16 12:09	DP	TAL IRV
Total/NA	Analysis	SM 2540D		1	25 mL	1000 mL	316987	03/11/16 18:13	MMH	TAL IRV
Total/NA	Analysis	SM 9221F		1	100 mL	100 mL	316959		KRW	TAL IRV
							(Start)	03/07/16 17:53		
							(End)	03/10/16 15:24		

Laboratory References:

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

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-140204-1

Method: 525.2 - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-316054/1-A
Matrix: Water
Analysis Batch: 316232

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 316054

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlorpyrifos	ND		1.0	0.50	ug/L		03/08/16 12:24	03/09/16 09:51	1
Diazinon	ND		0.25	0.12	ug/L		03/08/16 12:24	03/09/16 09:51	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,3-Dimethyl-2-nitrobenzene	101		70 - 130	03/08/16 12:24	03/09/16 09:51	1
Perylene-d12	95		70 - 130	03/08/16 12:24	03/09/16 09:51	1
Triphenylphosphate	102		70 - 130	03/08/16 12:24	03/09/16 09:51	1

Lab Sample ID: LCS 440-316054/2-A
Matrix: Water
Analysis Batch: 316232

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 316054

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Chlorpyrifos	5.00	5.00		ug/L		100	70 - 130
Diazinon	5.00	4.77		ug/L		95	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,3-Dimethyl-2-nitrobenzene	94		70 - 130
Perylene-d12	105		70 - 130
Triphenylphosphate	107		70 - 130

Lab Sample ID: LCSD 440-316054/3-A
Matrix: Water
Analysis Batch: 316232

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 316054

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	RPD Limit
Chlorpyrifos	5.00	4.76		ug/L		95	70 - 130	5	30
Diazinon	5.00	4.00		ug/L		80	70 - 130	18	30

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
1,3-Dimethyl-2-nitrobenzene	96		70 - 130
Perylene-d12	100		70 - 130
Triphenylphosphate	106		70 - 130

Method: 608 - Organochlorine Pesticides in Water

Lab Sample ID: MB 440-317195/1-A
Matrix: Water
Analysis Batch: 317358

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 317195

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlordane (technical)	ND		0.10	0.080	ug/L		03/14/16 06:27	03/14/16 21:10	1
Dieldrin	ND		0.0050	0.0020	ug/L		03/14/16 06:27	03/14/16 21:10	1
Toxaphene	ND		0.50	0.25	ug/L		03/14/16 06:27	03/14/16 21:10	1
4,4'-DDD	ND		0.0050	0.0040	ug/L		03/14/16 06:27	03/14/16 21:10	1
4,4'-DDE	ND		0.0050	0.0030	ug/L		03/14/16 06:27	03/14/16 21:10	1
4,4'-DDT	ND		0.010	0.0040	ug/L		03/14/16 06:27	03/14/16 21:10	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-140204-1

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
Tetrachloro-m-xylene	62		10 - 150	03/14/16 06:27	03/14/16 21:10	1
DCB Decachlorobiphenyl (Surr)	77		18 - 134	03/14/16 06:27	03/14/16 21:10	1

Lab Sample ID: LCS 440-317195/2-A
Matrix: Water
Analysis Batch: 317358

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 317195

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Dieldrin	0.200	0.166		ug/L		83	51 - 117
alpha-BHC	0.200	0.147		ug/L		74	42 - 115
Endrin aldehyde	0.200	0.153		ug/L		77	49 - 115
delta-BHC	0.200	0.145		ug/L		73	48 - 115
gamma-BHC (Lindane)	0.200	0.146		ug/L		73	43 - 115
Aldrin	0.200	0.146		ug/L		73	19 - 115
Endosulfan sulfate	0.200	0.143		ug/L		71	50 - 117
Endosulfan I	0.200	0.173		ug/L		87	47 - 117
Endrin	0.200	0.157		ug/L		78	51 - 120
4,4'-DDD	0.200	0.162		ug/L		81	53 - 126
Endosulfan II	0.200	0.166		ug/L		83	32 - 128
4,4'-DDE	0.200	0.158		ug/L		79	48 - 115
beta-BHC	0.200	0.145		ug/L		73	48 - 115
4,4'-DDT	0.200	0.163		ug/L		81	10 - 150
Heptachlor	0.200	0.159		ug/L		79	44 - 115
Heptachlor epoxide	0.200	0.168		ug/L		84	35 - 131

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
Tetrachloro-m-xylene	65		10 - 150
DCB Decachlorobiphenyl (Surr)	82		18 - 134

Lab Sample ID: 440-140204-1 MS
Matrix: Water
Analysis Batch: 317358

Client Sample ID: ArroyoSimi_20160307_Grab
Prep Type: Total/NA
Prep Batch: 317195

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Dieldrin	ND		0.192	0.146		ug/L		76	50 - 120
4,4'-DDD	ND		0.192	0.140		ug/L		73	50 - 125
4,4'-DDE	ND		0.192	0.127		ug/L		66	45 - 125
4,4'-DDT	ND		0.192	0.138		ug/L		72	50 - 125
alpha-BHC	ND		0.192	0.120		ug/L		62	40 - 120
gamma-BHC (Lindane)	ND		0.192	0.116		ug/L		60	40 - 120
Endrin aldehyde	ND		0.192	0.125		ug/L		65	45 - 125
delta-BHC	ND		0.192	0.115		ug/L		60	50 - 120
Aldrin	ND		0.192	0.132		ug/L		69	35 - 120
Endosulfan sulfate	ND		0.192	0.124		ug/L		65	55 - 125
Endosulfan I	ND		0.192	0.146		ug/L		76	50 - 120
Endrin	ND		0.192	0.147		ug/L		76	50 - 120
Endosulfan II	ND		0.192	0.132		ug/L		69	50 - 125
beta-BHC	ND		0.192	0.118		ug/L		62	50 - 120
Heptachlor	ND		0.192	0.137		ug/L		71	40 - 120
Heptachlor epoxide	ND		0.192	0.149		ug/L		77	50 - 120

Surrogate	MS MS		Limits
	%Recovery	Qualifier	
Tetrachloro-m-xylene	72		10 - 150

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-140204-1

Method: 608 - Organochlorine Pesticides in Water (Continued)

Lab Sample ID: 440-140204-1 MS
Matrix: Water
Analysis Batch: 317358

Client Sample ID: ArroyoSimi_20160307_Grab
Prep Type: Total/NA
Prep Batch: 317195

Surrogate	MS %Recovery	MS Qualifier	Limits
DCB Decachlorobiphenyl (Surr)	81		18 - 134

Lab Sample ID: 440-140204-1 MSD
Matrix: Water
Analysis Batch: 317358

Client Sample ID: ArroyoSimi_20160307_Grab
Prep Type: Total/NA
Prep Batch: 317195

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Dieldrin	ND		0.190	0.139		ug/L		73	50 - 120	5	30
4,4'-DDD	ND		0.190	0.138		ug/L		73	50 - 125	1	30
4,4'-DDE	ND		0.190	0.119		ug/L		63	45 - 125	6	30
4,4'-DDT	ND		0.190	0.131		ug/L		69	50 - 125	5	30
alpha-BHC	ND		0.190	0.114		ug/L		60	40 - 120	5	30
gamma-BHC (Lindane)	ND		0.190	0.116		ug/L		61	40 - 120	0	30
Endrin aldehyde	ND		0.190	0.119		ug/L		63	45 - 125	5	30
delta-BHC	ND		0.190	0.118		ug/L		62	50 - 120	2	30
Aldrin	ND		0.190	0.124		ug/L		65	35 - 120	6	30
Endosulfan sulfate	ND		0.190	0.118		ug/L		62	55 - 125	5	30
Endosulfan I	ND		0.190	0.138		ug/L		73	50 - 120	6	30
Endrin	ND		0.190	0.138		ug/L		73	50 - 120	6	30
Endosulfan II	ND		0.190	0.129		ug/L		68	50 - 125	2	30
beta-BHC	ND		0.190	0.138		ug/L		73	50 - 120	15	30
Heptachlor	ND		0.190	0.139		ug/L		73	40 - 120	1	30
Heptachlor epoxide	ND		0.190	0.142		ug/L		75	50 - 120	5	30

Surrogate	MSD %Recovery	MSD Qualifier	Limits
Tetrachloro-m-xylene	67		10 - 150
DCB Decachlorobiphenyl (Surr)	79		18 - 134

Method: 608 - Polychlorinated Biphenyls (PCBs) (GC)

Lab Sample ID: MB 440-317195/1-A
Matrix: Water
Analysis Batch: 317502

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 317195

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor 1016	ND		0.50	0.25	ug/L		03/14/16 06:27	03/15/16 11:14	1
Aroclor 1221	ND		0.50	0.25	ug/L		03/14/16 06:27	03/15/16 11:14	1
Aroclor 1232	ND		0.50	0.25	ug/L		03/14/16 06:27	03/15/16 11:14	1
Aroclor 1242	ND		0.50	0.25	ug/L		03/14/16 06:27	03/15/16 11:14	1
Aroclor 1248	ND		0.50	0.25	ug/L		03/14/16 06:27	03/15/16 11:14	1
Aroclor 1254	ND		0.50	0.25	ug/L		03/14/16 06:27	03/15/16 11:14	1
Aroclor 1260	ND		0.50	0.25	ug/L		03/14/16 06:27	03/15/16 11:14	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl (Surr)	105		29 - 115	03/14/16 06:27	03/15/16 11:14	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-140204-1

Method: 608 - Polychlorinated Biphenyls (PCBs) (GC) (Continued)

Lab Sample ID: LCS 440-317195/7-A
Matrix: Water
Analysis Batch: 317502

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 317195

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Aroclor 1016	4.00	3.92		ug/L		98	50 - 115
Aroclor 1260	4.00	3.75		ug/L		94	10 - 127

Surrogate	LCS %Recovery	LCS Qualifier	Limits
DCB Decachlorobiphenyl (Surr)	108		29 - 115

Lab Sample ID: 440-140204-1 MS
Matrix: Water
Analysis Batch: 317502

Client Sample ID: ArroyoSimi_20160307_Grab
Prep Type: Total/NA
Prep Batch: 317195

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Aroclor 1016	ND		3.77	3.34		ug/L		89	45 - 120
Aroclor 1260	ND		3.77	3.17		ug/L		84	55 - 125

Surrogate	MS %Recovery	MS Qualifier	Limits
DCB Decachlorobiphenyl (Surr)	95		29 - 115

Lab Sample ID: 440-140204-1 MSD
Matrix: Water
Analysis Batch: 317502

Client Sample ID: ArroyoSimi_20160307_Grab
Prep Type: Total/NA
Prep Batch: 317195

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Aroclor 1016	ND		3.76	3.62		ug/L		96	45 - 120	8	30
Aroclor 1260	ND		3.76	3.45		ug/L		92	55 - 125	8	25

Surrogate	MSD %Recovery	MSD Qualifier	Limits
DCB Decachlorobiphenyl (Surr)	104		29 - 115

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

Lab Sample ID: MB 320-102933/1-A
Matrix: Water
Analysis Batch: 103410

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 102933

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000010	0.0000002	ug/L		03/10/16 12:10	03/15/16 02:46	1
2,3,7,8-TCDF	ND		0.000010	0.0000001	ug/L		03/10/16 12:10	03/15/16 02:46	1
1,2,3,7,8-PeCDD	ND		0.000050	0.0000003	ug/L		03/10/16 12:10	03/15/16 02:46	1
1,2,3,7,8-PeCDF	ND		0.000050	0.0000002	ug/L		03/10/16 12:10	03/15/16 02:46	1
2,3,4,7,8-PeCDF	ND		0.000050	0.0000003	ug/L		03/10/16 12:10	03/15/16 02:46	1
1,2,3,4,7,8-HxCDD	ND		0.000050	0.0000003	ug/L		03/10/16 12:10	03/15/16 02:46	1
1,2,3,6,7,8-HxCDD	0.000000490	J,DX	0.000050	0.0000002	ug/L		03/10/16 12:10	03/15/16 02:46	1

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QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-140204-1

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

Lab Sample ID: MB 320-102933/1-A
Matrix: Water
Analysis Batch: 103410

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 102933

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,7,8,9-HxCDD	0.000000488	J,DX	0.000050	0.0000002	ug/L		03/10/16 12:10	03/15/16 02:46	1
1,2,3,4,7,8-HxCDF	ND		0.000050	0.0000005	ug/L		03/10/16 12:10	03/15/16 02:46	1
1,2,3,6,7,8-HxCDF	ND		0.000050	0.0000004	ug/L		03/10/16 12:10	03/15/16 02:46	1
1,2,3,7,8,9-HxCDF	0.000000285	J,DX q	0.000050	0.0000002	ug/L		03/10/16 12:10	03/15/16 02:46	1
2,3,4,6,7,8-HxCDF	ND		0.000050	0.0000002	ug/L		03/10/16 12:10	03/15/16 02:46	1
1,2,3,4,6,7,8-HpCDD	0.00000216	J,DX	0.000050	0.0000002	ug/L		03/10/16 12:10	03/15/16 02:46	1
1,2,3,4,6,7,8-HpCDF	0.00000272	J,DX	0.000050	0.0000003	ug/L		03/10/16 12:10	03/15/16 02:46	1
1,2,3,4,7,8,9-HpCDF	0.00000116	J,DX	0.000050	0.0000004	ug/L		03/10/16 12:10	03/15/16 02:46	1
OCDD	0.0000134	J,DX	0.00010	0.0000003	ug/L		03/10/16 12:10	03/15/16 02:46	1
OCDF	0.0000102	J,DX	0.00010	0.0000005	ug/L		03/10/16 12:10	03/15/16 02:46	1
Total TCDD	ND		0.000010	0.0000002	ug/L		03/10/16 12:10	03/15/16 02:46	1
Total TCDF	ND		0.000010	0.0000001	ug/L		03/10/16 12:10	03/15/16 02:46	1
Total PeCDD	ND		0.000050	0.0000003	ug/L		03/10/16 12:10	03/15/16 02:46	1
Total PeCDF	ND		0.000050	0.0000002	ug/L		03/10/16 12:10	03/15/16 02:46	1
Total HxCDD	0.000000978	J,DX	0.000050	0.0000002	ug/L		03/10/16 12:10	03/15/16 02:46	1
Total HxCDF	0.000000285	J,DX q	0.000050	0.0000003	ug/L		03/10/16 12:10	03/15/16 02:46	1
Total HpCDD	0.00000429	J,DX	0.000050	0.0000002	ug/L		03/10/16 12:10	03/15/16 02:46	1
Total HpCDF	0.00000508	J,DX	0.000050	0.0000003	ug/L		03/10/16 12:10	03/15/16 02:46	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	62		25 - 164	03/10/16 12:10	03/15/16 02:46	1
13C-2,3,7,8-TCDF	67		24 - 169	03/10/16 12:10	03/15/16 02:46	1
13C-1,2,3,7,8-PeCDD	65		25 - 181	03/10/16 12:10	03/15/16 02:46	1
13C-1,2,3,7,8-PeCDF	64		24 - 185	03/10/16 12:10	03/15/16 02:46	1
13C-2,3,4,7,8-PeCDF	67		21 - 178	03/10/16 12:10	03/15/16 02:46	1
13C-1,2,3,4,7,8-HxCDD	68		32 - 141	03/10/16 12:10	03/15/16 02:46	1
13C-1,2,3,6,7,8-HxCDD	67		28 - 130	03/10/16 12:10	03/15/16 02:46	1
13C-1,2,3,4,7,8-HxCDF	76		26 - 152	03/10/16 12:10	03/15/16 02:46	1
13C-1,2,3,6,7,8-HxCDF	68		26 - 123	03/10/16 12:10	03/15/16 02:46	1
13C-1,2,3,7,8,9-HxCDF	75		29 - 147	03/10/16 12:10	03/15/16 02:46	1
13C-2,3,4,6,7,8-HxCDF	73		28 - 136	03/10/16 12:10	03/15/16 02:46	1
13C-1,2,3,4,6,7,8-HpCDD	52		23 - 140	03/10/16 12:10	03/15/16 02:46	1
13C-1,2,3,4,6,7,8-HpCDF	60		28 - 143	03/10/16 12:10	03/15/16 02:46	1
13C-1,2,3,4,7,8,9-HpCDF	51		26 - 138	03/10/16 12:10	03/15/16 02:46	1
13C-OCDD	38		17 - 157	03/10/16 12:10	03/15/16 02:46	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-140204-1

Surrogate	MB MB	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	113	35 - 197	03/10/16 12:10	03/15/16 02:46	1

Lab Sample ID: LCS 320-102933/2-A
Matrix: Water
Analysis Batch: 103410

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 102933

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2,3,7,8-TCDD	0.000200	0.000240		ug/L		120	67 - 158
2,3,7,8-TCDF	0.000200	0.000254		ug/L		127	75 - 158
1,2,3,7,8-PeCDD	0.00100	0.00132		ug/L		132	70 - 142
1,2,3,7,8-PeCDF	0.00100	0.00131		ug/L		131	80 - 134
2,3,4,7,8-PeCDF	0.00100	0.00129		ug/L		129	68 - 160
1,2,3,4,7,8-HxCDD	0.00100	0.00130		ug/L		130	70 - 164
1,2,3,6,7,8-HxCDD	0.00100	0.00125	MB	ug/L		125	76 - 134
1,2,3,7,8,9-HxCDD	0.00100	0.00129	MB	ug/L		129	64 - 162
1,2,3,4,7,8-HxCDF	0.00100	0.00136	LQ	ug/L		136	72 - 134
1,2,3,6,7,8-HxCDF	0.00100	0.00133	LQ	ug/L		133	84 - 130
1,2,3,7,8,9-HxCDF	0.00100	0.00135	LQ MB	ug/L		135	78 - 130
2,3,4,6,7,8-HxCDF	0.00100	0.00128		ug/L		128	70 - 156
1,2,3,4,6,7,8-HpCDD	0.00100	0.00123	MB	ug/L		123	70 - 140
1,2,3,4,6,7,8-HpCDF	0.00100	0.00119	MB	ug/L		119	82 - 122
1,2,3,4,7,8,9-HpCDF	0.00100	0.00127	MB	ug/L		127	78 - 138
OCDD	0.00200	0.00222	MB	ug/L		111	78 - 144
OCDF	0.00200	0.00233	MB	ug/L		116	63 - 170

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C-2,3,7,8-TCDD	58		20 - 175
13C-2,3,7,8-TCDF	61		22 - 152
13C-1,2,3,7,8-PeCDD	59		21 - 227
13C-1,2,3,7,8-PeCDF	62		21 - 192
13C-2,3,4,7,8-PeCDF	63		13 - 328
13C-1,2,3,4,7,8-HxCDD	65		21 - 193
13C-1,2,3,6,7,8-HxCDD	63		25 - 163
13C-1,2,3,4,7,8-HxCDF	69		19 - 202
13C-1,2,3,6,7,8-HxCDF	63		21 - 159
13C-1,2,3,7,8,9-HxCDF	73		17 - 205
13C-2,3,4,6,7,8-HxCDF	72		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	50		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	59		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	50		20 - 186
13C-OCDD	38		13 - 199

Surrogate	LCS %Recovery	LCS Qualifier	Limits
37Cl4-2,3,7,8-TCDD	113		35 - 197

Lab Sample ID: LCSD 320-102933/3-A
Matrix: Water
Analysis Batch: 103410

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 102933

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2,3,7,8-TCDD	0.000200	0.000238		ug/L		119	67 - 158	1	50
2,3,7,8-TCDF	0.000200	0.000234		ug/L		117	75 - 158	8	50
1,2,3,7,8-PeCDD	0.00100	0.00121		ug/L		121	70 - 142	9	50

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-140204-1

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

Lab Sample ID: LCSD 320-102933/3-A
Matrix: Water
Analysis Batch: 103410

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 102933

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,3,7,8-PeCDF	0.00100	0.00119		ug/L		119	80 - 134	10	50
2,3,4,7,8-PeCDF	0.00100	0.00116		ug/L		116	68 - 160	10	50
1,2,3,4,7,8-HxCDD	0.00100	0.00123		ug/L		123	70 - 164	6	50
1,2,3,6,7,8-HxCDD	0.00100	0.00123	MB	ug/L		123	76 - 134	1	50
1,2,3,7,8,9-HxCDD	0.00100	0.00122	MB	ug/L		122	64 - 162	5	50
1,2,3,4,7,8-HxCDF	0.00100	0.00126		ug/L		126	72 - 134	8	50
1,2,3,6,7,8-HxCDF	0.00100	0.00123		ug/L		123	84 - 130	8	50
1,2,3,7,8,9-HxCDF	0.00100	0.00124	MB	ug/L		124	78 - 130	9	50
2,3,4,6,7,8-HxCDF	0.00100	0.00125		ug/L		125	70 - 156	3	50
1,2,3,4,6,7,8-HpCDD	0.00100	0.00120	MB	ug/L		120	70 - 140	3	50
1,2,3,4,6,7,8-HpCDF	0.00100	0.00116	MB	ug/L		116	82 - 122	3	50
1,2,3,4,7,8,9-HpCDF	0.00100	0.00122	MB	ug/L		122	78 - 138	4	50
OCDD	0.00200	0.00227	MB	ug/L		113	78 - 144	2	50
OCDF	0.00200	0.00233	MB	ug/L		117	63 - 170	0	50

Isotope Dilution	LCSD LCSD		Limits
	%Recovery	Qualifier	
13C-2,3,7,8-TCDD	68		20 - 175
13C-2,3,7,8-TCDF	75		22 - 152
13C-1,2,3,7,8-PeCDD	72		21 - 227
13C-1,2,3,7,8-PeCDF	73		21 - 192
13C-2,3,4,7,8-PeCDF	77		13 - 328
13C-1,2,3,4,7,8-HxCDD	74		21 - 193
13C-1,2,3,6,7,8-HxCDD	69		25 - 163
13C-1,2,3,4,7,8-HxCDF	79		19 - 202
13C-1,2,3,6,7,8-HxCDF	73		21 - 159
13C-1,2,3,7,8,9-HxCDF	84		17 - 205
13C-2,3,4,6,7,8-HxCDF	81		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	56		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	66		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	56		20 - 186
13C-OCDD	44		13 - 199

Surrogate	LCSD LCSD		Limits
	%Recovery	Qualifier	
37Cl4-2,3,7,8-TCDD	123		35 - 197

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

Lab Sample ID: MB 440-316987/1
Matrix: Water
Analysis Batch: 316987

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		1.0	0.50	mg/L			03/11/16 18:13	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-140204-1

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

Lab Sample ID: LCS 440-316987/2
 Matrix: Water
 Analysis Batch: 316987

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	1000	985		mg/L		99	85 - 115

Lab Sample ID: 440-140204-1 DU
 Matrix: Water
 Analysis Batch: 316987

Client Sample ID: ArroyoSimi_20160307_Grab
 Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Suspended Solids	1000		1030		mg/L		0.8	10



QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-140204-1

GC/MS Semi VOA

Prep Batch: 316054

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-140204-1	ArroyoSimi_20160307_Grab	Total/NA	Water	525.2	
LCS 440-316054/2-A	Lab Control Sample	Total/NA	Water	525.2	
LCSD 440-316054/3-A	Lab Control Sample Dup	Total/NA	Water	525.2	
MB 440-316054/1-A	Method Blank	Total/NA	Water	525.2	

Analysis Batch: 316232

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-140204-1	ArroyoSimi_20160307_Grab	Total/NA	Water	525.2	316054
LCS 440-316054/2-A	Lab Control Sample	Total/NA	Water	525.2	316054
LCSD 440-316054/3-A	Lab Control Sample Dup	Total/NA	Water	525.2	316054
MB 440-316054/1-A	Method Blank	Total/NA	Water	525.2	316054

GC Semi VOA

Prep Batch: 317195

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-140204-1	ArroyoSimi_20160307_Grab	Total/NA	Water	608	
440-140204-1 MS	ArroyoSimi_20160307_Grab	Total/NA	Water	608	
440-140204-1 MS	ArroyoSimi_20160307_Grab	Total/NA	Water	608	
440-140204-1 MSD	ArroyoSimi_20160307_Grab	Total/NA	Water	608	
440-140204-1 MSD	ArroyoSimi_20160307_Grab	Total/NA	Water	608	
LCS 440-317195/2-A	Lab Control Sample	Total/NA	Water	608	
LCS 440-317195/7-A	Lab Control Sample	Total/NA	Water	608	
MB 440-317195/1-A	Method Blank	Total/NA	Water	608	

Analysis Batch: 317358

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-140204-1	ArroyoSimi_20160307_Grab	Total/NA	Water	608 Pesticides	317195
440-140204-1 MS	ArroyoSimi_20160307_Grab	Total/NA	Water	608	317195
440-140204-1 MSD	ArroyoSimi_20160307_Grab	Total/NA	Water	608	317195
LCS 440-317195/2-A	Lab Control Sample	Total/NA	Water	608	317195
MB 440-317195/1-A	Method Blank	Total/NA	Water	608	317195

Analysis Batch: 317502

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-140204-1	ArroyoSimi_20160307_Grab	Total/NA	Water	608 PCB LL	317195
440-140204-1 MS	ArroyoSimi_20160307_Grab	Total/NA	Water	608	317195
440-140204-1 MSD	ArroyoSimi_20160307_Grab	Total/NA	Water	608	317195
LCS 440-317195/7-A	Lab Control Sample	Total/NA	Water	608	317195
MB 440-317195/1-A	Method Blank	Total/NA	Water	608	317195

Specialty Organics

Prep Batch: 102933

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-140204-1	ArroyoSimi_20160307_Grab	Total/NA	Water	1613B	
LCS 320-102933/2-A	Lab Control Sample	Total/NA	Water	1613B	
LCSD 320-102933/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	
MB 320-102933/1-A	Method Blank	Total/NA	Water	1613B	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-140204-1

Specialty Organics (Continued)

Analysis Batch: 103410

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 320-102933/2-A	Lab Control Sample	Total/NA	Water	1613B	102933
LCSD 320-102933/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	102933
MB 320-102933/1-A	Method Blank	Total/NA	Water	1613B	102933

Analysis Batch: 103412

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-140204-1	ArroyoSimi_20160307_Grab	Total/NA	Water	1613B	102933

Metals

Analysis Batch: 321298

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-140204-1	ArroyoSimi_20160307_Grab	Total Recoverable	Water	SM 2340B	
440-140204-1 MS	ArroyoSimi_20160307_Grab	Total Recoverable	Water	SM 2340B	
440-140204-1 MSD	ArroyoSimi_20160307_Grab	Total Recoverable	Water	SM 2340B	

General Chemistry

Analysis Batch: 316987

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-140204-1	ArroyoSimi_20160307_Grab	Total/NA	Water	SM 2540D	
440-140204-1 DU	ArroyoSimi_20160307_Grab	Total/NA	Water	SM 2540D	
LCS 440-316987/2	Lab Control Sample	Total/NA	Water	SM 2540D	
MB 440-316987/1	Method Blank	Total/NA	Water	SM 2540D	

Biology

Analysis Batch: 316959

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-140204-1	ArroyoSimi_20160307_Grab	Total/NA	Water	SM 9221F	

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-140204-1

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.
LQ	LCS/LCSD recovery above method control limits

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
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
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)

Certification Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-140204-1

Laboratory: TestAmerica Irvine

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

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-16
Arizona	State Program	9	AZ0671	10-13-16
California	LA Cty Sanitation Districts	9	10256	01-31-17 *
California	State Program	9	CA ELAP 2706	06-30-16
Guam	State Program	9	Cert. No. 12.002r	01-23-17
Hawaii	State Program	9	N/A	01-29-17
Kansas	NELAP Secondary AB	7	E-10420	07-31-16
Nevada	State Program	9	CA015312016-2	07-31-16
New Mexico	State Program	6	N/A	01-29-17
Northern Mariana Islands	State Program	9	MP0002	01-29-16 *
Oregon	NELAP	10	4028	01-29-17
USDA	Federal		P330-09-00080	07-08-18
Washington	State Program	10	C900	09-03-16

Laboratory: TestAmerica Sacramento

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

Authority	Program	EPA Region	Certification ID	Expiration Date
A2LA	DoD ELAP		2928-01	01-31-17
Alaska (UST)	State Program	10	UST-055	12-18-16
Arizona	State Program	9	AZ0708	08-11-16
Arkansas DEQ	State Program	6	88-0691	06-17-16
California	State Program	9	2897	01-31-17
Colorado	State Program	8	CA00044	08-31-16
Connecticut	State Program	1	PH-0691	06-30-17
Florida	NELAP	4	E87570	06-30-16
Hawaii	State Program	9	N/A	01-31-17
Illinois	NELAP	5	200060	03-17-17
Kansas	NELAP	7	E-10375	05-31-16
Louisiana	NELAP	6	30612	06-30-16
Maine	State Program	1	CA0004	04-18-16
Michigan	State Program	5	9947	01-31-18
Nevada	State Program	9	CA00044	07-31-16
New Jersey	NELAP	2	CA005	06-30-16
New York	NELAP	2	11666	04-01-17
Oregon	NELAP	10	4040	01-29-17
Pennsylvania	NELAP	3	68-01272	03-31-17
Texas	NELAP	6	T104704399	05-31-16
US Fish & Wildlife	Federal		LE148388-0	10-31-16
USDA	Federal		P330-11-00436	12-30-17
USEPA UCMR	Federal	1	CA00044	11-06-16
Utah	NELAP	8	CA00044	02-28-17
Virginia	NELAP	3	460278	03-14-17
Washington	State Program	10	C581	05-04-16
West Virginia (DW)	State Program	3	9930C	12-31-16
Wyoming	State Program	8	8TMS-L	01-29-17

* Certification renewal pending - certification considered valid.

Chain of Custody Record



Client Information (Sub Contract Lab)		Lab PM# Patel, Urvashi		Carrier Tracking No(s)	
Client Contact Shipping/Receiving		E-Mail urvashi.patel@testamericainc.com		COC No 440-95534-1	
Company TestAmerica Laboratories, Inc.		Phone		Page Page 1 of 1	
Address 880 Riverside Parkway,		Due Date Requested: 3/29/2016		Job # 440-140204-1	
City West Sacramento		TAT Requested (days):		Preservation Codes:	
State, Zip CA, 95605		PO #:		A - HCL M - Hexane B - NaOH N - None O - AshNaO2 C - Zn Acetate D - Nitric Acid P - Na2O4S E - NatISO4 Q - Na2SO3 F - MeOH R - Na2S2O3 G - Amchlor S - H2SO4 H - Ascorbic Acid T - TSP Dodecahydrate I - Ice U - Acetone J - DI Water K - EDTA L - EDTA W - ph 4-5 Z - other (specify) Other:	
Project Name: Boeing NPDES SSFL outfalls		WO #:		Total Number of containers	
Site		Project # 44009879		2	
SSOW#		SSOW#		Special Instructions/Note: See QAS, Boeing_w/1 to zero, ug/L	
Sample Identification - Client ID (Lab ID)		Sample Date		Field Filtered Sample (Yes or No)	
ArroyoSimi_20160307_Grab (440-140204-1)		3/7/16		X	
Sample Time		Sample Date		Performance/MSD (Yes or No)	
13:28 Pacific		3/7/16		X	
Sample Type (C=Comp, G=grab)		Preservation Code:		1613B/1613B_Sox_Sep_P_Standard Lat w/ Totals	
Water		Water		Matrix (W=water, B=solid, O=water, BT=Tissue, AC=AI)	
Possible Hazard Identification		Unconfirmed		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)	
Deliverable Requested: I, II, III, IV, Other (specify)		Empty Kit Relinquished by:		Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months	
Relinquished by: <i>Vu Banda</i>		Date/Time: 3/8/16 17:00		Company: TAI	
Relinquished by:		Date/Time: 3-9-16 10:25		Company: Taus	
Relinquished by:		Date/Time:		Company:	
Custody Seals Intact Δ Yes Δ No		Custody Seal No: <i>100</i>		Cooler Temperature(s) °C and Other Remarks	



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-140204-1

Login Number: 140204

List Number: 1

Creator: Avila, Stephanie 1

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	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?	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 <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-140204-1

Login Number: 140204

List Number: 2

Creator: Hytrek, Cheryl

List Source: TestAmerica Sacramento

List Creation: 03/09/16 04:22 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	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	
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.	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: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-140204-1

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

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (25-164)	TCDF (24-169)	PeCDD (25-181)	PeCDF1 (24-185)	PeCDF2 (21-178)	HxCDD1 (32-141)	HxCDD2 (28-130)	HxCDF1 (26-152)
440-140204-1	ArroyoSimi_20160307_Grab	61	63	63	63	66	72	70	83
MB 320-102933/1-A	Method Blank	62	67	65	64	67	68	67	76

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (26-123)	HxCDF4 (29-147)	HxCDF3 (28-136)	HpCDD (23-140)	HpCDF1 (28-143)	HpCDF2 (26-138)	OCDD (17-157)
440-140204-1	ArroyoSimi_20160307_Grab	74	78	79	51	57	52	39
MB 320-102933/1-A	Method Blank	68	75	73	52	60	51	38

Surrogate Legend

- TCDD = 13C-2,3,7,8-TCDD
- TCDF = 13C-2,3,7,8-TCDF
- PeCDD = 13C-1,2,3,7,8-PeCDD
- PeCDF1 = 13C-1,2,3,7,8-PeCDF
- PeCDF2 = 13C-2,3,4,7,8-PeCDF
- HxCDD1 = 13C-1,2,3,4,7,8-HxCDD
- HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
- HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
- HxCDF2 = 13C-1,2,3,6,7,8-HxCDF
- HxCDF4 = 13C-1,2,3,7,8,9-HxCDF
- HxCDF3 = 13C-2,3,4,6,7,8-HxCDF
- HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
- HpCDF1 = 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)

Lab Sample ID	Client Sample ID	TCDD (20-175)	TCDF (22-152)	PeCDD (21-227)	PeCDF1 (21-192)	PeCDF2 (13-328)	HxCDD1 (21-193)	HxCDD2 (25-163)	HxCDF1 (19-202)
LCS 320-102933/2-A	Lab Control Sample	58	61	59	62	63	65	63	69
LCSD 320-102933/3-A	Lab Control Sample Dup	68	75	72	73	77	74	69	79

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (21-159)	HxCDF4 (17-205)	HxCDF3 (22-176)	HpCDD (26-166)	HpCDF1 (21-158)	HpCDF2 (20-186)	OCDD (13-199)
LCS 320-102933/2-A	Lab Control Sample	63	73	72	50	59	50	38
LCSD 320-102933/3-A	Lab Control Sample Dup	73	84	81	56	66	56	44

Surrogate Legend

- TCDD = 13C-2,3,7,8-TCDD
- TCDF = 13C-2,3,7,8-TCDF
- PeCDD = 13C-1,2,3,7,8-PeCDD
- PeCDF1 = 13C-1,2,3,7,8-PeCDF
- PeCDF2 = 13C-2,3,4,7,8-PeCDF
- HxCDD1 = 13C-1,2,3,4,7,8-HxCDD
- HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
- HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
- HxCDF2 = 13C-1,2,3,6,7,8-HxCDF

TestAmerica Irvine

Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-140204-1

HxCDF4 = 13C-1,2,3,7,8,9-HxCDF
HxCDF3 = 13C-2,3,4,6,7,8-HxCDF
HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF
HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
OCDD = 13C-OCDD

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DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-141131-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

April 5, 2016

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





TABLE OF CONTENTS

I. INTRODUCTION..... 1

II. Sample Management..... 2

III. STANDARD METHOD 9221F — ESCHERICHIA COLI..... 6

 III.1. Holding Times 6

 III.2. Calibration..... 6

 III.3. Quality Control Samples 6

 III.3.1. Method Blanks 6

 III.3.2. Laboratory Control Samples 6

 III.3.3. Laboratory Duplicates..... 6

 III.3.4. Matrix Spike/Matrix Spike Duplicate 6

 III.3.5. Sample Result Verification..... 6

 III.4. Field QC Samples..... 6

 III.4.1. Field Blanks and Equipment Blanks 6

 III.4.2. Field Duplicates..... 6

TABLES

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



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-141131-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
ArroyoSimi-20160314	440-141131-1	N/A	Water	3/14/2016 12:10:00 PM	SM9221F



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-141131-1:

- The laboratory received the samples in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratories received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs; however, the sampler's name was not listed on the COC.
- According to the laboratories' sample receipt checklists, custody seals were intact.



TABLE 2 - DATA QUALIFIER REFERENCE

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



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	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.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) 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.
B	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.
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.
P	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.
*II, *III	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. STANDARD METHOD 9221F — ESCHERICHIA COLI

Michael Cherny of MEC^X reviewed the SDG April 5, 2016

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *Standard Methods for the Examination of Water and Wastewater 9221F* and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

III.1. HOLDING TIMES

The analytical holding time, 8 hours from collection, was met.

III.2. CALIBRATION

The biological controls were acceptable.

III.3. QUALITY CONTROL SAMPLES

III.3.1. *METHOD BLANKS*

The method blank is not applicable to the biological methods.

III.3.2. *LABORATORY CONTROL SAMPLES*

The presumptive test was analyzed for the biological methods with the positive detects for the target bacteria.

III.3.3. *LABORATORY DUPLICATES*

No laboratory duplicate analysis was performed on the sample in this SDG.

III.3.4. *MATRIX SPIKE/MATRIX SPIKE DUPLICATE*

MS/MSD samples are not applicable to this method.

III.3.5. *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. When the sample results were qualified and the reviewer was able to clearly determine bias, detected results were qualified as either J+ or J-; otherwise, bias was not indicated in the qualification. Any detects between the method detection limit and the reporting limit were qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Reported nondetects are valid to the MDL.

III.4. FIELD QC SAMPLES

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

III.4.1. *FIELD BLANKS AND EQUIPMENT BLANKS*

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

III.4.2. *FIELD DUPLICATES*

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms 4401411311

Analysis Method *SM9221F*

Sample Name ArroyoSimi-20160314

Matrix Type: WS

Result Type: TRG

Sample Date: 3/14/2016 12:10:00 PM

Validation Level: 8

Lab Sample Name: 440-141131-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Escherichia coli	N	ECOLI	350	1.8	1.8	mpn/10			

TestAmerica

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ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-141131-1

Client Project/Site: Boeing NPDES SSFL outfalls

For:

Haley & Aldrich, Inc.

5333 Mission Center Road

Suite 300

San Diego, California 92108

Attn: Nancy Gardiner



Authorized for release by:

3/27/2016 7:49:04 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

LINKS

Review your project
results through
TotalAccess

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www.testamericainc.com

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

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

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

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



Urvashi Patel
Manager of Project Management
3/27/2016 7:49:04 PM



Table of Contents

Cover Page	1
Table of Contents	3
Sample Summary	4
Case Narrative	5
Client Sample Results	6
Method Summary	7
Lab Chronicle	8
QC Association Summary	9
Definitions/Glossary	10
Certification Summary	11
Chain of Custody	12
Receipt Checklists	13

Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-141131-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-141131-1	Arroyo Simi_20160314	Water	03/14/16 12:10	03/14/16 15:00

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-141131-1

Job ID: 440-141131-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-141131-1

Comments

No additional comments.

Receipt

The sample was received on 3/14/2016 3:00 PM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.4° C.

Biology

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

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Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-141131-1

Client Sample ID: Arroyo Simi_20160314

Lab Sample ID: 440-141131-1

Date Collected: 03/14/16 12:10

Matrix: Water

Date Received: 03/14/16 15:00

Method: SM 9221F - E.Coli (Multiple-Tube Fermentation; EC-MUG)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Escherichia coli	350		1.8	1.8	MPN/100mL			03/14/16 15:25	1

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Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-141131-1

Method	Method Description	Protocol	Laboratory
SM 9221F	E.Coli (Multiple-Tube Fermentation; EC-MUG)	SM	TAL IRV

Protocol References:

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

Laboratory References:

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

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Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-141131-1

Client Sample ID: Arroyo Simi_20160314

Lab Sample ID: 440-141131-1

Date Collected: 03/14/16 12:10

Matrix: Water

Date Received: 03/14/16 15:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 9221F		1	100 mL	100 mL	319447	(Start) 03/14/16 15:25 (End) 03/17/16 13:15	KRW	TAL IRV

Laboratory References:

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

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-141131-1

Biology

Analysis Batch: 319447

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-141131-1	Arroyo Simi_20160314	Total/NA	Water	SM 9221F	

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Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-141131-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
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
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)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-141131-1

Laboratory: TestAmerica Irvine

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

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-16
Arizona	State Program	9	AZ0671	10-13-16
California	LA Cty Sanitation Districts	9	10256	01-31-17 *
California	State Program	9	CA ELAP 2706	06-30-16
Guam	State Program	9	Cert. No. 12.002r	01-23-17
Hawaii	State Program	9	N/A	01-29-17
Kansas	NELAP Secondary AB	7	E-10420	07-31-16
Nevada	State Program	9	CA015312007A	07-31-16
New Mexico	State Program	6	N/A	01-29-17
Northern Mariana Islands	State Program	9	MP0002	01-29-16 *
Oregon	NELAP	10	4005	01-29-17
USDA	Federal		P330-09-00080	07-08-18
Washington	State Program	10	900	09-03-16

* Certification renewal pending - certification considered valid.

TestAmerica Irvine

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-141131-1

Login Number: 141131

List Source: TestAmerica Irvine

List Number: 1

Creator: Soderblom, Tim

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	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?	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 <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-141209-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

April 5, 2016

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





TABLE OF CONTENTS

I. INTRODUCTION..... 1

II. Sample Management..... 2

III. STANDARD METHOD 9221F — ESCHERICHIA COLI..... 6

 III.1. Holding Times 6

 III.2. Calibration..... 6

 III.3. Quality Control Samples 6

 III.3.1. Method Blanks 6

 III.3.2. Laboratory Control Samples 6

 III.3.3. Laboratory Duplicates..... 6

 III.3.4. Matrix Spike/Matrix Spike Duplicate 6

 III.3.5. Sample Result Verification..... 6

 III.4. Field QC Samples..... 6

 III.4.1. Field Blanks and Equipment Blanks 6

 III.4.2. Field Duplicates..... 6

TABLES

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



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-141209-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
ArroyoSimi-20160313	440-141209-1	N/A	Water	3/13/2016 8:35:00 AM	SM9221F



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-141209-1:

- The laboratory received the samples in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratories received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs; however, the sampler's name was not listed on the COC.
- According to the laboratories' sample receipt checklists, custody seals were intact.
- The sample time was missing from the COC; samples were logged as per the container label.



TABLE 2 - DATA QUALIFIER REFERENCE

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



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	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.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) 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.
B	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.
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.
P	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.
*II, *III	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. STANDARD METHOD 9221F — ESCHERICHIA COLI

Michael Cherny of MEC^X reviewed the SDG April 5, 2016

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *Standard Methods for the Examination of Water and Wastewater 9221F* and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

III.1. HOLDING TIMES

The analytical holding time, 8 hours from collection, was met.

III.2. CALIBRATION

The biological controls were acceptable.

III.3. QUALITY CONTROL SAMPLES

III.3.1. METHOD BLANKS

The method blank is not applicable to the biological methods.

III.3.2. LABORATORY CONTROL SAMPLES

The presumptive test was analyzed for the biological methods with the positive detects for the target bacteria.

III.3.3. LABORATORY DUPLICATES

No laboratory duplicate analysis was performed on the sample in this SDG.

III.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD samples are not applicable to this method.

III.3.5. 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. When the sample results were qualified and the reviewer was able to clearly determine bias, detected results were qualified as either J+ or J-; otherwise, bias was not indicated in the qualification. Any detects between the method detection limit and the reporting limit were qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Reported nondetects are valid to the MDL.

III.4. FIELD QC SAMPLES

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

III.4.1. FIELD BLANKS AND EQUIPMENT BLANKS

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

III.4.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms 4401412091

Analysis Method *SM9221F*

Sample Name ArroyoSimi-20160313

Matrix Type: WS

Result Type: TRG

Sample Date: 3/13/2016 8:35:00 AM

Validation Level: 8

Lab Sample Name: 440-141209-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Escherichia coli	N	ECOLI	4900	1.8	1.8	mpn/10			

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-141209-1

Client Project/Site: Boeing-Annual Arroyo Simi-Frontier Park

For:

Haley & Aldrich, Inc.

5333 Mission Center Road

Suite 300

San Diego, California 92108

Attn: Nancy Gardiner



Authorized for release by:

3/27/2016 8:00:42 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

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

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

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



Urvashi Patel
Manager of Project Management
3/27/2016 8:00:42 PM



Table of Contents

Cover Page	1
Table of Contents	3
Sample Summary	4
Case Narrative	5
Client Sample Results	6
Method Summary	7
Lab Chronicle	8
QC Association Summary	9
Definitions/Glossary	10
Certification Summary	11
Chain of Custody	12
Receipt Checklists	13

Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing-Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-141209-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-141209-1	ArroyoSimi-20160313	Water	03/13/16 08:35	03/13/16 11:20

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Boeing-Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-141209-1

Job ID: 440-141209-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-141209-1

Comments

No additional comments.

Receipt

The sample was received on 3/13/2016 11:20 AM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 0.5° C.

Biology

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

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Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Boeing-Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-141209-1

Client Sample ID: ArroyoSimi-20160313

Lab Sample ID: 440-141209-1

Date Collected: 03/13/16 08:35

Matrix: Water

Date Received: 03/13/16 11:20

Method: SM 9221F - E.Coli (Multiple-Tube Fermentation; EC-MUG)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Escherichia coli	4900		1.8	1.8	MPN/100mL			03/13/16 12:00	1

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Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing-Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-141209-1

Method	Method Description	Protocol	Laboratory
SM 9221F	E.Coli (Multiple-Tube Fermentation; EC-MUG)	SM	TAL IRV

Protocol References:

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

Laboratory References:

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

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Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Boeing-Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-141209-1

Client Sample ID: ArroyoSimi-20160313

Lab Sample ID: 440-141209-1

Date Collected: 03/13/16 08:35

Matrix: Water

Date Received: 03/13/16 11:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 9221F		1	100 mL	100 mL	319440	(Start) 03/13/16 12:00 (End) 03/15/16 13:15	KRW	TAL IRV

Laboratory References:

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

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing-Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-141209-1

Biology

Analysis Batch: 319440

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-141209-1	ArroyoSimi-20160313	Total/NA	Water	SM 9221F	

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Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing-Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-141209-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
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
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)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing-Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-141209-1

Laboratory: TestAmerica Irvine

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

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-16
Arizona	State Program	9	AZ0671	10-13-16
California	LA Cty Sanitation Districts	9	10256	01-31-17 *
California	State Program	9	CA ELAP 2706	06-30-16
Guam	State Program	9	Cert. No. 12.002r	01-23-17
Hawaii	State Program	9	N/A	01-29-17
Kansas	NELAP Secondary AB	7	E-10420	07-31-16
Nevada	State Program	9	CA015312007A	07-31-16
New Mexico	State Program	6	N/A	01-29-17
Northern Mariana Islands	State Program	9	MP0002	01-29-16 *
Oregon	NELAP	10	4005	01-29-17
USDA	Federal		P330-09-00080	07-08-18
Washington	State Program	10	900	09-03-16

* Certification renewal pending - certification considered valid.

TestAmerica Irvine

Client Name/Address: Haley & Aldrich, Inc. 9040 Friars Road Suite 220 San Diego, CA 92108-5860		Project: Boeing-SSFL NPDES Annual Arroyo Simi-Frontier Park		Comments	
Test America Contact: Urvashi Patel Project Manager: Nancy Gardiner		Phone Number: 619.285.7132, 858.337.4061 (cell) Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)		[Handwritten: 922, E.L.]	
Sampler: Dan Smith Bill Clarke		[Barcode: 440-141209 Chain of Custody]		[Handwritten: 03-13-16, 11:35]	
Sample Description Arroyo Simi	Sample Matrix W	Container Type 125mL Sterile Poly	# of Cont. 3	Sample I.D. Arroyo Simi-20160313	Sampling Date/Time 03/13/2016
				Preservative Na2S2O3	Bottle # 10
[Handwritten: IT coll (SM9221) X]					Deliver to lab ASAP 8 hr hold time. Need 1x, 10x, 100x dilutions
Relinquished By: Bill Clarke		Date/Time: 3-13-16/0948		Relinquished By: [Signature] Date/Time: 3-13-16 11:00 AM	
Relinquished By: [Signature]		Date/Time: 3-13-16 11:00 AM		Relinquished By: [Signature] Date/Time: 3-13-16 11:00 AM	
Relinquished By: [Signature]		Date/Time: 3-13-16 11:00 AM		Relinquished By: [Signature] Date/Time: 3-13-16 11:00 AM	
Turn around Time: (check) 24 Hours _____ 5 Days _____ 48 Hours _____ 10 Days _____ 72 Hours _____ Normal <input checked="" type="checkbox"/>			Sample Integrity: (check) Intact _____ On Ice: <input checked="" type="checkbox"/>		
Data Requirements: (check) No Level IV _____ All Level IV _____			NPDES Level IV _____		

8.0/0.5 < 93

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-141209-1

Login Number: 141209

List Source: TestAmerica Irvine

List Number: 1

Creator: Saraubon, Phakchaya

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	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.	False	No sample time on COC, logged in per container labels.
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-141410-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

April 5, 2016

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





TABLE OF CONTENTS

I. INTRODUCTION..... 1

II. Sample Management..... 2

III. STANDARD METHOD 9221F — ESCHERICHIA COLI..... 6

 III.1. Holding Times 6

 III.2. Calibration..... 6

 III.3. Quality Control Samples 6

 III.3.1. Method Blanks 6

 III.3.2. Laboratory Control Samples 6

 III.3.3. Laboratory Duplicates..... 6

 III.3.4. Matrix Spike/Matrix Spike Duplicate 6

 III.3.5. Sample Result Verification..... 6

 III.4. Field QC Samples..... 6

 III.4.1. Field Blanks and Equipment Blanks 6

 III.4.2. Field Duplicates..... 6

TABLES

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



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-141410-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
ArroyoSimi-20160315	440-141410-1	N/A	Water	3/15/2016 12:15:00 PM	SM9221F



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-141410-1:

- The laboratory received the samples in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius ($^{\circ}\text{C}$) and greater than 0°C .
- The laboratories received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs; however, the sampler's name was not listed on the COC.
- According to the laboratories' sample receipt checklists, custody seals were intact.



TABLE 2 - DATA QUALIFIER REFERENCE

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



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	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.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) 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.
B	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.
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.
P	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.
*II, *III	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. STANDARD METHOD 9221F — ESCHERICHIA COLI

Michael Cherny of MEC^X reviewed the SDG April 5, 2016

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *Standard Methods for the Examination of Water and Wastewater 9221F*, and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

III.1. HOLDING TIMES

The analytical holding time, 8 hours from collection, was met.

III.2. CALIBRATION

The biological controls were acceptable.

III.3. QUALITY CONTROL SAMPLES

III.3.1. METHOD BLANKS

The method blank is not applicable to the biological methods.

III.3.2. LABORATORY CONTROL SAMPLES

The presumptive test was analyzed for the biological methods with the positive detects for the target bacteria.

III.3.3. LABORATORY DUPLICATES

No laboratory duplicate analysis was performed on the sample in this SDG.

III.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD samples are not applicable to this method.

III.3.5. 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. When the sample results were qualified and the reviewer was able to clearly determine bias, detected results were qualified as either J+ or J-; otherwise, bias was not indicated in the qualification. Any detects between the method detection limit and the reporting limit were qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Reported nondetects are valid to the MDL.

III.4. FIELD QC SAMPLES

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

III.4.1. FIELD BLANKS AND EQUIPMENT BLANKS

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

III.4.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms 4401414101

Analysis Method *SM9221F*

Sample Name ArroyoSimi-20160315

Matrix Type: WS

Result Type: TRG

Sample Date: 3/15/2016 12:15:00 PM

Validation Level: 8

Lab Sample Name: 440-141410-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Escherichia coli	N	ECOLI	160	1.8	1.8	mpn/10			

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-141410-1

Client Project/Site: Boeing Annual Arroyo Simi- Frontier Park

For:

Haley & Aldrich, Inc.

5333 Mission Center Road

Suite 300

San Diego, California 92108

Attn: Nancy Gardiner



Authorized for release by:

3/27/2016 8:07:24 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

LINKS

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www.testamericainc.com

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

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

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

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



Urvashi Patel
Manager of Project Management
3/27/2016 8:07:24 PM



Table of Contents

Cover Page	1
Table of Contents	3
Sample Summary	4
Case Narrative	5
Client Sample Results	6
Method Summary	7
Lab Chronicle	8
QC Association Summary	9
Definitions/Glossary	10
Certification Summary	11
Chain of Custody	12
Receipt Checklists	13

Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing Annual Arroyo Simi- Frontier Park

TestAmerica Job ID: 440-141410-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-141410-1	Arroyo Simi_20160315	Water	03/15/16 12:15	03/15/16 15:40

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Boeing Annual Arroyo Simi- Frontier Park

TestAmerica Job ID: 440-141410-1

Job ID: 440-141410-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-141410-1

Comments

No additional comments.

Receipt

The sample was received on 3/15/2016 3:40 PM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.9° C.

Biology

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

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Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Boeing Annual Arroyo Simi- Frontier Park

TestAmerica Job ID: 440-141410-1

Client Sample ID: Arroyo Simi_20160315

Lab Sample ID: 440-141410-1

Date Collected: 03/15/16 12:15

Matrix: Water

Date Received: 03/15/16 15:40

Method: SM 9221F - E.Coli (Multiple-Tube Fermentation; EC-MUG)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Escherichia coli	160		1.8	1.8	MPN/100mL			03/15/16 16:35	1

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Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing Annual Arroyo Simi- Frontier Park

TestAmerica Job ID: 440-141410-1

Method	Method Description	Protocol	Laboratory
SM 9221F	E.Coli (Multiple-Tube Fermentation; EC-MUG)	SM	TAL IRV

Protocol References:

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

Laboratory References:

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

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Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Boeing Annual Arroyo Simi- Frontier Park

TestAmerica Job ID: 440-141410-1

Client Sample ID: Arroyo Simi_20160315

Lab Sample ID: 440-141410-1

Date Collected: 03/15/16 12:15

Matrix: Water

Date Received: 03/15/16 15:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 9221F		1	100 mL	100 mL	319454	(Start) 03/15/16 16:35 (End) 03/18/16 16:55	KRW	TAL IRV

Laboratory References:

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

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing Annual Arroyo Simi- Frontier Park

TestAmerica Job ID: 440-141410-1

Biology

Analysis Batch: 319454

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-141410-1	Arroyo Simi_20160315	Total/NA	Water	SM 9221F	

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Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing Annual Arroyo Simi- Frontier Park

TestAmerica Job ID: 440-141410-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
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
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)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing Annual Arroyo Simi- Frontier Park

TestAmerica Job ID: 440-141410-1

Laboratory: TestAmerica Irvine

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

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-16
Arizona	State Program	9	AZ0671	10-13-16
California	LA Cty Sanitation Districts	9	10256	01-31-17 *
California	State Program	9	CA ELAP 2706	06-30-16
Guam	State Program	9	Cert. No. 12.002r	01-23-17
Hawaii	State Program	9	N/A	01-29-17
Kansas	NELAP Secondary AB	7	E-10420	07-31-16
Nevada	State Program	9	CA015312007A	07-31-16
New Mexico	State Program	6	N/A	01-29-17
Northern Mariana Islands	State Program	9	MP0002	01-29-16 *
Oregon	NELAP	10	4005	01-29-17
USDA	Federal		P330-09-00080	07-08-18
Washington	State Program	10	900	09-03-16

* Certification renewal pending - certification considered valid.

TestAmerica Irvine

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-141410-1

Login Number: 141410

List Source: TestAmerica Irvine

List Number: 1

Creator: Saraubon, Phakchaya

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	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	Not listed on COC.
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 <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-141681-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

April 6, 2016

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





TABLE OF CONTENTS

I. INTRODUCTION..... 1

II. Sample Management..... 2

III. STANDARD METHOD 9221F — ESCHERICHIA COLI..... 6

 III.1. Holding Times 6

 III.2. Calibration..... 6

 III.3. Quality Control Samples 6

 III.3.1. Method Blanks 6

 III.3.2. Laboratory Control Samples 6

 III.3.3. Laboratory Duplicates..... 6

 III.3.4. Matrix Spike/Matrix Spike Duplicate 6

 III.3.5. Sample Result Verification..... 6

 III.4. Field QC Samples..... 6

 III.4.1. Field Blanks and Equipment Blanks 6

 III.4.2. Field Duplicates..... 6

TABLES

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



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-141681-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
ArroyoSimi-20160317	440-141681-1	N/A	Water	3/17/2016 12:00:00 PM	SM9221F



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-141681-1:

- The laboratory received the samples in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius ($^{\circ}\text{C}$) and greater than 0°C .
- The laboratories received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COC.
- According to the laboratories' sample receipt checklists, custody seals were intact.



TABLE 2 - DATA QUALIFIER REFERENCE

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



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	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.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) 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.
B	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.
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.
P	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.
*II, *III	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. STANDARD METHOD 9221F — ESCHERICHIA COLI

Michael Cherny of MEC^X reviewed the SDG April 6, 2016

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *Standard Methods for the Examination of Water and Wastewater 9221F* and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

III.1. HOLDING TIMES

The analytical holding time, 8 hours from collection, was met.

III.2. CALIBRATION

The biological controls were acceptable.

III.3. QUALITY CONTROL SAMPLES

III.3.1. *METHOD BLANKS*

The method blank is not applicable to the biological methods.

III.3.2. *LABORATORY CONTROL SAMPLES*

The presumptive test was analyzed for the biological methods with the positive detects for the target bacteria.

III.3.3. *LABORATORY DUPLICATES*

No laboratory duplicate analysis was performed on the sample in this SDG.

III.3.4. *MATRIX SPIKE/MATRIX SPIKE DUPLICATE*

MS/MSD samples are not applicable to this method.

III.3.5. *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. When the sample results were qualified and the reviewer was able to clearly determine bias, detected results were qualified as either J+ or J-; otherwise, bias was not indicated in the qualification. Any detects between the method detection limit and the reporting limit were qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Reported nondetects are valid to the MDL.

III.4. FIELD QC SAMPLES

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

III.4.1. *FIELD BLANKS AND EQUIPMENT BLANKS*

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

III.4.2. *FIELD DUPLICATES*

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms 4401416811

Analysis Method *SM9221F*

Sample Name ArroyoSimi-20160317

Matrix Type: WS

Result Type: TRG

Sample Date: 3/17/2016 12:00:00 PM

Validation Level: 8

Lab Sample Name: 440-141681-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Escherichia coli	N	ECOLI	76	1.8	1.8	mpn/10			

TestAmerica

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ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-141681-1

Client Project/Site: Annual Arroyo Simi-Frontier Park

For:

Haley & Aldrich, Inc.

5333 Mission Center Road

Suite 300

San Diego, California 92108

Attn: Nancy Gardiner



Authorized for release by:

3/27/2016 8:16:27 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

LINKS

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results through

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www.testamericainc.com

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

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

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

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



Urvashi Patel
Manager of Project Management
3/27/2016 8:16:27 PM



Table of Contents

Cover Page	1
Table of Contents	3
Sample Summary	4
Case Narrative	5
Client Sample Results	6
Method Summary	7
Lab Chronicle	8
QC Association Summary	9
Definitions/Glossary	10
Certification Summary	11
Chain of Custody	12
Receipt Checklists	13

Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-141681-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-141681-1	Arroyo Simi_20160317	Water	03/17/16 12:00	03/17/16 17:25

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-141681-1

Job ID: 440-141681-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-141681-1

Comments

No additional comments.

Receipt

The sample was received on 3/17/2016 5:25 PM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.4° C.

Biology

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

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Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-141681-1

Client Sample ID: Arroyo Simi_20160317

Lab Sample ID: 440-141681-1

Date Collected: 03/17/16 12:00

Matrix: Water

Date Received: 03/17/16 17:25

Method: SM 9221F - E.Coli (Multiple-Tube Fermentation; EC-MUG)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Escherichia coli	76		1.8	1.8	MPN/100mL			03/17/16 19:23	1

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Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-141681-1

Method	Method Description	Protocol	Laboratory
SM 9221F	E.Coli (Multiple-Tube Fermentation; EC-MUG)	SM	TAL IRV

Protocol References:

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

Laboratory References:

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

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Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-141681-1

Client Sample ID: Arroyo Simi_20160317

Lab Sample ID: 440-141681-1

Date Collected: 03/17/16 12:00

Matrix: Water

Date Received: 03/17/16 17:25

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 9221F		1	100 mL	100 mL	319987	(Start) 03/17/16 19:23 (End) 03/20/16 16:17	AS	TAL IRV

Laboratory References:

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

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-141681-1

Biology

Analysis Batch: 319987

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-141681-1	Arroyo Simi_20160317	Total/NA	Water	SM 9221F	

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Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-141681-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
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
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)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-141681-1

Laboratory: TestAmerica Irvine

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

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-16
Arizona	State Program	9	AZ0671	10-13-16
California	LA Cty Sanitation Districts	9	10256	01-31-17 *
California	State Program	9	CA ELAP 2706	06-30-16
Guam	State Program	9	Cert. No. 12.002r	01-23-17
Hawaii	State Program	9	N/A	01-29-17
Kansas	NELAP Secondary AB	7	E-10420	07-31-16
Nevada	State Program	9	CA015312007A	07-31-16
New Mexico	State Program	6	N/A	01-29-17
Northern Mariana Islands	State Program	9	MP0002	01-29-16 *
Oregon	NELAP	10	4005	01-29-17
USDA	Federal		P330-09-00080	07-08-18
Washington	State Program	10	900	09-03-16

* Certification renewal pending - certification considered valid.

TestAmerica Irvine

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-141681-1

Login Number: 141681

List Number: 1

Creator: Soderblom, Tim

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	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?	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	

DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-141912-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

April 6, 2016

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





TABLE OF CONTENTS

I. INTRODUCTION..... 1

II. Sample Management..... 2

III. STANDARD METHOD 9221F — ESCHERICHIA COLI..... 6

 III.1. Holding Times 6

 III.2. Calibration..... 6

 III.3. Quality Control Samples 6

 III.3.1. Method Blanks 6

 III.3.2. Laboratory Control Samples 6

 III.3.3. Laboratory Duplicates..... 6

 III.3.4. Matrix Spike/Matrix Spike Duplicate 6

 III.3.5. Sample Result Verification..... 6

 III.4. Field QC Samples..... 6

 III.4.1. Field Blanks and Equipment Blanks 6

 III.4.2. Field Duplicate 6

TABLES

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



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-141912-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
ArroyoSimi-20160318	440-141912-1	N/A	Water	3/18/2016 8:40:00 AM	SM9221F



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-141912-1:

- The laboratory received the samples in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius ($^{\circ}\text{C}$) and greater than 0°C .
- The laboratories received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COC.
- According to the laboratories' sample receipt checklists, custody seals were intact.



TABLE 2 - DATA QUALIFIER REFERENCE

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



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	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.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) 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.
B	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.
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.
P	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.
*II, *III	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. STANDARD METHOD 9221F — ESCHERICHIA COLI

Michael Cherny of MEC^X reviewed the SDG April 6, 2016

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *Standard Methods for the Examination of Water and Wastewater 9221F* and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

III.1. HOLDING TIMES

The analytical holding time, 8 hours from collection, was met.

III.2. CALIBRATION

The biological controls were acceptable.

III.3. QUALITY CONTROL SAMPLES

III.3.1. METHOD BLANKS

The method blank is not applicable to the biological methods.

III.3.2. LABORATORY CONTROL SAMPLES

The presumptive test was analyzed for the biological methods with the positive detects for the target bacteria.

III.3.3. LABORATORY DUPLICATES

No laboratory duplicate analysis was performed on the sample in this SDG.

III.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD samples are not applicable to this method.

III.3.5. 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. When the sample results were qualified and the reviewer was able to clearly determine bias, detected results were qualified as either J+ or J-; otherwise, bias was not indicated in the qualification. Any detects between the method detection limit and the reporting limit were qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Reported nondetects are valid to the MDL.

III.4. FIELD QC SAMPLES

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

III.4.1. FIELD BLANKS AND EQUIPMENT BLANKS

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

III.4.2. FIELD DUPLICATE

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms 4401419121

Analysis Method *SM9221F*

Sample Name ArroyoSimi-20160318

Matrix Type: WS

Result Type: TRG

Sample Date: 3/18/2016 8:40:00 AM

Validation Level: 8

Lab Sample Name: 440-141912-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Escherichia coli	N	ECOLI	180	1.8	1.8	mpn/10			

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-141912-1

Client Project/Site: Annual Arroyo Simi-Frontier Park

For:

Haley & Aldrich, Inc.

5333 Mission Center Road

Suite 300

San Diego, California 92108

Attn: Nancy Gardiner



Authorized for release by:

3/30/2016 8:11:35 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

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

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

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



Urvashi Patel
Manager of Project Management
3/30/2016 8:11:35 PM



Table of Contents

Cover Page	1
Table of Contents	3
Sample Summary	4
Case Narrative	5
Client Sample Results	6
Method Summary	7
Lab Chronicle	8
QC Association Summary	9
Definitions/Glossary	10
Certification Summary	11
Chain of Custody	12
Receipt Checklists	13

Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-141912-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-141912-1	Arroyo Simi_20160318	Water	03/18/16 08:40	03/18/16 14:15

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-141912-1

Job ID: 440-141912-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-141912-1

Comments

No additional comments.

Receipt

The sample was received on 3/18/2016 2:15 PM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 0.8° C.

Biology

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

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Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-141912-1

Client Sample ID: Arroyo Simi_20160318

Lab Sample ID: 440-141912-1

Date Collected: 03/18/16 08:40

Matrix: Water

Date Received: 03/18/16 14:15

Method: SM 9221F - E.Coli (Multiple-Tube Fermentation; EC-MUG)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Escherichia coli	180		1.8	1.8	MPN/100mL			03/18/16 15:13	1

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Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-141912-1

Method	Method Description	Protocol	Laboratory
SM 9221F	E.Coli (Multiple-Tube Fermentation; EC-MUG)	SM	TAL IRV

Protocol References:

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

Laboratory References:

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



Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-141912-1

Client Sample ID: Arroyo Simi_20160318

Lab Sample ID: 440-141912-1

Date Collected: 03/18/16 08:40

Matrix: Water

Date Received: 03/18/16 14:15

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 9221F		1	100 mL	100 mL	319992	(Start) 03/18/16 15:13 (End) 03/21/16 15:27	KRW	TAL IRV

Laboratory References:

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

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-141912-1

Biology

Analysis Batch: 319992

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-141912-1	Arroyo Simi_20160318	Total/NA	Water	SM 9221F	

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Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-141912-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
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
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)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-141912-1

Laboratory: TestAmerica Irvine

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

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-16
Arizona	State Program	9	AZ0671	10-13-16
California	LA Cty Sanitation Districts	9	10256	01-31-17 *
California	State Program	9	CA ELAP 2706	06-30-16
Guam	State Program	9	Cert. No. 12.002r	01-23-17
Hawaii	State Program	9	N/A	01-29-17
Kansas	NELAP Secondary AB	7	E-10420	07-31-16
Nevada	State Program	9	CA015312007A	07-31-16
New Mexico	State Program	6	N/A	01-29-17
Northern Mariana Islands	State Program	9	MP0002	01-29-16 *
Oregon	NELAP	10	4005	01-29-17
USDA	Federal		P330-09-00080	07-08-18
Washington	State Program	10	900	09-03-16

* Certification renewal pending - certification considered valid.

TestAmerica Irvine

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-141912-1

Login Number: 141912

List Number: 1

Creator: Soderblom, Tim

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	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?	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 <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-142060-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

April 22, 2016

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





TABLE OF CONTENTS

I. INTRODUCTION..... 1

II. Sample Management..... 2

IV. VARIOUS METHODS — GENERAL CHEMISTRY..... 6

 IV.1. Holding Times 6

 IV.2. Calibration..... 6

 IV.3. Quality Control Samples 6

 IV.3.1. Method Blanks 6

 IV.3.2. Laboratory Control Samples 6

 IV.3.3. Laboratory Duplicates..... 6

 IV.3.4. Matrix Spike/Matrix Spike Duplicate 6

 IV.4. Sample Result Verification..... 6

 IV.5. Field QC Samples..... 7

 IV.5.1. Field Blanks and Equipment Blanks 7

 IV.5.2. Field Duplicates..... 7

TABLES

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



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-142060-1

Project Manager: Katherine Miller

Matrix: Sediment

QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Arroyo_Simi-Sed-20160319	440-142060-1	N/A	Sediment	3/19/2016 8:50:00 AM	SM4500-NH3, SW9060



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chain-of-custody (COC) provided by the laboratory for sample delivery group (SDG) 440-142060-1:

- The laboratory received the samples in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COC.
- According to the laboratory's sample receipt checklists, custody seals were intact.

MECX noted anomalies regarding sample management identified below.

- Minor corrections to the COC were not initialed or dated.



TABLE 2 - DATA QUALIFIER REFERENCE

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



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	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.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) 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.
B	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.
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.
P	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.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



IV. VARIOUS METHODS — GENERAL CHEMISTRY

Michael Cherny of MEC^X reviewed the SDG on April 20, 2016

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *EPA Method 9060, Standard Methods for the Examination of Water and Wastewater 4500-NH₃*, and the *National Functional Guidelines for Inorganic Superfund Data Review* (2014).

IV.1. HOLDING TIMES

The analytical holding time, 28 days for ammonia (as N) and total organic carbon (TOC), was met.

IV.2. CALIBRATION

Calibration criteria were met. The initial calibration r^2 values were ≥ 0.995 and all initial and continuing calibration recoveries were within 90-110%.

IV.3. QUALITY CONTROL SAMPLES

IV.3.1. METHOD BLANKS

The method blanks and CCBs had no detects.

IV.3.2. LABORATORY CONTROL SAMPLES

Recoveries were within the control limits of 90-110% for TOC and 85-115% for ammonia.

IV.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were performed on the sample from this SDG for ammonia. The RPD was less than 15%.

IV.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on Arroyo_Simi-Sed-20160319 for ammonia and TOC. Recoveries for TOC (57% / 68%) were below the control limits of 70-130%; therefore, TOC detected in the site sample was qualified as estimated with potential low bias (J-). Recoveries were within the control limit of 75-125% for ammonia and all RPDs were within the laboratory-established control limits.

IV.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample results reported on the sample results summary were verified against the raw data. No transcription errors or calculation errors were noted. When the sample results were qualified and the reviewer was able to clearly determine bias, detected results were qualified as either J+ or J-; otherwise, bias was not indicated in the qualification. Any detects between the method detection limit and the reporting limit were qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Reported nondetects are valid to the MDL. TOC in the site sample was report from a 2x dilution.

The reviewer noted that the TOC was reported on a wet weight basis. The reviewer corrected the result with the measured percent moisture to report the result on a dry weight basis as required by the permit.



IV.5. FIELD QC SAMPLES

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

IV.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

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

IV.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms 4401420601

Analysis Method SM4500-NH3

Sample Name Arroyo_Simi-Sed-20160319 **Matrix Type:** SE **Result Type:** TRG

Sample Date: 3/19/2016 8:50:00 AM **Validation Level:** 8

Lab Sample Name: 440-142060-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Ammonia (as N)	N	7664-41-7N	4.06	9.99	2.00	mg/kg	J,DX	J	DNQ

Analysis Method SW9060

Sample Name Arroyo_Simi-Sed-20160319 **Matrix Type:** SE **Result Type:** TRG

Sample Date: 3/19/2016 8:50:00 AM **Validation Level:** 8

Lab Sample Name: 440-142060-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Organic Carbon (TOC)	N	TOC	1500	280	140	mg/kg		J-	Q, \$

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-142060-1

Client Project/Site: Annul Sediment Arroyo Simi-Frontier Park

Revision: 1

For:

Haley & Aldrich, Inc.

5333 Mission Center Road

Suite 300

San Diego, California 92108

Attn: Nancy Gardiner



Authorized for release by:

4/29/2016 2:32:59 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

LINKS

Review your project
results through

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Visit us at:

www.testamericainc.com

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

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

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

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



Urvashi Patel
Manager of Project Management
4/29/2016 2:32:59 PM



Table of Contents

Cover Page	1
Table of Contents	3
Sample Summary	4
Case Narrative	5
Client Sample Results	7
Method Summary	8
Lab Chronicle	9
QC Sample Results	10
QC Association Summary	14
Definitions/Glossary	16
Certification Summary	17
Subcontract Data	18
Chain of Custody	23
Receipt Checklists	25

Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annul Sediment Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-142060-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-142060-1	Amoyo_Simi-Sed_20160319	Solid	03/19/16 08:50	03/19/16 13:50
440-142060-2	Arroyo_Simi-Sed_20160319	Solid	03/19/16 08:50	03/19/16 13:50

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Annul Sediment Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-142060-1

Job ID: 440-142060-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative 440-142060-1

Comments

TOC was reported with Dry Weight based on method analysis.

Receipt

The samples were received on 3/19/2016 1:50 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.4° C.

Receipt Exceptions

Client needs the Dry Weight correction

GC Semi VOA

Method(s) 8081A: The laboratory control sample (LCS) and / or laboratory control sample duplicate (LCSD) for preparation batch 440-319100 and analytical batch 440-319572 recovered outside control limits for the following analytes: 4,4'-DDD, Endrin ketone, and 4,4'-DDE. These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.

Method(s) 8081A: The following samples required a copper clean-up to reduce matrix interferences caused by sulfur: (LCS 440-326011/2-A), (MB 440-326011/1-A), (440-145183-A-1-C), (440-145183-A-1-A MS) and (440-145183-A-1-B MSD).

Method(s) 8081A: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 440-326011 and analytical batch 440-326254 were outside control limits. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Method(s) 8081A: The matrix spike / matrix spike duplicate (MS/MSD) precision for preparation batch 440-326011 and analytical batch 440-326254 was outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) precision was within acceptance limits.

Method(s) 8081A: DCB Decachlorobiphenyl (Surr) for the Laboratory Control Sample (LCS) associated with batch 440-326011 was out of range high possibly due to a spiking error. All target compounds were within acceptance limits. Data is not affected. (LCS 440-326011/2-A).

Method(s) 8081A: Re-extraction and reanalysis of the following samples was performed outside of the analytical holding time: Amoyo_Simi-Sed_20160319 (440-142060-1). The sample was originally extracted within holding time, however, the client requested that the sample be re-extracted using a greater initial volume. The sample was re-extracted using 7.35 grams of sample.

Method(s) 8081A: Re-preparation and reanalysis of the following samples was performed outside of the analytical holding time: Arroyo_Simi-Sed_20160319 (440-142060-2). Original extraction was performed within holding time, however, a dilution was done at the prep where approximately 3 grams of soil was used instead of the maximum of 15 grams. This extraction is reported as sample 142060-1 as Secondary results. The client requested that the sample be re-extracted past holding time using the maximum amount of soil. A second extraction was attempted, but due to the wet nature of the sample, we were only able to extract using approximately 7 grams of soil. This extraction is reported as 142060-1 as Primary results. The client then requested that we perform a drying procedure on the soil to enable us to extract using the full 15 grams. The soil was dried at room temperature for approximately 48 hours and then extracted a third time using 15 grams. The dried sample is reported as 142060-2 with a BU qualifier for the holding time violation.

Method(s) 8082: Surrogate recoveries for the CCVIS associated with analytical batch 440-319636 and the following samples and QC were outside the upper control limit: (CCV 440-319636/34), (CCVIS 440-319636/12) and (LCS 440-319100/2-A). Sample data may be biased high. All samples reported are ND, therefore, data is not affected and is acceptable. All target arochlors for the CCVIS and LCS/LCSD were within acceptance limits.

Method(s) 8082: Re-preparation and reanalysis of the following samples was performed outside of the analytical holding time: Amoyo_Simi-Sed_20160319 (440-142060-1). Originally the sample had been extracted at approximately 3 grams of sample instead of the

Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Annul Sediment Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-142060-1

Job ID: 440-142060-1 (Continued)

Laboratory: TestAmerica Irvine (Continued)

full amount of 15 grams. The sample was re-extracted attempting to extract using 15 grams. This was not possible due to the sample matrix. The solvent evaporated in the microwave when using 15 grams of sample. 7.35 grams was attempted and this extraction was successful. This result is reported past holding time.

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

General Chemistry

Method(s) 9060: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for analytical batch 440-322068 were outside control limits. Sample matrix interference is 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.

Subcontract non-Sister

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

Organic Prep

Method(s) 3546: The following samples was diluted due to the nature of the sample matrix: Amoyo_Simi-Sed_20160319 (440-142060-1), (440-142060-D-1 MS) and (440-142060-D-1 MSD). Elevated reporting limits (RLs) are provided.

Method(s) 3546: The following sample(s) was prepared outside of preparation holding time due to re-extraction :

Method(s) 3546: The following sample(s) was diluted due to the nature of the sample matrix: Elevated reporting limits (RLs) are provided.

Method(s) 3546: Sample was spread out thinly and dried on aluminum dishes for 2 days and then re-extracted at 15g. The sand was dried out along with the sample to determine any contamination that may occur.

Arroyo_Simi-Sed_20160319 (440-142060-2), (440-142060-A-2 MS) and (440-142060-A-2 MSD)

Method(s) 3546: The following sample(s) was prepared outside of preparation holding time due to re-extraction. The sample evaporated at 7.5g. Client requested to dry out sample and re-extract at 15g: Arroyo_Simi-Sed_20160319 (440-142060-2), (440-142060-A-2 MS) and (440-142060-A-2 MSD).

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: Annul Sediment Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-142060-1

Client Sample ID: Amoyo_Simi-Sed_20160319

Lab Sample ID: 440-142060-1

Date Collected: 03/19/16 08:50

Matrix: Solid

Date Received: 03/19/16 13:50

Percent Solids: 71.0

Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor 1016	ND	BU	140	49	ug/Kg	☼	04/22/16 15:43	04/23/16 11:14	1
Aroclor 1221	ND	BU	140	49	ug/Kg	☼	04/22/16 15:43	04/23/16 11:14	1
Aroclor 1232	ND	BU	140	49	ug/Kg	☼	04/22/16 15:43	04/23/16 11:14	1
Aroclor 1242	ND	BU	140	49	ug/Kg	☼	04/22/16 15:43	04/23/16 11:14	1
Aroclor 1248	ND	BU	140	49	ug/Kg	☼	04/22/16 15:43	04/23/16 11:14	1
Aroclor 1254	ND	BU	140	49	ug/Kg	☼	04/22/16 15:43	04/23/16 11:14	1
Aroclor 1260	ND	BU	140	49	ug/Kg	☼	04/22/16 15:43	04/23/16 11:14	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl (Surr)	83	PI	45 - 120	04/22/16 15:43	04/23/16 11:14	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	1100		200	100	mg/Kg			04/01/16 07:54	2
Ammonia (as N)	4.06	J,DX	9.99	2.00	mg/Kg		03/30/16 04:00	03/30/16 06:00	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	29.0		0.1	0.1	%			03/23/16 18:51	1
Percent Solids	71.0		0.1	0.1	%			03/23/16 18:51	1

Client Sample ID: Arroyo_Simi-Sed_20160319

Lab Sample ID: 440-142060-2

Date Collected: 03/19/16 08:50

Matrix: Solid

Date Received: 03/19/16 13:50

Percent Solids: 95.9

Method: 8081A - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4,4'-DDD	ND	BU	5.2	1.6	ug/Kg	☼	04/28/16 12:46	04/29/16 12:43	1
4,4'-DDE	ND	BU	5.2	1.6	ug/Kg	☼	04/28/16 12:46	04/29/16 12:43	1
4,4'-DDT	ND	BU	5.2	1.6	ug/Kg	☼	04/28/16 12:46	04/29/16 12:43	1
Chlordane (technical)	ND	BU	52	10	ug/Kg	☼	04/28/16 12:46	04/29/16 12:43	1
Dieldrin	ND	BU	5.2	1.6	ug/Kg	☼	04/28/16 12:46	04/29/16 12:43	1
Toxaphene	ND	BU	210	52	ug/Kg	☼	04/28/16 12:46	04/29/16 12:43	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl (Surr)	50	PI	45 - 120	04/28/16 12:46	04/29/16 12:43	1
Tetrachloro-m-xylene	67	PI	35 - 115	04/28/16 12:46	04/29/16 12:43	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	4.1		0.1	0.1	%			04/28/16 13:13	1
Percent Solids	95.9		0.1	0.1	%			04/28/16 13:13	1

TestAmerica Irvine

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annul Sediment Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-142060-1

Method	Method Description	Protocol	Laboratory
8081A	Organochlorine Pesticides (GC)	SW846	TAL IRV
8082	Polychlorinated Biphenyls (PCBs) by Gas Chromatography	SW846	TAL IRV
9060	Organic Carbon, Total (TOC)	SW846	TAL IRV
Moisture	Percent Moisture	EPA	TAL IRV
SM 4500 NH3 D	Ammonia	SM	TAL IRV
Particle Size	General Sub Contract Method	NONE	PTSL

Protocol References:

EPA = US Environmental Protection Agency

NONE = NONE

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

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

PTSL = PTS Laboratories, Inc, 8100 Secura Way, Santa Fe Springs, CA 90670

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

Lab Chronicle

Client: Haley & Aldrich, Inc.
 Project/Site: Annul Sediment Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-142060-1

Client Sample ID: Amoyo_Simi-Sed_20160319

Lab Sample ID: 440-142060-1

Date Collected: 03/19/16 08:50

Matrix: Solid

Date Received: 03/19/16 13:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9060		2	0.0500 g	0.0500 g	322068	04/01/16 07:54	YZ	TAL IRV
Total/NA	Analysis	Moisture		1			319737	03/23/16 18:51	MMH	TAL IRV

Client Sample ID: Amoyo_Simi-Sed_20160319

Lab Sample ID: 440-142060-1

Date Collected: 03/19/16 08:50

Matrix: Solid

Date Received: 03/19/16 13:50

Percent Solids: 71.0

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3546			7.35 g	2 mL	326011	04/22/16 15:43	BEJ	TAL IRV
Total/NA	Analysis	8082		1	7.35 g	2 mL	326093	04/23/16 11:14	JM	TAL IRV
Total/NA	Prep	SM 4500 NH3 B			2.5014 g	50 mL	321048	03/30/16 04:00	YZ	TAL IRV
Total/NA	Analysis	SM 4500 NH3 D		1	2.5014 g	50 mL	321061	03/30/16 06:00	YZ	TAL IRV

Client Sample ID: Arroyo_Simi-Sed_20160319

Lab Sample ID: 440-142060-2

Date Collected: 03/19/16 08:50

Matrix: Solid

Date Received: 03/19/16 13:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			327140	04/28/16 13:13	SN	TAL IRV

Client Sample ID: Arroyo_Simi-Sed_20160319

Lab Sample ID: 440-142060-2

Date Collected: 03/19/16 08:50

Matrix: Solid

Date Received: 03/19/16 13:50

Percent Solids: 95.9

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3546			15.05 g	2 mL	327134	04/28/16 12:46	QCT	TAL IRV
Total/NA	Analysis	8081A		1	15.05 g	2 mL	327332	04/29/16 12:43	KS	TAL IRV

Laboratory References:

PTSL = PTS Laboratories, Inc, 8100 Secura Way, Santa Fe Springs, CA 90670

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

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Annul Sediment Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-142060-1

Method: 8081A - Organochlorine Pesticides (GC)

Lab Sample ID: MB 440-327134/1-A

Matrix: Solid

Analysis Batch: 327332

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 327134

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4,4'-DDD	ND		5.0	1.5	ug/Kg		04/28/16 12:46	04/29/16 11:48	1
4,4'-DDE	ND		5.0	1.5	ug/Kg		04/28/16 12:46	04/29/16 11:48	1
4,4'-DDT	ND		5.0	1.5	ug/Kg		04/28/16 12:46	04/29/16 11:48	1
Chlordane (technical)	ND		50	10	ug/Kg		04/28/16 12:46	04/29/16 11:48	1
Dieldrin	ND		5.0	1.5	ug/Kg		04/28/16 12:46	04/29/16 11:48	1
Toxaphene	ND		200	50	ug/Kg		04/28/16 12:46	04/29/16 11:48	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl (Surr)	47		45 - 120	04/28/16 12:46	04/29/16 11:48	1
Tetrachloro-m-xylene	41		35 - 115	04/28/16 12:46	04/29/16 11:48	1

Lab Sample ID: LCS 440-327134/2-A

Matrix: Solid

Analysis Batch: 327332

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 327134

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
4,4'-DDD	13.3	12.1		ug/Kg		91	59 - 118
4,4'-DDE	13.3	9.81		ug/Kg		74	55 - 115
4,4'-DDT	13.3	9.87		ug/Kg		74	51 - 131
alpha-Chlordane	13.3	9.98		ug/Kg		75	56 - 115
gamma-Chlordane	13.3	10.3		ug/Kg		78	32 - 143
Dieldrin	13.3	10.2		ug/Kg		76	57 - 115

Surrogate	LCS %Recovery	LCS Qualifier	Limits
DCB Decachlorobiphenyl (Surr)	60		45 - 120
Tetrachloro-m-xylene	56		35 - 115

Lab Sample ID: 440-142060-2 MS

Matrix: Solid

Analysis Batch: 327332

Client Sample ID: Arroyo_Simi-Sed_20160319

Prep Type: Total/NA

Prep Batch: 327134

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
4,4'-DDD	ND	BU	13.9	10.7	PI	ug/Kg	☼	77	40 - 130
4,4'-DDE	ND	BU	13.9	10.5	PI	ug/Kg	☼	76	35 - 130
4,4'-DDT	ND	BU	13.9	13.9	PI	ug/Kg	☼	100	35 - 130
alpha-Chlordane	ND	BU	13.9	9.63	PI	ug/Kg	☼	69	50 - 115
gamma-Chlordane	ND	BU	13.9	8.66	PI	ug/Kg	☼	62	50 - 115
Dieldrin	ND	BU	13.9	11.4	PI	ug/Kg	☼	82	40 - 125

Surrogate	MS %Recovery	MS Qualifier	Limits
DCB Decachlorobiphenyl (Surr)	60	PI	45 - 120
Tetrachloro-m-xylene	76	PI	35 - 115

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annul Sediment Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-142060-1

Method: 8081A - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: 440-142060-2 MSD

Matrix: Solid
Analysis Batch: 327332

Client Sample ID: Arroyo_Simi-Sed_20160319

Prep Type: Total/NA
Prep Batch: 327134

Analyte	Sample		Spike Added	MSD		Unit	D	%Rec	Limits	RPD	Limit
	Result	Qualifier		Result	Qualifier						
4,4'-DDD	ND	BU	13.8	9.14	PI	ug/Kg	☼	66	40 - 130	16	30
4,4'-DDE	ND	BU	13.8	9.34	PI	ug/Kg	☼	68	35 - 130	12	30
4,4'-DDT	ND	BU	13.8	12.4	PI	ug/Kg	☼	90	35 - 130	12	30
alpha-Chlordane	ND	BU	13.8	8.60	PI	ug/Kg	☼	62	50 - 115	11	30
gamma-Chlordane	ND	BU	13.8	9.32	PI	ug/Kg	☼	68	50 - 115	7	30
Dieldrin	ND	BU	13.8	10.2	PI	ug/Kg	☼	74	40 - 125	11	30

Surrogate	MSD		Limits
	%Recovery	Qualifier	
DCB Decachlorobiphenyl (Surr)	99	PI	45 - 120
Tetrachloro-m-xylene	43	PI	35 - 115

Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Lab Sample ID: MB 440-326011/1-A

Matrix: Solid
Analysis Batch: 326093

Client Sample ID: Method Blank

Prep Type: Total/NA
Prep Batch: 326011

Analyte	MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Aroclor 1016	ND		50	17	ug/Kg		04/22/16 15:43	04/23/16 10:18	1
Aroclor 1221	ND		50	17	ug/Kg		04/22/16 15:43	04/23/16 10:18	1
Aroclor 1232	ND		50	17	ug/Kg		04/22/16 15:43	04/23/16 10:18	1
Aroclor 1242	ND		50	17	ug/Kg		04/22/16 15:43	04/23/16 10:18	1
Aroclor 1248	ND		50	17	ug/Kg		04/22/16 15:43	04/23/16 10:18	1
Aroclor 1254	ND		50	17	ug/Kg		04/22/16 15:43	04/23/16 10:18	1
Aroclor 1260	ND		50	17	ug/Kg		04/22/16 15:43	04/23/16 10:18	1

Surrogate	MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
DCB Decachlorobiphenyl (Surr)	103		45 - 120	04/22/16 15:43	04/23/16 10:18	1

Lab Sample ID: LCS 440-326011/11-A

Matrix: Solid
Analysis Batch: 326093

Client Sample ID: Lab Control Sample

Prep Type: Total/NA
Prep Batch: 326011

Analyte	Spike Added	LCS		Unit	D	%Rec	Limits
		Result	Qualifier				
Aroclor 1016	267	243		ug/Kg		91	65 - 115
Aroclor 1260	267	233		ug/Kg		88	65 - 115

Surrogate	LCS		Limits
	%Recovery	Qualifier	
DCB Decachlorobiphenyl (Surr)	100		45 - 120

Lab Sample ID: 440-142060-1 MS

Matrix: Solid
Analysis Batch: 326093

Client Sample ID: Amoyo_Simi-Sed_20160319

Prep Type: Total/NA
Prep Batch: 326011

Analyte	Sample		Spike Added	MS		Unit	D	%Rec	Limits
	Result	Qualifier		Result	Qualifier				
Aroclor 1016	ND	BU	751	514		ug/Kg	☼	69	50 - 120
Aroclor 1260	ND	BU	751	500		ug/Kg	☼	67	50 - 125

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Annul Sediment Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-142060-1

Surrogate	MS %Recovery	MS Qualifier	Limits
DCB Decachlorobiphenyl (Surr)	71		45 - 120

Lab Sample ID: 440-142060-1 MSD
Matrix: Solid
Analysis Batch: 326093

Client Sample ID: Amoyo_Simi-Sed_20160319
Prep Type: Total/NA
Prep Batch: 326011

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aroclor 1016	ND	BU	751	543		ug/Kg	☼	72	50 - 120	5	30
Aroclor 1260	ND	BU	751	539		ug/Kg	☼	72	50 - 125	8	30

Surrogate	MSD %Recovery	MSD Qualifier	Limits
DCB Decachlorobiphenyl (Surr)	74	PI	45 - 120

Method: 9060 - Organic Carbon, Total (TOC)

Lab Sample ID: MB 440-322068/8
Matrix: Solid
Analysis Batch: 322068

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	ND		100	50	mg/Kg			04/01/16 07:15	1

Lab Sample ID: LCS 440-322068/7
Matrix: Solid
Analysis Batch: 322068

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon	250	253		mg/Kg		101	90 - 110

Lab Sample ID: 440-142060-1 MS
Matrix: Solid
Analysis Batch: 322068

Client Sample ID: Amoyo_Simi-Sed_20160319
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon	1100		1000	1650	LN	mg/Kg		57	70 - 130

Lab Sample ID: 440-142060-1 MSD
Matrix: Solid
Analysis Batch: 322068

Client Sample ID: Amoyo_Simi-Sed_20160319
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Organic Carbon	1100		1000	1770	LN	mg/Kg		68	70 - 130	7	30

Method: Moisture - Percent Moisture

Lab Sample ID: 440-142060-1 DU
Matrix: Solid
Analysis Batch: 319737

Client Sample ID: Amoyo_Simi-Sed_20160319
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Percent Moisture	29.0		29.1		%		0.4	20
Percent Solids	71.0		70.9		%		0.1	20

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Annul Sediment Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-142060-1

Method: Moisture - Percent Moisture (Continued)

Lab Sample ID: 440-142060-2 DU
Matrix: Solid
Analysis Batch: 327140

Client Sample ID: Arroyo_Simi-Sed_20160319
Prep Type: Total/NA

Analyte	Sample	Sample	DU		Unit	D	RPD	Limit
	Result	Qualifier	Result	Qualifier				
Percent Moisture	4.1		3.9		%		4	20
Percent Solids	95.9		96.1		%		0.2	20

Method: SM 4500 NH3 D - Ammonia

Lab Sample ID: MB 440-321048/2-A
Matrix: Solid
Analysis Batch: 321061

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 321048

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Ammonia (as N)	ND		10.0	2.00	mg/Kg		03/30/16 04:00	03/30/16 06:00	1

Lab Sample ID: LCS 440-321048/1-A
Matrix: Solid
Analysis Batch: 321061

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 321048

Analyte	Spike Added	LCS	LCS	Unit	D	%Rec	Limits
		Result	Qualifier				
Ammonia (as N)	50.0	47.69		mg/Kg		95	85 - 115

Lab Sample ID: 440-142060-1 MS
Matrix: Solid
Analysis Batch: 321061

Client Sample ID: Amoyo_Simi-Sed_20160319
Prep Type: Total/NA
Prep Batch: 321048

Analyte	Sample	Sample	Spike Added	MS	MS	Unit	D	%Rec	Limits
	Result	Qualifier		Result	Qualifier				
Ammonia (as N)	4.06	J,DX	50.0	51.64		mg/Kg		95	75 - 125

Lab Sample ID: 440-142060-1 MSD
Matrix: Solid
Analysis Batch: 321061

Client Sample ID: Amoyo_Simi-Sed_20160319
Prep Type: Total/NA
Prep Batch: 321048

Analyte	Sample	Sample	Spike Added	MSD	MSD	Unit	D	%Rec	Limits	RPD	Limit
	Result	Qualifier		Result	Qualifier						
Ammonia (as N)	4.06	J,DX	50.0	55.90		mg/Kg		104	75 - 125	8	15

Lab Sample ID: 440-142060-1 DU
Matrix: Solid
Analysis Batch: 321061

Client Sample ID: Amoyo_Simi-Sed_20160319
Prep Type: Total/NA
Prep Batch: 321048

Analyte	Sample	Sample	DU		Unit	D	RPD	Limit
	Result	Qualifier	Result	Qualifier				
Ammonia (as N)	4.06	J,DX	3.898	J,DX	mg/Kg		4	15

QC Association Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Annul Sediment Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-142060-1

GC Semi VOA

Prep Batch: 326011

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-142060-1	Amoyo_Simi-Sed_20160319	Total/NA	Solid	3546	
440-142060-1 MS	Amoyo_Simi-Sed_20160319	Total/NA	Solid	3546	
440-142060-1 MSD	Amoyo_Simi-Sed_20160319	Total/NA	Solid	3546	
LCS 440-326011/11-A	Lab Control Sample	Total/NA	Solid	3546	
MB 440-326011/1-A	Method Blank	Total/NA	Solid	3546	

Analysis Batch: 326093

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-142060-1	Amoyo_Simi-Sed_20160319	Total/NA	Solid	8082	326011
440-142060-1 MS	Amoyo_Simi-Sed_20160319	Total/NA	Solid	8082	326011
440-142060-1 MSD	Amoyo_Simi-Sed_20160319	Total/NA	Solid	8082	326011
LCS 440-326011/11-A	Lab Control Sample	Total/NA	Solid	8082	326011
MB 440-326011/1-A	Method Blank	Total/NA	Solid	8082	326011

Prep Batch: 327134

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-142060-2	Arroyo_Simi-Sed_20160319	Total/NA	Solid	3546	
440-142060-2 MS	Arroyo_Simi-Sed_20160319	Total/NA	Solid	3546	
440-142060-2 MSD	Arroyo_Simi-Sed_20160319	Total/NA	Solid	3546	
LCS 440-327134/2-A	Lab Control Sample	Total/NA	Solid	3546	
MB 440-327134/1-A	Method Blank	Total/NA	Solid	3546	

Analysis Batch: 327332

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-142060-2	Arroyo_Simi-Sed_20160319	Total/NA	Solid	8081A	327134
440-142060-2 MS	Arroyo_Simi-Sed_20160319	Total/NA	Solid	8081A	327134
440-142060-2 MSD	Arroyo_Simi-Sed_20160319	Total/NA	Solid	8081A	327134
LCS 440-327134/2-A	Lab Control Sample	Total/NA	Solid	8081A	327134
MB 440-327134/1-A	Method Blank	Total/NA	Solid	8081A	327134

General Chemistry

Analysis Batch: 319737

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-142060-1	Amoyo_Simi-Sed_20160319	Total/NA	Solid	Moisture	
440-142060-1 DU	Amoyo_Simi-Sed_20160319	Total/NA	Solid	Moisture	

Prep Batch: 321048

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-142060-1	Amoyo_Simi-Sed_20160319	Total/NA	Solid	SM 4500 NH3 B	
440-142060-1 DU	Amoyo_Simi-Sed_20160319	Total/NA	Solid	SM 4500 NH3 B	
440-142060-1 MS	Amoyo_Simi-Sed_20160319	Total/NA	Solid	SM 4500 NH3 B	
440-142060-1 MSD	Amoyo_Simi-Sed_20160319	Total/NA	Solid	SM 4500 NH3 B	
LCS 440-321048/1-A	Lab Control Sample	Total/NA	Solid	SM 4500 NH3 B	
MB 440-321048/2-A	Method Blank	Total/NA	Solid	SM 4500 NH3 B	

Analysis Batch: 321061

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-142060-1	Amoyo_Simi-Sed_20160319	Total/NA	Solid	SM 4500 NH3 D	321048
440-142060-1 DU	Amoyo_Simi-Sed_20160319	Total/NA	Solid	SM 4500 NH3 D	321048

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annul Sediment Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-142060-1

General Chemistry (Continued)

Analysis Batch: 321061 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-142060-1 MS	Amoyo_Simi-Sed_20160319	Total/NA	Solid	SM 4500 NH3 D	321048
440-142060-1 MSD	Amoyo_Simi-Sed_20160319	Total/NA	Solid	SM 4500 NH3 D	321048
LCS 440-321048/1-A	Lab Control Sample	Total/NA	Solid	SM 4500 NH3 D	321048
MB 440-321048/2-A	Method Blank	Total/NA	Solid	SM 4500 NH3 D	321048

Analysis Batch: 322068

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-142060-1	Amoyo_Simi-Sed_20160319	Total/NA	Solid	9060	
440-142060-1 MS	Amoyo_Simi-Sed_20160319	Total/NA	Solid	9060	
440-142060-1 MSD	Amoyo_Simi-Sed_20160319	Total/NA	Solid	9060	
LCS 440-322068/7	Lab Control Sample	Total/NA	Solid	9060	
MB 440-322068/8	Method Blank	Total/NA	Solid	9060	

Analysis Batch: 327140

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-142060-2	Arroyo_Simi-Sed_20160319	Total/NA	Solid	Moisture	
440-142060-2 DU	Arroyo_Simi-Sed_20160319	Total/NA	Solid	Moisture	

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Annul Sediment Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-142060-1

Qualifiers

GC Semi VOA

Qualifier	Qualifier Description
BU	Sample was prepped beyond the specified holding time
PI	Primary and confirm results varied by > than 40% RPD

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.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
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
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)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annul Sediment Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-142060-1

Laboratory: TestAmerica Irvine

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

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-16
Arizona	State Program	9	AZ0671	10-13-16
California	LA Cty Sanitation Districts	9	10256	01-31-17 *
California	State Program	9	CA ELAP 2706	06-30-16
Guam	State Program	9	Cert. No. 12.002r	01-23-17
Hawaii	State Program	9	N/A	01-29-17
Kansas	NELAP Secondary AB	7	E-10420	07-31-16
Nevada	State Program	9	CA015312016-2	07-31-16
New Mexico	State Program	6	N/A	01-29-17
Northern Mariana Islands	State Program	9	MP0002	01-29-16 *
Oregon	NELAP	10	4028	01-29-17
USDA	Federal		P330-09-00080	07-08-18
Washington	State Program	10	C900	09-03-16

* Certification renewal pending - certification considered valid.

