Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-94732-1

Login Number: 94732

List Source: TestAmerica Irvine

List Number: 1

Creator: Blocker, Kristina M

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	

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-94732-1

Login Number: 94934

List Source: TestAmerica Irvine

List Number: 1

Creator: Blocker, Kristina M

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	

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-94732-1

Login Number: 94934
List Number: 2
Creator: Daniels, Brian J

List Source: TestAmerica St. Louis
List Creation: 12/05/14 01:27 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	7.5
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 <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: Routine outfall 009

TestAmerica Job ID: 440-94732-1

Method: 903.0 - Radium-226 (GFPC)

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

		Percent Yield (Acceptance Limits)
		Ba
Lab Sample ID	Client Sample ID	(40-110)
440-94733-A-3-B DU	Duplicate	106
440-94934-1	Outfall009_20141203_Comp	84.7
440-94934-2	Trip Blank	106
LCS 160-161419/2-A	Lab Control Sample	103
MB 160-161419/1-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)	
		Ba	Y
Lab Sample ID	Client Sample ID	(40-110)	(40-110)
440-94733-A-3-D DU	Duplicate	106	88.2
440-94934-1	Outfall009_20141203_Comp	84.7	88.2
440-94934-2	Trip Blank	106	85.6
LCS 160-161424/2-A	Lab Control Sample	103	88.2
MB 160-161424/1-A	Method Blank	101	90.5

Tracer/Carrier Legend

Ba = Ba Carrier

Y = Y Carrier

Method: 905 - Strontium-90 (GFPC)

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

		Percent Yield (Acceptance Limits)	
		Sr (C)	Y
Lab Sample ID	Client Sample ID	(40-110)	(40-110)
440-94733-A-3-K DU	Duplicate	85.4	95.3
440-94934-1	Outfall009_20141203_Comp	82.1	96.8
440-94934-2	Trip Blank	82.8	98.3
LCS 160-162945/2-A	Lab Control Sample	85.9	91.6
MB 160-162945/1-A	Method Blank	87.2	95.3

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)
		U-232
Lab Sample ID	Client Sample ID	(30-110)
440-94733-A-3-G DU	Duplicate	87.5
LCS 160-162442/2-A	Lab Control Sample	85.4
MB 160-162442/1-A	Method Blank	89.0

Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine outfall 009

TestAmerica Job ID: 440-94732-1

Tracer/Carrier Legend

U-232 = Uranium-232

DATA VALIDATION REPORT

Haley & Aldrich Boeing SSFL Stormwater

SAMPLE DELIVERY GROUP: 440-96486-1

Prepared by

MEC^X
12269 East Vassar Drive
Aurora, CO 80014

I. INTRODUCTION

Task Order Title:	Haley & Aldrich Boeing SSFL Stormwater
Contract Task Order:	1272.003H.01 001
Sample Delivery Group:	440-96486-1
Project Manager:	K. Miller
Matrix:	Water
QC Level:	IV
No. of Samples:	1
No. of Reanalyses/Dilutions:	0
Laboratory:	TestAmerica Irvine

Table 1. Sample Identification

Sample Name	*Lab Sample Name*	*Sub-Lab Sample Name*	*Matrix*	*Collection*	*Method*
Outfall_009_20141213 _Comp	440-96605-1	N/A	Water	12/13/2014 3:06:00 PM	E1613B, E200.8, E900, E901.1, E903.0, E904.0, E905.0, E906.0, HASL-300 U MOD, RADUIM, SM2540D

II. Sample Management

The coolers for the 1613B analysis and a portion of the samples received at TestAmerica-Irvine were below the temperature limits of 4°C ±2°C; however, as the sample containers were not noted to be damaged or frozen, no qualifications were required. The remaining samples were received within the temperature limits of 4°C ±2°C. According to the case narrative for this SDG, the sample containers were received intact and properly preserved, as applicable. No COC transferring the samples to TestAmerica-St. Louis was provided. A correction to the sample ID on the COC to TestAmerica-Irvine was not initialed or dated. The COCs were appropriately signed and dated by field and laboratory personnel. Custody seals were intact upon receipt at Test-America-Knoxville and St. Louis. The samples were delivered to TestAmerica-Irvine by courier.

Upon receipt at TestAmerica-Irvine, the laboratory prepared the radionuclide samples and a blank that accompanied the samples to TestAmerica-St. Louis.

Data Qualifier Reference Table

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. The associated value is the quantitation limit or the estimated detection limit for dioxins or PCB congeners.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit. The associated value is the sample detection limit or the quantitation limit for perchlorate only.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
J+	Not applicable	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample, and may have a potential positive bias.
J-	Not applicable	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample, and may have a potential negative bias.
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be 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.

Qualifier	Organics	Inorganics
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.

Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D was noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination as indicated by the preparation (method) blank results.	Presumed contamination as indicated by the preparation (method) or calibration blank results.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
L1	LCS/LCSD RPD was outside control limits.	LSC/LSCD RPD was outside control limits.
Q	MS/MSD recovery was poor.	MS recovery was poor.
Q1	MS/MSD RPD was outside control limits.	MS/MSD RPD was outside control limits.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	ICPMS tune was not compliant.
T	Presumed contamination as indicated by the trip blank results.	Not applicable.
+	False positive – reported compound was not present.	Not applicable.
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination as indicated by the FB or ER results.	Presumed contamination as indicated by the FB or ER results.
$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.

Qualifier	Organics	Inorganics
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within 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	Unusual problems found with the data that have been 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.	Unusual problems found with the data that have been 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

A. EPA METHOD 1613B—Dioxin/Furans

Reviewed By: L. Calvin
Date Reviewed: January 16, 2015

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).

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

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

    - 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%.

    - Mass Spectrometer Performance: The mass spectrometer performance was acceptable with the static resolving power greater than 10,000.

- Calibration: Calibration criteria were met.

    - Initial Calibration: Initial calibration criteria were met. The initial calibration was acceptable with %RSDs ≤20% for the 15 native compounds (calibration by isotope dilution) and ≤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.

- Blanks: The method blank had a detect below the reporting limit for OCDD at 0.0000276 µg/L. The sample concentration of OCDD exceeded 10× the method blank concentration and required no qualification. The method blank had no other detects above the estimated detection limit (EDL).

- Blank Spikes and Laboratory Control Samples: Recoveries were within the acceptance criteria listed in Table 6 of Method 1613B.

- 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. Following are findings associated with field QC samples:

    - Field Blanks and Equipment Rinsates: This SDG had no identified field blank or equipment rinsate samples.

    - Field Duplicates: This SDG had no identified field duplicate samples.

- Internal Standards Performance: The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613B.

- Compound Identification: Compound identification was verified. The laboratory analyzed for polychlorinated dioxins/furans by EPA Method 1613B. Isomer 2,3,7,8-TCDF was not detected in the initial analysis of the sample; therefore, confirmation analysis was not necessary.

- Compound Quantification and Reported Detection Limits: Compound quantitation was verified by recalculating any sample detects and a representative number of blank spike concentrations. 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) were qualified as estimated, "J," and coded with "DNQ," in order to comply with the NPDES permit. Nondetects are valid to the EDL.

  The results for 1,2,3,4,6,7,8-HpCDF and 1,2,3,6,7,8-HxCDF reported as EMPCs were qualified as estimated nondetects, "UJ," at the level of the EMPC. Totals HpCDF, HxCDF, PeCDF, and TCDF containing one or more EMPC peaks were qualified as estimated, "J."

B. EPA METHOD 200.8—Metals

Reviewed By: P. Meeks
Date Reviewed: January 16, 2015

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

- Holding Times: The analytical holding time, six months, was met.