TestAmerica Irvine



8100 Secura Way • Santa Fe Springs, CA 90670
Telephone (562) 347-2500 • Fax (562) 907-3610

April 11, 2016

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

Re: PTS File No: 46195
Physical Properties Data
Boeing NPDES SSFL outfalls; 44009879; 440-142060-1

Dear Ms. Patel:

Please find enclosed report for Physical Properties analyses conducted upon the sample received from your Boeing NPDES SSFL outfalls; 44009879; 440-142060-1 project. All analyses were performed by applicable ASTM, EPA, or API methodologies. The sample is currently in storage and will be retained for thirty days past completion of testing at no charge. Please note that the sample will be disposed of at that time. You may contact me regarding storage, disposal, or return of the sample.

PTS Laboratories appreciates the opportunity to be of service. If you have any questions or require additional information, please give me a call at (562) 347-2502.

Sincerely,
PTS Laboratories, Inc.

Michael Mark Brady, P.G.
Laboratory Director

Encl.

Project Name:
Project Number:

Boeing NPDES SSFL outfalls; 44009879
440-142060-1

PTS File No: 46195
Client: TestAmerica Irvine

TEST PROGRAM - 20160321

CORE ID	Depth ft.	Core Recovery ft.	Grain Size Analysis					Comments
		Plugs:	Grab					
Date Received: 20160321								
Amoyo_Simi-Sed_20160319 (440-142060-1)	N/A	N/A	X					
TOTALS:	1 jar		1					

Laboratory Test Program Notes

Contaminant identification:

Standard TAT for basic analysis is 10 business days.

ASTM D422: Dry Sieve only, Hydrometer analysis must be requested prior to initiating tests. Additional costs would apply.

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

PARTICLE SIZE SUMMARY
(METHODOLOGY: ASTM D422/D4464M)

PROJECT NAME: Boeing NPDES SSFL outfalls; 44009879
PROJECT NO: 440-142060-1

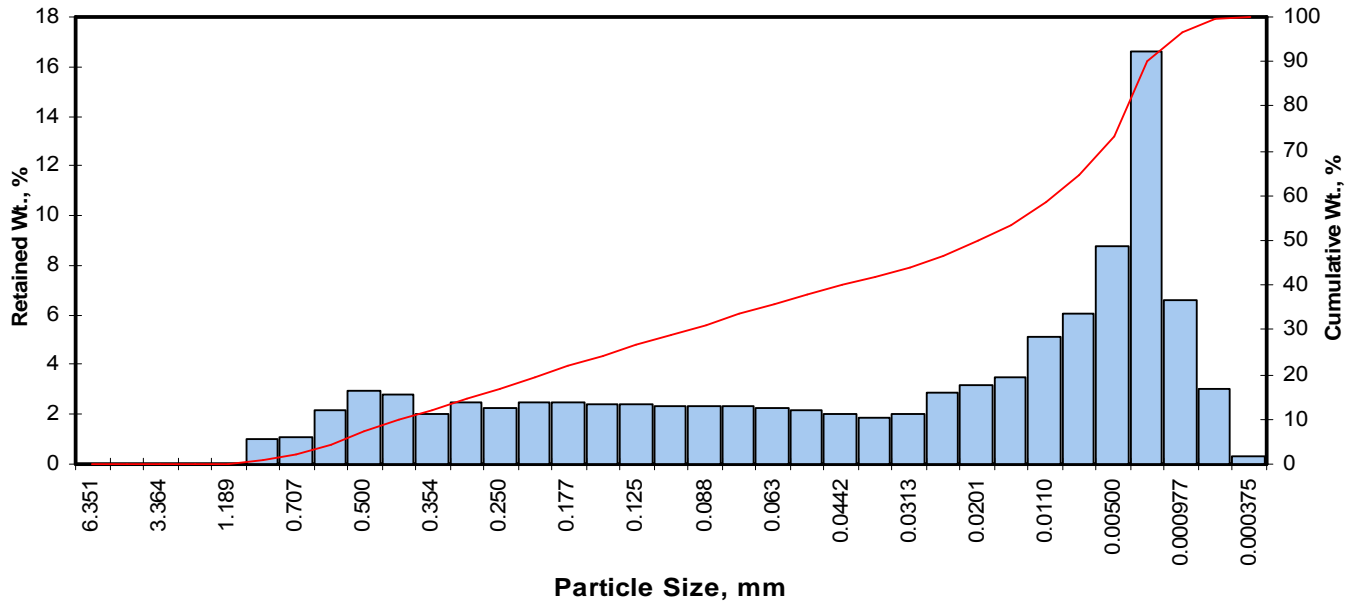
Sample ID	Depth, ft.	Mean Grain Size Description (1)	Median Grain Size mm	Particle Size Distribution, wt. percent						Silt & Clay
				Gravel	Sand Size			Silt	Clay	
					Coarse	Medium	Fine			
Amoyo_Simi-Sed_20160319 (440-142060-1)	N/A	Silt	0.020	0.00	0.00	10.05	23.50	39.89	26.55	66.44

(1) Based on Mean from Trask



Client: TestAmerica Irvine **PTS File No:** 46195
Project: Boeing NPDES SSFL outfalls; 44009879 **Sample ID:** Amoyo_Simi-Sed_20160319 (440-142060-1)
Project No: 440-142060-1 **Depth, ft:** N/A

Grv	Sand Size			Silt	Clay
	crs	medium	fine		



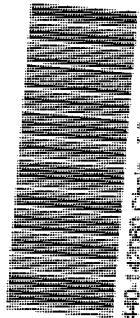
Opening		Phi of Screen	U.S. No.	Sample Weight, grams	Increment Weight, percent	Cumulative Weight, percent
Inches	Millimeters					
0.2500	6.351	-2.67	1/4	0.00	0.00	0.00
0.1873	4.757	-2.25	4	0.00	0.00	0.00
0.1324	3.364	-1.75	6	0.00	0.00	0.00
0.0787	2.000	-1.00	10	0.00	0.00	0.00
0.0468	1.189	-0.25	16	0.04	0.03	0.03
0.0331	0.841	0.25	20	0.99	0.99	1.02
0.0278	0.707	0.50	25	1.11	1.11	2.13
0.0234	0.595	0.75	30	2.14	2.14	4.27
0.0197	0.500	1.00	35	2.96	2.96	7.23
0.0166	0.420	1.25	40	2.82	2.82	10.05
0.0139	0.354	1.50	45	1.98	1.98	12.03
0.0117	0.297	1.75	50	2.48	2.48	14.51
0.0098	0.250	2.00	60	2.27	2.27	16.78
0.0083	0.210	2.25	70	2.48	2.48	19.26
0.0070	0.177	2.50	80	2.51	2.51	21.77
0.0059	0.149	2.75	100	2.44	2.44	24.21
0.0049	0.125	3.00	120	2.38	2.38	26.59
0.0041	0.105	3.25	140	2.34	2.34	28.93
0.0035	0.088	3.50	170	2.32	2.32	31.25
0.0029	0.074	3.75	200	2.31	2.31	33.56
0.0025	0.063	4.00	230	2.27	2.27	35.83
0.0021	0.053	4.25	270	2.14	2.14	37.97
0.00174	0.0442	4.50	325	1.98	1.98	39.95
0.00146	0.0372	4.75	400	1.89	1.89	41.83
0.00123	0.0313	5.00	450	2.00	2.00	43.83
0.000986	0.0250	5.32	500	2.91	2.91	46.74
0.000790	0.0201	5.64	635	3.22	3.22	49.96
0.000615	0.0156	6.00		3.51	3.51	53.47
0.000435	0.0110	6.50		5.13	5.13	58.60
0.000308	0.00781	7.00		6.06	6.06	64.66
0.000197	0.00500	7.65		8.79	8.79	73.45
0.000077	0.00195	9.00		16.60	16.60	90.04
0.000038	0.000977	10.00		6.60	6.60	96.64
0.000019	0.000488	11.00		3.05	3.05	99.69
0.000015	0.000375	11.38		0.31	0.31	100.00
TOTALS				100.00	100.00	100.00

Cumulative Weight Percent greater than			
Weight percent	Phi Value	Particle Size	
		Inches	Millimeters
5	0.81	0.0224	0.570
10	1.25	0.0166	0.422
16	1.91	0.0104	0.265
25	2.83	0.0055	0.140
40	4.51	0.0017	0.044
50	5.64	0.0008	0.020
60	6.62	0.0004	0.010
75	7.77	0.0002	0.005
84	8.51	0.0001	0.003
90	9.00	0.0001	0.002
95	9.75	0.0000	0.001

Measure	Trask	Inman	Folk-Ward
Median, phi	5.64	5.64	5.64
Median, in.	0.0008	0.0008	0.0008
Median, mm	0.020	0.020	0.020
Mean, phi	3.79	5.21	5.35
Mean, in.	0.0029	0.0011	0.0010
Mean, mm	0.072	0.027	0.024
Sorting	5.538	3.296	3.003
Skewness	1.267	-0.132	-0.106
Kurtosis	0.162	0.356	0.742
Grain Size Description		Silt	
(ASTM-USCS Scale)		(based on Mean from Trask)	

Description	Retained on Sieve #	Weight Percent
Gravel	4	0.00
Coarse Sand	10	0.00
Medium Sand	40	10.05
Fine Sand	200	23.50
Silt	>0.005 mm	39.89
Clay	<0.005 mm	26.55
Total		100

Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108		Project: Boeing-SSFL NPDES Permit 2015 Annual Sediment Arroyo Simi-Frontier Park		Field Readings Field readings: (Include units) Time of readings: <u>NA</u> pH _____ pH unit Temp _____ °C/F DO = _____ mg/L Conductivity = _____ µmhos/cm Velocity _____ ft/sec Field readings OC Checked by: <u>BE</u> Date/Time: <u>3-19-16/0925</u>		Meter serial # _____											
Test America Contact: Unvaashi Patel 17461 Deritan Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055		Project Manager: Nancy Gardiner 619.265.7132, 856.337.4061 (cell)		ANALYSIS REQUIRED Chronic 10-day eohaustorinus estuensis Toxicity 48-hour Bivalve Embryo toxicity (Mytilus edulis or Crassostrea gigas) 4-D-DT Chlordane, Dieldrin, Toxaphene (9081), 4-DDD, 4-DDE PCBs (9082) Total Organic Carbon Total Ammonia Particle Size Distribution % Moisture		Comments Keep sample in cooler in the dark until delivered to ABC Labs											
Sampler: Neal Smith Dan Smith		Field Manager: Mark Dominick 618.950.7312, 618.599.0702 (cell)		Turn-around times (Check) 24 Hour _____ 72 Hour _____ 10 Day _____ 48 Hour _____ 5 Day _____ Normal: <u>X</u>		Sample integrity: (Check) In tact: <u>X</u> On Ice: <u>X</u> Delta Requirements: (Check) No Level IV: _____ All Level IV: _____											
Sample Description	Sample I.D.	Sampling Date/Time	Sample Matrix	Container Type	# of Cont.	Preservative	Bottle #	MS/MSD	Total Ammonia	PCBs (9082)	Chlordane, Dieldrin, Toxaphene (9081), 4-DDD, 4-DDE	48-hour Bivalve Embryo toxicity (Mytilus edulis or Crassostrea gigas)	Chronic 10-day eohaustorinus estuensis Toxicity	% Moisture	Particle Size Distribution	Field Readings	Meter serial #
Arroyo Simi	Arroyo_Simi-Sed_20160319	3/19/2016 10:00	SE	9 oz Jar	1	None	165	Yes	X	X							
			SE	9 oz Jar	1	None	246	No									
			SE	9 oz Jar	1	None	280	Yes		X							
			SE	9 oz Jar	1	None	280	Yes			X						
			SE	1L wide mouth Plastic	1	None	295	No				X					
			SE	9 oz Jar	1	4C in the Dark	300	No					X				
			SE	9 oz Jar	1	None	305	No						X			
			SE	9 oz Jar	1	None	310	No									
Relinquished By	Company:	Date/Time:	Company:	Date/Time:	Received By	Date/Time:	Company:	Date/Time:	Received By	Date/Time:	Company:	Date/Time:	Company:	Date/Time:	Received By	Date/Time:	Company:
<i>[Signature]</i>		3/19/16 10:00	JHA		<i>[Signature]</i>	3/19/16 10:10											
<i>[Signature]</i>		3/19/16 13:50			<i>[Signature]</i>	3/19/16											



13:50

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-142060-1

Login Number: 142060

List Number: 1

Creator: Chavez, Yonny 1

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	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?	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	



DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-142067-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

April 6, 2016

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





TABLE OF CONTENTS

I. INTRODUCTION..... 1

II. Sample Management..... 2

III. STANDARD METHOD 9221F — ESCHERICHIA COLI..... 6

 III.1. Holding Times 6

 III.2. Calibration..... 6

 III.3. Quality Control Samples 6

 III.3.1. Method Blanks 6

 III.3.2. Laboratory Control Samples 6

 III.3.3. Laboratory Duplicates..... 6

 III.3.4. Matrix Spike/Matrix Spike Duplicate 6

 III.3.5. Sample Result Verification..... 6

 III.4. Field QC Samples..... 6

 III.4.1. Field Blanks and Equipment Blanks 6

 III.4.2. Field Duplicates..... 6

TABLES

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



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-142067-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
ArroyoSimi-20160319	440-142067-1	N/A	Water	3/19/2016 8:45:00 AM	SM9221F



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-142067-1:

- The laboratory received the samples in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius ($^{\circ}\text{C}$) and greater than 0°C .
- The laboratories received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COC.
- According to the laboratories' sample receipt checklists, custody seals were intact.



TABLE 2 - DATA QUALIFIER REFERENCE

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



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	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.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) 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.
B	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.
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.
P	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.
*II, *III	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. STANDARD METHOD 9221F — ESCHERICHIA COLI

Michael Cherny of MEC^X reviewed the SDG April 6, 2016

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *Standard Methods for the Examination of Water and Wastewater 9221F* and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

III.1. HOLDING TIMES

The analytical holding time, 8 hours from collection, was met.

III.2. CALIBRATION

The biological controls were acceptable.

III.3. QUALITY CONTROL SAMPLES

III.3.1. METHOD BLANKS

The method blank is not applicable to the biological methods.

III.3.2. LABORATORY CONTROL SAMPLES

The presumptive test was analyzed for the biological methods with the positive detects for the target bacteria.

III.3.3. LABORATORY DUPLICATES

No laboratory duplicate analysis was performed on the sample in this SDG.

III.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD samples are not applicable to this method.

III.3.5. 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. When the sample results were qualified and the reviewer was able to clearly determine bias, detected results were qualified as either J+ or J-; otherwise, bias was not indicated in the qualification. Any detects between the method detection limit and the reporting limit were qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Reported nondetects are valid to the MDL.

III.4. FIELD QC SAMPLES

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

III.4.1. FIELD BLANKS AND EQUIPMENT BLANKS

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

III.4.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms 4401420671

Analysis Method *SM9221F*

Sample Name ArroyoSimi-20160319

Matrix Type: WS

Result Type: TRG

Sample Date: 3/19/2016 8:45:00 AM

Validation Level: 8

Lab Sample Name: 440-142067-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Escherichia coli	N	ECOLI	120	1.8	1.8	mpn/10			

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-142067-1

Client Project/Site: Annual Arroyo Simi-Frontier Park

For:

Haley & Aldrich, Inc.

5333 Mission Center Road

Suite 300

San Diego, California 92108

Attn: Nancy Gardiner



Authorized for release by:

3/30/2016 8:19:39 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

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

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

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

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



Urvashi Patel
Manager of Project Management
3/30/2016 8:19:39 PM



Table of Contents

Cover Page	1
Table of Contents	3
Sample Summary	4
Case Narrative	5
Client Sample Results	6
Method Summary	7
Lab Chronicle	8
QC Association Summary	9
Definitions/Glossary	10
Certification Summary	11
Chain of Custody	12
Receipt Checklists	13

Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-142067-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-142067-1	Arroyo Simi	Water	03/19/16 08:45	03/19/16 13:50

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-142067-1

Job ID: 440-142067-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-142067-1

Comments

No additional comments.

Receipt

The sample was received on 3/19/2016 1:50 PM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.4° C.

Biology

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

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Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-142067-1

Client Sample ID: Arroyo Simi

Lab Sample ID: 440-142067-1

Date Collected: 03/19/16 08:45

Matrix: Water

Date Received: 03/19/16 13:50

Method: SM 9221F - E.Coli (Multiple-Tube Fermentation; EC-MUG)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Escherichia coli	120		1.8	1.8	MPN/100mL			03/19/16 15:30	1

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Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-142067-1

Method	Method Description	Protocol	Laboratory
SM 9221F	E.Coli (Multiple-Tube Fermentation; EC-MUG)	SM	TAL IRV

Protocol References:

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

Laboratory References:

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

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Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-142067-1

Client Sample ID: Arroyo Simi

Lab Sample ID: 440-142067-1

Date Collected: 03/19/16 08:45

Matrix: Water

Date Received: 03/19/16 13:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 9221F		1	100 mL	100 mL	319363	(Start) 03/19/16 15:30 (End) 03/22/16 14:22	AMH	TAL IRV

Laboratory References:

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

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-142067-1

Biology

Analysis Batch: 319363

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-142067-1	Arroyo Simi	Total/NA	Water	SM 9221F	

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Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-142067-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
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
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)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-142067-1

Laboratory: TestAmerica Irvine

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

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-16
Arizona	State Program	9	AZ0671	10-13-16
California	LA Cty Sanitation Districts	9	10256	01-31-17 *
California	State Program	9	CA ELAP 2706	06-30-16
Guam	State Program	9	Cert. No. 12.002r	01-23-17
Hawaii	State Program	9	N/A	01-29-17
Kansas	NELAP Secondary AB	7	E-10420	07-31-16
Nevada	State Program	9	CA015312007A	07-31-16
New Mexico	State Program	6	N/A	01-29-17
Northern Mariana Islands	State Program	9	MP0002	01-29-16 *
Oregon	NELAP	10	4005	01-29-17
USDA	Federal		P330-09-00080	07-08-18
Washington	State Program	10	900	09-03-16

* Certification renewal pending - certification considered valid.

TestAmerica Irvine

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-142067-1

Login Number: 142067

List Source: TestAmerica Irvine

List Number: 1

Creator: Skinner, Alma

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	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?	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 <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-142069-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

April 6, 2016

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





TABLE OF CONTENTS

I. INTRODUCTION..... 1

II. Sample Management..... 2

III. STANDARD METHOD 9221F — ESCHERICHIA COLI..... 6

 III.1. Holding Times 6

 III.2. Calibration..... 6

 III.3. Quality Control Samples 6

 III.3.1. Method Blanks 6

 III.3.2. Laboratory Control Samples 6

 III.3.3. Laboratory Duplicates..... 6

 III.3.4. Matrix Spike/Matrix Spike Duplicate 6

 III.3.5. Sample Result Verification..... 6

 III.4. Field QC Samples..... 6

 III.4.1. Field Blanks and Equipment Blanks 6

 III.4.2. Field Duplicates..... 6

TABLES

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



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-142069-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
ArroyoSimi-20160316	440-142069-1	N/A	Water	3/16/2016 12:15:00 PM	SM9221F



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-142069-1:

- The laboratory received the samples in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius ($^{\circ}\text{C}$) and greater than 0°C .
- The laboratories received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COC.
- According to the laboratories' sample receipt checklists, custody seals were intact.



TABLE 2 - DATA QUALIFIER REFERENCE

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



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	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.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) 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.
B	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.
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.
P	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.
*II, *III	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. STANDARD METHOD 9221F — ESCHERICHIA COLI

Michael Cherny of MEC^X reviewed the SDG April 6, 2016

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *Standard Methods for the Examination of Water and Wastewater 9221F* and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

III.1. HOLDING TIMES

The analytical holding time, 8 hours from collection, was met.

III.2. CALIBRATION

The biological controls were acceptable.

III.3. QUALITY CONTROL SAMPLES

III.3.1. METHOD BLANKS

The method blank is not applicable to the biological methods.

III.3.2. LABORATORY CONTROL SAMPLES

The presumptive test was analyzed for the biological methods with the positive detects for the target bacteria.

III.3.3. LABORATORY DUPLICATES

No laboratory duplicate analysis was performed on the sample in this SDG.

III.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD samples are not applicable to this method.

III.3.5. 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. When the sample results were qualified and the reviewer was able to clearly determine bias, detected results were qualified as either J+ or J-; otherwise, bias was not indicated in the qualification. Any detects between the method detection limit and the reporting limit were qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Reported nondetects are valid to the MDL.

III.4. FIELD QC SAMPLES

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

III.4.1. FIELD BLANKS AND EQUIPMENT BLANKS

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

III.4.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms 4401420691

Analysis Method *SM9221F*

Sample Name ArroyoSimi-20160316

Matrix Type: WS

Result Type: TRG

Sample Date: 3/16/2016 12:15:00 PM

Validation Level: 8

Lab Sample Name: 440-142069-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Escherichia coli	N	ECOLI	180	1.8	1.8	mpn/10			

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-142069-1

Client Project/Site: Annual Arroyo Simi-Frontier Park

For:

Haley & Aldrich, Inc.

5333 Mission Center Road

Suite 300

San Diego, California 92108

Attn: Nancy Gardiner



Authorized for release by:

3/27/2016 8:37:34 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

LINKS

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

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

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



Urvashi Patel
Manager of Project Management
3/27/2016 8:37:34 PM



Table of Contents

Cover Page	1
Table of Contents	3
Sample Summary	4
Case Narrative	5
Client Sample Results	6
Method Summary	7
Lab Chronicle	8
QC Association Summary	9
Definitions/Glossary	10
Certification Summary	11
Chain of Custody	12
Receipt Checklists	13

Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-142069-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-142069-1	Arrollo Simi	Water	03/16/16 12:15	03/16/16 19:30

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-142069-1

Job ID: 440-142069-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-142069-1

Comments

No additional comments.

Receipt

The sample was received on 3/16/2016 7:30 PM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.5° C.

Biology

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

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Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-142069-1

Client Sample ID: Arrollo Simi

Lab Sample ID: 440-142069-1

Date Collected: 03/16/16 12:15

Matrix: Water

Date Received: 03/16/16 19:30

Method: SM 9221F - E.Coli (Multiple-Tube Fermentation; EC-MUG)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Escherichia coli	180		1.8	1.8	MPN/100mL			03/16/16 19:10	1

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Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-142069-1

Method	Method Description	Protocol	Laboratory
SM 9221F	E.Coli (Multiple-Tube Fermentation; EC-MUG)	SM	TAL IRV

Protocol References:

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

Laboratory References:

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



Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-142069-1

Client Sample ID: Arrollo Simi

Lab Sample ID: 440-142069-1

Date Collected: 03/16/16 12:15

Matrix: Water

Date Received: 03/16/16 19:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 9221F		1	100 mL	100 mL	319459	(Start) 03/16/16 19:10 (End) 03/19/16 19:51	AS	TAL IRV

Laboratory References:

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

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-142069-1

Biology

Analysis Batch: 319459

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-142069-1	Arrollo Simi	Total/NA	Water	SM 9221F	

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Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-142069-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
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
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)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-142069-1

Laboratory: TestAmerica Irvine

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

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-16
Arizona	State Program	9	AZ0671	10-13-16
California	LA Cty Sanitation Districts	9	10256	01-31-17 *
California	State Program	9	CA ELAP 2706	06-30-16
Guam	State Program	9	Cert. No. 12.002r	01-23-17
Hawaii	State Program	9	N/A	01-29-17
Kansas	NELAP Secondary AB	7	E-10420	07-31-16
Nevada	State Program	9	CA015312007A	07-31-16
New Mexico	State Program	6	N/A	01-29-17
Northern Mariana Islands	State Program	9	MP0002	01-29-16 *
Oregon	NELAP	10	4005	01-29-17
USDA	Federal		P330-09-00080	07-08-18
Washington	State Program	10	900	09-03-16

* Certification renewal pending - certification considered valid.

TestAmerica Irvine

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-142069-1

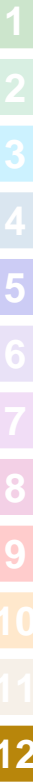
Login Number: 142069

List Number: 1

Creator: Skinner, Alma

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	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?	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 <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-142572-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

April 28, 2016

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





TABLE OF CONTENTS

I. INTRODUCTION..... 1

II. Sample Management..... 2

IV. VARIOUS METHODS — GENERAL CHEMISTRY 6

 IV.1. Holding Times 6

 IV.2. Calibration..... 6

 IV.3. Quality Control Samples 6

 IV.3.1. Method Blanks 6

 IV.3.2. Laboratory Control Samples 6

 IV.3.3. Laboratory Duplicates..... 6

 IV.3.4. Matrix Spike/Matrix Spike Duplicate 6

 IV.4. Sample Result Verification..... 6

 IV.5. Field QC Samples..... 6

 IV.5.1. Field Blanks and Equipment Blanks 6

 IV.5.2. Field Duplicates..... 7

TABLES

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



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-142572-1

Project Manager: Katherine Miller

Matrix: Sediment

QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Arroyo_Simi_Sed_2 0160325	440-142572-1	N/A	Sediment	3/25/2016 8:55:00 AM	EPA/600/R-94/025, EPA/R-95/136



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chain-of-custody (COC) provided by the laboratory for sample delivery group (SDG) 440-142572-1:

- The laboratories received the samples in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratories received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COC.
- According to the laboratory's sample receipt checklists, custody seals were intact.



TABLE 2 - DATA QUALIFIER REFERENCE

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



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	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.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) 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.
B	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.
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.
P	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.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



IV. VARIOUS METHODS — GENERAL CHEMISTRY

Michael Cherny of MEC^X reviewed the SDG on April 28, 2016

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, EPA Methods 600/R-94/025 and 600/R-95/136, and the *National Functional Guidelines for Inorganic Superfund Data Review* (2014).

IV.1. HOLDING TIMES

The American Society for Testing and Materials (ASTM) recommended analytical holding time, less than two weeks for sediment toxicity (chronic 10-day *Eohaustorius estuarius* toxicity) and 48-hour Bivalve Embryo toxicity (*Mytilus edulis*), was met.

IV.2. CALIBRATION

For toxicity, instruments were calibrated as per the manufacturer requirements and standard reference toxicant testing was performed to verify culture health and sensitivity.

IV.3. QUALITY CONTROL SAMPLES

IV.3.1. METHOD BLANKS

The method blanks and CCBs had no detects.

IV.3.2. LABORATORY CONTROL SAMPLES

LCS analyses are not applicable to these methods.

IV.3.3. LABORATORY DUPLICATES

No laboratory duplicate analyses were performed on a sample in this SDG.

IV.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses are not applicable to these methods.

IV.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample results reported on the sample results summary were verified against the raw data. No transcription errors or calculation errors were noted. When the sample results were qualified and the reviewer was able to clearly determine bias, detected results were qualified as either J+ or J-; otherwise, bias was not indicated in the qualification. Any detects between the method detection limit and the reporting limit were qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Reported nondetects are valid to the MDL.

IV.5. FIELD QC SAMPLES

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

IV.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

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



IV.5.2. *FIELD DUPLICATES*

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms 4401425721

Analysis Method EPA/600/R-94/025

Sample Name Arroyo_Simi_Sed_20160325 **Matrix Type:** SE **Result Type:** TRG

Sample Date: 3/25/2016 8:55:00 AM **Validation Level:** 8

Lab Sample Name: 440-142572-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
---------	----------	--------	--------------	----	-----	--------------	---------------	----------------------	------------------

Sediment toxicity (chronic 10-day eohaustorius estuarius toxicity)	N	SEDTOX10 DAY	100			% SURVIVAL			
--	---	--------------	-----	--	--	------------	--	--	--

Analysis Method EPA/R-95/136

Sample Name Arroyo_Simi_Sed_20160325 **Matrix Type:** SE **Result Type:** TRG

Sample Date: 3/25/2016 8:55:00 AM **Validation Level:** 8

Lab Sample Name: 440-142572-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
---------	----------	--------	--------------	----	-----	--------------	---------------	----------------------	------------------

48-hour Bivalve Embryo toxicity (Mytilus edulis)	N	BITOX48H OUR	100			% SURVIVAL			
--	---	--------------	-----	--	--	------------	--	--	--

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-142572-1

Client Project/Site: Annual Sediment Arroyo Simi-Frontier Pk.

For:

Haley & Aldrich, Inc.

5333 Mission Center Road

Suite 300

San Diego, California 92108

Attn: Nancy Gardiner



Authorized for release by:

4/25/2016 8:13:18 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

LINKS

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results through

TotalAccess

Have a Question?



Visit us at:

www.testamericainc.com

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

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

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

1

2

3

4

5

6

7

8

9

10

- 1
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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
4/25/2016 8:13:18 PM



Table of Contents

Cover Page	1
Table of Contents	3
Sample Summary	4
Case Narrative	5
Method Summary	6
Definitions/Glossary	7
Certification Summary	8
Subcontract Data	9
Chain of Custody	40
Receipt Checklists	41

Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Sediment Arroyo Simi-Frontier Pk.

TestAmerica Job ID: 440-142572-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-142572-1	Arroyo_Simi_Sed_20160325	Solid	03/25/16 08:55	03/25/16 16:45

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10

Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Annual Sediment Arroyo Simi-Frontier Pk.

TestAmerica Job ID: 440-142572-1

Job ID: 440-142572-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-142572-1

Comments

No additional comments.

Receipt

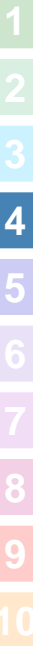
The samples were received on 3/25/2016 4:45 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 1.5° C and 2.8° C.

Subcontract non-Sister

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

Subcontract Work

Methods 48-hour Bivalve Embryo toxicity, Bioassay-Chronic 10day eohaustorius: These methods were subcontracted to Aquatic Bioassay - Ventura, CA. The subcontract laboratory certifications are different from that of the facility issuing the final report.



Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Sediment Arroyo Simi-Frontier Pk.

TestAmerica Job ID: 440-142572-1

Method	Method Description	Protocol	Laboratory
48-hour Bivalve Embryo toxicity Bioassay-Chronic 10day eohaustorius	General Sub Contract Method	NONE	ABC
	General Sub Contract Method	NONE	ABC

Protocol References:

NONE = NONE

Laboratory References:

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



Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Sediment Arroyo Simi-Frontier Pk.

TestAmerica Job ID: 440-142572-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
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
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)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Sediment Arroyo Simi-Frontier Pk.

TestAmerica Job ID: 440-142572-1

Laboratory: TestAmerica Irvine

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

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-16
Arizona	State Program	9	AZ0671	10-13-16
California	LA Cty Sanitation Districts	9	10256	01-31-17 *
California	State Program	9	CA ELAP 2706	06-30-16
Guam	State Program	9	Cert. No. 12.002r	01-23-17
Hawaii	State Program	9	N/A	01-29-17
Kansas	NELAP Secondary AB	7	E-10420	07-31-16
Nevada	State Program	9	CA015312016-2	07-31-16
New Mexico	State Program	6	N/A	01-29-17
Northern Mariana Islands	State Program	9	MP0002	01-29-16 *
Oregon	NELAP	10	4028	01-29-17
USDA	Federal		P330-09-00080	07-08-18
Washington	State Program	10	C900	09-03-16

* Certification renewal pending - certification considered valid.

TestAmerica Irvine



April 21, 2016

Debby Wilson
TestAmerica Irvine
17461 Derian Avenue, Suite 100
Irvine, CA 92614

Dear Ms. Wilson:

We are pleased to present the enclosed bioassay report. The test was conducted under guidelines prescribed in *Methods for Assessing the Toxicity of Sediment-associated Contaminants with Estuarine and Marine Amphipods, Method EPA/600/R-94/025*. Results were as follows:


CLIENT:	TestAmerica
SAMPLE I.D.:	Arroyo Simi
DATE RECEIVED:	3/29/2016
ABC LAB. NO.:	TAM0316.162

CHRONIC EOHAUSTORIUS SURVIVAL BIOASSAY

NOEC = 100.00 %
TUc = 1.00

EC25 = >100.00 %
EC50 = >100.00 %
TST RESULT = PASS

Yours very truly,


rc Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 21 Apr-16 10:10 (p 1 of 1)
 Test Code: TAM0316.162eoh | 18-5666-0960

Eohaustorius 10-d Survival and Reburial Sediment Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 10-0727-3627	Test Type: Survival-Reburial	Analyst: Joe Freas
Start Date: 08 Apr-16 08:22	Protocol: EPA/600/R-94/025 (1994)	Diluent: Laboratory Seawater
Ending Date: 18 Apr-16 08:30	Species: Eohaustorius estuarius	Brine: Not Applicable
Duration: 10d 0h	Source: Northwestern Aquatic Science, OR	Age:
Sample ID: 13-4204-1574	Code: TAM0316.162e	Client: Test America
Sample Date: 25 Mar-16 08:55	Material: Sample Water	Project: Annual Sediment Arroyo Simi-Frontier
Receive Date: 29 Mar-16 11:30	Source: Bioassay Report	
Sample Age: 13d 23h	Station: Arroyo_Simi_Sed_20160325 (440-142572-1)	

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
00-2879-4842	Survival Rate	100	>100	NA	2.12%	1	Wilcoxon Rank Sum Two-Sample Test

Point Estimate Summary

Analysis ID	Endpoint	Level	%	95% LCL	95% UCL	TU	Method
07-5736-2285	Survival Rate	EC5	>100	N/A	N/A	<1	Linear Interpolation (ICPIN)
		EC10	>100	N/A	N/A	<1	
		EC15	>100	N/A	N/A	<1	
		EC20	>100	N/A	N/A	<1	
		EC25	>100	N/A	N/A	<1	
		EC40	>100	N/A	N/A	<1	
		EC50	>100	N/A	N/A	<1	

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
00-2879-4842	Survival Rate	Control Resp	0.99	0.9 - NL	Yes	Passes Acceptability Criteria
07-5736-2285	Survival Rate	Control Resp	0.99	0.9 - NL	Yes	Passes Acceptability Criteria

Survival Rate Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	5	0.99	0.9622	1	0.95	1	0.01	0.02236	2.26%	0.0%
100		5	1	1	1	1	1	0	0	0.0%	-1.01%

Survival Rate Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Negative Control	0.95	1	1	1	1
100		1	1	1	1	1

Survival Rate Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Negative Control	19/20	20/20	20/20	20/20	20/20
100		20/20	20/20	20/20	20/20	20/20

CETIS Analytical Report

Report Date: 21 Apr-16 10:10 (p 2 of 2)
 Test Code: TAM0316.162eoh | 18-5666-0960

Eohaustorius 10-d Survival and Reburial Sediment Test

Aquatic Bioassay & Consulting Labs, Inc.

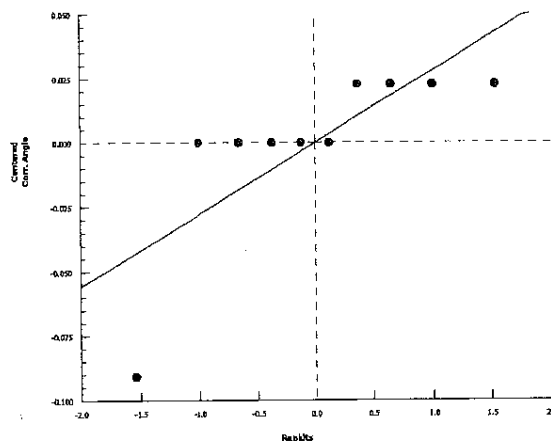
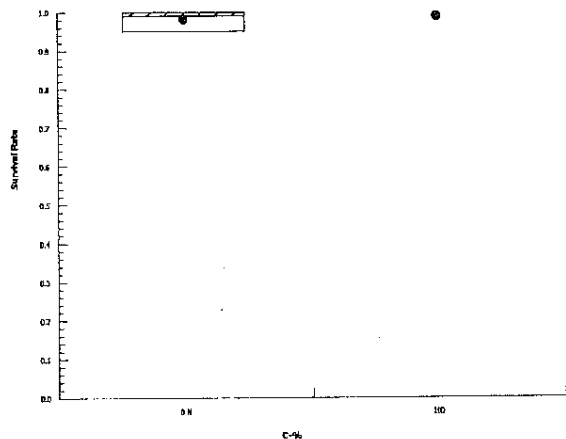
Analysis ID: 00-2879-4842 Endpoint: Survival Rate
 Analyzed: 21 Apr-16 10:09 Analysis: Nonparametric-Two Sample

CETIS Version: CETISv1.8.7
 Official Results: Yes

Survival Rate Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Negative Control	19/20	20/20	20/20	20/20	20/20
100		20/20	20/20	20/20	20/20	20/20

Graphics



CETIS Analytical Report

Report Date: 21 Apr-16 10:10 (p 1 of 2)
 Test Code: TAM0316.162eoh | 18-5666-0960

Eohaustorius 10-d Survival and Reburial Sediment Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 07-5736-2285	Endpoint: Survival Rate	CETIS Version: CETISv1.8.7
Analyzed: 21 Apr-16 10:09	Analysis: Linear Interpolation (ICPIN)	Official Results: Yes
Batch ID: 10-0727-3627	Test Type: Survival-Reburial	Analyst: Joe Freas
Start Date: 08 Apr-16 08:22	Protocol: EPA/600/R-94/025 (1994)	Diluent: Laboratory Seawater
Ending Date: 18 Apr-16 08:30	Species: Eohaustorius estuarius	Brine: Not Applicable
Duration: 10d 0h	Source: Northwestern Aquatic Science, OR	Age:
Sample ID: 13-4204-1574	Code: TAM0316.162e	Client: Test America
Sample Date: 25 Mar-16 08:55	Material: Sample Water	Project: Annual Sediment Arroyo Simi-Frontier
Receive Date: 29 Mar-16 11:30	Source: Bioassay Report	
Sample Age: 13d 23h	Station: Arroyo_Simi_Sed_20160325 (440-142572-1)	

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	0	280	Yes	Two-Point Interpolation

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
Control Resp	0.99	0.9 - NL	Yes	Passes Acceptability Criteria

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
EC5	>100	N/A	N/A	<1	NA	NA
EC10	>100	N/A	N/A	<1	NA	NA
EC15	>100	N/A	N/A	<1	NA	NA
EC20	>100	N/A	N/A	<1	NA	NA
EC25	>100	N/A	N/A	<1	NA	NA
EC40	>100	N/A	N/A	<1	NA	NA
EC50	>100	N/A	N/A	<1	NA	NA

Survival Rate Summary

C-%	Control Type	Count	Calculated Variate(A/B)								
			Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
0	Negative Control	5	0.99	0.95	1	0.01	0.02236	2.26%	0.0%	99	100
100		5	1	1	1	0	0	0.0%	-1.01%	100	100

Survival Rate Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Negative Control	0.95	1	1	1	1
100		1	1	1	1	1

Survival Rate Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Negative Control	19/20	20/20	20/20	20/20	20/20
100		20/20	20/20	20/20	20/20	20/20

CETIS Measurement Report

Report Date: 21 Apr-16 10:10 (p 1 of 1)
 Test Code: TAM0316.162eoh | 18-5666-0960

Eohaustorius 10-d Survival and Reburial Sediment Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 10-0727-3627	Test Type: Survival-Reburial	Analyst: Joe Freas
Start Date: 08 Apr-16 08:22	Protocol: EPA/600/R-94/025 (1994)	Diluent: Laboratory Seawater
Ending Date: 18 Apr-16 08:30	Species: Eohaustorius estuarius	Brine: Not Applicable
Duration: 10d 0h	Source: Northwestern Aquatic Science, OR	Age:
Sample ID: 13-4204-1574	Code: TAM0316.162e	Client: Test America
Sample Date: 25 Mar-16 08:55	Material: Sample Water	Project: Annual Sediment Arroyo Simi-Frontier
Receive Date: 29 Mar-16 11:30	Source: Bioassay Report	
Sample Age: 13d 23h	Station: Arroyo_Simi_Sed_20160325 (440-142572-1)	

Dissolved Oxygen-mg/L

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contro	2	9.55	8.915	10.19	9.5	9.6	0.04998	0.07069	0.74%	0
100		2	9.7	7.159	12.24	9.5	9.9	0.2	0.2828	2.92%	0
Overall		4	9.625			9.5	9.9				0 (0%)

pH-Units

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contro	2	7.9	7.884	7.916	7.9	7.9	0	0	0.0%	0
100		2	7.7	7.698	7.702	7.7	7.7	0	0	0.0%	0
Overall		4	7.8			7.7	7.9				0 (0%)

Salinity-ppt

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contro	2	20	20	20	20	20	0	0	0.0%	0
100		2	20	20	20	20	20	0	0	0.0%	0
Overall		4	20			20	20				0 (0%)

Temperature-°C

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contro	2	14.85	14.21	15.49	14.8	14.9	0.05004	0.07077	0.48%	0
100		2	14.65	14.02	15.28	14.6	14.7	0.04997	0.07067	0.48%	0
Overall		4	14.75			14.6	14.9				0 (0%)

Dissolved Oxygen-mg/L

C-%	Control Type	1	2
0	Negative Contr	9.6	9.5
100		9.5	9.9

pH-Units

C-%	Control Type	1	2
0	Negative Contr	7.9	7.9
100		7.7	7.7

Salinity-ppt

C-%	Control Type	1	2
0	Negative Contr	20	20
100		20	20

Temperature-°C

C-%	Control Type	1	2
0	Negative Contr	14.8	14.9
100		14.7	14.6



April 21, 2016

Debby Wilson
TestAmerica Irvine
17461 Derian Avenue, Suite 100
Irvine, CA 92614

Dear Ms. Wilson:

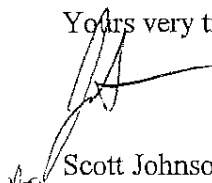
We are pleased to present the enclosed bioassay report. The test was conducted under guidelines prescribed in *Short-Term Methods for Measuring the Chronic Toxicity of Effluents and Receiving Waters to West Coast Marine and Estuarine Organisms, EPA/R-95/136*. Results were as follows:

CLIENT:	TestAmerica
SAMPLE I.D.:	Arroyo Simi
DATE RECEIVED:	3/29/2016
ABC LAB. NO.:	TAM0316.162

CHRONIC MYTILUS SEDIMENT WATER INTERFACE BIOASSAY

NOEC =	100.00 %
TU _c =	1.00
EC25 =	>100.00 %
EC50 =	>100.00 %
TST RESULT =	PASS

Yours very truly,



Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 21 Apr-16 10:12 (p 1 of 1)
 Test Code: TAM0316.162myt | 05-4604-6969

Mussel Shell Development Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 09-9931-6693	Test Type: Development-Survival	Analyst: Joe Freas
Start Date: 06 Apr-16 11:01	Protocol: EPA/600/R-95/136 (1995)	Diluent: Laboratory Water
Ending Date: 08 Apr-16 11:01	Species: Mytilus galloprovincialis	Brine:
Duration: 48h	Source: Carlsbad Aquafarms CA	Age:
Sample ID: 04-2516-8861	Code: TAM0316.162m	Client: Test America
Sample Date: 25 Mar-16 08:55	Material: Sample Water	Project: Annual Sediment Arroyo Simi-Frontier
Receive Date: 29 Mar-16 11:30	Source: Bioassay Report	
Sample Age: 12d 2h	Station: Arroyo_Simi_Sed_20160325 (440-142572-1)	

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
08-7066-2912	Combined Proportion Norm	100	>100	NA	2.94%	1	Equal Variance t Two-Sample Test

Point Estimate Summary

Analysis ID	Endpoint	Level	%	95% LCL	95% UCL	TU	Method
01-6235-3079	Combined Proportion Norm	EC5	>100	N/A	N/A	<1	Linear Interpolation (ICPIN)
		EC10	>100	N/A	N/A	<1	
		EC15	>100	N/A	N/A	<1	
		EC20	>100	N/A	N/A	<1	
		EC25	>100	N/A	N/A	<1	
		EC40	>100	N/A	N/A	<1	
		EC50	>100	N/A	N/A	<1	

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
08-7066-2912	Combined Proportion Norm	PMSD	0.02943	NL - 0.25	No	Passes Acceptability Criteria

Combined Proportion Normal Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	5	0.9435	0.9224	0.9646	0.9238	0.9686	0.007584	0.01696	1.8%	0.0%
100		5	0.9534	0.9254	0.9814	0.9238	0.9821	0.01009	0.02256	2.37%	-1.05%

Combined Proportion Normal Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Negative Control	0.9462	0.9327	0.9238	0.9686	0.9462
100		0.9821	0.9462	0.9686	0.9462	0.9238

Combined Proportion Normal Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Negative Control	211/223	208/223	206/223	216/223	211/223
100		219/223	211/223	216/223	211/223	206/223

CETIS Analytical Report

Report Date: 21 Apr-16 10:12 (p 1 of 2)
 Test Code: TAM0316.162myt | 05-4604-6969

Mussel Shell Development Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 08-7066-2912	Endpoint: Combined Proportion Normal	CETIS Version: CETISv1.8.7
Analyzed: 21 Apr-16 10:12	Analysis: Parametric-Two Sample	Official Results: Yes
Batch ID: 09-9931-6693	Test Type: Development-Survival	Analyst: Joe Freas
Start Date: 06 Apr-16 11:01	Protocol: EPA/600/R-95/136 (1995)	Diluent: Laboratory Water
Ending Date: 08 Apr-16 11:01	Species: Mytilis galloprovincialis	Brine:
Duration: 48h	Source: Carlsbad Aquafarms CA	Age:
Sample ID: 04-2516-8861	Code: TAM0316.162m	Client: Test America
Sample Date: 25 Mar-16 08:55	Material: Sample Water	Project: Annual Sediment Arroyo Simi-Frontier
Receive Date: 29 Mar-16 11:30	Source: Bioassay Report	
Sample Age: 12d 2h	Station: Arroyo_Simi_Sed_20160325 (440-142572-1)	

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	Test Result
Angular (Corrected)	NA	C > T	NA	NA	2.94%	Passes combined proportion normal

Equal Variance t Two-Sample Test

Control	vs C-%	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Negative Control	100	-0.8374	1.86	0.057	8	0.7867	CDF	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits	Overlap	Decision
PMSD	0.02943	NL - 0.25	No	Passes Acceptability Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.001638908	0.001638908	1	0.7012	0.4267	Non-Significant Effect
Error	0.01869754	0.002337193	8			
Total	0.02033645		9			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Variance Ratio F	2.142	23.15	0.4789	Equal Variances
Variances	Mod Levene Equality of Variance	0.5617	13.75	0.4819	Equal Variances
Variances	Levene Equality of Variance	1.257	11.26	0.2947	Equal Variances
Distribution	Shapiro-Wilk W Normality	0.9545	0.7411	0.7217	Normal Distribution
Distribution	Kolmogorov-Smirnov D	0.1855	0.3025	0.4752	Normal Distribution
Distribution	D'Agostino Skewness	0.6609	2.576	0.5087	Normal Distribution
Distribution	Anderson-Darling A2 Normality	0.3177	3.878	0.5610	Normal Distribution

Combined Proportion Normal Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Negative Control	5	0.9435	0.9224	0.9646	0.9462	0.9238	0.9686	0.007584	1.8%	0.0%
100		5	0.9534	0.9254	0.9814	0.9462	0.9238	0.9821	0.01009	2.37%	-1.05%

Angular (Corrected) Transformed Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Negative Control	5	1.333	1.285	1.381	1.337	1.291	1.393	0.01725	2.89%	0.0%
100		5	1.359	1.289	1.429	1.337	1.291	1.436	0.02524	4.16%	-1.92%

Combined Proportion Normal Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Negative Control	0.9462	0.9327	0.9238	0.9686	0.9462
100		0.9821	0.9462	0.9686	0.9462	0.9238

Angular (Corrected) Transformed Detail

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Negative Control	1.337	1.308	1.291	1.393	1.337
100		1.436	1.337	1.393	1.337	1.291

CETIS Analytical Report

Report Date: 21 Apr-16 10:12 (p 2 of 2)
 Test Code: TAM0316.162myt | 05-4604-6969

Mussel Shell Development Test

Aquatic Bioassay & Consulting Labs, Inc.

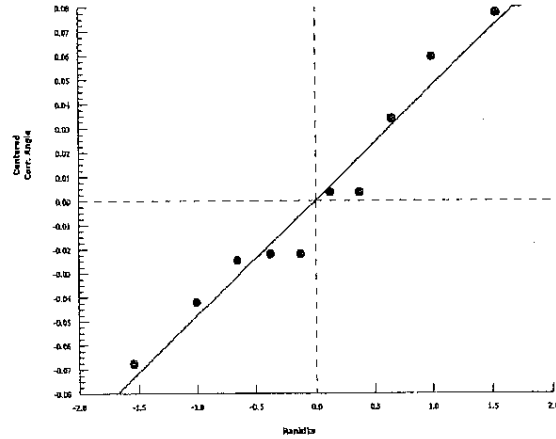
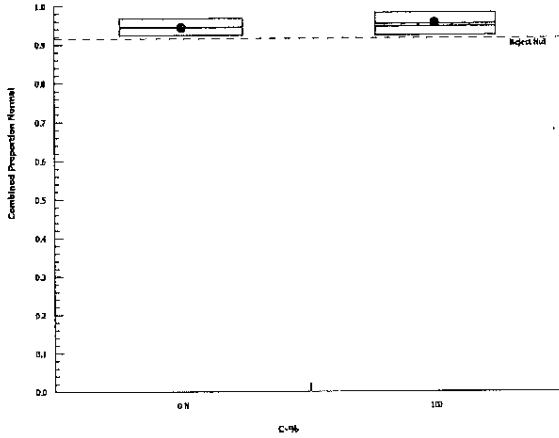
Analysis ID: 08-7066-2912 Endpoint: Combined Proportion Normal
 Analyzed: 21 Apr-16 10:12 Analysis: Parametric-Two Sample

CETIS Version: CETISv1.8.7
 Official Results: Yes

Combined Proportion Normal Binomials

C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Negative Control	211/223	208/223	206/223	216/223	211/223
100		219/223	211/223	216/223	211/223	206/223

Graphics



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APPENDIX 1

QA/QC REFERENCE TOXICANT TESTS



96 Hour *Eohaustorius estuarius* Survival Bioassay - Standard Toxicant.

DATE: 4/8/2016

STANDARD TOXICANT: Ammonium Chloride

ENDPOINT: SURVIVAL

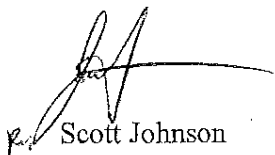
UNIONIZED AMMONIA

NOEC = 0.4520mg/L

EC25 = 0.8749mg/L

EC50 = 1.9030mg/L

Yours very truly,



Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 21 Apr-16 10:10 (p 1 of 1)
 Test Code: EOH040819 | 19-5616-1906

Reference Toxicant 96-h Acute Survival Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 19-0880-3230	Test Type: Survival	Analyst: Joe Freas
Start Date: 08 Apr-16 08:20	Protocol: EPA/600/R-94/025 (1994)	Diluent: Laboratory Seawater
Ending Date: 18 Apr-16 08:30	Species: Eohaustorius estuarius	Brine: Not Applicable
Duration: 10d 0h	Source: Northwestern Aquatic Science, OR	Age:
Sample ID: 15-0094-8816	Code: EOH040816	Client: Internal Lab
Sample Date: 08 Apr-16	Material: Ammonia (Unionized)	Project: REF TOX
Receive Date:	Source: Reference Toxicant	
Sample Age: 8h	Station: REF TOX	

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
17-5716-1161	Survival Rate	0.452	0.806	0.6036	10.1%		Dunnett Multiple Comparison Test

Point Estimate Summary

Analysis ID	Endpoint	Level	mg/L	95% LCL	95% UCL	TU	Method
00-4116-5566	Survival Rate	EC5	0.4498	0.2562	0.5799		Linear Interpolation (ICPIN)
		EC10	0.5484	0.3476	0.6579		
		EC15	0.6457	0.4985	0.7454		
		EC20	0.7431	0.6251	0.8808		
		EC25	0.8749	0.7052	1.083		
		EC40	1.459	1.279	1.665		
		EC50	1.903	1.591	2.214		

Survival Rate Summary

C-mg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	5	0.98	0.9245	1	0.9	1	0.02	0.04472	4.56%	0.0%
0.227		5	1	1	1	1	1	0	0	0.0%	-2.04%
0.452		5	0.94	0.8289	1	0.8	1	0.04	0.08944	9.52%	4.08%
0.806		5	0.76	0.692	0.828	0.7	0.8	0.02449	0.05477	7.21%	22.45%
1.672		5	0.54	0.472	0.608	0.5	0.6	0.02449	0.05477	10.14%	44.9%
3.524		5	0.18	0	0.3642	0	0.4	0.06633	0.1483	82.4%	81.63%

Survival Rate Detail

C-mg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Negative Control	1	1	0.9	1	1
0.227		1	1	1	1	1
0.452		1	0.8	0.9	1	1
0.806		0.8	0.8	0.7	0.7	0.8
1.672		0.5	0.6	0.6	0.5	0.5
3.524		0.4	0.2	0.1	0.2	0

Survival Rate Binomials

C-mg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Negative Control	10/10	10/10	9/10	10/10	10/10
0.227		10/10	10/10	10/10	10/10	10/10
0.452		10/10	8/10	9/10	10/10	10/10
0.806		8/10	8/10	7/10	7/10	8/10
1.672		5/10	6/10	6/10	5/10	5/10
3.524		4/10	2/10	1/10	2/10	0/10

CETIS Analytical Report

Report Date: 21 Apr-16 10:10 (p 1 of 2)
 Test Code: EOH040819 | 19-5616-1906

Reference Toxicant 96-h Acute Survival Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 17-5716-1161	Endpoint: Survival Rate	CETIS Version: CETISv1.8.7
Analyzed: 21 Apr-16 10:10	Analysis: Parametric-Control vs Treatments	Official Results: Yes
Batch ID: 19-0880-3230	Test Type: Survival	Analyst: Joe Freas
Start Date: 08 Apr-16 08:20	Protocol: EPA/600/R-94/025 (1994)	Diluent: Laboratory Seawater
Ending Date: 18 Apr-16 08:30	Species: Eohaustorius estuarius	Brine: Not Applicable
Duration: 10d 0h	Source: Northwestern Aquatic Science, OR	Age:
Sample ID: 15-0094-8816	Code: EOH040816	Client: Internal Lab
Sample Date: 08 Apr-16	Material: Ammonia (Unionized)	Project: REF TOX
Receive Date:	Source: Reference Toxicant	
Sample Age: 8h	Station: REF TOX	

Data Transform	Zeta	Alt Hyp	Trials	Seed	PMSD	NOEL	LOEL	TOEL	TU
Angular (Corrected)	NA	C > T	NA	NA	10.1%	0.452	0.806	0.6036	

Dunnnett Multiple Comparison Test

Control	vs	C-mg/L	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision(α:5%)
Negative Control		0.227	-0.4797	2.362	0.161	8	0.9372	CDF	Non-Significant Effect
		0.452	0.8973	2.362	0.161	8	0.4663	CDF	Non-Significant Effect
		0.806*	4.69	2.362	0.161	8	0.0002	CDF	Significant Effect
		1.672*	8.149	2.362	0.161	8	<0.0001	CDF	Significant Effect
		3.524*	14.14	2.362	0.161	8	<0.0001	CDF	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	3.793313	0.7586625	5	65.72	<0.0001	Significant Effect
Error	0.2770491	0.01154371	24			
Total	4.070362		29			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Mod Levene Equality of Variance	1.621	4.248	0.2052	Equal Variances
Variances	Levene Equality of Variance	4.338	3.895	0.0059	Unequal Variances
Distribution	Shapiro-Wilk W Normality	0.9197	0.9031	0.0264	Normal Distribution
Distribution	Kolmogorov-Smirnov D	0.1667	0.1853	0.0329	Normal Distribution
Distribution	D'Agostino Skewness	0.8624	2.576	0.3885	Normal Distribution
Distribution	D'Agostino Kurtosis	2.114	2.576	0.0345	Normal Distribution
Distribution	D'Agostino-Pearson K2 Omnibus	5.212	9.21	0.0738	Normal Distribution
Distribution	Anderson-Darling A2 Normality	1.07	3.878	0.0084	Non-normal Distribution

Survival Rate Summary

C-mg/L	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Negative Control	5	0.98	0.9245	1	1	0.9	1	0.02	4.56%	0.0%
0.227		5	1	1	1	1	1	1	0	0.0%	-2.04%
0.452		5	0.94	0.8289	1	1	0.8	1	0.04	9.52%	4.08%
0.806		5	0.76	0.692	0.828	0.8	0.7	0.8	0.02449	7.21%	22.45%
1.672		5	0.54	0.472	0.608	0.5	0.5	0.6	0.02449	10.14%	44.9%
3.524		5	0.18	0	0.3642	0.2	0	0.4	0.06633	82.4%	81.63%

Angular (Corrected) Transformed Summary

C-mg/L	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Negative Control	5	1.379	1.289	1.47	1.412	1.249	1.412	0.03259	5.28%	0.0%
0.227		5	1.412	1.412	1.412	1.412	1.412	1.412	0	0.0%	-2.36%
0.452		5	1.318	1.148	1.489	1.412	1.107	1.412	0.06153	10.44%	4.42%
0.806		5	1.061	0.9819	1.14	1.107	0.9912	1.107	0.02841	5.99%	23.1%
1.672		5	0.8257	0.7572	0.8941	0.7854	0.7854	0.8861	0.02466	6.68%	40.14%
3.524		5	0.4185	0.1767	0.6604	0.4636	0.1588	0.6847	0.08711	46.54%	69.66%

CETIS Analytical Report

Report Date: 21 Apr-16 10:10 (p 1 of 2)
 Test Code: EOH040819 | 19-5616-1906

Reference Toxicant 96-h Acute Survival Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 00-4116-5566	Endpoint: Survival Rate	CETIS Version: CETISv1.8.7
Analyzed: 21 Apr-16 10:10	Analysis: Linear Interpolation (ICPIN)	Official Results: Yes
Batch ID: 19-0880-3230	Test Type: Survival	Analyst: Joe Freas
Start Date: 08 Apr-16 08:20	Protocol: EPA/600/R-94/025 (1994)	Diluent: Laboratory Seawater
Ending Date: 18 Apr-16 08:30	Species: Eohaustorius estuarius	Brine: Not Applicable
Duration: 10d 0h	Source: Northwestern Aquatic Science, OR	Age:
Sample ID: 15-0094-8816	Code: EOH040816	Client: Internal Lab
Sample Date: 08 Apr-16	Material: Ammonia (Unionized)	Project: REF TOX
Receive Date:	Source: Reference Toxicant	
Sample Age: 8h	Station: REF TOX	

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	1574315	280	Yes	Two-Point Interpolation

Point Estimates

Level	mg/L	95% LCL	95% UCL
EC5	0.4498	0.2562	0.5799
EC10	0.5484	0.3476	0.6579
EC15	0.6457	0.4985	0.7454
EC20	0.7431	0.6251	0.8808
EC25	0.8749	0.7052	1.083
EC40	1.459	1.279	1.665
EC50	1.903	1.591	2.214

Survival Rate Summary

Calculated Variate(A/B)

C-mg/L	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
0	Negative Control	5	0.98	0.9	1	0.02	0.04472	4.56%	0.0%	49	50
0.227		5	1	1	1	0	0	0.0%	-2.04%	50	50
0.452		5	0.94	0.8	1	0.04	0.08944	9.52%	4.08%	47	50
0.806		5	0.76	0.7	0.8	0.02449	0.05477	7.21%	22.45%	38	50
1.672		5	0.54	0.5	0.6	0.02449	0.05477	10.14%	44.9%	27	50
3.524		5	0.18	0	0.4	0.06633	0.1483	82.4%	81.63%	9	50

Survival Rate Detail

C-mg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Negative Control	1	1	0.9	1	1
0.227		1	1	1	1	1
0.452		1	0.8	0.9	1	1
0.806		0.8	0.8	0.7	0.7	0.8
1.672		0.5	0.6	0.6	0.5	0.5
3.524		0.4	0.2	0.1	0.2	0

Survival Rate Binomials

C-mg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Negative Control	10/10	10/10	9/10	10/10	10/10
0.227		10/10	10/10	10/10	10/10	10/10
0.452		10/10	8/10	9/10	10/10	10/10
0.806		8/10	8/10	7/10	7/10	8/10
1.672		5/10	6/10	6/10	5/10	5/10
3.524		4/10	2/10	1/10	2/10	0/10

CETIS Measurement Report

Report Date: 21 Apr-16 10:10 (p 2 of 2)
 Test Code: EOH040819 | 19-5616-1906

Reference Toxicant 96-h Acute Survival Test

Aquatic Bioassay & Consulting Labs, Inc.

Dissolved Oxygen-mg/L

C-mg/L	Control Type	1	2
0	Negative Contr	8.9	8.6
0.227		8.5	9.5
0.452		9.2	9.1
0.806		9.2	9.6
1.672		9.6	9.9
3.524		9.5	9.5

pH-Units

C-mg/L	Control Type	1	2
0	Negative Contr	7.7	7.8
0.227		7.9	7.8
0.452		7.8	7.7
0.806		7.7	7.9
1.672		7.8	7.8
3.524		7.9	7.9

Salinity-ppt

C-mg/L	Control Type	1	2
0	Negative Contr	20	20
0.227		20	20
0.452		20	20
0.806		20	20
1.672		20	20
3.524		20	20

Temperature-°C

C-mg/L	Control Type	1	2
0	Negative Contr	14.8	14.9
0.227		14.8	14.8
0.452		14.7	14.7
0.806		14.8	14.6
1.672		14.9	14.9
3.524		14.8	15





CHRONIC MYTILUS DEVELOPMENT BIOASSAY

DATE: 4/6/2016

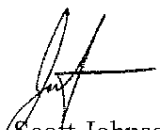
STANDARD TOXICANT: Unionized Ammonia

NOEC = 0.05000mg/l

EC25 = 0.08338 mg/l

EC50 = 0.10230 mg/l

Yours very truly,


Per: Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 21 Apr-16 10:12 (p 1 of 1)
 Test Code: MYT040616 | 01-0056-8233

Mussel Shell Development Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 13-6874-8282	Test Type: Development-Survival	Analyst: Joe Freas
Start Date: 06 Apr-16 11:00	Protocol: EPA/600/R-95/136 (1995)	Diluent: Laboratory Seawater
Ending Date: 08 Apr-16 11:00	Species: Mytilus galloprovincialis	Brine: Not Applicable
Duration: 48h	Source: Carlsbad Aquafarms CA	Age:
Sample ID: 04-3873-6441	Code: MYT040616	Client: Internal Lab
Sample Date: 06 Apr-16 11:00	Material: Copper chloride	Project: REF TOX
Receive Date:	Source: Reference Toxicant	
Sample Age: NA	Station: REF TOX	

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
14-2686-6755	Combined Proportion Norm	0.05	0.075	0.06124	5.53%		Dunnett Multiple Comparison Test

Point Estimate Summary

Analysis ID	Endpoint	Level	µg/L	95% LCL	95% UCL	TU	Method
03-0146-2509	Combined Proportion Norm	EC5	0.05542	0.0478	0.06674		Linear Interpolation (ICPIN)
		EC10	0.06631	0.05749	0.0811		
		EC15	0.07577	0.06449	0.08095		
		EC20	0.07957	0.07386	0.08466		
		EC25	0.08338	0.07846	0.08833		
		EC40	0.09479	0.08946	0.1014		
		EC50	0.1023	0.09618	0.1071		

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision
14-2686-6755	Combined Proportion Norm	PMSD	0.05528	NL - 0.25	No	Passes Acceptability Criteria

Combined Proportion Normal Summary

C-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Negative Control	5	0.9444	0.9261	0.9627	0.9327	0.9686	0.006591	0.01474	1.56%	0.0%
0.028		5	0.9471	0.925	0.9691	0.9238	0.9686	0.007946	0.01777	1.88%	-0.28%
0.05		5	0.922	0.8887	0.9553	0.8969	0.9552	0.012	0.02683	2.91%	2.37%
0.075		5	0.8135	0.7247	0.9022	0.722	0.8969	0.03198	0.07151	8.79%	13.87%
0.097		5	0.5399	0.4469	0.633	0.4753	0.6457	0.03352	0.07494	13.88%	42.83%
0.119		5	0.2619	0.1808	0.343	0.1525	0.3094	0.02922	0.06534	24.95%	72.27%

Combined Proportion Normal Detail

C-µg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Negative Control	0.9462	0.9327	0.9686	0.9417	0.9327
0.028		0.9462	0.9372	0.9238	0.9686	0.9596
0.05		0.8969	0.9552	0.9103	0.9462	0.9013
0.075		0.8969	0.843	0.7578	0.8475	0.722
0.097		0.6457	0.5919	0.4978	0.4753	0.4888
0.119		0.2915	0.3094	0.3049	0.1525	0.2511

Combined Proportion Normal Binomials

C-µg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Negative Control	211/223	208/223	216/223	210/223	208/223
0.028		211/223	209/223	206/223	216/223	214/223
0.05		200/223	213/223	203/223	211/223	201/223
0.075		200/223	188/223	169/223	189/223	161/223
0.097		144/223	132/223	111/223	106/223	109/223
0.119		65/223	69/223	68/223	34/223	56/223

CETIS Analytical Report

Report Date: 21 Apr-16 10:12 (p 1 of 2)
 Test Code: MYT040616 | 01-0056-8233

Mussel Shell Development Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 03-0146-2509	Endpoint: Combined Proportion Normal	CETIS Version: CETISv1.8.7
Analyzed: 21 Apr-16 10:11	Analysis: Linear Interpolation (ICPIN)	Official Results: Yes
Batch ID: 13-6874-8282	Test Type: Development-Survival	Analyst: Joe Freas
Start Date: 06 Apr-16 11:00	Protocol: EPA/600/R-95/136 (1995)	Diluent: Laboratory Seawater
Ending Date: 08 Apr-16 11:00	Species: Mytilis galloprovincialis	Brine: Not Applicable
Duration: 48h	Source: Carlsbad Aquafarms CA	Age:
Sample ID: 04-3873-6441	Code: MYT040616	Client: Internal Lab
Sample Date: 06 Apr-16 11:00	Material: Copper chloride	Project: REF TOX
Receive Date:	Source: Reference Toxicant	
Sample Age: NA	Station: REF TOX	

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	0	280	Yes	Two-Point Interpolation

Point Estimates

Level	µg/L	95% LCL	95% UCL
EC5	0.05542	0.0478	0.06674
EC10	0.06631	0.05749	0.0811
EC15	0.07577	0.06449	0.08095
EC20	0.07957	0.07386	0.08466
EC25	0.08338	0.07846	0.08833
EC40	0.09479	0.08946	0.1014
EC50	0.1023	0.09618	0.1071

Combined Proportion Normal Summary

Calculated Variate(A/B)

C-µg/L	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
0	Negative Control	5	0.9444	0.9327	0.9686	0.006591	0.01474	1.56%	0.0%	1053	1115
0.028		5	0.9471	0.9238	0.9686	0.007946	0.01777	1.88%	-0.28%	1056	1115
0.05		5	0.922	0.8969	0.9552	0.012	0.02683	2.91%	2.37%	1028	1115
0.075		5	0.8135	0.722	0.8969	0.03198	0.07151	8.79%	13.87%	907	1115
0.097		5	0.5399	0.4753	0.6457	0.03352	0.07494	13.88%	42.83%	602	1115
0.119		5	0.2619	0.1525	0.3094	0.02922	0.06534	24.95%	72.27%	292	1115

Combined Proportion Normal Detail

C-µg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Negative Control	0.9462	0.9327	0.9686	0.9417	0.9327
0.028		0.9462	0.9372	0.9238	0.9686	0.9596
0.05		0.8969	0.9552	0.9103	0.9462	0.9013
0.075		0.8969	0.843	0.7578	0.8475	0.722
0.097		0.6457	0.5919	0.4978	0.4753	0.4888
0.119		0.2915	0.3094	0.3049	0.1525	0.2511

Combined Proportion Normal Binomials

C-µg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	Negative Control	211/223	208/223	216/223	210/223	208/223
0.028		211/223	209/223	206/223	216/223	214/223
0.05		200/223	213/223	203/223	211/223	201/223
0.075		200/223	188/223	169/223	189/223	161/223
0.097		144/223	132/223	111/223	106/223	109/223
0.119		65/223	69/223	68/223	34/223	56/223

CETIS Analytical Report

Report Date: 21 Apr-16 10:12 (p 2 of 2)
Test Code: MYT040616 | 01-0056-8233

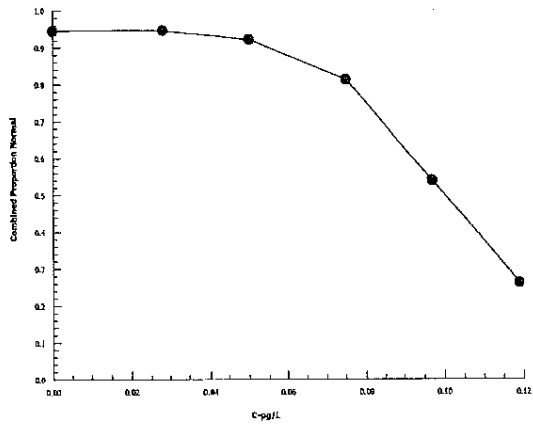
Mussel Shell Development Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 03-0146-2509 Endpoint: Combined Proportion Normal
Analyzed: 21 Apr-16 10:11 Analysis: Linear Interpolation (ICPIN)

CETIS Version: CETISv1.8.7
Official Results: Yes

Graphics



CETIS Measurement Report

Report Date: 21 Apr-16 10:12 (p 1 of 2)
 Test Code: MYT040616 | 01-0056-8233

Mussel Shell Development Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 13-6874-8282	Test Type: Development-Survival	Analyst: Joe Freas
Start Date: 06 Apr-16 11:00	Protocol: EPA/600/R-95/136 (1995)	Diluent: Laboratory Seawater
Ending Date: 08 Apr-16 11:00	Species: Mytilus galloprovincialis	Brine: Not Applicable
Duration: 48h	Source: Carlsbad Aquafarms CA	Age:
Sample ID: 04-3873-6441	Code: MYT040616	Client: Internal Lab
Sample Date: 06 Apr-16 11:00	Material: Copper chloride	Project: REF TOX
Receive Date:	Source: Reference Toxicant	
Sample Age: NA	Station: REF TOX	

Dissolved Oxygen-mg/L

C-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contro	2	6.55	5.915	7.185	6.5	6.6	0.04999	0.0707	1.08%	0
0.028		2	6.4	3.859	8.941	6.2	6.6	0.2	0.2828	4.42%	0
0.05		2	6.4	5.129	7.671	6.3	6.5	0.1	0.1414	2.21%	0
0.075		2	6.35	3.173	9.527	6.1	6.6	0.25	0.3536	5.57%	0
0.097		2	6.4	3.859	8.941	6.2	6.6	0.2	0.2828	4.42%	0
0.119		2	6.55	2.103	11	6.2	6.9	0.35	0.495	7.56%	0
Overall		12	6.442			6.1	6.9				0 (0%)

pH-Units

C-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contro	2	7.9	7.884	7.916	7.9	7.9	0	0	0.0%	0
0.028		2	7.9	7.884	7.916	7.9	7.9	0	0	0.0%	0
0.05		2	7.9	7.884	7.916	7.9	7.9	0	0	0.0%	0
0.075		2	7.9	7.884	7.916	7.9	7.9	0	0	0.0%	0
0.097		2	7.9	7.884	7.916	7.9	7.9	0	0	0.0%	0
0.119		2	7.9	7.884	7.916	7.9	7.9	0	0	0.0%	0
Overall		12	7.9			7.9	7.9				0 (0%)

Salinity-ppt

C-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contro	2	34	34	34	34	34	0	0	0.0%	0
0.028		2	34	34	34	34	34	0	0	0.0%	0
0.05		2	34	34	34	34	34	0	0	0.0%	0
0.075		2	34	34	34	34	34	0	0	0.0%	0
0.097		2	34	34	34	34	34	0	0	0.0%	0
0.119		2	34	34	34	34	34	0	0	0.0%	0
Overall		12	34			34	34				0 (0%)

Temperature-°C

C-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	Negative Contro	2	14.85	14.21	15.49	14.8	14.9	0.05004	0.07077	0.48%	0
0.028		2	14.85	14.21	15.49	14.8	14.9	0.05004	0.07077	0.48%	0
0.05		2	14.85	14.21	15.49	14.8	14.9	0.05004	0.07077	0.48%	0
0.075		2	14.85	14.21	15.49	14.8	14.9	0.05004	0.07077	0.48%	0
0.097		2	14.85	14.21	15.49	14.8	14.9	0.05004	0.07077	0.48%	0
0.119		2	14.85	14.21	15.49	14.8	14.9	0.05004	0.07077	0.48%	0
Overall		12	14.85			14.8	14.9				0 (0%)

TestAmerica Irvine
 17461 DeRian Ave Suite 100
 Irvine, CA 92614-5817
 Phone (949) 261-1022 Fax (949) 260-3297

Chain of Custody Record

TestAmerica
 THE LEADER IN ENVIRONMENTAL TESTING



Client Information (Sub Contract Lab) Client Contact: Shipping/Receiving Company: Aquatic Bioassay Address: 29 North Olive Street, City: Ventura State, Zip: C.A. 93001 Phone: Email:		Camer Tracking No(s): Lab PM: Patel, Urvashi E-Mail: urvashi.patel@testamericainc.com	
Due Date Requested: 4/4/2016 TAT Requested (days): PO #: WO #: Project #: 44009879 Project Name: Annual Sediment Arroyo Simi-Frontier Pk. Site:		COC No: 440-98165.1 Page: Page 1 of 1 Job #: 440-142572-1	
Analysis Requested		Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:	
SUB (Bioassay-Chronic Today exhaustors) / Bioassay-Chronic Today Exhaustors / 48-hour Bioassay Embryo Toxicity / 48-hour Bioassay Embryo Toxicity		SUB (Bioassay-Chronic Today exhaustors) / Bioassay-Chronic Today Exhaustors / 48-hour Bioassay Embryo Toxicity / 48-hour Bioassay Embryo Toxicity	
Field Filtered Sample (Yes or No) <input checked="" type="checkbox"/>		Form MS/MSD (Yes or No) <input checked="" type="checkbox"/>	
Sample Date: 3/25/16 Sample Time: 08:55 Pacific Sample Type (C=Comp, G=grab): Matrix (Numeric, Swab, Composite): Preservation Code: Solid		Total Number of Containers: 7 Special Instructions/Note: sub to Aquatic Bioassay Consultants-send 4 1 liter wide mouth plastic containers TAM0316162	
Possible Hazard Identification Unconfirmed Deliverable Requested: I, II, III, IV, Other (specify)			
Empty Kit Relinquished by:		Method of Shipment:	
Relinquished by: <i>Sub Bawly</i> Date/Time: 3/28/16 17:00 Company: TAI		Received by: <i>FedEx</i> Date/Time: 3/28/16 17:00 Company:	
Relinquished by: Date/Time: Company:		Received by: <i>DMB</i> Date/Time: 3/29/16 1:00 Company:	
Relinquished by: Date/Time: Company:		Received by: Date/Time: Company:	
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:	



Client Name/Address:
 by & Aldrich
 Mission Center Rd Suite 300
 Eliego, CA 92108
 America Contact: Unvashi Patel
 1 Derian Ave Suite #100
 CA 92614
 49-260-3269
 49-333-9055

Project:
 Boeing-SSFL NPDES
 Permit 2015
 Annual Sediment Arroyo Simi-Frontier Park
 Project Manager: Nancy Gardiner
 619.285.7132, 858.337.4061 (cell)

Field Manager: Mark Dominick
 818.350.7312, 818.599.0702 (cell)
 Checked by: Bill Wolfe
 Date/Time: 0915

Sample ID	Sample Matrix	Sampling Date/Time	Container Type	# of Cont.	Preservative	Botle #	MS/MSD
Arroyo Simi-Sub. 20160925	SE	3-25-16 0855	9 oz Jar	1	None	165	No
	SE		9 oz Jar	1	None	246	No
	SE		9 oz Jar	1	None	280	No
	SE		9 oz Jar	1	None	290	No
	SE		1L wide mouth Plastic	3	None	295	No
	SE		1L wide mouth Plastic	4	4C in the Dark	300	No
	SE		9 oz Jar	1	None	305	No
	SE		9 oz Jar	1	None	310	No

ANALYSIS REQUIRED	Field Readings
Total Ammonia	
Total Organic Carbon	
PCBs (8082)	
Chlordane, Dieldrin, Toxaphene (8081), 4,4-DDD, 4,4-DDE, 4,4-DDT	
48-hour Bivalve Embryo toxicity (Mytilus edulis or Crassostrea gigas)	
Chronic 10-day eohausiorus estuarinus Toxicity	
% Moisture	
Particle Size Distribution	

Field Readings (include units)
 Time of readings: See COC dtd 3-19-16
 pH: NA
 Temp: NA °C/F
 DO: NA mg/L
 Conductivity: NA µmhos/cm
 Velocity: 0.0 ft/sec
 Field readings QC
 Checked by: Bill Wolfe
 Date/Time: 0915
 Comments: Keep sample in cooler in the dark until delivered to ABC Labs

Shed By: [Signature] Date/Time: 3/25/16 Company: 1005
 Received By: [Signature] Date/Time: 3/25/16 005
 Shed By: [Signature] Date/Time: 3/25/16 1645 Company: FAT
 Received By: [Signature] Date/Time: 03/25/16 1645
 Turn-around time: (Check) 24 Hour: 72 Hour: 10 Day:
 48 Hour: 5 Day: Normal:
 Sample Integrity: (Check) Pass: On Ice:
 Data Requirements: (Check) No Level IV: All Level IV:

FR 78 1.2/15 2.5/2.8



440-142572 Chain of Custody

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-142572-1

Login Number: 142572

List Number: 1

Creator: Avila, Stephanie 1

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	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?	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 <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-142666-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

April 20, 2016

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





TABLE OF CONTENTS

I. INTRODUCTION..... 1

II. Sample Management..... 2

III. STANDARD METHOD 9221F — ESCHERICHIA COLI..... 6

 III.1. Holding Times 6

 III.2. Calibration..... 6

 III.3. Quality Control Samples 6

 III.3.1. Method Blanks 6

 III.3.2. Laboratory Control Samples 6

 III.3.3. Laboratory Duplicates..... 6

 III.3.4. Matrix Spike/Matrix Spike Duplicate 6

 III.3.5. Sample Result Verification..... 6

 III.4. Field QC Samples..... 6

 III.4.1. Field Blanks and Equipment Blanks 6

 III.4.2. Field Duplicate 6

TABLES

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



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-142666-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Arroyo Simi-20160325	440-142666-1	N/A	Water	3/25/2016 8:50:00 AM	SM9221F



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-142666-1:

- The laboratory received the sample in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- It was noted that the sample was received five minutes before the holding time expiration; there was insufficient time to perform the analysis within the holding time for that reason.
- The laboratories received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COC.
- According to the laboratories' sample receipt checklists, custody seals were intact.



TABLE 2 - DATA QUALIFIER REFERENCE

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



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	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.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) 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.
B	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.
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.
P	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.
*II, *III	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. STANDARD METHOD 9221F — *ESCHERICHIA COLI*

Michael Cherny of MEC^X reviewed the SDG April 20, 2016

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *Standard Methods for the Examination of Water and Wastewater 9221F* and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

III.1. HOLDING TIMES

The analytical holding time, 8 hours from collection, was exceeded by 41 minutes; therefore, *e. coli* detected in the site sample was qualified as estimated with potential low bias (J-).

III.2. CALIBRATION

The biological controls were acceptable.

III.3. QUALITY CONTROL SAMPLES

III.3.1. METHOD BLANKS

The method blank is not applicable to the biological methods.

III.3.2. LABORATORY CONTROL SAMPLES

The presumptive test was analyzed for the biological methods with the positive detects for the target bacteria.

III.3.3. LABORATORY DUPLICATES

No laboratory duplicate analysis was performed on the sample in this SDG.

III.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD samples are not applicable to this method.

III.3.5. 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. Any detects between the method detection limit and the reporting limit were qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Reported nondetects are valid to the MDL.

III.4. FIELD QC SAMPLES

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

III.4.1. FIELD BLANKS AND EQUIPMENT BLANKS

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

III.4.2. FIELD DUPLICATE

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms 4401426661

Analysis Method *SM9221F*

Sample Name Arroyo Simi-20160325

Matrix Type: WS

Result Type: TRG

Sample Date: 3/25/2016 8:50:00 AM

Validation Level: 8

Lab Sample Name: 440-142666-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Escherichia coli	N	ECOLI	31	1.8	1.8	mpn/10	BU	J-	H

TestAmerica

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ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-142666-1

Client Project/Site: Annual Arroyo Simi-Frontier Park

For:

Haley & Aldrich, Inc.

5333 Mission Center Road

Suite 300

San Diego, California 92108

Attn: Nancy Gardiner



Authorized for release by:

4/5/2016 6:13:03 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

LINKS

Review your project
results through

TotalAccess

Have a Question?



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www.testamericainc.com

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

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

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

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



Urvashi Patel
Manager of Project Management
4/5/2016 6:13:03 PM



Table of Contents

Cover Page	1
Table of Contents	3
Sample Summary	4
Case Narrative	5
Client Sample Results	6
Method Summary	7
Lab Chronicle	8
QC Association Summary	9
Definitions/Glossary	10
Certification Summary	11
Chain of Custody	12
Receipt Checklists	13

Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-142666-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-142666-1	Arroyo Simi-20160325	Water	03/25/16 08:50	03/25/16 16:45

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-142666-1

Job ID: 440-142666-1

Laboratory: TestAmerica Irvine

Narrative

**Job Narrative
440-142666-1**

Comments

No additional comments.

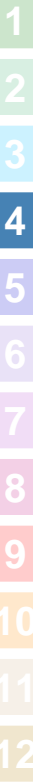
Receipt

The samples were received on 3/25/2016 4:45 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 1.5° C and 2.8° C.

Biology

Method(s) SM 9221F: The following sample(s) was received with less than 2 days remaining on the holding time or less than one shift (8 hours) remaining on a test with a holding time of 48 hours or less. As such, the laboratory had insufficient time remaining to perform the analysis within holding time: Arroyo Simi-20160325 (440-142666-1).

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: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-142666-1

Client Sample ID: Arroyo Simi-20160325

Lab Sample ID: 440-142666-1

Date Collected: 03/25/16 08:50

Matrix: Water

Date Received: 03/25/16 16:45

Method: SM 9221F - E.Coli (Multiple-Tube Fermentation; EC-MUG)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Escherichia coli	31	BU	1.8	1.8	MPN/100mL			03/25/16 17:31	1

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Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-142666-1

Method	Method Description	Protocol	Laboratory
SM 9221F	E.Coli (Multiple-Tube Fermentation; EC-MUG)	SM	TAL IRV

Protocol References:

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

Laboratory References:

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

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Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-142666-1

Client Sample ID: Arroyo Simi-20160325

Lab Sample ID: 440-142666-1

Date Collected: 03/25/16 08:50

Matrix: Water

Date Received: 03/25/16 16:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 9221F		1	100 mL	100 mL	320893	(Start) 03/25/16 17:31 (End) 03/28/16 13:08	KRW	TAL IRV

Laboratory References:

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

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-142666-1

Biology

Analysis Batch: 320893

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-142666-1	Arroyo Simi-20160325	Total/NA	Water	SM 9221F	

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Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-142666-1

Qualifiers

Biology

Qualifier	Qualifier Description
BU	Analyzed out of holding time

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, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
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
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)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-142666-1

Laboratory: TestAmerica Irvine

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

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-16
Arizona	State Program	9	AZ0671	10-13-16
California	LA Cty Sanitation Districts	9	10256	01-31-17 *
California	State Program	9	CA ELAP 2706	06-30-16
Guam	State Program	9	Cert. No. 12.002r	01-23-17
Hawaii	State Program	9	N/A	01-29-17
Kansas	NELAP Secondary AB	7	E-10420	07-31-16
Nevada	State Program	9	CA015312016-2	07-31-16
New Mexico	State Program	6	N/A	01-29-17
Northern Mariana Islands	State Program	9	MP0002	01-29-16 *
Oregon	NELAP	10	4028	01-29-17
USDA	Federal		P330-09-00080	07-08-18
Washington	State Program	10	C900	09-03-16

* Certification renewal pending - certification considered valid.

TestAmerica Irvine

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-142666-1

Login Number: 142666

List Source: TestAmerica Irvine

List Number: 1

Creator: Saraubon, Phakchaya

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	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?	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 <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-143004-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

April 20, 2016

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





TABLE OF CONTENTS

I. INTRODUCTION..... 1

II. Sample Management..... 2

III. STANDARD METHOD 9221F — ESCHERICHIA COLI..... 6

 III.1. Holding Times 6

 III.2. Calibration..... 6

 III.3. Quality Control Samples 6

 III.3.1. Method Blanks 6

 III.3.2. Laboratory Control Samples 6

 III.3.3. Laboratory Duplicates..... 6

 III.3.4. Matrix Spike/Matrix Spike Duplicate 6

 III.3.5. Sample Result Verification..... 6

 III.4. Field QC Samples..... 6

 III.4.1. Field Blanks and Equipment Blanks 6

 III.4.2. Field Duplicate 6

TABLES

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



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-143004-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Arroyo Simi-20160331	440-143004-1	N/A	Water	3/31/2016 8:35:00 AM	SM9221F



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-143004-1:

- The laboratory received the samples in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius ($^{\circ}\text{C}$) and greater than 0°C .
- The laboratories received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COC.
- According to the laboratories' sample receipt checklists, custody seals were intact.



TABLE 2 - DATA QUALIFIER REFERENCE

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



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	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.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) 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.
B	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.
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.
P	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.
*II, *III	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. STANDARD METHOD 9221F — *ESCHERICHIA COLI*

Michael Cherny of MEC^X reviewed the SDG April 20, 2016

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *Standard Methods for the Examination of Water and Wastewater 9221F* and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

III.1. HOLDING TIMES

The analytical holding time, 8 hours from collection, was met.

III.2. CALIBRATION

The biological controls were acceptable.

III.3. QUALITY CONTROL SAMPLES

III.3.1. *METHOD BLANKS*

The method blank is not applicable to the biological methods.

III.3.2. *LABORATORY CONTROL SAMPLES*

The presumptive test was analyzed for the biological methods with the positive detects for the target bacteria.

III.3.3. *LABORATORY DUPLICATES*

No laboratory duplicate analysis was performed on the sample in this SDG.

III.3.4. *MATRIX SPIKE/MATRIX SPIKE DUPLICATE*

MS/MSD samples are not applicable to this method.

III.3.5. *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. Any detects between the method detection limit and the reporting limit were qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Reported nondetects are valid to the MDL.

III.4. FIELD QC SAMPLES

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

III.4.1. *FIELD BLANKS AND EQUIPMENT BLANKS*

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

III.4.2. *FIELD DUPLICATE*

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms 4401430041

Analysis Method *SM9221F*

Sample Name Arroyo Simi-20160331

Matrix Type: WS

Result Type: TRG

Sample Date: 3/31/2016 8:35:00 AM

Validation Level: 8

Lab Sample Name: 440-143004-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Escherichia coli	N	ECOLI	180	1.8	1.8	mpn/10			

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-143004-1

Client Project/Site: Annual Arroyo Simi-Frontier Park

For:

Haley & Aldrich, Inc.

5333 Mission Center Road

Suite 300

San Diego, California 92108

Attn: Nancy Gardiner



Authorized for release by:

4/5/2016 6:28:07 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

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results through

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

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

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

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



Urvashi Patel
Manager of Project Management
4/5/2016 6:28:07 PM



Table of Contents

Cover Page	1
Table of Contents	3
Sample Summary	4
Case Narrative	5
Client Sample Results	6
Method Summary	7
Lab Chronicle	8
QC Association Summary	9
Definitions/Glossary	10
Certification Summary	11
Chain of Custody	12
Receipt Checklists	13

Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-143004-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-143004-1	Arroyo Simi-20160331	Water	03/31/16 08:35	03/31/16 13:07

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-143004-1

Job ID: 440-143004-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-143004-1

Comments

No additional comments.

Receipt

The sample was received on 3/31/2016 1:07 PM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.2° C.

Biology

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

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Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-143004-1

Client Sample ID: Arroyo Simi-20160331

Lab Sample ID: 440-143004-1

Date Collected: 03/31/16 08:35

Matrix: Water

Date Received: 03/31/16 13:07

Method: SM 9221F - E.Coli (Multiple-Tube Fermentation; EC-MUG)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Escherichia coli	180		1.8	1.8	MPN/100mL			03/31/16 14:42	1

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Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-143004-1

Method	Method Description	Protocol	Laboratory
SM 9221F	E.Coli (Multiple-Tube Fermentation; EC-MUG)	SM	TAL IRV

Protocol References:

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

Laboratory References:

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

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Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-143004-1

Client Sample ID: Arroyo Simi-20160331

Lab Sample ID: 440-143004-1

Date Collected: 03/31/16 08:35

Matrix: Water

Date Received: 03/31/16 13:07

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 9221F		1	100 mL	100 mL	321982	(Start) 03/31/16 14:42 (End) 04/03/16 11:10	KRW	TAL IRV

Laboratory References:

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

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-143004-1

Biology

Analysis Batch: 321982

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-143004-1	Arroyo Simi-20160331	Total/NA	Water	SM 9221F	

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Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-143004-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
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
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)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-143004-1

Laboratory: TestAmerica Irvine

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

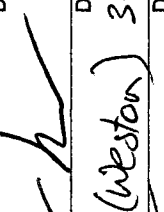
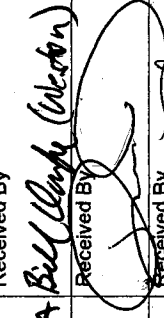
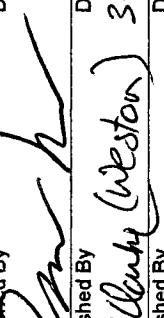
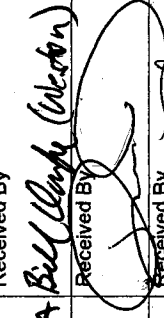
Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-16
Arizona	State Program	9	AZ0671	10-13-16
California	LA Cty Sanitation Districts	9	10256	01-31-17 *
California	State Program	9	CA ELAP 2706	06-30-16
Guam	State Program	9	Cert. No. 12.002r	01-23-17
Hawaii	State Program	9	N/A	01-29-17
Kansas	NELAP Secondary AB	7	E-10420	07-31-16
Nevada	State Program	9	CA015312016-2	07-31-16
New Mexico	State Program	6	N/A	01-29-17
Northern Mariana Islands	State Program	9	MP0002	01-29-16 *
Oregon	NELAP	10	4028	01-29-17
USDA	Federal		P330-09-00080	07-08-18
Washington	State Program	10	C900	09-03-16

* Certification renewal pending - certification considered valid.

TestAmerica Irvine

CHAIN OF CUSTODY FORM

Test America Version 7/19/2010

Client Name/Address: Haley & Aldrich, Inc. 9040 Friars Road Suite 220 San Diego, CA 92108-5860		Project: Boeing-SSFL NPDES Annual Arroyo Simi-Frontier Park		ANALYSIS REQUIRED		Comments Flow = 0.0 ft/sec.	
Test America Contact: Urvashi Patel Project Manager: Nancy Gardiner		Phone Number: 619.285.7132, 858.337.4061 (cell) Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)		FT. coli (SM9221)			
Sampler: Dan Smith Neal Keller	Sample Description Arroyo Simi	Container Type 125mL Sterile Poly	# of Cont. 3	Sample I.D. ArroyoSimi-20160331	Sampling Date/Time 03/31/2016 / 0835	Preservative Na2S2O3	Bottle # 10
							Deliver to lab ASAP 8 hr hold time. Need 1x, 10x, 100x dilutions
Relinquished By 		Date/Time: 3/31/16 0918		Received By Bill Clardy (Weston)		Date/Time: 3-31-16/0918	
Relinquished By Bill Clardy (Weston)		Date/Time: 3-31-16 / 1039		Received By 		Date/Time: 3/31/14 1039	
Relinquished By 		Date/Time: 3/31/16 1307		Received By 		Date/Time: 3/31/16 1307	



440-143004 Chain of Custody

UTC RD 2.9/32 12-78

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-143004-1

Login Number: 143004

List Number: 1

Creator: Avila, Stephanie 1

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	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?	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 <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



APPENDIX F

First Quarter 2016 Reasonable Potential Analysis (RPA) Summary Tables

**FIRST QUARTER 2016
REASONABLE POTENTIAL ANALYSIS SUMMARY NOTES
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY
NPDES PERMIT CA0001309**

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), and 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.
4. Data reported with qualifiers (e.g., J [DNQ] or R) were not included in this RPA as Boeing believes qualified data are not “appropriate, valid, relevant, (nor) representative”¹ of storm water constituents and are therefore not utilized in its RPA.
5. All of the following abbreviations and/or notes may not occur on every table.

Definition of Acronyms, Abbreviations, and Terminology Used

>=	Greater than or equal to
*	Freshwater aquatic life criteria for metals are expressed as a function of total hardness (mg/L) in the water body. The equations are provided in the CTR, (US EPA, 2011). Values displayed correspond to a total hardness of 100 mg/l.
µg/L	Concentration units, micrograms per liter
All Data Qualified	All available monitoring data are qualified and no statistical analysis is performed.
Annual	The 2015 NPDES Permit requires annual monitoring.
Available Data < DL	All available monitoring data that are not qualified are below detection limits.
B	Background
C	Concentration
CCC	Criterion Continuous Concentration
CMC	Criterion Maximum Concentration
CTR	California Toxics Rule
CV	Coefficient of Variation
DL	Detection Limit
EPA TSD	EPA's Technical Support Document for Water Quality Based Toxics Control, (see references).
Fibers/L	Units for asbestos concentration, fibers per liter
HH O	Human Health criteria for consumption of Organisms only

¹ SIP, p. 5.

**FIRST QUARTER 2016
REASONABLE POTENTIAL ANALYSIS SUMMARY NOTES
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY
NPDES PERMIT CA0001309**

Definition of Acronyms, Abbreviations, and Terminology Used (Continued)

HH W&O	Human Health criteria for consumption of Water and Organisms
MEC	Maximum Observed Effluent Concentration
mg/L	Concentration units, milligrams per liter
Min	Minimum
MPN/100ml	Most probable number per 100 milliliters
NA	Not Applicable
Narrative	Water quality criteria are expressed as a narrative objective rather than a numeric objective, and therefore are not part of the statistical RPA calculations.
None	No available CTR or Basin Plan criteria.
pH Dependent	CTR Criteria are based on pH.
Discharge	The 2015 NPDES Permit requires monitoring once per discharge event.
Qualified Data	Data qualifier definitions are: (a) J- The reported result is an estimate. The value is less than the minimum calibration level but greater than the estimated detection limit (EDL), (b) U/UJ- The analyte was not detected in the sample at the detection limit /estimated detection limit (EDL), (c) B - Analyte found in sample and associated blank, and (d) DNQ- Detected Not Quantified.
Reserved	EPA has reserved the CTR criteria.
RPA	Reasonable Potential Analysis
SIP	The State Water Resources Control Board "Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California," (see references).
Tot	Total

Priority Pollutant RPA Column Explanation

CTR	Provides CTR constituent reference number.
Constituent	Provides CTR constituent common name.
Units	Provides the data set's concentration units as referenced by 2015 NPDES Permit.
MEC	Provides the outfall monitoring group's maximum value from the applicable data set.
CV	Equal to the standard deviation divided by the average of the applicable data set. If the number of samples is less than 10, the CV is assumed to be 0.6.
<i>Step 1 identifies all applicable water quality criteria.</i>	
CTR Criteria	Concentration criteria as listed in the CTR.
CMC = Acute	The Freshwater CMC is listed as the acute concentration criterion.
CCC = Chronic	The Freshwater CCC is listed as the chronic concentration criterion.
HH W&O (Not App)	The HH W&O is deemed not applicable based on past Regional Board RPAs.
HH O = HH	The HH O is listed as the CTR human health concentration criterion.
Basin Plan Criteria	Applicable Basin Plan Criteria are listed for the Los Angeles River and/or Calleguas Creek watersheds.
C = Lowest Criteria	The comparison concentration (C) is equal to the lowest criterion for a constituent based on the CMC, CCC, HH O, and Basin Plan Criteria listed.
<i>Step 2 defines the applicable data set.</i>	
Is Effluent Data Available	If all data is qualified, then NO. If not, then YES.

**FIRST QUARTER 2016
REASONABLE POTENTIAL ANALYSIS SUMMARY NOTES
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY
NPDES PERMIT CA0001309**

Priority Pollutant RPA Column Explanation (Continued)

<i>Step 3 determines the maximum observed effluent concentration.</i>	
Was Constituent Detected in Effluent Data	If the constituent was detected, then YES. If all monitoring data are non-detect or qualified then NO.
Are all Detection Limits >C	If constituent was detected in effluent data then not applicable (NA). If 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 (DL)	If the previous cell answer was yes, then the MEC is equal to the minimum detection limit. If not, then NA.
<i>Step 4 compares the MEC to the lowest applicable water quality criteria.</i>	
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 Boeing SSFL because the Regional Board gives no consideration for receiving water background constituent concentrations. Furthermore, Boeing SSFL defers the application of best professional judgment in Step 7 and final determination of reasonable potential in Step 8 to the Regional Board Staff.

Non-priority Pollutant RPA Column Explanation

Constituent	Provides the Non Priority Pollutant constituent common name
Monitoring	Provides the 2015 NPDES Permit directed monitoring frequency
Units	Provides the data set's concentration units
Number of Samples	Provides the number of available samples that are not qualified
MEC	Provides the outfall monitoring group's maximum value from the applicable data set
CV	Equal to the standard deviation divided by the average of the applicable data set. If the number of samples is less than 10, the CV is assumed to be 0.6.
Multiplier	Utilizes the EPA's TSD calculation to determine multiplier for which the maximum effluent concentration is calculated. (MWH and Flow Science, 2006, or EPA TSD, 1991)
Projected Maximum Effluent Concentration	Utilizes the product of the multiplier and the MEC as an estimate for the projected maximum effluent concentration.
Dilution Ratio	The Regional Board allocates no dilution ratio to Boeing SSFL (NA).
Background Concentration	The Regional Board allocates no background concentration to Boeing SSFL (NA).
Projected Maximum Receiving Water Concentration	The Regional Board estimates the projected maximum receiving water concentration as equal to the projected maximum effluent concentration.
Step 1, Determine Water Quality Objectives	The water quality objective is based on appropriate Basin Plan criteria as noted in the Reasonable Potential Analysis Methodology Technical Memo.
BU – Beneficial Use Protection, NC – Human Non-carcinogen, AP- Aquatic Life Protection, TMDL – Total Maximum Daily Load	This is the Regional Board's Basis for determining if reasonable potential should be evaluated for a non-priority pollutant.

Note: Boeing SSFL 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.

**FIRST QUARTER 2016
REASONABLE POTENTIAL ANALYSIS SUMMARY NOTES
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY
NPDES PERMIT CA0001309**

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 Susana 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)**

**FIRST QUARTER 2016 REPORTING SUMMARY
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY
NPDES PERMIT CA0001309**

Outfall	CTR	Constituent	Units	MEC	CV	Step 1: Water Quality Criteria, Determine C				Basin Plan	C = Lowest Criteria	Step 2 Is Effluent Data Available	Step 3		Step 4 MEC >= C	
						CTR CRITERIA							Was Constituent Detected in Effluent Data	Are all Detection Limits > C		If DL > C, MEC = Min (DL)
						Freshwater		Human Health								
CMC = Acute	CCC = Chronic	HH W&O (Not App)	HH O = HH													
1, 2, 11, 18	1	Antimony	ug/L	Available Data <DL	0.6	NONE	NONE	14	4,300	6	6	Yes	No	No	NA	No
1, 2, 11, 18	2	Arsenic	ug/L	Available Data <DL	0.6	340	150	NONE	NONE	50	50	Yes	No	No	NA	No
1, 2, 11, 18	3	Beryllium	ug/L	Available Data <DL	0.6	NONE	NONE	Narrative	Narrative	4	4	Yes	No	No	NA	No
1, 2, 11, 18	4	Cadmium	ug/L	Available Data <DL	0.6	4.3	2.2	Narrative	Narrative	5	2.2	Yes	No	No	NA	No
1, 2, 11, 18	5a	Chromium	ug/L	Available Data <DL	0.6	550	180	Narrative	Narrative	50	50	Yes	No	No	NA	No
1, 2, 11, 18	5b	Chromium VI	ug/L	Available Data <DL	0.6	16	11	Narrative	Narrative	NONE	11	Yes	No	No	NA	No
1, 2, 11, 18	6	Copper	ug/L	All Data Qualified	0.6	13	9.0	1,300	NONE	NONE	9.0	No	No	No	NA	No
1, 2, 11, 18	7	Lead	ug/L	Available Data <DL	0.6	65	2.5	Narrative	Narrative	NONE	2.5	Yes	No	No	NA	No
1, 2, 11, 18	8	Mercury	ug/L	Available Data <DL	0.6	Reserved	Reserved	0.050	0.051	2	0.051	Yes	No	Yes	0.051	No
1, 2, 11, 18	9	Nickel	ug/L	Available Data <DL	0.6	470	52	610	4,600	100	52	Yes	No	No	NA	No
1, 2, 11, 18	10	Selenium	ug/L	Available Data <DL	0.6	Reserved	5.0	Narrative	Narrative	50	5.0	Yes	No	No	NA	No
1, 2, 11, 18	11	Silver	ug/L	Available Data <DL	0.6	3.4	NONE	NONE	NONE	NONE	3.4	Yes	No	No	NA	No
1, 2, 11, 18	12	Thallium	ug/L	Available Data <DL	0.6	NONE	NONE	1.7	6.3	2	2	Yes	No	No	NA	No
1, 2, 11, 18	13	Zinc	ug/L	Available Data <DL	0.6	120	120	NONE	NONE	NONE	120	Yes	No	No	NA	No
1, 2, 11, 18	14	Total Cyanide	ug/L	Available Data <DL	0.6	22	5.2	700	220,000	200	5.2	Yes	No	No	NA	No
1, 2, 11, 18	15	Asbestos	Fibers/L	Not Analyzed	0.6	NONE	NONE	7,000,000	NONE	7,000,000	7,000,000	No	NA	NA	NA	NA
1, 2, 11, 18	16	TCDD TEQ_NoDNQ	ug/L	Available Data <DL	0.6	NONE	NONE	1.30E-08	1.40E-08	3.00E-08	1.40E-08	Yes	No	No	NA	No
1, 2, 11, 18	17	Acrolein	ug/L	Available Data <DL	0.6	NONE	NONE	320	780	NONE	780	Yes	No	No	NA	No
1, 2, 11, 18	18	Acrylonitrile	ug/L	Available Data <DL	0.6	NONE	NONE	0.059	0.66	NONE	0.66	Yes	No	Yes	0.66	No
1, 2, 11, 18	19	Benzene	ug/L	Available Data <DL	0.6	NONE	NONE	1.2	71	1	1	Yes	No	No	NA	No
1, 2, 11, 18	20	Bromoform	ug/L	Available Data <DL	0.6	NONE	NONE	4.3	360	NONE	360	Yes	No	No	NA	No
1, 2, 11, 18	21	Carbon Tetrachloride	ug/L	Available Data <DL	0.6	NONE	NONE	0.25	4.4	0.5	0.5	Yes	No	No	NA	No
1, 2, 11, 18	22	Chlorobenzene	ug/L	Available Data <DL	0.6	NONE	NONE	680	21,000	70	70	Yes	No	No	NA	No
1, 2, 11, 18	23	Dibromochloromethane	ug/L	Available Data <DL	0.6	NONE	NONE	0.401	34	NONE	34	Yes	No	No	NA	No
1, 2, 11, 18	24	Chloroethane	ug/L	Available Data <DL	0.6	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
1, 2, 11, 18	25	2-Chloroethylvinylether	ug/L	Available Data <DL	0.6	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
1, 2, 11, 18	26	Chloroform	ug/L	Available Data <DL	0.6	NONE	NONE	Reserved	Reserved	NONE	NONE	Yes	No	No	NA	No
1, 2, 11, 18	27	Bromodichloromethane	ug/L	Available Data <DL	0.6	NONE	NONE	0.56	46	NONE	46	Yes	No	No	NA	No
1, 2, 11, 18	28	1,1-Dichloroethane	ug/L	Available Data <DL	0.6	NONE	NONE	NONE	NONE	5	5	Yes	No	No	NA	No
1, 2, 11, 18	29	1,2-Dichloroethane	ug/L	Available Data <DL	0.6	NONE	NONE	0.38	99	0.5	0.5	Yes	No	No	NA	No
1, 2, 11, 18	30	1,1-Dichloroethene	ug/L	Available Data <DL	0.6	NONE	NONE	0.057	3.2	6	3.2	Yes	No	No	NA	No
1, 2, 11, 18	31	1,2-Dichloropropane	ug/L	Available Data <DL	0.6	NONE	NONE	0.52	39	5	5	Yes	No	No	NA	No
1, 2, 11, 18	32	cis-1,3-Dichloropropene	ug/L	Available Data <DL	0.6	NONE	NONE	10	1,700	0.5	0.5	Yes	No	No	NA	No
1, 2, 11, 18	32a	trans-1,3-Dichloropropene	ug/L	Available Data <DL	0.6	NONE	NONE	10	1,700	0.5	0.5	Yes	No	No	NA	No
1, 2, 11, 18	33	Ethylbenzene	ug/L	Available Data <DL	0.6	NONE	NONE	3,100	29,000	700	700	Yes	No	No	NA	No
1, 2, 11, 18	34	Bromomethane	ug/L	Available Data <DL	0.6	NONE	NONE	48	4,000	NONE	4,000	Yes	No	No	NA	No
1, 2, 11, 18	35	Chloromethane	ug/L	Available Data <DL	0.6	NONE	NONE	Narrative	Narrative	NONE	NONE	Yes	No	No	NA	No
1, 2, 11, 18	36	Methylene chloride	ug/L	Available Data <DL	0.6	NONE	NONE	4.7	1,600	NONE	1,600	Yes	No	No	NA	No
1, 2, 11, 18	37	1,1,2,2-Tetrachloroethane	ug/L	Available Data <DL	0.6	NONE	NONE	0.17	11	1	1	Yes	No	No	NA	No
1, 2, 11, 18	38	Tetrachloroethene	ug/L	Available Data <DL	0.6	NONE	NONE	0.8	8.85	5	5	Yes	No	No	NA	No
1, 2, 11, 18	39	Toluene	ug/L	Available Data <DL	0.6	NONE	NONE	6,800	200,000	150	150	Yes	No	No	NA	No
1, 2, 11, 18	40	trans-1,2-Dichloroethene	ug/L	Available Data <DL	0.6	NONE	NONE	700	140,000	10	10	Yes	No	No	NA	No
1, 2, 11, 18	41	1,1,1-Trichloroethane	ug/L	Available Data <DL	0.6	NONE	NONE	Narrative	Narrative	200	200	Yes	No	No	NA	No
1, 2, 11, 18	42	1,1,2-trichloroethane	ug/L	Available Data <DL	0.6	NONE	NONE	0.60	42	5	5	Yes	No	No	NA	No
1, 2, 11, 18	43	Trichloroethene	ug/L	Available Data <DL	0.6	NONE	NONE	2.7	81	5	5	Yes	No	No	NA	No
1, 2, 11, 18	44	Vinyl chloride	ug/L	Available Data <DL	0.6	NONE	NONE	2	525	0.5	0.5	Yes	No	No	NA	No
1, 2, 11, 18	45	2-chlorophenol	ug/L	Available Data <DL	0.6	NONE	NONE	120	400	NONE	400	Yes	No	No	NA	No
1, 2, 11, 18	46	2,4-Dichlorophenol	ug/L	Available Data <DL	0.6	NONE	NONE	93	790	NONE	790	Yes	No	No	NA	No

**TABLE F-1
REASONABLE POTENTIAL ANALYSIS - PRIORITY POLLUTANTS (OUTFALLS 001, 002, 011 AND 018)**

**FIRST QUARTER 2016 REPORTING SUMMARY
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY
NPDES PERMIT CA0001309**

Outfall	CTR	Constituent	Units	MEC	CV	Step 1: Water Quality Criteria, Determine C				Basin Plan	C = Lowest Criteria	Step 2 Is Effluent Data Available	Step 3		Step 4 MEC >= C	
						CTR CRITERIA							Was Constituent Detected in Effluent Data	Are all Detection Limits > C		If DL > C, MEC = Min (DL)
						Freshwater		Human Health								
CMC = Acute	CCC = Chronic	HH W&O (Not App)	HH O = HH													
1, 2, 11, 18	47	2,4-dimethylphenol	ug/L	Available Data <DL	0.6	NONE	NONE	540	2,300	NONE	2,300	Yes	No	No	NA	No
1, 2, 11, 18	48	2-Methyl-4,6-dinitrophenol	ug/L	Available Data <DL	0.6	NONE	NONE	13.4	765	NONE	765	Yes	No	No	NA	No
1, 2, 11, 18	49	2,4-dinitrophenol	ug/L	Available Data <DL	0.6	NONE	NONE	70	14,000	NONE	14,000	Yes	No	No	NA	No
1, 2, 11, 18	50	2-nitrophenol	ug/L	Available Data <DL	0.6	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
1, 2, 11, 18	51	4-nitrophenol	ug/L	Available Data <DL	0.6	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
1, 2, 11, 18	52	4-Chloro-3-methylphenol	ug/L	Available Data <DL	0.6	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
1, 2, 11, 18	53	Pentachlorophenol	ug/L	Available Data <DL	0.6	pH dependent	pH dependent	0.28	8.2	1	1	Yes	No	No	NA	No
1, 2, 11, 18	54	Phenol	ug/L	Available Data <DL	0.6	NONE	NONE	21,000	4,600,000	NONE	4,600,000	Yes	No	No	NA	No
1, 2, 11, 18	55	2,4,6-Trichlorophenol	ug/L	Available Data <DL	0.6	NONE	NONE	2.1	6.5	NONE	6.5	Yes	No	No	NA	No
1, 2, 11, 18	56	Acenaphthene	ug/L	Available Data <DL	0.6	NONE	NONE	1,200	2,700	NONE	2,700	Yes	No	No	NA	No
1, 2, 11, 18	57	Acenaphthylene	ug/L	Available Data <DL	0.6	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
1, 2, 11, 18	58	Anthracene	ug/L	Available Data <DL	0.6	NONE	NONE	9,600	110,000	NONE	110,000	Yes	No	No	NA	No
1, 2, 11, 18	59	Benzidine	ug/L	All Data Qualified	0.6	NONE	NONE	0.00012	0.00054	NONE	0.00054	No	No	Yes	0.00054	No
1, 2, 11, 18	60	Benzo(a)Anthracene	ug/L	Available Data <DL	0.6	NONE	NONE	0.0044	0.049	NONE	0.049	Yes	No	Yes	0.049	No
1, 2, 11, 18	61	Benzo(a)Pyrene	ug/L	Available Data <DL	0.6	NONE	NONE	0.0044	0.049	0.2	0.049	Yes	No	Yes	0.049	No
1, 2, 11, 18	62	Benzo(b)Fluoranthene	ug/L	Available Data <DL	0.6	NONE	NONE	0.0044	0.049	NONE	0.049	Yes	No	Yes	0.049	No
1, 2, 11, 18	63	Benzo(g,h,i)Perylene	ug/L	Available Data <DL	0.6	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
1, 2, 11, 18	64	Benzo(k)Fluoranthene	ug/L	Available Data <DL	0.6	NONE	NONE	0.0044	0.049	NONE	0.049	Yes	No	Yes	0.049	No
1, 2, 11, 18	65	Bis(2-Chloroethoxy) methane	ug/L	Available Data <DL	0.6	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
1, 2, 11, 18	66	bis (2-Chloroethyl) ether	ug/L	Available Data <DL	0.6	NONE	NONE	0.0310	1.4	NONE	1.4	Yes	No	No	NA	No
1, 2, 11, 18	67	Bis(2-Chloroisopropyl) Ether	ug/L	Available Data <DL	0.6	NONE	NONE	1,400	170,000	NONE	170,000	Yes	NA	No	NA	No
1, 2, 11, 18	68	bis (2-ethylhexyl) Phthalate	ug/L	Available Data <DL	0.6	NONE	NONE	1.8	5.9	4	4	Yes	No	No	NA	No
1, 2, 11, 18	69	4-Bromophenylphenylether	ug/L	Available Data <DL	0.6	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
1, 2, 11, 18	70	Butylbenzylphthalate	ug/L	Available Data <DL	0.6	NONE	NONE	3,000	5,200	NONE	5,200	Yes	No	No	NA	No
1, 2, 11, 18	71	2-Chloronaphthalene	ug/L	Available Data <DL	0.6	NONE	NONE	1,700	4,300	NONE	4,300	Yes	No	No	NA	No
1, 2, 11, 18	72	4-Chlorophenylphenylether	ug/L	Available Data <DL	0.6	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
1, 2, 11, 18	73	Chrysene	ug/L	Available Data <DL	0.6	NONE	NONE	0.0044	0.049	NONE	0.049	Yes	No	Yes	0.049	No
1, 2, 11, 18	74	Dibenzo(a,h)Anthracene	ug/L	Available Data <DL	0.6	NONE	NONE	0.0044	0.049	NONE	0.049	Yes	No	Yes	0.049	No
1, 2, 11, 18	75	1,2-Dichlorobenzene	ug/L	Available Data <DL	0.6	NONE	NONE	2,700	17,000	600	600	Yes	No	No	NA	No
1, 2, 11, 18	76	1,3-Dichlorobenzene	ug/L	Available Data <DL	0.6	NONE	NONE	400	2,600	NONE	2,600	Yes	No	No	NA	No
1, 2, 11, 18	77	1,4-Dichlorobenzene	ug/L	Available Data <DL	0.6	NONE	NONE	400	2,600	5	5	Yes	No	No	NA	No
1, 2, 11, 18	78	3,3'-Dichlorobenzidine	ug/L	All Data Qualified	0.6	NONE	NONE	0.04	0.077	NONE	0.077	No	No	Yes	0.077	No
1, 2, 11, 18	79	Diethylphthalate	ug/L	Available Data <DL	0.6	NONE	NONE	23,000	120,000	NONE	120,000	Yes	No	No	NA	No
1, 2, 11, 18	80	Dimethylphthalate	ug/L	Available Data <DL	0.6	NONE	NONE	313,000	2,900,000	NONE	2,900,000	Yes	No	No	NA	No
1, 2, 11, 18	81	Di-n-butylphthalate	ug/L	Available Data <DL	0.6	NONE	NONE	2,700	12,000	NONE	12,000	Yes	No	No	NA	No
1, 2, 11, 18	82	2,4-Dinitrotoluene	ug/L	Available Data <DL	0.6	NONE	NONE	0.11	9.1	NONE	9.1	Yes	No	No	NA	No
1, 2, 11, 18	83	2,6-Dinitrotoluene	ug/L	Available Data <DL	0.6	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
1, 2, 11, 18	84	Di-n-octylphthalate	ug/L	Available Data <DL	0.6	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
1, 2, 11, 18	85	1,2-Diphenylhydrazine	ug/L	Available Data <DL	0.6	NONE	NONE	0.040	0.54	NONE	0.54	Yes	No	No	NA	No
1, 2, 11, 18	86	Fluoranthene	ug/L	Available Data <DL	0.6	NONE	NONE	300	370	NONE	370	Yes	No	No	NA	No
1, 2, 11, 18	87	Fluorene	ug/L	Available Data <DL	0.6	NONE	NONE	1,300	14,000	NONE	14,000	Yes	No	No	NA	No
1, 2, 11, 18	88	Hexachlorobenzene	ug/L	Available Data <DL	0.6	NONE	NONE	0.00075	0.00077	1	0.00077	Yes	No	Yes	0.00077	No
1, 2, 11, 18	89	Hexachlorobutadiene	ug/L	Available Data <DL	0.6	NONE	NONE	0.44	50	NONE	50	Yes	No	No	NA	No
1, 2, 11, 18	90	Hexachlorocyclopentadiene	ug/L	Available Data <DL	0.6	NONE	NONE	240	17,000	50	50	Yes	No	No	NA	No
1, 2, 11, 18	91	Hexachloroethane	ug/L	Available Data <DL	0.6	NONE	NONE	1.9	8.9	NONE	8.9	Yes	No	No	NA	No
1, 2, 11, 18	92	Indeno(1,2,3-cd)Pyrene	ug/L	Available Data <DL	0.6	NONE	NONE	0.0044	0.049	NONE	0.049	Yes	No	Yes	0.049	No
1, 2, 11, 18	93	Isophorone	ug/L	Available Data <DL	0.6	NONE	NONE	8.4	600	NONE	600	Yes	No	No	NA	No
1, 2, 11, 18	94	Naphthalene	ug/L	Available Data <DL	0.6	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No

TABLE F-1
REASONABLE POTENTIAL ANALYSIS - PRIORITY POLLUTANTS (OUTFALLS 001, 002, 011 AND 018)
FIRST QUARTER 2016 REPORTING SUMMARY
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY
NPDES PERMIT CA0001309

Outfall	CTR	Constituent	Units	MEC	CV	Step 1: Water Quality Criteria, Determine C				Basin Plan	C = Lowest Criteria	Step 2 Is Effluent Data Available	Step 3		Step 4 MEC >= C	
						CTR CRITERIA							Was Constituent Detected in Effluent Data	Are all Detection Limits > C		If DL > C, MEC = Min (DL)
						Freshwater		Human Health								
						CMC = Acute	CCC = Chronic	HH W&O (Not App)	HH O = HH							
1, 2, 11, 18	95	Nitrobenzene	ug/L	Available Data <DL	0.6	NONE	NONE	17	1,900	NONE	1,900	Yes	No	No	NA	No
1, 2, 11, 18	96	N-Nitrosodimethylamine	ug/L	Available Data <DL	0.6	NONE	NONE	0.00069	8.1	NONE	8.1	Yes	No	No	NA	No
1, 2, 11, 18	97	n-Nitroso-di-n-propylamine	ug/L	Available Data <DL	0.6	NONE	NONE	0.005	1.4	NONE	1.4	Yes	No	No	NA	No
1, 2, 11, 18	98	N-Nitrosodiphenylamine	ug/L	Available Data <DL	0.6	NONE	NONE	5.0	16	NONE	16	Yes	No	No	NA	No
1, 2, 11, 18	99	Phenanthrene	ug/L	Available Data <DL	0.6	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
1, 2, 11, 18	100	Pyrene	ug/L	Available Data <DL	0.6	NONE	NONE	960	11,000	NONE	11,000	Yes	No	No	NA	No
1, 2, 11, 18	101	1,2,4-Trichlorobenzene	ug/L	Available Data <DL	0.6	NONE	NONE	NONE	NONE	70	70	Yes	No	No	NA	No
1, 2, 11, 18	102	Aldrin	ug/L	Available Data <DL	0.6	3	NONE	0.00013	0.00014	NONE	0.00014	Yes	No	Yes	0.00014	No
1, 2, 11, 18	103	alpha-BHC	ug/L	Available Data <DL	0.6	NONE	NONE	0.0039	0.013	NONE	0.013	Yes	No	No	NA	No
1, 2, 11, 18	104	beta-BHC	ug/L	Available Data <DL	0.6	NONE	NONE	0.014	0.046	NONE	0.046	Yes	No	No	NA	No
1, 2, 11, 18	105	Lindane (gamma-BHC)	ug/L	Available Data <DL	0.6	0.95	NONE	0.019	0.063	0.2	0.063	Yes	No	No	NA	No
1, 2, 11, 18	106	delta-BHC	ug/L	Available Data <DL	0.6	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
1, 2, 11, 18	107	Chlordane	ug/L	Available Data <DL	0.6	2.4	0.0043	0.00057	0.00059	0.1	0.00059	Yes	No	Yes	0.00059	No
1, 2, 11, 18	108	4,4'-DDT	ug/L	Available Data <DL	0.6	1.1	0.001	0.00059	0.00059	NONE	0.00059	Yes	No	Yes	0.00059	No
1, 2, 11, 18	109	4,4'-DDE	ug/L	Available Data <DL	0.6	NONE	NONE	0.00059	0.00059	NONE	0.00059	Yes	No	Yes	0.00059	No
1, 2, 11, 18	110	4,4'-DDD	ug/L	Available Data <DL	0.6	NONE	NONE	0.00083	0.00084	NONE	0.00084	Yes	No	Yes	0.00084	No
1, 2, 11, 18	111	Dieldrin	ug/L	Available Data <DL	0.6	0.24	0.056	0.00014	0.00014	NONE	0.00014	Yes	No	Yes	0.00014	No
1, 2, 11, 18	112	Endosulfan I	ug/L	Available Data <DL	0.6	0.22	0.056	110	240	NONE	0.056	Yes	No	No	NA	No
1, 2, 11, 18	113	Endosulfan II	ug/L	Available Data <DL	0.6	0.22	0.056	110	240	NONE	0.056	Yes	No	No	NA	No
1, 2, 11, 18	114	Endosulfan Sulfate	ug/L	Available Data <DL	0.6	NONE	NONE	110	240	NONE	240	Yes	No	No	NA	No
1, 2, 11, 18	115	Endrin	ug/L	Available Data <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	ug/L	Available Data <DL	0.6	NONE	NONE	0.76	0.81	NONE	0.81	Yes	No	No	NA	No
1, 2, 11, 18	117	Heptachlor	ug/L	Available Data <DL	0.6	0.52	0.0038	0.00021	0.00021	0.01	0.00021	Yes	No	Yes	0.00021	No
1, 2, 11, 18	118	Heptachlor Epoxide	ug/L	Available Data <DL	0.6	0.52	0.0038	0.00010	0.00011	0.01	0.00011	Yes	No	Yes	0.00011	No
1, 2, 11, 18	119	Aroclor-1016	ug/L	Available Data <DL	0.6	NONE	0.014	0.00017	0.00017	0.5	0.00017	Yes	No	Yes	0.00017	No
1, 2, 11, 18	120	Aroclor-1221	ug/L	Available Data <DL	0.6	NONE	0.014	0.00017	0.00017	0.5	0.00017	Yes	No	Yes	0.00017	No
1, 2, 11, 18	121	Aroclor-1232	ug/L	Available Data <DL	0.6	NONE	0.014	0.00017	0.00017	0.5	0.00017	Yes	No	Yes	0.00017	No
1, 2, 11, 18	122	Aroclor-1242	ug/L	Available Data <DL	0.6	NONE	0.014	0.00017	0.00017	0.5	0.00017	Yes	No	Yes	0.00017	No
1, 2, 11, 18	123	Aroclor-1248	ug/L	Available Data <DL	0.6	NONE	0.014	0.00017	0.00017	0.5	0.00017	Yes	No	Yes	0.00017	No
1, 2, 11, 18	124	Aroclor-1254	ug/L	Available Data <DL	0.6	NONE	0.014	0.00017	0.00017	0.5	0.00017	Yes	No	Yes	0.00017	No
1, 2, 11, 18	125	Aroclor-1260	ug/L	Available Data <DL	0.6	NONE	0.014	0.00017	0.00017	0.5	0.00017	Yes	No	Yes	0.00017	No
1, 2, 11, 18	126	Toxaphene	ug/L	Available Data <DL	0.6	0.73	0.0002	0.00073	0.00075	3	0.0002	Yes	No	Yes	0.0002	No
1, 2, 11, 18	127	E. Coli	MPN/100ml	180	0.6	NA	NA	NA	NA	235	235	Yes	Yes	NA	NA	No

**TABLE F-2
REASONABLE POTENTIAL ANALYSIS - NONPRIORITY POLLUTANTS (OUTFALLS 001, 002, 011 AND 018)**

**FIRST QUARTER 2016 REPORTING SUMMARY
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY
NPDES PERMIT CA0001309**

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
1, 2, 11, 18	Barium	Annual	mg/L	2	0.051	0.6	7.4	0.3774	NA	NA	0.3774	1	BU
1, 2, 11, 18	Biochemical Oxygen Demand (BOD 5 day)	Discharge	mg/L	1	2	0.6	13.2	26.4	NA	NA	26.4	30	BU
1, 2, 11, 18	Chloride	Discharge	mg/L	1	19	0.6	13.2	250.8	NA	NA	250.8	150	BU
1, 2, 11, 18	Fluoride	Annual	mg/L	1	Available Data <DL	0.6	13.2	Available Data <DL	NA	NA	Available Data <DL	1.6	BU
1, 2, 11, 18	Nitrate + Nitrite as Nitrogen (N)	Discharge	mg/L	2	0.46	0.6	7.4	3.404	NA	NA	3.404	8	BU/TMDL
1, 2, 11, 18	Oil & Grease	Discharge	mg/L	2	Available Data <DL	0.6	7.4	Available Data <DL	NA	NA	Available Data <DL	15	BU
1, 2, 11, 18	Sulfate	Discharge	mg/L	2	240	0.6	7.4	1,776	NA	NA	1,776	300	BU
1, 2, 11, 18	Surfactants (MBAS)	Discharge	mg/L	1	0.1	0.6	13.2	1.32	NA	NA	1.32	0.5	BU
1, 2, 11, 18	Total Dissolved Solids	Discharge	mg/L	2	550	0.6	7.4	4,070	NA	NA	4,070	850	BU
1, 2, 11, 18	Total Settleable Solids	Discharge	ml/L	2	Available Data <DL	0.6	7.4	Available Data <DL	NA	NA	Available Data <DL	0.3	BU
1, 2, 11, 18	Total Suspended Solids	Discharge	mg/L	1	1.1	0.6	13.2	14.52	NA	NA	14.52	45	BU

**TABLE F-3
REASONABLE POTENTIAL ANALYSIS - PRIORITY POLLUTANTS (OUTFALLS 003-007, 009 AND 010)**

**FIRST QUARTER 2016 REPORTING SUMMARY
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY
NPDES PERMIT CA0001309**

Outfall	CTR	Constituent	Units	MEC	CV	Step 1: Water Quality Criteria, Determine C				Basin Plan	C = Lowest Criteria	Step 2 Is Effluent Data Available	Step 3		Step 4 MEC >= C	
						CTR CRITERIA							Was Constituent Detected in Effluent Data	Are all Detection Limits > C		If DL > C, MEC = Min (DL)
						Freshwater		Human Health								
CMC = Acute	CCC = Chronic	HH W&O (Not App)	HH O = HH													
3-7, 9, 10	1	Antimony	ug/L	All Data Qualified	0.6	NONE	NONE	14	4,300	6	6	No	No	No	NA	No
3-7, 9, 10	2	Arsenic	ug/L	Available Data <DL	0.6	340	150	NONE	NONE	50	50	Yes	No	No	NA	No
3-7, 9, 10	3	Beryllium	ug/L	Available Data <DL	0.6	NONE	NONE	Narrative	Narrative	4	4	Yes	No	No	NA	No
3-7, 9, 10	4	Cadmium	ug/L	Available Data <DL	0.6	4.3	2.2	Narrative	Narrative	5	2.2	Yes	No	No	NA	No
3-7, 9, 10	5a	Chromium	ug/L	5.4	0.6	550	180	Narrative	Narrative	50	50	Yes	Yes	No	NA	No
3-7, 9, 10	5b	Chromium VI	ug/L	Available Data <DL	0.6	16	11	Narrative	Narrative	NONE	11	Yes	No	No	NA	No
3-7, 9, 10	6	Copper	ug/L	8.8	0.6	13	9	1,300	NONE	NONE	9	Yes	Yes	No	NA	No
3-7, 9, 10	7	Lead	ug/L	5.9	0.6	65	2.5	Narrative	Narrative	NONE	2.5	Yes	Yes	No	NA	Yes
3-7, 9, 10	8	Mercury	ug/L	Available Data <DL	0.6	Reserved	Reserved	0.05	0.051	2	0.051	Yes	No	Yes	0.051	No
3-7, 9, 10	9	Nickel	ug/L	2.2	0.6	470	52	610	4,600	100	52	Yes	Yes	No	NA	No
3-7, 9, 10	10	Selenium	ug/L	Available Data <DL	0.6	Reserved	5	Narrative	Narrative	50	5	Yes	No	No	NA	No
3-7, 9, 10	11	Silver	ug/L	Available Data <DL	0.6	3.4	NONE	NONE	NONE	NONE	3.4	Yes	No	No	NA	No
3-7, 9, 10	12	Thallium	ug/L	Available Data <DL	0.6	NONE	NONE	1.7	6.3	2	2	Yes	No	No	NA	No
3-7, 9, 10	13	Zinc	ug/L	41	0.6	120	120	NONE	NONE	NONE	120	Yes	Yes	No	NA	No
3-7, 9, 10	14	Total Cyanide	ug/L	Available Data <DL	0.6	22	5.2	700	220,000	200	5.2	Yes	No	No	NA	No
3-7, 9, 10	15	Asbestos	Fibers/L	Available Data <DL	0.6	NONE	NONE	7,000,000	NONE	7,000,000	7000000	Yes	No	NA	NA	No
3-7, 9, 10	16	TCDD TEQ NoDNQ	ug/L	8.71E-08	0.6	NONE	NONE	1.30E-08	1.40E-08	3.00E-08	1.40E-08	Yes	Yes	No	NA	Yes
3-7, 9, 10	17	Acrolein	ug/L	Available Data <DL	0.6	NONE	NONE	320	780	NONE	780	Yes	No	No	NA	No
3-7, 9, 10	18	Acrylonitrile	ug/L	Available Data <DL	0.6	NONE	NONE	0.059	0.66	NONE	0.66	Yes	No	Yes	0.66	No
3-7, 9, 10	19	Benzene	ug/L	Available Data <DL	0.6	NONE	NONE	1.2	71	1	1	Yes	No	No	NA	No
3-7, 9, 10	20	Bromoform	ug/L	Available Data <DL	0.6	NONE	NONE	4.3	360	NONE	360	Yes	No	No	NA	No
3-7, 9, 10	21	Carbon Tetrachloride	ug/L	Available Data <DL	0.6	NONE	NONE	0.25	4.4	0.5	0.5	Yes	No	No	NA	No
3-7, 9, 10	22	Chlorobenzene	ug/L	Available Data <DL	0.6	NONE	NONE	680	21,000	70	70	Yes	No	No	NA	No
3-7, 9, 10	23	Dibromochloromethane	ug/L	Available Data <DL	0.6	NONE	NONE	0.401	34	NONE	34	Yes	No	No	NA	No
3-7, 9, 10	24	Chloroethane	ug/L	Available Data <DL	0.6	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
3-7, 9, 10	25	2-Chloroethylvinylether	ug/L	Available Data <DL	0.6	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
3-7, 9, 10	26	Chloroform	ug/L	Available Data <DL	0.6	NONE	NONE	Reserved	Reserved	NONE	NONE	Yes	No	No	NA	No
3-7, 9, 10	27	Bromodichloromethane	ug/L	Available Data <DL	0.6	NONE	NONE	0.56	46	NONE	46	Yes	No	No	NA	No
3-7, 9, 10	28	1,1-Dichloroethane	ug/L	Available Data <DL	0.6	NONE	NONE	NONE	NONE	5	5	Yes	No	No	NA	No
3-7, 9, 10	29	1,2-Dichloroethane	ug/L	Available Data <DL	0.6	NONE	NONE	0.38	99	0.5	0.5	Yes	No	No	NA	No
3-7, 9, 10	30	1,1-Dichloroethene	ug/L	Available Data <DL	0.6	NONE	NONE	0.057	3.2	6	3.2	Yes	No	No	NA	No
3-7, 9, 10	31	1,2-Dichloropropane	ug/L	Available Data <DL	0.6	NONE	NONE	0.52	39	5	5	Yes	No	No	NA	No
3-7, 9, 10	32	cis-1,3-Dichloropropene	ug/L	Available Data <DL	0.6	NONE	NONE	10	1,700	0.5	0.5	Yes	No	No	NA	No
3-7, 9, 10	32a	trans-1,3-Dichloropropene	ug/L	Available Data <DL	0.6	NONE	NONE	10	1,700	0.5	0.5	Yes	No	No	NA	No
3-7, 9, 10	33	Ethylbenzene	ug/L	Available Data <DL	0.6	NONE	NONE	3,100	29,000	700	700	Yes	No	No	NA	No
3-7, 9, 10	34	Bromomethane	ug/L	Available Data <DL	0.6	NONE	NONE	48	4,000	NONE	4000	Yes	No	No	NA	No
3-7, 9, 10	35	Chloromethane	ug/L	Available Data <DL	0.6	NONE	NONE	Narrative	Narrative	NONE	NONE	Yes	No	No	NA	No
3-7, 9, 10	36	Methylene chloride	ug/L	Available Data <DL	0.6	NONE	NONE	4.7	1,600	NONE	1600	Yes	No	No	NA	No
3-7, 9, 10	37	1,1,2,2-Tetrachloroethane	ug/L	Available Data <DL	0.6	NONE	NONE	0.17	11	1	1	Yes	No	No	NA	No
3-7, 9, 10	38	Tetrachloroethene	ug/L	Available Data <DL	0.6	NONE	NONE	0.8	8.85	5	5	Yes	No	No	NA	No
3-7, 9, 10	39	Toluene	ug/L	Available Data <DL	0.6	NONE	NONE	6,800	200,000	150	150	Yes	No	No	NA	No
3-7, 9, 10	40	trans-1,2-Dichloroethene	ug/L	Available Data <DL	0.6	NONE	NONE	700	140,000	10	10	Yes	No	No	NA	No
3-7, 9, 10	41	1,1,1-Trichloroethane	ug/L	Available Data <DL	0.6	NONE	NONE	Narrative	Narrative	200	200	Yes	No	No	NA	No
3-7, 9, 10	42	1,1,2-trichloroethane	ug/L	Available Data <DL	0.6	NONE	NONE	0.6	42	5	5	Yes	No	No	NA	No
3-7, 9, 10	43	Trichloroethene	ug/L	Available Data <DL	0.6	NONE	NONE	2.7	81	5	5	Yes	No	No	NA	No
3-7, 9, 10	44	Vinyl chloride	ug/L	Available Data <DL	0.6	NONE	NONE	2	525	0.5	0.5	Yes	No	No	NA	No
3-7, 9, 10	45	2-chlorophenol	ug/L	Available Data <DL	0.6	NONE	NONE	120	400	NONE	400	Yes	No	No	NA	No
3-7, 9, 10	46	2,4-Dichlorophenol	ug/L	Available Data <DL	0.6	NONE	NONE	93	790	NONE	790	Yes	No	No	NA	No

**TABLE F-3
REASONABLE POTENTIAL ANALYSIS - PRIORITY POLLUTANTS (OUTFALLS 003-007, 009 AND 010)**

**FIRST QUARTER 2016 REPORTING SUMMARY
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY
NPDES PERMIT CA0001309**

Outfall	CTR	Constituent	Units	MEC	CV	Step 1: Water Quality Criteria, Determine C				Basin Plan	C = Lowest Criteria	Step 2 Is Effluent Data Available	Step 3 Was Constituent Detected in Effluent Data	Step 3 Are all Detection Limits > C	Step 3 If DL > C, MEC = Min (DL)	Step 4 MEC >= C
						CTR CRITERIA										
						Freshwater		Human Health								
						CMC = Acute	CCC = Chronic	HH W&O (Not App)	HH O = HH							
3-7, 9, 10	47	2,4-dimethylphenol	ug/L	Available Data <DL	0.6	NONE	NONE	540	2,300	NONE	2300	Yes	No	No	NA	No
3-7, 9, 10	48	2-Methyl-4,6-dinitrophenol	ug/L	Available Data <DL	0.6	NONE	NONE	13.4	765	NONE	765	Yes	No	No	NA	No
3-7, 9, 10	49	2,4-dinitrophenol	ug/L	Available Data <DL	0.6	NONE	NONE	70	14,000	NONE	14000	Yes	No	No	NA	No
3-7, 9, 10	50	2-nitrophenol	ug/L	Available Data <DL	0.6	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
3-7, 9, 10	51	4-nitrophenol	ug/L	Available Data <DL	0.6	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
3-7, 9, 10	52	4-Chloro-3-methylphenol	ug/L	Available Data <DL	0.6	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
3-7, 9, 10	53	Pentachlorophenol	ug/L	Available Data <DL	0.6	pH dependent	pH dependent	0.28	8.2	1	1	Yes	No	No	NA	No
3-7, 9, 10	54	Phenol	ug/L	Available Data <DL	0.6	NONE	NONE	21,000	4,600,000	NONE	4600000	Yes	No	No	NA	No
3-7, 9, 10	55	2,4,6-Trichlorophenol	ug/L	Available Data <DL	0.6	NONE	NONE	2.1	6.5	NONE	6.5	Yes	No	No	NA	No
3-7, 9, 10	56	Acenaphthene	ug/L	Available Data <DL	0.6	NONE	NONE	1,200	2,700	NONE	2700	Yes	No	No	NA	No
3-7, 9, 10	57	Acenaphthylene	ug/L	Available Data <DL	0.6	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
3-7, 9, 10	58	Anthracene	ug/L	Available Data <DL	0.6	NONE	NONE	9,600	110,000	NONE	110000	Yes	No	No	NA	No
3-7, 9, 10	59	Benztidine	ug/L	Available Data <DL	0.6	NONE	NONE	0.00012	0.00054	NONE	0.00054	Yes	No	Yes	0.00054	No
3-7, 9, 10	60	Benzo(a)Anthracene	ug/L	Available Data <DL	0.6	NONE	NONE	0.0044	0.049	NONE	0.049	Yes	No	Yes	0.049	No
3-7, 9, 10	61	Benzo(a)Pyrene	ug/L	Available Data <DL	0.6	NONE	NONE	0.0044	0.049	0.2	0.049	Yes	No	Yes	0.049	No
3-7, 9, 10	62	Benzo(b)Fluoranthene	ug/L	Available Data <DL	0.6	NONE	NONE	0.0044	0.049	NONE	0.049	Yes	No	Yes	0.049	No
3-7, 9, 10	63	Benzo(g,h,i)Perylene	ug/L	Available Data <DL	0.6	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
3-7, 9, 10	64	Benzo(k)Fluoranthene	ug/L	Available Data <DL	0.6	NONE	NONE	0.0044	0.049	NONE	0.049	Yes	No	Yes	0.049	No
3-7, 9, 10	65	Bis(2-Chloroethoxy) methane	ug/L	Available Data <DL	0.6	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
3-7, 9, 10	66	bis (2-Chloroethyl) ether	ug/L	Available Data <DL	0.6	NONE	NONE	0.031	1.4	NONE	1.4	Yes	No	No	NA	No
3-7, 9, 10	67	Bis(2-Chloroisopropyl) Ether	ug/L	Available Data <DL	0.6	NONE	NONE	1,400	170,000	NONE	170000	Yes	No	No	NA	No
3-7, 9, 10	68	bis (2-ethylhexyl) Phthalate	ug/L	10.6	0.6	NONE	NONE	1.8	5.9	4	4	Yes	Yes	No	NA	Yes
3-7, 9, 10	69	4-Bromophenylphenylether	ug/L	Available Data <DL	0.6	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
3-7, 9, 10	70	Butylbenzylphthalate	ug/L	Available Data <DL	0.6	NONE	NONE	3,000	5,200	NONE	5200	Yes	No	No	NA	No
3-7, 9, 10	71	2-Chloronaphthalene	ug/L	Available Data <DL	0.6	NONE	NONE	1,700	4,300	NONE	4300	Yes	No	No	NA	No
3-7, 9, 10	72	4-Chlorophenylphenylether	ug/L	Available Data <DL	0.6	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
3-7, 9, 10	73	Chrysene	ug/L	Available Data <DL	0.6	NONE	NONE	0.0044	0.049	NONE	0.049	Yes	No	Yes	0.049	No
3-7, 9, 10	74	Dibenzo(a,h)Anthracene	ug/L	Available Data <DL	0.6	NONE	NONE	0.0044	0.049	NONE	0.049	Yes	No	Yes	0.049	No
3-7, 9, 10	75	1,2-Dichlorobenzene	ug/L	Available Data <DL	0.6	NONE	NONE	2,700	17,000	600	600	Yes	No	No	NA	No
3-7, 9, 10	76	1,3-Dichlorobenzene	ug/L	Available Data <DL	0.6	NONE	NONE	400	2,600	NONE	2600	Yes	No	No	NA	No
3-7, 9, 10	77	1,4-Dichlorobenzene	ug/L	Available Data <DL	0.6	NONE	NONE	400	2,600	5	5	Yes	No	No	NA	No
3-7, 9, 10	78	3,3'-Dichlorobenzidine	ug/L	Available Data <DL	0.6	NONE	NONE	0.04	0.077	NONE	0.077	Yes	No	Yes	0.077	No
3-7, 9, 10	79	Diethylphthalate	ug/L	Available Data <DL	0.6	NONE	NONE	23,000	120,000	NONE	120000	Yes	No	No	NA	No
3-7, 9, 10	80	Dimethylphthalate	ug/L	Available Data <DL	0.6	NONE	NONE	313,000	2,900,000	NONE	2900000	Yes	No	No	NA	No
3-7, 9, 10	81	Di-n-butylphthalate	ug/L	Available Data <DL	0.6	NONE	NONE	2,700	12,000	NONE	12000	Yes	No	No	NA	No
3-7, 9, 10	82	2,4-Dinitrotoluene	ug/L	Available Data <DL	0.6	NONE	NONE	0.11	9.1	NONE	9.1	Yes	No	No	NA	No
3-7, 9, 10	83	2,6-Dinitrotoluene	ug/L	Available Data <DL	0.6	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
3-7, 9, 10	84	Di-n-octylphthalate	ug/L	Available Data <DL	0.6	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
3-7, 9, 10	85	1,2-Diphenylhydrazine	ug/L	Available Data <DL	0.6	NONE	NONE	0.04	0.54	NONE	0.54	Yes	No	No	NA	No
3-7, 9, 10	86	Fluoranthene	ug/L	Available Data <DL	0.6	NONE	NONE	300	370	NONE	370	Yes	No	No	NA	No
3-7, 9, 10	87	Fluorene	ug/L	Available Data <DL	0.6	NONE	NONE	1,300	14,000	NONE	14000	Yes	No	No	NA	No
3-7, 9, 10	88	Hexachlorobenzene	ug/L	Available Data <DL	0.6	NONE	NONE	0.00075	0.00077	1	0.00077	Yes	No	Yes	0.00077	No
3-7, 9, 10	89	Hexachlorobutadiene	ug/L	Available Data <DL	0.6	NONE	NONE	0.44	50	NONE	50	Yes	No	No	NA	No
3-7, 9, 10	90	Hexachlorocyclopentadiene	ug/L	Available Data <DL	0.6	NONE	NONE	240	17,000	50	50	Yes	No	No	NA	No
3-7, 9, 10	91	Hexachloroethane	ug/L	Available Data <DL	0.6	NONE	NONE	1.9	8.9	NONE	8.9	Yes	No	No	NA	No
3-7, 9, 10	92	Indeno(1,2,3-cd)Pyrene	ug/L	Available Data <DL	0.6	NONE	NONE	0.0044	0.049	NONE	0.049	Yes	No	Yes	0.049	No
3-7, 9, 10	93	Isophorone	ug/L	Available Data <DL	0.6	NONE	NONE	8.4	600	NONE	600	Yes	No	No	NA	No
3-7, 9, 10	94	Naphthalene	ug/L	Available Data <DL	0.6	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No

**TABLE F-3
REASONABLE POTENTIAL ANALYSIS - PRIORITY POLLUTANTS (OUTFALLS 003-007, 009 AND 010)**

**FIRST QUARTER 2016 REPORTING SUMMARY
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY
NPDES PERMIT CA0001309**

Outfall	CTR	Constituent	Units	MEC	CV	Step 1: Water Quality Criteria, Determine C				Basin Plan	C = Lowest Criteria	Step 2 Is Effluent Data Available	Step 3 Was Constituent Detected in Effluent Data	Step 3 Are all Detection Limits > C	Step 3 If DL > C, MEC = Min (DL)	Step 4 MEC >= C
						CTR CRITERIA		HH W&O (Not App)	HH O = HH							
						Freshwater CMC = Acute	Human Health CCC = Chronic									
3-7, 9, 10	95	Nitrobenzene	ug/L	Available Data <DL	0.6	NONE	NONE	17	1,900	NONE	1900	Yes	No	No	NA	No
3-7, 9, 10	96	N-Nitrosodimethylamine	ug/L	Available Data <DL	0.6	NONE	NONE	0.00069	8.1	NONE	8.1	Yes	No	No	NA	No
3-7, 9, 10	97	n-Nitroso-di-n-propylamine	ug/L	Available Data <DL	0.6	NONE	NONE	0.005	1.4	NONE	1.4	Yes	No	No	NA	No
3-7, 9, 10	98	N-Nitrosodiphenylamine	ug/L	Available Data <DL	0.6	NONE	NONE	5	16	NONE	16	Yes	No	No	NA	No
3-7, 9, 10	99	Phenanthrene	ug/L	Available Data <DL	0.6	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
3-7, 9, 10	100	Pyrene	ug/L	Available Data <DL	0.6	NONE	NONE	960	11,000	NONE	11000	Yes	No	No	NA	No
3-7, 9, 10	101	1,2,4-Trichlorobenzene	ug/L	Available Data <DL	0.6	NONE	NONE	NONE	NONE	70	70	Yes	No	No	NA	No
3-7, 9, 10	102	Aldrin	ug/L	Available Data <DL	0.6	3	NONE	0.00013	0.00014	NONE	0.00014	Yes	No	Yes	0.00014	No
3-7, 9, 10	103	alpha-BHC	ug/L	Available Data <DL	0.6	NONE	NONE	0.0039	0.013	NONE	0.013	Yes	No	No	NA	No
3-7, 9, 10	104	beta-BHC	ug/L	Available Data <DL	0.6	NONE	NONE	0.014	0.046	NONE	0.046	Yes	No	No	NA	No
3-7, 9, 10	105	Lindane (gamma-BHC)	ug/L	Available Data <DL	0.6	0.95	NONE	0.019	0.063	0.2	0.063	Yes	No	No	NA	No
3-7, 9, 10	106	delta-BHC	ug/L	Available Data <DL	0.6	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
3-7, 9, 10	107	Chlordane	ug/L	Available Data <DL	0.6	2.4	0.0043	0.00057	0.00059	0.1	0.00059	Yes	No	Yes	0.00059	No
3-7, 9, 10	108	4,4'-DDT	ug/L	Available Data <DL	0.6	1.1	0.001	0.00059	0.00059	NONE	0.00059	Yes	No	Yes	0.00059	No
3-7, 9, 10	109	4,4'-DDE	ug/L	Available Data <DL	0.6	NONE	NONE	0.00059	0.00059	NONE	0.00059	Yes	No	Yes	0.00059	No
3-7, 9, 10	110	4,4'-DDD	ug/L	Available Data <DL	0.6	NONE	NONE	0.00083	0.00084	NONE	0.00084	Yes	No	Yes	0.00084	No
3-7, 9, 10	111	Dieldrin	ug/L	Available Data <DL	0.6	0.24	0.056	0.00014	0.00014	NONE	0.00014	Yes	No	Yes	0.00014	No
3-7, 9, 10	112	Endosulfan I	ug/L	Available Data <DL	0.6	0.22	0.056	110	240	NONE	0.056	Yes	No	No	NA	No
3-7, 9, 10	113	Endosulfan II	ug/L	Available Data <DL	0.6	0.22	0.056	110	240	NONE	0.056	Yes	No	No	NA	No
3-7, 9, 10	114	Endosulfan Sulfate	ug/L	Available Data <DL	0.6	NONE	NONE	110	240	NONE	240	Yes	No	No	NA	No
3-7, 9, 10	115	Endrin	ug/L	Available Data <DL	0.6	0.086	0.036	0.76	0.81	2	0.036	Yes	No	No	NA	No
3-7, 9, 10	116	Endrin Aldehyde	ug/L	Available Data <DL	0.6	NONE	NONE	0.76	0.81	NONE	0.81	Yes	No	No	NA	No
3-7, 9, 10	117	Heptachlor	ug/L	Available Data <DL	0.6	0.52	0.0038	0.00021	0.00021	0.01	0.00021	Yes	No	Yes	0.00021	No
3-7, 9, 10	118	Heptachlor Epoxide	ug/L	Available Data <DL	0.6	0.52	0.0038	0.0001	0.00011	0.01	0.00011	Yes	No	Yes	0.00011	No
3-7, 9, 10	119	Aroclor-1016	ug/L	Available Data <DL	0.6	NONE	0.014	0.00017	0.00017	0.5	0.00017	Yes	No	Yes	0.00017	No
3-7, 9, 10	120	Aroclor-1221	ug/L	Available Data <DL	0.6	NONE	0.014	0.00017	0.00017	0.5	0.00017	Yes	No	Yes	0.00017	No
3-7, 9, 10	121	Aroclor-1232	ug/L	Available Data <DL	0.6	NONE	0.014	0.00017	0.00017	0.5	0.00017	Yes	No	Yes	0.00017	No
3-7, 9, 10	122	Aroclor-1242	ug/L	Available Data <DL	0.6	NONE	0.014	0.00017	0.00017	0.5	0.00017	Yes	No	Yes	0.00017	No
3-7, 9, 10	123	Aroclor-1248	ug/L	Available Data <DL	0.6	NONE	0.014	0.00017	0.00017	0.5	0.00017	Yes	No	Yes	0.00017	No
3-7, 9, 10	124	Aroclor-1254	ug/L	Available Data <DL	0.6	NONE	0.014	0.00017	0.00017	0.5	0.00017	Yes	No	Yes	0.00017	No
3-7, 9, 10	125	Aroclor-1260	ug/L	Available Data <DL	0.6	NONE	0.014	0.00017	0.00017	0.5	0.00017	Yes	No	Yes	0.00017	No
3-7, 9, 10	126	Toxaphene	ug/L	Available Data <DL	0.6	0.73	0.0002	0.00073	0.00075	3	0.0002	Yes	No	Yes	0.0002	No
3-7, 9, 10	127	E. Coli	MPN/100ml	270	0.6	NA	NA	NA	NA	235	235	Yes	Yes	NA	NA	Yes

**TABLE F-4
REASONABLE POTENTIAL ANALYSIS - NONPRIORITY POLLUTANTS (OUTFALLS 003-007,009 AND 010)**

**FIRST QUARTER 2016 REPORTING SUMMARY
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY
NPDES PERMIT CA0001309**

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	Boron	Annual	mg/L	1	0.053	0.6	13.20	0.6994	NA	NA	0.6994	1	BU
3-7, 9, 10	Chloride	Discharge	mg/L	4	4.5	0.6	4.74	21.31	NA	NA	21.31	150	BU
3-7, 9, 10	Fluoride	Annual	mg/L	1	Available Data <DL	0.6	All Data Qualified	All Data Qualified	NA	NA	NA	1.6	BU
3-7, 9, 10	Nitrate + Nitrite as Nitrogen (N)	Discharge	mg/L	3	2.0	0.6	Not Analyzed	Not Analyzed	NA	NA	NA	8	BU/TMDL
3-7, 9, 10	Oil & Grease	Discharge	mg/L	3	Available Data <DL	0.6	All Data Qualified	All Data Qualified	NA	NA	NA	10	BU
3-7, 9, 10	Sulfate	Discharge	mg/L	4	6.9	0.6	4.74	32.68	NA	NA	32.68	300	BU
3-7, 9, 10	Total Dissolved Solids	Discharge	mg/L	3	110	0.6	5.62	618.47	NA	NA	618.47	850	BU
3-7, 9, 10	Total Suspended Solids	Annual	mg/L	1	20	0.6	13.20	All Data Qualified	NA	NA	NA	45	BU

APPENDIX G

**First Quarter 2016 Analytical Laboratory Methods, Method Detection Limits,
Reporting Limits, QA/QC Procedures, and ELAP Certifications
(on CD)**

TABLE G
LABORATORY MDLs, REPORTING LIMITS, STATE MINIMUM LEVELS AND PERMIT LIMITS COMPARISON

FIRST QUARTER 2016 REPORTING SUMMARY
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY
NPDES PERMIT CA0001309

Method	Analyte	Units	TestAmerica Laboratory 2015 MDL	TestAmerica Laboratory 2015 RL	SWRCB ML	Laboratory vs ML ⁽¹⁾	Permit Limits (PL)					
							Monthly Average Limits	Daily Maximum Limits	Daily Maximum Limits	Daily Maximum Limits	Receiving Water Limits	Receiving Water Sediment Limits
							019, 020	001, 002 011, 018	003-007,009, 010	008	Arroyo Simi	Arroyo Simi
EPA 624 - Low Level	1,1,1-Trichloroethane	µg/L	0.25	0.5	2	-- ^(b)						
	1,1,2,2-Tetrachloroethane	µg/L	0.25	0.5	1	-- ^(b)						
	1,1,2-Trichloroethane	µg/L	0.25	0.5	2	-- ^(b)						
	1,1-Dichloroethane	µg/L	0.25	0.5	1	-- ^(b)						
	1,1-Dichloroethene	µg/L	0.25	0.5	2	-- ^(a)	3.2	6.0				
	1,2-Dichlorobenzene	µg/L	0.2	0.5	2	-- ^(b)						
	1,2-Dichloroethane	µg/L	0.25	0.5	2	PL<ML		0.5				
	1,2-Dichloropropane	µg/L	0.25	0.5	1	-- ^(b)						
	1,3-Dichlorobenzene	µg/L	0.2	0.5	2	-- ^(b)						
	1,3-Dichloropropene (reported as cis & trans)	µg/L	0.25	0.5	2	-- ^(b)						
	1,4-Dichlorobenzene	µg/L	0.2	0.5	2	-- ^(b)						
	Benzene	µg/L	0.25	0.5	2	-- ^(b)						
	Bromodichloromethane	µg/L	0.25	0.5	2	-- ^(b)						
	Bromoform	µg/L	0.4	1	2	-- ^(b)						
	Bromomethane	µg/L	0.25	0.5	2	-- ^(b)						
	Carbon tetrachloride	µg/L	0.25	0.5	2	-- ^(b)						
	Chlorobenzene	µg/L	0.25	0.5	2	-- ^(b)						
	Chloroethane	µg/L	0.4	1	2	-- ^(b)						
	Chloroform	µg/L	0.25	0.5	2	-- ^(b)						
	Chloromethane	µg/L	0.25	0.5	2	-- ^(b)						
Dibromochloromethane	µg/L	0.25	0.5	2	-- ^(b)							
Ethylbenzene	µg/L	0.25	0.5	2	-- ^(b)							
m,p-Xylenes	µg/L	0.5	1	n/a	-- ^(d)							
Methylene chloride	µg/L	0.88	2	2	-- ^(b)							
Naphthalene	µg/L	0.5	1	n/a	-- ^(d)							
o-Xylene	µg/L	0.5	1	n/a	-- ^(d)							
Tetrachloroethene	µg/L	0.25	0.5	2	-- ^(b)							
Toluene	µg/L	0.25	0.5	2	-- ^(b)							
trans-1,2-Dichloroethene	µg/L	0.25	0.5	1	-- ^(b)							
Trichloroethene	µg/L	0.25	0.5	2	-- ^(a)		5.0					
Trichlorofluoromethane	µg/L	0.25	0.5	n/a	-- ^(d)							
Vinyl chloride	µg/L	0.25	0.5	2	-- ^(b)							
EPA 624	1,1,2-Trichloro-1,2,2-Trifluoromethane (Freon 113)	µg/L	0.5	2	n/a	-- ^(d)						
	1,2-Dichloro-1,1,2-Trichloroethane (Freon 123a)	µg/L	1	2	n/a	-- ^(d)						
	Cyclohexane (TIC)	µg/L	1	2	n/a	-- ^(d)						
EPA 624/8260B - Low Level	2-Chloroethylvinylether	µg/L	1	2	1	ML<RL						
	Acrolein	µg/L	2.5	5	5	-- ^(b)						
	Acrylonitrile	µg/L	1	2	2	-- ^(b)						
EPA 8260B-Mod	1,4-Dioxane	µg/L	0.5	2	n/a	-- ^(d)						
EPA 625 - Low Level	1,2,4-Trichlorobenzene	µg/L	0.5	1	5	-- ^(b)						
	1,2-Dichlorobenzene	µg/L	0.2	0.5	2	-- ^(b)						
	1,2-Diphenylhydrazine/Azobenzene	µg/L	0.5	1	1	-- ^(b)						
	1,3-Dichlorobenzene	µg/L	0.2	0.5	1	-- ^(b)						
	1,4-Dichlorobenzene	µg/L	0.2	0.5	1	-- ^(b)						
	2,4,6-Trichlorophenol	µg/L	0.5	1	10	-- ^(a)	6.5	13				
	2,4-Dichlorophenol	µg/L	2	5	5	-- ^(b)						
	2,4-Dimethylphenol	µg/L	1	2	2	-- ^(b)						
	2,4-Dinitrophenol	µg/L	2	5	5	-- ^(b)						

TABLE G
LABORATORY MDLs, REPORTING LIMITS, STATE MINIMUM LEVELS AND PERMIT LIMITS COMPARISON

FIRST QUARTER 2016 REPORTING SUMMARY
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY
NPDES PERMIT CA0001309

Method	Analyte	Units	TestAmerica Laboratory 2015 MDL	TestAmerica Laboratory 2015 RL	SWRCB ML	Laboratory vs ML ⁽¹⁾	Permit Limits (PL)					
							Monthly Average Limits	Daily Maximum Limits	Daily Maximum Limits	Daily Maximum Limits	Receiving Water Limits	Receiving Water Sediment Limits
							019, 020	001, 002 011, 018	003-007,009, 010	008	Arroyo Simi	Arroyo Simi
EPA 625 - Low Level	2,4-Dinitrotoluene	µg/L	2	5	5	-- ^(a)	9.1	18				
	2,6-Dinitrotoluene	µg/L	2	5	5	-- ^(b)						
	2-Chloronaphthalene	µg/L	0.2	0.5	10	-- ^(b)						
	2-Chlorophenol	µg/L	0.5	1	5	-- ^(b)						
	2-Nitrophenol	µg/L	1	2	10	-- ^(b)						
	3,3-Dichlorobenzidine	µg/L	2	5	5	-- ^(b)						
	4,6-Dinitro-2-methylphenol	µg/L	2	5	5	-- ^(b)						
	4-Bromophenyl phenyl ether	µg/L	0.5	1	5	-- ^(b)						
	4-Chloro-3-methylphenol	µg/L	0.2	2	1	MDL<ML<RL						
	4-Chlorophenyl phenyl ether	µg/L	0.2	0.5	5	-- ^(b)						
	4-Nitrophenol	µg/L	2	5	10	-- ^(b)						
	Acenaphthene	µg/L	0.2	0.5	1	-- ^(b)						
	Acenaphthylene	µg/L	0.2	0.5	10	-- ^(b)						
	Anthracene	µg/L	0.2	0.5	10	-- ^(b)						
	Benzidine	µg/L	5	10	5	ML<RL						
	Benzo(a)anthracene	µg/L	2	5	5	-- ^(b)						
	Benzo(a)pyrene	µg/L	0.5	2	10	-- ^(b)						
	Benzo(b)fluoranthene	µg/L	1	2	10	-- ^(b)						
	Benzo(g,h,i)perylene	µg/L	2	5	5	-- ^(b)						
	Benzo(k)fluoranthene	µg/L	0.3	0.5	10	-- ^(b)						
	Bis(2-chloroethoxy)methane	µg/L	0.2	0.5	5	-- ^(b)						
	Bis(2-chloroethyl)ether	µg/L	0.2	0.5	1	-- ^(b)						
	Bis(2-chloroisopropyl)ether	µg/L	0.2	0.5	2	-- ^(b)						
	Bis(2-ethylhexyl)phthalate	µg/L	2	5	5	PL<ML&RL		4.0				
	Butyl benzyl phthalate	µg/L	2	5	10	-- ^(b)						
	Chrysene	µg/L	0.2	0.5	10	-- ^(b)						
	Dibenz(a,h)anthracene	µg/L	0.3	0.5	10	-- ^(b)						
	Diethyl phthalate	µg/L	0.5	1	2	-- ^(b)						
	Dimethyl phthalate	µg/L	0.2	0.5	2	-- ^(b)						
	Di-n-butyl phthalate	µg/L	1	2	10	-- ^(b)						
	Di-n-octyl phthalate	µg/L	2	5	10	-- ^(b)						
	Fluoranthene	µg/L	0.2	0.5	1	-- ^(b)						
	Fluorene	µg/L	0.2	0.5	10	-- ^(b)						
	Hexachlorobenzene	µg/L	0.5	1	1	-- ^(b)						
	Hexachlorobutadiene	µg/L	0.5	2	1	MDL<ML<RL						
	Hexachlorocyclopentadiene	µg/L	2	5	5	-- ^(b)						
	Hexachloroethane	µg/L	0.5	3	1	MDL<ML<RL						
	Indeno(1,2,3-cd)pyrene	µg/L	1	2	10	-- ^(b)						
	Isophorone	µg/L	0.5	1	1	-- ^(b)						
	Naphthalene	µg/L	0.5	1	1	-- ^(b)						
Nitrobenzene	µg/L	0.5	1	1	-- ^(b)							
n-Nitrosodimethylamine	µg/L	1	2	5	-- ^(a)	8.1	16					
n-Nitroso-di-n-propylamine	µg/L	1	2	5	-- ^(b)							
n-Nitrosodiphenylamine	µg/L	0.5	2	1	MDL<ML<RL							
Pentachlorophenol	µg/L	1	2	5	-- ^(a)	8.2	16.5					
Phenanthrene	µg/L	0.2	0.5	5	-- ^(b)							
Phenol	µg/L	1	1	1	-- ^(b)							
Pyrene	µg/L	0.2	0.5	10	-- ^(b)							

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FIRST QUARTER 2016 REPORTING SUMMARY
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY
NPDES PERMIT CA0001309

Method	Analyte	Units	TestAmerica Laboratory 2015 MDL	TestAmerica Laboratory 2015 RL	SWRCB ML	Laboratory vs ML ⁽¹⁾	Permit Limits (PL)					
							Monthly Average Limits	Daily Maximum Limits	Daily Maximum Limits	Daily Maximum Limits	Receiving Water Limits	Receiving Water Sediment Limits
							019, 020	001, 002 011, 018	003-007,009, 010	008	Arroyo Simi	Arroyo Simi
Field Test	Dissolved Oxygen ⁽³⁾	mg/L	n/a	1	n/a	-- ^(d)						
	Total Residual Chlorine ⁽³⁾	mg/L	n/a	0.1	n/a	-- ^(c)		0.1				
EPA 120.1	Conductivity (µmhos/cm)	µmhos/cm	n/a	1	n/a	-- ^(d)						
EPA 1664	Oil & Grease (1664-HEM)	mg/L	1.4	5	n/a	-- ^(c)	10	15	15	15		
EPA 180.1	Turbidity (NTU)	mg/L	0.04	0.1	n/a	-- ^(d)						
EPA 300	Chloride	mg/L	0.25	0.5	n/a	-- ^(c)		150	150	150		
	Nitrate + Nitrite-N	mg/L	0.07	0.26	n/a	-- ^(c)		8	10	8		
	Nitrate-N	mg/L	0.055	0.11	n/a	-- ^(c)		8		8		
	Nitrite-N	mg/L	0.07	0.15	n/a	-- ^(c)		1		1		
	Sulfate	mg/L	0.25	0.5	n/a	-- ^(c)		300	250	300		
SM2540C	Total Dissolved Solids	mg/L	5	10	n/a	-- ^(c)		950	850	950		
SM2540D	Suspended Solids (TSS)	mg/L	0.5	1	n/a	-- ^(c)	15	45				
SM2540F	Settleable Solids (ml/L)	ml/L	n/a	0.1	n/a	-- ^(c)	0.1	0.3				
SM4500F-C	Fluoride	mg/L	0.25	0.5	n/a	-- ^(c)		1.6	1.6	1.6		
SM4500-NH3	Ammonia-N	mg/L	0.1	0.2	n/a	-- ^(c)	1.96	10.1		10.1		
SM5210B	BOD	mg/L	0.5	2	n/a	-- ^(c)	20	30				
SM5310B	Total Organic Carbon	mg/L	0.65	1	n/a	-- ^(d)						
SM5540	Detergents (MBAS)	mg/L	0.05	0.1	n/a	-- ^(c)		0.5				
SM4500	Cyanide	µg/L	2.5	5	5.0	PL<ML&RL	4.3	8.5	9.5	9.5		
EPA 200.7	Aluminum	µg/L	25	50	n/a	-- ^(d)						
	Arsenic	µg/L	5	10	10	-- ^(a)		10				
	Barium	µg/L	5	10	n/a	-- ^(c)		1000				
	Beryllium	µg/L	1	2	2	-- ^(a)		4.0				
	Boron	mg/L	0.01	0.05	n/a	-- ^(c)			1.0	1.0		
	Chromium	µg/L	2.5	5	10	-- ^(a)	see Cr VI	see Cr VI				
	Cobalt	µg/L	2.5	10	n/a	-- ^(d)						
	Hardness as CaCO3	mg/L	0.2	0.3	n/a	-- ^(d)						
	Iron	mg/L	0.01	0.04	n/a	-- ^(c)		0.3				
	Manganese	µg/L	10	20	n/a	-- ^(c)		50				
	Nickel	µg/L	5	10	20	-- ^(a)	35	94	86	86		
	Silver	µg/L	5	10	10	PL<ML&MDL	2.0	4.1				
	Vanadium	µg/L	5	10	n/a	-- ^(d)						
	Zinc	µg/L	10	20	20	-- ^(a)	43	119	120	120		
EPA 200.8	Antimony	µg/L	0.5	2	0.5	ML<RL		6.0	6.0	6.0		
	Cadmium	µg/L	0.2	1	0.25	MDL<ML<RL	2.0	4.0/3.1	4.0	4.0/3.1		
	Copper	µg/L	0.5	2	0.5	ML<RL	5.8	14	13	14		
	Iron	µg/L	10	40	n/a	-- ^(c)		300				
	Lead	µg/L	0.5	1	0.5	ML<RL	2.6	5.2	5.2	5.2		
	Selenium	µg/L	0.5	2	2	-- ^(a)	4.1	8.2/5		5		
	Silver	µg/L	0.5	1	0.25	ML<RL	2.0	4.1				
	Thallium	µg/L	0.5	1	1	-- ^(a)		2.0	2.0	2.0		
	Zinc	µg/L	2.5	20	1	ML<RL	43	119	120	120		
EPA 245.1	Mercury	µg/L	0.1	0.2	0.5	PL<MDL	0.05	0.1	0.13	0.13		
EPA 218.6	Chromium VI	µg/L	0.25	1	10	PL<ML	8.0	16				

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FIRST QUARTER 2016 REPORTING SUMMARY
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY
NPDES PERMIT CA0001309

Method	Analyte	Units	TestAmerica Laboratory 2015 MDL	TestAmerica Laboratory 2015 RL	SWRCB ML	Laboratory vs ML ⁽¹⁾	Permit Limits (PL)					
							Monthly Average Limits	Daily Maximum Limits	Daily Maximum Limits	Daily Maximum Limits	Receiving Water Limits	Receiving Water Sediment Limits
							019, 020	001, 002 011, 018	003-007,009, 010	008	Arroyo Simi	Arroyo Simi
EPA 608 - Low Level	Aroclor 1016	µg/L	0.3	0.5	0.5	PL<ML&MDL					0.0003	
	Aroclor 1016	µg/g	0.017	0.049	n/a	-- ^(c)						0.12
	Aroclor 1221	µg/L	0.3	0.5	0.5	PL<ML&MDL					0.0003	
	Aroclor 1221	µg/g	0.017	0.049	n/a	-- ^(c)						0.12
	Aroclor 1232	µg/L	0.3	0.5	0.5	PL<ML&MDL					0.0003	
	Aroclor 1232	µg/g	0.017	0.049	n/a	-- ^(c)						0.12
	Aroclor 1242	µg/L	0.3	0.5	0.5	PL<ML&MDL					0.0003	
	Aroclor 1242	µg/g	0.017	0.049	n/a	-- ^(c)						0.12
	Aroclor 1248	µg/L	0.3	0.5	0.5	PL<ML&MDL					0.0003	
	Aroclor 1248	µg/g	0.017	0.049	n/a	-- ^(c)						0.12
	Aroclor 1254	µg/L	0.3	0.5	0.5	PL<ML&MDL					0.0003	
	Aroclor 1254	µg/g	0.017	0.049	n/a	-- ^(c)						0.12
	Aroclor 1260	µg/L	0.3	0.5	0.5	PL<ML&MDL					0.0003	
	Aroclor 1260	µg/g	0.017	0.049	n/a	-- ^(c)						0.12
	4,4'-DDD	µg/L	0.004	0.005	0.05	PL<ML&MDL					0.0014	
	4,4'-DDD	µg/g	0.0015	0.0049	n/a	PL<RL						0.002
	4,4'-DDE	µg/L	0.003	0.005	0.05	PL<ML&MDL					0.001	
	4,4'-DDE	µg/g	0.0015	0.0049	n/a	PL<MDL						0.0014
4,4'-DDT	µg/L	0.004	0.01	0.01	PL<ML&MDL					0.001		
4,4'-DDT	µg/g	0.0015	0.0049	n/a	PL<MDL						0.0003	
Aldrin	µg/L	0.0015	0.005	0.005	-- ^(b)							
alpha-BHC	µg/L	0.0025	0.005	0.01	-- ^(a)	0.01	0.03					
beta-BHC	µg/L	0.004	0.01	0.005	MDL<ML<RL							
Chlordane	µg/L	0.08	0.1	0.1	PL<ML&MDL					0.001		
Chlordane	µg/g	0.0097	0.049	n/a	PL<MDL						0.0033	
delta-BHC	µg/L	0.003	0.005	0.005	-- ^(b)							
Dieldrin	µg/L	0.002	0.005	0.01	PL<ML&MDL					0.0002		
Dieldrin	µg/g	0.0015	0.0049	n/a	PL<MDL						0.0002	
Endosulfan I	µg/L	0.003	0.005	0.02	-- ^(b)							
Endosulfan II	µg/L	0.002	0.005	0.01	-- ^(b)							
Endosulfan sulfate	µg/L	0.003	0.01	0.05	-- ^(b)							
Endrin	µg/L	0.002	0.005	0.01	-- ^(b)							
Endrin aldehyde	µg/L	0.002	0.01	0.01	-- ^(b)							
gamma-BHC (Lindane)	µg/L	0.003	0.01	0.02	-- ^(b)							
Heptachlor	µg/L	0.003	0.01	0.01	-- ^(b)							
Heptachlor epoxide	µg/L	0.0025	0.005	0.01	-- ^(b)							
Toxaphene	µg/L	0.25	0.5	0.5	PL<ML&MDL					0.0003		
Toxaphene	µg/g	0.049	0.19	n/a	PL<MDL						0.0006	
SW8141	Chlorpyrifos	µg/L	0.5	1	n/a	PL<MDL					0.02	
	Diazinon	µg/L	0.12	0.25	n/a	PL<RL					0.16	
EPA 525.2	Chlorpyrifos	µg/L	0.5	1	n/a	PL<MDL					0.02	
	Diazinon	µg/L	0.12	0.25	n/a	PL<RL					0.16	
EPA 900	Gross Alpha	pCi/L	n/a	2.15 ⁽⁴⁾	n/a	-- ^(c)		15	15	15		
	Gross Beta	pCi/L	n/a	1.08 ⁽⁴⁾	n/a	-- ^(c)		50	50	50		
EPA 901.1	Cesium-137	pCi/L	n/a	8.35 ⁽⁴⁾	n/a	-- ^(c)		200	200	200		
	Potassium-40	pCi/L	n/a	200 ⁽⁴⁾	n/a	-- ^(d)						
EPA 903/904	Radium 226 + 228	pCi/L	n/a	n/a	n/a	-- ^(e)		5.0	5.0	5		
EPA 905.0	Strontium 90	pCi/L	n/a	0.664 ⁽⁴⁾	n/a	-- ^(c)		8.0	8.0	8		
EPA 906.0	Tritium	pCi/L	n/a	328 ⁽⁴⁾	n/a	-- ^(c)		20000	20000	20000		

See attached notes for abbreviations, definitions, and other explanations for the data presented.