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

- Calibration: The initial and continuing calibration recoveries were within 90-110% and the CRI recoveries were within the control limits of 70-130%.

- Blanks: Method blanks and CCBs had no detects.

- Interference Check Samples: Recoveries were within 80-120%. If detected in the ICSA, the interferents were less than the certified trace contaminant concentration.

- Blank Spikes and Laboratory Control Samples: Recoveries and the RPDs were within the method control limits of 85-115% and ≤20%, respectively.

- Laboratory Duplicates: No laboratory duplicate analyses were performed on the sample in this SDG.

- Matrix Spike/Matrix Spike Duplicate: MS/MSD analyses were performed on the sample in this SDG for the total analytes. The recoveries were within the method control limits of 70-130% and the RPDs were within the laboratory control limit of ≤20%.

- Serial Dilution: No serial dilution analyses were performed on the sample in this SDG.

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

- 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.

- 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. Following are findings associated with field QC samples:

    - Field Blanks and Equipment Rinsates: This SDG had no identified field blank or equipment rinsate samples.

    - Field Duplicates: There were no field duplicate samples identified for this SDG.

C. VARIOUS EPA METHODS — Radionuclides

Reviewed By: P. Meeks
Date Reviewed: January 16, 2015

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the *EPA Methods 900.0, 901.1, 903.0, 904.0, 905.0, and 906.0, HASL-300,* and the *National Functional Guidelines for Inorganic Data Review* (2014).

- Holding Times: The tritium sample was analyzed within 180 days of collection. Aliquots for the remaining analytes were preserved within the five-day holding time.

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

  The gross alpha and radium-226 detector efficiencies were less than 20%; therefore, gross alpha and radium-226 in the sample was qualified as estimated, "J," for detects and, "UJ," for nondetects. The remaining detector efficiencies were greater than 20%.

  All initial and annual calibration verifications were acceptable with mean recoveries within 90-110%. All carrier recoveries were within 40-110%. The gamma spectroscopy analytes were determined at the maximum photopeak energy.

- Blanks: There were no analytes detected in the method blanks or the blank prepared by TestAmerica-Irvine.

- Blank Spikes and Laboratory Control Samples: The recoveries and the radium-228 and tritium relative error ratios (RERs) were within laboratory-established control limits.

- Laboratory Duplicates: No laboratory duplicate analyses were performed on a sample in this SDG.

- Matrix Spike/Matrix Spike Duplicate: No matrix spike analyses were performed on a sample in this SDG. Method accuracy was evaluated based on LCS results.

- 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.

- 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. Following are findings associated with field QC samples:

- Field Blanks and Equipment Rinsates: This SDG had no identified field blank or equipment rinsate samples.

- Field Duplicates: There were no field duplicate samples identified for this SDG.

D. Standard Method 2540D—Total Suspended Solids (TSS)

Reviewed By: P. Meeks
Date Reviewed: January 16, 2015

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for Metals (DVP-5, Rev. 0 and DVP-21, Rev. 0), Standard Method for the Examination of Water and Wastewater Method 2540D,* and the *National Functional Guidelines for Inorganic Data Review* (2014).

- Holding Times: The analytical holding time, seven days, was met.

- Calibration: The balance calibration logs were acceptable.

- Blanks: The method blank had no detect for TSS.

- Blank Spikes and Laboratory Control Samples: The recovery was within the control limits of 85-115%.

- Laboratory Duplicates: A laboratory duplicate analysis was performed on the sample in this SDG. The RPD was within the control limit of ≤10%.

- Matrix Spike/Matrix Spike Duplicate: MS/MSD analyses are not applicable to the TSS analysis.

- 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.

- 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. Following are findings associated with field QC samples:

- Field Blanks and Equipment Rinsates: This SDG had no identified field blank or equipment rinsate samples.

- Field Duplicates: There were no field duplicate samples identified for this SDG.