TABLE G
LABORATORY MDLs, REPORTING LIMITS, STATE MINIMUM LEVELS AND PERMIT LIMITS COMPARISON

FIRST QUARTER 2016 REPORTING SUMMARY
 THE BOEING COMPANY
 SANTA SUSANA FIELD LABORATORY
 NPDES PERMIT CA0001309

Method	Analyte	Units	TestAmerica Laboratory 2015 MDL	TestAmerica Laboratory 2015 RL	SWRCB ML	Laboratory vs ML ⁽¹⁾	Permit Limits (PL)					
							Monthly Average Limits	Daily Maximum Limits	Daily Maximum Limits	Daily Maximum Limits	Receiving Water Limits	Receiving Water Sediment Limits
							019, 020	001, 002 011, 018	003-007,009, 010	008	Arroyo Simi	Arroyo Simi
HASL-300 U Mod	Uranium	pCi/L	n/a	0.562 ⁽⁴⁾	n/a	-- ⁽⁶⁾		20	20	20		
EPA 1002	Chronic Toxicity	Pass or Fail, % Effect	n/a	n/a	n/a	n/a	Pass or Fail	Pass or % Effect <50	Pass or % Effect <50	Pass or % Effect <50		
EPA 600	Asbestos	MFL	n/a ⁽²⁾	n/a ⁽²⁾	n/a	-- ^(d)						
SM9221F	E. Coli	MPN	n/a	1.8	n/a	-- ^(c)					235	
EPA 1613	TCDD TEQ	µg/L	n/a	n/a	n/a	-- ^(e)	1.4E-08	2.8E-08	2.8E-08	2.8E-08		
EPA 314.0	Perchlorate	µg/L	1	4	n/a	-- ^(c)		6.0	6.0	6.0		
EPA 8015-Mod	Diesel Range Organics (DRO)	mg/L	0.1	0.5	n/a	-- ^(d)						
	Gasoline Range Organics (GRO)	mg/L	0.025	0.05	n/a	-- ^(d)						
EPA 8315M	Monomethyl hydrazine	µg/L	0.245	10	n/a	-- ^(d)						

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FIRST QUARTER 2016 REPORTING SUMMARY
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY
NPDES PERMIT CA0001309

Notes:

Benchmark limitations: Outfalls 001, 002

Compliance limitations: Outfalls 003-011, 018-020

The MDLs and RLs listed are from the MDL study conducted in 2015. The next MDL study will be conducted in Spring 2016.

Columns are used to compare laboratory's reporting limits (RLs) and method detection limits (MDLs) to the SWRCB Minimum Levels (MLs) and the permit limits (PLs).

(1) This column indicates the status of analytical capabilities if the ML is less than the laboratory RL and/or MDL. See explanation for "--" below.

The following designations summarize the comparison of RLs, MDLs, MLs, and permit limits:

-- = Laboratory reporting limit meets ML if applicable and permit limit requirements

--^(a) Laboratory reporting limit meets ML and permit limit requirements

--^(b) Laboratory reporting limit meets ML. This analyte has no permit limit requirements.

--^(c) Laboratory reporting limit meets permit limit. This analyte has no ML.

--^(d) This analyte has no ML or permit limit.

--^(e) This analyte is a calculation and does not have a reporting limit. This calculation has no ML.

(2) The RL and MDL for asbestos varies based upon the sample.

(3) Total residual chlorine (TRC) and dissolved oxygen (DO) are measured in the field. The RL is the lowest limit of the instrument. The MDL is not relevant for field parameters.

(4) This value is the minimum detectable activity (MDA) which applies only to radiological constituents.

ML<RL = The laboratory RL does not meet the ML

MDL<ML<RL = The ML is less than RL, but greater than the MDL

PL<ML = The established permit limit is less than the ML

PL<ML&RL = The permit limit is less than the ML and the RL

PL<ML&MDL = The permit limit is less than the ML and the MDL

PL<RL = The permit limit is less than the RL

PL<MDL = The permit limit is less than the MDL

The receiving water sediment limits do not have a ML and are included for reference only.

Acronyms:

MFL = million fibers per liter

mg/L = milligrams per liter

MPN = most probable number per 100 milliliters

pCi/L = picoCuries per liter

SWRCB = State Water Resources Control Board

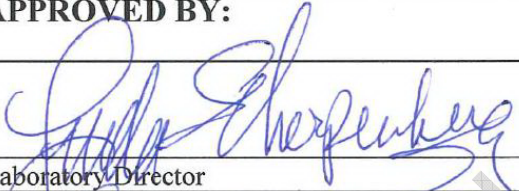
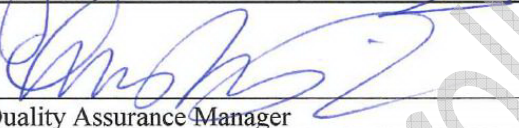
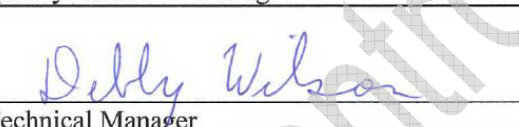
TIC = tentatively identified compound

µg/L = micrograms per liter

µg/g = micrograms per gram

n/a = not applicable

FACILITY SOP ATTACHMENT

SOP NUMBER: IR-QAM, Rev. 4 (09/18/2015)		CHANGE FORM ID: CF1	
SOP TITLE: Quality Assurance Manual			
REASON FOR ADDITION OR CHANGE (Use additional sheets if necessary): Change in approval signatories.			
CHANGE OR ADDITION (Use additional sheets if necessary): The current Title Page (page 2 of 187) has been updated to reflect recent management changes at the Irvine facility. See attached.			
Prepared By: D. Dawes			
APPROVED BY:			
 Laboratory Director		10-26-15 Date	
 Quality Assurance Manager		10-26-2015 Date	
 Technical Manager		10-26-15 Date	

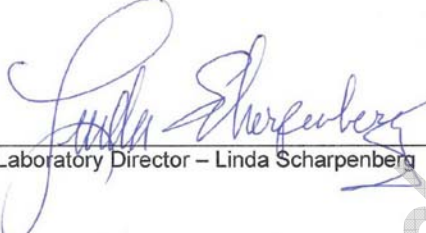
Control Copy Number _____

Title Page Attachment

Document No.: IR-QAM
Revision No.: 4
Effective Date: 09/18/2015
Page 2 of 187

Title Page:

**Quality Assurance Manual
Approval Signatories**



Laboratory Director – Linda Scharpenberg

10-26-15

Date



Quality Assurance Manager – Maria Friedman

10-26-2015

Date



Technical Manager – Debby Wilson

10-26-15

Date

Quality Assurance Manual

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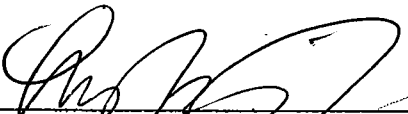
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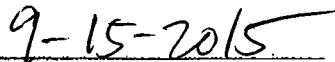
Laboratory Director and Technical Manager – Fred Haley



Date



Quality Assurance Manager – Maria Friedman



Date

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SECTION 2

TABLE OF CONTENTS

Section No.	Title	2009 TNI Standard Reference	ISO/IEC 17025:2005(E) Reference	Page No.
-	COVER PAGE	V1M2 4.2.8.3		COVER
1	TITLE PAGE			2
2	TABLE OF CONTENTS	V1M2 4.2.8.3-4.2.8.4		3
3	INTRODUCTION, SCOPE AND APPLICABILITY	V1M2 4.2.8.4		15
3.1	Introduction And Compliance References	V1M2 1.1; 1.2; 2.0; 3.2; 4.1.2; 4.2.4	4.1.2; 4.2.4	15
3.2	Terms And Definitions	V1M2 3.0; 4.2.4	4.2.4	15
3.3	Scope / Fields Of Testing	V1M2 1.2; 4.2.4	4.1.2; 4.2.4	16
3.4	Management Of The Manual	V1M2 4.2.1; 4.2.7; 4.3.3.2; 4.3.3.3	4.2.1; 4.2.7; 4.3.3.2; 4.3.3.3	16
4	MANAGEMENT REQUIREMENTS	V1M2 4.0		17
4.1	Overview	V1M2 4.1.1; 4.1.3; 4.1.5	4.1.1; 4.1.3; 4.1.5; 4.2.6	17
4.2	Roles And Responsibilities	V1M2 4.1.4; 4.1.5; 4.1.6; 4.2.1; 4.2.6; 5.2.4	4.1.3; 4.1.5; 4.1.6; 4.2.1; 4.2.6; 5.2.4	17
4.3	Deputies	V1M2 4.1.5; 4.1.7.2; 4.2.7	4.1.5; 4.2.7	29
5	QUALITY SYSTEM			33
5.1	Quality Policy Statement	V1M2 4.1.5; 4.2.2; 4.2.3; 4.2.8.3	4.1.5; 4.2.2; 4.2.3	33
5.2	Ethics And Data Integrity	V1M2 4.1.5; 4.1.6; 4.2.2; 4.2.8.1; 5.2.7	4.1.5; 4.2.2	33
5.3	Quality System Documentation	V1M2 4.1.5; 4.2.2; 4.2.5	4.2.2; 4.2.5	34
5.4	QA/QC Objectives For The Measurement Of Data	V1M2 4.2.2	4.1.5; 4.2.2	35
5.5	Criteria For Quality Indicators			37
5.6	Statistical Quality Control			37
5.7	Quality System Metrics			38
6	DOCUMENT CONTROL	V1M2 4.2.7; 4.3.1; 4.3.2.2; 4.3.3.3; 4.3.3.4	4.2.7; 4.3.1; 4.3.2.2; 4.3.3.3; 4.3.3.4	39
6.1	Overview			39
6.2	Document Approval And Issue	V1M2 4.3.2; 4.3.2.1- 4.3.2.3; 4.3.3.1	4.3.2.1; 4.3.2.2; 4.3.2.3; 4.3.3.1	39
6.3	Procedures For Document Control Policy	V1M2 4.3.2.1-4.3.2.2; 4.3.3.1	4.3.2.1; 4.3.2.2; 4.3.3.1	40
6.4	Obsolete Documents	V1M2 4.3.2.1-4.3.2.2	4.3.2.1; 4.3.2.2	40

Section No.	Title	2009 TNI Standard Reference	ISO/IEC 17025:2005(E) Reference	Page No.
7	SERVICE TO THE CLIENT	V1M2 4.4.1 - 4.4.4	4.4.1; 4.4.2; 4.4.3; 4.4.4	41
7.1	Overview	V1M2 4.4.5; 4.5.5; 5.7.1	4.4.5; 5.7.1	41
7.2	Review Sequence And Key Personnel	V1M2 4.4.5	4.4.5	42
7.3	Documentation	V1M2 5.7.1	5.7.1	43
7.4	Special Services	V1M2 4.7.1-4.7.2	4.7.1; 4.7.2	44
7.5	Client Communication	V1M2 4.7.1-4.7.2	4.7.1; 4.7.2	45
7.6	Reporting	V1M2 4.7.1-4.7.2	4.7.1; 4.7.2	45
7.7	Client Surveys	V1M2 4.7.1-4.7.2	4.7.1; 4.7.2	45
8	SUBCONTRACTING OF TESTS	V1M2 4.4.3; 4.5.4	4.4.3; 4.5.4	46
8.1	Overview	V1M2 4.5.1 - 4.5.3; 4.5.5; 5.3.1	4.5.1; 4.5.2; 4.5.3; 5.3.1	46
8.2	Qualifying And Monitoring Subcontractors	V1M2 4.5.1; 4.5.2; 4.5.3; 4.5.5	4.5.1; 4.5.2; 4.5.3	46
8.3	Oversight And Reporting	V1M2 4.5.5		48
8.4	Contingency Planning			49
9	PURCHASING SERVICES AND SUPPLIES	V1M2 4.6.1	4.6.1	51
9.1	Overview	V1M2 4.6.2; 4.6.3; 4.6.4	4.6.2; 4.6.3; 4.6.4	51
9.2	Glassware	V1M2 5.5.13.1		51
9.3	Reagents, Standards, And Supplies	V1M2 4.6.2; 4.6.3; 4.6.4	4.6.2; 4.6.3; 4.6.4	51
9.4	Purchase Of Equipment / Instruments / Software			53
9.5	Services			54
9.6	Suppliers			54
10	COMPLAINTS	V1M2 4.8	4.8	57
10.1	Overview			57
10.2	External Complaints			57
10.3	Internal Complaints			58
10.4	Management Review			58
11	CONTROL OF NONCONFORMING WORK	V1M2 4.9.1; 5.10.5	4.9.1; 5.10.5	59
11.1	Overview	V1M2 4.9.1; 4.11.3; 4.11.5	4.9.1; 4.11.3; 4.11.5	59
11.2	Responsibilities And Authorities	V1M2 4.9.1; 4.11.3; 4.11.5; 5.2.7	4.9.1; 4.11.3; 4.11.5	59
11.3	Evaluation Of Significance And Actions Taken	V1M2 4.9.1; 4.11.3; 4.11.5	4.9.1; 4.11.3; 4.11.5	60
11.4	Prevention Of Nonconforming Work	V1M2	4.9.2; 4.11.2	60

Section No.	Title	2009 TNI Standard Reference	ISO/IEC 17025:2005(E) Reference	Page No.
		4.9.4; 4.11.2		
11.5	Method Suspension / Restriction (Stop Work Procedures)	V1M2 4.9.1; 4.9.2; 4.11.5	4.9.1; 4.9.2; 4.11.5	61
12	CORRECTIVE ACTION	V1M2 4.11		62
12.1	Overview	V1M2 4.9.2; 4.11.1; 4.11.2	4.9.2; 4.11.1; 4.11.2	62
12.2	General	V1M2 4.11.2; 4.11.3	4.11.2; 4.11.3	62
12.3	Closed-Loop Corrective Action Process	V1M2 4.11.2; 4.11.3; 4.11.4; 4.11.6; 4.11.7; 4.12.2	4.11.2; 4.11.3; 4.11.4; 4.12.2	63
12.4	Technical Corrective Actions	V1M2 4.11.6		65
12.5	Basic Corrections	V1M2 4.11.1; 4.13.2.3	4.11.1; 4.13.2.3	66
13	PREVENTIVE ACTION / IMPROVEMENT	V1M2 4.10; 4.12.1; 4.12.2	4.10; 4.12.1; 4.12.2	73
13.1	Overview	V1M2 4.15.1; 4.15.2	4.15.1; 4.15.2	73
13.2	Management Of Change			74
14	CONTROL OF RECORDS	V1M2 4.2.7; 4.13.1.1; 4.13.3	4.2.7; 4.13.1.1	75
14.1	Overview	V1M2 4.13.1.1; 4.13.1.2; 4.13.1.3; 4.13.1.4; 4.13.2.1; 4.13.2.2; 4.13.2.3; 4.13.3	4.13.1.1; 4.13.1.2; 4.13.1.3; 4.13.1.4; 4.13.2.1; 4.13.2.2; 4.13.2.3	75
14.2	Technical And Analytical Records	V1M2 4.13.2.2 - 4.13.2.3	4.13.2.2; 4.13.2.3	80
14.3	Laboratory Support Activities			81
14.4	Administrative Records			82
14.5	Records Management, Storage, And Disposal	V1M2 4.13.3		82
15	AUDITS			84
15.1	Internal Audits	V1M2 4.2.8.1; 4.14; 4.14.1; 4.14.2; 4.14.3; 4.14.5; 5.9.1; 5.9.2	4.14.1; 4.14.2; 4.14.3; 5.9.1; 5.9.2	84
15.2	External Audits	V1M2 4.14.2; 4.14.3	4.14.2; 4.14.3; 4.14.4	86
15.3	Audit Findings	V1M2 4.14.2; 4.14.3; 4.14.5		87
16	MANAGEMENT REVIEWS	V1M2 4.1.6; 4.15; 4.15.1; 4.15.2	4.1.6; 4.15.1; 4.15.2	88
16.1	Quality Assurance Report			88
16.2	Annual Management Systems Review	V1M2 4.2.2; 4.15.3	4.2.2	88
16.3	Potential Integrity-Related Managerial Reviews			89

Section No.	Title	2009 TNI Standard Reference	ISO/IEC 17025:2005(E) Reference	Page No.
17	PERSONNEL	V1M2 5.2; 5.2.1	5.2.1	90
17.1	Overview	V1M2 5.2.2; 5.2.3; 5.2.5	5.2.2; 5.2.3; 5.2.5	90
17.2	Education And Experience Requirements For Technical Personnel	V1M2 5.2.1; 5.2.3; 5.2.4	5.2.1; 5.2.3; 5.2.4	90
17.3	Training	V1M2 5.2.5	5.2.5	91
17.4	Data Integrity And Ethics Training Program	V1M2 4.2.8.1; 5.2.7		93
18	ACCOMMODATIONS AND ENVIRONMENTAL CONDITIONS	V1M2 5.3		95
18.1	Overview	V1M2 5.3.1; 5.3.3; 5.3.4; 5.3.5	5.3.1; 5.3.3; 5.3.4; 5.3.5	95
18.2	Environment	V1M2 5.3.1; 5.3.2; 5.3.3; 5.3.4; 5.3.5	5.3.1; 5.3.2; 5.3.3; 5.3.4; 5.3.5	95
18.3	Work Areas	V1M2 5.3.3; 5.3.4; 5.3.5	5.3.3; 5.3.4; 5.3.5	96
18.4	Floor Plan			96
18.5	Building Security	V1M2 5.3.4	5.3.4	96
19	TEST METHODS AND METHOD VALIDATION	V1M2 5.4.1	5.4.1	84
19.1	Overview	V1M2 5.4.1	5.4.1; 5.4.5.1	98
19.2	Standard Operating Procedures	V1M2 4.2.8.5; 4.3.3.1; 5.4.2	4.3.3.1; 5.4.2	98
19.3	Laboratory Methods Manual	V1M2 4.2.8.5		98
19.4	Selection Of Methods	V1M2 4.13.3; 5.4.1; 5.4.2; 5.4.3 ; V1M4 1.4; 1.5.1; 1.6.1; 1.6.2; 1.6.2.1; 1.6.2.2	5.4.1; 5.4.2; 5.4.3; 5.4.4; 5.4.5.1; 5.4.5.2; 5.4.5.3	99
19.5	Laboratory-Developed Methods And Non-Standard Methods	V1M2 5.4.2 ; V1M4 1.5.1	5.4.2; 5.4.4; 5.4.5.2; 5.4.5.3	103
19.6	Validation Of Methods	V1M2 5.4.2 ; V1M4 1.5.1; 1.5.2; 1.5.2.1; 1.5.2.2; 1.5.3	5.4.2; 5.4.4; 5.4.5.2; 5.4.5.3	103
19.7	Method Detection Limits / Limits Of Detection	V1M2 5.9.3 ; V1M4 1.5.2; 1.5.2.1; 1.5.2.2	5.4.5.3	105
19.8	Instrument Detection Limits	V1M2 5.9.3		105
19.9	Verification Of Detection And Reporting Limits	V1M2 5.9.3 ; V1M4		106

Section No.	Title	2009 TNI Standard Reference	ISO/IEC 17025:2005(E) Reference	Page No.
		1.5.2.1		
19.10	Retention Time Windows	V1M2 5.9.3		106
19.11	Evaluation Of Selectivity	V1M2 5.9.3 ; V1M4 1.5.4; 1.7.3.6		106
19.12	Estimation Of Uncertainty Of Measurement	V1M2 5.1.1; 5.1.2; 5.4.6	5.1.1; 5.1.2; 5.4.6.1; 5.4.6.2; 5.4.6.3	106
19.13	Sample Re-Analysis Guidelines	V1M2 5.9.1	5.9.1	107
19.14	Control Of Data	V1M2 5.4.7.1; 5.4.7.2; 5.9.1	5.4.7.1; 5.4.7.2; 5.9.1	108
20	EQUIPMENT AND CALIBRATIONS	V1M2 5.5.4; 5.5.5; 5.5.6	5.5.4; 5.5.5; 5.5.6; 5.6.1	144
20.1	Overview	V1M2 5.5.1; 5.5.2; 5.5.3; 5.5.5; 5.5.10	5.5.1; 5.5.2; 5.5.3; 5.5.5; 5.5.10; 5.6.1	116
20.2	Preventive Maintenance	V1M2 5.5.1; 5.5.3; 5.5.7; 5.5.9	5.5.1; 5.5.3; 5.5.7; 5.5.9; 5.6.1	116
20.3	Support Equipment	V1M2 5.5.10; 5.5.11; 5.5.13.1	5.5.10; 5.5.11; 5.6.2.1.2; 5.6.2.2.1; 5.6.2.2.2	118
20.4	Instrument Calibrations	V1M2 5.5.8; 5.5.10; 5.6.3.1 ; V1M4 1.7.1.1; 1.7.2	5.5.8; 5.5.9; 5.5.10; 5.6.1; 5.6.2; 5.6.3.1	121
20.5	Tentatively Identified Compounds – GC/MS Analysis			124
20.6	GC/MS Tuning			124
21	MEASUREMENT TRACEABILITY			144
21.1	Overview	V1M2 5.6.3.1	5.6.2.1.2; 5.6.2.2.2; 5.6.3.1	144
21.2	NIST-Traceable Weights And Thermometers	V1M2 5.5.13.1; 5.6.3.1; 5.6.3.2	5.6.3.1; 5.6.3.2	144
21.3	Reference Standards / Materials	V1M2 5.6.3.1; 5.6.3.2; 5.6.3.3; 5.6.3.4; 5.6.4.1; 5.6.4.2; 5.9.1; 5.9.3	5.6.3.1; 5.6.3.2; 5.6.3.3; 5.6.3.4; 5.9.1	144
21.4	Documentation And Labeling Of Standards, Reagents, And Reference Materials	V1M2 5.6.4.2; 5.9.3		145
22	SAMPLING			148
22.1	Overview	V1M2 5.7.1; 5.7.3	5.7.1; 5.7.3	148
22.2	Sampling Containers			148
22.3	Definition Of Holding Time			148
22.4	Sampling Containers, Preservation Requirements, Holding Times			148
22.5	Sample Aliquots / Sub-Sampling	V1M2 5.7.1	5.7.1	149
23	HANDLING OF SAMPLES	V1M2	5.8.1	150

Section No.	Title	2009 TNI Standard Reference	ISO/IEC 17025:2005(E) Reference	Page No.
		5.8.1		
23.1	Chain Of Custody	V1M2 5.7.2; 5.7.4; 5.8.4; 5.8.7.5; 5.8.8; 5.9.1	5.7.2; 5.8.4; 5.9.1	150
23.2	Sample Receipt	V1M2 5.8.1; 5.8.2; 5.8.3; 5.8.5; 5.8.7.3; 5.8.7.4; 5.8.7.5	5.8.2; 5.8.3	151
23.3	Sample Acceptance Policy	V1M2 5.8.6; 5.8.7.2		152
23.4	Sample Storage	V1M2 5.7.4; 5.8.4	5.8.4	153
23.5	Hazardous Samples And Foreign Soils			154
23.6	Sample Shipping	V1M2 5.8.2	5.8.2	154
23.7	Sample Disposal			155
24	ASSURING THE QUALITY OF TEST RESULTS			160
24.1	Overview	V1M2 5.9.2; 5.9.3	5.9.2	160
24.2	Controls	V1M2 5.9.2; 5.9.3	5.9.2	160
24.3	Negative Controls	V1M2 5.9.2; 5.9.3 ; V1M4 1.7.3; 1.7.3.1; 1.7.4.1	5.9.2	160
24.4	Positive Controls	V1M2 5.9.2; 5.9.3 ; V1M4 1.7.3; 1.7.3.2; 1.7.3.2.1; 1.7.3.2.2; 1.7.3.2.3	5.9.2	162
24.5	Sample Matrix Controls	V1M2 5.9.2; 5.9.3 ; V1M4 1.7.3; 1.7.3.3; 1.7.3.3.1; 1.7.3.3.2; 1.7.3.3.3	5.9.2	163
24.6	Acceptance Criteria (Control Limits)	V1M2 5.9.3 ; V1M4 1.7.4.2; 1.7.4.3		164
24.7	Additional Procedures To Assure Quality Control	V1M2 5.9.3 ; V1M4 1.7.3.4		167
25	REPORTING RESULTS			168
25.1	Overview	V1M2 5.10.1; 5.10.2; 5.10.8	5.10.1; 5.10.2; 5.10.8	168
25.2	Test Reports	V1M2 5.10.1; 5.10.2; 5.10.3.1; 5.10.3.2; 5.10.5; 5.10.6; 5.10.7; 5.10.8; 5.10.10; 5.10.11	5.10.1; 5.10.2; 5.10.3.1; 5.10.3.2; 5.10.5; 5.10.6; 5.10.7; 5.10.8	168
25.3	Reporting Level Or Report Type	V1M2 5.10.1; 5.10.7;	5.10.1; 5.10.7; 5.10.8	170

Section No.	Title	2009 TNI Standard Reference	ISO/IEC 17025:2005(E) Reference	Page No.
		5.10.8		
25.4	Supplemental Information For Test	V1M2 5.10.1; 5.10.3.1; 5.10.5	5.10.1; 5.10.3.1; 5.10.5	171
25.5	Environmental Testing Obtained From Subcontractors	V1M2 4.5.5; 5.10.1; 5.10.6	5.10.1; 5.10.6	172
25.6	Client Confidentiality	V1M2 4.1.5; 5.10.7	4.1.5; 5.10.7	172
25.7	Format Of Reports	V1M2 5.10.8	5.10.8	173
25.8	Amendments To Test Reports	V1M2 5.10.9	5.10.1; 5.10.9	173
25.9	Policies On Client Requests For Amendments	V1M2 5.9.1; 5.10.9	5.9.1; 5.10.1; 5.10.5; 5.10.9	173

LIST OF TABLES

Table No.	Title	2009 TNI Standard Reference	ISO/IEC 17025:2005(E) Reference	Page
4-1	Key Personnel And Deputies			30
12-1	Example – General Corrective Action Procedures	V1M2 4.11.6 ; V1M4 1.7.4.1	4.11.2	69
12-2	Timeline for Corrective Action Responses			72
14-1	Record Index		4.13.1.1	75
14-2	Example: Special Record Retention Requirements			78
15-1	Types Of Internal Audits And Frequency		4.14.1	84
17-1	Education And Experience Guidelines			91
17-2	Required Employee Training			92
20-1	Example: Instrumentation List		5.5.4; 5.5.5	126
20-2	Example: Schedule Of Routine Maintenance			141
24-1	Example – Negative Controls			160
24-2	Negative Controls for Microbiology			161
24-3	Sample Matrix Control			163

LIST OF FIGURES

Figure No.	Title	2009 TNI Standard Reference	ISO/IEC 17025:2005(E) Reference	Page
4-1	Corporate And Laboratory Organization Charts	V1M2 4.1.5	4.1.3; 4.1.5; 4.2.6	31
8-1	Example - Subcontracted Sample Form			50
9-1	New Instrumentation Checklist			56
12-1	Example – NCM Program In Lims			66
12-2	Example – iCAT Program			66
12-3	Example – Corrective Action Report			68
19-1	Example - Demonstration Of Capability Documentation			114
19-2	Testamerica Irvine Workflow			115
23-1	Example - Chain Of Custody			156
23-2	Example - Sample Acceptance Policy	V1M2 5.8.6; 5.8.7.1 ; V1M4 1.7.5		157
23-3	Example - Hazardous & Quarantine/Foreign Soil - Drum for Incineration Sample Notice			159

LIST OF APPENDICES

Appendix No.	Title	Page
1	Laboratory Floor Plan	175
2	Glossary / Acronyms	176
3	Laboratory Certifications, Accreditations, Validations	187

Uncontrolled Document

REFERENCED CORPORATE DOCUMENTS

Document Reference	Title
CA-Q-M-002	Corporate Quality Management Plan
CW-L-P-004	Ethics Policy
CW-L-S-002	Internal Investigation of Potential Data Discrepancies and Determination for Data Recall
CW-Q-S-001	Corporate Document Control & Archiving
CA-L-P-002	Contract Compliance Policy
CA-L-S-002	Subcontracting Procedures
CW-F-S-007	Capital Expenditure, Controlled Purchase Requests & Fixed Asset Capitalization
CW-F-P-002	Company Wide Authorization Matrix
CW-F-P-004	Procurement and Contracts Policy
CA-Q-S-001	Acid & Solvent Lot Testing and Approval
CW-E-M-001	Environmental Health and Safety Manual
CA-T-P-001	Qualified Products List
CW-Q-S-003	Internal Auditing
CW-Q-S-004	Management Systems Review
CW-Q-WI-003	Management Systems Review Checklist
CW-Q-S-002	Writing a Standard Operating Procedure (SOP)
CA-Q-S-006	Detection Limits
CA-Q-S-002	Acceptable Manual Integration Practices
CA-I-P-002	Electronic Reporting and Signature Policy

REFERENCED LABORATORY DOCUMENTS

Document Reference	Title
IR-QA-DOC	Document Control & Review
IR-QA-CNTRLLIM	Control Charts and Statistical Process Control
IR-QA-TRAIN	Training and Documentation
IR-QA-MDL	Determination of Method Detection Limits
IR-IT-COMPSEC	Computer Security
IR-QA-STDCNTRL	Reagent and Standard Preparation, Control and Documentation
IR-SC-FIELD	Field Sampling
IR-QA SUBSAMP	Subsampling
IR-SC-LOGIN	Sample Login
IR-EHS-WASTE	Hazardous Waste Disposal

SECTION 3

INTRODUCTION, SCOPE, AND APPLICABILITY

3.1 INTRODUCTION AND COMPLIANCE REFERENCES

TestAmerica Irvine's QAM is a document prepared to define the overall policies, organization objectives, and functional responsibilities for achieving TestAmerica's data quality goals. The laboratory maintains a local perspective in its scope of services and client relations and maintains a national perspective in terms of quality.

The QAM has been prepared to assure compliance with TNI Standard, dated 2009, Volume 1 Modules 2 and 4. In addition, the policies and procedures outlined in this manual are compliant with TestAmerica's CQMP (Corporate Quality Document No. CA-Q-M-002) and the various accreditation and certification programs listed in Appendix 3. The CQMP provides a summary of TestAmerica's quality and data integrity system. It contains requirements and general guidelines under which all TestAmerica facilities shall conduct their operations.

The QAM has been prepared to be consistent with the requirements of the following documents:

- EPA 600/4-88/039, *Methods for the Determination of Organic Compounds in Drinking Water*, EPA, Revised July 1991.
- EPA 600/R-95/131, *Methods for the Determination of Organic Compounds in Drinking Water*, Supplement III, EPA, August 1995.
- EPA 600/4-79-019, *Handbook for Analytical Quality Control in Water and Wastewater Laboratories*, EPA, March 1979.
- *Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW846)*, Third Edition, September 1986, Final Update I, July 1992, Final Update IIA, August 1993, Final Update II, September 1994; Final Update IIB, January 1995; Final Update III, December 1996; Final Update IV, January 2008.
- Federal Register, 40 CFR Parts 136, 141, 172, 173, 178, 179 and 261.
- *Manual for the Certification of Laboratories Analyzing Drinking Water (EPA 815-R-05-004, January 2005)*
- *Statement of Work for Inorganics & Organics Analysis, SOM and ISM, current versions, USEPA Contract Laboratory Program Multi-media, Multi-concentration.*
- APHA, *Standard Methods for the Examination of Water and Wastewater*, 18th, 19th, 20th, 21st, 22nd, and on-line Editions.
- Toxic Substances Control Act (TSCA)

3.2 TERMS AND DEFINITIONS

A QA Program is a company-wide system designed to ensure that data produced by the laboratory conforms to the standards set by state and/or federal regulations. The program functions at the management level through company goals and management policies, and at the analytical level through SOPs and QC. The TestAmerica program is

designed to minimize systematic error, encourage constructive documented problem solving, and provide a framework for continuous improvement within the organization.

Refer to Appendix 2 for the Glossary/Acronyms.

3.3 SCOPE / FIELDS OF TESTING

The laboratory analyzes a broad range of environmental and industrial samples every month. Sample matrices vary among air, drinking water, effluent water, groundwater, hazardous waste, sludge, and soils. The QA Program contains specific procedures and methods to test samples for chemical, physical, and biological parameters. The Program also contains guidelines on maintaining documentation of analytical processes, reviewing results, servicing clients, and tracking samples through the laboratory. The technical and service requirements of all analytical requests are thoroughly evaluated before commitments are made to accept the work. Measurements are made using published reference methods or methods developed and validated by the laboratory.

The methods covered by this manual include the most frequently requested methodologies needed to provide analytical services in the United States and its territories. The specific list of test methods used by the laboratory can be found in the laboratory's QA server. The approach of this manual is to define the minimum level of QA and QC necessary to meet these requirements. All methods performed by the laboratory shall meet these criteria as appropriate. In some instances, QAPPs, project-specific DQOs, or local regulations may require criteria other than those contained in this manual. In these cases, the laboratory will abide by the requested criteria following review and acceptance of the requirements by the Laboratory Director and the QA Manager. In some cases, QAPPs and DQOs may specify less stringent requirements. The Laboratory Director and the QA Manager must determine if it is in the laboratory's best interest to follow the less stringent requirements.

3.4 MANAGEMENT OF THE MANUAL

3.4.1 Review Process

The template on which this manual is based is reviewed annually by Corporate Quality Management personnel to assure it remains in compliance with Section 3.1. This manual itself is reviewed annually by senior laboratory management to assure that it reflects current practices and meets the requirements of the laboratory's clients and regulators as well as the CQMP. Occasionally, the manual may need changes in order to meet new or changing regulations and operations. The QA Manager will review the changes in the normal course of business and incorporate changes into revisions of the document. All updates will be reviewed by the senior laboratory management staff. The laboratory updates and approves such changes according to the procedures in laboratory SOP No. IR-QA-DOC.

SECTION 4

MANAGEMENT REQUIREMENTS

4.1 OVERVIEW

TestAmerica Irvine is a local operating unit of TestAmerica Laboratories, Inc. The organizational structure, responsibilities, and authorities of the corporate staff of TestAmerica Laboratories, Inc. are presented in the CQMP. The laboratory has day-to-day independent operational authority overseen by corporate officers (e.g., CEO, Executive VP of Operations, Corporate Quality, etc.). The laboratory's operational and support staff work under the direction of the Laboratory Director. The organizational structure for both Corporate and TestAmerica Irvine is presented in Figure 4-1.

4.2 ROLES AND RESPONSIBILITIES

In order for the QA Program to function properly, all members of the staff must clearly understand and meet their individual responsibilities as they relate to the QA Program. The following descriptions briefly define key roles and their relationship to the QA Program.

4.2.1 Additional Requirements for Laboratories

The responsibility for quality resides with every employee of the laboratory. All employees have access to the QAM, are trained to this manual, and are responsible for upholding the standards therein. Each employee carries out his/her daily tasks in a manner consistent with the goals and in accordance with the procedures in this manual and the laboratory's SOPs. Role descriptions for Corporate personnel are defined in the CQMP. This manual is specific to the operations of TestAmerica's Irvine laboratory.

4.2.2 Chief Executive Officer

The CEO is a member of the Board of Directors and is ultimately responsible for the quality and performance of all TestAmerica facilities. The CEO establishes the overall quality standard and data integrity program for the Analytical Business, providing the necessary leadership and resources to assure that the standard and integrity program are met.

4.2.3 Executive Vice President of Operations

The Executive VPO reports directly to the CEO of TestAmerica. The VPO oversees the operations of all TestAmerica laboratories and the EMLab P&K business unit. The VP's of Operations report directly to Exec. VP of Operations.

4.2.4 Vice President of Operations

Each VP of Operations reports directly to the Executive VP of Operations and is a part of the Executive Committee. Each VP of Operations is responsible for the overall administrative and operational management of their respective laboratories. The VP's responsibilities include allocation of personnel and resources, long-term planning, goal setting, and achieving the financial, business, and quality objectives of TestAmerica. The VP's ensure timely compliance with Corporate Management directives, policies, and management systems reviews. The VP's are also responsible for restricting any laboratory from performing analyses that cannot be consistently and successfully performed to meet the standards set forth in this manual.

4.2.5 Vice President of Quality, Technical & Operations Support

The Vice President reports directly to the CEO. With the assistance of all laboratory and senior management team members as well as the Executive Committee, the VP has the responsibility for the establishment, general overview and Corporate maintenance of the Quality Assurance and Environmental, Health and Safety Program within TestAmerica. The VP supports the CEO in decisions regarding long-term planning, resource allocation and capital expenditures. Additional responsibilities include:

- Review of QA/QC aspects of Corporate SOPs, national projects and expansions or changes in services.
- Maintenance of Corporate Policies, Quality Memorandums and SOPs. Maintenance of data investigation records that are reported to Corporate Management.
- Work with various organizations outside of TestAmerica to further the development of quality standards and represent TestAmerica at various trade meetings.
- With the assistance of the Corporate Senior Management Teams and the EHS Directors, development and implementation of the TestAmerica Environmental, Health and Safety Program.

4.2.6 Vice President of Client Service

The VP of Client Services leads the CSO and is responsible for client satisfaction, driving operational excellence and improving client responsiveness. The VP provides direction to the Client Service Directors, Programs Managers and Project Managers.

4.2.7 Executive Director of Quality and EHS

The Executive Director of Quality and EHS reports directly to the VP of Quality, Technical & Operations Support. With the aid of the Executive Committee, Laboratory Directors, Quality Directors and QA Managers, the Exec. Director of Quality & EHS has the responsibility for the establishment, general overview and Corporate maintenance of the Quality Assurance Program within TestAmerica. Additional responsibilities include:

- Review of QA/QC aspects of Corporate SOPs & Policies, national projects and expansions or changes in services.
- Work with various organizations outside of TestAmerica to further the development of quality standards and represent TestAmerica at various trade meetings.
- Preparation of a monthly report that includes quality metrics across the analytical laboratories and a summary of any quality related initiatives and issues.

4.2.8 Quality Assessment Director

The Quality Assessment Director reports to the Exec. Director of Quality & EHS. The Quality Assessment Director has QA oversight of laboratories; responsible for the internal audit system, schedule and procedure; monitors laboratory internal audit findings; identifies common laboratory weaknesses; and monitors corrective action closures. Together with the Quality Compliance Director, the Quality Systems Director, and the Exec. Director of Quality & EHS, the Quality Assessment Director has the responsibility for the establishment, general overview and maintenance of the Analytical Quality Assurance Program within TestAmerica.

4.2.9 Quality Compliance Director

The Quality Compliance Director reports to the Exec. Director of Quality & EHS. The Quality Compliance Director has QA oversight of laboratories; monitors and communicates DoD / DoE requirements; develops corporate tools for ensuring and improving compliance; develops corporate assessment tools; identifies common laboratory weaknesses; and monitors corrective action closures. Together with the Quality Assessment Director, Quality Systems Director and the Exec. Director of Quality & EHS, the Quality Compliance Director has the responsibility for the establishment, general overview and maintenance of the Analytical Quality Assurance Program within TestAmerica.

4.2.10 Quality Systems Director

The Quality Systems Director reports to the Exec. Director of Quality & EHS. The Quality Systems Director has QA oversight of laboratories; develops quality policies, procedures and management tools; monitors and communicates regulatory and certification requirements; identifies common laboratory weaknesses; and monitors corrective action closures. Together with the Quality Assessment Director, Quality Compliance Director and the Exec. Director of Quality & EHS, the Quality Systems Director has the responsibility for the establishment, general overview and maintenance of the Analytical Quality Assurance Program within TestAmerica.

4.2.11 Quality Information Manager

The Quality Information Manager is responsible for managing all company official documents (e.g., Policies, Procedures, Work Instructions), the company's accreditation database, intranet websites, external laboratory subcontracting, regulatory limits for clients on the company's TotalAccess website; internal and external client support for various company groups (e.g., Client Services, EHS, Legal, IT, Sales) for both quality and operational functions. The Quality Information Manager reports to the Exec. Director of Quality & EHS; and works alongside the Quality Assessment, Quality Compliance and Quality System Directors and EHS Managers to support both the Analytical Quality Assurance and EHS Programs within TestAmerica.

4.2.12 Technical Services Director

The Technical Services Director is responsible for establishing, implementing and communicating TestAmerica's Analytical Business's Technical Policies, SOPs, and Manuals. Other responsibilities include conducting technical assessments as required, acting as a technical resource in national contracts review, coordinating new technologies, establishing best practices, advising staff on technology advances, innovations, and applications.

4.2.13 Ethics and Compliance Officers

TestAmerica has designated two senior members of the Corporate staff to fulfill the role of ECO – Exec. Director of Quality and EHS and the Corporate Counsel. Each ECO acts as a back-up to the other ECO and both are involved when data investigations occur. Each ECO has a direct line of communication to the entire senior Corporate and lab management staff.

The ECOs ensure that the organization distributes the data integrity and ethical practices policies to all employees and ensures annual trainings and orientation of new hires to the ethics program and its policies. The ECO is responsible for establishing a mechanism to foster employee reporting of incidents of illegal, unethical, or improper practices in a safe and confidential environment.

The ECOs monitor and audit procedures to determine compliance with policies and to make recommendations for policy enhancements to the CEO, VPOs, Laboratory Director or other appropriate individuals within the laboratory. The ECO will assist the laboratory QA Manager in the coordination of internal auditing of ethical policy related activities and processes within the laboratory, in conjunction with the laboratories regular internal auditing function.

The ECOs will also participate in investigations of alleged violations of policies and work with the appropriate internal departments to investigate misconduct, remedy the situation, and prevent recurrence of any such activity.

4.2.14 Chief Information Officer

The CIO is responsible for establishing, implementing and communicating TestAmerica's IT Policies, SOPs and Manuals. Other responsibilities include coordinating new technologies, development of electronic communication tools such as TestAmerica's intranet and internet sites, ensuring data security and documentation of software, ensuring compliance with the NELAC standard, and assistance in establishing, updating, and maintaining LIMS at the various TestAmerica facilities.

4.2.15 Environmental Health and Safety Managers (Corporate)

The EHS Managers report directly to the Exec. Director of Quality and EHS. The EHS Managers are responsible for the development and implementation of the TestAmerica Environmental, Health and Safety program. Responsibilities include:

- Consolidation and tracking all safety and health-related information and reports for the company, and managing compliance activities for TestAmerica locations.
- Coordination/preparation of the corporate Environmental, Health and Safety Manual Template that is used by each laboratory to prepare its own laboratory-specific Safety Manual/ CHP.
- Preparation of information and training materials for laboratory EHS Coordinators.
- Assistance in the internal and external coordination of employee exposure and medical monitoring programs to insure compliance with applicable safety and health regulations.
- Serving as DOT focal point and providing technical assistance to location management.
- Serving as Hazardous Waste Management main contact and providing technical assistance to location management.

4.2.16 Laboratory Director

The Laboratory Director is responsible for the overall quality, safety, financial, technical, human resource, and service performance of the whole laboratory. The Laboratory Director provides the resources necessary to implement and maintain an effective and comprehensive QA and Data Integrity Program.

The Laboratory Director shall:

- Ensure that all tasks performed at the laboratory are conducted according to the requirements of this QAM and appropriate QAPPs (if applicable).
- Ensure that all analysts and supervisors have the appropriate education and training to properly carry out the duties assigned to them and ensures that this training has been documented.

- Ensure that employees are free from any commercial, financial, and other undue pressures which might adversely affect the quality of their work.
- Ensure TestAmerica's human resource policies are adhered to and maintained.
- Ensure that sufficient numbers of qualified individuals are employed to supervise and perform the work of the laboratory.
- Communicate resource needs to Corporate Management.
- Supervise staff, set goals and objectives for both the business and the employees, and achieve the financial, business, and quality objectives of the laboratory.
- Establish the priority of sample analysis in order to meet QA and client deadlines.
- Maintain well-versed technical understanding of analytical methodology for the evaluation of laboratory operations, development of procedural improvements, investigation of nonconforming results, and implementation of corrective actions.
- Ensure that appropriate corrective actions are taken to address analyses identified as requiring such actions by internal and external performance or procedural audits. The Laboratory Director may temporarily suspend procedures that do not meet the standards set forth in the QAM or laboratory SOPs.
- Review and approve all SOPs prior to their implementation and ensure all approved SOPs are implemented and adhered to.
- Pursue and maintain appropriate laboratory certification and contract approvals.
- Ensure that client-specific reporting and QC requirements are met.

4.2.17 QA Manager

The QA Manager has responsibility and authority to ensure the continuous implementation of the Quality System.

The QA Manager reports directly to the Laboratory Director and their Corporate Quality Director. Corporate Quality may be used as a resource in dealing with regulatory requirements, certifications, and other QA-related concerns.

The QA Manager shall:

- Serve as the focal point for QA/QC in the laboratory.
- Have functions independent from laboratory operations for which he/she has QA oversight.

- Have the final authority to accept or reject data and to stop work in progress in the event that procedures or practices compromise the validity or integrity of analytical data.
- Communicate and monitor standards of performance to ensure that systems are in place to produce the level of quality defined in this document.
- Identify areas where corrective action is required and ensure implementation and completion of the resulting action.
- Notify laboratory management of deficiencies in the quality system and ensure corrective action is taken. Procedures that do not meet the standards set forth in the QAM or laboratory SOPs shall be investigated following the procedures outlined in Section 12 and, if deemed necessary, may be temporarily suspended during the investigation.
- Objectively monitor standards of performance in QA/QC without outside (e.g., managerial) influence.
- Maintain, improve, and evaluate the corrective action database and the corrective and preventive action systems.
- Prepare monthly reports to management.
- Maintain, approve, and implement the QAM.
- Conduct internal system and data audits to monitor laboratory conformance to the QAM, SOPs, and policies.
- Provide and document employee training regarding quality system, ethics, and client confidentiality.
- Evaluate the thoroughness and effectiveness of training.
- Review and approve documentation of analyst training records (e.g., demonstration of capability).
- Review and approve MDL studies and MDL verification, method validation studies, and statistical control limits.
- Have documented training and/or experience in QA/QC procedures and the laboratory's Quality System.
- Have a general knowledge of the analytical test methods for which data audit/review is performed (and/or have the means of getting this information when needed).
- Provide assistance in the development and approval of laboratory management documents including SOPs as well as the control, revision, and distribution thereof.
- Direct the controlled distribution of laboratory quality documents.
- Oversee laboratory participation in performance evaluation programs and regulatory certification and accreditation programs.
- Monitor and communicate to management regulatory changes that may affect the laboratory.

- Act as point of contact regarding QA matters for the laboratory, including external audits.
- Develop suggestions and recommendations to improve quality systems.
- Comply with the 2009 TNI Standard.

4.2.18 Technical Manager

The Technical Manager's scope of responsibility ranges from the new-hire process and existing technology through the ongoing training and development programs for existing analysts and second- and third-generation instrumentation. At TestAmerica Irvine, the Laboratory Director is also the Technical Manager.

The Technical Manager shall:

- Exercise day-to-day supervision of laboratory operations for the appropriate field of accreditation and reporting of results.
- Monitor the validity of the analyses performed and data generated in the laboratory to assure reliable data. This activity begins with the review and support of all new business contracts, ensuring data quality, analyzing internal and external nonconformances to identify root cause issues, implementing the resulting corrective and preventive actions, and facilitating the data review process (training, development, and accountability at the bench).
- Review and approve, with input from the QA Manager, proposals from marketing, in accordance with an established procedure for the review of requests and contracts.
- Manage laboratory operations: work scheduling, sample tracking, and prompt reporting of results.
- Supervise and train employees, set goals and objectives for the employees, and achieve the quality objectives of the laboratory.
- Determine qualifications required for technical positions and evaluate job candidates against those requirements.
- Certify technical laboratory employees based on education and background to ensure that employees have demonstrated capability in the activities for which they are responsible.
- Enhance efficiency and improve quality through technical advances and improved LIMS utilization.
- Forecast capital needs based on instrument life cycle and manage asset inventory.
- Coordinate audit responses with the Operations Group.
- Comply with the 2009 TNI Standard.

4.2.19 Operations Manager

The Operations Manager manages and directs the analytical production sections of the laboratory and assists the Technical Manager in determining efficient means to maximize instrument utilization. The Operations Manager reports directly to the Laboratory Director. In the absence of the Operations Manager, the Laboratory Director will fulfill this role.

The Operations Manager shall:

- Evaluate the level of internal/external non-conformances for all departments.
- Continuously evaluate production capacity and improve capacity utilization.
- Continuously evaluate turnaround time and address any problems that may hinder meeting the required and committed turnaround time from the various departments.
- Develop and improve the training of all analysts in cooperation with the Technical Manager and the QA Manager and in compliance with regulatory requirements.
- Ensure efficient utilization of supplies.
- Constantly monitor and modify, if needed, the procedures for processing samples through the departments.
- Coordinate audit responses with Department Managers or supervisors.
- Comply with the 2009 TNI Standard.

4.2.20 Department Manager

Department Managers are accountable for all analyses and analysts under their experienced supervision. The scope of responsibility ranges from the new-hire process and existing technology through the ongoing training and development programs for existing analysts and new instrumentation. Department Managers report directly to the Operations Manager.

The Department Manager shall:

- Manage the department's laboratory operations including work scheduling, sample tracking, analysis, data review, and prompt reporting of results.
- Ensure that all tasks performed by the department are conducted according to the requirements of the QAM, laboratory SOPs, policies, and QAPPs (if applicable).
- Perform frequent SOP reviews to ensure that current practices are consistent with the published SOP. Changes in procedures or deviations from the SOP must be immediately reported to the Operations Manager and the QA Manager for approval and update to the applicable SOP.

- Provide guidance to laboratory analysts in resolving problems encountered during daily sample preparation/analysis.
- Perform second-level review of raw data for accuracy and completeness, check calibrations and calculations, reconcile any nonconforming data, and accept or reject data based on conformance with established QA/QC criteria.
- Report nonconformance situations to the Operations Manager and the QA Manager.
- Provide written responses to external and internal audit issues.
- Identify, initiate, and implement corrective actions through root-cause analysis and investigations.
- Develop, implement, and schedule a system for preventive maintenance, troubleshooting, and repair of analytical instruments and equipment, to ensure they meet performance criteria and calibration requirements.
- Maintain adequate and valid inventory of reagents, standards, spare parts, and other relevant resources required to perform daily analysis.
- Ensure all logbooks are reviewed, maintained current, and are properly labeled or archived.
- Achieve optimum TAT on analyses and conform to holding times.
- Supervise, train, and set goals and objectives for the analysts to achieve the quality objectives of the laboratory.

4.2.21 **Analyst**

The analyst is responsible for the generation, interpretation, review, and reporting of data. Laboratory analysts report directly to their respective Department Managers.

The analyst shall:

- Perform analyses based on understanding of and conformance to the requirements of the QAM, laboratory SOPs, policies, and QAPPs (if applicable).
- Ensure sample analysis is completed within specified holding time, and immediately notifies the Department Manager if holding time will not be met.
- Ensure that all steps related to sample analysis are timely and completely documented, with integrity and accuracy.
- Document standard and sample preparation, instrument calibration and maintenance, and data calculations and review in logbooks, laboratory notebooks, bench sheets, and in the LIMS, as appropriate.
- Document all nonconformance situations, instrument problems, matrix effects, and QC failures, which might affect the quality and reliability of

the data, in logbooks, laboratory notebooks, bench sheets, and in an NCM using the NCM program in the LIMS, as appropriate.

- Report changes or deviations from the SOPs to the Department Manager, who will then report the changes or deviations to the Operations Manager and the QA Manager.
- Perform 100% initial technical review of sample preparation, calculations, qualitative identification, and raw data, with the authority to stop, accept, or reject data based on conformance with well-defined QA/QC criteria. This review must be completed prior to submitting data for second-level review.
- Perform second-level review of data, as appropriate.
- Report analytical results within the specified TAT.
- Suggest method improvements to the Department Manager.
- Identify, initiate, and implement corrective actions through root-cause analysis and investigations.
- Monitor, calibrate, and maintain support laboratory equipment such as refrigerators, freezers, water systems, process meters, and gas supply systems, as necessary.

4.2.22 Manager of Project Management

The Manager of Project Management reports directly to the Client Service Director (Western Region) and indirectly to the Laboratory Director. The Manager of Project Management serves as the interface between the laboratory's Project Management team, technical departments, and clients.

The Manager of Project Management shall:

- Oversee training and growth of the Project Management team.
- Act as technical liaison for the Project Management team.
- Provide human resource management support to the Project Management team.
- Assist PMs with responses to client inquiries or with resolutions to problems or complaints.
- Ensure that client specifications, when known, are met by communicating project and QA requirements to the laboratory.
- Notify Department Managers or supervisors of incoming projects and sample delivery schedules.
- Discuss with client any project-related problems, resolve service issues, and coordinate technical details with the laboratory staff.
- Monitor the status of projects in-house to ensure timely and accurate delivery of reports.
- Prepare price quotes or project bids.

4.2.23 Project Manager

The PM serves as the liaison between the laboratory and its clients and is instrumental in assisting both the laboratory and the client during the course of a project. PMs report directly to the Manager of Project Management.

The PM shall:

- Understand contractual requirements and effectively communicate client needs to laboratory staff.
- Coordinate client requests for sample containers and other services.
- Coordinate/arrange sample pick-up from client offices or project sites.
- Notify laboratory staff of incoming projects and sample delivery schedules.
- Investigate problems with samples and containers received from the field.
- Review sample login sheets.
- Monitor analytical work progress, provide clients with project status, and ensure timely delivery of reports.
- Notify clients of project-related nonconformances, changes, or difficulties encountered during analysis.
- Assist clients with technical questions and coordinate communication with the laboratory staff regarding technical issues.
- Conduct completeness review of all reports generated for the project.
- Approve final reports, as designated by the Laboratory Director.
- Coordinate subcontract work.
- Resolve service issues and maintain client satisfaction.
- Prepare price quotes or project bids.

4.2.24 Sample Control Supervisor

The Sample Control Supervisor is responsible for the daily activities within the Sample Control department. The Sample Control Supervisor reports directly to the Operations Manager.

The Sample Control Supervisor shall:

- Supervise the department's laboratory operations including, but not limited to, courier scheduling, initiation of container lot testing, sample container order preparation, sample receiving and tracking, shipping, and login.
- Ensure that all tasks performed by the department are conducted according to the requirements of the QAM, laboratory SOPs, policies, and QAPPs (if applicable).

- Perform frequent SOP reviews to ensure that current practices are consistent with the published SOP. Changes in procedures or deviations from the SOP must be immediately reported to the Operations Manager and the QA Manager for approval and update to the applicable SOP.
- Assist PMs and analysts in resolving inconsistencies and problems with samples received.
- Assist in routing workshare and subcontract analyses.
- Report nonconforming situations to the Operations Manager and the QA Manager.
- Provide written responses to external and internal audit issues.
- Identify, initiate, and implement corrective actions through root-cause analysis and investigations.
- Ensure all logbooks are reviewed, maintained current, and are properly labeled or archived.

4.2.25 Environmental Health and Safety Coordinator

The EHS Coordinator ensures that systems are maintained for the safe operation of the laboratory. The EHS Coordinator reports directly to the Laboratory Director and to Corporate EHS, for advice and resources.

The EHS Coordinator shall:

- Conduct ongoing and necessary safety training for current and new employees.
- Assist in developing and maintaining the Chemical Hygiene/Safety Manual.
- Oversee the inspection and maintenance of general safety equipment (e.g., fire extinguishers, safety showers, eyewash fountains, etc.) and ensure prompt repairs when needed.
- Supervise and schedule fire drills and emergency evacuation drills.
- Ensure that general protective equipment are available when needed.
- Assist in the internal and external coordination of the medical consultation/monitoring program conducted by TestAmerica's medical consultants.
- Oversee hazardous waste accumulation and disposal, and maintain all hazardous waste-related documentation such as manifests, biennial reports, and waste profiles.

4.3 DEPUTIES

The following table defines who assumes the responsibilities of key personnel in their absence:

Table 4-1. Key Personnel and Deputies

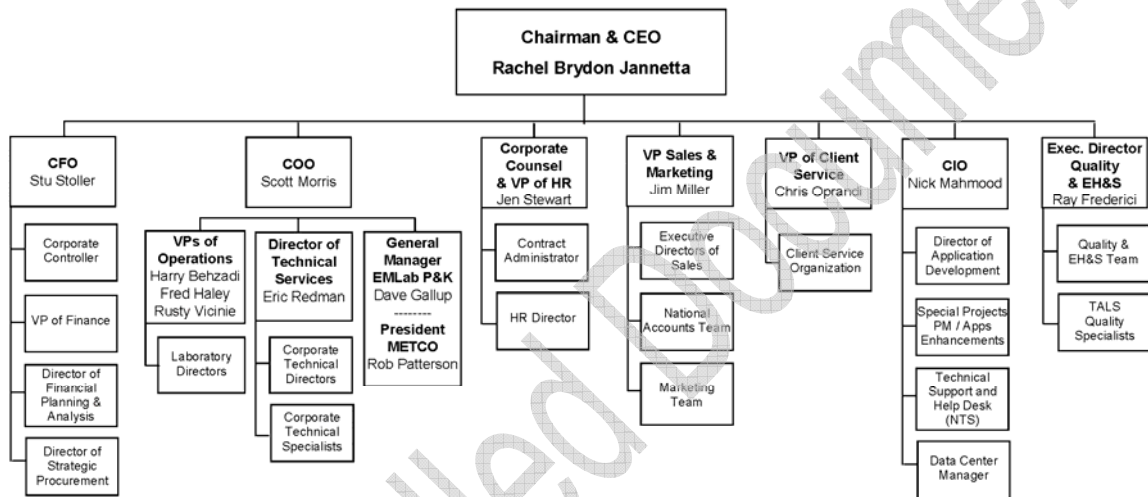
Key Personnel	Deputy ¹
Laboratory Director ²	Operations Manager
QA Manager	Senior QA Specialist
Operations Manager	Laboratory Director
Department Manager	Department Group Leader
Manager of Project Management	Manager of Project Manager Assistants
EHS Coordinator	Laboratory Director

¹ The assigned deputy for each key person is another full-time staff member, at the laboratory, who meets the qualifications of the key person whose functions they would perform in their absence.

² If the Laboratory Director will be absent for more than 65 consecutive calendar days, the regulatory agencies shall be notified in writing.

Figure 4-1. Corporate and Laboratory Organization Charts

Corporate

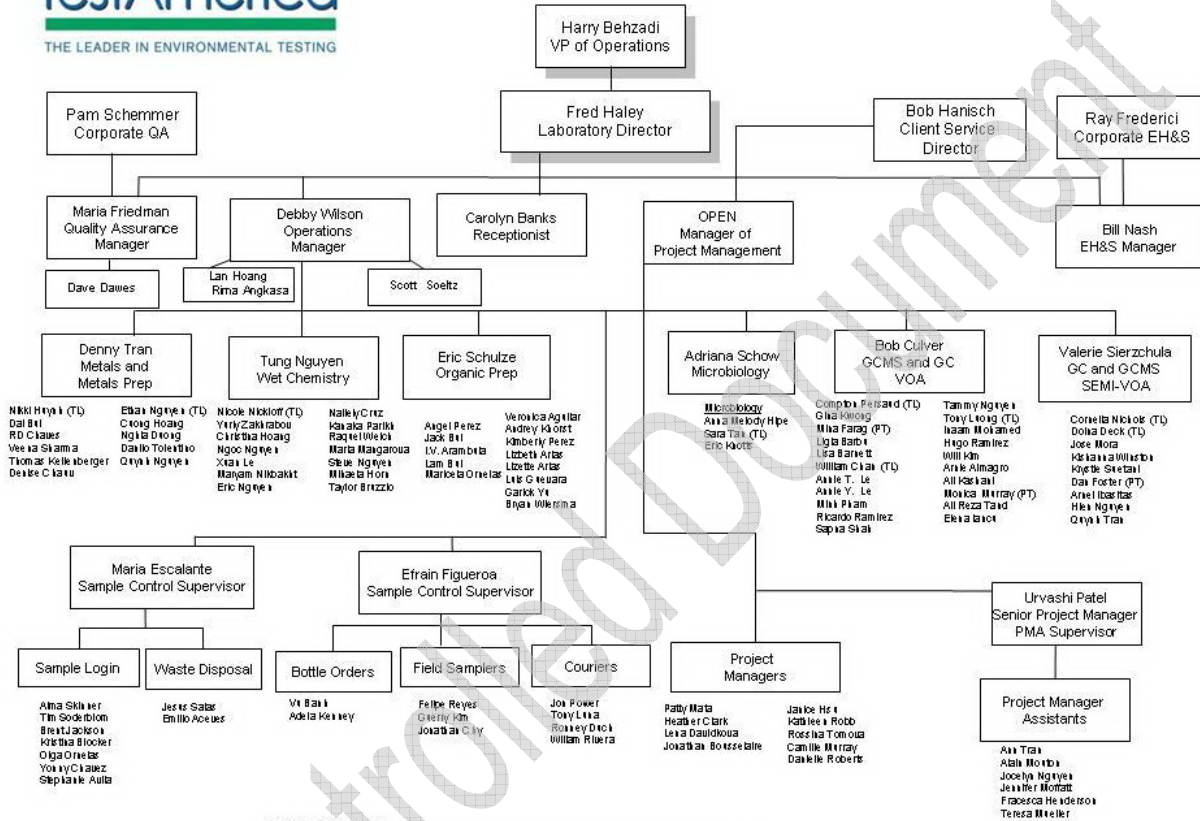


17 August 2015

TestAmerica Irvine



Irvine Laboratory Organization



Full Time Employees: 122
 Part Time (PT) Employees: 3
 TL = Technical Lead

Note: QA Manager and EH&S Manager have a direct reporting relationship to both operations leadership and corporate functional leadership.

Effective 08/11/15

SECTION 5

QUALITY SYSTEM

5.1 **QUALITY POLICY STATEMENT**

It is TestAmerica's Policy to:

- ❖ Provide data of known quality to its clients by adhering to approved methodologies, regulatory requirements, and the QA/QC protocols.
- ❖ Effectively manage all aspects of the laboratory and business operations by the highest ethical standards.
- ❖ Continually improve systems and provide support to quality improvement efforts in laboratory, administrative, and managerial activities. TestAmerica recognizes that the implementation of a QA program requires management's commitment and support as well as the involvement of the entire staff.
- ❖ Provide clients with the highest level of professionalism and the best service practices in the industry.
- ❖ Comply with ISO/IEC 17025:2005(E) and the 2009 TNI Standard, and continually improve the effectiveness of the management system.

Every staff member at the laboratory plays an integral part in QA and is held responsible and accountable for the quality of their work. It is, therefore, required that all laboratory staff are trained and agree to comply with applicable procedures and requirements established by this document.

5.2 **ETHICS AND DATA INTEGRITY**

TestAmerica is committed to ensuring the integrity of its data and meeting the quality needs of its clients. The elements of TestAmerica's Ethics and Data Integrity Program include:

- An Ethics Policy (Corporate Legal Document No. CW-L-P-004) and Employee Ethics Statements
- ECOs
- A Training Program
- Self-governance through disciplinary action for violations
- A confidential mechanism for anonymously reporting alleged misconduct and a means for conducting internal investigations of all alleged misconduct (Corporate Legal SOP No. CW-L-S-002)
- Procedures and guidance for recalling data, if necessary (Corporate Legal SOP No. CW-L-S-002)
- Effective external and internal monitoring system that includes procedures for internal audits (Section 15)

- Producing results that are accurate and include QA/QC information that meets client's pre-defined DQOs
- Presenting services in a confidential, honest, and forthright manner
- Providing employees with guidelines and an understanding of the Ethical and Quality Standards of our industry
- Operating our facilities in a manner that protects the environment and the health and safety of employees and the public
- Obeying all pertinent federal, state, and local laws and regulations, and encouragement to other members of our industry to do the same
- Educating clients as to the extent and kinds of services available
- Asserting competency only for work for which adequate personnel and equipment are available and for which adequate preparation has been made
- Promoting the status of environmental laboratories, their employees, and the value of services rendered by them

5.3 **QUALITY SYSTEM DOCUMENTATION**

The laboratory's Quality System is communicated through a variety of documents:

- **QAM** – Each laboratory has a laboratory-specific QAM.
- **Corporate SOPs and Policies** – Corporate SOPs and Policies are developed for use by all relevant laboratories. They are incorporated into the laboratory's normal SOP distribution, training, and tracking system. Corporate SOPs may be general or technical.
- **Work Instructions** – Subsets of procedural steps, tasks, or forms associated with an operation of a management system (e.g., checklists, pre-formatted bench sheets, forms).
- **Laboratory SOPs** – General and Technical
- **Laboratory QA/QC Policy Memoranda**
- **QAS** – Controlled documents that list client-specific project requirements. The QAS can be supplemented with Work Instructions, if necessary.

5.3.1 **Order of Precedence**

In the event of a conflict or discrepancy between policies, the order of precedence is as follows:

- CQMP
- Corporate SOPs and Policies
- Laboratory QA/QC Policy Memorandum
- Laboratory QAM
- Laboratory SOPs and Policies

- Other (Work Instructions, memos, flow charts, QAS, etc.)

Note: The laboratory has the responsibility and authority to operate in compliance with regulatory requirements of the jurisdiction in which the work is performed. Where the CQMP conflicts with those regulatory requirements, the regulatory requirements of the jurisdiction shall hold primacy. The laboratory QAM shall take precedence over the CQMP in those cases.

5.4 **QA/QC OBJECTIVES FOR THE MEASUREMENT OF DATA**

QA and QC are activities undertaken to achieve the goal of producing data that accurately characterize the sites or materials that have been sampled. QA is generally understood to be more comprehensive than QC.

QA can be defined as the integrated system of activities that ensures that a product or service meets defined standards.

QC is generally understood to be limited to the analyses of samples and to be synonymous with the term “*analytical quality control*.” QC refers to the routine application of statistically based procedures to evaluate and control the accuracy of results from analytical measurements. The QC program includes procedures for estimating and controlling precision and bias, and for determining RLs.

RFPs and QAPPs provide a mechanism for the client and the laboratory to discuss the DQOs in order to ensure that analytical services closely correspond to client needs. The client is responsible for developing the QAPP. In order to ensure the ability of the laboratory to meet the DQOs specified in the QAPP, clients are advised to allow time for the laboratory to review the QAPP before being finalized. Additionally, the laboratory will provide support to the client for developing the sections of the QAPP that concern laboratory activities.

Historically, laboratories have described their QC objectives in terms of precision, accuracy, representativeness, comparability, completeness, selectivity, and sensitivity (PARCCSS).

5.4.1 **Precision**

The laboratory objective for precision is to meet the performance for precision demonstrated for the methods on similar samples and to meet DQOs of the EPA and/or other regulatory programs. Precision is defined as the degree of reproducibility of measurements under a given set of analytical conditions (exclusive of field sampling variability). Precision is documented on the basis of replicate analysis, usually duplicate, MSD, or LCSD samples.

5.4.2 **Accuracy**

The laboratory objective for accuracy is to meet the performance for accuracy demonstrated for the methods on similar samples and to meet DQOs of the

EPA and/or other regulatory programs. Accuracy is defined as the degree of bias in a measurement system. Accuracy may be documented through the use of LCS and/or MS. A statement of accuracy is expressed as an interval of acceptance recovery about the mean recovery.

5.4.3 Representativeness

The laboratory objective for representativeness is to provide data which is representative of the sampled medium. Representativeness is defined as the degree to which data represent a characteristic of a population or set of samples and is a measurement of both analytical and field sampling precision. The representativeness of the analytical data is a function of the procedures used in procuring and processing the samples. Representativeness can be documented by the RPD between separately procured, but otherwise identical samples or sample aliquots.

The representativeness of the data from the sampling sites depends on both the sampling procedures and the analytical procedures. The laboratory may provide guidance to the client regarding proper sampling and handling methods in order to assure the integrity of the samples.

5.4.4 Comparability

The comparability objective is to provide analytical data for which the accuracy, precision, representativeness, and RL statistics are similar to these quality indicators generated by other laboratories for similar samples, and data generated by the laboratory over time.

The comparability objective is documented by inter-laboratory studies carried out by regulatory agencies or carried out for specific projects or contracts, by comparison of periodically generated statements of accuracy, precision, and RLs, with those of other laboratories.

5.4.5 Completeness

The completeness objective for data is 90% (or as specified by a particular project), expressed as the ratio of the valid data to the total data over the course of the project. Data will be considered valid if they are adequate for their intended use. Data usability will be defined in a QAPP, project scope, or regulatory requirement. Data validation is the process for reviewing data to determine its usability and completeness. If the completeness objective is not met, actions will be taken internally and with the data user to improve performance. This may take the form of an audit to evaluate the methodology and procedures as possible sources for the difficulty or may result in a recommendation to use a different method.

5.4.6 Selectivity

Selectivity is defined as the capability of a test method or instrument to respond to a target substance or constituent in the presence of non-target substances. Target analytes are separated from non-target constituents and subsequently identified/detected through one or more of the following, depending on the analytical method: extractions (separation), digestions (separation), interelement corrections (separation), use of matrix modifiers (separation), specific retention times (separation and identification), confirmations with different columns or detectors (separation and identification), specific wavelengths (identification), specific mass spectra (identification), specific electrodes (separation and identification), etc.

5.4.7 Sensitivity

Sensitivity refers to the amount of analyte necessary to produce a detector response that can be reliably detected (the MDL) or quantified (the RL).

5.5 CRITERIA FOR QUALITY INDICATORS

The laboratory maintains the precision and accuracy acceptability limits for performed analyses using the Analysis/Matrix table in the LIMS. This table includes an effective date, is updated each time new limits are generated, and is managed by the laboratory's QA department. Unless otherwise noted, limits within these tables are laboratory-generated. Some acceptability limits are derived from EPA methods when they are required. Where EPA method limits are not required, the laboratory has developed limits from evaluation of data from similar matrices. Criteria for development of control limits are contained in laboratory SOP No. IR-QA-CNTRLIM.

5.6 STATISTICAL QUALITY CONTROL

Statistically-derived precision and accuracy limits are required by selected methods (such as SW-846) and programs. The laboratory routinely utilizes statistically-derived limits to evaluate method performance and determine when corrective action is appropriate. The analysts are instructed to use the current limits in the LIMS (dated and approved by the QA Manager). All historical limits can be queried from the LIMS. If a method defines the QC limits, the method limits are used.

If a method requires the generation of historical limits, the laboratory develops such limits from recent data in the QC database of the LIMS, following the guidelines described in Section 24. All calculations and limits are documented and dated when approved and effective. On occasion, clients request contract-specified limits for a specific project.

Current QC limits are entered and maintained in the LIMS analyte database. As sample results and the related QC are entered into LIMS, the sample QC values are compared with the limits in LIMS to determine if they are within the acceptable range. The analyst then evaluates if the sample needs to be rerun or re-extracted/rerun or if a comment should be added to the report explaining the reason for the QC outlier.

5.6.1 QC Charts

When QC limits are calculated, QC charts are generated showing warning and control limits for the purpose of evaluating trends. The QA Manager evaluates these trends to determine if adjustments need to be made to the current QC limits or if a need for corrective action is indicated. All findings are documented and kept on file. Refer to laboratory SOP No. IR-QA-CNTRLIM for more details regarding generation of control limits and development of control charts.

5.7 **QUALITY SYSTEM METRICS**

In addition to the QC parameters discussed above, the entire quality system is evaluated on a monthly basis through the use of specific metrics (refer to Section 16). These metrics are used to drive continuous improvement in the laboratory's Quality System.

Uncontrolled Document

SECTION 6

DOCUMENT CONTROL

6.1 OVERVIEW

The QA department is responsible for the control of documents used in the laboratory to ensure that approved and up-to-date documents are in circulation and out-of-date (obsolete) documents are archived or destroyed. The following documents, at a minimum, must be controlled:

- Laboratory QAM
- Laboratory SOPs
- Laboratory Policies
- Work Instructions and Forms
- QAS
- Corporate Policies and Procedures distributed outside the Intranet

Corporate Quality posts Corporate Manuals, SOPs, Policies, Work Instructions, White Papers, and Training Materials on the company Intranet site. These Corporate documents are only considered controlled when they are read on the Intranet site. Printed copies are considered uncontrolled unless the laboratory physically distributes them as controlled documents. A detailed description of the procedure for issuing, authorizing, controlling, distributing, and archiving Corporate documents is found in Corporate SOP No. CW-Q-S-001. The laboratory's internal document control procedure is defined in SOP No. IR-QA-DOC.

The laboratory posts SOPs and Policies on the local QA server. These documents are only considered controlled when they are read on the local QA server. Access to these documents via the local QA server is restricted to viewing only; documents cannot be printed. Additionally, copying of these documents is prohibited. The QA department will provide an uncontrolled copy (watermarked or labeled as "Uncontrolled") upon request.

The QA department also maintains access to various references and document sources integral to the operation of the laboratory. This includes reference methods and regulations. Instrument manuals (hardcopies or electronic copies) are also maintained by the laboratory.

The laboratory maintains control of records for raw analytical data and supporting records such as audit reports and responses, logbooks, training files, MDL studies, PT studies, certifications and related correspondence, and NCMs. Raw analytical data consists of bound logbooks, instrument printouts, any other notes, magnetic media, electronic data, and final reports.

6.2 DOCUMENT APPROVAL AND ISSUE

The pertinent elements of a document control system for each document include a unique document title and number, pagination, the total number of pages of the item or an 'end of document' page, the effective date, the revision number, and the laboratory's name. The QA department is responsible for the maintenance of this system.

Controlled documents are authorized by the QA department. In order to develop a new document, a Department Manager or Supervisor submits a draft (hardcopy or electronic) to the QA department for suggestions and approval before use. Upon approval, the QA department adds the identifying version information to the document and retains that document as the official document on file. That document is then provided to all applicable operational units (may include electronic access). Controlled documents are identified as such and records of their distribution are kept by the QA department. Document control may be achieved by either electronic or hardcopy distribution.

The QA department maintains a list of the official versions of controlled documents.

Quality system policies and procedures will be reviewed at a minimum of every two years and revised as appropriate. Quality system policies and procedures that affect Drinking Water projects will be reviewed annually and revised as appropriate. Changes to documents occur when a procedural change warrants.

6.3 PROCEDURES FOR DOCUMENT CONTROL POLICY

For changes to the QAM, refer to the procedures discussed in Section 3.4. For changes to SOPs, refer to laboratory SOP No. IR-QA-DOC.

Forms, worksheets, Work Instructions, and information are organized by department in the local QA server.

Uncontrolled copies must not be used within the laboratory.

Subsequent employee training in these documents is discussed in laboratory SOP No. IR-QA-TRAIN.

6.4 OBSOLETE DOCUMENTS

All invalid or obsolete documents are removed, or otherwise prevented from unintended use, using specific procedures as described above. In general, obsolete documents are collected from employees according to distribution lists (if applicable) and are marked obsolete on the cover or destroyed. At least one copy of the obsolete document is archived for the retention period described in Section 14.

SECTION 7

SERVICE TO THE CLIENT

7.1 OVERVIEW

The laboratory has established procedures for the review of work requests and contracts, oral or written. The procedures include evaluation of the laboratory's capability and resources to meet the contract's requirements within the requested time period. All requirements, including the methods to be used, must be adequately defined, documented, and understood. For many environmental sampling and analysis programs, testing design is site- or program-specific and does not necessarily "fit" into a standard laboratory service or product. It is the laboratory's intent to provide both standard and customized environmental laboratory services to our clients.

A thorough review of technical and QC requirements contained in contracts is performed to ensure project success. The appropriateness of requested methods, and the laboratory's capability to perform them must be established. Projects, proposals, and contracts are reviewed for adequately defined requirements and the laboratory's capability to meet those requirements. Alternate test methods that are capable of meeting the client's requirements may be proposed by the laboratory. A review of the laboratory's capability to analyze non-routine analytes is also part of this review process.

All projects, proposals, and contracts are reviewed for the client's requirements in terms of compound lists, test methodology requested, sensitivity (detection and reporting levels), accuracy (percent recovery), and precision requirements (RPD). The reviewer ensures that the laboratory's test methods are suitable to achieve these requirements and that the laboratory holds the appropriate certifications and approvals to perform the work. The laboratory and any potential subcontract laboratories must be certified, as required, for all proposed tests.

The laboratory must determine if it has the necessary physical, personnel, and information resources to meet the contract, and if the personnel have the expertise needed to perform the testing requested. Each proposal is checked for its impact on the capacity of the laboratory's equipment and personnel. As part of the review, the proposed TAT will be checked for feasibility.

Electronic or hardcopy deliverable requirements are evaluated against the laboratory's capacity for production of the documentation.

If the laboratory cannot provide all services but intends to subcontract such services, whether to another TestAmerica facility or to an outside firm, this will be documented and discussed with the client prior to contract approval. Refer to Section 8 for subcontracting procedures.

The laboratory informs the client of the results of the review if it indicates any potential conflict, deficiency, lack of accreditation, or inability of the laboratory to complete the work satisfactorily. Any discrepancy between the client's requirements and the laboratory's capability to meet those requirements is resolved in writing before

acceptance of the contract. It is necessary that the contract be acceptable to both the laboratory and the client. Amendments initiated by the client and/or TestAmerica, are documented in writing.

All contracts, QAPPs, SAPs, contract amendments, and documented communications become part of the project record.

The same contract review process used for the initial review is repeated when there are amendments to the original contract by the client, and the participating personnel are informed of the changes.

7.2 REVIEW SEQUENCE AND KEY PERSONNEL

Appropriate personnel will review the work request at each stage of evaluation.

For routine projects and other simple tasks, a review by the PM is considered adequate. The PM confirms that the laboratory has any required certifications, that it can meet the client's data quality and reporting requirements and that the laboratory has the capacity to meet the client's TAT needs. It is recommended that, where there is a sales person assigned to the account, an attempt should be made to contact that sales person to inform them of the incoming samples.

For new, complex, or large projects, the proposed contract is given to the CRM or CRM Proposal team, who will decide which laboratory will receive the work based on the scope of work and other requirements, including certification, testing methodology, and available capacity to perform the work. The contract review process is outlined in Corporate Legal Document No. CA-L-P-002.

This review encompasses all facets of the operation. The scope of work is distributed to the appropriate personnel (not necessarily in the order below) as needed, based on scope of contract, to evaluate all of the requirements shown above:

- Contract Administrator
- VP of Operations
- Laboratory Operations Manager
- Laboratory Manager of Project Management
- Laboratory PM
- Laboratory and/or Corporate Technical Managers
- Laboratory and/or Corporate IT
- AEs
- Laboratory and/or Corporate Quality
- Laboratory and/or Corporate EHS
- Laboratory Director - reviews the formal laboratory quote and makes final acceptance for their facility

The CRM, Contract Administrator, AE, or Client Relations Manager then submits the final proposal to the client.

In the event that one of the above personnel is not available to review the contract, his or her backup will fulfill the review requirements.

The Contracts department maintains copies of all signed contracts. A copy is also kept with the assigned laboratory PM.

7.3 DOCUMENTATION

Appropriate records are maintained for every contract or work request. All stages of the contract review process are documented and include records of any significant changes. These records are kept on file with the assigned laboratory PM.

The contract will be distributed to and maintained by the appropriate sales/marketing personnel and the AE. A copy of the contract and formal quote will be filed with the laboratory PM and the Laboratory Director.

Records are maintained of pertinent discussions with a client relating to the client's requirements or the results of the work during the period of execution of the contract. The PM keeps a phone log or e-mail documentation of conversations with the client. These records are stored with the project or client folder, as appropriate, and become part of the project records.

7.3.1 Project-Specific Quality Planning

Communication of contract-specific technical and QC criteria is an essential activity in ensuring the success of site-specific testing programs. To achieve this goal, the laboratory assigns a PM to each client. It is the PM's and the Technical Manager's responsibility to ensure that project-specific technical and QC requirements are effectively evaluated and communicated to the laboratory personnel before and during the project. QA department involvement may be needed to assist in the evaluation of custom QC requirements.

PMs are the primary client contact and they ensure resources are available to meet project requirements. Although PMs do not have direct reports or staff in production, they coordinate opportunities and work with laboratory management and supervisory staff to ensure available resources are sufficient to perform work for the client's project. Project Management is positioned between the client and the laboratory resources.

The laboratory has established procedures in order to ensure that communication is inclusive and effective. These include, but are not limited to, use of project memos and QAS; discussion/notification during daily production meetings; conducting meetings with the project teams; and/or conducting start-up meetings between the laboratory personnel and the client.

Whenever a new or revised technical SOP or SOP Change Form is issued, QA will notify all PMs if there are any changes that will affect how final results will be reported compared to the previous revision. QA and the PM will work together to ensure the client is properly notified of the change. Changes in a technical SOP that should be considered with regards to impact on client data include, but are not limited to:

- Increase in RL
- Deletion of target analytes from a method
- Change in method name or method reference (e.g., 8260B to 8260C)
- Change in how target analytes are qualitatively or quantitatively determined (e.g., how peaks are identified, how integrations are performed)

During the project, any change that may occur within an active project is agreed upon between the client/regulatory agency and the PM/laboratory. These changes (e.g., use of a non-standard method or modification of a method) and approvals must be documented prior to implementation. Documentation pertains to any document, e.g., letter, e-mail, variance, contract addendum, which has been signed by both parties.

Such changes are also communicated to the laboratory, as stated above. Project notes are updated. After the modification is implemented into the laboratory process, documentation of the modification is made in the case narrative of the data report(s).

The laboratory strongly encourages client visits to the laboratory and for formal/informal information sharing session with employees in order to effectively communicate ongoing client needs as well as project-specific details for customized testing programs.

7.4 SPECIAL SERVICES

The laboratory cooperates with clients and their representatives to monitor the laboratory's performance in relation to work performed for the client. It is the laboratory's goal to meet all client requirements in addition to statutory and regulatory requirements. The laboratory has procedures to ensure confidentiality to clients (Sections 15 and 25).

The laboratory's standard procedures for reporting data are described in Section 25. Special services are also available and provided upon request. These services include:

- Reasonable access for our clients or their representatives to the relevant areas of the laboratory for the witnessing of tests performed for the client.
- Assist client-specified third party data validators, as specified in the client's contract.
- Supplemental information pertaining to the analysis of their samples.

Note: An additional charge may apply for additional data/information that was not requested prior to the time of sample analysis or previously agreed upon.

7.5 CLIENT COMMUNICATION

PMs are the primary communication link to the clients. They shall inform their clients of any delays in project completion as well as any nonconformances in either sample receipt or sample analysis. Project Management will maintain ongoing client communication throughout the entire client project.

The Laboratory Director, QA Manager, and Technical Manager are available to discuss any technical questions or concerns that the client may have.

7.6 REPORTING

The laboratory works with our clients to produce any special communication reports required by the contract.

7.7 CLIENT SURVEYS

The laboratory assesses both positive and negative client feedback. The results are used to improve overall laboratory quality and client service.

TestAmerica's Sales and Marketing teams periodically develop laboratory- and client-specific surveys to assess client satisfaction.

SECTION 8

SUBCONTRACTING OF TESTS

8.1 **OVERVIEW**

For the purpose of this QAM, the phrase “subcontract laboratory” refers to a laboratory external to the TestAmerica laboratories. The phrase “worksharing” refers to internal transfers of samples between the TestAmerica laboratories. The term outsourcing refers to the act of subcontracting tests.

When contracting with our clients, the laboratory makes commitments regarding the services to be performed and the data quality for the results to be generated. When the need arises to outsource testing for our clients because of project scope, changes in laboratory capabilities, capacity, or unforeseen circumstances, we must be assured that the subcontractors or worksharing laboratories understand the requirements and will meet the same commitments we have made to the client. Refer to Corporate Legal Document No. CA-L-S-002.

When outsourcing analytical services, the laboratory will assure, to the extent necessary that the subcontract or worksharing laboratory maintains a program consistent with the requirements of this document, the requirements specified in TNI/ISO 17025 and/or the client’s QAPP. All QC guidelines specific to the client’s analytical program are transmitted to the subcontractor and agreed upon before sending the samples to the subcontract facility. Additionally, work requiring accreditation will be placed with an appropriately accredited laboratory. The laboratory performing the subcontracted work will be identified in the final report, as will non-TNI accredited work where required.

PMs and AEs for the Export Lab (TestAmerica laboratory that transfers samples to another laboratory) are responsible for obtaining client approval prior to subcontracting any samples. The laboratory will advise the client of a subcontract arrangement in writing and, when possible, approval from the client shall be retained in the client folder or project folder. Standard TestAmerica Terms & Conditions include the flexibility to subcontract samples within the TestAmerica laboratories. Therefore, additional advance notification to clients for intra-laboratory subcontracting is not necessary unless specifically required by a client contract.

Note: In addition to the client, some regulatory agencies (e.g., USDA) or contracts, may require notification prior to placing such work.

8.2 **QUALIFYING AND MONITORING SUBCONTRACTORS**

Whenever a PM (or AE) becomes aware of a client requirement or laboratory need where samples must be outsourced to another laboratory, the other laboratory shall be selected based on the following:

- The first priority is to attempt to place the work in a qualified TestAmerica laboratory.
- Firms specified by the client for the task. Documentation that a subcontractor was

designated by the client must be maintained with the project file. This documentation can be as simple as placing a copy of an e-mail from the client in the client folder or project folder.

- Firms listed as pre-qualified and currently under a subcontract with TestAmerica. A listing of all approved subcontract laboratories is available on the TestAmerica Intranet site. Supporting documentation is maintained by Corporate offices and by the TestAmerica laboratory originally requesting approval of the subcontract laboratory. Verify necessary accreditation, where applicable (e.g., TNI, A2LA, or State certification).
- Firms identified in accordance with the company's Small Business Subcontracting program as small, women-owned, veteran-owned, and/or minority-owned businesses.
- TNI or A2LA accredited laboratories.
- Firms selected must hold the appropriate certification to perform the work required.

All TestAmerica laboratories are pre-qualified for worksharing provided they hold the appropriate accreditations, can adhere to the project/program requirements, and the client approved sending samples to that laboratory. The client must provide acknowledgment that the samples can be sent to that laboratory (an e-mail is sufficient documentation or if acknowledgment is verbal, the date, time, and name of person providing acknowledgment must be documented). The originating laboratory is responsible for communicating all technical, quality, and deliverable requirements as well as other contract needs.

When the potential subcontract laboratory has not been previously approved, AEs or PMs may nominate a laboratory as a subcontractor based on need. The decision to nominate a laboratory must be approved by the Laboratory Director. The Laboratory Director requests that the QA Manager begin the process of approving the subcontract laboratory, as outlined in Corporate Legal Document No. CA-L-S-002 on subcontracting. The client must provide acknowledgment that the samples can be sent to that laboratory (an e-mail is sufficient documentation or if acknowledgment is verbal, the date, time, and name of person providing acknowledgment must be documented).

8.2.1 Once the appropriate accreditation and legal information is received by the laboratory, it is evaluated for acceptability (where applicable) and forwarded to the Corporate QIM for review. Once all documents are reviewed for completeness, the Corporate QIM will forward the documents to the Purchasing Manager for formal signature and contracting with the laboratory. The approved vendor will be added to the approved subcontractor list on the Intranet site and the Finance Group is concurrently notified for JD Edwards assignment.

8.2.2 The client will assume responsibility for the quality of the data generated from the use of a subcontractor they have requested the laboratory to use. The qualified subcontractors on the Intranet site are known to meet minimal standards. TestAmerica does not certify laboratories. The subcontractor is

on our approved list and can only be recommended to the extent that we would use them.

- 8.2.3** The status and performance of qualified subcontractors will be monitored periodically by the Corporate Contracts and/or Quality departments. Any problems identified will be brought to the attention of TestAmerica's Corporate Finance or Corporate Quality personnel.
- Complaints shall be investigated. Documentation of the complaint, investigation, and corrective action will be maintained in the subcontractor's file on the Intranet site. Complaints must be posted using the Vendor Performance Report.
 - Information must be updated on the Intranet when new information is received from the subcontract laboratories.
 - Subcontractors in good standing will be retained on the Intranet listing. The QA Manager will notify all TestAmerica laboratories, Corporate Quality, and Corporate Contracts if any laboratory requires removal from the Intranet site. This notification will be posted on the Intranet site and e-mailed to all Laboratory Directors, QA Managers, and Sales personnel.

8.3 OVERSIGHT AND REPORTING

The PM must request that the selected subcontractor be presented with a subcontract, if one is not already executed between the laboratory and the subcontractor. The subcontract must include terms which flow down the requirements of our clients, either in the subcontract itself or through the mechanism of jobs relating to individual projects. A standard subcontract and the Laboratory Subcontractor Vendor Package (posted on the Intranet) can be used to accomplish this, and Corporate Counsel can tailor the document or assist with negotiations, if needed. The PM (or AE) responsible for the project must advise and obtain client consent to the subcontract as appropriate, and provide the scope of work to ensure that the proper requirements are made a part of the subcontract and are made known to the subcontractor.

Prior to sending samples to the subcontract laboratory, the PM confirms their certification status to determine if it is current and scope-inclusive. The information is documented in a Subcontracted Sample Form (Figure 8-1) and the form is retained in the client folder or project folder. For TestAmerica laboratories, certifications can be viewed on the company's TotalAccess Database.

The Sample Control department is responsible for ensuring compliance with QA requirements and applicable shipping regulations when shipping samples to a subcontract laboratory.

All subcontracted samples must be accompanied by a TestAmerica COC form. A copy of the original COC sent by the client must also be included with all samples subcontracted within TestAmerica. Client COCs are only forwarded to external subcontractors when samples are shipped directly from the project site to the subcontract laboratory. Under routine circumstances, client COCs are not provided to external subcontractors.

Through communication with the subcontract laboratory, the PM monitors the status of the subcontracted analyses, facilitates successful execution of the work, and ensures the timeliness and completeness of the analytical report.

Non-TNI accredited work must be identified in the subcontractor's report as appropriate. If accreditation is not required, the report does not need to include this information.

Reports submitted from subcontract laboratories are not altered and are included in their original form in the final project report. This clearly identifies the data as being produced by a subcontract laboratory. If subcontract laboratory data is incorporated into the originating laboratory's EDD (i.e., imported), the report must explicitly indicate which laboratory produced the data for which methods and samples. A copy of the subcontract laboratory's report must be included in the originating laboratory's final report, regardless of whether the subcontract laboratory's results are incorporated into the originating laboratory's report.

Note: The results submitted by a TestAmerica workshare laboratory may be transferred electronically and the results reported by the TestAmerica worksharing laboratory are identified on the final report. The report must explicitly indicate which laboratory produced the data and for which methods and samples. The final report must include a copy of the completed COC for all worksharing reports.

8.4 **CONTINGENCY PLANNING**

The Laboratory Director may waive the full qualification of a subcontractor process temporarily to meet emergency needs; however, this decision and justification must be documented in the client files or project files and the Purchase Order Terms and Conditions For Subcontracted Laboratory Services must be sent with the samples and COC. In the event this provision is utilized, the laboratory (e.g., PM) will be required to verify and document the applicable accreditations of the subcontractor. All other quality and accreditation requirements will still be applicable, but the subcontractor need not have signed a subcontract with TestAmerica at this time. The comprehensive approval process must then be initiated within 30 calendar days of subcontracting.

Figure 8-1.

Example - Subcontracted Sample Form

Date/Time: _____

Subcontracted Laboratory Information:

- Subcontractor's Name: _____
- Subcontractor Point of Contact: _____
- Subcontractor's Address: _____
- Subcontractor's Phone: _____
- Analyte/Method: _____
- Certified for State of Origin: _____
- TNI Certified: Yes _____ No _____
- **USDA Permit (__ Domestic __ Foreign)** Yes _____ No _____
- A2LA (or ISO 17025) Certified: Yes _____ No _____
- CLP-like Required: Yes _____ No _____
(Full doc required)
- Requested Sample Due Date: _____
(Must be put on COC)
- Client POC Approval on file to Subcontract Samples to Sub Laboratory Yes _____ No _____

Project Manager: _____

Laboratory Sample # Range: _____
(Only of Subcontracted Samples)

Laboratory Project Number (Billing Control #): _____

All subcontracted samples are to be sent via bonded carrier and Priority Overnight. Please attach tracking number below and maintain these records in the project files.

PM Signature _____ **Date** _____

SECTION 9

PURCHASING SERVICES AND SUPPLIES

9.1 OVERVIEW

Evaluation and selection of suppliers and vendors is performed, in part, on the basis of the quality of their products, their ability to meet the demand for their products on a continuous and short-term basis, the overall quality of their services, their past history, and competitive pricing. This is achieved through evaluation of objective evidence of quality furnished by the supplier, which can include certificates of analysis, recommendations, and proof of historical compliance with similar programs for other clients. To ensure that quality critical consumables and equipment conform to specified requirements, which may affect quality, all purchases from specific vendors are approved by a member of the supervisory or management staff. Capital expenditures are made in accordance with Corporate Finance Document No. CW-F-S-007.

Contracts will be signed in accordance with Corporate Finance Document No. CW-F-P-002. RFPs will be issued where more information is required from the potential vendors than just price. Process details regarding procurement are available in Corporate Finance Policy No. CW-F-P-004. RFPs allow TestAmerica to determine if a vendor is capable of meeting requirements such as supplying to all of the TestAmerica laboratories, meeting required quality standards, and adhering to necessary ethical and environmental standards. The RFP process also allows potential vendors to outline any additional capabilities they may offer.

9.2 GLASSWARE

Glassware used for volumetric measurements must be Class A or verified for accuracy according to laboratory procedure. Pyrex (or equivalent) glass should be used where possible. For safety purposes, thick-wall glassware should be used where available.

9.3 REAGENTS, STANDARDS, AND SUPPLIES

Purchasing guidelines for equipment and reagents must meet with the requirements of the specific method and testing procedures for which they are being purchased. Solvents and acids are pre-tested in accordance with Corporate Quality Document No. CA-Q-S-001.

9.3.1 Purchasing

Chemical reagents, solvents, glassware, and general supplies are ordered as needed to maintain sufficient quantities on hand. Materials used in the analytical process must be of a known quality. The wide variety of materials and reagents available makes it advisable to specify recommendations for the name, brand, and grade of materials to be used in any determination. This information is contained in the laboratory SOPs.

The analyst completes a requisition in JD Edwards when requesting reagents, standards, or supplies or, for select items, may check the item out of the on-site consignment system that contains items approved for laboratory use. The Operations Manager approves orders placed in JD Edwards, as necessary.

9.3.2 Receiving

It is the responsibility of the Sample Control department to receive the shipment. It is the responsibility of the analyst who ordered the materials to document the date the materials were received. Once the ordered reagents or materials are received, the analyst compares the information on the label or packaging to the original order to ensure that the purchase meets the quality level specified. SDS are available online through the company's Intranet website. Anyone may review these for relevant information on the safe handling and emergency precautions of on-site chemicals.

9.3.3 Specifications

Methods in use in the laboratory specify the grade of reagent that must be used in the procedure. If the quality of the reagent is not specified, analytical reagent grade will be used. It is the responsibility of the analyst to check the procedure carefully for the suitability of grade of reagent.

Chemicals must not be used past the manufacturer's expiration date and must not be used past the expiration date noted in the laboratory SOPs. If expiration dates are not provided, the laboratory may contact the manufacturer to determine an expiration date.

The laboratory assumes a five year expiration date on inorganic dry chemicals and solvents, unless noted otherwise by the manufacturer or by the reference source method. Chemicals/solvents should not be used past the manufacturer's or SOP's expiration date.

Wherever possible, standards must be traceable to national or international standards of measurement or to national or international reference materials. Records to that effect are available to the user.

Compressed gases in use are checked for pressure and secure positioning daily. To prevent a tank from going to dryness, or introducing potential impurities, the pressure should be closely watched as it decreases to approximately 15% of the original reading, at which point it should be replaced. For example, a standard sized laboratory gas cylinder containing 3,000 psig of gas should be replaced when it drops to approximately 500 psig. The quality of the gases must meet method or manufacturer specification or be of a grade that does not cause any analytical interference.

Water used in the preparation of standards or reagents must have a specific conductivity of less than 1- $\mu\text{mho/cm}$ (or specific resistivity greater than 1.0

megaohm-cm) at 25°C. The specific conductivity (or specific resistivity) is checked and recorded daily. If the water's specific conductivity is greater than the specified limits, the Department Manager, Technical Manager, and QA Manager must be notified immediately in order to decide on cessation (based on intended use) of activities, and make arrangements for correction. More stringent method or client requirements, when applicable, must be met.

The laboratory may purchase reagent grade (or other similar quality) water for use in the laboratory. This water must be certified "clean" by the supplier for all target analytes or otherwise verified by the laboratory prior to use. This verification must be documented and submitted to the QA department.

Standard lots are verified before first time use if the laboratory switches manufacturers or has historically had a problem with the type of standard.

Purchased bottlere used for sampling must be certified clean and the certificates must be maintained. If uncertified sampling bottlere is purchased, all lots must be verified clean prior to use. This verification must be documented and submitted to the QA department.

Records of manufacturer's certification and traceability statements are maintained in files or binders in each laboratory section or uploaded in the LIMS. These records include, at a minimum, the date of receipt, the lot number (when applicable), and the expiration date (when applicable). Incorporation of the item into the record indicates that the analyst has compared the new certificate with the previous one for the same purpose and that no difference is noted, unless approved and so documented by the Technical Manager or QA Manager.

9.3.4 Storage

Reagent and chemical storage is important from the aspects of both integrity and safety. Light-sensitive reagents may be stored in brown-glass containers. Storage conditions must meet the Corporate EHS Document No. CW-E-M-001 and laboratory SOPs or manufacturer instructions.

9.4 PURCHASE OF EQUIPMENT / INSTRUMENTS / SOFTWARE

When a new piece of equipment/instrument/software is needed, either for additional capacity or for replacing inoperable ones, the analyst or the Department Manager makes a request to the Technical Manager and/or the Laboratory Director. If they agree, the procedures outlined in Corporate Technical Services Document No. CA-T-P-001, regarding qualified products list, are followed. A decision is made as to which piece of equipment/instrument/software can best satisfy the requirements. The appropriate written requests are completed and the Corporate Purchasing Group places the order.

Upon receipt of a new or used piece of equipment/instrument, a New Instrumentation Checklist is initiated (see Figure 9-1). The checklist must be submitted to the QA department so that the equipment/instrument may be assigned an identification name

and added to the equipment/instrument list. QA will also notify the IT department so that the instrument may be synchronized for backups. The capability of the equipment/instrument is assessed to determine if it is adequate for the specific application. A calibration curve is generated, followed by MDL studies, DOCs, and other relevant criteria (refer to Section 19). The manufacturer's operation manual is retained at the laboratory bench.

Upon receipt of new software, the IT department is notified so that the new software may be added to the software list. The capability of the software is assessed to determine if it is adequate for the specific application. Its operation must be deemed reliable and evidence of verification must be retained by either the IT department or the QA department, depending on software use. Software certificates supplied by the vendors, if any, are filed with the IT department. Records of software purchases are also maintained by the IT department.

9.5 SERVICES

Service to analytical instruments (except analytical balances) is performed on an as-needed basis. Routine preventative maintenance is discussed in Section 20. The need for service is determined by analysts, Department Managers, or the Technical Manager. The service providers that perform the services are approved by the Technical Manager and the Laboratory Director.

9.6 SUPPLIERS

TestAmerica selects vendors through a competitive proposal/bid process, strategic business alliances, or negotiated vendor partnerships (contracts). This process is defined in Corporate Finance Policy No. CW-F-P-004. The level of control used in the selection process is dependent on the anticipated spending amount and the potential impact on TestAmerica business. Vendors that provide test and measuring equipment, solvents, standards, certified containers, instrument-related service contracts, or subcontract laboratory services shall be subject to more rigorous controls than vendors that provide off-the-shelf items of defined quality that meet the end use requirements. The JD Edwards purchasing system includes all suppliers/vendors that have been approved for use.

Evaluation of suppliers is accomplished by ensuring the supplier ships the product or material ordered and that the material is of the appropriate quality. This is documented by signing off on packing slips or other supply receipt documents. The purchasing documents contain the data that adequately describe the services and supplies ordered.

Any issues of vendor performance are to be reported immediately by the laboratory staff to the Corporate Purchasing Group by completing a Vendor Performance Report.

The Corporate Purchasing Group will work through the appropriate channels to gather the information required to clearly identify the problem and will contact the vendor to report the problem and to make any necessary arrangements for exchange, return authorization, credit, etc.

As deemed appropriate, the Vendor Performance Reports will be summarized and reviewed to determine corrective action necessary, or service improvements required by vendors.

The laboratory has access to a listing of all approved suppliers of critical consumables, supplies, and services. This information is provided through the JD Edwards purchasing system.

9.6.1 New Vendor Procedure

TestAmerica employees who wish to request the addition of a new vendor must complete a JD Edwards Vendor Add Request Form.

New vendors are evaluated based upon criteria appropriate to the products or services provided as well as their ability to provide those products and services at a competitive cost. Vendors are also evaluated to determine if there are ethical reasons or potential conflicts of interest with TestAmerica employees that would make it prohibitive to do business with them as well as their financial stability. The QA department is consulted with vendor and product selection that have an impact on quality.

Uncontrolled Document

Figure 9-1.
New Instrumentation Checklist

Instrumentation/Equipment Checklist			
To be completed by the department:			
Department:			
ID Number:			
Date Installed:			
Method(s) Performed:			
Type*:			
Manufacturer:			
Model Number:			
Serial Number:			
*IC, GC, Autosampler, Balance, ASE etc.			
To be completed by QA:			
Item	Applicable	Date/ Initials	Comments
Maintenance/monitoring logbook created	Yes <input type="checkbox"/> No <input type="checkbox"/>		
IT informed (so data backup process can be updated)	Yes <input type="checkbox"/> No <input type="checkbox"/>		
Instrument tagged with ID number	Yes <input type="checkbox"/> No <input type="checkbox"/>		
Instrument ID number entered into Element	Yes <input type="checkbox"/> No <input type="checkbox"/>		
Calibrated thermometer placed in unit	Yes <input type="checkbox"/> No <input type="checkbox"/>		
Instrument has been added to MDL database	Yes <input type="checkbox"/> No <input type="checkbox"/>		
Laboratory equipment list updated	Yes <input type="checkbox"/> No <input type="checkbox"/>		
G:\EQUIPMENT\New Instrumentation Checklist_r2.doc Version 07/09/2009			

SECTION 10

COMPLAINTS

10.1 OVERVIEW

The laboratory considers an effective client complaint handling processes to be of significant business and strategic value. Listening to and documenting client concerns captures 'client knowledge' that enables our operations to continually improve processes and client satisfaction. An effective client complaint handling process also provides assurance to the data user that the laboratory will stand behind its data, service obligations, and products.

A client complaint is any expression of dissatisfaction with any aspect of our business services (e.g., communication, responsiveness, data, reports, invoicing, and other functions) expressed by any party, whether received verbally or in written form. Client inquiries, complaints, or noted discrepancies are documented, communicated to management, and addressed promptly and thoroughly.

The laboratory has procedures for addressing both external and internal complaints with the goal of providing satisfactory resolution to complaints in a timely and professional manner.

The nature of the complaint is identified, documented, and investigated, and an appropriate action is determined and taken. In cases where a client complaint indicates that an established policy or procedure was not followed, the QA department must evaluate whether a special audit must be conducted to assist in resolving the issue. A written confirmation or letter to the client, outlining the issue and response taken, is recommended as part of the overall action taken.

The process of complaint resolution and documentation utilizes the procedures outlined in Section 12. The laboratory utilizes the NCM program in the LIMS or the laboratory's iCAT program, as appropriate, to document complaints and the corrective actions performed.

10.2 EXTERNAL COMPLAINTS

An employee that receives a complaint initiates the complaint resolution process by first documenting the complaint in an NCM or in the iCAT, as appropriate.

Complaints fall into two categories: correctable and non-correctable. An example of a correctable complaint would be one where a report re-issue would resolve the complaint. An example of a non-correctable complaint would be one where a client complains that their data was repeatedly late. Non-correctable complaints shall be reviewed for preventive action measures to reduce the likelihood of future occurrence and mitigation of client impact.

The general steps in the complaint handling process are:

- Receiving and Documenting Complaints
- Complaint Investigation and Service Recovery
- Process Improvement

The laboratory shall inform the initiator of the complaint of the results of the investigation and the corrective action taken, if any.

10.3 INTERNAL COMPLAINTS

Internal complaints include, but are not limited to, errors and nonconformances, training issues, internal audit findings, and deviations from methods. Corrective actions may be initiated by any staff member who observes a nonconformance and shall follow the procedures outlined in Section 12. In addition, Corporate Management, Sales and Marketing, and IT may initiate a complaint by contacting the laboratory or through the corrective action system described in Section 12.

10.4 MANAGEMENT REVIEW

The number and nature of client complaints is reported by the QA Manager to the Laboratory Director, the VP of Operations, and the Corporate Quality Director in the QA monthly report. Monitoring and addressing the overall level and nature of client complaints and the effectiveness of the solutions is part of the annual Management Systems Review (Section 16).

SECTION 11

CONTROL OF NONCONFORMING WORK

11.1 OVERVIEW

When data discrepancies are discovered or deviations and departures from laboratory SOPs, policies, and/or client requests have occurred, corrective action is taken immediately. First, the laboratory evaluates the significance of the nonconforming work. Then, a corrective action plan is initiated based on the outcome of the evaluation. If it is determined that the nonconforming work is an isolated incident, the plan could be as simple as adding a qualifier to the final results and/or making a notation in the case narrative. If it is determined that the nonconforming work is a systematic or improper practices issue, the corrective action plan could include a more in depth investigation and a possible suspension of an analytical method. In all cases, the actions taken are documented using the laboratory's corrective action system (refer to Section 12).

Due to the frequently unique nature of environmental samples, sometimes, departures from documented policies and procedures are needed. When an analyst encounters such a situation, the problem is presented to the Department Manager. The Department Manager discusses the reason for the departure and proposes a resolution to the Technical Manager and the QA Manager. Depending on the nature of the departure, the PM or the Laboratory Director may be involved to contact the client to decide on a logical course of action. The analyst documents the departure using the NCM program in the LIMS. The NCM is then attached to the final report to the client.

Project Management may encounter situations whereby a client may request that a special procedure that is not standard laboratory practice be applied to a sample. The laboratory may accept or opt to reject the request based on technical or ethical merit. An example might be the need to report a compound that the laboratory does not normally report. The laboratory would not have validated the method for this compound following the procedures in Section 19 and would have to do so if it chooses to accept the request. Another example might be a request to report a compound based only on a one-point calibration. Such a request would need to be approved by the Technical Manager and the QA Manager, documented, and included in the client folder or project folder.

Any compound reported that is not in compliance with TNI Standard or the analytical method requirements must be reported in an NCM. In addition, regardless of whether the data is being reported to a TNI or non-TNI state, deviations must be reported in an NCM. Deviations must be noted and explained in the final reports to the client.

11.2 RESPONSIBILITIES AND AUTHORITIES

Corporate Legal SOP No. CW-L-S-002 outlines the general procedures for the reporting and investigation of data discrepancies and alleged incidents of misconduct or violations of TestAmerica's data integrity policies as well as the policies and procedures related to the determination of the potential need to recall data.

Under certain circumstances, the Laboratory Director, the Technical Manager, or the QA Manager may authorize departures from documented procedures or policies. The departures may be a result of procedural changes due to the nature of the sample, a one-time procedure for a client, QC failures with insufficient sample to re-analyze, etc. In most cases, the client will be informed of the departure prior to the reporting of the data. Any departures must be well documented using the laboratory's corrective action procedures. This information may also be documented in logbooks and/or data review checklists, as appropriate. Any impacted data must be referenced in a case narrative and/or flagged with an appropriate data qualifier.

Any misrepresentation or possible misrepresentation of analytical data discovered by any laboratory staff member must be reported to facility Senior Management (Laboratory Director, QA Manager, and Operations Manager) within 24 hours of discovery. The reporting of issues involving alleged violations of the company's Data Integrity or Manual Integration procedures must be conveyed to an ECO, Exec. Director of Quality & EHS, and the laboratory's Corporate Quality Director within 24 hours of discovery.

Whether an inaccurate result was reported due to calculation or quantitation errors, data entry errors, improper practices, or failure to follow SOPs, the data must be evaluated to determine the possible effect.

The Laboratory Director, QA Manager, ECOs, Corporate Quality, Executive VP of Operations, VP of Operations, and the Quality Directors have the authority and responsibility to halt work, withhold final reports, or suspend an analysis for due cause as well as authorize the resumption of work.

11.3 EVALUATION OF SIGNIFICANCE AND ACTIONS TAKEN

For each nonconforming issue reported, an evaluation of its significance and the level of management involvement needed is made. This includes reviewing its impact on the final data, whether or not it is an isolated or systematic issue, and how it relates to any special client requirements.

Corporate Legal SOP No. CW-L-S-002 distinguishes between situations when it would be appropriate for laboratory management to make the decision on the need for client notification (written or verbal) and data recall (report revision) and when the decision must be made with the assistance of the ECOs and Corporate Management. Laboratory level decisions are documented and approved using the laboratory's standard nonconformance/corrective action reporting in lieu of the data recall determination form contained in Corporate Legal SOP No. CW-L-S-002.

11.4 PREVENTION OF NONCONFORMING WORK

If it is determined that the nonconforming work could recur, further corrective actions must be made following the laboratory's corrective action system. On a monthly basis, the QA department evaluates nonconformances to determine if any nonconforming work has been repeated multiple times. If so, the laboratory's corrective action process may be followed.

11.5 METHOD SUSPENSION / RESTRICTION (STOP WORK PROCEDURES)

In some cases, it may be necessary to suspend/restrict the use of a method or target compound which constitutes significant risk and/or liability to the laboratory. Suspension/restriction procedures can be initiated by any of the persons noted in Section 11.2, Paragraph 5.

Prior to suspension/restriction, confidentiality will be respected, and the problem with the required corrective and preventive action will be stated in writing and presented to the Laboratory Director.

The Laboratory Director shall arrange for the appropriate personnel to meet with the QA Manager, as needed. This meeting shall be held to confirm that there is a problem, that suspension/restriction of the method is required and will be concluded with a discussion of the steps necessary to bring the method/target analyte or test fully back on line. In some cases, that may not be necessary if all appropriate personnel have already agreed there is a problem and there is agreement on the steps needed to bring the method, target analyte, or test fully back on line.

The QA Manager will also initiate a corrective action report, as described in Section 12, if one has not already been started. A copy of any meeting notes and agreed upon steps should be faxed or e-mailed by the laboratory to the appropriate VP of Operations and member of Corporate Quality. This fax/e-mail acts as notification of the incident.

After suspension/restriction, the laboratory will hold all reports to clients pending review. No faxing, mailing, or distributing through electronic means may occur. The report must not be posted for viewing on the Internet. It is the responsibility of the Laboratory Director to hold all reporting and to notify all relevant laboratory personnel regarding the suspension/restriction (i.e., Project Management, Sample Control, etc.). Clients will NOT generally be notified at this time. Analysis may proceed in some instances, depending on the nonconformance issue.

Within 72 hours, the QA Manager will determine if conformance is now met and reports can be released, OR determine the plan of action to bring work into conformance, and release work. A team, with all principals involved (Laboratory Director, QA Manager, and Operations Manager) can devise a start-up plan to cover all steps from client notification through conformance and release of reports. Project Management and the Directors of Client Services and Sales and Marketing must be notified if clients must be notified or if the suspension/restriction affects the laboratory's ability to accept work. The QA Manager must approve start-up or elimination of any restrictions after all corrective action is complete. This approval is given by final signature on the completed corrective action report.

SECTION 12

CORRECTIVE ACTION

12.1 OVERVIEW

A major component of TestAmerica's QA Program is the problem investigation and feedback mechanism designed to keep the laboratory staff informed on quality-related issues and to provide insight to problem resolution. When nonconforming work or departures from policies and procedures in the quality system or technical operations are identified, the corrective action procedure provides a systematic approach to assess the issues, restore the laboratory's system integrity, and prevent recurrence. Corrective actions are documented using the NCM program in the LIMS or the iCAT, as appropriate. Refer to Figure 12-1 and 12-2, respectively.

12.2 GENERAL

Problems within the quality system or within analytical operations may be discovered in a variety of ways, such as QC sample failures, internal or external audits, PT performance, client complaints, staff observation, etc.

The purpose of a corrective action system is to:

- Identify nonconformance events and assign responsibility for investigating.
- Resolve nonconformance events and assign responsibility for any required corrective action.
- Identify systematic problems before they become serious.
- Identify and track client complaints and provide resolution.

12.2.1 NCM – The NCM program in the LIMS is used to document nonconformances (e.g., anomalies and deficiencies). The types of nonconformances to be reported include, but are not limited to, the following:

- Deviations from an established procedure or SOP
- QC outside of limits
- Isolated reporting/calculation errors
- Client complaints requiring report revisions
- Discrepancies in materials / goods received vs. manufacturer packing slips

12.2.2 iCAT – The iCAT program is used to document incidents and complaints that are not considered isolated incidents, as well as those that require greater flexibility in the assignment and tracking of corrective actions and associated communications than is afforded by the NCM program. The types of incidents and complaints to be reported in the iCAT include, but are not limited to, the following:

- Client complaints (correctable or non-correctable)
- Internal and external audit findings
- Systematic reporting/calculation errors
- Identified poor process and method performance or questionable trends that are found in the review of NCMs
- Issues found while reviewing NCMs that warrant further investigation
- Data recall investigations
- Failed or unacceptable PT results
- Excessive revised reports

This will provide background documentation to enable root cause analysis and preventive action.

12.3 CLOSED-LOOP CORRECTIVE ACTION PROCESS

Any employee in the company can initiate a corrective action. There are four main components to a closed-loop corrective action process once an issue has been identified: Cause Analysis, Selection and Implementation of Corrective Actions (both short and long term), Monitoring of the Corrective Actions, and Follow-up.

12.3.1 Cause Analysis

- Upon discovery of a nonconformance event, the event must be defined and documented. An NCM or an iCAT record must be initiated, someone is assigned to investigate the issue, and the event is investigated for cause. Table 1 provides some general guidelines on determining responsibility for assessment.
- The cause analysis step is the key to the process as a long-term corrective action cannot be determined until the cause is determined.
- If the cause is not readily obvious, the Operations Manager, the Laboratory Director, or the QA Manager are consulted.

12.3.2 Selection and Implementation of Corrective Actions

- Where corrective action is needed, the laboratory shall identify potential corrective actions. The action(s) most likely to eliminate the problem and prevent recurrence are selected and implemented. Responsibility for implementation is assigned.
- Corrective actions shall be to a degree appropriate to the magnitude of the problem identified through the cause analysis.
- Whatever corrective action is determined to be appropriate, the laboratory shall document and implement the changes. The NCM or the iCAT is used for this documentation.

12.3.3 **Root Cause Analysis**

Root Cause Analysis is a class of problem solving (investigative) methods aimed at identifying the basic or causal factor(s) that underlie variation in performance or the occurrence of a significant failure. The Root Cause may be buried under seemingly innocuous events, many steps preceding the perceived failure. At first glance, the immediate response is typically directed at a symptom and not the cause. Typically, Root Cause Analysis would be best with three or more incidents to triangulate a weakness.

Systematically analyze and document the Root Causes of the more significant problems that are reported. Identify, track, and implement the corrective actions required to reduce the likelihood of recurrence of significant incidents. Trend the Root Cause data from these incidents to identify Root Causes that, when corrected, can lead to dramatic improvements in performance by eliminating entire classes of problems.

Identify the one event associated with problem and ask why this event occurred. Brainstorm the root causes of failures, for example, by asking why events occurred or conditions existed; and then why the cause occurred five consecutive times until you get to the Root Cause. For each of these sub events or causes, ask why it occurred. Repeat the process for the other events associated with the incident.

Root Cause Analysis does not mean the investigation is over. Look at technique, or other systems outside the normal indicators. Often, creative thinking will find Root Causes that ordinarily would be missed, and continue to plague the laboratory or operation.

12.3.4 **Monitoring of the Corrective Actions**

- The Laboratory Director, Technical Manager, and the QA Manager are responsible to ensure that the corrective action taken was effective.
- Ineffective actions are documented and re-evaluated until acceptable resolution is achieved. The Technical Manager is accountable to the Laboratory Director to ensure final acceptable resolution is achieved and documented appropriately.
- Each NCM is entered into the LIMS for tracking purposes and a monthly summary of all corrective actions is available for review to aid in ensuring that the corrective actions have taken effect.
- The QA Manager reviews monthly NCMs and iCAT issues for trends. Highlights are included in the QA monthly report (refer to Section 16). If a significant trend develops that adversely affects quality, an audit of the area is performed and corrective action implemented.
- Any out-of-control situations that are not addressed acceptably at the laboratory level may be reported to the Corporate Quality Director by the QA Manager, indicating the nature of the out-of-control situation and problems encountered in solving the situation.

12.3.5 Follow-up Audits

- Follow-up audits may be initiated by the QA Manager and shall be performed as soon as possible when the identification of a nonconformance casts doubt on the laboratory's conformance with its own policies and procedures, or on its conformance with state or federal requirements.
- These audits often follow the implementation of the corrective actions to verify effectiveness. An additional audit would only be necessary when a critical issue or risk to business is discovered.

(Also refer to Section 15.1.4, Special Audits.)

12.3.6 Timeline for corrective action responses

When anomalies, deficiencies, audit findings (internal and external), and client complaints affect the laboratory operations, corrective actions must be immediately initiated and put in place. To that effect, timely responses are expected from each laboratory employee. Table 12-2 defines the timeline for submitting corrective action responses.

12.4 TECHNICAL CORRECTIVE ACTIONS

In addition to providing acceptance criteria and specific protocols for technical corrective actions in the laboratory SOPs, the laboratory has general procedures to be followed to determine when departures from the documented policies, procedures, and QC have occurred (refer to Section 11). The documentation of these procedures is done using the NCM program in the LIMS or the laboratory's iCAT program, as appropriate.

Table 12-1 includes examples of general technical corrective actions. For specific criteria and corrective actions, refer to the analytical methods or specific laboratory SOPs. The laboratory may also maintain Work Instructions on these items.

Table 12-1 provides some general guidelines for identifying the individual(s) responsible for assessing each QC type and initiating corrective action. The table also provides general guidance on how a data set should be treated if associated QC measurements are unacceptable. Specific procedures are included in laboratory SOPs and in Sections 19 and 20. All corrective actions are reviewed monthly, at a minimum, by the QA Manager and highlights are included in the QA monthly report.

To the extent possible, samples shall be reported only if all QC measures are acceptable. If the deficiency does not impair the usability of the results, data will be reported with an appropriate data qualifier and/or the deficiency will be noted in the case narrative. Where sample results may be impaired, the PM is notified via the NCM and appropriate corrective action (e.g., re-analysis) is taken and documented.

12.5 BASIC CORRECTIONS

When mistakes occur in records, each mistake shall be crossed-out [not obliterated (e.g. no white-out)], and the correct value entered alongside. All such corrections shall be initialed (or signed) and dated by the person making the correction. In the case of records stored electronically, the original “uncorrected” file must be maintained intact and a second “corrected” file is created.

This same process applies to adding information to a record. All additions made later to the initial record must also be initialed (or signed) and dated.

When corrections are due to reasons other than obvious transcription errors, the reason for the corrections (or additions) shall also be documented.

Figure 12-1.

Example – NCM Program in LIMS

NCM Create/Edit

New Edit Copy Delete Print Find Doc's NCM # Set to Ready

Description

NCM ID: 123 Date Opened: 1/16/2012 2:44:30 PM Status: Closed
 Lab Section: login Date Closed: 1/20/2012 11:24:58 AM CreatedBy: Gonzales, Steve
 NCM Type: Other - Anomaly
 NCM Category: Anomaly Need Corrective Action

Narrative | Internal Comments

Please note that EPA Method TO-15 describes the use of canisters for sampling and analysis. Use of air sample bags constitutes a modification to the method.
 QA approved on 1-19-2012; ok to report

Affected Items

Description	Final Report
Method: 340-235-2 Volatile Organic Co	<input checked="" type="checkbox"/>
Method: 340-235-3 Volatile Organic Co	<input checked="" type="checkbox"/>
Login: 340-235	<input checked="" type="checkbox"/>
Method: 340-235-1 Volatile Organic Co	<input checked="" type="checkbox"/>

Detail/History

#	User Name	Entry Date
1	Friedman, Maria	1/19/2012 1

QA approved on 1-19-2012; ok to report
 **** Previous NCM Narrative Text ****
 Please note that EPA Method TO-15 describes the use of canisters for sampling and analysis. Use of air sample bags constitutes a modification to the method.

Notifications

User Name	Notice Level	Verification Type
Friedman, Maria D	Level 1	Review
Riley, Beth	Level 2	Review


Figure 12-2.

Example – iCAT Program

Incident/Complaint Activity Tracker (iCAT)											
Home		Help		ADD NEW							
User Logged In: DaystromW				Status: <input type="button" value="Open"/>		Filter: <input type="button" value="For Any"/>					
#	Opened By	Opened On	Type	Subject	Client	Status	Due Date	Action Item Total	Open Action Items	Pending QA Review	Action Due From
Select 8	WilsonD	2/21/2013	Data Report Issue - Incomplete Data	MRL Reporting		Open	4/30/2013	3	1	2	SchowA
Select 11	WilsonD	2/22/2013	Service Issue - Other	Disposal Requirements		Open	4/30/2013	1	1	0	DaystromW
Select 22	WilsonD	3/15/2013	Data Report Issue - Other	Procedure Changes	Chevron Refinery	Open	4/2/2013	1	1	0	DawesD
Select 23	WilsonD	3/15/2013	Technical Issue - QC Data	Special EDD	Ecology Auto Parts	Open	4/19/2013	1	1	0	DaystromW
Select 24	WilsonD	3/15/2013	Data Report Issue - Errors	Notice of Violation	CH2/Honeywell	Open	4/30/2013	5	1	4	DawesD
Select 25	WilsonD	3/19/2013	Data Report Issue - Other	Arizona Reporting		Open	4/30/2013	1	0	1	
Select 31	FriedmanM	3/28/2013	Audit Finding: external	Tesoro Audit 2013	Tesoro	Open	4/30/2013	3	0	3	
Select 35	FriedmanM	3/28/2013	Audit Finding: external	AZ Audit 2013	AZDHS	Open	3/28/2013	23	5	11	BanhA, HoangL, SchowA
Select 39	WilsonD	4/1/2013	Service Issue - Other	Vials leaking	American Inc for Eaton	Open	4/30/2013	3	1	0	PatelP
Select 40	WilsonD	4/2/2013	PT and Double Blind Failures	Failed NDMA PT sample for Aerojet	CRA for Aerojet Project	Open	4/12/2013	3	0	3	
Select 41	FriedmanM	4/2/2013	Audit finding: internal	Logbooks		Open	4/8/2013	7	5	2	BanhA, NguyenT, PatelP, SchowA, TranD
Select 44	WilsonD	4/4/2013	Technical Issue - Other	URS PAH Project	URS	Open	5/1/2013	4	3	1	BanhA, ReddyS, SierzchulaV
Select 46	WilsonD	4/7/2013	Data Report Issue - Incomplete Data	Did not log in 524	City of San Juan Capistrano	Open	4/15/2013	5	2	2	HarrisAW, WilsonD
Select 47	WilsonD	4/7/2013	Technical Issue - Other	525 contamination issue	TestAmerica Phoenix	Open	4/30/2013	1	0	1	
Select 48	WilsonD	4/7/2013	Audit Finding: external	608 analytes being inactivated	various	Open	4/30/2013	1	1	0	beauchaineB
Select 49	WilsonD	4/7/2013	Other	Cyanide default RL		Open	4/30/2013	1	1	0	SchowA
Select 50	WilsonD	4/7/2013	Other	Policy for MDL and RL's on Summary Analytes		Open	5/15/2013	2	1	1	FriedmanM
Select 51	HoangL	4/9/2013	Audit finding: internal	Checklist		Open	5/15/2013	1	1	0	HoangL
Select 54	HoangL	4/9/2013	Audit finding: internal	EPA 3546		Open	5/10/2013	1	1	0	BanhA

Figure 12-3.

Example – Corrective Action Report



THE LEADER IN ENVIRONMENTAL TESTING

Corrective Action Report

LABORATORY:
Source of Issue:
Date Initiated:
Initiated By:
Responsible for Investigation:

Description of Problem:

Investigation Summary:

Root Cause Analysis

The immediate cause(s) include:

The underlying cause(s) include:

Corrective Action Plan

To correct the immediate problem, the following actions will (were) taken:

To prevent recurrence of this problem, the following actions will (were) taken:

Corrective Action Plan Approved By:

QA Manager	Date
Laboratory Director	Date

Monitoring of Corrective Action Status
[enter schedule for on-going assessments of corrective action status. When follow-up performed, enter name and date of person who performed the independent assessment and a statement of completion]

Corrective Action Closed By:

QA Manager	Date
------------	------

Page 1 of 1 Form No. CA-Q-WI-030, dated 11/12/2012

Table 12-1.

Example – General Corrective Action Procedures

QC Activity (Individual Responsible for Initiation/Assessment)	Acceptance Criteria	Recommended Corrective Action
Initial Instrument Blank (Analyst)	- Instrument response < MDL	- Prepare another blank. - If still unacceptable, determine cause of contamination: reagents, environment, equipment failure, etc.
ICAL standards (Analyst, Department Manager)	- See details in laboratory SOP.	- Re-analyze standards. - If still unacceptable, re-prepare standards and recalibrate instrument.
ICV standard (second-source) (Analyst, Department Manager)	- See details in laboratory SOP.	- Re-prepare and re-analyze ICV standard. - If still unacceptable, then re-prepare ICAL standards or use new primary standards and recalibrate instrument.
CCV standard (Analyst, Data Reviewer)	- See details in laboratory SOP.	- Re-analyze CCV standard. - If still unacceptable, then recalibrate and re-analyze affected samples.
LCS and LCSD (Analyst, Data Reviewer)	- % Recovery and RPD within limits specified in the LIMS	- Batch must be re-prepared and re-analyzed. This includes any allowable marginal exceedence. When <u>not</u> using marginal exceedences, the following exceptions apply: 1) when the acceptance criteria for the positive control are exceeded high (i.e., high bias) and there are associated samples that are non-detects, then those non-detects may be reported with data qualifying codes; 2) when the acceptance criteria for the positive control are exceeded low (i.e., low bias), those sample results may be reported if they exceed a maximum regulatory limit/decision level, if known, with data qualifying codes. Note: If there is insufficient sample or the holding time cannot be met, contact client and report with flags.

QC Activity (Individual Responsible for Initiation/Assessment)	Acceptance Criteria	Recommended Corrective Action
MS and MSD <i>(Analyst, Data Reviewer)</i>	- % Recovery and RPD within limits specified in the LIMS	<ul style="list-style-type: none"> - If the acceptance criteria for duplicates or matrix spikes are not met because of matrix interferences, the acceptance of the analytical batch is determined by the validity of the LCS. - If the LCS is within acceptable limits the batch is acceptable. - The results of the duplicates, matrix spikes and the LCS are reported with the data set. - For matrix spike or duplicate results outside criteria, the data for that sample shall be reported with qualifiers.
Surrogates <i>(Analyst, Data Reviewer)</i>	- % Recovery within limits of method or within three standard deviations of the historical mean. See LIMS.	<ul style="list-style-type: none"> - Individual sample must be re-analyzed (to verify matrix interference, if any). Place comment in LIMS report. - Surrogate results outside criteria shall be reported with qualifiers.
Method Blank <i>(Analyst, Data Reviewer)</i>	< RL ^{1, 2}	<ul style="list-style-type: none"> - Re-analyze Method Blank. - If still positive, determine source of contamination. If necessary, reprocess (i.e., digest or extract) entire sample batch. Report method blank results. - Qualify the result(s) if the concentration of a targeted analyte in the Method Blank is at or above the reporting limit AND is > 1/10 of the amount measured in the sample.
PT Samples <i>(QA Manager, Technical Manager, Department Manager)</i>	- Criteria supplied by PT provider/supplier.	<ul style="list-style-type: none"> - Any failures or warnings must be investigated for cause. Failures may result in the need to repeat a PT study to show the problem is corrected. <p>Certifying agencies must be informed of the results of the investigation of failures and the planned or performed corrective actions.</p>

¹ Program- or project-specific requirements may dictate that method blank must not contain target analytes greater than ½ the RL.

² Except as noted below for certain compounds, or if specified otherwise by the client, the method blank should be below the MDL. Concentrations up to 5X RL will be allowed for the ubiquitous laboratory and reagent contaminants: Methylene chloride, Toluene, Acetone, 2-Butanone, and Phthalates **provided** they appear in similar levels in the reagent blank and client samples. This allowance presumes that the MDL is significantly below any regulatory limit to which the data are to be compared and that blank subtraction will not occur. For Benzene and Ethylene dibromide (EDB) and other analytes for which regulatory limits are extremely close to the MDL, the method blank must be below MDL.

QC Activity (Individual Responsible for Initiation/Assessment)	Acceptance Criteria	Recommended Corrective Action
Internal / External Audits (QA Manager, Department Manager, Laboratory Director)	- Defined in Quality System documentation such as SOPs, QAM, etc.	- Nonconformances must be investigated, must be reported through the NCM program in the LIMS and in the laboratory's iCAT program, as appropriate, and necessary corrective actions must be performed.
Reporting / Calculation Errors (Depends on issue – possible individuals include Analysts, Data Reviewers, PMs, Department Manager, QA Manager, Corporate Quality, Corporate Management)	- Corporate Legal SOP No. CW-L-S-002	- Corrective action is determined by type of error. Follow the procedures in Corporate Legal SOP No. CW-L-S-002.
Client Complaints (PMs, Laboratory Director, Sales and Marketing)		- Corrective action is determined by the type of complaint. For example, a complaint regarding an incorrect address on a report will result in the report being corrected and then follow-up must be performed on the reasons the address was incorrect (e.g., database needs to be updated).
QA Monthly Report (refer to Section 16 for an example) (QA Manager, Laboratory Director)	- QAM, SOPs	- Corrective action is determined by the type of issue. For example, NCMs for the month are reviewed and possible trends are investigated.

Table 12-2.

Timeline for Corrective Action Responses

Type of Corrective Action Response	Response Time
Acknowledgment (R&U) of QA Policies (either electronic or hardcopy)	1 to 14 calendar days, as designated by the QA Manager based on urgency of corrective action
Acknowledgment (R&U) of SOPs and SOP Revisions	14 to 30 calendar days, as designated by the QA Manager based on urgency of corrective action
Acknowledgment (R&U) of QA Manual and QA Manual Revisions	30 calendar days, or as designated by the QA Manager
Acknowledgment (R&U) of Published Methods	30 calendar days
Internal audit findings	7 to 30 calendar days, as designated by the QA Manager based on urgency of corrective action
External audit findings	7 to 30 calendar days, as designated by external auditor based on client requirements
Data Recall Investigations	3 to 7 days, as designated by QA Manager or Corporate QA Director
Client complaints	1 to 14 calendar days, as designated by the QA Manager based on urgency of corrective action
All Others	1 to 30 calendar days, as designated by the QA Manager based on urgency of corrective action

SECTION 13

PREVENTIVE ACTION / IMPROVEMENT

13.1 OVERVIEW

The laboratory's preventive action programs improve or eliminate potential causes of nonconforming product and/or nonconformance to the Quality System. This preventive action process is a proactive and continuous process of improvement activities that can be initiated through feedback from clients, employees, business providers, and affiliates. The QA department has the overall responsibility to ensure that the preventive action process is in place, and that relevant information on actions is submitted for management review.

Dedicating resources to an effective preventive action system emphasizes the laboratory's commitment to its Quality Program. It is beneficial to identify and address negative trends before they develop into complaints, problems, and corrective actions. Additionally, the laboratory continually strives to improve customer service and client satisfaction through continuous improvements to laboratory systems.

Opportunities for improvement may be discovered during management system reviews, review of the monthly QA Metrics Report, evaluation of internal or external audits, results and evaluation of PT performance, review of control charts and QC results, data analysis and review processing operations, client complaints, staff observation, etc.

The monthly Management Systems Metrics Report shows performance indicators in all areas of the laboratory and Quality System. These areas include revised reports, corrective actions, audit findings, internal auditing and data authenticity audits, client complaints, PT samples, holding time violations, SOPs, ethics training, etc. The metrics report is reviewed monthly by the laboratory management, Corporate QA, and TestAmerica's Executive Committee. These metrics are used in evaluating the management and quality system performance on an ongoing basis and provide a tool for identifying areas for improvement.

Items identified as continuous improvement opportunities to the management system may be issued as goals from the annual management systems review, recommendations from internal audits, white papers, Lesson Learned, Technical Services audit report, Technical Best Practices, or as Corporate or management initiatives.

The laboratory's corrective action process is integral to implementation of preventive actions. A critical piece of the corrective action process is the implementation of actions to prevent further occurrence of a nonconformance event. Historical review of corrective actions and non-conformances provides a valuable mechanism for identifying preventive action opportunities.

13.1.1 The following elements are part of a preventive action/process improvement system:

- Identification of an opportunity for preventive action or process improvement.
- Process for the preventive action or improvement.
- Define the measurements of the effectiveness of the process once undertaken.
- Execution of the preventive action or improvement.
- Evaluation of the plan using the defined measurements.
- Verification of the effectiveness of the preventive action or improvement.
- Close-out by documenting any permanent changes to the Quality System as a result of the Preventive Action or Process Improvement. Documentation of Preventive Action/Process Improvement is incorporated into the monthly QA reports, corrective action process, and management review.

13.1.2 Any Preventive Actions/Process Improvement undertaken or attempted shall be taken into account during the annual Management Systems Review (Section 16). A highly detailed report is not required; however, a summary of successes and failures within the preventive action program is sufficient to provide management with a measurement for evaluation.

13.2 MANAGEMENT OF CHANGE

The Management of Change process is designed to manage significant events and changes that occur within the laboratory. Through these procedures, the potential risks inherent with a new event or change are identified and evaluated. The risks are minimized or eliminated through pre-planning and the development of preventive measures. Some of the types of changes covered under this system include facility changes, major accreditation changes, addition or deletion to capabilities or instrumentation, key personnel changes, and LIMS changes. TestAmerica Irvine has not implemented the Management of Change process at the time of the effective date of this QAM.

SECTION 14
CONTROL OF RECORDS

14.1 OVERVIEW

The laboratory maintains a records management system appropriate to its needs and that conforms with applicable standards or regulations, as required. The system produces unequivocal, accurate records that document all laboratory activities. The laboratory retains all original observations, calculations and derived data, calibration records, and a copy of the analytical report for a minimum of five years after it has been issued.

The laboratory has established procedures for identification, collection, indexing, access, filing, storage, maintenance, and disposal of quality and technical records. A record index is listed in Table 14-1. Records are of two types, either electronic or hardcopy paper formats, depending on whether the record is computer- or hand-generated (some records may be in both formats). Quality records are maintained by the QA department in the laboratory's local server, which is backed up as part of the regular laboratory backup. Technical records are maintained by the laboratory department responsible for generating the specific technical record. When archived, they are maintained by the individual Department Managers.

Table 14-1. Record Index¹

	Record Types¹:	Retention Time:
Technical Records	<ul style="list-style-type: none"> - Raw data - Logbooks² - Certificates of Analysis for standard materials - Analytical records 	5 years from the date the laboratory report was mailed to the client ³
Official Documents	<ul style="list-style-type: none"> - QAM - Work Instructions - Policies - SOPs - Policy memoranda - Manuals 	5 years from document retirement date ³

¹ Record types encompass hardcopy and electronic records.

² Examples of logbook types: Maintenance, Instrument Run/Analysis/Injection, Preparation (standard and samples), Standard and Reagent Receipt, Archiving, Temperature Monitoring (hardcopy or electronic records).

³ See exceptions under Section 14.1.2.

	Record Types¹:	Retention Time:
QA Records	<ul style="list-style-type: none"> - Data investigation⁴ - Internal and External audits / responses - Laboratory certifications / permits - Corrective / Preventive actions - Management reviews - Method and software validation/ verification data - MDLs, IDLs, RLs, QC limits - DOCs - Storage blank reports - PT reports 	5 years from archival ³
Project Records	<ul style="list-style-type: none"> - Sample receipt and COC documentation - Contracts and Amendments - Correspondence - QAPPs - SAPs - Telephone logbooks - Laboratory reports 	5 years from the date the laboratory report was mailed to the client ³
Administrative Records	- Finance and Accounting	10 years
	- Employee Handbook	Indefinitely
	- Personnel files, employee signature and initials, training records (administrative and technical)	Refer to HR Manual
	- Administrative Policies	7 years
	- EHS Manual	7 years
	- Disposal records and permits	Indefinitely

14.1.1 All records are stored and retained in such a way that they are secure and readily retrievable at the laboratory facility or from an off-site location that provides a suitable environment to prevent damage, deterioration, and loss. All records shall be protected against fire, theft, loss, environmental deterioration, and vermin. In the case of electronic records, electronic or magnetic sources, storage media are protected from deterioration caused by magnetic fields and/or electronic deterioration.

Retrieval of archived records, whether from on-site or off-site storage, must be documented.

- For records stored in file boxes or file cabinets on-site, a sign-out sheet, available from the laboratory's designated Record Organizers (either PMAs or the EHS Coordinator), is completed to document who pulled out the record, what record was pulled out, when the record was pulled out, who returned the record, and when the record was returned. The sign-out sheet replaces the same spot where the original record was filed inside the file box or cabinet. The sign-out sheet is pulled out and

⁴ Retention time is 5 years or the life of the affected raw data storage, whichever is greater (beyond 5 years, if ongoing project or pending investigation).

completed when the record is returned. This procedure ensures that the chronological order the record was originally filed is not disturbed, remains consistent, and facilitates tracking.

- For records stored off-site, the manifest of the records transferred off-site is consulted to determine which file boxes (that contain the record in question) have to be requested for retrieval:
 - Report Organizers are notified of the request to retrieve a particular record.
 - Report Organizers consult the manifest to determine the barcode assigned to the file box that contained the requested record.
 - Report Organizers transmit the request information to the off-site storage facility and the file box is delivered to the laboratory.
 - Report Organizers maintain records of all transfer of records (in and out) from the off-site storage facility.

Tracking of stored records both on-site and off-site is accomplished using the laboratory's Archived Records database. Details on the use of this database are addressed in laboratory SOP No. IR-QA-DOC.

Retention of records are maintained on-site at the laboratory for at least six months after their generation and moved off-site for the remainder of the required storage time. Records stored off-site should be accessible within two business days of a request for such records. Records are maintained for a minimum of five years unless otherwise specified by a client or regulatory requirement.

For raw data and project records, record retention shall be calculated from the date the project report is issued. For other records, such as controlled documents, QA, or administrative records, the retention time is calculated from the date the record is formally retired. Records related to the programs listed in Table 14-2 have lengthier retention requirements and are subject to the requirements in Section 14.1.3.

14.1.2 Programs with Longer Retention Requirements

Some regulatory programs have longer record retention requirements than the standard record retention time. These are detailed in Table 14-2 with their retention requirements. In these cases, the longer retention requirement is enacted. If special instructions exist such that client data cannot be destroyed prior to notification of the client, the container or box containing that data is marked as to who to contact for authorization prior to destroying the data. Records that must be archived longer than the normal five-year retention span are marked with an identifier that is used during archiving to

segregate such records from the general population. These records are then archived with the special retention time requirement clearly labeled.

Table 14-2. Example: Special Record Retention Requirements

Program	¹ Retention Requirement
Drinking Water – All States	5 years (project records)
Drinking Water Lead and Copper Rule	12 years (project records)
FIFRA – 40 CFR Part 160	Retain for life of research or marketing permit for pesticides regulated by EPA
TSCA - 40 CFR Part 792	10 years after publication of final test rule or negotiated test agreement

¹Note: Extended retention requirements must be noted with the archive documents or addressed in facility-specific records retention procedures.

14.1.3 The laboratory has procedures to protect and backup records stored electronically and to prevent unauthorized access to or amendment of these records. All analytical data are maintained as hardcopy or in a secure readable electronic format. For analytical reports that are maintained as copies in PDF format, refer to Section 19.14.1 for more information.

14.1.4 The record keeping system allows for historical reconstruction of all laboratory activities that produced the analytical data, as well as rapid recovery of historical data. The history of the sample from when the laboratory took possession of the samples must be readily understood through the documentation. This shall include inter-laboratory transfers of samples and/or extracts.

- The records include the identity of personnel involved in sampling, sample receipt, preparation, and testing. All analytical work contains the initials (at least) of the personnel involved. The laboratory’s copy of the COC is stored in the LIMS server. During sample login, the COC is scanned and this copy is stored in the PDF/COC folder in the LIMS server. If a correction was made to a COC at any time before final report is issued, the corrected COC is scanned and is stored with the first scanned copy in the same folder location in the LIMS server. The COC would indicate the name of the sampler. If any sampling notes are provided with a work order, they are kept with this package.
- All information relating to the laboratory facilities equipment, analytical test methods, and related laboratory activities, such as sample receipt, sample preparation, or data verification are documented.
- The record keeping system facilitates the retrieval of all working files and archived records for inspection and verification purposes (e.g., set format for naming electronic files, set format for what is included with a given analytical data set). PDF copies of final reports are automatically designated by the LIMS as “Final” and include the job number (e.g., “440-

12345 Final Report.pdf"). The final report package would include the following information in the following order:

- Cover page
- Table of Contents
- Definitions/Glossary
- Case Narrative (with NCMs, if applicable)
- Detection Summary
- Client Sample Results
- QC Sample Results
- QC Association Summary
- Lab Chronicle
- Certification Summary
- Method Summary
- Sample Summary
- COC
- Receipt Checklists
- Sampling equipment field data sheets and certification, if applicable
- Subcontract report, if applicable
- Raw data, if requested
- Instrument data are stored and identified sequentially by instrument. A given day's analyses are maintained in the order of the analysis. Injection logbooks are maintained for each instrument or method; a copy of each day's injection log or instrument sequence is stored with the data to aid in reconstructing an analytical sequence. Where an analysis is performed without an instrument, bound logbooks or bench sheets are used to record and file data. Standard and reagent information is recorded in logbooks and/or entered into the LIMS for each method.
- Changes to hardcopy records shall follow the procedures outlined in Sections 12 and 19. Changes to electronic records in LIMS or instrument data are recorded in audit trails.
- The reason for a signature or initials on a document is clearly indicated in the records such as "Sampled by," "Received by," "Prepared by," "Reviewed by," "Analyzed by," or "Approved by."
- All generated data, except those that are generated by automated data collection systems, are recorded directly, promptly, and legibly in permanent dark ink.
- Hardcopy data may be scanned into PDF for record storage as long as the scanning process can be verified in order to ensure that no data is lost and the data files and storage media must be tested to verify the

laboratory's ability to retrieve the information prior to the destruction of the hardcopy that was scanned.

- Also refer to Section 19.14.1 (Computer and Electronic Data Related Requirements).

14.2 TECHNICAL AND ANALYTICAL RECORDS

14.2.1 The laboratory retains records of original observations, derived data and sufficient information to establish an audit trail, calibration records, staff records, and a copy of each analytical report issued, for a minimum of five years unless otherwise specified by a client or regulatory requirement. The records for each analysis shall contain sufficient information to enable the analysis to be repeated under conditions as close as possible to the original. The records shall include the identity of laboratory personnel responsible for the sampling, performance of each analysis, and reviewing of results.

14.2.2 Observations, data, and calculations are recorded real-time and are identifiable to the specific task.

14.2.3 Changes to hardcopy records shall follow the procedures outlined in Section 12 and 19. Changes to electronic records in LIMS or instrument data are recorded in audit trails.

The essential information to be associated with analysis, such as strip charts, tabular printouts, computer data files, analytical notebooks, and injection logs, include:

- Laboratory sample ID code
- Date of analysis; time of analysis is also required if the holding time is 72 hours or less, or when time critical steps are included in the analysis (e.g., drying, incubation, etc.); instrumental analyses have the date and time of analysis recorded as part of their general operations. Where a time critical step exists in an analysis, location for such a time is included as part of the documentation in a specific logbook or on a benchsheet.
- Instrumentation identification and instrument operating conditions/parameters. Operating conditions/parameters are typically recorded in the instrument maintenance logbook.
- Analysis type
- All manual calculations and manual integrations
- Analyst's or operator's initials/signature
- Sample preparation including, but not limited to, cleanup, separation protocols, incubation periods or subculture, ID codes, volumes, weights, instrument printouts, meter readings, calculations, reagents
- Test results
- Standard and reagent origin, receipt, preparation, and use

- Calibration criteria, frequency, and acceptance criteria
- Data and statistical calculations, review, confirmation, interpretation, assessment, and reporting conventions
- QC protocols and assessment
- Electronic data security, software documentation and verification, software and hardware audits, backups, and records of any changes to automated data entries
- Method performance criteria including expected QC requirements. These are indicated both in the LIMS and in specific analytical report formats.

14.2.4 All logbooks used during receipt, preparation, storage, analysis, and reporting of samples or monitoring of support equipment shall undergo a documented supervisory or peer review on a monthly basis.

14.3 LABORATORY SUPPORT ACTIVITIES

In addition to documenting all of the above-mentioned activities, the following are retained QA records and project records (previous discussions in this section relate where and how these data are stored):

- All original raw data, whether hardcopy or electronic, for calibrations, samples, and QC measures, including analysts' worksheets and data output records (chromatograms, strip charts, and other instrument response readout records)
- A written description or reference to the specific test method used, which includes a description of the specific computational steps used to translate parametric observations into a reportable analytical value
- Copies of final reports
- Archived SOPs
- Correspondence relating to laboratory activities for a specific project
- All corrective action reports, audits, and audit responses
- PT results and raw data
- Results of data review, verification, and cross-checking procedures

14.3.1 Sample Handling Records

Records of all procedures to which a sample is subjected while in the possession of the laboratory are maintained. These include, but are not limited to, records pertaining to:

- Sample preservation, including appropriateness of sample container and compliance with holding time requirement
- Sample identification, receipt, acceptance or rejection, and login
- Sample storage and tracking, including shipping receipts, sample transmittal/COC forms

- Procedures for the receipt and retention of samples, including all provisions necessary to protect the integrity of samples

14.4 ADMINISTRATIVE RECORDS

The laboratory also maintains the administrative records in either electronic or hardcopy form. Refer to Table 14-1.

14.5 RECORDS MANAGEMENT, STORAGE, AND DISPOSAL

All records (including those pertaining to test equipment), certificates, and reports are safely stored, held secure, and in confidence to the client. Certification-related records are available upon request.

All information necessary for the historical reconstruction of data is maintained by the laboratory. Records that are stored only on electronic media must be supported by the hardware and software necessary for their retrieval.

Records that are stored or generated by computers or personal computers have hardcopy, write-protected backup copies, or an electronic audit trail controlling access.

The laboratory has a record management system (a.k.a., document control) for control of laboratory notebooks, instrument logbooks, standards logbooks, and records for data reduction, validation, storage, and reporting. Laboratory notebooks or logbooks issued by the QA department are numbered sequentially. No more than one notebook or logbook is active at a time for a given analysis, instrument, or task, so all data are recorded sequentially within a series of sequential notebooks or logbooks. Records are considered archived when noted as such in the records management system.

14.5.1 Transfer of ownership

In the event that the laboratory transfers ownership or goes out of business, the laboratory shall ensure that the records are maintained or transferred according to client's instructions. Upon ownership transfer, record retention requirements shall be addressed in the ownership transfer agreement and the responsibility for maintaining archives is clearly established. In addition, in cases of bankruptcy, appropriate regulatory and state legal requirements concerning laboratory records must be followed. In the event of the closure of the laboratory, all records will revert to the control of the Corporate headquarters. Should the entire company cease to exist, as much notice as possible will be given to clients and the accrediting bodies who have worked with the laboratory during the previous 5 years of such action.

14.5.2 Records Disposal

Records are removed from the archive and destroyed after five years, unless otherwise specified by a client or regulatory requirement. On a project-specific or program basis, clients may need to be notified prior to record destruction. Records are destroyed in a manner that ensures their

confidentiality such as shredding, mutilation, or incineration. Refer to Tables 14-1 and 14-2.

Electronic copies of records must be destroyed by erasure or physically damaging off-line storage media so no records can be read.

If a third-party records management company is hired to dispose of records, a "Certificate of Destruction" is required.

Uncontrolled Document

SECTION 15

AUDITS

15.1 INTERNAL AUDITS

Internal audits are performed to verify that laboratory operations comply with the requirements of the laboratory's quality system and with the external quality programs under which the laboratory operates. Audits are planned and organized by the QA Manager. Personnel conducting the audits should be independent of the area being evaluated. Auditors will have sufficient authority, access to work areas, and organizational freedom necessary to observe all activities affecting quality and to report the assessments to laboratory management and, when requested, to Corporate management.

Audits are conducted and documented, as described in Corporate Quality SOP No. CW-Q-S-003. The types and frequency of routine internal audits are described in Table 15-1. Special or ad hoc assessments may be conducted, as needed, under the direction of the QA Manager.

Table 15-1. Types of Internal Audits and Frequency

Description	Performed by	Frequency
Quality Systems Audits	QA Department, QA-approved designee, or Corporate Quality	All areas of the laboratory, annually
Quality Technical Audits	Joint responsibility: a) QA Manager or designee b) Technical Manager or designee (Refer to Corporate Quality SOP CW-Q-S-003)	50% of methods annually
SOP Method Compliance	Joint responsibility: a) QA Manager or designee b) Technical Manager or designee (Refer to Corporate Quality SOP CW-Q-S-003)	Every 2 years, except for all SOPs affecting Drinking Water analyses (including QA and administrative SOPs)
Special Audits	QA Department or designee	Surveillance or spot checks performed as needed (e.g., to confirm corrective actions from other audits)

Description	Performed by	Frequency
PT	Analysts, with QA oversight	Two successful per year for each TNI field of testing, or as dictated by regulatory requirements

15.1.1 Annual Quality Systems Audit

An annual quality systems audit is required to ensure compliance to analytical methods and SOPs, TestAmerica’s Data Integrity and Ethics Policies, TNI quality systems, client and State requirements, and the effectiveness of the internal controls of the analytical process including, but not limited to, data review, QCs, preventive action, and corrective action. The completeness of earlier corrective actions is assessed for effectiveness and sustainability. The audit is divided into sections for each operating or support area of the laboratory, and each section is comprehensive for a given area. The area audits may be performed on a rotating schedule throughout the year to ensure adequate coverage of all areas. This schedule may change as situations in the laboratory warrant.

15.1.2 QA Technical Audits

QA technical audits are based on client projects, associated sample delivery groups, and the methods performed. Reported results are compared to raw data to verify the authenticity of results. The validity of calibrations and QC results are compared to data qualifiers, footnotes, and case narratives. Documentation is assessed by examining injection logs and records of manual integrations. Manual calculations are checked. Where possible, electronic audit miner programs (e.g., Chrom AuditMiner) are used to identify unusual manipulations of the data deserving closer scrutiny. QA technical audits will include all methods within a two-year period.

15.1.3 SOP Method Compliance

Compliance of all SOPs with the source methods and compliance of the operational groups with the SOPs will be assessed by the Technical Manager or qualified designee, at least every two years, or annually for methods, QA, and administrative SOPs related to the Drinking Water program. The work of each newly hired analyst is assessed within three months of working independently (e.g., completion of method IDOC). In addition, as analysts add methods to their capabilities, (new IDOC) reviews of the analyst work products will be performed within three months of completing the documented training.

15.1.4 Special Audits

Special audits are conducted on an as needed basis, generally as a follow-up to specific issues such as client complaints, corrective actions, PT results, data audits, system audits, validation comments, regulatory audits, or suspected ethical improprieties. Special audits are focused on a specific

issue, and report format, distribution, and timeframes are designed to address the nature of the issue.

15.1.5 Performance Testing

The laboratory participates in performance audits conducted through the analysis of PT samples provided by a third party. PT samples are analyzed either annually or semi-annually based on the laboratory's accreditation requirements (e.g., NELAP/TNI and Nevada DEP require semi-annual PT samples while Arizona DHS and California ELAP require annual PT samples). The laboratory generally participates in the following types of PT studies: Drinking Water (WS), Non-potable Water (WP), Underground Storage Tank (UST), and Soil (HW).

It is TestAmerica's policy that PT samples be treated as typical samples in the production process. Furthermore, where PT samples present special or unique problems in the regular production process, they may need to be treated differently, as would any special or unique request submitted by any client. The QA Manager must be consulted and must be in agreement with any decisions made to treat a PT sample differently due to some special circumstance.

Written responses to unacceptable PT results are required. In some cases, it may be necessary for blind QC samples to be submitted to the laboratory to show a return to control.

15.2 EXTERNAL AUDITS

External audits are performed when certifying agencies or clients conduct on-site inspections or submit performance testing samples for analysis. It is TestAmerica's policy to cooperate fully with regulatory authorities and clients. The laboratory makes every effort to provide the auditors with access to personnel, documentation, and assistance. Department Managers are responsible for providing corrective actions to the QA Manager who coordinates the response for any deficiencies discovered during an external audit. Audit responses are due in the time allotted by the client or agency performing the audit. When requested, a copy of the audit report and the laboratory's corrective action plan will be forwarded to Corporate Quality.

The laboratory cooperates with clients and their representatives to monitor the laboratory's performance in relation to work performed for the client. The client may only view data and systems related directly to the client's work. All efforts are made to keep other client information confidential.

15.2.1 Confidential Business Information Considerations

During on-site audits, on-site auditors may come into possession of information claimed as business confidential. A business confidentiality claim is defined as "a claim or allegation that business information is entitled to confidential treatment for reasons of business confidentiality or a request for

a determination that such information is entitled to such treatment.” When information is claimed as business confidential, the laboratory must place on (or attach to) the information at the time it is submitted to the auditor, a cover sheet, stamped or typed legend or other suitable form of notice, employing language such as “trade secret,” “proprietary,” or “company confidential.” Confidential portions of documents otherwise non-confidential must be clearly identified. CBI may be purged of references to client identity by the responsible laboratory official at the time of removal from the laboratory. However, sample identifiers may not be obscured from the information. Additional information regarding CBI can be found in the 2009 TNI Standard.

15.3 **AUDIT FINDINGS**

Audit findings are documented using the iCAT. The laboratory’s corrective action responses for both types of audits (internal or external) may include action plans that could not be completed within a pre-defined timeframe. In these instances, a completion date must be set and agreed to by Operations Management and the QA Manager.

Developing and implementing corrective actions to findings is the responsibility of the Department Manager where the finding originated. Findings that are not corrected by specified due dates are reported monthly to management in the QA monthly report. . When requested, a copy of the audit report and the laboratory’s corrective action plan will be forwarded to Corporate Quality.

If any audit finding casts doubt on the effectiveness of the operations or on the correctness or validity of the laboratory’s test results, the laboratory shall take timely corrective action, and shall notify clients in writing if the investigations show that the laboratory results have been affected. Once corrective action is implemented, a follow-up audit is scheduled to ensure that the problem has been corrected.

Clients must be notified promptly in writing, of any event such as the identification of defective measuring or test equipment that casts doubt on the validity of results given in any test report or amendment to a test report. The investigation must begin within 24 hours of discovery of the problem and all efforts are made to notify the client within two weeks after the completion of the investigation.

SECTION 16

MANAGEMENT REVIEWS

16.1 QUALITY ASSURANCE REPORT

A comprehensive QA report shall be prepared each month by the laboratory's QA department and forwarded to the Laboratory Director, Operations Manager, their Corporate Quality Director as well as their VP of Operations. All aspects of the QA system are reviewed to evaluate the suitability of policies and procedures. During the course of the year, the Laboratory Director, VP of Operations, or Corporate Quality may request that additional information be added to the report.

On a monthly basis, Corporate Quality compiles information from all the monthly laboratory reports. The Corporate Quality Directors prepare a report that includes a compilation of all metrics and notable information and concerns regarding the QA programs within the laboratories. The report also includes a listing of new regulations that may potentially impact the laboratories. This report is presented to the Senior Management Team and VPs of Operations.

16.2 ANNUAL MANAGEMENT SYSTEMS REVIEW

The senior laboratory management team (Laboratory Director, Operations Manager, QA Manager, and Manager of Project Management) conducts an annual review of its quality systems and the LIMS to ensure its continuing suitability and effectiveness in meeting client and regulatory requirements and to introduce any necessary changes or improvements. It will also provide a platform for defining goals, objectives, and action items that feed into the laboratory planning system. Corporate Operations and Corporate Quality may be included in this meeting at the discretion of the Laboratory Director. The LIMS review consists of examining any audits, complaints, or concerns that have been raised through the year that are related to the LIMS. The laboratory will summarize any critical findings that cannot be solved by the laboratory and report them to Corporate IT.

This management systems review (Corporate Quality SOP No. CW-Q-S-004 and Work Instruction No. CW-Q-WI-003) uses information generated during the preceding year to assess the "big picture" by ensuring that routine actions taken and reviewed on a monthly basis are not components of larger systematic concerns. The monthly review should keep the quality systems current and effective, therefore, the annual review is a formal senior management process to review specific existing documentation.

Significant issues from the following documentation are compiled or summarized by the QA Manager prior to the review meeting:

- Matters arising from the previous annual review
- Prior monthly QA reports issues
- Laboratory QA metrics
- Review of report re-issue requests
- Review of client feedback and complaints

- Issues arising from any prior management or staff meetings
- Minutes from prior senior laboratory management team meetings. Issues that may be raised from these meetings include:
 - Adequacy of staff, equipment, and facility resources
 - Adequacy of policies and procedures
 - Future plans for resources and testing capability and capacity
- The annual internal double blind PT program sample performance (if performed)
- Compliance to the Ethics Policy and Data Integrity Plan. Include any evidence/incidents of inappropriate actions or vulnerabilities related to data integrity.

A report is generated by the QA Manager and management. The report is distributed to the appropriate VP of Operations and the Corporate Quality Director. The report includes, but is not limited to:

- The date of the review and the names and titles of participants
- A reference to the existing data quality-related documents and topics that were reviewed
- Quality system or operational changes or improvements that will be made as a result of the review [e.g., an implementation schedule including assigned responsibilities for the changes (Action Table)].

Changes to the quality systems requiring update to the QAM shall be included in the next revision of the QAM.

16.3 POTENTIAL INTEGRITY-RELATED MANAGERIAL REVIEWS

Potential integrity issues (data- or business-related) must be handled and reviewed in a confidential manner until such time as a follow-up evaluation, full investigation, or other appropriate actions have been completed and issues clarified. Corporate Legal SOP No. CW-L-S-002 shall be followed. All investigations that result in finding of inappropriate activity are documented and include any disciplinary actions involved, corrective actions taken, and all appropriate notification of clients.

TestAmerica's CEO, Executive VP of Operations, VP of Client & Technical Services, VPs of Operations, and Corporate Quality Directors receive a monthly report from the Exec. Director of Quality & EHS summarizing any current data integrity or data recall investigations. The VPs of Operations are also made aware of progress on these issues for their specific laboratories.

SECTION 17

PERSONNEL

17.1 OVERVIEW

The laboratory's management believes that its highly qualified and professional staff is the single most important aspect in assuring a high level of data quality and service. The staff consists of professionals and support personnel as outlined in the organization charts in Figure 4-1.

All personnel must demonstrate competence in the areas where they have responsibility. Any staff who is undergoing training shall have appropriate supervision until they have demonstrated their ability to perform their job function on their own. Staff shall be qualified for their tasks based on appropriate education, training, experience, and/or demonstrated skills, as required.

The laboratory employs sufficient personnel with the necessary education, training, technical knowledge, and experience for their assigned responsibilities.

All personnel are responsible for complying with all QA/QC requirements that pertain to the laboratory and their area of responsibility. Each staff member must have a combination of experience and education to adequately demonstrate a specific knowledge of their particular area of responsibility. Technical staff must also have a general knowledge of laboratory operations, test methods, QA/QC procedures, and records management.

Laboratory management is responsible for formulating goals for laboratory staff, with respect to education, training and skills, and ensuring that the laboratory has a policy and procedures for identifying training needs and providing training of personnel. The training shall be relevant to the present and anticipated responsibilities of the laboratory staff.

The laboratory only uses personnel that are employed by, or under contract to, the laboratory. Contracted personnel, when used, must meet competency standards of the laboratory and work in accordance to the laboratory's quality system.

17.2 EDUCATION AND EXPERIENCE REQUIREMENTS FOR TECHNICAL PERSONNEL

The laboratory makes every effort to hire analytical staff that possesses a college degree (AA, BA, and BS) in an applied science with some chemistry in the curriculum. Selection of qualified candidates for laboratory employment begins with documentation of minimum education, training, and experience prerequisites needed to perform the prescribed task. Minimum education and training requirements for TestAmerica employees are outlined in job descriptions and are generally summarized for analytical staff in the table below. Where specific education and experience requirements are dictated by regulatory programs or States, these requirements must be met.

The laboratory maintains job descriptions for all personnel who manage, perform, or verify work affecting the quality of the environmental testing the laboratory performs. Job descriptions are located in the TestAmerica Intranet's Human Resources webpage.

Experience and specialized training are occasionally accepted in lieu of a college degree (basic lab skills such as using a balance, colony counting, aseptic or quantitation techniques, etc., are also considered).

As a general rule for analytical staff:

Table 17-1. Education and Experience Guidelines

Specialty	Education	Experience
Extractions, Digestions, some electrode methods (pH, Dissolved Oxygen, Redox, etc.), or Titrimetric and Gravimetric Analyses	H.S. Diploma	On the job training
GFAA, CVAA, FLAA, Single component or short list chromatography (e.g., Fuels, BTEX-GC, IC)	A college degree in an applied science or 2 years of college and at least 1 year of college chemistry, or	2 years prior analytical experience is required
ICP, ICPMS, Long list or complex chromatography (e.g., Pesticides, PCB, Herbicides, etc.), HPLC, GCMS	A college degree in an applied science or 2 years of college chemistry, or	5 years of prior analytical experience is required
Spectra interpretation	A college degree in an applied science or 2 years of college chemistry, and	2 years relevant experience or 5 years of prior analytical experience
Technical Managers/Department Managers	Bachelor degree in an applied science or engineering with 24 semester hours in chemistry (or 16 semester hours in general microbiology and biology for Microbiology), and	2 years experience in environmental analysis of representative analytes for which they will oversee An advanced (MS, PhD) degree may substitute for one year of experience

When an analyst does not meet these requirements, they can perform a task under the direct supervision of a qualified (with approved DOC) personnel (analyst, peer reviewer, Department Manager, or Technical Manager) and are considered an analyst in training. The person supervising an analyst in training is accountable for the quality of the analytical data and must review and approve data and associated corrective actions.

17.3 TRAINING

The laboratory is committed to furthering the professional and technical development of employees at all levels.

Orientation to the laboratory's policies and procedures, in-house method training, and employee attendance at outside training courses and conferences all contribute toward employee proficiency. Below are examples of required employee training:

Table 17-2. Required Employee Training

Required Training	Time Frame	Employee Type
EHS	Prior to laboratory work	All
Ethics – New Hires	1 week of hire	All
Ethics – Comprehensive	90 days of hire	All
Data Integrity	30 days of hire	Technical and PMs
QAM	30 days of hire	All
Ethics – Refresher	Quarterly	All
IDOC	Prior to unsupervised method performance or analysis of client samples	Technical

The laboratory maintains records of relevant authorization/competence, education, professional qualifications, training, skills, and experience of technical personnel (including contracted personnel) as well as the date that approval/authorization was given. These records are kept on file at the laboratory. Also refer to Section 19.4.2.

The training of technical staff is kept up to date by:

- Documentation in each employee training file that they have read, understood, and agreed to follow the most recent version of the QAM and SOPs in their area of responsibility. This documentation is updated as the QAM and the SOPs are updated.
- Documentation from any training courses or workshops on specific equipment, analytical techniques, or other relevant topics are maintained in their training file.
- Documentation of proficiency (refer to Section 19).
- An Ethics Agreement signed by each staff member (renewed each year) and evidence of quarterly ethics training.
- A Confidentiality Agreement signed by each staff member signed at the time of employment and annually.
- Documentation and attestation forms, maintained by Human Resources, on employment status and records, benefit programs, timekeeping/payroll, and employee conduct (e.g., ethics violations). This information is maintained in the employee's secured personnel file.

Evidence of successful training could include such items as:

- Adequate documentation of training within operational areas, including one-on-one

technical training for individual technologies, and particularly for people cross-trained.

- Analysts knowledge to refer to QAM and QA SOPs for quality issues.
- Analysts following SOPs, i.e., practice matches SOPs.
- Analysts regularly communicate to supervisors and QA if SOPs need revision, rather than waiting for auditors to find problems.

Further details regarding the laboratory's training program are described in laboratory SOP No. IR-QA-TRAIN.

17.4 DATA INTEGRITY AND ETHICS TRAINING PROGRAM

Establishing and maintaining a high ethical standard is an important element of a quality system. Ethics and data integrity training is integral to the success of TestAmerica and is provided for each employee at TestAmerica. It is a formal part of the initial employee orientation within one week of hire followed by technical data integrity training within 30 days, comprehensive training within 90 days, and quarterly refresher for all employees. The Laboratory Director or the QA Manager at each facility typically performs the ethics training for their staff.

In order to ensure that all personnel understand the importance TestAmerica places on maintaining high ethical standards at all times, TestAmerica has established an Ethics Policy (Corporate Legal Document No. CW-L-P-004) and an Ethics Statement. All initial and annual training is documented by signature on the signed Ethics Statement demonstrating that the employee has participated in the training and understands their obligations related to ethical behavior and data integrity.

Violations of this Ethics Policy will not be tolerated. Employees who violate this policy will be subject to disciplinary actions up to and including termination. Criminal violations may also be referred to the Government for prosecution. In addition, such actions could jeopardize TestAmerica's ability to do work on Government contracts, and for that reason, TestAmerica has a Zero Tolerance approach to such violations.

Employees are trained as to the legal and environmental repercussions that result from data misrepresentation. Key topics covered in the presentation include:

- Organizational mission and its relationship to the critical need for honesty and full disclosure in all analytical reporting
- Ethics Policy
- How and when to report ethical/data integrity issues; confidential reporting
- Record keeping
- Discussion regarding data integrity procedures
- Specific examples of breaches of ethical behavior (e.g., peak shaving, altering data or computer clocks, improper macros, accepting/offering kickbacks, illegal accounting practices, unfair competition/collusion)

- Internal monitoring; investigations and data recalls
- Consequences for infractions including potential for immediate termination, debarment, or criminal prosecution.
- Importance of proper written narration/data qualification by the analyst and PM with respect to those cases where the data may still be usable but are in one sense or another partially deficient

Additionally, a data integrity hotline (800-736-9407) is maintained by TestAmerica and administered by the Corporate Quality department.

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SECTION 18

ACCOMMODATIONS AND ENVIRONMENTAL CONDITIONS

18.1 OVERVIEW

The laboratory is a 45,000 ft² secure laboratory facility with controlled access and designed to accommodate an efficient work flow and to provide a safe and comfortable work environment for employees. All visitors sign in and are escorted by laboratory personnel. Access is controlled by various measures.

The laboratory is equipped with structural safety features. Each employee is familiar with the location, use, and capabilities of general and specialized safety features associated with their work place. The laboratory provides and requires the use of protective equipment including safety glasses, protective clothing, gloves, etc. The OSHA and other regulatory agency guidelines regarding required amounts of bench and fume hood space, lighting, ventilation (temperature and humidity controlled), access, and safety equipment are met or exceeded.

Traffic flow through sample preparation and analysis areas is minimized to reduce the likelihood of contamination. Adequate floor space and bench top area is provided to allow unencumbered sample preparation and analysis space. Sufficient space is also provided for storage of reagents and media, glassware, and portable equipment. Ample space is also provided for refrigerated sample storage before analysis and archival storage of samples after analysis. Laboratory HVAC and deionized water systems are designed to minimize potential trace contaminants.

The laboratory is separated into specific areas for sample receiving, sample preparation, volatile organic sample analysis, non-volatile organic sample analysis, inorganic sample analysis, microbiological sample analysis, and administrative functions.

18.2 ENVIRONMENT

Laboratory accommodation, test areas, energy sources, and lighting are adequate to facilitate proper performance of tests. The facility is equipped with HVAC systems appropriate to the needs of environmental testing performed at this laboratory.

The environment in which these activities are undertaken does not invalidate the results or adversely affect the required accuracy of any measurements.

The laboratory provides for the effective monitoring, control, and recording of environmental conditions that may affect the results of environmental tests, as required by the relevant specifications, methods, and procedures. Such environmental conditions include humidity, voltage, pressure, temperature, and vibration levels in the laboratory.

When any of the method- or regulatory-required environmental conditions change to a point where they may adversely affect test results, analytical testing will be discontinued until the environmental conditions are returned to the required levels.

Environmental conditions of the facility housing the computer network and the LIMS are regulated to protect against raw data loss.

18.3 WORK AREAS

There is effective separation between neighboring areas when the activities therein are incompatible with each other. Examples include:

- Microbiological culture handling and sample incubation areas
- Volatile organic chemical handling areas (e.g., sample preparation and waste disposal) and volatile organic chemical analysis areas

Access to and use of all areas affecting the quality of analytical testing is defined and controlled by secure access to the laboratory building, as described below in the Building Security section.

Adequate measures are taken to ensure good housekeeping in the laboratory and to ensure that any contamination does not adversely affect data quality. These measures include regular cleaning to control dirt and dust within the laboratory. Work areas are available to ensure an unencumbered work environment. Work areas include:

- Access and entry ways to the laboratory
- Sample receipt
- Sample storage
- Chemical and waste storage
- Data handling and storage
- Sample processing
- Sample analysis

Refer to the following documents and procedures for specific requirements for microbiological laboratory facility:

- Standard Methods, 20th Ed., 9020B, Section 2
- TNI V1M5, 1.7.3.7.a

18.4 FLOOR PLAN

A floor plan can be found in Appendix 1.

18.5 BUILDING SECURITY

Building keys and alarm codes are distributed to employees, as necessary.

Visitors to the laboratory sign in and out in a visitor's logbook. A visitor is defined as any person who visits the laboratory who is not an employee of that laboratory. In addition to signing into the laboratory, the EHS Manual (Corporate EHS Document No. CW-E-M-

001) contains requirements for visitors and vendors. There are specific safety forms that must be reviewed and signed.

Visitors (with the exception of company employees) are escorted by laboratory personnel at all times, or the location of the visitor is noted in the visitor's logbook. Signs are posted in the laboratory designating employee-only areas: "Authorized employees beyond this point."

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SECTION 19

TEST METHODS AND METHOD VALIDATION

19.1 OVERVIEW

The laboratory uses methods that are appropriate to meet our clients' requirements and that are within the scope of the laboratory's capabilities. These include sample handling and transport, sample storage and preparation, and, where appropriate, an estimation of the measurement of uncertainty as well as statistical techniques for analysis of environmental data.

Instructions are available in the laboratory for the operation of equipment as well as for the handling and preparation of samples. All instructions, SOPs, reference methods, and manuals relevant to the work of the laboratory are readily available to all staff. Deviations from published methods are documented (with justification) in the laboratory's approved SOPs. SOPs are submitted to clients for review at their request. Significant deviations from published methods require client approval and regulatory approval, where applicable.

19.2 STANDARD OPERATING PROCEDURES

The laboratory maintains SOPs that accurately reflect all phases of the laboratory such as assessing data integrity, corrective actions, handling customer complaints, as well as all analytical methods and sampling procedures. The laboratory SOPs are derived from the most recently promulgated/approved published methods and are specifically adapted to the laboratory facility. Modifications or clarifications to published methods are clearly noted in the SOPs. All SOPs are controlled in the laboratory:

- All SOPs contain a revision number, effective date, and appropriate approval signatures. Controlled copies are available to all staff.
- Procedures for writing an SOP are incorporated by reference to Corporate Quality Document No. CW-Q-S-002.
- SOPs are reviewed at a minimum of every 2 years (annually for Drinking Water projects), and where necessary, revised to ensure continuing suitability and compliance with applicable requirements.

19.3 LABORATORY METHODS MANUAL

For each test method, the laboratory shall have available the published referenced method as well as the laboratory developed SOP.

Note: If more stringent standards or requirements are included in a mandated test method or regulation than those specified in this manual, the laboratory shall demonstrate that such requirements are met. If it is not clear which requirements are more stringent, the standard from the method or regulation is to be followed. Any exceptions or deviations from the referenced methods or regulations are noted in the specific laboratory SOP.

The laboratory maintains an SOP Index for both technical and non-technical SOPs. Technical SOPs are maintained to describe a specific test method. Non-technical SOPs are maintained to describe functions and processes not related to a specific test method.

19.4 **SELECTION OF METHODS**

Since numerous methods and analytical techniques are available, continued communication between the client and the laboratory is imperative to assure the correct methods are utilized. Once client methodology requirements are established, this and other pertinent information is summarized by the PM. These mechanisms ensure that the proper analytical methods are applied when the samples arrive for login. For non-routine analytical services (e.g., special matrices, non-routine compound lists, etc.), the method of choice is selected based on client needs and available technology. The methods selected should be capable of measuring the specific parameter of interest, in the concentration range of interest, and with the required precision and accuracy.

19.4.1 **Sources of Methods**

Routine analytical services are performed using standard EPA-approved methodology. In some cases, modification of standard approved methods may be necessary to provide accurate analyses of particularly complex matrices. When the use of specific methods for sample analysis is mandated through project or regulatory requirements, only those methods shall be used.

When clients do not specify the method to be used or when methods are not required, the methods used will be clearly validated and documented in an SOP and available to clients and/or the end user of the data.

The analytical methods used by the laboratory are those currently accepted and approved by the EPA and the state or territory from which the samples were collected. Reference methods include:

- Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act; Analysis and Sampling Procedures; 40CFR Part 136 as amended by Method Update Rule; May 18, 2012
- Methods for Chemical Analysis of Water and Wastes, EPA 600 (4-79-020), 1983.
- Methods for the Determination of Inorganic Substances in Environmental Samples, EPA-600/R-93/100, August 1993.
- Methods for the Determination of Metals in Environmental Samples, EPA/600/4-91/010, June 1991. Supplement I: EPA-600/R-94/111, May 1994.
- Methods for the Determination of Organic Compounds in Drinking Water, EPA-600/4-88-039, December 1988, Revised, July 1991, Supplement I, EPA-600-4-90-020, July 1990, Supplement II, EPA-600/R-92-129, August 1992. Supplement III EPA/600/R-95/131 - August 1995 (EPA 500 Series) (EPA 500 Series methods)
- Technical Notes on Drinking Water Methods, EPA-600/R94-173, October 1994
- Standard Methods for the Examination of Water and Wastewater, 20th and on-line editions; Eaton, A.D. Clesceri, L.S. Greenberg, A.E. Eds; American Water

Works Association, Water Pollution Control Federation, American Public Health Association: Washington, D.C.

- *Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW846), Third Edition, September 1986, Final Update I, July 1992, Final Update IIA, August 1993, Final Update II, September 1994; Final Update IIB, January 1995; Final Update III, December 1996; Final Update IV, January 2008.*
- *Annual Book of ASTM Standards, American Society for Testing & Materials (ASTM), Philadelphia, PA.*
- *Manual for the Certification of Laboratories Analyzing Drinking Water (EPA 815-R-05-004, January 2005)*
- *Code of Federal Regulations (CFR) 40, Parts 136, 141, 172, 173, 178, 179 and 261*

The laboratory reviews updated versions to all the aforementioned references for adaptation based upon capabilities, instrumentation, etc., and implements them as appropriate. As such, the laboratory strives to perform only the latest versions of each approved method as regulations allow or require.

Other reference procedures for non-routine analyses may include methods established by specific states (e.g., Underground Storage Tank methods), ASTM, or equipment manufacturers. Sample type, source, and the governing regulatory agency requiring the analysis will determine the method utilized.

The laboratory shall inform the client when a method proposed by the client may be inappropriate or out-of-date. After the client has been informed, and they wish to proceed contrary to the laboratory's recommendation, it will be documented.

19.4.2 Demonstration of Capability

Before the laboratory may institute a new method and begin reporting results, the laboratory shall confirm that it can properly operate the method. In general, this demonstration does not test the performance of the method in real world samples, but in an applicable and available clean matrix sample. If the method is for the testing of analytes that are not conducive to spiking, DOC may be performed on QC samples.

A DOC is performed whenever there is a change in instrument type (e.g., new instrumentation), matrix, method, or personnel (e.g., analyst has not performed the method within the last 12 months).

Note: The laboratory shall have a DOC for all analytes included in the methods that the laboratory performs, and proficiency DOCs for each analyst shall include all analytes that the laboratory routinely performs. Addition of non-routine analytes does not require new DOCs for all analysts if those analysts are already qualified for routine analytes tested using identical chemistry and instrument conditions.

An IDOC for an analyst must include all analytes that the laboratory performs. The IDOC must be thoroughly documented and approved by the QA Manager prior to independently analyzing client samples or reviewing data (first- or second-level review). All associated documentation must be retained in accordance with the laboratory's archiving procedures.

Ongoing DOCs for analysts may include all analytes that the laboratory performs or only those analytes that are routinely analyzed as long as all analytes that the laboratory performs are included in at least one analyst's DOC (initial or ongoing) every two years. Ongoing DOCs are approved by the QA Manager annually or a new IDOC is performed, in order to continue or resume analyzing client samples or reviewing data (first- or second-level reviews). All associated documentation must be retained in accordance with the laboratory's archiving procedures.

The laboratory must have an approved SOP, demonstrate satisfactory performance, and conduct an MDL study. There may be other requirements, as stated within the published method or regulations (e.g., RT window study).

Note: In some instances, a situation may arise where a client requests that an unusual analyte be reported using a method where this analyte is not normally reported. If the analyte is being reported for regulatory purposes, the method must meet all procedures outlined within this QAM (SOP, MDL, and DOC). If the client states that the information is not for regulatory purposes, the result may be reported as long as the following criteria are met:

- The instrument is calibrated for the analyte to be reported using the criteria for the method and ICV/CCV criteria are met (unless an ICV/CCV is not required by the method or criteria are per project DQOs).
- The laboratory's nominal or default RL is equal to the QL, must be at or above the lowest non-zero standard in the calibration curve, and must be reliably determined. Project RLs are client-specified reporting levels, which may be higher than the QL. Results reported below the QL must be qualified as estimated values. Also see Section 19.6.1.3.
- The client request is documented and the laboratory informs the client of its procedure for working with unusual compounds. The final report must be footnoted or qualified, as applicable:
Reporting Limit based on the low standard of the calibration curve.

19.4.3 IDOC and Ongoing DOC Procedures

19.4.3.1 The spiking standard used must be prepared independently from those used in instrument calibration.

19.4.3.2 The analyte(s) shall be diluted in a volume of clean matrix sufficient to prepare four aliquots at one to four times the RL (for

IDOCs) or at the concentration specified by a method or the laboratory SOP (for Ongoing DOCs).

- 19.4.3.3** Four aliquots shall be prepared and analyzed according to the test method. The four aliquots shall be analyzed consecutively on the same day or consecutively over a period of consecutive days, meaning one replicate per day for four days or two consecutive aliquots per day for two days, or three consecutive aliquots in one day and one replicate the next day, however preferred, as long as the aliquots are analyzed in consecutive order in consecutive days.
- 19.4.3.4** Using all of the results, calculate the mean recovery in the appropriate reporting units and the standard deviations for each parameter of interest.
- 19.4.3.5** When it is not possible to determine the mean and standard deviations, such as for presence, absence, and logarithmic values, the laboratory will assess performance against criteria described in the laboratory SOP.
- 19.4.3.6** Compare the information obtained above to the corresponding acceptance criteria for precision and accuracy in the test method (if applicable) or to the laboratory-generated acceptance criteria (or interim criteria) for the LCS, if there is no mandatory criteria established. If any one of the parameters do not meet the acceptance criteria, the performance is unacceptable for that parameter.
- 19.4.3.7** When one or more of the tested parameters fail at least one of the acceptance criteria, the analyst must proceed according to either option listed below:
- Locate and correct the source of the problem and repeat the test for all parameters of interest beginning with Section 19.4.3.3 above.
 - Beginning with Section 19.4.3.3 above, repeat the test for all parameters that failed to meet criteria. Repeated failure, however, will confirm a general problem with the measurement system. If this occurs, locate and correct the source of the problem and repeat the test for all compounds of interest beginning with Section 19.4.3.1 above.

Note: Results of successive LCS analyses can be used to fulfill the DOC requirement. All analytes that the laboratory can possibly report (i.e., those analytes with approved ICAL and MDL studies) must be included in the analyst IDOC. Routine LCS or LCSD analytes may be used for ongoing DOCs.

A certification statement (see Figure 19-1) shall be used to document the completion of each IDOC for an analyst. A similar form may be used to document an ongoing DOC. A copy of the certification is archived in the QA files. Approved DOCs for all analysts are summarized in the QA files.

19.5 LABORATORY-DEVELOPED METHODS AND NON-STANDARD METHODS

Any new method developed by the laboratory must be fully defined in an SOP and validated by qualified personnel with adequate resources to perform the method. Method specifications and the relation to client requirements must be clearly conveyed to the client if the method is a non-standard method (not a published or routinely accepted method). The client must also be in agreement to the use of the non-standard method.

19.6 VALIDATION OF METHODS

Validation is the confirmation by examination and the provision of objective evidence that the particular requirements for a specific intended use are fulfilled.

All non-standard methods, laboratory-designed/developed methods, standard methods used outside of their scope, and major modifications to published methods must be validated to confirm they are fit for their intended use. The validation will be as extensive as necessary to meet the needs of the given application. The results are documented with the validation procedure used and contain a statement as to the fitness for use.

19.6.1 Method Validation and Verification Activities for All New Methods

While method validation can take various courses, the following activities can be required as part of method validation. Method validation records are designated QC records and are archived accordingly.

19.6.1.1 Determination of Method Selectivity

Method selectivity is the demonstrated ability to discriminate the analyte(s) of interest from other compounds in the specific matrix or matrices from other analytes or interference. In some cases, to achieve the required selectivity for an analyte, a confirmation analysis is required as part of the method.

19.6.1.2 Determination of Method Sensitivity

Sensitivity can be both estimated and demonstrated. Whether a study is required to estimate sensitivity depends on the level of method development required when applying a particular measurement system to a specific set of samples. Where estimations and/or demonstrations of sensitivity are required by regulation or client agreement, such as the procedure in 40 CFR Part 136 Appendix B, under the Clean Water Act, these shall be followed.

19.6.1.3 Relationship of Limit of Detection to the Quantitation Limit

An important characteristic of expression of sensitivity is the difference in the LOD and the QL. The LOD is the minimum level at which the presence of an analyte can be reliably concluded. The QL is the minimum concentration of analyte that can be quantitatively determined with acceptable precision and bias. For most instrumental measurement systems, there is a region where semi-quantitative data is generated around the LOD (both above and below the estimated MDL or LOD) and below the QL. In this region, detection of an analyte may be confirmed but quantification of the analyte is unreliable within the accuracy and precision guidelines of the measurement system. When an analyte is detected below the QL, and the presence of the analyte is confirmed by meeting the qualitative identification criteria for the analyte, the analyte can be reliably reported, but the amount of the analyte can only be estimated. If data is to be reported in this region, it must be done so with a qualification that denotes the semi-quantitative nature of the result.

The LOD (MDL) of the analyte shall be multiplied by a correction factor, when applicable, based on actual divided by expected sample weights. The adjusted LOD (MDL) shall not be reported if the adjustment lowers the LOD (MDL) by more than 50%.

The QL (RL) of the analyte shall be multiplied by a correction factor, when applicable, based on actual divided by expected sample weights. The adjusted QL (RL) cannot be lower than the lowest non-zero calibration level.

19.6.1.4 Determination of Interferences

A determination that the method is free from interferences in a blank matrix is performed.

19.6.1.5 Determination of Range

Where appropriate to the method, the quantitation range is determined by comparison of the response of an analyte in a curve to established or targeted criteria. Generally, the upper QL is defined by the highest acceptable calibration concentration. The lower QL cannot be lower than the lowest non-zero calibration level, and can be constrained by required levels of bias and precision.

19.6.1.6 Determination of Accuracy and Precision

Accuracy and precision studies are generally performed using

replicate analyses, with a resulting percent recovery and measure of reproducibility (standard deviation, relative standard deviation) calculated and measured against a set of target criteria.

19.6.1.7 Documentation of Method

The method is formally documented in an SOP. If the method is a minor modification of a standard laboratory method that is already documented in an SOP, an SOP Attachment describing the specific differences in the new method is acceptable in place of a separate SOP.

19.6.1.8 Continued Demonstration of Method Performance

Continued demonstration of method performance is addressed in the SOP. Continued demonstration of method performance is generally accomplished by batch-specific QC samples such as LCS, method blank, or PT samples.

19.7 METHOD DETECTION LIMITS / LIMITS OF DETECTION

MDLs are initially determined in accordance with 40 CFR Part 136, Appendix B or, alternatively, by other technically acceptable practices that have been accepted by regulators. MDL is also sometimes referred to as LOD. The MDL theoretically represents the concentration level for each analyte within a method at which the analyst is 99% confident that the true value is not zero. The MDL is determined for each analyte initially during the method validation process and updated as required in the analytical methods, whenever there is a significant change in the procedure or equipment, or based on project-specific requirements. Generally, the analyst prepares at least 7 replicates of standard spiked at one to five times the estimated MDL (most often at the lowest standard in the calibration curve) into the applicable matrix with all the analytes of interest. Each of these aliquots is analyzed in the same manner as the samples. Where possible, the 7 replicates should be analyzed over two to four days to provide a more realistic MDL.

Refer to Corporate Quality SOP No. CA-Q-S-006 or laboratory SOP No. IR-QA-MDL for details on the MDL study process.

19.8 INSTRUMENT DETECTION LIMITS

The IDL is sometimes used to assess the reasonableness of the MDLs or, in some cases, required by the analytical method or program requirements. IDLs are mostly used in metals analyses but may be useful in demonstration of instrument performance in other areas.

IDLs are calculated to determine an instrument's sensitivity independent of any preparation method. IDLs are calculated either using 7 replicate spike analyses, like MDL but without sample preparation, or by the analysis of 10 instrument blanks and calculating three times the absolute value of the standard deviation.

If IDL is greater than the MDL, it may be used as the reported MDL.

19.9 VERIFICATION OF DETECTION AND REPORTING LIMITS

Once the MDL is determined, it must be verified on each instrument used for the given method, by analyzing a QC sample (prepared in the same manner as client samples) at no more than three times the calculated MDL for single analyte analyses (e.g., most Wet Chemistry methods, Atomic Absorption, etc.) or no more than four times the calculated MDL for multiple analyte analyses (e.g., GC, GC/MS, ICP methods, etc.). MDLV standards, like MDL standards, are analyzed through the entire analytical process under acceptable calibration and batch QC. The analytes must be qualitatively identified. This verification does not apply to methods that are not readily spiked (e.g., pH, Turbidity, etc.) or where the laboratory does not report to the MDL. If the MDL cannot be successfully verified, then the laboratory will not report to the MDL, or redevelop their MDL, or perform and pass two consecutive MDLVs at a higher concentration and set the MDL (or LOD) at the higher concentration.

When the laboratory establishes a QL, it must be initially verified by the analysis of a low-level standard or QC sample at one to two times the RL and annually, thereafter. The annual requirement is waived for methods that have an annually verified MDL. The laboratory will comply with any regulatory requirement.

19.10 RETENTION TIME WINDOWS

Most organic analyses and some inorganic analyses use chromatography techniques for qualitative and quantitative determinations. For every chromatography analysis, or as specified in the reference method, each analyte will have a specific time of elution from the column to the detector. This is known as the analyte's RT. The variance in the expected time of elution is defined as the RT window. As the key to analyte identification in chromatography, RT windows must be established on every column for every analyte used for that method. These records are kept with the files associated with an instrument for later quantitation of the analytes. Procedures to be followed are defined in the laboratory SOPs.

19.11 EVALUATION OF SELECTIVITY

The laboratory evaluates selectivity by following the checks within the applicable analytical methods, which include mass spectral tuning, second column confirmation, ICP interelement interference checks, chromatography RT windows, sample blanks, spectrochemical, atomic absorption, or fluorescence profiles, co-precipitation evaluations, and specific electrode response factors.

19.12 ESTIMATION OF UNCERTAINTY OF MEASUREMENT

19.12.1 Uncertainty is "a parameter associated with the result of a measurement, that characterizes the dispersion of the values that could reasonably be attributed to the measurand" (as defined by the International Vocabulary of Basic and General Terms in Metrology, ISO Geneva, 1993, ISBN 9610171).

Knowledge of the uncertainty of a measurement provides additional confidence in a result's validity. Its value accounts for all the factors which could possibly affect the result, such as adequacy of analyte definition, sampling, matrix effects and interferences, climatic conditions, variances in weights, volumes, standards, analytical procedure, and random variation. Some national accreditation organizations require the use of an "expanded uncertainty": the range within which the value of the measurand is believed to lie within at least a 95% confidence level with the coverage factor $k=2$.

- 19.12.2** Uncertainty is not error. Error is a single value, the difference between the true result and the measured result. In environmental samples, the true result is never known. The measurement is the sum of the unknown true value and the unknown error. Unknown error is a combination of systematic error, or bias, and random error. Bias varies predictably, constantly, and independently from the number of measurements. Random error is unpredictable, assumed to be Gaussian in distribution, and reducible by increasing the number of measurements.
- 19.12.3** The minimum uncertainty associated with results generated by the laboratory can be determined by using the LCS accuracy range for a given analyte. The LCS limits are used to assess the performance of the measurement system since they take into consideration all of the laboratory variables associated with a given test over time (except for variability associated with the sampling and the variability due to matrix effects). The percent recovery of the LCS is compared either to the method-required LCS accuracy limits or to the statistical, historical, in-house LCS accuracy limits.
- 19.12.4** To calculate the uncertainty for the specific result reported, multiply the result by the decimal of the lower end of the LCS range percent value for the lower end of the uncertainty range, and multiply the result by the decimal of the upper end of the LCS range percent value for the upper end of the uncertainty range. These calculated values represent uncertainties at approximately the 99% confidence level with a coverage factor of $k = 3$. As an example, for a reported result of 1.0 mg/L with an LCS recovery range of 50 to 150%, the estimated uncertainty in the result would be 1.0 ± 0.5 mg/L.
- 19.12.5** In the case where a well-recognized test method specifies limits to the values of major sources of uncertainty of measurement (e.g., EPA 524.2, EPA 525, etc.) and specifies the form of presentation of calculated results, no further discussion of uncertainty is required.

19.13 SAMPLE RE-ANALYSIS GUIDELINES

Because there is a certain level of uncertainty with any analytical measurement, a sample re-preparation (where appropriate) and subsequent analysis (hereafter referred to as 're-analysis') may result in either a higher or lower value from an initial sample analysis. There are also variables that may be present that may affect the results of a re-analysis. Based on the above comments, the laboratory will re-analyze samples at a

client's request with the following caveats. Client-specific Contractual Terms & Conditions for re-analysis protocols may supersede the following items:

- Homogenous samples: If a re-analysis agrees with the original result to within the RPD limits for MS/MSD or duplicate sample analyses, or within ± 1 RL for samples $\leq 5x$ the RL, the original analysis will be reported. At the client's request, both results may be reported on the same report, but not on two separate reports.
- If the re-analysis does not agree (as defined above) with the original result, then the laboratory will investigate the discrepancy and re-analyze the sample a third time for confirmation, if sufficient sample is available.
- Any potential charges related to re-analysis are discussed in the contract terms and conditions or discussed at the time of the request. The client will typically be charged for re-analysis unless it is determined that the laboratory was in error.
- Due to the potential for increased variability, reanalysis may not be applicable to Non-homogenous, Encore, and Sodium Bisulfate preserved samples. See the Department Manager if unsure.

19.14 CONTROL OF DATA

The laboratory has policies and procedures in place to ensure the authenticity, integrity, and accuracy of the analytical data generated by the laboratory.

19.14.1 Computer- and Electronic Data-Related Requirements

The three basic objectives of our computer security procedures and policies are shown below. Details are outlined in laboratory SOP No. IR-IT-COMPSEC. The laboratory is currently using TALS, which is a proprietary LIMS that has been designed to meet the needs of the laboratory. It is referred to as LIMS for the remainder of this section. The LIMS utilizes Microsoft SQL Server, which is an industry standard relational database platform. It is referred to as Database for the remainder of this section.

19.14.1.1 Maintain the Database Integrity: Assurance that data is reliable and accurate through data verification (review) procedures, password-protecting access, anti-virus protection, data change requirements, as well as an internal LIMS permissions procedure.

- LIMS Database Integrity is achieved through data input validation, internal user controls, and data change requirements.
- Spreadsheets and other software developed in-house must be verified with documentation through hand calculations prior to use. QA approval must be received prior to use. Cells containing calculations must be lock-protected and controlled.
- Instrument hardware and software adjustments are safeguarded through maintenance logs, audit trails, and controlled access.

19.14.1.2 Ensure Information Availability: Protection against loss of information or service is ensured through scheduled backups, stable file server network architecture, secure storage of media, line filter, Uninterruptible Power Supply, and maintaining older versions of software as revisions are implemented.

19.14.1.3 Maintain Confidentiality: Ensure data confidentiality through physical access controls, such as password protection or website access approval, when electronically transmitting data.

19.14.2 Data Reduction

The complexity of the data reduction depends on the analytical method and the number of discrete operations involved (e.g., extractions, dilutions, instrument readings, and concentrations). The analyst calculates the final results from the raw data or uses appropriate computer programs to assist in the calculation of final reportable values.

For manual data entry, the data is reduced by the analyst and then verified by the Department Manager, or alternate analyst, prior to updating the data into LIMS. The spreadsheets, or any other type of applicable documents, are signed by both the analyst and the Department Manager (or alternate analyst) to confirm the accuracy of the manual entry.

Manual integration of peaks will be documented and reviewed and the raw data will be flagged in accordance with Corporate Quality Document No. CA-Q-S-002.

Analytical results are reduced to appropriate concentration units specified by the analytical method, taking into account factors such as dilution, sample weight or volume, etc. Blank correction will be applied only when required by the method or per client instructions; otherwise, it should not be performed. Calculations are independently verified by appropriate laboratory staff. Calculations and data reduction steps for various methods are summarized in the respective laboratory SOPs or program requirements.

19.14.2.1 All raw data must be retained in the worklist or project folder, computer file (if appropriate), and/or injection/run log. All criteria pertinent to the method must be recorded. The documentation is recorded at the time observations or calculations are made and must be signed or initialed/dated (month/day/year). It must be easily identifiable who performed which tasks, if multiple employees were involved.

19.14.2.2 In general, concentration results are reported in milligrams per liter (mg/l) or micrograms per liter ($\mu\text{g/l}$) for liquids and milligrams per kilogram (mg/kg) or micrograms per kilogram ($\mu\text{g/kg}$) for solids. For values greater than 10,000 mg/l, results can be reported in

percent, i.e., 10,000 mg/l = 1%. Units are defined in each lab SOP.

- 19.14.2.3** In reporting, the analyst or the instrument output records the raw data result using values of known certainty plus one uncertain digit. If final calculations are performed external to LIMS, the results should be entered into LIMS with at least three significant figures. In general, results are reported to two significant figures in the final report.
- 19.14.2.4** For those methods that do not have an instrument printout or an instrumental output compatible with the LIMS, the raw results and dilution factors are entered directly into LIMS by the analyst, and the software calculates the final result for the analytical report. LIMS has a defined significant figure criterion for each analyte.
- 19.14.2.5** The laboratory strives to import data directly from instruments or calculation spreadsheets to ensure that the reported data are free from transcription and calculation errors. For those analyses with an instrument output compatible with the LIMS, the raw results and dilution factors are transferred into LIMS electronically after reviewing the quantitation report, and removing not needed/not requested or poor spectrally-matched compounds. The analyst prints a copy, if applicable, of what has been entered to check for errors. Otherwise, the instrument's record of calibrations, concentrations, RTs, chromatograms, and mass spectra, if applicable, are retained with the data file. The data file is stored in a folder in the instrument computer. Periodically, this file is transferred to the server and, eventually, to a tape file.

19.14.3 Logbook / Worksheet Use Guidelines

Logbooks and worksheets are filled out 'real time' and have enough information on them to trace the events of the applicable analysis/task (e.g., calibrations, standards, analyst, sample ID, date, time on short holding time tests, temperature when applicable, calculations are traceable, etc.).

- Corrections are made following the procedures outlined in Section 12.
- Logbooks are controlled by the QA department. A record is maintained of all logbooks in the laboratory.
- Unused portions of pages must be Z'd out, initialed/signed, and dated.
- Worksheets are created with the approval of the Technical Manager/QA Manager at the facility. The QA Department controls all worksheets following the procedures in Section 6.
- Logbooks are reviewed monthly by the Department Manager of the department where the logbook resides. The name of the reviewer and date of review is documented on each page of the logbook. Once reviewed, the Department Manager updates the laboratory's Logbook

Tracking Database to mark the latest review performed on a particular logbook. QA uses the same database to track missing or overdue logbook reviews.

19.14.4 Review / Verification Procedures

Review procedures are outlined in the laboratory SOPs to ensure that reported data are free from calculation and transcription errors and that QC parameters have been reviewed and evaluated before data are reported. The laboratory follows Corporate Quality Document No. CA-Q-S-002 regarding manual integrations to ensure the authenticity of the data. The general review concepts are discussed below; more specific information can be found in the laboratory SOPs.

All data, regardless of regulatory program or level of reporting, are subject to a thorough review process. All levels of the review are documented.

19.14.4.1 Log-In Review – The data review process starts at the sample receipt stage. Sample control personnel review COC forms and project instructions from the project management group. This is the basis of the sample information and analytical instructions entered into the LIMS. The log-in instructions are reviewed by the personnel entering the information, and a second level review is conducted by the project management staff.

19.14.4.2 First Level Data Review – The next level of data review occurs with the analysts. As data are generated, analysts review their work to ensure that the results meet project and SOP requirements. First level reviews include inspection of all raw data (e.g., instrument output for continuous analyzers, chromatograms, spectra, and manual integrations), evaluation of calibration/calibration verification data in the day's analytical run, evaluation of QC data, and reliability of sample results. The analyst transfers data into LIMS, data qualifiers are added as needed. All first level reviews are documented.

19.14.4.3 Second Level Data Review – All analytical data are subject to review by a second qualified analyst or supervisor. Second level reviews include inspection of all raw data (e.g., instrument output, chromatograms, and spectra) including 100% of data associated with any changes made by the primary analyst, such as manual integrations or reassignment of peaks to different analytes, or elimination of false negative analytes. The second review also includes evaluation of initial calibration/calibration verification data in the day's analytical run, evaluation of QC data, reliability of sample results, qualifiers and NCM narratives. Manual calculations are checked in second level review. All second level reviews are documented. To ensure data compliance, the Department Manager or another analyst (different from that who

performed the first level data review) performs the second level review.

Issues that deem further review include, but not limited to, the following:

- QC data are outside the specified control limits for accuracy and precision
- Reviewed sample data does not match with reported results
- Unusual detection limit changes are observed
- Samples having unusually high results
- Samples exceeding a known regulatory limit
- Raw data indicating some type of contamination or poor technique
- Inconsistent peak integration
- Transcription errors
- Results outside of calibration range

19.14.4.4 Unacceptable analytical results may require re-analysis of the samples. Any problems are brought to the attention of the Laboratory Director, PM, QA Manager, Technical Manager, or Department Manager for further investigation. Corrective action is initiated whenever necessary.

19.14.4.5 The results are then entered or directly transferred into the computer database and a hard copy (or .pdf) is printed for the client.

19.14.4.6 As a final review prior to the release of the report, the PM reviews the results for appropriateness and completeness. This review and approval ensures that client requirements have been met and that the final report has been properly completed. The process includes, but is not limited to, verifying that chemical relationships are evaluated, COC is followed, cover letters/narratives are present, flags are appropriate, and project-specific requirements are met.

19.14.4.7 Any project that requires a data package is subject to a tertiary data review for transcription errors and acceptable QC requirements. The PM then signs the final report. The accounting personnel also check the report for any clerical or invoicing errors. When complete, the report is sent out to the client.

19.14.4.8 A visual summary of the flow of samples and information through the laboratory, as well as data review and validation, is presented in Figure 19-2.

19.14.5 Manual Integrations

Computerized data systems provide the analyst with the ability to re-integrate raw instrument data in order to optimize the interpretation of the data. Though manual integration of data is an invaluable tool for resolving variations in instrument performance and some sample matrix problems, when used improperly, this technique would make unacceptable data appear to meet QC acceptance limits. Improper re-integrations lead to legally indefensible data, a poor reputation, or possible laboratory decertification. Because guidelines for re-integration of data are not provided in the methods and most methods were written prior to widespread implementation of computerized data systems, the laboratory trains all analytical staff on proper manual integration techniques using Corporate Quality Document No. CA-Q-S-002 as guideline.

19.14.5.1 The analyst must adjust baseline or the area of a peak in some situations, for example, when two compounds are not adequately resolved or when a peak shoulder needs to be separated from the peak of interest. The analyst must use professional judgment and common sense to determine when manual integration is required. Analysts are encouraged to ask for assistance from a senior analyst or Department Manager when in doubt.

19.14.5.2 Analysts shall not increase or decrease peak areas for the sole purpose of achieving acceptable QC recoveries that would have otherwise been unacceptable. The intentional recording or reporting of incorrect information (or the intentional omission of correct information) is against company principles and policy and is ground for immediate termination.

19.14.5.3 Client samples, performance evaluation samples, and QC samples are all treated equally when determining whether or not a peak area or baseline should be manually adjusted.

19.14.5.4 All manual integrations require a second-level review. Manual integrations must be indicated on an expanded scale "after" chromatograms such that the integration performed can be easily evaluated during data review. Expanded scale "before" chromatograms are also required for all manual integrations on QC parameters (calibrations, calibration verifications, LCS, internal standards, surrogates, etc.) unless the laboratory has another documented Corporate-approved procedure in place that can demonstrate an active process for detection and deterrence of improper integration practices.

Figure 19-1.

Example - Demonstration of Capability Documentation

**DEMONSTRATION OF CAPABILITY
CERTIFICATION STATEMENT**

Page 1 of 1

Date:
Laboratory Name:
Laboratory Address:
Analyst(s) Name(s):

Matrix:
SOP# and Rev#:
Parameter:

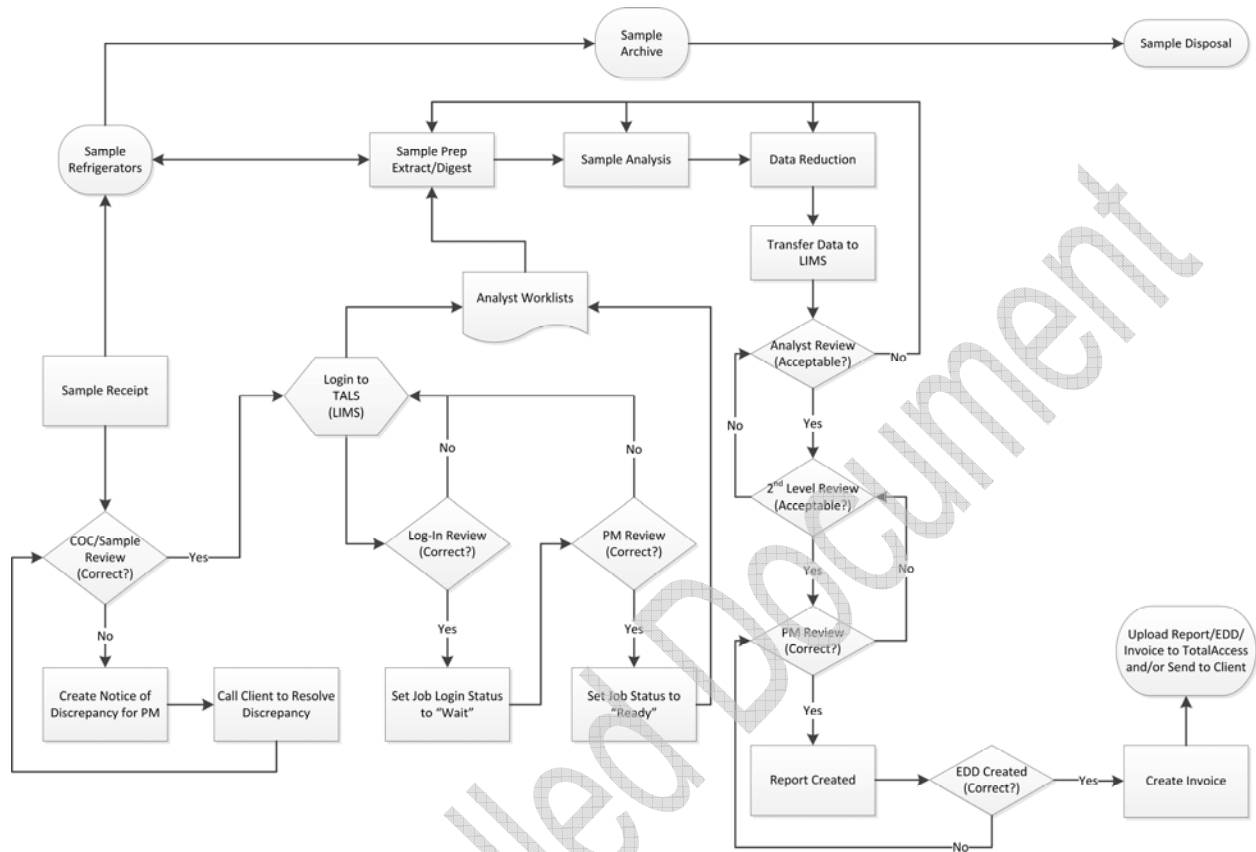
We, the undersigned, CERTIFY that:

1. The analysts identified above, using the cited test method(s), which is in use at this facility for the analyses of samples under the National Environmental Laboratory Accreditation Program, have met the Demonstration of Capability.
2. The test method(s) was performed by the analyst(s) identified on this certification.
3. A copy of the test method(s) and the laboratory-specific SOPs are available for all personnel on-site.
4. The data associated with the demonstration capability are true, accurate, complete, and self explanatory.¹
5. All raw data (including a copy of this certification form) necessary to reconstruct and validate these analyses have been retained at the facility, and that the associated information is well organized and available for review by authorized assessors.

Technical Director's Name and Title	Signature	Date
Quality Assurance Manager	Signature	Date

¹ True: Consistent with supporting data.
Accurate: Based on good laboratory practices consistent with sound scientific principles/practices.
Complete: Includes the results of all supporting performance testing.
Self-Explanatory: Data properly labeled and stored so that the results are clear and require no additional explanation.

Figure 19-2. TestAmerica Irvine Workflow



SECTION 20

EQUIPMENT AND CALIBRATIONS

20.1 OVERVIEW

The laboratory purchases the most technically advanced analytical instrumentation for sample analyses. Instrumentation is purchased on the basis of accuracy, dependability, efficiency, and sensitivity. Each laboratory is furnished with all items of sampling, preparation, analytical testing, and measurement equipment necessary to correctly perform the tests for which the laboratory has capabilities. Each piece of equipment is capable of achieving the required accuracy and complies with specifications relevant to the method being performed. Before being placed into use, the equipment (including sampling equipment) is calibrated and checked to establish that it meets its intended specification. The calibration routines for analytical instruments establish the range of quantitation. Calibration procedures are specified in laboratory SOPs. A list of laboratory equipment and instrumentation is presented in Table 20-1.

Equipment is only operated by authorized and trained personnel. Manufacturer's instructions for equipment use are readily accessible to all appropriate laboratory personnel.

20.2 PREVENTIVE MAINTENANCE

The laboratory follows a well-defined maintenance program to ensure proper equipment operation and to prevent the failure of laboratory equipment or instrumentation during use. This program of preventive maintenance helps to avoid delays due to instrument failure.

Routine preventive maintenance procedures and frequency, such as cleaning and replacements, should be performed according to the procedures outlined in the manufacturer's manual. Qualified personnel must also perform maintenance when there is evidence of degradation of peak resolution, a shift in the calibration curve, loss of sensitivity, or failure to continually meet one of the QC criteria.

Table 20-2 lists examples of scheduled routine maintenance. It is the responsibility of each Department Manager to ensure that instrument maintenance logbooks are kept for all equipment in their respective departments. Preventative maintenance procedures may be or are outlined in laboratory SOPs or instrument manuals.

Instrument maintenance logbooks are controlled and are used to document instrument problems, instrument repair, and maintenance activities. Maintenance logbooks shall be kept for all major pieces of equipment. Instrument maintenance logbooks may also be used to specify instrument parameters.

- Documentation must include all major maintenance activities such as contracted preventive maintenance and service, and in-house activities such as the replacement of electrical components, lamps, tubing, valves, columns, detectors, cleaning, and adjustments.

- Each entry in the instrument maintenance logbook includes the analyst's initials, the date, a detailed description of the problem (or maintenance needed/scheduled), a detailed explanation of the solution or maintenance performed, and a verification that the equipment is functioning properly (state what was used to determine a return to control, e.g., "CCV run on 'date' was acceptable" or "Instrument recalibrated on 'date' with acceptable verification," etc.) must also be documented in the instrument maintenance records.
- When maintenance or repair is performed by an outside agency, service receipts detailing the service performed shall be affixed into the logbooks adjacent to pages describing the maintenance performed. The service receipt that is taped or stapled into the logbook must be initialed and dated on the edge, with initials and date overlapping the attached receipt and the page where attached, so it is clear that a page is missing if only half a signature is found in the logbook.

If instruments or support equipment require repair/maintenance (subjected to overloading or mishandling, gives suspect results, or otherwise has shown to be defective or outside of specified limits), they shall be taken out of operation or otherwise isolated, and tagged as out-of-service until such a time as the repairs have been made and the instrument or support equipment can be demonstrated as operational by calibration and/or verification or other tests to demonstrate acceptable performance. The laboratory shall examine the effect of this defect on previous analyses or usage of the support equipment.

- When an instrument or support equipment must be tagged as out-of-service, the same laboratory personnel who affixed the tag-out form must be the same laboratory personnel to remove the tag-out form, after the repair/maintenance has been completed and after documentation of such repair/maintenance has been examined to be complete. The same procedure must be followed when the repair/maintenance is performed by an outside vendor.

Note: If the repair/maintenance can be started and completed, and 'return to control' demonstrated and documented, within the same work shift, it is not necessary to tag-out the instrument or support equipment.

- For the repair/maintenance to be considered complete, 'return to control' must be demonstrated and documented.
- The repair/maintenance must be documented in the designated maintenance logbooks.

In the event of equipment malfunction that cannot be resolved, service shall be obtained from the instrument vendor manufacturer, or qualified service technician, if such a service can be tendered. If on-site service is unavailable, arrangements shall be made to have the instrument shipped back to the manufacturer for repair. Backup instruments that have been approved for the analysis shall perform the analysis normally carried out by the malfunctioning instrument. If the backup is not available and the analysis cannot

be carried out within the needed timeframe, the samples shall be workshared or subcontracted.

At a minimum, if an instrument is sent out for service or transferred to another facility, it must be recalibrated and verified (including new initial MDL study) prior to return to laboratory operations.

20.3 SUPPORT EQUIPMENT

This section applies to all devices that may not be the actual test instrument, but are necessary to support laboratory operations. These include, but are not limited to, balances, ovens, refrigerators, freezers, incubators, water baths, field sampling devices, temperature measuring devices, thermal/pressure sample preparation devices, and volumetric dispensing devices, if quantitative results are dependent on their accuracy, as in standard preparation and sample dilution into a specified volume. All raw data records associated with the support equipment are retained to document instrument performance.

20.3.1 Weights and Balances

The accuracy of the balances used in the laboratory is checked every working day, before use. All balances are placed on stable counter tops.

Each balance is checked prior to initial serviceable use with at least two certified ASTM Type 1 weights spanning its range of use (weights that have been calibrated to ASTM Type 1 weights may also be used for daily verification). ASTM Type 1 weights used only for calibration of other weights (and no other purpose) are inspected for corrosion, damage, or nicks, at least annually, and if no damage is observed, they are calibrated at least every five years by an outside calibration laboratory. Any weights (including ASTM Type 1) used for daily balance checks or other purposes are recalibrated/recertified annually to NIST standards (this may be done internally if laboratory maintains "calibration only" ASTM Type 1 weights). All balances are serviced annually by a qualified service representative, who supplies the laboratory with a certificate that identifies traceability of the calibration to the NIST standards.

All of this information is recorded in logbooks, and the recalibration or recertification certificates kept in the QA files.

20.3.2 pH, Conductivity, and Turbidity Meters

The pH meters used in the laboratory are accurate to ± 0.1 pH units, and have a scale readability of at least 0.05 pH units. The meters automatically compensate for the temperature, and are calibrated with at least two working range buffer solutions before each use.

Conductivity meters are also calibrated before each use with a known standard to demonstrate the meters do not exceed an error of 1% or one

$\mu\text{mhos/cm}$.

Turbidity meters are also calibrated before each use.

All of this information is documented in logbooks. Consult pH and Conductivity, and Turbidity SOPs for further information.

20.3.3 Thermometers

All thermometers are calibrated on an annual basis with a NIST-traceable thermometer at temperatures bracketing the range of use. IR thermometers, digital probes, and thermocouples are calibrated quarterly. IR thermometers should be calibrated over the full range of use, including ambient, iced (4°C), and frozen (0 to -5°C), per the Drinking Water Manual.

The mercury NIST thermometer is recalibrated every three years (unless thermometer has been exposed to temperature extremes or apparent separation of internal liquid) by an approved outside service and the provided certificate of traceability is kept on file. The NIST thermometers have increments of no more than 1°C (or 0.5°C or less increments for drinking water microbiological laboratories) and have ranges applicable to method and certification requirements. The NIST-traceable thermometer is used for no other purpose than to calibrate other thermometers.

All of this information is recorded in logbooks, and the recalibration or recertification certificates kept in the QA files.

20.3.4 Refrigerators/Freezer Units, Waterbaths, Ovens, and Incubators

The temperature of all refrigerator units and freezers used for sample and standard storage are monitored each working day (twice for microbiology).

Ovens, waterbaths, and incubators are monitored once on days of use (twice for microbiology).

All of this equipment has a unique identification number, and is assigned a unique thermometer for monitoring.

Samples and standards storage refrigerator temperatures are kept between $>0^{\circ}\text{C}$ and $\leq 6^{\circ}\text{C}$. Freezers are kept at $-15 \pm 5^{\circ}\text{C}$.

Specific temperature settings/ranges for other refrigerators, ovens waterbaths, and incubators can be found in the laboratory SOPs.

All of this information is documented in daily temperature logbooks and method-specific logbooks.

20.3.5 Autopipettors, Dilutors, and Syringes

Mechanical volumetric dispensing devices including burettes (except Class A Glassware) are given unique identification numbers and the delivery volumes are verified gravimetrically, at a minimum, on a monthly basis.

For those dispensers that are not used for analytical measurements, a label must be applied to the device stating that it is not calibrated. Any device not regularly verified must not be used for any quantitative measurement.

Glass micro-syringes with volumes of $\geq 20 \mu\text{L}$ are checked for accuracy every six months. Glass micro-syringes with volumes $< 20\mu\text{L}$ are certified by the manufacturer (e.g., Hamilton Company). Certificate of accuracy and precision must be obtained and kept on file in the laboratory.

20.3.6 Autoclaves

The performance of each autoclave shall be initially evaluated by establishing its functional properties and performance, for example heat distribution characteristics with respect to typical uses. Autoclaves shall meet specified temperature tolerances. Pressure cookers shall not be used for sterilization of growth media.

Demonstration of sterilization temperature shall be provided by use of a continuous temperature recording device or by use of a maximum registering thermometer with every cycle. At least once during each month that the autoclave is used, appropriate biological indicators shall be used to determine effective sterilization. The selected biological indicator shall be effective at the sterilization temperature and time needed to sterilize lactose-based media. Temperature sensitive tape shall be used with the contents of each autoclave run to indicate that the autoclave contents have been processed.

Records of autoclave operations shall be maintained for every cycle. Records shall include: date, contents, maximum temperature reached, pressure, time in sterilization mode, total run time (may be recorded as time in and time out) and analyst's initials.

Autoclave maintenance, either internally or by service contract, shall be performed annually, and shall include a pressure check and verification of temperature device. Records of the maintenance shall be maintained in equipment logs.

NOTE: When it has been determined that the autoclave has no leaks, pressure checks can be documented using the formula $PV = nRT$.

The autoclave mechanical timing device shall be checked quarterly against a stopwatch and the actual time elapsed documented.

20.3.7 Field Sampling Devices (Isco Auto Samplers)

Each Auto Sampler (ISCO) is assigned a unique identification number and is

recorded on the sampling documentation.

The Auto Sampler is calibrated each day of use based on the sample volume required for the specific sampling event. The results are recorded on the field sampling request form. The technician will adjust the delivery volume prior final set-up to ensure the correct aliquot is collected.

20.4 INSTRUMENT CALIBRATIONS

Calibration of analytical instrumentation is essential to the production of quality data. Strict calibration procedures are followed for each method. These procedures are designed to determine and document the MDLs, the working range of the analytical instrumentation, and any fluctuations that may occur from day to day.

Sufficient raw data records are retained to allow an outside party to reconstruct all facets of the ICAL. Records contain, but are not limited to, the following: calibration date, method, instrument, analyst(s) initials or signatures, analysis date, analytes, concentration, response, and type of calibration (average RF, curve, or other calculations that may be used to reduce instrument responses to concentration).

Sample results must be quantitated from the ICAL and may not be quantitated from any CCV, unless otherwise required by regulation, method, or program.

If the ICAL results are outside acceptance criteria, corrective action must be performed and any affected samples re-analyzed, if sufficient sample remains. If the re-analysis is not possible, any data associated with an unacceptable ICAL will be reported with appropriate data qualifiers (refer to Section 12).

Note: Instruments must be calibrated initially and as needed thereafter and at least annually. Project-specific requirements may dictate more frequent calibrations (e.g., quarterly), as agreed upon with the client.

20.4.1 Calibration Standards

Calibration standards are prepared using the procedures indicated in the Reagents and Standards section of the determinative laboratory SOP. If a reference method does not specify the number of calibration points, a minimum of three calibration points (exception being ICP and ICP/MS methods) will be used.

Standards for instrument calibration are obtained from a variety of sources. All standards are traceable to national or international standards of measurement, or to national or international standard reference materials.

The lowest concentration calibration standard that is analyzed during an ICAL must be at or below the stated RL for the method, based on the final volume of extract or sample.

The other concentrations define the working range of the instrument/method or correspond to the expected range of concentrations found in actual samples that are also within the working range of the instrument/method. Results of samples not bracketed by the ICAL standards (within calibration range to at least the same number of significant figures used to report the data) must be reported as having less certainty (e.g., use defined qualifiers or flags and report in an NCM using the NCM program in the LIMS). The exception to these rules is ICP methods or other methods where the referenced method does not specify two or more standards.

All ICALs are verified with a standard obtained from a second source and traceable to a national standard, when available (or vendor-certified different lot, if a second source is not available). Any claim of unavailability of second-source standards must be accompanied by supporting documentation (e.g., e-mails from several prospective vendors where they state that the standard being sought is unavailable). The ICAL verification must occur immediately after the calibration curve has been analyzed, and before the analysis of any samples.

20.4.2 Calibration Verification

The calibration relationship established during the ICAL must be verified at least daily, as specified in the laboratory SOPs in accordance with the referenced analytical methods and in the 2009 TNI Standard. The process of calibration verification applies to both external standard and internal standard calibration techniques, as well as to linear and non-linear calibration models. The ICAL is verified with a standard source secondary (second source standard) to the ICAL standards, but CCVs may use the same source standards as the calibration curve.

Note: The process of calibration verification referred to is fundamentally different from the approach called "calibration" in some methods. As described in those methods, the CF or RF calculated during calibration is used to update the CF or RF used for sample quantitation. This approach, while employed in other EPA programs, amounts to a daily single-point calibration.

All target analytes and surrogates, including those reported as non-detects, must be included in periodic calibration verifications for purposes of RT confirmation and to demonstrate that calibration verification criteria are being met, i.e., RPD, per the 2009 TNI Standard, EL-V1M4 Section 1.7.2.

All samples must be bracketed by periodic analyses of standards that meet the QC acceptance criteria (e.g., calibration and RT). The frequency is found in the determinative methods or laboratory SOPs.

Note: If an internal standard calibration is being used (basically in GC/MS), then bracketing standards are not required; only daily verifications are needed. The results from these verification standards must meet the

CCV and the RT criteria (if applicable).

Generally, ICALs must be verified at the beginning of each 12-hour analytical shift during which samples are analyzed. (Some methods may specify more or less frequent verifications.) The 12-hour analytical shift begins with the injection of the CCV (or the GC/MS tuning standard in GC/MS methods). The shift ends after the completion of the analysis of the last sample, QC, or standard that can be injected within 12 hours of the beginning of the shift.

A CCV must be repeated at the beginning and, for methods that have quantitation by external calibration models, at the end of each analytical batch. Some methods may have more frequent CCV requirements. Most inorganic methods require the CCV to be analyzed after every 10 samples or injections, including matrix or batch QC samples.

If the results of a CCV are outside the established acceptance criteria and analysis of a second consecutive (and immediate) CCV fails to produce results within acceptance criteria, corrective action shall be performed. Once corrective actions have been completed and documented, the laboratory shall demonstrate acceptable instrument / method performance by analyzing two consecutive CCVs, or a new initial instrument calibration shall be performed.

Sample analyses and reporting of data may not occur or continue until the analytical system is calibrated or calibration verified. However, data associated with unacceptable calibration verification may be fully useable under the following special conditions:

- when the acceptance criteria for the CCV are exceeded high (i.e., high bias) and the associated samples within the batch are non-detects, then those non-detects may be reported with a footnote or case narrative explaining the high bias. Otherwise the samples affected by the unacceptable CCV shall be re-analyzed after a new calibration curve has been established, evaluated and accepted; or
- when the acceptance criteria for the CCV are exceeded low (i.e., low bias), those sample results may be reported if they exceed a maximum regulatory limit/decision level, if known. Otherwise the samples affected by the unacceptable CCV shall be re-analyzed after a new calibration curve has been established, evaluated and accepted.

Samples reported under the two conditions identified above will be appropriately flagged.

20.4.2.1 Verification of Linear and Non-Linear Calibrations

Calibration verification for calibrations involves the calculation of the percent drift or the percent difference of the instrument response between the ICAL and each subsequent analysis of the verification standard. (These calculations are available in the

laboratory SOPs.) Verification standards are evaluated based on the percent difference from the average CF or RF of the ICAL or based on percent drift or percent recovery if a linear or quadratic curve is used.

Regardless of whether a linear or non-linear calibration model is used, if initial verification criterion is not met, then no sample analyses may take place until the calibration has been verified or a new ICAL that meets the specifications listed in the laboratory SOPs is performed.

When the acceptance criteria for the calibration verification are exceeded high (i.e., high bias) and the associated samples within the batch are NDs, then those NDs may be reported with a qualifier or case narrative explaining the high bias. Otherwise, the samples affected by the unacceptable calibration verification shall be re-analyzed after a new ICAL has been established, evaluated, and accepted.

When the acceptance criteria for the calibration verification are exceeded low (i.e., low bias), those sample results may be reported if they exceed a maximum regulatory limit/decision level, if known. Otherwise, the samples affected by the unacceptable calibration verification shall be re-analyzed after a new ICAL has been established, evaluated, and accepted.

20.5 TENTATIVELY IDENTIFIED COMPOUNDS – GC/MS ANALYSIS

For samples containing components not associated with the calibration standards, a library search may be made for the purpose of tentative identification. The necessity to perform this type of identification will be determined by the purpose of the analyses being conducted. Data system library search routines should not use normalization routines that would misrepresent the library or unknown spectra when compared to each other.

Note: If the TIC compound is not part of the client target analyte list but is calibrated by the laboratory and is both qualitatively and/or quantitatively identifiable, it should not be reported as a TIC. If the compound is reported on the same form as true TICs, it should be qualified and/or narrated that the reported compound is qualitatively and quantitatively (if verification in control) reported compared to a known standard that is in control (where applicable).

For example, the RCRA permit or waste delisting requirements may require the reporting of non-target analytes. Only after visual comparison of sample spectra with the nearest library searches may the analyst assign a tentative identification.

20.6 GC/MS TUNING

Prior to any GC/MS analytical sequence, including calibration, the instrument parameters for the tune and subsequent sample analyses within that sequence must be set.

Prior to tuning/auto-tuning the mass spectrometer, the parameters may be adjusted within the specifications set by the manufacturer or the analytical method. These generally do not need any adjustment but it may be required based on the current instrument performance. If the tune verification does not pass, it may be necessary to clean the source or perform additional maintenance. Any maintenance is documented in the instrument maintenance logbook.

Uncontrolled Document

Table 20-1. Example: Instrumentation List

Equipment/ Instrument	Manufacturer	Model Number	Serial Number	Year put into Service	Methods Performed
Ammonia Probe	Orion	96-12		1/1/2005	SM4500 NH3 D
Auto Sampler	Varian	Archon	14635	1/1/2005	EPA 8015 (GRO)
Auto Sampler	Varian	Archon	14169	1/1/2005	
Auto Sampler	O.I. Analytical	4552	14407	1/1/2006	EPA 8260B-SIM
Auto Sampler	O.I. Analytical	4552	14417	1/1/2006	screening
Auto Sampler	Dionex	AS40	03080145		EPA 300.1
Auto Sampler	Dionex	AS 40	04110044		EPA 300.0/9056
Auto Sampler	Dionex	AS40	06110242	1/1/2002	EPA 300.0/9056
Auto Sampler	Dionex	AS40-1	98050117	10/1/2008	EPA 300.0/9056
Auto Sampler	ManTech	PC-Titrate PC1000-102	MS-9K8-210	1/1/2009	pH (Water samples only) and Conductivity
Auto Sampler	Metrohm	838	1838001005147	3/29/2010	EPA 7199/218.6
Auto Sampler	O.I. Analytical	4552	14217	1/1/2011	EPA 8021
Auto Sampler	Dionex	AS40	98050116	1/1/2007	EPA 300.1
Auto Sampler	Dionex	AS 40	04110044	6/1/2015	
Auto Sampler	Metrohm	9191C	1919002002153	10/3/2013	EPA 300.0/9056
Auto Sampler	Dionex	ICS-AS-DV	10120363	10/3/2013	EPA 7199/218.6
Auto Sampler	Metrohm	838	1838002006220	1/1/2012	EPA 332, 6860
Auto Sampler	Metrohm	838	1838002009651	1/1/2004	EPA 332, 6860
Auto Sampler	Dionex	AS40	06110242	1/1/2007	EPA 300.0/9056
Auto Sampler	Dionex	AS 40	94090145	6/1/2015	EPA 300.0/9056
Auto Sampler	Metrohm	838	1838001009124	6/1/2015	EPA 300.0/9056
Auto Sampler	Metrohm	838	1838001005147	6/1/2015	EPA 7199/218.6
Auto Sampler	Metrohm	838		6/1/2015	EPA 7199/218.6
Auto Sampler	Dionex	AS40	0411072	10/1/2008	EPA 314.0
Auto Sampler	Metrohm	858	1858002003286	5/2/2011	EPA 218.7
Auto Sampler	Dionex	068888	14071159	1/1/2015	EPA 314.1
Auto Sampler (Archon)	Varian	Archon DY505220-16	12731	1/1/2001	
Auto Sampler (Archon)	Varian	Archon	14636	1/1/2004	
Auto Sampler (Archon)	Varian	Archon	14633	1/1/2006	
Auto Sampler (Archon)	Varian	Archon	14634	1/1/2006	
Auto Sampler (Archon)	Varian	Archon	14662	1/1/2006	
Auto Sampler (Archon)	Varian	Archon	13171	1/1/2006	
Auto Sampler (Archon)	Varian	Archon	14638	1/1/2006	
Auto Sampler (Archon)	Varian	Archon	14418	1/1/2006	
Auto Sampler (Archon)	Varian	Archon	14195	1/1/2006	
Auto Sampler (Archon)	Varian	Archon	13388	1/1/2006	

Equipment/ Instrument	Manufacturer	Model Number	Serial Number	Year put into Service	Methods Performed
Auto Sampler (Archon)	Varian	Archon	14411	1/1/2006	EPA 8015
Auto Sampler (Archon)	Varian	Archon	14492	1/1/2006	
Auto Sampler (Archon)	Varian	Archon	14639	1/1/2006	
Auto Sampler (Archon)	Varian	Archon	14637	1/1/2006	
Auto Sampler (Archon)	Varian	Archon	13389	1/1/2006	
Auto Sampler (Archon)	O.I. Analytical	4552	12221	1/1/2009	EPA 524.2, EPA 524.2-SIM
Auto Sampler (Archon)	O.I. Analytical	4552	14420	1/1/2009	EPA 524.2, EPA 524.2-SIM
Auto Sampler (Archon)	EST	Archon	14653	1/1/2009	EPA 524.2, EPA 524.2-SIM
Auto Sampler (Archon)	Varian	Archon	13520	1/1/2009	EPA 524.2, EPA 524.2-SIM
Auto Sampler (DPM)	Varian	Archon	14654	1/1/2005	
Auto Sampler (DPM)	O.I. Analytical	MPM16/DPM16	H308369/89049B	1/1/1993	
Auto Sampler (DPM)	O.I. Analytical	MPM/DPM 16	91349/D12241664 6	1/1/1993	
Auto Sampler (DPM)	O.I. Analytical	MPM16/DPM16	H303322/C420411 196	1/1/1993	
Auto Sampler (DPM)	O.I. Analytical	DPM 16	B704411427	1/1/2003	
Auto Sampler (DPM)	O.I. Analytical	MPM 16		1/1/2011	Diesel
Auto Sampler for GC	Hewlett Packard	18596A	2718A09693	1/1/2005	
Auto Sampler for GC	Hewlett Packard	18596A	2718A08776	1/1/2006	
Auto Sampler for GC	Hewlett Packard	18596E	3445A17015	1/1/2006	
Auto Sampler for GC	Agilent	G2614A	US20914533	1/1/2006	
Auto Sampler for GC	Hewlett Packard	18596B	3206A27724	1/1/2006	
Auto Sampler for GC	Agilent	G2614A	CN24322262	1/1/2006	
Auto Sampler for GC	Hewlett Packard	7673B		1/1/1993	
Auto Sampler for GC	Hewlett Packard	7673B		1/1/1995	
Auto Sampler for GC	Agilent	G2614A	US12812101	1/1/2003	
Auto Sampler for GC	Agilent	G2614A	CN33826431	1/1/2005	
Auto Sampler for GC	Hewlett Packard	7673B		1/1/1993	
Auto Sampler for GC	Agilent	G2614A	CN63340749	1/1/2006	PAH low-level
Auto Sampler for GC	Hewlett Packard	18593B	3120A26939	1/1/1992	1,4-Dioxane
Auto Sampler for GC	Agilent	G2614A	CN55237971	1/1/2006	8081
Auto Sampler for	Agilent	G2614A	CN55237964	1/1/2007	

Equipment/ Instrument	Manufacturer	Model Number	Serial Number	Year put into Service	Methods Performed
GC					
Auto Sampler for GC	Agilent	G2614A	CN42629414	1/1/2006	EPA 8270/625
Auto Sampler for GC	Hewlett Packard			1/1/2008	
Auto Sampler for GC	Agilent	18596B	3202A27470	1/1/2008	
Auto Sampler for GC	Agilent	G2614A	US10510643	1/1/2009	EPA 525.2
Auto Sampler for GC	Agilent	7683	CN42729496	1/18/2013	
Auto Sampler for Hg	Perkin Elmer	AS 91	6060	1/1/1995	
Auto Sampler for ICP	Perkin Elmer	AS 93 Plus	1075	1/1/2002	
Auto Sampler for ICPMS	Perkin Elmer	CETAC	060019ASX	1/1/2001	
Auto Sampler for Mercury	Perkin Elmer	AS 90	3380	1/1/1995	
Auto Sampler for Metals	Perkin Elmer	AS 93 Plus	3023	1/1/2006	
Autoclave	Tuttnaur/Brinkman	3870E	2903420	1/1/2009	
Autoclave	Market Forge	STM-E Type C	3Y0521	1/1/2009	
Automated Extractor	Horizon Technology	SPE-DEX 4790	03-0360	1/1/2003	EPA 1664A
Automated Extractor	Horizon Technology	SPE-DEX 4790	Various	3/25/2014	525.2 (SN: 06-0726, 0729, 0730, 0728, 0731,0711)
Automated Extractor	Horizon Technology	SPE-DEX 4790	09-1208,1209,1210,1207, 06-0718,06-0727 (SPE17-22)	4/21/2014	14Diox, NDMA
Autosampler	Agilent	CETAC ASX 520	120916A520	1/1/2010	EPA 200.8 DW
Autosampler	ESI	SL 4AXF95T3	X4DXS-HS-TDP-16-120401	1/1/2010	EPA 200.8 / 6020 /6020_LL
Autosampler	Metrohm	919	1919002002190	11/5/2012	EPA 7199/218.6
Autosampler	EST	Arcon	12116	4/1/2013	EPA 8260B
Autotitration with autosampler	ManTech	Tetra Rinse/Autosampler	MS-9K9-108	1/1/2002	
Balance, Analytical	Denver	P-214	27150173	6/1/2015	
Balance, Analytical	Denver	P-214	27150174	6/1/2015	
Balance, Analytical	Denver	P-214	27150172	6/1/2015	
Balance, Analytical	Denver	P-214	26850013	1/1/2012	
Balance, Top Loader	Ohaus	C11P9	0605016JHP	1/1/2006	
Balance, Top Loader	Denver	P-602	27050794	6/1/2015	
Balance, Top Loader	Denver	P-602	27150188	6/1/2015	
Balance, Top	Denver	P-602	27150187	6/1/2015	

Equipment/ Instrument	Manufacturer	Model Number	Serial Number	Year put into Service	Methods Performed
Loader					
Balance, Top Loader	Denver	P-602	27150186	6/1/2015	
Balance, Top Loader	Denver	P-602	27150184	6/1/2015	
Balance, Top Loader	Denver	P-602	27150183	6/1/2015	
Balance, Top Loader	Denver	P-602	27150182	6/1/2015	
Balance, Top Loader	Sartorius	12000S	40040045	6/1/2015	
Block Digestor	Bioscience	163-466T		1/1/1997	EPA 410.4
Block Digestor	Bioscience	2091B1		1/1/1997	EPA 410.4
BOD Meter	Accumet	25	C0021582	1/1/2006	BOD
BOD probe	Jenco			1/1/2006	BOD
Centrifuge	Fisher Scientific	AccuSpin 300	40327924	1/1/2003	
Centrifuge	Precision	Durafuge 100	40317924	1/1/2003	
Chiller	Thermomeslab	M75	101226011	1/1/1999	
Chiller	VWR	1177PD	G42546	1/1/2004	
Chiller	VWR	1177PD	106A00879	1/1/2005	
Chiller	VWR	1173PD	106600242	1/1/2005	
Chiller for ICP	Polyscience	N0772026	G36430	1/1/2005	
Chiller for ICP	VWR	1173PD	106800421	1/1/2006	
Chiller for ICP	Polyscience	N0772026	106A00726	1/1/2006	
Chiller for ICPMS	Neslab	CFT-75	199064010	1/1/1999	
COD Reactor	Bioscience Inc.	2091B1	34613302	1/1/2006	
COD Reactor	Bioscience Inc.	163-466T	COD-T349	1/1/2006	
Compound Microscope (10x100)	VWR	BB-P/TB-P	V167531	1/1/2009	
Concentrator	O.I. Analytical	4560	N228460103	1/1/2009	EPA 8260B
Concentrator	O.I. Analytical	4560	M012460798	1/1/2009	EPA 524.2, EPA 524.2-SIM
Concentrator	O.I. Analytical	4560	D306030	1/1/2009	EPA 524.2, EPA 524.2-SIM
Concentrator	O.I. Analytical	4560	N114460213	1/1/2009	EPA 524.2, EPA 524.2-SIM
Concentrator	OI	4660	B425466658P	4/1/2013	EPA 8260B
Conductivity Detector	Dionex	CD25A	03070269	1/1/2007	EPA 300.0/9056
Conductivity Detector	Dionex	CD20	98040309	6/1/2015	EPA 300.0/9056
Conductivity Meter	VWR	21800-012	Q022545	1/1/2009	EPA 120.1, 2510B, 9050A, 2520B
Conductivity Probe	Yellow Springs	32	COD0031	1/1/2006	EPA 120.1, 2510B, 9050A, 2520B
Conductivity/TDS Probe	Corning	M90	001253	1/1/2006	EPA 360.1
Conductivity/TDS Probe	Acument	AP75	943318	1/1/2013	2510B
Cyanide Distillation	Andrew Glass Co	110-10-R	A780509	1/1/1999	

Equipment/ Instrument	Manufacturer	Model Number	Serial Number	Year put into Service	Methods Performed
Cyanide Distillation	Andrew Glass Co	110-10-R	A8X0309	1/1/1999	
Cyanide Distillation	Andrew Glass Co	110-10-R		1/1/1999	
Cyanide Distillation Unit	Andrew Glass Co	MIDI System	MCVA13908221	1/1/2006	
Cyanide Distillation Unit	Andrew Glass Co	MIDI System	33212579	1/1/2006	
Detector	Metrohm	887 UV / 800 Dosino	1887001006158	11/5/2012	EPA 7199/218.6
Digestion Unit	Lachat	BD-46	100700000985	10/10/2012	TKN/Ammonia
Dispenser with Adapter	Fisher Scientific	NA	W2838	1/1/2009	
Drying Oven	Fisher		40200001	1/1/2006	
Drying Oven	Fisher	630G	800121	1/1/2006	
Drying Oven	Scientific Products	DX-61	194002	1/1/2006	
Drying Oven	Fisher	Isotemp Standard OB602G	2032100355237	1/1/2010	TSS, VS, %Solids, %Moisture
Drying Oven	Fisher	Isotemp Standard OB702F	2153100457536	1/1/2010	TDS, TS (Water)
Drying Oven					
Drying Oven	Quincy Lab Inc	30GC	G3-008043	1/1/2006	
Drying Oven	Fisher	Isotemp Standard	613226-529	5/15/2013	TDS, TS (Water)
Drying Oven	Fisher	750F	305N0072	6/8/2015	TDS, TS (Water)
Eluent Generator	Dionex	EG50	03080261	1/1/2007	EPA 300.0/9056
Evaporator	Buchi	Q-101	1000170194	7/24/2014	3510, 3546, 3520
Flashpoint Tester	Koehler	K-162	10A/Y-2	1/1/1992	EPA 1010
Fluoride Probe	Orion	96-09	9609BN	1/1/2006	SM4500F
Gas Chromatograph	Agilent	6890N/1530N	CN10551059	1/1/2007	EPA 8081/608
Gas Chromatograph (Dual ECD)	Hewlett Packard	5890 Series II	3223A43015	1/1/2005	EPA 8081/608
Gas Chromatograph (Dual ECD)	Hewlett Packard	5890 Series II	336A51142	1/1/2005	EPA 8082/608
Gas Chromatograph (Dual ECD)	Agilent	6890N	US10215019	1/1/2002	EPA 608, 8082
Gas Chromatograph (Dual ECD)	Agilent	6890N/G1530N	US10250081	1/1/2005	EPA 8081/608
Gas Chromatograph (Dual ECD)	Agilent	6890N/G1540N	US10423015	1/1/2008	EPA 8081/608
Gas Chromatograph (Dual ECD)	Agilent	6890N/G1540N	US10423014	1/1/2008	EPA 8081/8082
Gas Chromatograph (Dual ECD)	Agilent	7890A/G3440A	CN10741034	1/1/2007	EPA 504.1

Equipment/ Instrument	Manufacturer	Model Number	Serial Number	Year put into Service	Methods Performed
Gas Chromatograph (Dual ECD)	Agilent	6890N/G1530N	US10322076	1/1/2007	EPA 8081, 8082
Gas Chromatograph (Dual ECD)	Agilent	6890N	US10212094	1/1/2009	EPA 508.1
Gas Chromatograph (Dual ECD)	Agilent	6890N	US10402034	1/1/2009	EPA 552.2, EPA 504.1
Gas Chromatograph (Dual ECD)	Agilent	6890N	US10244151	1/1/2010	EPA 505
Gas Chromatograph (Dual ECD)	Hewlett Packard	5890 Series II	3336A56851	1/1/2010	EPA 8082
Gas Chromatograph (Dual FID)	Hewlett Packard	5890 Series II	3126A36534	1/1/2005	EPA 8015 Diesel
Gas Chromatograph (Dual FID)	Agilent	6890N/G1540N	US10546009	1/1/2007	EPA 8015B Diesel
Gas Chromatograph (Dual FID)	Agilent	6890N/G1540N	US10546010	1/1/2007	EPA 8015B Diesel
Gas Chromatograph (FID)	Agilent	6890N	CN10505005	1/18/2013	EPA 8015 Diesel
Gas Chromatograph (FID/PID)	Hewlett Packard	5890 Series II	S/N3133A37156	1/1/1992	EPA 8021
Gas Chromatograph (FID/PID)	Hewlett Packard	5890A	S/N2750A15898	1/1/1997	EPA 8021
Gas Chromatograph (FID/PID)	Hewlett Packard	5890 Series II	S/N3223A2733	1/1/1993	EPA 8015
Gas Chromatograph (FID/PID)	Hewlett Packard	5890 Series II	S/N3336A60064	1/1/1993	EPA 8015
Gas Chromatograph (FID/PID)	Hewlett Packard	5890 Series II	S/N3033A33301	1/1/1998	EPA 8015
Gas Chromatograph (FID/PID)	Hewlett Packard	5890 Series II	2921A23920	1/1/2011	EPA 8015B Diesel
Gas Chromatograph (FID/PID)	Agilent	5890 Series II	S/N3133A37568	1/1/2008	EPA 8015M Methanol/Ethanol
Gas Chromatograph (FID/TCD)	Varian	CP-3800	05262	5/20/2013	RSK-175
Gas Chromatograph (FID/TCD)	Varian	CP-3800	11827	5/20/2013	EPA 25C
Gas Chromatograph/ Mass Spectrometer	Hewlett Packard	6890/5973A	US00007750/US70 810354	1/1/2000	EPA 8260B
Gas Chromatograph/ Mass Spectrometer	Hewlett Packard	6890/5973A	US00022931/US82 311546	1/1/2000	EPA 8260B

Equipment/ Instrument	Manufacturer	Model Number	Serial Number	Year put into Service	Methods Performed
Gas Chromatograph/ Mass Spectrometer	Agilent	6850/5973N	US00001207/US01 140222	1/1/2001	EPA 8260B
Gas Chromatograph/ Mass Spectrometer	Agilent	6850/5973	US00001206/US01 140215	1/1/2001	EPA 8260B
Gas Chromatograph/ Mass Spectrometer	Agilent	6850/5973N	US0001947/US103 40261	1/1/2002	EPA 8260B SIM
Gas Chromatograph/ Mass Spectrometer	Agilent	6850/5973N	US00002140/US10 440793	1/1/2002	EPA 8260B
Gas Chromatograph/ Mass Spectrometer	Agilent	6850/5973N	US00002860/US21 843317	1/1/2003	EPA 8260B
Gas Chromatograph/ Mass Spectrometer	Agilent	6890/5973	US00034262/US01 112246	1/1/2004	EPA 8260B
Gas Chromatograph/ Mass Spectrometer	Agilent	6890N/5973	CN10318006/US3 0945515	1/1/2004	EPA 8260B (screener)
Gas Chromatograph/ Mass Spectrometer	Agilent	6890N/5973	CN10318007/US3 0945517	1/1/2004	EPA 8260B SIM
Gas Chromatograph/ Mass Spectrometer	Agilent	6890N/5973	CN0523048/US43 146864	1/1/2006	EPA 8260B
Gas Chromatograph/ Mass Spectrometer	Agilent	6890N/5973	CN01521014/US4 4647184	1/1/2005	EPA 8260B
Gas Chromatograph/ Mass Spectrometer	Hewlett Packard	6890/5973A	US00020097/US72 810389	1/1/1999	EPA 8260B
Gas Chromatograph/ Mass Spectrometer	Hewlett Packard	5890Ser.II/5971	3140A39653	1/1/1993	Screening
Gas Chromatograph/ Mass Spectrometer	Agilent	6890N/5973/G2578A	US10341048/US33 210028	1/1/2005	EPA 8270/625-Low level
Gas Chromatograph/ Mass Spectrometer	Hewlett Packard	5890Ser.II/5971	3033A30488/3133 A37717	1/1/1993	1,4-Dioxane
Gas Chromatograph/ Mass Spectrometer	Agilent	6890N/5973	US10206070/US10 462145	1/1/2006	EPA 8260B (screener)
Gas Chromatograph/ Mass Spectrometer	Agilent	6890N/5973N	US10222064/US10 462085	1/1/2006	EPA 8260B

Equipment/ Instrument	Manufacturer	Model Number	Serial Number	Year put into Service	Methods Performed
Gas Chromatograph/ Mass Spectrometer	Agilent	6890N/5975B/G3171A	CN10636107/US6 2724086	1/1/2006	PAH low-level
Gas Chromatograph/ Mass Spectrometer	Agilent	6890N/5973	US00001682/US92 522712	1/1/2001	EPA 8260B
Gas Chromatograph/ Mass Spectrometer	Hewlett Packard	5890IIB/5971A	2921A24077/3188 A02848	1/1/1992	1,4-Dioxane
Gas Chromatograph/ Mass Spectrometer	Agilent	6890N/5973 Inert	CN10349032/US3 3220240	1/30/2008	EPA 625 and EPA 8270C
Gas Chromatograph/ Mass Spectrometer	Agilent	6890N/5973 inert	CN10339005/US3 5120285	1/1/2007	EPA 8260B and TPH by GCMS
Gas Chromatograph/ Mass Spectrometer	Agilent	6890N / 5973 Inert	CN10345035 / US33220184	1/1/2009	EPA 524.2, EPA 524.2-SIM
Gas Chromatograph/ Mass Spectrometer	Agilent	6890N / 5973	CN10521030 / US40620627	1/1/2009	EPA 524.2, EPA 524.2-SIM
Gas Chromatograph/ Mass Spectrometer	Agilent	6890N / 5973	CN10503040 / US10461983	1/1/2009	EPA 524.2, EPA 524.2-SIM
Gas Chromatograph/ Mass Spectrometer	Agilent	6890N / 5973	US00002015 / US10440578	1/1/2009	EPA 524.2, EPA 524.2-SIM
Gas Chromatograph/ Mass Spectrometer	Agilent	6890N/5973N	US10232062/US21 863660	1/1/2009	EPA 525.2
Gas Chromatograph/ Mass Spectrometer	Agilent	6890/G1530N	US10243060	1/1/2010	EPA 525.2
Gas Chromatograph/ Mass Spectrometer	Agilent	6890/5973	US10226108/US21 843299	1/1/2010	EPA 8270C PAH SIM
Gas Chromatograph/ Mass Spectrometer	Agilent	7890/5975	CN10752039/US8 0148288	1/1/2010	EPA 8270C
Gas Chromatograph/ Mass Spectrometer	Agilent	7890/5975	CN10824037/US8 3140433	1/1/2010	Pyrethroid by EPA 8270C
Gas Chromatograph/ Mass Spectrometer	Hewlett Packard	5890/5970	3336A60053/3307 A00396	1/1/2011	EPA 8270C Screener
Gas Chromatograph/ Mass Spectrometer	Hewlett Packard/O.I.	6890/5973	US00029799	1/1/2011	EPA 8260B

Equipment/ Instrument	Manufacturer	Model Number	Serial Number	Year put into Service	Methods Performed
GFAA	Perkin Elmer	AA600	601S3110501	9/19/2013	HML 939-M Organic Lead
Heat block (analog)	VWR	949312	110705008	1/1/2006	
Heat block (standard)	VWR	949031	4066	1/1/2006	
Hg FIAS Mercury Analyzer	Perkin Elmer	FIMS 400	4167	1/1/1995	EPA 245.1/7470/7471
Hg FIAS Mercury Analyzer	Perkin Elmer	FIMS 400	401510021001	1/1/2010	EPA 245.1/7470/7471
High volume stir plate	VWR	986920	090915011	1/1/2009	Metals Prep
High volume stir plate with heating	VWR	986663	090930001	1/1/2009	Metals Prep
Hot Block 36 Place	Environmental Express	SC154	1763CEC1138	1/1/2006	Hg digestion
Hot Block 36 Place	Environmental Express	SC154	31577	1/1/2006	Metals soil digestion
Hot Block 36 Place	Environmental Express	SC154	31576	1/1/2011	Metals soil digestion
Hot Block 36 Place	Environmental Express	SC154	8031CECW3359	5/26/2015	Metals soil digestion
Hot Block 36 Place	Environmental Express	SC154		1/1/2011	Metals soil digestion
Hot Block 54 Place	Environmental Express	SC154	3098CEC1491	1/1/2006	Metals water digestion
Hot Block 54 Place	Environmental Express	SC154	424CEC0641	1/1/2006	Hg digestion
Hot Block 54 Place	Environmental Express	SC154	4186CEC1997	1/1/2006	Metals water digestion
Hot Block 54 Place	Environmental Express	SC154	4186CEC1998	1/1/2006	Metals water digestion
Hot Block 54 Place	Environmental Express	SC154	8031CECW3355	5/26/2015	Metals soil digestion
Hotplate with Stirrer	VWR	800 Series	58849-001	1/1/2009	
HPLC (DAD)	Agilent	1100	DE14914766	1/1/2009	EPA 549.2
HPLC (DAD)	Hewlett Packard	G1316A	US54000547	1/1/2009	EPA 549.2
HPLC (FLD)	Agilent	1100	DE14903835	1/1/2009	EPA 547
HPLC (FLD)	Agilent	1100	DE14903629	1/1/2009	EPA 531.1, EPA 547
IC Pump/Lamp	Metrohm	818/1010	1818011013123/11 53001013131	3/29/2010	EPA 7199/218.6
Ice Machine	Microban	XAC830	63K0426BL075	1/1/2004	None
Incubator for BOD	Fisher	307C	00037-090-00	1/1/2002	
Incubator for BOD	VWR	2020	6003205	1/1/2002	
Incubator for Micro	Fisher Scientific			1/1/2009	

Equipment/ Instrument	Manufacturer	Model Number	Serial Number	Year put into Service	Methods Performed
Incubator for Micro (35C)	VWR	1915	800902	1/1/2009	For MTF and QC
Incubator for Micro (35C)	VWR	1915	1102003	1/1/2009	For P/A, HOC-SIM, HPC-PP, Q-Tray
Incubator for Micro (55C)	Fisher Scientific	516D	502N0034	1/1/2009	
Incubator, small				1/1/2009	
Inductively Coupled Plasma Spectrophotometer	Perkin Elmer	Optima 4300 DV	077N1100901	1/1/2002	EPA 200.7/6010B
Inductively Coupled Plasma Spectrophotometer	Perkin Elmer	Optima 5300DV	077N5112802	1/1/2006	EPA 200.7/6010B
Inductively Coupled Plasma Spectrophotometer	Perkin Elmer	Optima 8300	078N1051001	1/1/2011	EPA 200.7/6010B
Inductively Coupled Plasma Spectrophotometer/MS	Agilent	7700 series G3281A	JP09480189	1/1/2010	EPA 200.8 DW
Inductively Coupled Plasma Spectrophotometer/MS	Agilent	7700 series G3281A	JP12091608	1/1/2012	EPA 200.8 / 6020 / 6020_LL
Injector	Hewlett Packard	7673	NA	1/1/2011	Diesel
Injector for GC	Agilent	7673 series (18593B)	3120A27934	1/1/2008	
Injector Tower	Hewlett Packard	18593B	3120A27153	1/1/2006	
Injector Tower	Agilent	G2913A	CN55130059	1/1/2007	
Injector Tower	Agilent	7683	CN54859595/US91907180	1/18/2013	8015B-DRO
Integrated Sample Introduction System (ISIS)	Agilent	G4911A	JP09300004	1/1/2010	EPA 200.8 DW
Ion Chromatograph	Dionex	ICS-1000	03110585	1/1/2002	EPA 300.0/9056
Ion Chromatograph	Dionex	LC25	02050420	1/1/2005	EPA 300.1
Ion Chromatograph	Dionex	LC 30	97040546	1/1/2002	EPA 300.0/9056
Ion Chromatograph	Dionex	LC20	94010215	9/1/2006	EPA 300.0/9056
Ion Chromatograph	Dionex	LC25	03080195	1/1/2007	EPA 300.0/9056
Ion Chromatograph	Metrohm	861/838	1861004003159/1838001009124	3/29/2010	EPA 300.0/9056
Ion Chromatograph	Metrohm	881	1881000007119	3/29/2010	EPA 7199/218.6
Ion Chromatograph	Metrohm	881	1881000123101	11/5/2012	EPA 7199/218.6
Ion Chromatograph	Metrohm	861	1861002008105	10/3/2013	EPA 300.0
Ion Chromatograph	Dionex	ICS-2000-TC	08010736	10/3/2013	EPA 7199 / 218.6
Ion	Dionex	ICS-2000	04100753	10/28/2013	314.0

Equipment/ Instrument	Manufacturer	Model Number	Serial Number	Year put into Service	Methods Performed
Chromatograph					
Ion Chromatograph	Dionex	ICS-2100	11021089	1/24/2014	314.0
Ion Chromatograph	Dionex	ICS-2100	13071408	1/1/2015	314.0
Ion Chromatograph (with UV/VIS detector)	Metrohm	881/887	15105/03140	5/2/2011	EPA 218.7
Ion Chromatograph/ Mass Spectrometer	Metrohm (IC) / Agilent (MS)	LC30-1/LC110/IC800	1820023004102/U S34800214	1/1/2005	EPA 332, 6860
Ion Chromatograph/ Mass Spectrometer	Metrohm/Agilent	G1956B	US34800214	1/1/2004	Perchlorate EPA 332.0, EPA 6860
Ion Chromatograph/ Mass Spectrometer	Metrohm (IC) / Agilent (MS)	761-SL / G1956B	1830002008183 / US42500764	1/1/2012	EPA 332, 6860
ISCO Sampler	GLS Teledyne	60-2954-00		1/1/2006	Field Sampling
ISCO Sampler	GLS Teledyne	60-2954-00		1/1/2006	Field Sampling
ISCO Sampler	GLS Teledyne	60-2954-00		1/1/2006	Field Sampling
ISCO Sampler	GLS Teledyne	60-2954-00		1/1/2006	Field Sampling
ISCO Sampler	GLS Teledyne	60-2954-00		1/1/2006	Field Sampling
ISCO Sampler	GLS Teledyne	60-2954-00		1/1/2006	Field Sampling
ISCO Sampler	603714001	3710		1/1/2006	Field Sampling
ISCO Sampler	603714001	3710		1/1/2006	Field Sampling
Kiln	Cress Electric Klin	E2418	0503DD	1/1/2005	
Kone Lab	Lab Medics	Aquakem 250	E2319629	1/1/2004	
Lachat auto-analyzer	Lachat	QuickChem 8500 series 2	140100001626	1/28/2014	Ammonia, Cyanide, Phenol, Nitrate-Nitrite
Lachat auto-dilutor	Lachat	PDS-200	14010000704	1/28/2014	Ammonia, Cyanide, Phenol, Nitrate-Nitrite
Lachat auto-sampler	Lachat	ASX-520 Series	14100002230	1/28/2014	Ammonia, Cyanide, Phenol, Nitrate-Nitrite
Lachat in-line sample prep (ammonia)	Lachat	A30113	140100002217	1/28/2014	Ammonia, Cyanide, Phenol, Nitrate-Nitrite
Lachat in-line sample prep (cyanide)	Lachat	A303113	140100002218	1/28/2014	Ammonia, Cyanide, Phenol, Nitrate-Nitrite
Mercury Analyzer	Leeman	Hydra AF Gold+	AFG+ 3010	1/1/2010	EPA 245.7
Microwave	CEM	MARS5	MD3165	1/1/2010	EPA 3546
Microwave	CEM	MARS XPRESS	MD8441	1/1/2010	EPA 3546

Equipment/ Instrument	Manufacturer	Model Number	Serial Number	Year put into Service	Methods Performed
Muffle Furnace	Fisher	Isotemp 630G	801N0001	1/1/2006	
mV Meter	Denver Instrument	Basic	13036	1/1/2006	pH for BOD
mV Meter	Accumet	Model 25	C0021582	1/1/2006	BOD
Orbital Shaker	Heathrow Scientific	EF9796	ADA00973	12/22/2014	
Oven	Fisher Scientific	Isotemp Oven		1/1/2012	
pH Meter	Mettler Toledo	SevenEasy	1227116127	1/1/2006	Redox
pH Meter	Fisher Scientific	Accumet AB15 Plus	AB92334024	1/1/2010	Microbiology
pH Meter	Thermo Scientific	Orion 3Star 1219000	A11235	7/1/2010	Field Sampling
pH Meter	Hach	Sens10N™+pH1	321113	7/15/2013	Field Sampling
pH Meter	Beckman	Φ 255	2227	1/1/2006	Field Sampling
pH Meter	Denver Instruments	UB-10	UB10107126	1/2/2008	pH for alkalinity
pH Meter	Accumet	AB15	AB92338994	1/1/2006	Fluoride
pH Meter	Thermo	OrionStarA111	J00943	1/1/2006	pH for TCLP
pH Meter	Mettler Toledo	SevenEasy	1231105377	1/1/2006	pH
pH Meter	Thermo Scientific	Orion Star AIII	J0791	4/7/2014	pH
pH Meter	Sartorius	Basic Meter PB-11	31350114	10/14/2014	pH
pH probe	Thermo	9107BNMD	PV1-30483	7/1/2011	Field Sampling
pH probe	Hach	50.50TpHelectrode	LZW5050T.97.002	7/15/2013	Field Sampling
Pipet-Aid Pipettor	Drummond	Pipet-Aid XP	68640	1/1/2009	
Plastic Shredder	Prodeva	315-S	11090	1/1/2001	None
Post-Column Derivatizer	Pickering	1102202	PCX5200	1/1/2009	EPA 547
Post-Column Derivatizer	Pickering	Pinnacle PCX	1007302	1/1/2009	EPA 531.1, EPA 547
Pump	Metrohm	818	1818011014106	11/5/2012	EPA 7199/218.6
Pump	Dionex	IC25	01030292	1/1/2007	EPA 300.0/9056
Pump	Dionex	IS20	98060397	6/1/2015	EPA 300.0/9056
Pump	Dionex	ICS-2000-DP	09080225	10/3/2013	EPA 7199/218.6
Purge & Trap Concentrator	O.I. Analytical	4460A	12584-1027	1/1/1992	
Purge & Trap Concentrator	O.I. Analytical	4460A	123811014	1/1/1993	
Purge & Trap Concentrator	O.I. Analytical	4460A	108061863	1/1/1997	
Purge & Trap Concentrator	O.I. Analytical	4560	N111460835	1/1/1993	
Purge & Trap Concentrator	O.I. Analytical	4560	A229100	1/1/1992	
Purge & Trap Concentrator	O.I. Analytical	4460A	M214048	1/1/1993	
Purge & Trap Concentrator	O.I. Analytical	4560	N222460463	1/1/1998	
Purge & Trap Concentrator	O.I. Analytical	4560	K728460713	1/1/1999	
Purge & Trap Concentrator	O.I. Analytical	4560	J513460474	1/1/1997	

Equipment/ Instrument	Manufacturer	Model Number	Serial Number	Year put into Service	Methods Performed
Purge & Trap Concentrator	O.I. Analytical	4560	K841460440	1/1/2001	
Purge & Trap Concentrator	O.I. Analytical	4560	M946460833	1/1/2001	
Purge & Trap Concentrator	O.I. Analytical	4560	K82946045	1/1/2002	
Purge & Trap Concentrator	O.I. Analytical	4560	J431460443	1/1/2002	
Purge & Trap Concentrator	O.I. Analytical	4560	N228460103	1/1/2003	
Purge & Trap Concentrator	O.I. Analytical	4560	K907460143	1/1/2004	
Purge & Trap Concentrator	O.I. Analytical	4560	J624460525	1/1/2004	
Purge & Trap Concentrator	O.I. Analytical	4560	J513460468	1/1/2004	
Purge & Trap Concentrator	O.I. Analytical	4560	A229108	1/1/2006	
Purge & Trap Concentrator	O.I. Analytical	4560	L924460239	1/1/2005	
Purge & Trap Concentrator	O.I. Analytical	4560	C301264	1/1/1997	
Purge & Trap Concentrator	O.I. Analytical	4560	K810460876	1/1/1999	
Purge & Trap Concentrator	O.I. Analytical	4560	H351460339	1/1/2006	
Purge & Trap Concentrator	O.I. Analytical	4560	E324406	1/1/2006	
Purge & Trap Concentrator	O.I. Analytical	4560	L930460194	1/1/2000	
Purge & Trap Concentrator	O.I. Analytical	4560	E324406	1/1/2001	
Quanti Tray Sealer	Idexx	89-10894-04	6345	1/1/2009	
Quebec Colony Counter	Reichert	3325	02561-1009	1/1/2009	
Rapid Vap	Labconco	Rapidvap	705319	1/1/1999	
Rapid Vap	Labconco	Rapidvap	21098412F	1/1/2002	
Rapid Vap	Labconco	Rapidvap	010194458E	1/1/2002	
Rapid Vap	Labconco	Rapidvap	040824527F	1/1/2006	
Rapid Vap	Labconco	Rapidvap	100931761	1/1/2010	
Rapid Vap	Labconco	Rapidvap	266894	1/1/2010	Drinking Water
Rapid Vap	Labconco	Rapidvap	990391288C	1/1/2010	Drinking Water
Reciprocal Shaker	Lab-Line	3506	0590-1753	1/1/2012	
Rotator, 10-place	Environmental Express	5K939C	V00212AY10	1/1/2006	
Rotator, 12-place	Environmental Express		GFMG060J1	1/1/2002	
Rotator, 20-place	Ed W. Smith Machine Works	NA	NA	1/1/1999	
Rotator, 8-place	Environmental Express	F057	E512-TMP	1/1/2002	
Rotator/ Shaker	Thermolyne "Big Bill"	M49235	...49...	1/1/2012	

Equipment/ Instrument	Manufacturer	Model Number	Serial Number	Year put into Service	Methods Performed
SPE	Horizon	SPE-3000XL PLUS	1006	1/1/2008	EPA 1664A HEM & SGT-HEM
SPE-Controller	Horizon Technology	SPE-DEX	020357	1/1/2003	EPA 1664A
SpeedVapII	Horizon	SpeedVap 9000	00-248	1/1/2005	EPA 1664 and EPA 413.1
SpeedVapII	Horizon	SpeedVap 9000	99-216	1/1/2007	EPA 1664 and EPA 413.1
SpeedVapIII	Horizon	SpeedVap III	04-2019	1/1/2007	EPA 1664 and EPA 413.1
SpeedVapIII	Horizon	SpeedVap 9000	04-2032	1/1/2007	EPA 1664 and EPA 413.1
Stereo Microscope with Fluorescence source	VWR	HF-745	V167693	1/1/2009	
Thermolyne 48000 Furnace	Thermolyne	F48015	1205001206827	1/1/2015	TVS
TOC Analyzer	Shimadzu	5000A	33N01036A	1/1/1998	EPA 415.1, SW9060, SM5310B
TOC Analyzer	Tekmar-Dohrmann	Phoenix 8000	US02106006	1/1/2002	SM5310C
TOC Analyzer	O.I. Analytical	Solids	C905776109	1/1/2009	EPA 415.1, SW9060 (Soil Only)
TOC Analyzer	Shimadzu	VCSH	HS1104535257CS	1/1/2011	SW9060, SM5310B
TOC Analyzer	Shimadzu	ASI-V	H52104502349SA	1/1/2011	SW9060, SM5310B
TOC Analyzer	O.I. Analytical	Solids	C532776280	1/6/2015	SW9060 (Soil Only)
TOC Autosampler	Shimadzu	ASI-500A-H-P	33212579	1/1/1998	TOC
TOC Autosampler	Tekmar-Dohrmann	223	CAN 001 768 396	1/1/2002	SM5310C
Tower	Agilent	G2613A	CN22425747	1/1/2009	EPA 525.2
Tower	Hewlett Packard	18593B	3239A32438	1/1/2009	
Turbidity Meter	Orbeco-Hellige	965-10A	4389	1/1/2007	Turbidity
Turbidity Meter	Orbeco-Hellige	965-10A	5187	1/1/2009	EPA 180.1Turbidity
Turbo Vap II	Zymark	TurboVap II	TV0239N11193	1/1/2002	
TurboVap II	Zymark	TurboVap II	04427	1/1/2008	1664, 418.1/413.2, 3510C
TurboVap II	Zymark	TurboVap II	04429	1/1/2008	1664, 418.1/413.2, 3510C
TurboVap II	Zymark	TurboVap II	TV0635N13234	6/1/2015	1664, 418.1/413.2, 3510C, CALuft
TurboVap II	Zymark	TurboVap II	TV0634N13224	6/1/2015	1664, 418.1/413.2, 3510C, CALuft
TurboVap II	Zymark	TurboVap II	TV0635N13233	6/1/2015	1664, 418.1/413.2, 3510C, CALuft

Equipment/ Instrument	Manufacturer	Model Number	Serial Number	Year put into Service	Methods Performed
TurboVap II	Zymark	46368/A	TV9424N4100	12/8/2014	1664, 3510C
UV Lamp (big)	UVP	C-65	95025701	1/1/2009	
UV Lamp (small)	UVP	CC-10	95007201	1/1/2009	
UV Viewing Cabinet (big)	UVP	UVLMS	95025201	1/1/2009	
UV Viewing Cabinet (small)	UVP	UVGL58	9500705	1/1/2009	
UV/VIS Detector	Dionex	ICS-VWD	08040042	10/3/2013	EPA 7199/218.6
UV/VS Spectrometer	Thermo Spectronic	Genesys20	3SGG06B0117	1/1/2002	SM4500-CN
UV/VS Spectrometer	Thermo Spectronic	Genesys20	3SGQ068003	1/1/2012	SM4500-CN
UV/VS Spectrometer	Thermo Spectronic	Genesys20	3SGS260009	10/6/2014	SM4500CN, SM5520, SM5220
Water Bath	Precision	185	N/A	1/1/2010	Odor
Water Bath	Fisher	IsoTemp 228	1608090911951	1/1/2009	Odor
Water Bath, circulating (44.5C)	Precision	2866	205648-295	1/1/2010	For MTFs
Water Bath, circulating (44.5C)	Precision	2862	200035	1/1/2009	For P/As

Table 20-2. Example: Schedule of Routine Maintenance

Instrument	Procedure	Frequency
Graphite Furnace (GFAA)	Inspect graphite tube Inspect contact rings Clean windows Align lamp	Daily Daily Daily Daily
Mercury Analyzer	Check tubing for wear Fill rinse tank with 10% HCl Fill reductant bottle with 10% Stannous Chloride	Daily Daily Daily
ICP	Check/replace pump tubing Check liquid argon supply Check fluid level in waste container Check/clean/replace filters Check torch Clean torch and nebulizer	Daily/as needed Daily Daily Daily/as needed Daily As needed
ICP/ MS	Check/replace pump tubing Inspect torch and injector cones Clean/replace ion lens Replace torch o-rings Check/replace gas filters Change rough pump oil Check chiller water level	Daily/as needed Daily As needed As needed As needed As needed Weekly
UV-Vis Spectrophotometer	Clean sample holder Precision check/alignment of flow cell Wavelength verification check	As required As required Semi-annually
Gas Chromatograph/Mass Spectrometer (GCMS)	Bake trap (VOC only) Clean source Check/change vacuum pump oil Clean injectors; replace liners (SVOC only) Replace column Clean cooling fan grills	Daily As needed Annually, as needed Daily As needed Semiannually
Gas Chromatograph (GC)	Change septum Check gases Replace or clip column Clean injectors; replace liners Clean cooling fan grills	As needed Daily As needed As needed Semiannually
Electron Capture Detector (ECD)	Detector wipe test (Ni-63) Detector cleaning	Semi-annually Sent out, as needed
Flame Ionization Detector (FID)	Detector cleaning	As required
Flame Photoionization Detector (FPD)	Clean and/or Replace Lamp	As required
Photoionization Detector (PID)	Change O-rings Clean lamp window	As required As required

Instrument	Procedure	Frequency
Ion Chromatograph (IC)	Replace column disks Change guard columns Check pump seals Replace tubing Replace suppressor Check fluid level in waste container Clean cooling fan grills	As required As required As required As required As required Daily Semiannually
Balances	Class "S" traceable weight check Clean pan and check if level Outside calibration service	Daily, when used Daily At least Annually
Conductivity Meter	0.01M KCl calibration Conductivity cell cleaning	Daily As required
Turbidimeter	Check light bulb Clean sample holder	Daily, when used Daily, when used
Deionized/Distilled Water	Daily conductivity check Check deionizer light Monitor for VOA's System cleaning Replace cartridge & large mixed bed resins	Daily Daily As required As required As required
Drying Ovens	Temperature monitoring Temperature adjustments	When used As required
Refrigerators/ Freezers	Temperature monitoring Temperature adjustment Defrosting/cleaning	Daily As required As required
pH/Specific Ion Meter	Calibration/check slope Clean electrode	Daily As required
BOD Incubator	Temperature monitoring Incubator cleaning	Daily As required
Centrifuge	Check brushes and bearings	As needed
Water baths	Temperature monitoring Water replaced	Daily Monthly or as needed
Automated Solvent Extraction units (ASE)	Check solvent reservoirs Check tubing	Daily Daily
TurboVaps	Check gas lines Check water level Calibrate temperature	Daily Daily Annually
Total Organic Carbon Analyzer	Check gas flow Check reagent reservoir levels Replace o-rings Check autosampler needle Replace scrubbers Replace catalyst	Daily Daily As needed Daily Annually As needed
Automated Analyzer	Clean sampler Check all tubing Clean detector Clean optics and cells	Daily Daily Daily Daily

Instrument	Procedure	Frequency
Infrared Spectrophotometer (IR)	Clean lens/optimize	As needed
Flashpoint Apparatus	Check gas line for leaks Check stirrer speed	Daily Annually
Rotators	Verify rotation speed	Annually

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SECTION 21

MEASUREMENT TRACEABILITY

21.1 OVERVIEW

Traceability of measurements shall be assured using a system of documentation, calibration, and analysis of reference standards. Laboratory equipment that are peripheral to analysis and whose calibration is not necessarily documented in a test method analysis or by analysis of a reference standard shall be subject to ongoing certifications of accuracy. At a minimum, these must include procedures for checking specifications of ancillary equipment: balances, thermometers, and Deionized and Reverse Osmosis water systems, automatic pipettes and other volumetric measuring devices. (Refer to Section 20.3.) With the exception of Class A Glassware and Glass microliter syringes, monthly accuracy checks are performed for all mechanical volumetric devices. Microsyringes are verified at least semi-annually or disposed after 6 months of use. Wherever possible, subsidiary or peripheral equipment is checked against standard equipment or standards that are traceable to national or international standards. Class A Glassware and Glass microliter syringes should be routinely inspected for chips, acid etching, or deformity (e.g., bent needle). If the Class A glassware or syringe is suspect, the accuracy of the glassware will be assessed prior to use.

21.2 NIST-TRACEABLE WEIGHTS AND THERMOMETERS

Reference standards of measurement shall be used for calibration only and for no other purpose, unless it can be shown that their performance as reference standards would not be invalidated.

For NIST-traceable weights and thermometers, the laboratory requires that all calibrations be conducted by a calibration laboratory accredited by A2LA, NVLAP, or another accreditation organization that is a signatory to an MRA of one or more of the following cooperations: ILAC or APLAC. A calibration certificate and scope of accreditation is kept on file at the laboratory. Refer to Section 20 for calibration of weights and thermometers.

21.3 REFERENCE STANDARDS / MATERIALS

Reference standards/materials, where commercially available, are traceable to certified reference materials. Commercially prepared reference standards, to the extent available, are purchased from vendors that are accredited to ISO Guide 34 and ISO/IEC Guide 17025. All reference standards from commercial vendors shall be accompanied with a certificate that includes at least the following information:

- Manufacturer
- Analytes or parameters calibrated
- Identification or lot number
- Calibration method

- Concentration with associated uncertainties
- Purity

If a standard cannot be purchased from a vendor that supplies a Certificate of Analysis, the purity of the standard is documented by analysis. The receipt of all reference standards must be documented. Reference standards are labeled with a unique Standard Identification Number and expiration date. All documentation received with the reference standard is retained as a QC record and references the Standard Identification Number.

All reference, primary, and working standards/materials, whether commercially purchased or laboratory-prepared, must be checked regularly to ensure that the variability of the standard or material from the 'true' value does not exceed method requirements. The accuracy of calibration standards is checked by comparison with a standard from a second source. In cases where a second standard manufacturer is not available, a vendor-certified different lot is acceptable for use as a second source. The appropriate QC criteria for specific standards are defined in laboratory SOPs. In most cases, the analysis of an ICV or LCS, where there is no sample preparation, is used as the second source confirmation. These checks are generally performed as an integral part of the analysis method (e.g., calibration checks, LCS).

All standards and reference materials must be stored and handled according to manufacturer's recommendations in order to prevent contamination or deterioration. Refer to Corporate EHS Document No. CW-E-M-001 or laboratory SOPs. For safety requirements, refer to method SOPs and the laboratory EHS Manual.

Standards and reference materials shall not be used after their expiration dates.

21.4 DOCUMENTATION AND LABELING OF STANDARDS, REAGENTS, AND REFERENCE MATERIALS

Reagents must be at a minimum the purity required in the test method. The date of reagent receipt and the expiration date are documented. The lots for most of the common solvents and acids are tested for acceptability prior to company-wide purchase. Refer to Corporate Quality Document No. CA-Q-S-001.

All manufacturer- or vendor-supplied Certificate of Analysis or Purity must be retained, stored appropriately, and readily available for use and inspection. These records are maintained in the LIMS or in binders or other organized files stored within each department. Records must be kept of the date of receipt and date of expiration of standards, reagents, and reference materials. In addition, records of preparation of laboratory standards, reagents, and reference materials must be retained, stored appropriately, and be readily available for use and inspection. For detailed information on documentation and labeling, please refer to laboratory SOP No. IR-QA-STDCNTRL.

Commercial materials purchased for preparation of calibration solutions, spike solutions, etc., are usually accompanied with an assay certificate or the purity is noted on the label. If the assay purity is 96% or better, the weight provided by the vendor may be used without correction. If the assay purity is less than 96%, a correction will be made to

concentrations applied to solutions prepared from the stock commercial material. Blended gas standard cylinders use a nominal concentration if the certified value is within +/- 15%, otherwise the certified value is used for the canister concentration.

21.4.1 All standards, reagents, and reference materials must be labeled in an unambiguous manner. Standards are logged into the LIMS and are assigned a unique identification number. The following information is typically recorded in the electronic database within the LIMS:

- Standard ID
- Description of standard
- Department
- Preparer's name
- Final volume and number of vials prepared
- Solvent type and lot number
- Preparation date
- Expiration date
- Standard source type (stock or daughter)
- Standard type (spike, surrogate, other)
- Parent standard ID (if applicable)
- Parent standard analyte concentration (if applicable)
- Parent standard amount used (if applicable)
- Component analytes
- Final concentration of each analyte
- Comments (e.g., recommended storage conditions)

Records are maintained electronically for standard and reference material preparation. These records show the traceability to purchased stocks or neat compounds. These records also include method of preparation, date of preparation, expiration date, and preparer's name or initials. Preparation procedures are provided in the method SOPs.

21.4.2 All standards, reagents, and reference materials must be labeled with a minimum of the following information:

- Expiration date (include prep date for reagents)
- Standard ID (specified from LIMS)
- Special Health/Safety warnings, if applicable

Records must also be maintained of the date of receipt for commercially purchased items or date of preparation for laboratory prepared items.

Special Health/Safety warnings must also be available to the analyst. This information is maintained in the LIMS.

21.4.3 In addition, the following information may be helpful:

- Date opened (for multi-use containers, if applicable)
- Description of standard (if prepared at the laboratory)
- Recommended storage conditions
- Expiration date (include prep date for reagents)
- Concentration (if applicable)
- Initials of analyst preparing standard or opening container

All containers of prepared reagents must include an expiration date and an ID number to trace back to preparation.

Procedures for preparation of reagents can be found in the method SOPs.

Standard ID numbers must be traceable through associated logbooks, worksheets, and preparation/analytical batch records.

All reagents and standards must be stored in accordance to the following priority: 1) with the manufacturer's recommendations; 2) with requirements in the specific analytical methods as specified in the laboratory SOP.

SECTION 22

SAMPLING

22.1 OVERVIEW

The laboratory provides sampling services. Sampling procedures are described in laboratory SOP No. IR-SC-FIELD. The laboratory also supplies samplers with the necessary coolers, sample containers, sample labels, custody seals, COC forms, and packing materials required to properly pack and ship samples to the laboratory.

22.2 SAMPLING CONTAINERS

The laboratory offers clean sampling containers for use by clients. These containers are either obtained from reputable container manufacturers and meet EPA specifications as required. Certificates of cleanliness for bottles and preservatives are provided by the supplier and are maintained at the laboratory. Alternatively, the certificates may be maintained by the supplier and available to the laboratory on-line.

22.2.1 Preservatives

Upon request, preservatives are provided to the client in pre-cleaned sampling containers. In some cases, containers may be purchased pre-preserved from the container supplier. Whether prepared by the laboratory or bought pre-preserved, the grades of the preservatives are, at a minimum:

- Hydrochloric Acid – Reagent ACS (Certified VOA Free) or equivalent
- Methanol – Purge and Trap grade
- Nitric Acid – Intra-Analyzed or equivalent
- Sodium Bisulfate – ACS Grade or equivalent
- Sodium Hydroxide – Intra-Analyzed or equivalent
- Sulfuric Acid – Intra-Analyzed or equivalent
- Sodium Thiosulfate – ACS Grade or equivalent

22.3 DEFINITION OF HOLDING TIME

The date and time of sampling documented on the COC form establishes the day and time zero. As a general rule, when the maximum allowable holding time is expressed in “days” (e.g., 14 days, 28 days), the holding time is based on calendar day measured. Holding time expressed in “hours” (e.g., 6 hours, 24 hours, etc.) is measured from date and time zero. Holding times for analysis include any necessary re-analysis.

22.4 SAMPLING CONTAINERS, PRESERVATION REQUIREMENTS, HOLDING TIMES

The preservation and holding time criteria specified in the laboratory SOPs are derived from the source documents for the methods. If method-required holding time or preservation requirements are not met, the results will be qualified using a flag, footnote, or case narrative. As soon as possible or “ASAP” is an EPA designation for tests for

which rapid analysis is advised, but for which neither EPA nor the laboratory have a basis for a holding time.

22.5 SAMPLE ALIQUOTS / SUB-SAMPLING

Taking a representative sub-sample from a container is necessary to ensure that the analytical results are representative of the sample collected in the field. The size of the sample container, the quantity of sample fitted within the container, and the homogeneity of the sample need consideration when sub-sampling for sample preparation. It is the laboratory's responsibility to take a representative sub-sample or aliquot of the sample provided for analysis.

Analysts should handle each sample as if it is potentially dangerous. At a minimum, safety glasses, gloves, and lab coats must be worn when preparing aliquots for analysis.

Guidelines on taking sample aliquots and sub-sampling are defined in laboratory SOP No. IR-QA-SUBSAMP.

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SECTION 23

HANDLING OF SAMPLES

23.1 **CHAIN OF CUSTODY**

Sample management procedures at the laboratory ensure that sample integrity and custody are maintained and documented from sampling/receipt through disposal. The COC form is the written documented history of any sample and is initiated when bottles are sent to the field, or at the time of sampling. This form is completed by the sampling personnel and accompanies the samples to the laboratory, where it is received and stored under the laboratory's custody. The purpose of the COC form is to provide a legal written record of the handling of samples from the time of collection until they are received at the laboratory. It also serves as the primary written request for analyses from the client to the laboratory. The COC form acts as a purchase order for analytical services when no other contractual agreement is in effect. An example of a COC form may be found in Figure 23-1.

23.1.1 **Field Documentation**

The information the sampler needs to provide, at the time of sampling, on the container label are:

- Sample identification
- Date and time of sampling
- Preservative

During the sampling process, the COC form is completed and must be legible. This form includes information such as:

- Client name, address, phone number, and fax number (if available)
- Project name and/or number
- Sample identification
- Date, time, and location of sampling
- Sample collector name
- Matrix description
- Container description
- Total number of each type of container
- Preservatives used
- Analysis requested
- Requested TAT
- Any special instructions
- Purchase Order number or billing information (e.g., quote number), if

available

- Date and time that each person received or relinquished the sample(s), including their signed name.

When the sampling personnel delivers the samples directly to TestAmerica personnel, the samples are stored in a cooler with ice, as applicable, and remain solely in the possession of the client's field technician (or sampler) until the samples are delivered to the laboratory personnel. The sample collector must assure that each container is in his/her physical possession or in his/her view at all times, or stored in such a place and manner to preclude tampering. The field technician relinquishes the samples in writing on the COC form to the Sample Control personnel at the laboratory or to a TestAmerica courier.

When the sampling personnel delivers the samples through a common carrier (e.g., FedEx and UPS), the COC relinquished date/time is completed by the field personnel and samples are released to the carrier. Samples are only considered to be received by the laboratory when personnel at the fixed laboratory facility have physical contact with the samples.

Note: Independent couriers like FedEx and UPS are not required to sign the COC form. The COC is usually kept in the sealed sample cooler. The receipt from the courier is stored in login by date; it lists all receipts each date.

23.1.2 Legal / Evidentiary COC

If samples are identified for legal/evidentiary purposes on the COC, Sample Control personnel, at login, will complete the custody seal, retain the shipping record with the COC, and initiate an internal COC for laboratory use by analysts and a sample disposal record.

23.2 SAMPLE RECEIPT

Samples are received at the laboratory by designated sample receiving personnel and a unique laboratory project identification number is assigned. Each sample container shall be assigned a unique sample identification number that is cross-referenced to the client identification number such that traceability of test samples is unambiguous and documented. Each sample container is affixed with a durable sample identification label. Sample acceptance, receipt, tracking, and storage procedures are summarized in the following sections and are discussed in detail in laboratory SOP No. IR-SC-LOGIN.

23.2.1 Laboratory Receipt

When samples arrive at the laboratory, sample receiving personnel inspect the coolers and samples. The integrity of each sample must be determined by comparing sample labels or tags with the COC and by visual checks of the container for possible damage. Any nonconformance, irregularity, or compromised sample receipt must be documented in the NCM program in

the LIMS and brought to the immediate attention of the client. The COC, shipping documents, documentation of any nonconformance, irregularity, or compromised sample receipt, record of client contact, and resulting instructions become part of the project record.

23.2.1.1 Unique Sample Identification

All samples that are processed through the laboratory receive a unique sample identification to ensure that there can be no confusion regarding the identity of such samples at any time. This system includes identification for all samples, subsamples, and subsequent extracts and/or digestates.

The laboratory assigns a unique identification (i.e., Sample ID) code to each sample container received at the laboratory. This primary ID is made up of the following information (consisting of four components):



The above example is a login at TestAmerica Irvine Laboratory (Location 440). Login ID is 12345 (unique to a particular client/job occurrence). The container code indicates it is the first container (“A”) of Sample #4.

If the primary container goes through a prep step that creates a “new” container, then the new container is considered secondary and gets another ID. An example of this being a client sample in a 1-Liter amber bottle is sent through a Liquid/Liquid Extraction and an extraction vial is created from this step. The vial would be a SECONDARY container. The secondary ID has 5 components.

Example: 440-12345-A-4-A ← **Secondary Container Occurrence**

Example 440-12345-A-4-A would indicate the PRIMARY container listed above that went through a step that created the 1st occurrence of a Secondary container.

With this system, a client sample can be tracked throughout the laboratory in every step from receipt to disposal.

23.3 SAMPLE ACCEPTANCE POLICY

The laboratory has a written Sample Acceptance Policy (Figure 23-2) that clearly outlines the circumstances under which samples shall be accepted or rejected. These include:

- COC filled out completely
- Samples properly labeled
- Proper sample containers with adequate volume for the analysis and necessary QC
- Samples preserved according to the requirements of the requested analytical method
- Sample holding time adhered to

The PM will be notified if any sample is received in damaged condition.

Data from samples that do not meet these criteria are flagged and the nature of the variation from policy is defined. Sample Control personnel shall include this copy with the sample container shipment to the client or the PM may e-mail the client a copy during project setup (prior to shipment of samples to the laboratory).

23.3.1 After inspecting the samples, the sample receiving personnel sign and date the COC form, make any necessary notes of the samples' conditions and store them in appropriate refrigerators or storage locations.

23.3.2 Any deviations from these checks that question the suitability of the sample for analysis, or incomplete documentation as to the tests required will be resolved by consultation with the client. If the sample acceptance policy criteria are not met, the laboratory shall either:

- Retain all correspondence and/or records of communications with the client regarding the disposition of rejected samples, or
- Fully document any decision to proceed with sample analysis that does not meet sample acceptance criteria.

Once sample acceptance is verified, the samples are logged into the LIMS according to laboratory SOP No. IR-SC-LOGIN.

23.4 SAMPLE STORAGE

In order to avoid deterioration, contamination, or damage to a sample during storage and handling, from the time of receipt until all analyses are complete, samples are stored in refrigerators or freezers suitable for the sample matrix (for analyses requiring thermal preservation) or in protected locations like secured shelvings for acid-preserved water containers requiring only metals analysis. In addition, samples to be analyzed for volatile organic parameters are stored in separate refrigerators designated for volatile organic parameters only. Samples are never to be stored with reagents, standards, or materials that may create contamination.

To ensure the integrity of the samples during storage, refrigerator blanks are maintained in the volatile sample refrigerators and analyzed every two weeks.

Analysts and technicians retrieve the sample container allocated to their analysis from the designated refrigerator, analyze the sample, and return the remaining sample or empty container to the refrigerator from which it originally came. All unused portions of samples, including empty sample containers, are returned to the Sample Control area. All samples are kept in the refrigerators for two to four weeks after analysis, which meets or exceeds most sample holding times. After two to four weeks, the samples are moved to dry room temperature Sample Archive area, where they are stored for an additional two to four weeks before they are disposed. This four to eight week holding period allows samples to be checked if a discrepancy or question arises. Special arrangements may be made to store samples for longer periods of time. This extended holding period allows additional metal analyses to be performed on the archived sample and assists clients in dealing with legal matters or regulatory issues.

Access to the laboratory is controlled such that sample storage need not be locked at all times, unless a project specifically demands it. Samples are accessible to laboratory personnel only. Visitors to the laboratory are prohibited from entering the refrigerator and laboratory areas, unless accompanied by an employee of TestAmerica.

23.5 HAZARDOUS SAMPLES AND FOREIGN SOILS

To minimize exposure to personnel and to avoid potential accidents, hazardous and foreign soil samples are stored in an isolated area designated for hazardous waste only. For any sample that is known to be hazardous at the time of receipt, the Sample Control personnel handling wastes clearly marks the sample with a red stamp, stamped on the sample label reading "HAZARDOUS" or "FOREIGN SOIL," and places it in a colored and/or marked bag for easy identification. The Sample Control personnel handling wastes must completely fill out the Hazardous & Quarantine/Foreign Soil – Drum for Incineration Sample Notice (see Figure 23-3) and include a copy with the original COC and other sample receipt records that will be submitted to the PM. The original is retained by the Sample Control personnel handling wastes.

If after completion of analysis the analyst has determined a sample to be hazardous (based on action limits that are exceeded, as set up in the LIMS), the analyst will notify the Sample Control personnel handling wastes and submit to that personnel the original of the completed notification form (Figure 23-3) and a copy to the PM for archiving with the job records.

All hazardous samples are either returned to the client or disposed appropriately through a hazardous waste disposal firm that lab-packs all hazardous samples and removes them from the laboratory. Foreign soil samples are sent out for incineration by a USDA-approved waste disposal facility.

23.6 SAMPLE SHIPPING

In the event that the laboratory needs to ship samples, the samples are placed in coolers with enough ice to ensure the samples remain just above freezing and at or below 6.0°C

during transit. The samples are carefully surrounded by packing material to avoid breakage (yet maintain appropriate temperature). A trip blank is enclosed for those samples requiring water/solid volatile organic analyses (see Note). The COC form is signed by Sample Control and is attached to the shipping paperwork. Samples are generally shipped overnight express or hand-delivered by a TestAmerica courier to maintain sample integrity. All personnel involved with shipping and receiving samples must be trained to maintain the proper COC documentation and to keep the samples intact and on ice, if needed. Corporate EHS Document No. CW-E-M-001 contains additional shipping requirements.

Note: If a client does not request trip blank analysis on the COC or other paperwork, the laboratory will not analyze the trip blanks that were supplied. However, in the interest of good client service, the laboratory will advise the client at the time of sample receipt that it was noted that they did not request analysis of the trip blank, and that the laboratory is providing the notification to verify that they are not inadvertently omitting a key part of regulatory compliance testing.


23.7 SAMPLE DISPOSAL

Samples should be retained for a minimum of 30 days after the project report is sent, however, provisions may be made for earlier disposal of samples once the holding time is exceeded. Some samples are required to be held for longer periods based on regulatory or client requirements (e.g., 60 days after project report is sent). The laboratory must follow the longer sample retention requirements, where required by regulation or client agreement. Several possibilities for sample disposal exist: the sample may be used up completely during analysis, the sample may be returned to the customer or location of sampling for disposal, or the sample may be disposed of in accordance with laboratory SOP No. IR-EHS-WASTE. All procedures in the laboratory EHS Manual are followed during disposal. Samples are normally maintained in the laboratory no longer than two months from receipt, unless otherwise requested. Unused portions of samples found or suspected to be hazardous according to state or federal guidelines may be returned to the client upon completion of the analytical work.

If a sample is part of a known litigation, the affected legal authority, sample data user, and/or submitter of the sample must participate in the decision about the sample's disposal. All documentation and correspondence concerning the disposal decision process must be kept on file. Pertinent information includes the date of disposal, nature of disposal (such as sample depletion, hazardous waste facility disposal, and return to client), and names of individuals who conducted the arrangements and physically completed the task. The laboratory will remove or deface sample labels prior to disposal, unless this is accomplished through the disposal method (e.g., samples are incinerated). A waste disposal record should be completed.

Figure 23-2.

Example - Sample Acceptance Policy



THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Sample Acceptance Policy

All incoming work will be evaluated against the criteria listed below. Where applicable, data from any samples that do not meet the criteria listed below will be noted on the laboratory report defining the nature and substance of the variation. In addition the client will be notified either by telephone, fax or e-mail ASAP after the receipt of the samples.

Per State and/or Federal Regulation, the client is responsible to ensure that samples are shipped in accordance with DOT/IATA requirements, and that radioactive materials may only be delivered to licensed facilities. Any samples containing (or suspected to contain) Source, Byproduct, or Special Nuclear Material as defined by 10 CFR should be delivered directly to facilities licensed to handle such radioactive material. Natural material or ores containing naturally occurring radionuclides may be delivered to any TestAmerica facility or courier as long as the activity concentration of the material does not exceed 270 pCi/g alpha or 2700 pCi/g beta (49 CFR Part 173).

- 1) Samples must arrive with labels intact with a Chain of Custody filled out completely. The following information must be recorded.
 - Client name, address, phone number and fax number (if available)
 - Project name and/or number
 - The sample identification
 - Date, time and location of sampling
 - The collectors name
 - The matrix description
 - The container description
 - The total number of each type of container
 - Preservatives used
 - Analysis requested
 - Requested turnaround time (TAT)
 - Any special instructions
 - Purchase Order number or billing information (e.g. quote number) if available
 - The date and time each person received or relinquished the sample(s), including their signed name.
 - The date and time of receipt must be recorded between the last person to relinquish the samples and the person who receives the samples in the lab, and they must be exactly the same.
 - **Information must be legible**
- 2) Samples must be properly labeled.
 - Use durable labels (labels provided by TestAmerica are preferred)
 - Include a unique identification number
 - Include sampling date and time & sampler ID
 - Include preservative used.
 - Use indelible ink
 - **Information must be legible**
- 3) Proper sample containers with adequate volume for the analysis and necessary QC are required for each analysis requested. See TA Sample Container Guide.
- 4) Samples must be preserved according to the requirements of the requested analytical method (See TA Sample Container Guide). Most analytical methods require chilling samples

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to 4°C (other than water samples for metals analysis and samples for air analysis). For these methods, the criteria are met if the samples are chilled to below 6°C and above freezing (0°C). For methods with other temperature criteria (e.g. some bacteriological methods require $\leq 10^{\circ}\text{C}$), the samples must arrive within $\pm 2^{\circ}\text{C}$ of the required temperature or within the method specified range. **Note:** Samples that are hand-delivered to the laboratory immediately after collection may not have had time to cool sufficiently. In this case the samples will be considered acceptable as long as there is evidence that the chilling process has begun (arrival on ice).

- Chemical preservation (pH) will be verified at the time of analysis and the project manager will be notified immediately if there is a discrepancy. If analyses will still be reported, all affected results will be flagged to indicate improper preservation.
- 5) Sample Holding Times
- TestAmerica will make every effort to analyze samples within the regulatory holding time. Samples must be received in the laboratory with enough time to perform the sample analysis. Except for short holding time samples (< 72hr HT) sample must be received with at least 48 hrs (working days) remaining on the holding time for us to ensure analysis.
 - Analyses that are designated as "field" analyses (pH, Dissolved Oxygen, Residual Chlorine, and Redox Potential) should be analyzed within 15 minutes. Dissolved Metals samples should be filtered in the field within 15 minutes. Dissolved Sulfide samples should be flocculated in the field within 15 minutes. The actual times of all "field" sample analyses are noted on the "Short Hold Time Detail Report" in the final report. If the analysis is performed at the laboratory, the data will be flagged on the final report with an 'HF' to indicate holding time is 15 minutes.
- 6) All samples submitted for Volatile Organic analyses should have a Trip Blank submitted at the same time. TestAmerica will supply a blank with the bottle order.
- 7) The project manager will be notified if any sample is received in damaged condition. TestAmerica will request that a sample be resubmitted for analysis.
- 8) Recommendations for packing samples for shipment.
- Pack samples in "wet" Ice rather than "Blue" ice packs.
 - Soil samples should be placed in plastic zip-lock bags. The containers often have dirt around the top and do not seal very well and are prone to intrusion from the water from melted ice.
 - Water samples would be best if wrapped with bubble-wrap or paper (newspaper, or paper towels work) and then placed in plastic zip-lock bags.
 - Fill extra cooler space with bubble wrap.

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Updated June 20, 2014

SECTION 24

ASSURING THE QUALITY OF TEST RESULTS

24.1 OVERVIEW

In order to assure our clients of the validity of their data, the laboratory continuously evaluates the quality of the analytical process. The analytical process is controlled not only by instrument calibration as discussed in Section 20, but also by routine process QC measurements (e.g., blanks, LCS, MS, sample duplicates, surrogates, and internal standards). These QC checks are performed as required by the method or regulations to assess precision and accuracy. QC samples are to be treated in the exact same manner as the associated field samples being tested. In addition to the routine process QC samples, PT samples (concentrations unknown to laboratory) are analyzed to help ensure laboratory performance.

24.2 CONTROLS

Sample preparation or pre-treatment is commonly required before analysis. Typical preparation steps include homogenization, grinding, solvent extraction, sonication, acid digestion, distillation, reflux, evaporation, drying, and ashing. During these pre-treatment steps, samples are arranged into discreet manageable groups referred to as preparation (prep) batches. Prep batches provide a means to control variability in sample treatment. Control samples are added to each prep batch to monitor method performance and are processed through the entire analytical procedure with investigative/field samples.

24.3 NEGATIVE CONTROLS

Table 24-1. Example – Negative Controls

Control Type	Details
Method Blank	are used to assess preparation and analysis for possible contamination during the preparation and processing steps.
	The specific frequency of use for method blanks during the analytical sequence is defined in the specific SOP for each analysis. Generally, it is one for each batch of samples; not to exceed 20 environmental samples.
	The method blank is prepared from a clean matrix similar to that of the associated samples that is free from target analytes (e.g., reagent water, Ottawa sand, glass beads, etc.) and is processed along with and under the same conditions as the associated samples.
	The method blank goes through all of the steps of the process (including as necessary: filtration, clean-ups, etc.).
	Re-analyze or qualify associated sample results when the concentration of a targeted analyte in the method blank is at or above the RL (or at or above 1/2, as established by the method or by regulation, AND is greater than 1/10 of the amount measured in the sample.
Calibration Blanks	are prepared and analyzed along with calibration standards, where applicable. They are prepared using the same reagents that are used to prepare the standards. In some analyses, the calibration blank may be included in the calibration curve.

Control Type	Details
Instrument Blanks	are blank reagents or reagent water that may be processed during an analytical sequence in order to assess contamination in the analytical system. In general, instrument blanks are used to differentiate between contamination caused by the analytical system and that caused by the sample handling or sample preparation process. Instrument blanks may also be inserted throughout the analytical sequence to minimize the effect of carryover from samples with high analyte content.
Trip Blanks ¹	are required to be submitted by the client with each shipment of samples requiring aqueous and solid volatiles analyses (or as specified in the client's project plan). Additionally, trip blanks may be prepared and analyzed for volatile analysis of air samples, when required by the client. A trip blank may be purchased (certified-clean) or is prepared by the laboratory by filling a clean container with pure deionized water that has been purged to remove any volatile compounds. Appropriate preservatives are also added to the container. The trip blank is sent with the bottle order and is intended to reflect the environment that the containers are subjected to throughout shipping and handling and help identify possible sources if contamination is found. The field sampler returns the trip blank in the cooler with the field samples.
Field Blanks ¹	are sometimes used for specific projects by the field samplers. A field blank is prepared in the field by filling a clean container with pure reagent water and appropriate preservative, if any, for the specific sampling activity being undertaken. (EPA OSWER)
Equipment Blanks ¹	are also sometimes created in the field for specific projects. An equipment blank is a sample of analyte-free media which has been used to rinse common sampling equipment to check effectiveness of decontamination procedures. (TNI)
Holding Blanks	are also referred to as refrigerator blanks or storage blanks and are used to monitor the sample storage units for volatile organic compounds during the storage of VOA samples in the laboratory.

¹ When known, these field QC samples should not be selected for matrix QC as it does not provide information on the behavior of the target compounds in the field samples. Usually, the client sample ID will provide information to identify the field blanks, equipment blanks, or trip blanks with labels such as "FB", "EB", or "TB."

Evaluation criteria and corrective action for these controls are defined in the specific SOP for each analysis.

24.3.1 Negative Controls for Microbiological Methods

Microbiological methods utilize a variety of negative controls throughout the process to ensure that false positive results are not obtained. These controls are critical to the validity of the microbiological analyses. Some of these negative controls are:

Table 24-2. Negative Controls for Microbiology

Control Type	Details
Sterility Checks (Media)	are analyzed for each lot of pre-prepared media, ready-to-use media, and for each batch of medium prepared by the laboratory.
Filtration Blanks	are run at the beginning and end for each sterilized filtration unit used in a filtration series. For pre-sterilized single use funnels, a sterility check is performed on at least one funnel per lot.
Sterility checks (Sample Containers)	are performed on at least one container per lot of purchased, pre-sterilized containers. If containers are prepared and sterilized by the laboratory, one container per sterilization batch is checked. Container sterility checks are performed using non-selective growth media.
Sterility Checks (Dilution Water)	are performed on each batch of dilution water prepared by the laboratory and on each batch of pre-prepared dilution water. All checks are performed using non-selective growth media.

Negative culture controls demonstrate that a media does not support the growth of non-target organisms and ensures that there is not an atypical positive reaction from the target organisms. Prior to the first use of the media, each lot of pre-prepared selective media or batch of laboratory prepared selective media is analyzed with at least one known negative culture control. as appropriate to the method.

24.4 POSITIVE CONTROLS

Control samples (e.g., QC indicators) are analyzed with each batch of samples to evaluate data based upon (1) Method Performance (LCS or Blank Spike), which entails both the preparation and measurement steps; and (2) Matrix Effects (MS or sample duplicates), which evaluates field sampling accuracy, precision, representativeness, interferences, and the effect of the matrix on the method performed. Each regulatory program and each method within those programs specify the control samples that are prepared and/or analyzed with a specific batch.

Note that frequency of control samples vary with specific regulatory, methodology, and project-specific criteria. Complete details on method control samples are as listed in the laboratory SOPs.

24.4.1 Method Performance Control – LCS

The LCS measures the accuracy of the method in a blank matrix and assesses method performance independent of potential field sample matrix effects in a laboratory batch.

The LCS is prepared from a clean matrix similar to that of the associated samples that is free from target analytes (e.g., reagent water, Ottawa sand, glass beads, etc.) and is processed along with and under the same conditions as the associated samples. The LCS is spiked with verified known amounts of analytes or is made of a material containing known and verified amounts of analytes, taken through all preparation and analysis steps along with the field samples. Where there is no preparation taken for an analysis (such as in aqueous volatiles), or when all samples and standards undergo the same preparation and analysis process (such as Phosphorus), a calibration verification standard is reported as the LCS. In some instances where there is no practical clean solid matrix available, aqueous LCSs may be processed for solid matrices; final results may be calculated as mg/kg or ug/kg, assuming 100% solids and a weight equivalent to the aliquot used for the corresponding field samples, to facilitate comparison with the field samples.

Certified pre-made reference material purchased from a NIST/A2LA-accredited vendor may also be used for the LCS when the material represents the sample matrix or the analyte is not easily spiked (e.g. solid matrix LCS for metals, TDS, etc.).

The specific frequency of use for LCS during the analytical sequence is defined in the specific SOP for each analysis. It is generally one for each batch of samples, not to exceed 20 environmental samples.

If the mandated or requested test method or project requirements do not specify the spiking components, the laboratory shall spike all reportable components to be reported in the LCS (and MS), where applicable (e.g. no spike of pH). However, in cases where the components interfere with accurate assessment (such as simultaneously spiking chlordane, toxaphene and PCBs in Method 608), the test method has an extremely long list of components or components are incompatible, at a minimum, a representative number of the listed components (see below) shall be used to control the test method. The selected components of each spiking mix shall represent all chemistries, elution patterns and masses, permit specified analytes, and other client-requested components. However, the laboratory shall ensure that all reported components are used in the spike mixture within a two-year time period.

- For methods that have 1-10 target analytes, spike all components.
- For methods that include 11- 20 target analytes, spike at least 10 or 80%, whichever is greater.
- For methods with more than 20 target analytes, spike at least 16 components.
- Exception: Due to analyte incompatibility in pesticides, Toxaphene and Chlordane are only spiked at client request based on specific project needs.
- Exception: Due to analyte incompatibility between the various PCB aroclors, aroclors 1016 and 1260 are used for spiking as they cover the range of all of the aroclors. Specific aroclors may be used by request on a project specific basis.

24.4.2 Positive Controls for Microbiological Methods

- Each lot of pre-prepared media (including chromofluorogenic reagent) and each batch of laboratory prepared media is tested with a pure culture of known positive reaction.
- In addition, every analytical batch also contains a pure culture of known positive reaction.
- A pure culture of known negative reaction is also tested with each analytical batch to ensure specificity of the procedure.

24.5 SAMPLE MATRIX CONTROLS

Table 24-3. Sample Matrix Control

Control Type	Details	
MS	Use	used to assess the effect that the sample matrix of the spiked sample has on the precision and accuracy of the results generated by the method used.
	Typical Frequency ¹	At a minimum, with each matrix-specific batch of samples processed, an MS is carried through the complete analytical procedure. Unless specified by the client, samples used for spiking are randomly selected and rotated between different client projects. If the mandated or requested test method does not specify the spiking components, the laboratory shall spike all reportable components to be reported in the LCS and MS. Refer to the laboratory SOP for complete details.
	Description	essentially, a sample fortified with a known amount of the test analyte(s).
Surrogate	Use	Measures method performance to sample matrix (organics only).
	Typical Frequency ¹	are added to all samples, standards, and blanks, for all organic chromatography methods except when the matrix precludes its use or when a surrogate is not available. The recovery of the surrogates is compared to the acceptance limits for the specific method. Poor surrogate recovery may indicate a problem with sample composition and shall be reported, with data qualifiers, to the client whose sample produced poor recovery.
	Description	are similar to MS except the analytes are compounds with properties that mimic the analyte of interest and are unlikely to be found in environmental samples.
Duplicates ²	Use	For a measure of analytical precision, with each matrix-specific batch of samples processed, a sample duplicate or LCSD is carried through the complete analytical procedure.
	Typical Frequency ¹	Duplicate samples are usually analyzed with methods that do not require MS analysis.
	Description	Performed by analyzing two aliquots of the same field sample independently or an additional LCS.
Internal Standard	Use	are spiked into all environmental and QC samples (including the ICAL standards) to monitor the qualitative aspect of organic and some inorganic analytical measurements.
	Typical Frequency ¹	All organic and ICP methods, as required by the analytical method.
	Description	Used to correct for matrix effects and to help troubleshoot variability in analytical response and are assessed after data acquisition. Possible sources of poor internal standard response are sample matrix, poor analytical technique or instrument performance.

¹ See the specific laboratory SOP for type and frequency of sample matrix control samples.

² The recoveries for the spiked duplicate samples must meet the same laboratory-established recovery limits as the accuracy QC samples. If an LCSD is analyzed, both the LCS and LCSD must meet the same recovery criteria and be included in the final report. The precision measurement is reported as RPD. Poor precision between duplicates (except LCS/LCSD) may indicate non-homogeneous matrix or sampling.

24.6 ACCEPTANCE CRITERIA (CONTROL LIMITS)

As mandated by the test method and regulation, the individual analyte in the LCS, MS, or Surrogate Spike is evaluated against the control limits published in the test method. Where there are no established acceptance criteria, the laboratory calculates in-house control limits with the use of control charts or, in some cases, utilizes client project-specific control limits. When this occurs, the regulatory or project limits will supersede the laboratory's in-house limits.

Note: For methods, analytes, and matrices with very limited data (e.g., unusual matrices not analyzed often), interim limits are established using available data or by analogy to similar methods or matrices.

Once control limits have been established, they are verified, reviewed, and updated if necessary, on an annual basis unless the method requires more frequent updating. Control limits are established per method, (as opposed to per instrument) regardless of the number of instruments utilized.

Laboratory-generated percent recovery acceptance (control) limits are generally established by taking ± 3 standard deviations (99% confidence level) from the average recovery of a minimum of 20-30 data points (more points are preferred).

- Regardless of the calculated limit, the control limit should be no tighter than those used in the Calibration Verification (ICV/CCV), unless the analytical method specifies a tighter limit.
- In-house limits cannot be any wider than those mandated in a regulated analytical method. Client- or contract-required control limits are evaluated against the laboratory's statistically derived control limits to determine if the DQOs can be achieved. If laboratory control limits are not consistent with DQOs, then alternatives must be considered, such as method improvements or use of an alternate analytical method.
- The lowest acceptable recovery limit will be 10% (the analyte must be detectable and identifiable). Exception: The lowest acceptable recovery limit for Benzidine will be 5% and the analyte must be detectable and identifiable.
- The maximum acceptable recovery limit will be 150%. The QA Manager may grant exceptions, as warranted.
- The maximum acceptable RPD limit will be 35% for waters and 40% for soils. The minimum RPD limit will be 10%.
- If either the high or low end of the control limit changes by $\leq 5\%$ from previous, the control chart is visually inspected and, using professional judgment, the control limits may be left unchanged if there is no effect on the laboratory's ability to meet the existing limits.

24.6.1 The laboratory must be able to generate a current listing of their control limits and track when the updates are performed. In addition, the laboratory must be able to recreate historical control limits. Refer to laboratory SOP No. IR-QA-CNTRLLIM.

- The QA Department e-mails the appropriate laboratory staff a table that contains the accuracy and precision limits for the spiked analytes for each method performed at the laboratory. Unless otherwise noted, the control limits within these tables are laboratory-generated. The table includes an effective date. The control limits are stored in the LIMS.
- When control limits are updated, the LIMS maintains in its database the previous control limits, so that historical control limits in effect for a specific time period may be retrieved for reference.

24.6.2 An LCS that is within the acceptance criteria establishes that the analytical system is in control and is used to validate the process. Samples that are analyzed with an LCS with recoveries outside of the acceptance limits may be determined to be out of control and should be re-analyzed, if possible. If re-analysis is not possible, then the results for all affected analytes for samples within the same batch must be qualified when reported. The internal corrective action process (see Section 12) is also initiated if an LCS exceeds

the acceptance limits. Sample results may be qualified and reported without re-analysis if:

- The analyte results are below the RL and the LCS is above the upper control limit.
- The analytical results are above the relevant regulatory limit, if known, and the LCS is below the lower control limit.

Or, for TNI work, there are an allowable number of Marginal Exceedences:

<11 analytes	0 marginal exceedences are allowed.
11 – 30 Analytes	1 marginal exceedence is allowed
31-50 Analytes	2 marginal exceedences are allowed
51-70 Analytes	3 marginal exceedences are allowed
71-90 Analytes	4 marginal exceedences are allowed
> 90 Analytes	5 marginal exceedences are allowed

- Marginal exceedences are recovery exceedences between 3 SD and 4 SD from the mean recovery limit (TNI).
- Marginal exceedences must be random. If the same analyte exceeds the LCS control limit repeatedly, it is an indication of a systematic problem. The source of the error must be located and corrective action taken. The laboratory has a system to monitor marginal exceedences to ensure that they are random.

Though marginal exceedences may be allowed, the data must still be qualified to indicate it is outside of the normal limits.

24.6.3 If the MS/MSDs do not meet acceptance limits, the MS/MSD and the associated spiked sample is reported with a qualifier for those analytes that do not meet acceptance limits. If obvious preparation errors are suspected, or if requested by the client, unacceptable MS/MSDs are reprocessed and re-analyzed to prove matrix interference. A more detailed discussion of acceptance criteria and corrective action can be found in the laboratory SOPs and in Section 12.

24.6.4 If a surrogate standard falls outside the acceptance limits, if there is not obvious chromatographic matrix interference, re-analyze the sample to confirm a possible matrix effect. If the recoveries confirm or there was obvious chromatographic interference, results are reported from the original analysis and a qualifier is added. If the re-analysis meets surrogate recovery criteria, the second run is reported (or both are reported if requested by the client). Under certain circumstances, where all of the samples are from the same location and share similar chromatography, the re-analysis may be performed on a single sample rather than all of the samples, and if the surrogate meets the recovery criteria in the re-analysis, all of the affected samples would require re-analysis.

24.7 ADDITIONAL PROCEDURES TO ASSURE QUALITY CONTROL

The laboratory has written and approved SOPs to assure the accuracy of the test method, including calibration (see Section 20), use of certified reference materials (see Section 21), and use of PT samples (see Section 15).

A discussion regarding MDL, LOD, and LOQ can be found in Section 19.

Use of formulae to reduce data is discussed in the laboratory SOPs and in Section 20.

Selection of appropriate reagents and standards is included in Sections 9 and 21.

A discussion on selectivity of the test is included in Section 5.

Constant and consistent test conditions are discussed in Section 18.

The laboratory's sample acceptance policy is included in Section 23.

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SECTION 25

REPORTING RESULTS

25.1 OVERVIEW

The results of each test are reported accurately, clearly, unambiguously, and objectively in accordance with State and Federal regulations as well as client requirements. Analytical results are issued in a format that is intended to satisfy customer and laboratory accreditation requirements as well as provide the end user with the information needed to properly evaluate the results. Where there is conflict between client requests and laboratory ethics or regulatory requirements, the laboratory's ethical and legal requirements are paramount, and the laboratory will work with the client during project setup to develop an acceptable solution. Refer to Section 7.

A variety of report formats are available to meet specific needs.

In cases where a client asks for simplified reports, there must be a written request from the client. There still must be enough information that would show any analyses that were out of conformance (e.g., QC out of limits) and there should be a reference to a full report that is made available to the client. Review of reported data is included in Section 19.

25.2 TEST REPORTS

Analytical results are reported in a format that is satisfactory to the client and meets all requirements of applicable accrediting authorities and agencies. A variety of report formats are available to meet specific needs. The report is printed on laboratory letterhead, reviewed, and signed by the appropriate PM. At a minimum, the standard laboratory report shall contain the following information:

25.2.1 A report title (e.g., Analytical Report) with headers for the different information associated with a sample result (e.g., analyte name, data qualifiers, units, MDL, RL, dilution, date analyzed, instrument, analyst, and QC batch).

25.2.2 Each report cover page printed on company letterhead, which includes the laboratory name, address, and telephone number.

25.2.3 A unique identification of the report (e.g., job number) and on each page an identification to ensure the page is recognized as part of the report and a clear identification of the end.

Note: Page numbers of report are represented as Page # of ##, where the first number is the page number and the second is the total number of pages.

25.2.4 A copy of the COC

- Any COCs involved with subcontracting are included.

- 25.2.5 The name and address of client and a project name/number, if applicable.
- 25.2.6 Client PM or other contact
- 25.2.7 Description and unambiguous identification of the tested sample(s) including the client identification code
- 25.2.8 Date of receipt of sample, date and time of collection, and date(s) of test preparation and performance, and time of preparation or analysis if the required holding time for either activity is less than or equal to 72 hours.
- 25.2.9 Date reported or date of revision, if applicable.
- 25.2.10 Method of analysis including method code (EPA, Standard Methods, etc.)
- 25.2.11 RLs
- 25.2.12 MDLs, if requested
- 25.2.13 Definition of data qualifiers and reporting acronyms, e.g., ND
- 25.2.14 Sample results
- 25.2.15 QC data consisting of method blank, surrogate (if applicable), LCS, and MS/MSD recoveries and control limits
- 25.2.16 Condition of samples at receipt, including temperature (if applicable).
- 25.2.17 A statement expressing the validity of the results, that the source methodology was followed, and that all results were reviewed for error.
- 25.2.18 A statement to the effect that the results relate only to the items tested and the sample, as received by the laboratory.
- 25.2.19 A statement that the report shall not be reproduced except in full, without prior express written approval by the laboratory.
- 25.2.20 A signature and title of the person(s) accepting responsibility for the content of the report and date of issue. Signatories are appointed by the Laboratory Director.
- 25.2.21 When TNI accreditation is required, the laboratory shall certify that the test results meet all requirements of TNI or provide reasons and/or justification if they do not.
- 25.2.22 The laboratory includes a cover letter.

- 25.2.23** Where applicable, a narrative to the report that explains the issue(s) and corrective action(s) taken in the event that a specific accreditation or certification requirement was not met.
- 25.2.24** When soil samples are analyzed, a specific identification as to whether soils are reported on a “wet weight” or “dry weight” basis.
- 25.2.25** Appropriate laboratory certification number for the state of origin of the sample, if applicable
- 25.2.26** If only part of the report is provided to the client (client requests some results before all of it is complete), it must be clearly indicated on the report (e.g., partial report). A complete report must be sent once all of the work has been completed.
- 25.2.27** Any non-TestAmerica subcontracted analysis results are provided as a separate report on the official letterhead of the subcontractor. All TestAmerica subcontracting is clearly identified on the report as to which laboratory performed a specific analysis.
- 25.2.28** A Certification Summary Report, where required, will document that, unless otherwise noted, all analytes tested and reported by the laboratory were covered by the noted certifications.

Note: Refer to Corporate Information Technology SOP No. CA-I-P-002 for details on internally applying electronic signatures of approval.

25.3 REPORTING LEVEL OR REPORT TYPE

The laboratory offers four levels of report packages. Each level, in addition to its own specific requirements, contains all the information provided in the preceding level. The packages provide the following information in addition to the information described above. Note that raw data presented in Level III and Level IV reports are in CLP-like format:

- Level I is a report with the features described in Section 25.2 above.
- Level II is a Level I report plus summary information, including results for the method blank reported to the laboratory MDL (if required or applicable), percent recovery for LCS and MS samples, and the RPD values for all LCS/LCSD, MS/MSD, and sample duplicate analyses.
- Level III contains all the information supplied in Level II, but presented on the CLP-like summary forms, and relevant calibration information. A Level II report is not included, unless specifically requested. No raw data are provided.
- Level IV is the same as Level III with the addition of all raw supporting data.

In addition to hardcopy reports, the laboratory also provides reports in CD deliverable form when requested. Initial reports may be provided to clients by facsimile or e-mail or upload to TestAmerica’s Total Access database. All faxed or other electronic reports are

followed by hardcopy, when requested. Procedures used to ensure client confidentiality are outlined in Section 25.6.

25.3.1 Electronic Data Deliverables

EDDs are routinely offered as part of TestAmerica's services in addition to the test report as described in Section 25.2. When NELAP accreditation is required and both a test report and EDD are provided to the client, the official version of the test report will be the combined information of the report and the EDD. TestAmerica Irvine offers a variety of EDD formats including, but not limited to, NAS, ADR, COELT EDF, EQUIS, GISKEY, Microsoft Excel, Locus EIM, Standard TestAmerica Format, FoxPro, and Terrabase.

EDD specifications are submitted to the IT department by the PM for review and undergo the contract review process. Once the laboratory has committed to providing data in a specific electronic format, the coding of the format may need to be performed. This coding is documented and validated. The validation of the code is retained by the Corporate IT staff coding the EDD.

EDDs shall be subject to a review to ensure their accuracy and completeness. If EDD generation is automated, review may be reduced to periodic screening if the laboratory can demonstrate that it can routinely generate that EDD without errors. Any revisions to the EDD format must be reviewed until it is demonstrated that it can routinely be generated without errors. If the EDD can be reproduced accurately and if all subsequent EDDs can be produced error-free, each EDD does not necessarily require a review.

25.4 SUPPLEMENTAL INFORMATION FOR TEST

The laboratory identifies any unacceptable QC analyses or any other unusual circumstances or observations such as environmental conditions and any non-standard conditions that may have affected the quality of a result. This is typically in the form of a footnote or a qualifier and/or a narrative explaining the discrepancy in the front of the report.

Numeric results with values outside of the calibration range, either high or low are qualified as 'estimated'.

Where quality system requirements are not met, a statement of compliance/non-compliance with requirements and/or specifications is required, including identification of test results derived from any sample that did not meet TNI sample acceptance requirements such as improper container, holding time, or temperature.

Where applicable, a statement on the estimated uncertainty of measurements; information on uncertainty is needed when a client's instructions so require.

Opinions and Interpretations – In general, the test report contains objective

information and does not contain subjective information such as opinions and interpretations. If such information is required by the client, the Laboratory Director will determine if a response can be prepared. If so, the Laboratory Director will designate the appropriate member of the management team to prepare a response. The response will be fully documented, and reviewed by the Laboratory Director, before release to the client. There may be additional fees charged to the client at this time, as this is a non-routine function of the laboratory.

When opinions or interpretations are included in the report, the laboratory provides an explanation as to the basis upon which the opinions and interpretations have been made. Opinions and interpretations are clearly noted as such and where applicable, a comment should be added suggesting that the client verify the opinion or interpretation with their regulator.

25.5 ENVIRONMENTAL TESTING OBTAINED FROM SUBCONTRACTORS

If the laboratory is unable to provide the client the requested analysis, the samples would be subcontracted following the procedures outlined in Corporate Legal Document No. CA-L-S-002.

Data reported from analyses performed by a subcontract laboratory are clearly identified as such on the analytical report provided to the client. Results from a subcontract laboratory outside of TestAmerica are reported to the client on the subcontract laboratory's original report stationery and the report includes any accompanying documentation.

25.6 CLIENT CONFIDENTIALITY

In situations involving the transmission of environmental test results by telephone, facsimile, or other electronic means, client confidentiality must be maintained.

TestAmerica will not intentionally divulge to any person (other than the client or any other person designated by the client in writing) any information regarding the services provided by TestAmerica or any information disclosed to TestAmerica by the client. Furthermore, information known to be potentially endangering to national security or an entity's proprietary rights will not be released.

Note: This shall not apply to the extent that the information is required to be disclosed by TestAmerica under the compulsion of legal process. TestAmerica will, to the extent feasible, provide reasonable notice to the client before disclosing the information.

Note: Authorized representatives of an accreditation body are permitted to make copies of any analyses or records relevant to the accreditation process, and copies may be removed from the laboratory for purposes of assessment.

25.6.1 Report deliverable formats are discussed with each new client. If a client requests that reports be faxed or e-mailed, the reports are faxed with a cover

sheet or e-mailed with the following note that includes a confidentiality statement similar to the following:

“CONFIDENTIALITY NOTICE: This e-mail communication, including any attachments, may contain privileged or confidential information for specific individuals and is protected by law. If you are not the intended recipient(s), you are hereby notified that any dissemination, distribution or copying of this communication is strictly prohibited and you should delete this message and its attachments from your computer without retaining any copies. If you have received this communication in error, please reply to the sender immediately. We appreciate your cooperation.”

25.7 FORMAT OF REPORTS

The format of reports is designed to accommodate each type of environmental test carried out and to minimize the possibility of misunderstanding or misuse.

25.8 AMENDMENTS TO TEST REPORTS

Corrections, additions, or deletions to reports are only made when justification arises through supplemental documentation. Justification is documented using the laboratory's corrective action system (refer to Section 12).

The revised report is retained in LIMS, as is the original report. The revised report is stored in LIMS under the job number along with a sequential revision number.

When the report is re-issued, a notation of 'amended report' is placed on the cover/signature page of the report *or at the top of the narrative page* with a brief explanation of reason for the amendment and a reference back to the last final report generated. *For example: This final report, identified as Revision 1, was revised on 11/3/2014 to include toluene in sample NQA1504 per client's request. This final report replaces the final report identified as Revision 0.*

25.9 POLICIES ON CLIENT REQUESTS FOR AMENDMENTS

25.9.1 Policy on Data Omissions or RL Increases

Fundamentally, our policy is simply to not omit previously reported results (including data qualifiers) or to not raise RLs and report sample results as ND. This policy has few exceptions. They are as follows:

- Laboratory error
- Sample identification is indeterminate (confusion between COC and sample labels).
- An incorrect analysis (not analyte) was requested (e.g., COC lists 8315 but client wanted 8310). A written request for the change is required.
- Incorrect limits reported based on regulatory requirements

- The requested change has absolutely no possible impact on the interpretation of the analytical results and there is no possibility of the change being interpreted as misrepresentation by anyone inside or outside of our company.

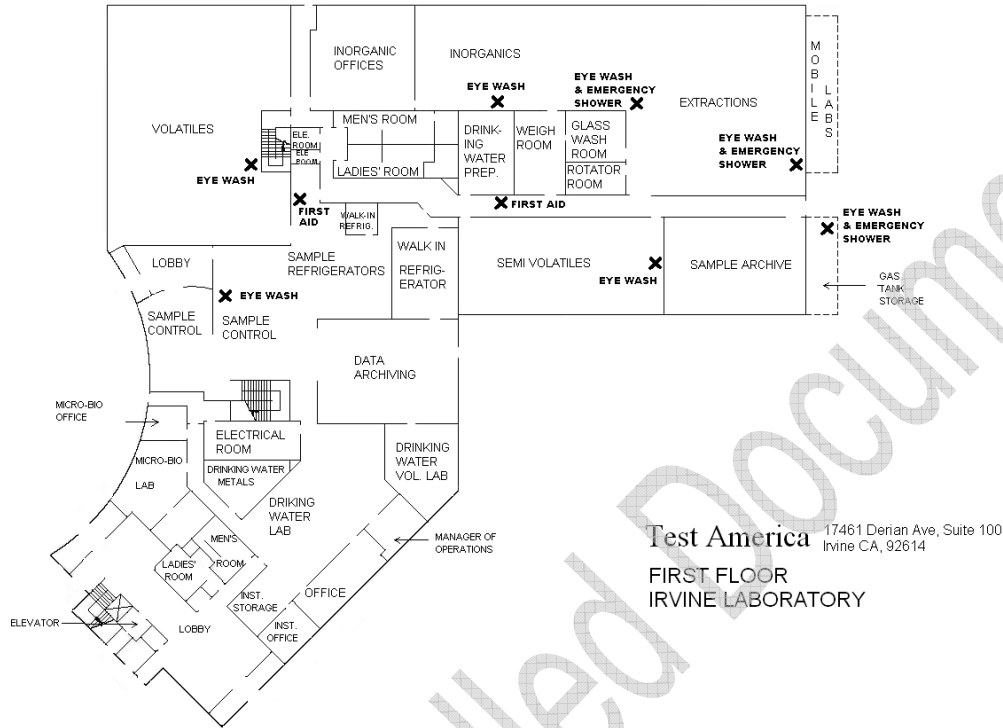
25.9.2 Multiple Reports

TestAmerica does not issue multiple reports for the same job where there is different information on each report (this does not refer to copies of the same report) unless required to meet regulatory needs and approved by the QA Manager.

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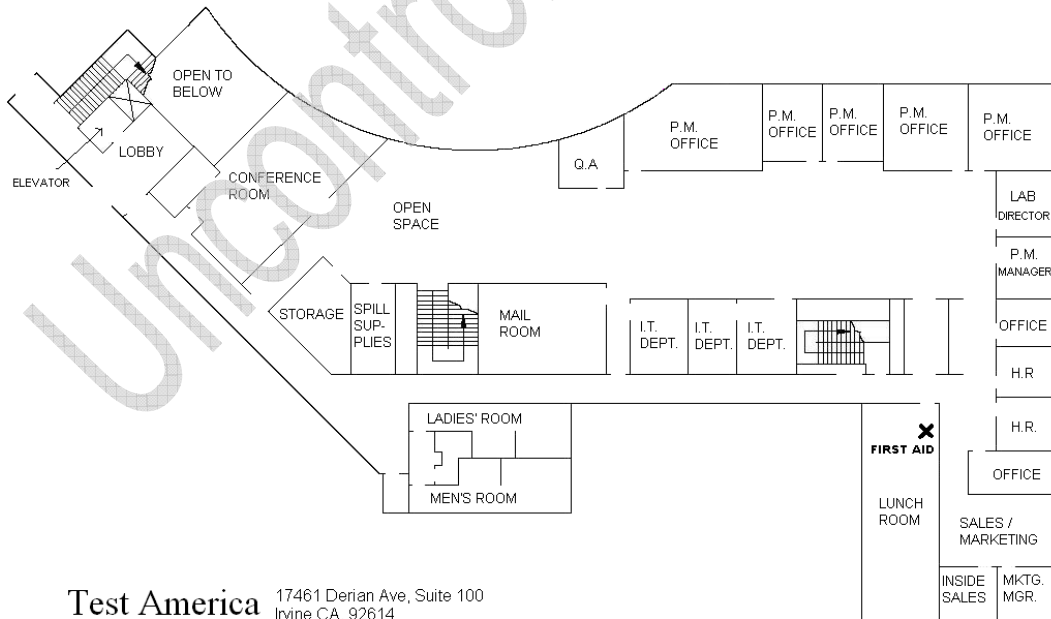
Appendix 1.

Laboratory Floor Plan



Test America 17461 Denian Ave, Suite 100
 Irvine CA, 92614

FIRST FLOOR
 IRVINE LABORATORY



Test America 17461 Denian Ave, Suite 100
 Irvine CA, 92614

SECOND FLOOR
 IRVINE LABORATORY

Appendix 2. Glossary / Acronyms (EL-V1M2 Sec. 3.1)

Glossary:

Acceptance Criteria:

Specified limits placed on characteristics of an item, process, or service defined in requirement documents. (ASQ)

Accreditation:

The process by which an agency or organization evaluates and recognizes a laboratory as meeting certain predetermined qualifications or standards, thereby accrediting the laboratory.

Accuracy:

The degree of agreement between an observed value and an accepted reference value. Accuracy includes a combination of random error (precision) and systematic error (bias) components which are due to sampling and analytical operations; a data quality indicator.

Analyst:

The designated individual who performs the “hands-on” analytical methods and associated techniques and who is the one responsible for applying required laboratory practices and other pertinent QC to meet the required level of quality.

Analytical Uncertainty:

A subset of Measurement Uncertainty that includes all laboratory activities performed as part of the analysis. (TNI)

Anomaly

A condition or event, other than a deficiency, that may affect the quality of the data, whether in the laboratory’s control or not.

Assessment:

The evaluation process used to measure or establish the performance, effectiveness, and conformance of an organization and/or its systems to defined criteria (to the standards and requirements of laboratory accreditation). (TNI)

Audit:

A systematic and independent examination of facilities, equipment, personnel, training, procedures, record-keeping, data validation, data management, and reporting aspects of a system to determine whether QA/QC and technical activities are being conducted as planned and whether these activities will effectively achieve quality objectives. (TNI)

Batch:

A set of environmental samples that are prepared and/or analyzed together with the same process and personnel, using the same lot(s) of reagents and within a defined period of time.

A preparation batch is composed of one to 20 environmental samples of the same quality systems matrix, meeting the above mentioned criteria and with a maximum time between the start of processing of the first and last sample in the batch to be 24 hours.

An analytical batch is composed of prepared environmental samples (extracts, digestates, or concentrates) which are analyzed sequentially (no time gaps greater than 8 hours) as a group using the same calibration curve or factor, and meeting the method calibration check criteria (tune time or bracketing CCVs). An analytical batch can include prepared samples originating from various quality system matrices and can exceed 20 samples. (TNI)

NOTE: For methods that do not require a preparative step, the analytical batch must meet the same criteria as the preparation batch. Rerun of the same environmental sample is counted as part of the 20 in a batch. Field QC samples are included in the batch count.

A set of up to 20 environmental samples (reportable or not) of the same matrix processed using the same procedures and the same lot(s) of reagents within the same time period. A preparation batch is composed of one to 20 environmental samples of the same quality systems matrix, meeting the above mentioned criteria and with a maximum time between the start of processing of the first and last sample in the batch to be 24 hours. An analytical batch is composed of prepared environmental samples (extracts, digestates, or concentrates) and/or those samples not requiring preparation, which are analyzed together as a group using the same calibration curve or calibration factor. The batch must be analyzed sequentially using the same instrument and instrument configuration within the same calibration event (i.e., the same calibration curve, calibration factors, or RFs must be in effect throughout the analysis). QC samples do not count towards the 20 samples in a batch. Rerun of the same environmental sample is counted as part of the 20 in a batch. Field QC samples are included in the batch count.

Bias:

The systematic or persistent distortion of a measurement process, which causes errors in one direction (i.e., the expected sample measurement is different from the sample's true value). (TNI)

Blank:

A sample that has not been exposed to the analyzed sample stream in order to monitor contamination during sampling, transport, storage, or analysis. The blank is subjected to the usual analytical and measurement process to establish a zero baseline or background value and is sometimes used to adjust or correct routine analytical results. (ASQ)

Calibration:

A set of operations that establish, under specified conditions, the relationship between values of quantities indicated by a measuring instrument or measuring system, or values represented by a material measure or a reference material, and the corresponding values realized by standards. (TNI)

- 1) In calibration of support equipment, the values realized by standards are established through the use of reference standards that are traceable to the International System of Units.
- 2) In calibration according to methods, the values realized by standards are typically established through the use of Reference Materials that are either purchased by the laboratory with a certificate of analysis or purity, or prepared by the laboratory using support equipment that has been calibrated or verified to meet specifications.

Calibration Curve:

The mathematical relationship between the known values, such as concentrations, of a series of calibration standards and their instrument response. (TNI)

Calibration Standard:

A substance or reference material used to calibrate an instrument.

Certified Reference Material:

A reference material accompanied by a certificate having a value, measurement uncertainty, and stated metrological traceability chain to a national metrology institute. (TNI)

Chain of Custody:

Record that documents the possession of the samples from the time of collection to receipt at the laboratory. This record generally includes the number and types of containers, the mode of collection, the collector, time of collection, preservation, and requested analyses. (TNI)

Compromised Samples:

Those samples, which are improperly sampled, insufficiently documented (COC and other sample records and/or labels), improperly preserved, collected in improper containers, or exceeding holding times when delivered to a laboratory. Under normal conditions, compromised samples are not analyzed. If emergency situation requires analysis, the results must be appropriately qualified.

Confidential Business Information:

Information that an organization designates as having the potential of providing a competitor with inappropriate insight into its management, operation, or products. TNI and its representatives agree to safeguard identified CBI and to maintain all information identified as such in full confidentiality.

Confirmation:

Verification of the identity of a component through the use of an approach with a different scientific principle from the original method. These may include, but are not limited to, second-column confirmation, alternate wavelength, derivatization, mass spectral interpretation, alternative detectors, or additional clean-up procedures. (TNI)

Conformance:

An affirmative indication or judgment that a product or service has met the requirements of the relevant specifications, contract, or regulation; also the state of meeting the requirements. (ANSI/ASQ E1994)

Correction:

Action necessary to correct or repair analysis-specific nonconformances. The acceptance criteria for method-specific QC and protocols as well as the associated corrective actions. The analyst will most frequently be the one to identify the need for this action as a result of calibration checks and QC sample analysis. No significant action is taken to change behavior, process, or procedure.

Corrective Action:

The action taken to eliminate the causes of an existing nonconformity, defect, or other undesirable situation in order to prevent recurrence. (ISO 8402)

Data Audit:

A qualitative and quantitative evaluation of the documentation and procedures associated with environmental measurements to verify that the resulting data are of acceptable quality (i.e., they meet specified acceptance criteria).

Data Reduction:

The process of transforming the number of data by arithmetic or statistical calculations, standard curves, and concentration factors, and collation into a more useable form. (TNI)

Deficiency:

An unauthorized deviation from acceptable procedures or practices, or a defect in an item (ASQC), whether in the laboratory's control or not.

Demonstration of Capability:

A procedure to establish the ability of the analyst to generate analytical results of acceptable accuracy and precision. (TNI)

Document Control:

The act of ensuring that documents (and revisions thereto) are proposed, reviewed for accuracy, approved for release by authorized personnel, distributed properly, and controlled to ensure use of the correct version at the location where the prescribed activity is performed. (ASQ)

Duplicate Analyses:

The analyses or measurements of the variable of interest performed identically on two sub-samples of the same sample. The results from duplicate analyses are used to evaluate analytical or measurement

precision but not the precision of sampling, preservation, or storage internal to the laboratory. (EPA-QAD)

Equipment Blank:

Sample of analyte-free media which has been used to rinse common sampling equipment to check effectiveness of decontamination procedures.

External Standard Calibration:

Calibrations for methods that do not utilize internal standards to compensate for changes in instrument conditions.

Field Blank:

Blank prepared in the field by filling a clean container with pure deionized water and appropriate preservative, if any, for the specific sampling activity being undertaken. (EPA OSWER)

Field of Accreditation:

Those matrix, technology/method, and analyte combinations for which the accreditation body offers accreditation.

Holding Times:

The maximum times that samples may be held prior to analyses and still be considered valid or not compromised. (40 CFR Part 136)

Internal Standard:

A known amount of standard added to a test portion of a sample as a reference for evaluating and controlling the precision and bias of the applied analytical test method. (TNI)

Internal Standard Calibration:

Calibrations for methods that utilize internal standards to compensate for changes in instrument conditions.

Instrument Blank:

A clean sample (e.g., distilled water) processed through the instrumental steps of the measurement process; used to determine instrument contamination. (EPA-QAD)

Instrument Detection Limit:

The minimum amount of a substance that can be measured with a specified degree of confidence that the amount is greater than zero using a specific instrument. The IDL is associated with the instrumental portion of a specific method only, and sample preparation steps are not considered in its derivation. The IDL is a statistical estimation at a specified confidence interval of the concentration at which the relative uncertainty is $\pm 100\%$. The IDL represents a range where qualitative detection occurs on a specific instrument. Quantitative results are not produced in this range.

Laboratory Control Sample (or however named, such as laboratory fortified blank, spiked blank, or QC check sample):

A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes, taken through all preparation and analysis steps of the procedure, unless otherwise noted in a reference method. It is generally used to establish intra-laboratory or analyst-specific precision and bias or to assess the performance of all or a portion of the measurement system.

An LCS shall be prepared at a minimum of 1 per batch of 20 or less samples per matrix type per sample extraction or preparation method except for analytes for which spiking solutions are not available such as total suspended solids, total dissolved solids, total volatile solids, total solids, pH, color, odor, temperature, dissolved oxygen, or turbidity. The results of these samples shall be used to determine batch acceptance.

Least Squares Regression (1st Order Curve):

The least squares regression is a mathematical calculation of a straight line over two axes. The y-axis represents the instrument response (or Response ratio) of a standard or sample and the x-axis represents the concentration. The regression calculation will generate a correlation coefficient (r) that is a measure of the "goodness of fit" of the regression line to the data. A value of 1.00 indicates a perfect fit. In order to be used for quantitative purposes, r must be greater than or equal to 0.99 for analysis of organic compounds and 0.995 for analysis of inorganic compounds.

Limit(s) of Detection (LOD) [a.k.a., Method Detection Limit (MDL)]:

A laboratory's estimate of the minimum amount of an analyte in a given matrix that an analytical process can reliably detect in their facility. (TNI)

LOD Verification [a.k.a., MDL Verification]:

A processed QC sample in the matrix of interest, spiked with the analyte at no more than 3X the calculated MDL for single analyte tests and 4X the calculated MDL for multiple analyte tests and processed through the entire analytical procedure.

Limit(s) of Quantitation (LOQ) [a.k.a., Reporting Limit]:

The minimum levels, concentrations, or quantities of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence. (TNI)

Matrix Spike (spiked sample or fortified sample):

A sample prepared, taken through all sample preparation and analytical steps of the procedure unless otherwise noted in a referenced method, by adding a known amount of target analyte to a specified amount of sample for which an independent test result of target analyte concentration is available. MS is used, for example, to determine the effect of the matrix on a method's recovery efficiency.

Matrix Spike Duplicate (spiked sample or fortified sample duplicate):

MS prepared in the laboratory and analyzed to obtain a measure of the precision of the recovery for each analyte.

Method Blank:

A sample of a matrix similar to the batch of associated samples (when available) that is free from the analytes of interest and is processed simultaneously with and under the same conditions as samples through all steps of the analytical procedures, and in which no target analytes or interferences are present at concentrations that impact the analytical results for sample analyses.

Method Detection Limit:

The minimum concentration of a substance (an analyte) that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix containing the analyte. (40 CFR Part 136, Appendix B)

Negative Control:

Measures taken to ensure that a test, its components, or the environment do not cause undesired effects, or produce incorrect test results.

Non-conformance:

An indication, judgment, or state of not having met the requirements of the relevant specifications, contract, or regulation.

Observation

A record of phenomena that (1) may assist in evaluation of the sample data; (2) may be of importance to the project manager and/or the client, and yet not at the time of the observation have any known effect on quality.

Performance Audit:

The routine comparison of independently obtained qualitative and quantitative measurement system data with routinely obtained data in order to evaluate the proficiency of an analyst or laboratory.

Positive Control:

Measures taken to ensure that a test and/or its components are working properly and producing correct or expected results from positive test subjects.

Precision:

The degree to which a set of observations or measurements of the same property, obtained under similar conditions, conform to themselves; a data quality indicator. Precision is usually expressed as standard deviation, variance, or range, in either absolute or relative terms. (TNI)

Preservation:

Any condition under which a sample must be kept, in order to maintain chemical and/or biological integrity prior to analysis. (TNI)

Proficiency Testing:

A means of evaluating a laboratory's performance under controlled conditions relative to a given set of criteria through analysis of unknown samples provided by an external source. (TNI)

Proficiency Testing Program:

The aggregate of providing rigorously controlled and standardized environmental samples to a laboratory for analysis, reporting of results, statistical evaluation of the results, and the collective demographics and results summary of all participating laboratories. (TNI)

Proficiency Testing Sample:

A sample, the composition of which is unknown to the laboratory and is provided to test whether the analyst/laboratory can produce analytical results within specified acceptance criteria. (TNI)

Quality Assurance:

An integrated system of management activities involving planning, implementation, assessment, reporting, and quality improvement to ensure that a process, item, or service is of the type of quality needed and expected by the client. (TNI)

Quality Assurance [Project] Plan:

A formal document describing the detailed QC procedures by which the quality requirements defined for the data and decisions pertaining to a specific project are to be achieved. (EAP-QAD)

Quality Control:

The overall system of technical activities that measures the attributes and performance of a process, item, or service against defined standards to verify that they meet the stated requirements established by the customer; operational techniques and activities that are used to fulfill requirements for quality; also the system of activities and checks used to ensure that measurement systems are maintained within prescribed limits, providing protection against "out of control" conditions, and ensuring that the results are of acceptable quality. (TNI)

Quality Control Sample:

A sample used to assess the performance of all or a portion of the measurement system. One of any number of samples, such as Certified Reference Materials, a quality system matrix fortified by spiking, or actual samples fortified by spiking, intended to demonstrate that a measurement system or activity is in control. (TNI)

Quality Manual:

A document stating the management policies, objectives, principles, organizational structure, authority, responsibilities, accountability, and implementation of an agency, organization, or laboratory, to ensure the quality of its product and the utility of its product to its users. (TNI)

Quality System:

A structured and documented management system describing the policies, objectives, principles, organizational authority, responsibilities, accountability, and implementation plan of an organization for ensuring quality in its work processes, products (items), and services. The quality system provides the framework for planning, implementing, and assessing work performed by the organization and for carrying out required QA and QC activities. (TNI)

Quality System Matrix:

The component or substrate that contains the analyte of interest. For purposes of batch and QC requirement determinations, the following matrix distinctions shall be used:

Aqueous: Any aqueous sample excluded from the definition of Drinking Water or Saline/Estuarine. Includes surface water, groundwater, effluents, and TCLP or other extracts.

Drinking Water: Any aqueous sample that has been designated as a potable or potential potable water source.

Saline/Estuarine: Any aqueous sample from an ocean or estuary, or other salt water source such as the Great Salt Lake.

Non-aqueous Liquid: Any organic liquid with <15% settleable solids.

Biological Tissue: Any sample of a biological origin such as fish tissue, shellfish, or plant material. Such samples shall be grouped according to origin.

Solids: Includes soils, sediments, sludges, and other matrices with >15% settleable solids.

Chemical Waste: A product or by-product of an industrial process that results in a matrix not previously defined.

Air & Emissions: Whole gas or vapor samples including those contained in flexible or rigid wall containers and the extracted concentrated analytes of interest from a gas or vapor that are collected with a sorbant tube, impinger solution, filter, or other device. (TNI)

Range:

The difference between the minimum and the maximum of a set of values. (EPA-QAD)

Raw Data:

The documentation generated during sampling and analysis. This documentation includes, but is not limited to, field notes, electronic data, magnetic tapes, untabulated sample results, QC sample results, printouts of chromatograms, instrument outputs, and handwritten records. (TNI)

Record Retention:

The systematic collection, indexing, and storing of documented information under secure conditions.

Reference Material:

Material or substance, one or more properties of which are, sufficiently homogeneous and well established to be used for the calibration of an apparatus, the assessment of a measurement method, or for assigning values to materials. (TNI)

Reference Standard:

Standard used for the calibration of working measurement standards in a given organization or a given location. (TNI)

Sampling:

Activity related to obtaining a representative sample of the object of conformity assessment, according to a procedure.

Second-Order Polynomial Curve (Quadratic):

The second-order order curves are a mathematical calculation of a slightly curved line over two axes. The y-axis represents the instrument response (or Response ratio) of a standard or sample and the x-axis represents the concentration. The second-order regression will generate a coefficient of determination (r^2) that is a measure of the "goodness of fit" of the quadratic curvature of the data. A value of 1.00 indicates a perfect fit. In order to be used for quantitative purposes, r^2 must be greater than or equal to 0.99.

Selectivity:

The ability to analyze, distinguish, and determine a specific analyte or parameter from another component that may be a potential interferent or that may behave similarly to the target analyte or parameter within the measurement system. (TNI)

Sensitivity:

The capability of a method or instrument to discriminate between measurement responses representing different levels (e.g., concentrations) of a variable of interest. (TNI)

Spike:

A known mass of target analyte added to a blank, sample, or sub-sample; used to determine recovery efficiency or for other QC purposes.

Standard:

The document describing the elements of laboratory accreditation that has been developed and established within the consensus principles of standard setting and meets the approval requirements of standard adoption organizations procedures and policies. (TNI)

Standard Operating Procedures:

A written document which details the method for an operation, analysis, or action with thoroughly prescribed techniques and steps. SOPs are officially approved as the methods for performing certain routine or repetitive tasks. (TNI)

Storage Blank:

A blank matrix stored with field samples of a similar matrix (volatiles only) that measures storage contribution to any source of contamination.

Surrogate:

A substance with properties that mimic the analyte of interest. It is unlikely to be found in environmental samples and is added to them for QC purposes.

Surrogate compounds must be added to all samples, standards, and blanks, for all organic chromatography methods except when the matrix precludes its use or when a surrogate is not available. Poor surrogate recovery may indicate a problem with sample composition and shall be reported to the client whose sample produced poor recovery.

Systems Audit (also Technical Systems Audit):

A thorough, systematic, qualitative on-site assessment of the facilities, equipment, personnel, training, procedures, record keeping, data validation, data management, and reporting aspects of a total measurement system. (EPA-QAD)

Technical Manager (or Technical Director):

A member of the staff of an environmental laboratory who exercises actual day-to-day supervision of laboratory operations for the appropriate fields of accreditation and reporting of results.

Technology:

A specific arrangement of analytical instruments, detection systems, and/or preparation techniques.

Traceability:

The ability to trace the history, application, or location of an entity by means of recorded identifications. In a calibration sense, traceability relates measuring equipment to national or international standards, primary standards, basic physical constants or properties, or reference materials. In a data collection sense, it relates calculations and data generated throughout the project back to the requirements for the quality of the project. (TNI)

Trip Blank:

A blank matrix placed in a sealed container at the laboratory that is shipped, held unopened in the field, and returned to the laboratory in the shipping container with the field samples.

Uncertainty:

A parameter associated with the result of a measurement that characterizes the dispersion of the value that could reasonably be attributed to the measured value.

Acronyms:

A2LA – American Association for Laboratory Accreditation
AE – Account Executive
ANSI – American National Standards Institute
APLAC – Asia-Pacific Laboratory Accreditation Cooperation
ASQ – American Society for Quality
ASTM – American Society for Testing and Materials
CBI – Confidential Business Information
CCV – Continuing Calibration Verification
CEO – Chief Executive Officer
CF – Calibration Factor
CFR – Code of Federal Regulations
CHP – Chemical Hygiene Plan
CIO – Chief Information Officer
COC – Chain of Custody
CQMP – Corporate Quality Management Plan
CRM – Client Relations Manager
CSO – Client Service Organization
DOC – Demonstration of Capability
DOT – Department of Transportation
DQO – Data Quality Objectives
DW – Drinking Water
ECO – Ethics and Compliance Officer
EDD – Electronic Data Deliverable
EHS – Environmental Health and Safety
EPA-OSWER – Environmental Protection Agency–Office of Solid Waste and Emergency Response
EPA-QAD – Environmental Protection Agency–Quality Assurance Division

FID – Flame Ionization Detector
GC – Gas Chromatography
GC/MS – Gas Chromatography/Mass Spectrometry
GFAA – Graphite Furnace Atomic Absorption
HPLC – High Performance Liquid Chromatography
HVAC – Heating, Ventilation, and Air Conditioning
ICAL – Initial Calibration
iCAT – Incident/Complaint Activity Tracker
ICP – Inductively Coupled Plasma Atomic Emission Spectroscopy
ICP/MS – Inductively Coupled Plasma Mass Spectrometry
ICV – Initial Calibration Verification
IDL – Instrument Detection Limit
IDOC – Initial Demonstration of Capability
IEC – International Electrotechnical Commission
ILAC – International Laboratory Accreditation Cooperation
IR – Infrared
ISO – International Standards Organization
IT – Information Technology
LCS – Laboratory Control Sample
LCSD – Laboratory Control Sample Duplicate
LIMS – Laboratory Information Management System
LOD – Limit of Detection
LOQ – Limit of Quantitation
MDL – Method Detection Limit
MDLV – Method Detection Limit Verification
MRA – Mutual Recognition Arrangement
MS – Matrix Spike
MSD – Matrix Spike Duplicate
NCM – Nonconformance Memo
ND – Not Detected
NELAC – National Environmental Laboratory Accreditation Conference
NELAP – National Environmental Laboratory Accreditation Program
NIST – National Institute of Standards and Technology
NVLAP – National Voluntary Laboratory Accreditation
OSHA – Occupational Safety and Health Administration
PDF – Portable Document Format
PID – Photo Ionization Detector
PM – Project Manager
PMA – Project Manager Assistant
PT – Proficiency or Performance Testing
QA/QC – Quality Assurance/Quality Control
QAM – Quality Assurance Manual
QAS – Quality Assurance Summaries
QAPP – Quality Assurance Project Plan
QIM – Quality Information Manager
QL – Quantitation Limit
QS – Quality System
R&U – Read and Understand
RF – Response Factor
RFP – Request for Proposal
RL – Reporting Limit
RPD – Relative Percent Difference
RT – Retention Time
SAP – Sampling and Analysis Plan
SDS – Safety Data Sheet
SOP – Standard Operating Procedure

TAT – Turnaround Time
TCLP - Toxicity Characteristic Leaching Procedure
TDS – Total Dissolved Solids
TIC – Tentatively Identified Compound
TNI – The NELAC Institute
USDA – U.S. Department of Agriculture
VOA – Volatile Organic Analytes
VOC – Volatile Organic Compound
VP – Vice-President
VPO – Vice-President of Operations

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Appendix 3.

Laboratory Certifications, Accreditations, Validations

TestAmerica Irvine maintains certifications, accreditations, and approvals with numerous state and national entities. Programs vary but may include on-site audits, reciprocal agreements with another entity, performance testing evaluations, review of the QAM, SOPs, MDLs, training records, etc. At the time of this QAM revision, the laboratory has accreditation/certification/licensing with the following organizations:

**CERTIFICATION / ACCREDITATION STATUS
IRVINE LABORATORY (EPA ID CA01531)**

State	Agency	Program	License Number	Expiration Date
CA	ELAP	DW, WW, HW	2706	06/30/16
AK	DEC	DW	CA01531	06/30/16
AZ	DHS	DW, WW, HW	AZ0671	10/31/15
NV	DEP	DW, WW, HW	CA01531	07/31/16
HI	DOH	DW	--	01/29/16
Northern Mariana Islands	DEQ	DW	MP0002	01/29/16
Guam	EPA	DW	15-001r	01/23/16
NM	DWB	DW	CA01531	01/29/16
OR	ORELAP	DW, WW, HW	4028	01/29/16
KS	KDHE	WW, HW	E-10420	07/31/16
WA	Dept Of Ecology	DW, WW, HW	C900	09/03/16
CA	County Sanitation District Los Angeles County	WW	10256	n/a
--	USDA	Foreign Soil	P330-15-00184	07/08/18

The certificates and accredited parameter lists are available for each State/Program at www.testamericainc.com under Analytical Services Search – Certifications.

Quality Assurance Summary (QAS)

Client / Project:	Boeing
QAPP or SOW:	Waste Discharge Requirements for the Boeing Company, Santa Susana Field Laboratory, Order R4-2015-0033, NPDES CA0001309, Los Angeles Regional Water Quality Control Board, April 1, 2015

Project Organization

Project Managers	Urvashi Patel								
Special Notification Requirements	<p><u>Management Changes</u></p> <p>TestAmerica must notify all parties (Consultant, Mec^x) within 30 days of any changes in senior management (Lab Director, QA Manager, Operations Manager, Manager of Project Management) or Project Manager at the laboratory.</p> <p><u>Certification Changes</u></p> <p>In addition to providing an annual update on current laboratory methods, certifications, reporting limits and MDLs, any changes in the laboratory's ability to perform requested analyses must be communicated to all parties immediately. Changes will generally be provided no later than October, prior to the start of the rainy season.</p>								
Sampling Event Information	<p>The SSFL site is monitored for discharge under NPDES permit CA0001309. This discharge permit encompasses 16 outfalls that are monitored on routine, monthly, quarterly, and annual frequencies as specified in the permit.</p> <p>The outfalls are grouped by their monitoring parameter lists:</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Monitoring List*</th> <th>Outfall ID</th> </tr> </thead> <tbody> <tr> <td>E-2a</td> <td>001, 002, 011, 018</td> </tr> <tr> <td>E-2b</td> <td>003, 004, 005, 006, 007, 008, 009, 010</td> </tr> <tr> <td>E-2c</td> <td>019,020</td> </tr> </tbody> </table> <p>*From Permit table</p>	Monitoring List*	Outfall ID	E-2a	001, 002, 011, 018	E-2b	003, 004, 005, 006, 007, 008, 009, 010	E-2c	019,020
Monitoring List*	Outfall ID								
E-2a	001, 002, 011, 018								
E-2b	003, 004, 005, 006, 007, 008, 009, 010								
E-2c	019,020								

<p>Sampling Event Information, continued</p>	<p><u>Monitoring Frequency</u></p> <p>Tables E-2a, b, and c in the Permit specify the analytical parameters, units, sample type (grab or composite) and sampling frequency. Sampling frequencies may change based on detects, non-detects, and recommendations by the consultants and/or the SSFL expert panel.</p>
<p>Special Bottle Order/Bottle Preps (containers, preservation, etc.)</p>	<ol style="list-style-type: none"> 1) Bottle orders are coordinated between the TestAmerica project manager and the consultant. . The laboratory will be instructed as to what Outfall and events are planned to be sampled so correct bottle sets can be sent. 2) ISRA, BMP and GETs bottle orders are sent in bulk shipments when requested by Consultant 3) Preserved bottles must be individually bagged and an absorbent pad must also be placed each cooler in case of a spill. 4) Laboratory pre-printed labels on NPDES outfall bottle orders when requested by consultant. 5) Laboratory-supplied water for trip blanks must be lot-traceable. 6) When requested by consultant, low level 1631 mercury kits will be utilized for sample collection for method 245.1. Consultant will inform the lab as to whether these unpreserved VOA vials should have nitric acid added to them prior to or after sample collection. <p>Interim Source Removal Action (ISRA) Performance Monitoring Samples are collected in accordance with the Los Angeles Regional Water Quality Control Board (LARWQB). Consultant indicates on the COC which samples are to be run through the Dekaport Cone Splitter. These split samples are analyzed by both TestAmerica Irvine and American Scientific Laboratories (ASL).</p>

Sample Pickup	<ol style="list-style-type: none">1) All couriers must be on pre-approved courier list to be granted access to SSFL. If an outside courier service is used, the courier must have been audited by TestAmerica.2) TestAmerica will submit a list of couriers to Consultant with the appropriate documentation so that the courier will be granted access to the site.3) If a new courier is hired and it is anticipated that he/she will be servicing SSFL, then TestAmerica will pro-actively submit the documentation to Consultant for SSFL approval.4) At a minimum, appropriate courier documentation consists of the full name of the courier.5) Custody seals must be placed on the cooler whenever samples are not counted in the field.6) Check for short-hold analyses on COCs and notify the TestAmerica project manager.<ol style="list-style-type: none">a) Bioassay-36 hour holding time may need to be delivered immediately to Aquatic Bioassay Laboratories.b) Hydrazine has a 72 hour holding time so may need to be sent via Fed-ex direct from site to the appropriate subcontract lab: TestAmerica Denver for SSFL NPDES work.c) Notify the TestAmerica project manager of all other analyses with short holding times (48 hours or less) such as Micro, bioassays, Chromium VI, nitrate, pH, and turbidity.d) 525.2 Diazinon and Chloropyrifos has a 24-hour extraction holding time.
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<p>Subsampling or Compositing?</p>	<p><u>Cone Splitting Procedure</u> (see IR-WI-CONE_SPLIT, current revision)</p> <ol style="list-style-type: none">1) The Cone Splitter must be correctly assembled, cleaned, leveled and pre-rinsed prior to use. A Performance Check must be run prior to the first sampling event of the season.2) There are two levels of cleaning for the cone splitter. Each has a checklist:<ol style="list-style-type: none">a) Level 1 is performed each time before use for samples collected from different sites on the same day.b) Level 2 cleaning is performed if the splitter has dried before cleaning or was used for splitting sample with known or suspected high level target analytes.3) Only laboratory staff with documented training on the Cone Splitter Work Instruction (can be involved in the cone splitting procedure). <p><u>Clarification on Cone Splitter Protocol</u></p> <ol style="list-style-type: none">1) Performance tests are performed at the request of the Consultant, typically on an annual basis.2) Sample Volumes: the client submits approximately 4 liters of sample. The final volumes after splitting are approximately 800mL in each 1 Liter container and approximately 400mL in each 500mL container. For dioxin analysis, the dioxin testing laboratory is provided with instructions on the COC to use the contents of both a 1 liter amber and a 500mL amber for testing and to perform a solvent rinse on both containers. For equipment blanks, volume from all 3-500mL ambers are used and solvent rinsed.3) Holding time: Lab performs cone splitting within 24 hours of receipt. SOP has a recommended holding time of 5 hours if splitting is performed in field or "best professional judgment." Analyses being performed have holding times of 7 days or greater.
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<p>Subcontract Labs</p>	<p><u>Radiological Sample Preparation</u></p> <ol style="list-style-type: none"> 1) Radiological samples subcontracted to an outside laboratory require documentation of sample preparation procedure performed at TestAmerica Irvine. <ol style="list-style-type: none"> a) Either the Sample Control department manager or the Metals dept manager oversees the processing of these samples. b) Every batch of samples (each 2.5 gallon container) requires a trip blank with the exception of samples for tritium analyses. c) Prepare the trip blank by filling a 2.5 gallon container with Laboratory Reagent-Grade Water (RGW). d) Add 25mL of nitric acid to each sample and trip blank. e) Check pH with pH paper by taking an aliquot of sample using a disposable transfer pipette and squeezing a few drops on the pH strip. (Do not dip pH strip directly into sample container). f) If pH<2, record on log sheet. g) If pH>2, add another 5mL and recheck pH. h) Record sample ID, acid vendor, lot#, date and time on log sheet-see Attachment 2. Note any comments if needed. i) Notify Sample Control that samples have been prepared/are ready to be shipped. j) Sample Control logs in the trip blank (use prep date/time as sample date) on the same work order and logs in the applicable test methods, prints subcontract COC and sends to a pre-approved radiological testing laboratory with original pH adjustment log. Sample Control attaches a copy of pH adjustment log to work order. k) Samples must not be filtered. l) A site specific sample duplicate must be run with each batch of samples. <p><u>Dioxin Analysis</u></p> <ol style="list-style-type: none"> 1) Report in µg/L. 2) Report down to the EDL for non-detects and below the EDL for isomers meeting required signal-to-noise ratios. 3) Narrate any detection below EDL. 4) Confirm all 2,3,7,8-TCDF J-flag hits and report both results. 5) EMPCs are reported as positive results with the appropriate qualifiers. 6) Flag total results as the summation of all flags within the homolog group.
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Sample Receiving/Login Instructions

<p>Special forms?</p>	<ol style="list-style-type: none"> 1) Receipt Acknowledgements should be sent within 24 hours of receipt. The format and the delivery instructions are specified in LIMS under the Deliverables section for the project.
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<p>Other Comments</p>	<ol style="list-style-type: none">1) Log in the sample with dioxin, TSS, metals analysis as indicated on COC and add the following containers with TestAmerica labels for the analyst:<ul style="list-style-type: none">2-1 gal ambers (as received from client)1-500mL poly for TSS1-500mL poly w/Nitric acid1-1000mL amber1-500mL amber2) Log in an equipment blank per sample and an equipment blank after the last sample that will be placed on hold. Equipment Blank and Analyses to be provided by the Client to the TestAmerica project manager. Provide empty containers with TestAmerica labels with each equipment blank in sequential order (equipment blank #1, #2, etc.) for:<ul style="list-style-type: none">1-1000mL poly for TSS1-1000mL poly w/Nitric acid3-500mL ambers3) After the cone splitting is completed, the TestAmerica project manager will update the equipment blank sample descriptions and add any analyses requested per the Equipment Blank COC provided.4) Note any comments on the COC in LIMS (for example "high concentrations").5) Field blanks do not go through cone splitter and will be logged in for analyses or placed on a "hold" status as indicated on COC.6) The split samples: For each sample, the following containers will have labels with client descriptions and will be sent directly to ASL labs (info below). These will NOT be logged into TestAmerica's LIMS. Consultant will provide the COC that will accompany the samples to ASL.<ul style="list-style-type: none">1-500mL poly for TSS1-500mL poly w/Nitric acid1-1000mL amber1-500mL amber7) Once split samples are ready, a courier will send splits and the COC to ASL labs at the address listed below. A copy of COC will also be emailed to Consultant. Molky Brar American Scientific Laboratories, LLC 2520 North San Fernando Road Los Angeles, CA 90065 Phone: 323 223 9700 Fax: 323 223 9500
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Deliverable Requirements

Report on Dry-Weight Basis?	N/A
Special Flagging/Reporting	<p><u>Level 2</u></p> <ol style="list-style-type: none"> 1) Analyses performed at TestAmerica Irvine and dioxin work are due in 10 business days unless otherwise noted on the COC. GETS program is typically requested on a 48 hour rush as indicated on the chain of custody. 2) Complete level 2 report (with all subcontract data), equis EDD, and Access 7 EDD is due 28 calendar days from sample receipt. 3) Upon receipt of the dioxin and radiological data they will each be merged into the report and EDD. 4) Bioassay and particle size data is merged into the PDF report but not included in the EDD. 5) No partial EDDs are needed unless specifically requested by Consultant or MEC^x. 6) J-flag all results to MDL (to the EDL for dioxins). 7) Report must be in NPDES format. 8) Geotracker EDF needed when requested on COC. 9) Grab and composite samples from the same sampling event must be merged into a single report and SDG. 10) NPDES SSFL-significant figures and units must match permit. 11) Deliverable instructions are specified in TALS. <p><u>Level 4</u></p> <ol style="list-style-type: none"> 1) Data package due 28 days after sample collection date unless otherwise noted on the COC. 2) Post to Total Access and mail CD and hard copy to Kim Schultz at MEC^x for NPDES reports or when specifically requested by the Consultant project manager for other programs. 3) Data packages from sublabs are saved into the subcontract folder in the level IV deliverable so that one complete data package is completed. 4) Unless otherwise requested by Consultant, Level 4 data packages are not generated for ISRA, BMP, and GETs sampling events.
Special Narrative	NPDES format (includes perjury statement)
EDD	StdAccess 7 (UDS) and Equ_HaleyAldrich_HdrY (UDS)
Special Invoice	None
Other	None

Technical Requirements for All Lab Areas

	Yes	No	Notes
Full Analyte Spike List?		X	
Reporting Multiple Dilutions?		X	

	Yes	No	Notes
Special reanalysis requirements?	X		See Technical Requirements for Specific Areas
Project-specified action limits?	X		1) An Action Limit Group is set up in LIMS for each outfall group. 2) The appropriate action limit is applied to analysis during the login process. 3) Automated exceedence notifications are emailed to the TestAmerica project manager for review and distribution to Consultant and MEC ^x . 4) Action limits do not apply to ISRA, BMP, and GETs sampling events.
Project-specified QC limits?		X	
Project-specified RLs?	X		For select parameters from each outfall, daily maximum and monthly average discharge levels are specified in the permit.
Special MDL Requirements?		X	
Special QC Samples or Frequency?	X		See Technical Requirements for Specific Areas
Special Blank Control Requirements		X	
Reagents and Standards		X	

Technical Requirements for Specific Areas

Method	Special Requirements
1613-Dioxin	1) Report down to the EDL for ND and below the EDL for isomers meeting required signal-to-noise ratios. 2) Narrate any detection below EDL. 3) Confirm all 2,3,7,8-TCDF J-flag hits and report both results. 4) EMPCs are reported as positive results with the appropriate qualifiers. 5) Flag total results as the summation of all flags within the homolog group.
Perchlorate 314.0	1) A low level MS is required on any samples with elevated baseline (baseline above the height of the 4ppb standard) 2) All samples with detected (>MDL) results for perchlorate must be post-spiked with perchlorate at a concentration 2-5x the native sample concentration to verify that the peak identified in the samples is perchlorate.

Method	Special Requirements
DI Leach	On an as-needed basis, the laboratory will be requested to perform a 1:10 DI leaching procedure for solid materials that are being used at the site in order to determine if they could introduce target analytes into the monitored outfalls. For specifics of the leaching process, see, IR-WI-BOEING_LEACH
Microbiology (SM9221B & Enterolert)	Samples must be prepared at 1X, 10X and 100X dilutions. The dilutions are indicated on the COC. Laboratory must report the geometric mean of these results.
Mercury 245.1	1631 low level mercury kits will be utilized upon client request. Consultant will inform the lab if nitric acid should be added to the unpreserved vials prior to or after sample collection. Vials will remain bagged through log in and sample storage. The vials will only be opened by metals staff trained in special sample handling; hands and forearms must be washed prior to preparation, wear clean gloves when handling these samples, analyst will not wear a watch or use cell phone or IR temperature probe.
Volatile Organics	Method Blanks must be < 1/2 RL or 1/10 associated sample concentrations

Sample Archive/Disposal Instructions

Long-term sample storage required?	After analysis is complete, samples from this site are to be refrigerated for 30 days and maintained at room temperature storage at the laboratory for six months.
Disposal requirements:	Approval for disposal is communicated to Sample Control staff by the laboratory project manager for all Boeing work.

Attachments

- 1) pH adjustment Log for Radiological Samples

Revision History

This section has been added beginning with Revision 0. Only details of the last two revisions are incorporated into this SOP. Prior revisions are documented in the QA files.

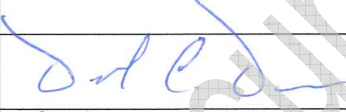


Revision 2, dated 03/13/2015

- This revision supersedes IR-QAS-BOEING_NPDES, revision 1, 11/21/2014
- Addition of microbiology requirements for multiple dilutions and geometric mean.

Revision 3, dated 03/18/2016

- This revision supersedes IR-QAS-BOEING_NPDES, revision 2, 03/13/2015
- Added special mercury sample bottle and handling
- Updated references to new permit (dates, revision, tables, action limits)
- Updated Project Manager and subcontract lab for hydrazine and bioassays
- Removed Outfall Discharge Limit tables
- Removed attachments for work instructions IR-WI-CONE_SPLIT and IR-WI-BOEING_LEACH

Laboratory Review/Approval

Title	Name	Signature	Date
Project Manager	Urvashi Patel		
Manager of Project Management	Urvashi Patel		
Interim Quality Assurance Manager	Dave Dawes		03/17/16
Operations Manager	Debby Wilson		03/17/16
Laboratory Director	Linda Scharpenberg		3/17/16

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Laboratory Review/Approval

Title	Name	Signature	Date
Project Manager	Urvashi Patel	<i>Urvashi Patel</i>	3/17/16
Manager of Project Management	Urvashi Patel	<i>Urvashi Patel</i>	3/17/16
Interim Quality Assurance Manager	Dave Dawes		
Operations Manager	Debby Wilson		
Laboratory Director	Linda Scharpenberg		

Uncontrolled Document



STATE WATER RESOURCES CONTROL BOARD
REGIONAL WATER QUALITY CONTROL BOARDS

CALIFORNIA STATE



ENVIRONMENTAL LABORATORY ACCREDITATION PROGRAM

CERTIFICATE OF ENVIRONMENTAL ACCREDITATION

Is hereby granted to

Testamerica Irvine

Irvine

17461 Derian Avenue, Suite 100

Irvine, CA 92614-5817

Scope of the certificate is limited to the
"Fields of Testing"
which accompany this Certificate.

Continued accredited status depends on successful completion of on-site inspection,
proficiency testing studies, and payment of applicable fees.

This Certificate is granted in accordance with provisions of
Section 100825, et seq. of the Health and Safety Code.

Certificate No.: **2706**

Expiration Date: **6/30/2016**

Effective Date: **7/1/2014**

Sacramento, California
subject to forfeiture or revocation

A handwritten signature in black ink, appearing to read "Christine Sotelo".

Christine Sotelo, Chief
Environmental Laboratory Accreditation Program



**CALIFORNIA STATE
ENVIRONMENTAL LABORATORY ACCREDITATION PROGRAM
Accredited Fields of Testing**



Testamerica Irvine

Irvine
17461 Derian Avenue, Suite 100
Irvine, CA 92614-5817
Phone: (949) 261-1022

**Certificate No.: 2706
Renew Date: 6/30/2016**

Field of Testing: 101 - Microbiology of Drinking Water

101.010	001	Heterotrophic Bacteria	SM9215B
101.011	001	Heterotrophic Bacteria	SimPlate
101.020	001	Total Coliform	SM9221A,B
101.021	001	Fecal Coliform	SM9221E (MTF/EC)
101.022	001	E. coli	CFR 141.21(f)(6)(i) (MTF/EC+MUG)
101.060	002	Total Coliform	SM9223
101.060	003	E. coli	SM9223
101.070	002	Total Coliform	Colisure
101.070	003	E. coli	Colisure
101.120	001	Total Coliform (Enumeration)	SM9221A,B,C
101.130	001	Fecal Coliform (Enumeration)	SM9221E (MTF/EC)
101.160	001	Total Coliform (Enumeration)	SM9223
101.195	001	Heterotrophic Bacteria	SM9215B
101.196	001	Heterotrophic Bacteria	SimPlate
101.200	001	E. coli (Enumeration)	SM9223B
101.210	001	E. coli (Enumeration)	SM9221B,F-2006
101.300	001	E. coli	SM9223B
101.301	001	E. coli	SM9223B
101.305	001	E. coli	SM9221B,F-2006
101.307	001	Enterococci	SM9230B
101.310	001	Enterococci	Enterolert

Field of Testing: 102 - Inorganic Chemistry of Drinking Water

102.015	001	Hydrogen Ion (pH)	EPA 150.1
102.020	001	Turbidity	EPA 180.1
102.026	001	Calcium	EPA 200.7
102.026	002	Magnesium	EPA 200.7
102.026	003	Potassium	EPA 200.7
102.026	004	Silica	EPA 200.7
102.026	005	Sodium	EPA 200.7
102.026	006	Hardness (calculation)	EPA 200.7
102.030	003	Chloride	EPA 300.0
102.030	005	Fluoride	EPA 300.0
102.030	006	Nitrate	EPA 300.0
102.030	007	Nitrite	EPA 300.0
102.030	008	Phosphate, Ortho	EPA 300.0
102.030	010	Sulfate	EPA 300.0
102.040	001	Bromide	EPA 300.1
102.040	002	Chlorite	EPA 300.1

As of 2/9/2015, this list supersedes all previous lists for this certificate number.
Customers: Please verify the current accreditation standing with the State.

102.040	003	Chlorate	EPA 300.1
102.040	004	Bromate	EPA 300.1
102.045	001	Perchlorate	EPA 314.0
102.048	001	Perchlorate	EPA 332.0
102.095	001	Turbidity	SM2130B-2001
102.100	001	Alkalinity	SM2320B-1997
102.120	001	Hardness (calculation)	SM2340B-1997
102.121	001	Hardness	SM2340C-1997
102.130	001	Conductivity	SM2510B-1997
102.140	001	Residue, Filterable TDS	SM2540C-1997
102.175	001	Chlorine, Free	SM4500-CI G-2000
102.175	002	Chlorine, Total Residual	SM4500-CI G-2000
102.190	001	Cyanide, Total	SM4500-CN E
102.192	001	Cyanide, amenable	SM4500-CN G
102.210	001	Hydrogen Ion (pH)	SM4500-H+ B
102.220	001	Nitrite	SM4500-NO2- B-2000
102.234	001	Nitrite	SM4500-NO3- F-2000
102.262	001	Total Organic Carbon	SM5310C
102.263	001	Organic carbon-Dissolved DOC	SM5310C
102.270	001	Surfactants	SM5540C
102.563	001	Cyanide	Kelada-01

Field of Testing: 103 - Toxic Chemical Elements of Drinking Water

103.130	001	Aluminum	EPA 200.7
103.130	003	Barium	EPA 200.7
103.130	004	Beryllium	EPA 200.7
103.130	005	Cadmium	EPA 200.7
103.130	007	Chromium	EPA 200.7
103.130	008	Copper	EPA 200.7
103.130	009	Iron	EPA 200.7
103.130	011	Manganese	EPA 200.7
103.130	012	Nickel	EPA 200.7
103.130	015	Silver	EPA 200.7
103.130	017	Zinc	EPA 200.7
103.130	018	Boron	EPA 200.7
103.140	001	Aluminum	EPA 200.8
103.140	002	Antimony	EPA 200.8
103.140	003	Arsenic	EPA 200.8
103.140	004	Barium	EPA 200.8
103.140	005	Beryllium	EPA 200.8
103.140	006	Cadmium	EPA 200.8
103.140	007	Chromium	EPA 200.8
103.140	008	Copper	EPA 200.8
103.140	009	Lead	EPA 200.8
103.140	010	Manganese	EPA 200.8
103.140	011	Mercury	EPA 200.8
103.140	012	Nickel	EPA 200.8
103.140	013	Selenium	EPA 200.8

As of 2/9/2015 , this list supersedes all previous lists for this certificate number.
 Customers: Please verify the current accreditation standing with the State.

103.140	014	Silver	EPA 200.8
103.140	015	Thallium	EPA 200.8
103.140	016	Zinc	EPA 200.8
103.140	018	Vanadium	EPA 200.8
103.160	001	Mercury	EPA 245.1
103.310	001	Chromium (VI)	EPA 218.6
103.311	001	Chromium (VI)	EPA 218.7

Field of Testing: 104 - Volatile Organic Chemistry of Drinking Water

104.030	001	1,2-Dibromoethane	EPA 504.1
104.030	002	1,2-Dibromo-3-chloropropane	EPA 504.1
104.035	001	1,2,3-Trichloropropane	SRL 524M-TCP
104.040	000	Volatile Organic Compounds	EPA 524.2
104.040	001	Benzene	EPA 524.2
104.040	007	n-Butylbenzene	EPA 524.2
104.040	008	sec-Butylbenzene	EPA 524.2
104.040	009	tert-Butylbenzene	EPA 524.2
104.040	010	Carbon Tetrachloride	EPA 524.2
104.040	011	Chlorobenzene	EPA 524.2
104.040	015	2-Chlorotoluene	EPA 524.2
104.040	016	4-Chlorotoluene	EPA 524.2
104.040	019	1,3-Dichlorobenzene	EPA 524.2
104.040	020	1,2-Dichlorobenzene	EPA 524.2
104.040	021	1,4-Dichlorobenzene	EPA 524.2
104.040	022	Dichlorodifluoromethane	EPA 524.2
104.040	023	1,1-Dichloroethane	EPA 524.2
104.040	024	1,2-Dichloroethane	EPA 524.2
104.040	025	1,1-Dichloroethene	EPA 524.2
104.040	026	cis-1,2-Dichloroethene	EPA 524.2
104.040	027	trans-1,2-Dichloroethene	EPA 524.2
104.040	028	Dichloromethane	EPA 524.2
104.040	029	1,2-Dichloropropane	EPA 524.2
104.040	033	cis-1,3-Dichloropropene	EPA 524.2
104.040	034	trans-1,3-Dichloropropene	EPA 524.2
104.040	035	Ethylbenzene	EPA 524.2
104.040	036	Hexachlorobutadiene	EPA 524.2
104.040	037	Isopropylbenzene	EPA 524.2
104.040	039	Naphthalene	EPA 524.2
104.040	041	N-propylbenzene	EPA 524.2
104.040	042	Styrene	EPA 524.2
104.040	043	1,1,1,2-Tetrachloroethane	EPA 524.2
104.040	044	1,1,2,2-Tetrachloroethane	EPA 524.2
104.040	045	Tetrachloroethene	EPA 524.2
104.040	046	Toluene	EPA 524.2
104.040	047	1,2,3-Trichlorobenzene	EPA 524.2
104.040	048	1,2,4-Trichlorobenzene	EPA 524.2
104.040	049	1,1,1-Trichloroethane	EPA 524.2
104.040	050	1,1,2-Trichloroethane	EPA 524.2

104.040	051	Trichloroethene	EPA 524.2
104.040	052	Trichlorofluoromethane	EPA 524.2
104.040	054	1,2,4-Trimethylbenzene	EPA 524.2
104.040	055	1,3,5-Trimethylbenzene	EPA 524.2
104.040	056	Vinyl Chloride	EPA 524.2
104.040	057	Xylenes, Total	EPA 524.2
104.040	061	Carbon Disulfide	EPA 524.2
104.040	062	Methyl Isobutyl Ketone	EPA 524.2
104.045	000	Trihalomethanes, Total	EPA 524.2
104.045	001	Bromodichloromethane	EPA 524.2
104.045	002	Bromoform	EPA 524.2
104.045	003	Chloroform	EPA 524.2
104.045	004	Dibromochloromethane	EPA 524.2
104.050	000	Gasoline Additives	EPA 524.2
104.050	002	Methyl tert-butyl Ether (MTBE)	EPA 524.2
104.050	003	tert-Amyl Methyl Ether (TAME)	EPA 524.2
104.050	004	Ethyl tert-butyl Ether (ETBE)	EPA 524.2
104.050	005	Trichlorotrifluoroethane	EPA 524.2
104.050	006	tert-Butyl Alcohol (TBA)	EPA 524.2

Field of Testing: 105 - Semi-volatile Organic Chemistry of Drinking Water

105.010	002	Alachlor	EPA 505
105.010	004	Chlordane	EPA 505
105.010	006	Endrin	EPA 505
105.010	007	Heptachlor	EPA 505
105.010	008	Heptachlor Epoxide	EPA 505
105.010	009	Hexachlorobenzene	EPA 505
105.010	010	Hexachlorocyclopentadiene	EPA 505
105.010	011	Lindane	EPA 505
105.010	012	Methoxychlor	EPA 505
105.010	014	Toxaphene	EPA 505
105.010	015	PCBs as Aroclors (screen)	EPA 505
105.083	001	2,4-D	EPA 515.4
105.083	002	Dinoseb	EPA 515.4
105.083	003	Pentachlorophenol	EPA 515.4
105.083	004	Picloram	EPA 515.4
105.083	005	2,4,5-TP	EPA 515.4
105.083	006	Dalapon	EPA 515.4
105.083	007	Bentazon	EPA 515.4
105.083	008	Dicamba	EPA 515.4
105.083	009	Chlorinated Acids	EPA 515.4
105.090	000	Semi-volatile Organic Compounds	EPA 525.2
105.090	001	Alachlor	EPA 525.2
105.090	002	Aldrin	EPA 525.2
105.090	003	Atrazine	EPA 525.2
105.090	004	Benzo(a)pyrene	EPA 525.2
105.090	005	Butachlor	EPA 525.2
105.090	007	Dieldrin	EPA 525.2

As of 2/9/2015, this list supersedes all previous lists for this certificate number.
 Customers: Please verify the current accreditation standing with the State.

105.090	008	Di(2-ethylhexyl) Adipate	EPA 525.2
105.090	009	Di(2-ethylhexyl) Phthalate	EPA 525.2
105.090	016	Hexachlorobenzene	EPA 525.2
105.090	017	Hexachlorocyclopentadiene	EPA 525.2
105.090	018	Lindane	EPA 525.2
105.090	019	Methoxychlor	EPA 525.2
105.090	022	Molinate	EPA 525.2
105.090	025	Simazine	EPA 525.2
105.100	000	Carbamates	EPA 531.1
105.100	001	Aldicarb	EPA 531.1
105.100	002	Aldicarb Sulfone	EPA 531.1
105.100	003	Aldicarb Sulfoxide	EPA 531.1
105.100	004	Carbaryl	EPA 531.1
105.100	005	Carbofuran	EPA 531.1
105.100	006	3-Hydroxycarbofuran	EPA 531.1
105.100	007	Methomyl	EPA 531.1
105.100	008	Oxamyl	EPA 531.1
105.120	001	Glyphosate	EPA 547
105.140	001	Endothall	EPA 548.1
105.150	001	Diquat	EPA 549.2
105.200	001	Bromoacetic Acid	EPA 552.2
105.200	003	Chloroacetic Acid	EPA 552.2
105.200	004	Dalapon	EPA 552.2
105.200	005	Dibromoacetic Acid	EPA 552.2
105.200	006	Dichloroacetic Acid	EPA 552.2
105.200	007	Trichloroacetic Acid	EPA 552.2
105.200	008	Haloacetic Acids (HAA5)	EPA 552.2

Field of Testing: 106 - Radiochemistry of Drinking Water

106.092	001	Uranium	EPA 200.8
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Field of Testing: 107 - Microbiology of Wastewater

107.010	001	Heterotrophic Bacteria	SM9215B
107.020	001	Total Coliform	SM9221B,C-2006
107.030	001	Total Coliform with Chlorine Present	SM9221B,C-2006
107.040	001	Fecal Coliform	SM9221C,E (MTF/EC)
107.050	001	Fecal Coliform with Chlorine Present	SM9221E-2006
107.100	001	Fecal Streptococci	SM9230B
107.242	001	Enterococci	Enterolert
107.245	002	E. coli	SM9223B-2004
107.245	003	E. coli	SM9223B-2004
107.247	001	E. coli	SM9221B,F-2006

Field of Testing: 108 - Inorganic Chemistry of Wastewater

108.020	001	Conductivity	EPA 120.1
108.090	001	Residue, Volatile	EPA 160.4
108.110	001	Turbidity	EPA 180.1
108.112	001	Boron	EPA 200.7
108.112	002	Calcium	EPA 200.7

108.112	003	Hardness (calculation)	EPA 200.7
108.112	004	Magnesium	EPA 200.7
108.112	005	Potassium	EPA 200.7
108.112	006	Silica	EPA 200.7
108.112	007	Sodium	EPA 200.7
108.112	008	Phosphorus, Total	EPA 200.7
108.120	001	Bromide	EPA 300.0
108.120	002	Chloride	EPA 300.0
108.120	003	Fluoride	EPA 300.0
108.120	008	Sulfate	EPA 300.0
108.120	012	Nitrate (as N)	EPA 300.0
108.120	013	Nitrate-Nitrite (as N)	EPA 300.0
108.120	014	Nitrite as N	EPA 300.0
108.120	015	Phosphate, Ortho (as P)	EPA 300.0
108.200	001	Ammonia	EPA 350.1
108.211	001	Kjeldahl Nitrogen	EPA 351.2
108.264	001	Phosphate, Ortho	EPA 365.3
108.265	001	Phosphorus, Total	EPA 365.3
108.362	001	Phenols, Total	EPA 420.4
108.381	001	Oil and Grease	EPA 1664A
108.385	001	Color	SM2120B-2001
108.390	001	Turbidity	SM2130B-2001
108.400	001	Acidity	SM2310B-1997
108.410	001	Alkalinity	SM2320B-1997
108.420	001	Hardness (calculation)	SM2340B-1997
108.421	001	Hardness	SM2340C-1997
108.430	001	Conductivity	SM2510B-1997
108.439	001	Residue, Volatile	SM2540E-1997
108.440	001	Residue, Total	SM2540B-1997
108.441	001	Residue, Filterable TDS	SM2540C-1997
108.442	001	Residue, Non-filterable TSS	SM2540D-1997
108.443	001	Residue, Settleable	SM2540F-1997
108.465	001	Chlorine, Total	SM4500-CI G-2000
108.465	002	Chlorine, Free	SM4500-CI G-2000
108.470	001	Cyanide, Manual Distillation	SM4500-CN C
108.472	001	Cyanide, Total	SM4500-CN E
108.473	001	Cyanide, amenable	SM4500-CN G
108.490	001	Hydrogen Ion (pH)	SM4500-H+ B-2000
108.492	001	Ammonia	SM4500-NH3 C (19th/20th)
108.493	001	Ammonia	SM4500-NH3 D or E (19th/20th)
108.497	001	Ammonia	SM4500-NH3 G (19th/20th)
108.514	001	Nitrite as N	SM4500-NO2- B-2000
108.529	001	Nitrate-Nitrite (as N)	SM4500-NO3- F-2000
108.529	003	Nitrate (as N)	SM4500-NO3- F-2000
108.536	001	Oxygen, dissolved	SM4500-O G-2001
108.584	001	Sulfide (as S)	SM4500-S= D-2000
108.592	001	Biochemical Oxygen Demand	SM5210B-2001

108.592	002	Carbonaceous BOD	SM5210B-2001
108.595	001	Chemical Oxygen Demand	SM5220D-1997
108.596	001	Organic Carbon-Total (TOC)	SM5310B-2000
108.605	001	Surfactants	SM5540C-2000
108.924	001	Cyanide, Total	Kelada-01

Field of Testing: 109 - Toxic Chemical Elements of Wastewater

109.010	001	Aluminum	EPA 200.7
109.010	002	Antimony	EPA 200.7
109.010	003	Arsenic	EPA 200.7
109.010	004	Barium	EPA 200.7
109.010	005	Beryllium	EPA 200.7
109.010	006	Boron	EPA 200.7
109.010	007	Cadmium	EPA 200.7
109.010	009	Chromium	EPA 200.7
109.010	010	Cobalt	EPA 200.7
109.010	011	Copper	EPA 200.7
109.010	012	Iron	EPA 200.7
109.010	013	Lead	EPA 200.7
109.010	015	Manganese	EPA 200.7
109.010	016	Molybdenum	EPA 200.7
109.010	017	Nickel	EPA 200.7
109.010	019	Selenium	EPA 200.7
109.010	021	Silver	EPA 200.7
109.010	023	Thallium	EPA 200.7
109.010	024	Tin	EPA 200.7
109.010	025	Titanium	EPA 200.7
109.010	026	Vanadium	EPA 200.7
109.010	027	Zinc	EPA 200.7
109.020	001	Aluminum	EPA 200.8
109.020	002	Antimony	EPA 200.8
109.020	003	Arsenic	EPA 200.8
109.020	004	Barium	EPA 200.8
109.020	005	Beryllium	EPA 200.8
109.020	006	Cadmium	EPA 200.8
109.020	007	Chromium	EPA 200.8
109.020	008	Cobalt	EPA 200.8
109.020	009	Copper	EPA 200.8
109.020	010	Lead	EPA 200.8
109.020	011	Manganese	EPA 200.8
109.020	012	Molybdenum	EPA 200.8
109.020	013	Nickel	EPA 200.8
109.020	014	Selenium	EPA 200.8
109.020	015	Silver	EPA 200.8
109.020	016	Thallium	EPA 200.8
109.020	017	Vanadium	EPA 200.8
109.020	018	Zinc	EPA 200.8
109.020	021	Iron	EPA 200.8

As of 2/9/2015, this list supersedes all previous lists for this certificate number.
 Customers: Please verify the current accreditation standing with the State.

109.020	022	Tin	EPA 200.8
109.104	001	Chromium (VI)	EPA 218.6
109.190	001	Mercury	EPA 245.1
109.445	002	Chromium (VI)	SM3500-Cr B-2009
109.449	001	Iron	SM3500-Fe

Field of Testing: 110 - Volatile Organic Chemistry of Wastewater

110.040	000	Purgeable Organic Compounds	EPA 624
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Field of Testing: 111 - Semi-volatile Organic Chemistry of Wastewater

111.100	000	Acid/base/neutral Organic Compounds	EPA 625
111.103	000	Nitrosamines	EPA 625
111.120	000	Semi-volatile Organic Compounds	EPA 1625B
111.170	000	Pesticides & PCBs	EPA 608

Field of Testing: 114 - Inorganic Chemistry of Hazardous Waste

114.010	001	Antimony	EPA 6010B
114.010	002	Arsenic	EPA 6010B
114.010	003	Barium	EPA 6010B
114.010	004	Beryllium	EPA 6010B
114.010	005	Cadmium	EPA 6010B
114.010	006	Chromium	EPA 6010B
114.010	007	Cobalt	EPA 6010B
114.010	008	Copper	EPA 6010B
114.010	009	Lead	EPA 6010B
114.010	010	Molybdenum	EPA 6010B
114.010	011	Nickel	EPA 6010B
114.010	012	Selenium	EPA 6010B
114.010	013	Silver	EPA 6010B
114.010	014	Thallium	EPA 6010B
114.010	015	Vanadium	EPA 6010B
114.010	016	Zinc	EPA 6010B
114.020	001	Antimony	EPA 6020
114.020	002	Arsenic	EPA 6020
114.020	003	Barium	EPA 6020
114.020	004	Beryllium	EPA 6020
114.020	005	Cadmium	EPA 6020
114.020	006	Chromium	EPA 6020
114.020	007	Cobalt	EPA 6020
114.020	008	Copper	EPA 6020
114.020	009	Lead	EPA 6020
114.020	010	Molybdenum	EPA 6020
114.020	011	Nickel	EPA 6020
114.020	012	Selenium	EPA 6020
114.020	013	Silver	EPA 6020
114.020	014	Thallium	EPA 6020
114.020	015	Vanadium	EPA 6020
114.020	016	Zinc	EPA 6020
114.103	001	Chromium (VI)	EPA 7196A

As of 2/9/2015, this list supersedes all previous lists for this certificate number.
Customers: Please verify the current accreditation standing with the State.

114.106	001	Chromium (VI)	EPA 7199
114.140	001	Mercury	EPA 7470A
114.141	001	Mercury	EPA 7471A
114.222	001	Cyanide	EPA 9014
114.230	001	Sulfides, Total	EPA 9034
114.240	001	Corrosivity - pH Determination	EPA 9040B
114.241	001	Corrosivity - pH Determination	EPA 9045C
114.250	001	Fluoride	EPA 9056
114.270	001	Fluoride	EPA 9214
114.280	001	Organic Lead	HML 939-M

Field of Testing: 115 - Extraction Test of Hazardous Waste

115.020	001	Toxicity Characteristic Leaching Procedure (TCLP)	EPA 1311
115.030	001	Waste Extraction Test (WET)	CCR Chapter 11, Article 5, Appendix II
115.040	001	Synthetic Precipitation Leaching Procedure (SPLP)	EPA 1312

Field of Testing: 116 - Volatile Organic Chemistry of Hazardous Waste

116.020	031	Ethanol and Methanol	EPA 8015B
116.030	001	Gasoline-range Organics	EPA 8015B
116.040	041	Methyl tert-butyl Ether (MTBE)	EPA 8021B
116.040	062	BTEX	EPA 8021B
116.080	000	Volatile Organic Compounds	EPA 8260B
116.080	120	Oxygenates	EPA 8260B
116.100	001	Total Petroleum Hydrocarbons - Gasoline	LUFT GC/MS
116.110	001	Total Petroleum Hydrocarbons - Gasoline	LUFT

Field of Testing: 117 - Semi-volatile Organic Chemistry of Hazardous Waste

117.010	001	Diesel-range Total Petroleum Hydrocarbons	EPA 8015B
117.016	001	Diesel-range Total Petroleum Hydrocarbons	LUFT
117.110	000	Extractable Organics	EPA 8270C
117.150	000	Carbonyl Compounds	EPA 8315A
117.210	000	Organochlorine Pesticides	EPA 8081A
117.220	000	PCBs	EPA 8082

Field of Testing: 120 - Physical Properties of Hazardous Waste

120.010	001	Ignitability	EPA 1010
120.070	001	Corrosivity - pH Determination	EPA 9040B
120.080	001	Corrosivity - pH Determination	EPA 9045C

Field of Testing: 126 - Microbiology of Recreational Water

126.010	001	Total Coliform (Enumeration)	SM9221A,B,C
126.030	001	Fecal Coliform (Enumeration)	SM9221E-2006
126.050	001	Total Coliform (Enumeration)	SM9223B-2004
126.050	002	E. coli (Enumeration)	SM9223B-2004
126.080	001	Enterococci	IDEXX



CALIFORNIA STATE
ENVIRONMENTAL LABORATORY ACCREDITATION PROGRAM

CERTIFICATE OF ENVIRONMENTAL LABORATORY ACCREDITATION

Is hereby granted to

TestAmerica Denver

4955 Yarrow Street

Arvada, CO 80002

Scope of the certificate is limited to the
"Fields of Testing"
which accompany this Certificate.

Continued accredited status depends on successful completion of on-site,
proficiency testing studies, and payment of applicable fees.

This Certificate is granted in accordance with provisions of
Section 100825, et seq. of the Health and Safety Code.

Certificate No.: **2513**

Expiration Date: **08/31/2016**

Effective Date: **09/01/2014**

A handwritten signature in black ink, appearing to read "Christine Sotelo".

Richmond, California
subject to forfeiture or revocation

Christine Sotelo, Chief
California State Environmental Laboratory Accreditation Program

NOTICE

The “List of Approved Fields of Testing and Analytes”, as stated on this certificate will be sent to your laboratory upon completion of the entire certification process, which includes an on-site inspection and participation in the appropriate PT studies.



California Environmental Protection Agency

State Water Resources Control Board
Environmental Laboratory Accreditation Program



EDMUND G. BROWN JR.
Governor

August 28, 2014

William S. Cicero
TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002

Dear William S. Cicero:

Certificate No. 2513

This is to advise you that the laboratory named above continues to be certified as an environmental testing laboratory pursuant to the provisions of the Health and Safety Code (HSC), Division 101, Part 1, Chapter 4, Section 100825, et seq. Certification for all currently certified Fields of Testing that the laboratory has applied for renewal shall remain in effect until **08/31/2016** unless it is revoked.

Please note that the renewal application for certification is subject to an on-site process, and the continued use of this certificate is contingent upon:

- * **successful completion of the on-site process;**
- * **acceptable performance in the required proficiency testing (PT) studies;**
- * **timely payment of all fees, including an annual fee due before August 31, 2015;**
- * **compliance with Environmental Laboratory Accreditation Program (ELAP); statutes (HSC, Section 100825, et seq.) and Regulations (California Code of Regulations (CCR), Title 22, Division 4, Chapter 19).**

An updated certificate of the "Fields of Testing" will be issued to the laboratory upon successful completion of the on-site process.

The application for the renewal of this certificate must be received before the expiration date to remain in force according to the HSC100845(a).

Please note that the laboratory is required to notify ELAP of any major changes in the laboratory such as the transfer of ownership, change of laboratory director, change in location, or structural alterations which may affect adversely the quality of analyses (HSC, Section 100845(b)(d)). Please include the above certificate number in all your correspondence with ELAP.

If you have any questions, please contact ELAP at (510) 620-3155.

Sincerely,


Christine Sotelo, Chief
California State Environmental Laboratory Accreditation Program



CALIFORNIA DEPARTMENT OF PUBLIC HEALTH
ENVIRONMENTAL LABORATORY ACCREDITATION PROGRAM
Accredited Fields of Testing



TestAmerica Laboratories, Inc. Denver
4955 Yarrow Street
Arvada, CO 80002
Phone: (303) 736-0100

Certificate No.: 2513
Renew Date: 8/31/2014

Field of Testing: 104 - Volatile Organic Chemistry of Drinking Water

104.030	001	1,2-Dibromoethane	EPA 504.1
104.030	002	1,2-Dibromo-3-chloropropane	EPA 504.1

Field of Testing: 108 - Inorganic Chemistry of Wastewater

108.090	001	Residue, Volatile	EPA 160.4
108.110	001	Turbidity	EPA 180.1
108.112	001	Boron	EPA 200.7
108.112	002	Calcium	EPA 200.7
108.112	003	Hardness (calculation)	EPA 200.7
108.112	004	Magnesium	EPA 200.7
108.112	005	Potassium	EPA 200.7
108.112	006	Silica	EPA 200.7
108.112	007	Sodium	EPA 200.7
108.120	001	Bromide	EPA 300.0
108.120	002	Chloride	EPA 300.0
108.120	003	Fluoride	EPA 300.0
108.120	004	Nitrate	EPA 300.0
108.120	005	Nitrite	EPA 300.0
108.120	006	Nitrate-nitrite	EPA 300.0
108.120	007	Phosphate, Ortho	EPA 300.0
108.120	008	Sulfate	EPA 300.0
108.183	001	Cyanide, Total	EPA 335.4
108.200	001	Ammonia	EPA 350.1
108.211	001	Kjeldahl Nitrogen	EPA 351.2
108.232	001	Nitrate-nitrite	EPA 353.2
108.232	002	Nitrite	EPA 353.2
108.260	001	Phosphate, Ortho	EPA 365.1
108.261	001	Phosphorus, Total	EPA 365.1
108.360	001	Phenols, Total	EPA 420.1
108.362	001	Phenols, Total	EPA 420.4
108.381	001	Oil and Grease	EPA 1664A
108.400	001	Acidity	SM2310B
108.410	001	Alkalinity	SM2320B
108.420	001	Hardness (calculation)	SM2340B

As of 10/4/2013, this list supersedes all previous lists for this certificate number.
Customers: Please verify the current accreditation standing with the State.

108.430	001	Conductivity	SM2510B
108.440	001	Residue, Total	SM2540B
108.441	001	Residue, Filterable	SM2540C
108.442	001	Residue, Non-filterable	SM2540D
108.443	001	Residue, Settleable	SM2540F
108.470	001	Cyanide, Manual Distillation	SM4500-CN C
108.472	001	Cyanide, Total	SM4500-CN E
108.473	001	Cyanide, amenable	SM4500-CN G
108.490	001	pH	SM4500-H+ B
108.510	001	Nitrite	SM4500-NO2 B
108.560	001	Sulfite	SM4500-SO3 B
108.580	001	Sulfide	SM4500-S= D
108.582	001	Sulfide	SM4500-S= F (19th/20th)
108.590	001	Biochemical Oxygen Demand	SM5210B
108.591	001	Carbonaceous BOD	SM5210B
108.610	001	Total Organic Carbon	SM5310B-2000

Field of Testing: 109 - Toxic Chemical Elements of Wastewater

109.010	001	Aluminum	EPA 200.7
109.010	002	Antimony	EPA 200.7
109.010	003	Arsenic	EPA 200.7
109.010	004	Barium	EPA 200.7
109.010	005	Beryllium	EPA 200.7
109.010	007	Cadmium	EPA 200.7
109.010	009	Chromium	EPA 200.7
109.010	010	Cobalt	EPA 200.7
109.010	011	Copper	EPA 200.7
109.010	012	Iron	EPA 200.7
109.010	013	Lead	EPA 200.7
109.010	015	Manganese	EPA 200.7
109.010	016	Molybdenum	EPA 200.7
109.010	017	Nickel	EPA 200.7
109.010	019	Selenium	EPA 200.7
109.010	021	Silver	EPA 200.7
109.010	023	Thallium	EPA 200.7
109.010	024	Tin	EPA 200.7
109.010	026	Vanadium	EPA 200.7
109.010	027	Zinc	EPA 200.7
109.020	002	Antimony	EPA 200.8
109.020	003	Arsenic	EPA 200.8
109.020	004	Barium	EPA 200.8
109.020	005	Beryllium	EPA 200.8

As of 10/4/2013 , this list supersedes all previous lists for this certificate number.
 Customers: Please verify the current accreditation standing with the State.

109.020	006	Cadmium	EPA 200.8
109.020	007	Chromium	EPA 200.8
109.020	008	Cobalt	EPA 200.8
109.020	009	Copper	EPA 200.8
109.020	010	Lead	EPA 200.8
109.020	011	Manganese	EPA 200.8
109.020	012	Molybdenum	EPA 200.8
109.020	013	Nickel	EPA 200.8
109.020	014	Selenium	EPA 200.8
109.020	015	Silver	EPA 200.8
109.020	016	Thallium	EPA 200.8
109.020	017	Vanadium	EPA 200.8
109.020	018	Zinc	EPA 200.8
109.190	001	Mercury	EPA 245.1

Field of Testing: 110 - Volatile Organic Chemistry of Wastewater

110.020	000	Aromatic Volatiles	EPA 602
110.040	040	Halogenated Hydrocarbons	EPA 624
110.040	041	Aromatic Compounds	EPA 624
110.040	042	Oxygenates	EPA 624
110.040	043	Other Volatile Organics	EPA 624

Field of Testing: 111 - Semi-volatile Organic Chemistry of Wastewater

111.060	000	Polynuclear Aromatics	EPA 610
111.101	032	Polynuclear Aromatic Hydrocarbons	EPA 625
111.101	033	Adipates	EPA 625
111.101	034	Phthalates	EPA 625
111.101	036	Other Extractables	EPA 625
111.120	999	N-nitrosodimethylamine	EPA 1625
111.170	030	Organochlorine Pesticides	EPA 608
111.170	031	PCBs	EPA 608

Field of Testing: 114 - Inorganic Chemistry of Hazardous Waste

114.010	001	Antimony	EPA 6010B
114.010	002	Arsenic	EPA 6010B
114.010	003	Barium	EPA 6010B
114.010	004	Beryllium	EPA 6010B
114.010	005	Cadmium	EPA 6010B
114.010	006	Chromium	EPA 6010B
114.010	007	Cobalt	EPA 6010B
114.010	008	Copper	EPA 6010B
114.010	009	Lead	EPA 6010B
114.010	010	Molybdenum	EPA 6010B

114.010	011	Nickel	EPA 6010B	
114.010	012	Selenium	EPA 6010B	
114.010	013	Silver	EPA 6010B	
114.010	014	Thallium	EPA 6010B	
114.010	015	Vanadium	EPA 6010B	
114.010	016	Zinc	EPA 6010B	
114.020	001	Antimony	EPA 6020	
114.020	002	Arsenic	EPA 6020	
114.020	003	Barium	EPA 6020	
114.020	004	Beryllium	EPA 6020	
114.020	005	Cadmium	EPA 6020	
114.020	006	Chromium	EPA 6020	
114.020	007	Cobalt	EPA 6020	
114.020	008	Copper	EPA 6020	
114.020	009	Lead	EPA 6020	
114.020	010	Molybdenum	EPA 6020	
114.020	011	Nickel	EPA 6020	
114.020	012	Selenium	EPA 6020	
114.020	013	Silver	EPA 6020	
114.020	014	Thallium	EPA 6020	
114.020	015	Vanadium	EPA 6020	
114.020	016	Zinc	EPA 6020	
114.103	001	Chromium (VI)	EPA 7196A	
114.140	001	Mercury	EPA 7470A	
114.141	001	Mercury	EPA 7471A	
114.221	001	Cyanide, Total	EPA 9012A	
114.230	001	Sulfides, Total	EPA 9034	
114.240	001	Corrosivity - pH Determination	EPA 9040B	
114.241	001	Corrosivity - pH Determination	EPA 9045C	
114.250	001	Fluoride	EPA 9056	
114.280	001	Organic Lead	HML 939-M	Interim

Field of Testing: 115 - Extraction Test of Hazardous Waste

115.020	001	Toxicity Characteristic Leaching Procedure (TCLP)	EPA 1311
115.030	001	Waste Extraction Test (WET)	CCR Chapter11, Article 5, Appendix II
115.040	001	Synthetic Precipitation Leaching Procedure (SPLP)	EPA 1312

Field of Testing: 116 - Volatile Organic Chemistry of Hazardous Waste

116.010	000	EDB and DBCP	EPA 8011
116.020	030	Nonhalogenated Volatiles	EPA 8015B
116.020	031	Ethanol and Methanol	EPA 8015B
116.030	001	Gasoline-range Organics	EPA 8015B
116.040	041	Methyl tert-butyl Ether (MTBE)	EPA 8021B

As of 10/4/2013, this list supersedes all previous lists for this certificate number.
Customers: Please verify the current accreditation standing with the State.

116.040	061	Aromatic Volatiles	EPA 8021B
116.040	062	BTEX	EPA 8021B
116.080	000	Volatile Organic Compounds	EPA 8260B
116.080	120	Oxygenates	EPA 8260B

Field of Testing: 117 - Semi-volatile Organic Chemistry of Hazardous Waste

117.010	001	Diesel-range Total Petroleum Hydrocarbons	EPA 8015B
117.110	000	Extractable Organics	EPA 8270C
117.140	000	Polynuclear Aromatic Hydrocarbons	EPA 8310
117.170	000	Nitroaromatics and Nitramines	EPA 8330
117.210	000	Organochlorine Pesticides	EPA 8081A
117.220	000	PCBs	EPA 8082
117.240	000	Organophosphorus Pesticides	EPA 8141A
117.250	000	Chlorinated Herbicides	EPA 8151A
117.280	000	Carbamates	EPA 8321A

Field of Testing: 120 - Physical Properties of Hazardous Waste

120.010	001	Ignitability	EPA 1010
120.070	001	Corrosivity - pH Determination	EPA 9040B
120.080	001	Corrosivity - pH Determination	EPA 9045C



EDMUND G. BROWN JR.
GOVERNOR

MATTHEW RODRIGUEZ
SECRETARY FOR
ENVIRONMENTAL PROTECTION

State Water Resources Control Board
Division of Drinking Water

January 07, 2016

Jerry Drapala, Ph.D.
Laboratory Director
LA Testing - South Pasadena Laboratory
520 Mission Street
South Pasadena, CA. 91030

Dear Dr. Drapala:

Certificate No. 2283

The California Environmental Laboratory Accreditation Program (ELAP) has received and conducted a review of your laboratory's Renewal Application received on August 13, 2015.

We have found your application complete and acceptable. Based on your last site visit and latest Performance Evaluation sample results, ELAP has granted your request for certification.

Please be reminded that the State must be notified in writing within 30 days of any change in location, physical structures of the laboratory, ownership, and principal analysts or laboratory director.

Should you have any questions or require further assistance, please call (818) 551-2043 or email Angela.Anand@waterboards.ca.gov.

Sincerely,

A handwritten signature in blue ink that reads "Angela Anand".

Angela Anand, Glendale Branch Supervisor
Environmental Laboratory Accreditation Program



EDMUND G. BROWN JR.
GOVERNOR



MATTHEW RODRIGUEZ
SECRETARY FOR
ENVIRONMENTAL PROTECTION

State Water Resources Control Board

January 8, 2016

Jerry Drapala, Ph.D.
LA Testing - South Pasadena Laboratory
520 Mission Street
South Pasadena, CA 91030

Dear Jerry Drapala, Ph.D.:

Certificate No. 2283

This notice advises that the laboratory named above has been certified as an environmental testing laboratory pursuant to the provisions of the Health and Safety Code (HSC), Division 101, Part 1, Chapter 4, Section 100825, *et seq.*

The Fields of Testing for which this laboratory has been certified are indicated on the enclosed "Fields of Testing" list. The certificate shall remain in effect until **December 31, 2017** unless it is revoked. This certificate is subject to an annual fee as determined by HSC 100860.1(a).

The application for renewal of this certificate must be received 90 days prior to the expiration date to remain in force according to HSC 100845(a). You must submit annual Proficiency Testing results before the due date of your annual fee to remain in compliance.

Any change in laboratory location or alteration to laboratory structure that could adversely affect quality of analysis in certified methods require notification prior to the change. Notification is also required for a transfer in ownership or appointment of new laboratory director within 30 days of the change (HSC, Section 100845(b) and (d)).

Your continued cooperation with the above requirements is essential for maintaining the high quality of the data produced by environmental laboratories certified by the State of California.

For general inquiries, please contact our office at the phone number or email address listed below. For specific concerns regarding your application, please call (916) 341-5175 or email Christine.Sotelo@waterboards.ca.gov.

Sincerely,

A handwritten signature in black ink that reads "Christine Sotelo".

Christine Sotelo, Chief
Environmental Laboratory Accreditation Program

Enclosure



**CALIFORNIA STATE
ENVIRONMENTAL LABORATORY ACCREDITATION PROGRAM
Accredited Fields of Testing**



LA Testing - South Pasadena Laboratory

520 Mission Street
South Pasadena, CA 91030
Phone: (800) 303-0047

**Certificate No. 2283
Expiration Date 12/31/2017**

Field of Testing: 101 - Microbiology of Drinking Water

101.010	001	Heterotrophic Bacteria	SM9215B
101.060	002	Total Coliform	SM9223B (Colilert)
101.060	003	E. coli	SM9223B (Colilert)
101.150	001	Fecal Coliform (Enumeration)	SM9222D
101.160	001	Total Coliform (Enumeration)	SM9223B (Colilert/Quanti-Tray)

Field of Testing: 103 - Toxic Chemical Elements of Drinking Water

103.301	001	Asbestos	EPA 100.2
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Field of Testing: 107 - Microbiology of Wastewater

107.010	001	Heterotrophic Bacteria	SM9215B
107.080	002	Fecal Coliform	SM9222D-1997

Field of Testing: 114 - Inorganic Chemistry of Hazardous Waste

114.130	001	Lead	EPA 7420
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Field of Testing: 121 - Bulk Asbestos Analysis of Hazardous Waste

121.010	001	Bulk Asbestos	EPA 600/M4-82-020
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Field of Testing: 126 - Microbiology of Recreational Water

126.040	001	Fecal Coliform (Enumeration)	SM9222D-1997
126.080	001	Enterococci	Enterolert



STATE WATER RESOURCES CONTROL BOARD
REGIONAL WATER QUALITY CONTROL BOARDS

CALIFORNIA STATE



ENVIRONMENTAL LABORATORY ACCREDITATION PROGRAM

CERTIFICATE OF ENVIRONMENTAL ACCREDITATION

Is hereby granted to

LA Testing - South Pasadena Laboratory

520 Mission Street

South Pasadena, CA 91030

Scope of the certificate is limited to the
"Fields of Testing"
which accompany this Certificate.

Continued accredited status depends on successful completion of on-site inspection,
proficiency testing studies, and payment of applicable fees.

This Certificate is granted in accordance with provisions of
Section 100825, et seq. of the Health and Safety Code.

Certificate No.: **2283**

Expiration Date: **12/31/2017**

Effective Date: **1/1/2016**

A handwritten signature in black ink, appearing to read "Christine Sotelo".

Sacramento, California
subject to forfeiture or revocation

Christine Sotelo, Chief
Environmental Laboratory Accreditation Program



STATE WATER RESOURCES CONTROL BOARD
REGIONAL WATER QUALITY CONTROL BOARDS



CALIFORNIA STATE

ENVIRONMENTAL LABORATORY ACCREDITATION PROGRAM

CERTIFICATE OF ENVIRONMENTAL ACCREDITATION

Is hereby granted to

TestAmerica Sacramento

880 Riverside Parkway
West Sacramento, CA 95605

Scope of the certificate is limited to the
"Fields of Testing"
which accompany this Certificate.

Continued accredited status depends on successful completion of on-site inspection,
proficiency testing studies, and payment of applicable fees.

This Certificate is granted in accordance with provisions of
Section 100825, et seq. of the Health and Safety Code.

Certificate No.: **2897**

Expiration Date: **1/31/2018**

Effective Date: **2/1/2016**

A handwritten signature in black ink, appearing to read "Christine Sotelo".

Sacramento, California
subject to forfeiture or revocation

Christine Sotelo, Chief
Environmental Laboratory Accreditation Program



**CALIFORNIA STATE
ENVIRONMENTAL LABORATORY ACCREDITATION PROGRAM
Accredited Fields of Testing**



TestAmerica Sacramento

880 Riverside Parkway
West Sacramento, CA 95605
Phone: (916) 373-5600

**Certificate No. 2897
Expiration Date 1/31/2018**

Field of Testing: 102 - Inorganic Chemistry of Drinking Water

102.045	001	Perchlorate	EPA 314.0
102.047	001	Perchlorate	EPA 331.0

Field of Testing: 105 - Semi-volatile Organic Chemistry of Drinking Water

105.230	001	2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	EPA 1613B
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Field of Testing: 108 - Inorganic Chemistry of Wastewater

108.020	001	Conductivity	EPA 120.1
108.112	001	Boron	EPA 200.7
108.112	002	Calcium	EPA 200.7
108.112	003	Hardness (calculation)	EPA 200.7
108.112	004	Magnesium	EPA 200.7
108.112	005	Potassium	EPA 200.7
108.112	006	Silica, Dissolved	EPA 200.7
108.112	007	Sodium	EPA 200.7
108.112	008	Phosphorus, Total	EPA 200.7
108.113	001	Boron	EPA 200.8
108.113	002	Calcium	EPA 200.8
108.113	003	Magnesium	EPA 200.8
108.113	004	Potassium	EPA 200.8
108.113	006	Sodium	EPA 200.8
108.120	001	Bromide	EPA 300.0
108.120	002	Chloride	EPA 300.0
108.120	003	Fluoride	EPA 300.0
108.120	008	Sulfate	EPA 300.0
108.120	012	Nitrate (as N)	EPA 300.0
108.120	013	Nitrate-Nitrite (as N)	EPA 300.0
108.120	014	Nitrite (as N)	EPA 300.0
108.120	015	Phosphate, Ortho (as P)	EPA 300.0
108.232	003	Nitrate-Nitrite (as N)	EPA 353.2
108.323	001	Chemical Oxygen Demand	EPA 410.4
108.410	001	Alkalinity	SM2320B-1997
108.420	001	Hardness (calculation)	SM2340B
108.430	001	Conductivity	SM2510B
108.440	001	Residue, Total	SM2540B
108.441	001	Residue, Filterable TDS	SM2540C
108.442	001	Residue, Non-filterable TSS	SM2540D
108.490	001	Hydrogen Ion (pH)	SM4500-H+ B
108.528	001	Nitrate-Nitrite (as N)	SM4500-NO3- E-2000

Interim

108.528	002	Nitrite (as N)	SM4500-NO3- E-2000	Interim
108.528	003	Nitrate (as N)	SM4500-NO3- E-2000	Interim

Field of Testing: 109 - Toxic Chemical Elements of Wastewater

109.010	001	Aluminum	EPA 200.7
109.010	002	Antimony	EPA 200.7
109.010	003	Arsenic	EPA 200.7
109.010	004	Barium	EPA 200.7
109.010	005	Beryllium	EPA 200.7
109.010	006	Boron	EPA 200.7
109.010	007	Cadmium	EPA 200.7
109.010	009	Chromium	EPA 200.7
109.010	010	Cobalt	EPA 200.7
109.010	011	Copper	EPA 200.7
109.010	012	Iron	EPA 200.7
109.010	013	Lead	EPA 200.7
109.010	015	Manganese	EPA 200.7
109.010	016	Molybdenum	EPA 200.7
109.010	017	Nickel	EPA 200.7
109.010	019	Selenium	EPA 200.7
109.010	021	Silver	EPA 200.7
109.010	023	Thallium	EPA 200.7
109.010	024	Tin	EPA 200.7
109.010	025	Titanium	EPA 200.7
109.010	026	Vanadium	EPA 200.7
109.010	027	Zinc	EPA 200.7
109.020	001	Aluminum	EPA 200.8
109.020	002	Antimony	EPA 200.8
109.020	003	Arsenic	EPA 200.8
109.020	004	Barium	EPA 200.8
109.020	005	Beryllium	EPA 200.8
109.020	006	Cadmium	EPA 200.8
109.020	007	Chromium	EPA 200.8
109.020	008	Cobalt	EPA 200.8
109.020	009	Copper	EPA 200.8
109.020	010	Lead	EPA 200.8
109.020	011	Manganese	EPA 200.8
109.020	012	Molybdenum	EPA 200.8
109.020	013	Nickel	EPA 200.8
109.020	014	Selenium	EPA 200.8
109.020	015	Silver	EPA 200.8
109.020	016	Thallium	EPA 200.8
109.020	017	Vanadium	EPA 200.8
109.020	018	Zinc	EPA 200.8
109.020	020	Gold	EPA 200.8
109.020	021	Iron	EPA 200.8
109.020	022	Tin	EPA 200.8
109.020	023	Titanium	EPA 200.8

As of 2/2/2016 , this list supersedes all previous lists for this certificate number.
 Customers: Please verify the current accreditation standing with the State.

Field of Testing: 110 - Volatile Organic Chemistry of Wastewater

110.040 000 Purgeable Organic Compounds EPA 624

Field of Testing: 111 - Semi-volatile Organic Chemistry of Wastewater

111.100 000 Acid/base/neutral Organic Compounds EPA 625

111.103 000 Nitrosamines EPA 625

111.111 000 Dioxins and Dibenzofurans EPA 1613B

Field of Testing: 114 - Inorganic Chemistry of Hazardous Waste

114.010 001 Antimony EPA 6010B

114.010 002 Arsenic EPA 6010B

114.010 003 Barium EPA 6010B

114.010 004 Beryllium EPA 6010B

114.010 005 Cadmium EPA 6010B

114.010 006 Chromium EPA 6010B

114.010 007 Cobalt EPA 6010B

114.010 008 Copper EPA 6010B

114.010 009 Lead EPA 6010B

114.010 010 Molybdenum EPA 6010B

114.010 011 Nickel EPA 6010B

114.010 012 Selenium EPA 6010B

114.010 013 Silver EPA 6010B

114.010 014 Thallium EPA 6010B

114.010 015 Vanadium EPA 6010B

114.010 016 Zinc EPA 6010B

114.020 001 Antimony EPA 6020

114.020 002 Arsenic EPA 6020

114.020 003 Barium EPA 6020

114.020 004 Beryllium EPA 6020

114.020 005 Cadmium EPA 6020

114.020 006 Chromium EPA 6020

114.020 007 Cobalt EPA 6020

114.020 008 Copper EPA 6020

114.020 009 Lead EPA 6020

114.020 010 Molybdenum EPA 6020

114.020 011 Nickel EPA 6020

114.020 012 Selenium EPA 6020

114.020 013 Silver EPA 6020

114.020 014 Thallium EPA 6020

114.020 015 Vanadium EPA 6020

114.020 016 Zinc EPA 6020

114.103 001 Chromium (VI) EPA 7196A

114.140 001 Mercury EPA 7470A

114.141 001 Mercury EPA 7471A

114.240 001 Corrosivity - pH Determination EPA 9040B

114.241 001 Corrosivity - pH Determination EPA 9045C

114.250 001 Fluoride EPA 9056

Field of Testing: 115 - Extraction Test of Hazardous Waste

115.021	001	TCLP Inorganics	EPA 1311	Interim
115.022	001	TCLP Extractables	EPA 1311	Interim
115.030	001	Waste Extraction Test (WET)	CCR Chapter11, Article 5, Appendix II	
115.040	001	Synthetic Precipitation Leaching Procedure (SPLP)	EPA 1312	
115.040	001	Synthetic Precipitation Leaching Procedure (SPLP)	EPA 1312	

Field of Testing: 116 - Volatile Organic Chemistry of Hazardous Waste

116.080	000	Volatile Organic Compounds	EPA 8260B	
116.080	000	Volatile Organic Compounds	EPA 8260B	
116.080	120	Oxygenates	EPA 8260B	
116.080	120	Oxygenates	EPA 8260B	
116.100	001	Total Petroleum Hydrocarbons - Gasoline	LUFT GC/MS	
116.100	001	Total Petroleum Hydrocarbons - Gasoline	LUFT GC/MS	
116.100	002	Benzene	LUFT GC/MS	
116.100	003	Toluene	LUFT GC/MS	
116.100	004	Xylenes	LUFT GC/MS	
116.100	005	Methyl tert-butyl Ether (MTBE)	LUFT GC/MS	
116.100	010	BTEX and MTBE	LUFT GC/MS	
116.100	010	BTEX and MTBE	LUFT GC/MS	
116.110	001	Total Petroleum Hydrocarbons - Gasoline	LUFT	Interim

Field of Testing: 117 - Semi-volatile Organic Chemistry of Hazardous Waste

117.010	001	Diesel-range Total Petroleum Hydrocarbons	EPA 8015B	
117.010	001	Diesel-range Total Petroleum Hydrocarbons	EPA 8015B	
117.016	001	Diesel-range Total Petroleum Hydrocarbons	LUFT	
117.016	001	Diesel-range Total Petroleum Hydrocarbons	LUFT	
117.110	000	Extractable Organics	EPA 8270C	
117.110	000	Extractable Organics	EPA 8270C	
117.120	000	Dioxins and Dibenzofurans	EPA 8280A	
117.120	000	Dioxins and Dibenzofurans	EPA 8280A	
117.130	000	Dioxins and Dibenzofurans	EPA 8290	
117.130	000	Dioxins and Dibenzofurans	EPA 8290	
117.170	000	Nitroaromatics and Nitramines	EPA 8330	
117.170	000	Nitroaromatics and Nitramines	EPA 8330	Interim
117.171	000	Nitroaromatics and Nitramines	EPA 8330A	
117.210	000	Pesticides	EPA 8081A	
117.210	000	Pesticides	EPA 8081A	
117.220	000	PCBs	EPA 8082	
117.220	000	PCBs	EPA 8082	



CALIFORNIA

Water Boards

STATE WATER RESOURCES CONTROL BOARD
REGIONAL WATER QUALITY CONTROL BOARDS



CALIFORNIA STATE

ENVIRONMENTAL LABORATORY ACCREDITATION PROGRAM

CERTIFICATE OF ENVIRONMENTAL ACCREDITATION

Is hereby granted to

TestAmerica St. Louis

13715 Rider Trail North

Earth City, MO 63045

Scope of the certificate is limited to the
"Fields of Testing"
which accompany this Certificate.

Continued accredited status depends on successful completion of on-site inspection,
proficiency testing studies, and payment of applicable fees.

This Certificate is granted in accordance with provisions of
Section 100825, et seq. of the Health and Safety Code.

Certificate No.: **2886**

Expiration Date: **3/31/2018**

Effective Date: **4/1/2016**

Sacramento, California
subject to forfeiture or revocation

Christine Sotelo, Chief
Environmental Laboratory Accreditation Program



CALIFORNIA STATE
ENVIRONMENTAL LABORATORY ACCREDITATION PROGRAM
Accredited Fields of Testing



TestAmerica St. Louis

13715 Rider Trail North
Earth City, MO 63045
Phone: (314) 298-8566

Certificate No. 2886
Expiration Date 3/31/2018

Field of Testing: 106 - Radiochemistry of Drinking Water

106.010	001	Gross Alpha and Beta Radiation	EPA 900.0
106.010	002	Gross Beta	EPA 900.0
106.030	003	Gamma Emitters	EPA 901.1
106.050	002	Radium-226 (estimate)	EPA 903.0
106.060	001	Radium-228	EPA 904.0
106.070	003	Strontium-90	EPA 905.0
106.080	001	Tritium	EPA 906.0
106.220	001	Strontium-89, 90	DOE Sr-02

Field of Testing: 108 - Inorganic Chemistry of Wastewater

108.020	001	Conductivity	EPA 120.1
108.112	001	Boron	EPA 200.7
108.112	002	Calcium	EPA 200.7
108.112	004	Magnesium	EPA 200.7
108.112	005	Potassium	EPA 200.7
108.112	007	Sodium	EPA 200.7
108.113	003	Magnesium	EPA 200.8
108.120	001	Bromide	EPA 300.0
108.120	002	Chloride	EPA 300.0
108.120	003	Fluoride	EPA 300.0
108.120	012	Nitrate (as N)	EPA 300.0
108.120	014	Nitrite (as N)	EPA 300.0
108.120	015	Phosphate, Ortho (as P)	EPA 300.0
108.183	001	Cyanide, Total	EPA 335.4
108.211	002	Kjeldahl Nitrogen, Total (as N)	EPA 351.2
108.323	001	Chemical Oxygen Demand	EPA 410.4
108.381	001	Oil and Grease	EPA 1664A
108.440	001	Residue, Total	SM2540B-1997
108.441	001	Residue, Filterable TDS	SM2540C-1997
108.442	001	Residue, Non-filterable TSS	SM2540D-1997
108.490	001	Hydrogen Ion (pH)	SM4500-H+ B-2000

Field of Testing: 109 - Toxic Chemical Elements of Wastewater

109.010	001	Aluminum	EPA 200.7
109.010	002	Antimony	EPA 200.7
109.010	003	Arsenic	EPA 200.7
109.010	004	Barium	EPA 200.7
109.010	005	Beryllium	EPA 200.7
109.010	006	Boron	EPA 200.7

109.010	007	Cadmium	EPA 200.7
109.010	009	Chromium	EPA 200.7
109.010	010	Cobalt	EPA 200.7
109.010	011	Copper	EPA 200.7
109.010	012	Iron	EPA 200.7
109.010	013	Lead	EPA 200.7
109.010	015	Manganese	EPA 200.7
109.010	016	Molybdenum	EPA 200.7
109.010	017	Nickel	EPA 200.7
109.010	019	Selenium	EPA 200.7
109.010	021	Silver	EPA 200.7
109.010	023	Thallium	EPA 200.7
109.010	024	Tin	EPA 200.7
109.010	025	Titanium	EPA 200.7
109.010	026	Vanadium	EPA 200.7
109.010	027	Zinc	EPA 200.7
109.020	001	Aluminum	EPA 200.8
109.020	002	Antimony	EPA 200.8
109.020	003	Arsenic	EPA 200.8
109.020	004	Barium	EPA 200.8
109.020	005	Beryllium	EPA 200.8
109.020	006	Cadmium	EPA 200.8
109.020	007	Chromium	EPA 200.8
109.020	008	Cobalt	EPA 200.8
109.020	009	Copper	EPA 200.8
109.020	010	Lead	EPA 200.8
109.020	011	Manganese	EPA 200.8
109.020	012	Molybdenum	EPA 200.8
109.020	013	Nickel	EPA 200.8
109.020	014	Selenium	EPA 200.8
109.020	015	Silver	EPA 200.8
109.020	016	Thallium	EPA 200.8
109.020	017	Vanadium	EPA 200.8
109.020	018	Zinc	EPA 200.8
109.190	001	Mercury	EPA 245.1

Field of Testing: 110 - Volatile Organic Chemistry of Wastewater

110.040	000	Purgeable Organic Compounds	EPA 624
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Field of Testing: 111 - Semi-volatile Organic Chemistry of Wastewater

111.100	000	Base/Neutral & Acid Organics	EPA 625
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111.170	000	Organochlorine Pesticides and PCBs	EPA 608
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Field of Testing: 112 - Radiochemistry of Wastewater

112.010	001	Gross Alpha and Beta Radiation	EPA 900.0
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112.010	002	Gross Beta	EPA 900.0
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112.020	001	Total Alpha Radium	EPA 903.0
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112.140	002	Gamma	EPA 901.1
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112.160	001	Radium-228	EPA 904.0
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112.170	001	Strontium	EPA 905.0
112.180	001	Tritium	EPA 906.0
112.510	001	Strontium	DOE Sr-02

Field of Testing: 114 - Inorganic Chemistry of Hazardous Waste

114.010	001	Antimony	EPA 6010B
114.010	002	Arsenic	EPA 6010B
114.010	003	Barium	EPA 6010B
114.010	004	Beryllium	EPA 6010B
114.010	005	Cadmium	EPA 6010B
114.010	006	Chromium	EPA 6010B
114.010	007	Cobalt	EPA 6010B
114.010	008	Copper	EPA 6010B
114.010	009	Lead	EPA 6010B
114.010	010	Molybdenum	EPA 6010B
114.010	011	Nickel	EPA 6010B
114.010	012	Selenium	EPA 6010B
114.010	013	Silver	EPA 6010B
114.010	014	Thallium	EPA 6010B
114.010	015	Vanadium	EPA 6010B
114.010	016	Zinc	EPA 6010B
114.020	001	Antimony	EPA 6020
114.020	002	Arsenic	EPA 6020
114.020	003	Barium	EPA 6020
114.020	004	Beryllium	EPA 6020
114.020	005	Cadmium	EPA 6020
114.020	006	Chromium	EPA 6020
114.020	007	Cobalt	EPA 6020
114.020	008	Copper	EPA 6020
114.020	009	Lead	EPA 6020
114.020	010	Molybdenum	EPA 6020
114.020	011	Nickel	EPA 6020
114.020	012	Selenium	EPA 6020
114.020	013	Silver	EPA 6020
114.020	014	Thallium	EPA 6020
114.020	015	Vanadium	EPA 6020
114.020	016	Zinc	EPA 6020
114.103	001	Chromium (VI)	EPA 7196A
114.141	001	Mercury	EPA 7471A
114.221	001	Cyanide, Total	EPA 9012A
114.241	001	Corrosivity - pH Determination	EPA 9045C
114.250	001	Fluoride	EPA 9056

Field of Testing: 115 - Extraction Test of Hazardous Waste

115.020	001	Toxicity Characteristic Leaching Procedure (TCLP)	EPA 1311
115.021	001	TCLP Inorganics	EPA 1311
115.022	001	TCLP Extractables	EPA 1311
115.023	001	TCLP Volatiles	EPA 1311

115.030	001	Waste Extraction Test (WET)	CCR Chapter 11, Article 5, Appendix II
115.040	001	Synthetic Precipitation Leaching Procedure (SPLP)	EPA 1312

Field of Testing: 116 - Volatile Organic Chemistry of Hazardous Waste

116.030	001	Gasoline-range Organics	EPA 8015B
116.080	000	Volatile Organic Compounds	EPA 8260B

Field of Testing: 117 - Semi-volatile Organic Chemistry of Hazardous Waste

117.010	001	Diesel-range Total Petroleum Hydrocarbons	EPA 8015B
117.110	000	Extractable Organics	EPA 8270C
117.170	000	Nitroaromatics and Nitramines	EPA 8330
117.210	000	Organochlorine Pesticides	EPA 8081A
117.220	000	PCBs	EPA 8082
117.250	000	Chlorinated Herbicides	EPA 8151A

Field of Testing: 118 - Radiochemistry of Hazardous Waste

118.010	001	Gross Alpha and Beta In Hazardous Wastes	EPA 9310
118.010	002	Gross Beta	EPA 9310
118.020	001	Radium, Total	EPA 9315
118.030	001	Radium-228	EPA 9320
118.271	001	Strontium	DOE Sr-02

Field of Testing: 120 - Physical Properties of Hazardous Waste

120.010	001	Ignitability	EPA 1010
120.040	001	Reactive Cyanide	Section 7.3 SW-846
120.050	001	Reactive Sulfide	Section 7.3 SW-846
120.070	001	Corrosivity - pH Determination	EPA 9040B
120.080	001	Corrosivity - pH Determination	EPA 9045C



STATE WATER RESOURCES CONTROL BOARD
REGIONAL WATER QUALITY CONTROL BOARDS

Interim



CALIFORNIA STATE

ENVIRONMENTAL LABORATORY ACCREDITATION PROGRAM

CERTIFICATE OF ENVIRONMENTAL ACCREDITATION

Is hereby granted to

Aquatic Bioassay & Consulting Laboratories, Inc.

29 North Olive Street

Ventura, CA 93001

Scope of the certificate is limited to the
"Fields of Testing"
which accompany this Certificate.

Continued accredited status depends on successful completion of on-site inspection,
proficiency testing studies, and payment of applicable fees.

This Certificate is granted in accordance with provisions of
Section 100825, et seq. of the Health and Safety Code.

Certificate No.: **1907**

Expiration Date: **7/31/2016**

Effective Date: **8/1/2015**

A handwritten signature in black ink, appearing to read "Christine Sotelo".

Sacramento, California
subject to forfeiture or revocation

Christine Sotelo, Chief
Environmental Laboratory Accreditation Program



**CALIFORNIA STATE
ENVIRONMENTAL LABORATORY ACCREDITATION PROGRAM
Accredited Fields of Testing**



Aquatic Bioassay & Consulting Laboratories, Inc.

29 North Olive Street
Ventura, CA 93001
Phone: (805) 643-5621

**Certificate No.: 1907
Renew Date: 7/31/2016
INTERIM**

Field of Testing: 108 - Inorganic Chemistry of Wastewater

108.051	001	Hydrogen Ion (pH)	EPA 150.2
108.531	001	Dissolved Oxygen	SM4500-O G

Field of Testing: 113 - Whole Effluent Toxicity of Wastewater

113.010	001A	Fathead Minnow (<i>P. promelas</i>)	EPA 600/4-90/027F, Static
113.010	001B	Fathead Minnow (<i>P. promelas</i>)	EPA 600/4-90/027F, Static Renewal
113.010	003A	Rainbow trout (<i>O. mykiss</i>)	EPA 600/4-90/027F, Static
113.010	003B	Rainbow trout (<i>O. mykiss</i>)	EPA 600/4-90/027F, Static Renewal
113.010	005A	Daphnid (<i>C. dubia</i>)	EPA 600/4-90/027F, Static
113.010	005B	Daphnid (<i>C. dubia</i>)	EPA 600/4-90/027F, Static Renewal
113.010	006A	Daphnia spp.	EPA 600/4-90/027F, Static
113.010	006B	Daphnia spp.	EPA 600/4-90/027F, Static Renewal
113.010	008A	Topsmelt (<i>A. affinis</i>)	EPA 600/4-90/027F, Static
113.010	008B	Topsmelt (<i>A. affinis</i>)	EPA 600/4-90/027F, Static Renewal
113.010	009A	Silverside (<i>Menidia</i> spp.)	EPA 600/4-90/027F, Static
113.010	009B	Silverside (<i>Menidia</i> spp.)	EPA 600/4-90/027F, Static Renewal
113.010	012A	Mysid (<i>M. bahia</i>)	EPA 600/4-90/027F, Static
113.010	012B	Mysid (<i>M. bahia</i>)	EPA 600/4-90/027F, Static Renewal
113.021	001A	Fathead Minnow (<i>P. promelas</i>)	EPA 2000 (EPA-821-R-02-012), Static
113.021	001B	Fathead Minnow (<i>P. promelas</i>)	EPA 2000 (EPA-821-R-02-012), Static Renewal
113.022	003A	Rainbow trout (<i>O. mykiss</i>)	EPA 2019 (EPA-821-R-02-012), Static
113.022	003B	Rainbow trout (<i>O. mykiss</i>)	EPA 2019 (EPA-821-R-02-012), Static Renewal
113.023	005A	Daphnid (<i>C. dubia</i>)	EPA 2002 (EPA-821-R-02-012), Static
113.023	005B	Daphnid (<i>C. dubia</i>)	EPA 2002 (EPA-821-R-02-012), Static Renewal
113.024	006A	Daphnia spp.	EPA 2021 (EPA-821-R-02-012), Static
113.024	006B	Daphnia spp.	EPA 2021 (EPA-821-R-02-012), Static Renewal
113.025	009A	Silverside (<i>Menidia</i> spp.)	EPA 2006 (EPA-821-R-02-012), Static
113.025	009B	Silverside (<i>Menidia</i> spp.)	EPA 2006 (EPA-821-R-02-012), Static Renewal
113.027	012A	Mysid (<i>M. bahia</i>)	EPA 2007 (EPA-821-R-02-012), Static
113.027	012B	Mysid (<i>M. bahia</i>)	EPA 2007 (EPA-821-R-02-012), Static Renewal
113.028	008A	Topsmelt (<i>A. affinis</i>)	EPA-821-R-02-012, Static
113.028	008B	Topsmelt (<i>A. affinis</i>)	EPA-821-R-02-012, Static Renewal
113.040	001	Fathead Minnow (<i>P. promelas</i>)	EPA 1000 (EPA/600/4-91/002)
113.041	001	Fathead Minnow (<i>P. promelas</i>)	EPA 1000 (EPA-821-R-02-013)
113.050	005	Daphnid (<i>C. dubia</i>)	EPA 1002 (EPA/600/4-91/002)
113.051	005	Daphnid (<i>C. dubia</i>)	EPA 1002 (EPA-821-R-02-013)
113.060	020	Green algae (<i>S. capricornutum</i>)	EPA 1003 (EPA/600/4-91/002)
113.061	020	Green algae (<i>S. capricornutum</i>)	EPA 1003 (EPA-821-R-02-013)
113.080	009	Silverside (<i>Menidia</i> spp.)	EPA 1006 (EPA/600/4-91/003)

As of 7/14/2015, this list supersedes all previous lists for this certificate number.
Customers: Please verify the current accreditation standing with the State.

113.081	009	Silverside (<i>Menidia</i> spp.)	EPA 1006 (EPA-821-R-02-014)
113.090	012	Mysid (<i>M. bahia</i>)	EPA 1007 (EPA/600/4-91/003)
113.091	012	Mysid (<i>M. bahia</i>)	EPA 1007 (EPA-821-R-02-014)
113.120	008	Topsmelt (<i>A. affinis</i>)	EPA 600/R-95/136
113.120	014	Pacific oyster (<i>C. gigas</i>)	EPA 600/R-95/136
113.120	015D	Sand dollar (<i>D. excentricus</i>)	EPA 600/R-95/136, Fertilization Test
113.120	015E	Sand dollar (<i>D. excentricus</i>)	EPA 600/R-95/136, Development Test
113.120	017D	Purple sea urchin (<i>S. purpuratus</i>)	EPA 600/R-95/136, Fertilization Test
113.120	017E	Purple sea urchin (<i>S. purpuratus</i>)	EPA 600/R-95/136, Development Test
113.120	019	Mussels (<i>Mytilus</i> spp.)	EPA 600/R-95/136
113.120	022	Giant kelp (<i>M. pyrifera</i>)	EPA 600/R-95/136
113.120	023	Red abalone (<i>H. rufescens</i>)	EPA 600/R-95/136
113.160	026	Amphipod (<i>H. azteca</i>)	EPA 600/R-99/064, EPA 100.1
113.190	026	Amphipod (<i>H. azteca</i>)	EPA 600/R-99/064, EPA 100.4
113.210	030	Amphipod (<i>E. estuarius</i>)	EPA 600/R-94/025, EPA 100.4

Field of Testing: 119 - Toxicity Bioassay of Hazardous Waste

119.010	001	Fathead Minnow (<i>P. promelas</i>)	Polisini & Miller (CDFG 1988)
119.010	003	Rainbow trout (<i>O. mykiss</i>)	Polisini & Miller (CDFG 1988)
119.020	026	Amphipod (<i>H. azteca</i>)	EPA 100.1
119.050	030	Amphipod (<i>E. estuarius</i>)	EPA 100.4

Field of Testing: 126 - Microbiology of Recreational Water

126.010	001	Total Coliform (Enumeration)	SM9221A,B,C
126.030	001	Fecal Coliform (Enumeration)	SM9221E-2006
126.050	001	Total Coliform and <i>E. coli</i>	SM9223
126.080	001	Enterococci	IDEXX



CALIFORNIA STATE

ENVIRONMENTAL LABORATORY ACCREDITATION PROGRAM BRANCH

CERTIFICATE OF ENVIRONMENTAL LABORATORY ACCREDITATION

Is hereby granted to

EMS Laboratories, Inc.

117 West Bellevue Drive, Suite 3

Pasadena, CA 91105

Scope of the certificate is limited to the
"Fields of Testing"
which accompany this Certificate.

Continued accredited status depends on successful completion of on-site,
proficiency testing studies, and payment of applicable fees.


This Certificate is granted in accordance with provisions of
Section 100825, et seq. of the Health and Safety Code.

Certificate No.: 1119

Expiration Date: 02/28/2016

Effective Date: 03/01/2014

Richmond, California
subject to forfeiture or revocation


David Mazzera, Ph.D., Assistant Division Chief
Division of Drinking Water and Environmental Management



CALIFORNIA DEPARTMENT OF PUBLIC HEALTH
ENVIRONMENTAL LABORATORY ACCREDITATION PROGRAM
Accredited Fields of Testing



EMS Laboratories, Inc.
117 West Bellevue Drive, Suite 3
Pasadena, CA 91105
Phone: (626) 568-4065

Certificate No.: 1119
Renew Date: 2/28/2016

Field of Testing: 103 - Toxic Chemical Elements of Drinking Water

0	009	Lead	EPA 200.9
103.300	001	Asbestos	EPA 100.1
103.301	001	Asbestos	EPA 100.2

Field of Testing: 108 - Inorganic Chemistry of Wastewater

108.020	001	Conductivity	EPA 120.1
108.090	001	Residue, Volatile	EPA 160.4
108.141	001	Alkalinity	EPA 310.2
108.323	001	Chemical Oxygen Demand	EPA 410.4
108.381	001	Oil and Grease	EPA 1664A
108.440	001	Residue, Total	SM2540B
108.441	001	Residue, Filterable TDS	SM2540C
108.442	001	Residue, Non-filterable TSS	SM2540D
108.443	001	Residue, Settleable	SM2540F
108.445	001	Calcium	SM3111B
108.445	003	Magnesium	SM3111B
108.445	005	Sodium	SM3111B
108.451	001	Chloride	SM4500-Cl- C
108.490	001	Hydrogen Ion (pH)	SM4500-H+ B
108.581	001	Sulfide	SM4500-S= E (18th)

Field of Testing: 109 - Toxic Chemical Elements of Wastewater

109.370	001	Antimony	SM3111B
109.370	002	Cadmium	SM3111B
109.370	004	Chromium	SM3111B
109.370	005	Cobalt	SM3111B
109.370	006	Copper	SM3111B
109.370	009	Iron	SM3111B
109.370	010	Lead	SM3111B
109.370	012	Manganese	SM3111B
109.370	013	Nickel	SM3111B
109.370	019	Silver	SM3111B
109.370	021	Thallium	SM3111B
109.370	022	Tin	SM3111B
109.370	023	Zinc	SM3111B
109.390	001	Aluminum	SM3111D
109.390	002	Barium	SM3111D

As of 6/11/2014, this list supersedes all previous lists for this certificate number.
Customers: Please verify the current accreditation standing with the State.

109.390	003	Beryllium	SM3111D
109.390	005	Molybdenum	SM3111D
109.390	007	Titanium	SM3111D
109.390	008	Vanadium	SM3111D
109.410	003	Arsenic	SM3113B
109.410	015	Selenium	SM3113B
109.811	001	Chromium (VI)	SM3500-Cr D (18th/19th)

Field of Testing: 114 - Inorganic Chemistry of Hazardous Waste

114.010	001	Antimony	EPA 6010B
114.010	002	Arsenic	EPA 6010B
114.010	003	Barium	EPA 6010B
114.010	004	Beryllium	EPA 6010B
114.010	005	Cadmium	EPA 6010B
114.010	006	Chromium	EPA 6010B
114.010	007	Cobalt	EPA 6010B
114.010	008	Copper	EPA 6010B
114.010	009	Lead	EPA 6010B
114.010	010	Molybdenum	EPA 6010B
114.010	011	Nickel	EPA 6010B
114.010	012	Selenium	EPA 6010B
114.010	013	Silver	EPA 6010B
114.010	014	Thallium	EPA 6010B
114.010	015	Vanadium	EPA 6010B
114.010	016	Zinc	EPA 6010B
114.030	001	Antimony	EPA 7040
114.040	001	Arsenic	EPA 7060A
114.060	001	Barium	EPA 7080A
114.070	001	Beryllium	EPA 7090
114.080	001	Cadmium	EPA 7130
114.090	001	Chromium	EPA 7190
114.103	001	Chromium (VI)	EPA 7196A
114.110	001	Cobalt	EPA 7200
114.120	001	Copper	EPA 7210
114.130	001	Lead	EPA 7420
114.150	001	Molybdenum	EPA 7480
114.160	001	Nickel	EPA 7520
114.170	001	Selenium	EPA 7740
114.181	001	Silver	EPA 7761
114.190	001	Thallium	EPA 7840
114.200	001	Vanadium	EPA 7910
114.210	001	Zinc	EPA 7950
114.222	001	Cyanide	EPA 9014

Field of Testing: 115 - Extraction Test of Hazardous Waste

115.021 001 TCLP Inorganics EPA 1311

115.030 001 Waste Extraction Test (WET) CCR Chapter11, Article 5, Appendix II

Field of Testing: 121 - Bulk Asbestos Analysis of Hazardous Waste

121.010 001 Bulk Asbestos EPA 600/M4-82-020