Validated Sample Result Forms: 440964861

Analysis Method E1613B

Sample Name Outfall_009_20141213_C **Matrix Type:** WM **Result Type:** TRG

Sample Date: 12/13/2014 3:06:00 PM **Validation Level:** 3

Lab Sample Name: 440-96605-1

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	0.0000978	0.000101	0.0	ug/L	J	J	DNQ
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	N	3268-87-9	0.00180	0.000101	0.0	ug/L	B		
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	N	67562-39-4	0.0000330	0.0000505	0.0	ug/L	QJ	UJ	*III
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	N	35822-46-9	0.000175	0.0000505	0.0	ug/L			
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	N	55673-89-7		0.0000505	0.0	ug/L	U	U	
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	N	70648-26-9		0.0000505	0.0	ug/L	U	U	
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	39227-28-6		0.0000505	0.0	ug/L	U	U	
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	57117-44-9	0.00000340	0.0000505	0.0	ug/L	QJ	UJ	*III
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	57653-85-7	0.00000957	0.0000505	0.0	ug/L	J	J	DNQ
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	N	72918-21-9		0.0000505	0.0	ug/L	U	U	
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	N	19408-74-3	0.00000801	0.0000505	0.0	ug/L	J	J	DNQ
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-41-6		0.0000505	0.0	ug/L	U	U	
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	N	40321-76-4		0.0000505	0.0	ug/L	U	U	
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	60851-34-5		0.0000505	0.0	ug/L	U	U	
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-31-4		0.0000505	0.0	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9		0.0000101	0.0	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	N	1746-01-6		0.0000101	0.0	ug/L	U	U	
Total Heptachlorodibenzofuran (HpCDF)	N	38998-75-3	0.0000881	0.0000505	0.0	ug/L	Q	J	*III
Total Heptachlorodibenzo-p-dioxin (HpCDD)	N	37871-00-4	0.000438	0.0000505	0.0	ug/L			
Total Hexachlorodibenzofuran (HxCDF)	N	55684-94-1	0.0000570	0.0000505	0.0	ug/L	JQ	J	DNQ, *III
Total Hexachlorodibenzo-p-dioxin (HxCDD)	N	34465-46-8	0.0000490	0.0000505	0.0	ug/L	J	J	DNQ

Analysis Method E1613B

Total Pentachlorodibenzofuran (PeCDF)	N	30402-15-4	0.0000145	0.0000505	0.0	ug/L	QJ	J	DNQ, *III
Total Pentachlorodibenzo-p-dioxin (PeCDD)	N	36088-22-9		0.0000505	0.0	ug/L	U	U	
Total Tetrachlorodibenzofuran (TCDF)	N	55722-27-5	0.0000115	0.0000101	0.0	ug/L	QJ	J	DNQ, *III
Total Tetrachlorodibenzo-p-dioxin (TCDD)	N	41903-57-5		0.0000101	0.0	ug/L	U	U	

Analysis Method E200.8

Sample Name Outfall_009_20141213_C **Matrix Type:** WM **Result Type:** TRG

Sample Date: 12/13/2014 3:06:00 PM **Validation Level:** 3

Lab Sample Name: 440-96605-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Antimony	D	7440-36-0		2.0	0.50	ug/L	UQP	U	
Antimony	N	7440-36-0	0.74	2.0	0.50	ug/L	J,DX	J	DNQ
Antimony	T	7440-36-0	0.74	2.0	0.50	ug/L	J,DX	J	DNQ
Cadmium	N	7440-43-9	0.31	1.0	0.25	ug/L	J,DX	J	DNQ
Cadmium	D	7440-43-9		1.0	0.25	ug/L	UQP	U	
Cadmium	T	7440-43-9	0.31	1.0	0.25	ug/L	J,DX	J	DNQ
Copper	N	7440-50-8	9.0	2.0	0.50	ug/L			
Copper	T	7440-50-8	9.0	2.0	0.50	ug/L			
Copper	D	7440-50-8	4.6	2.0	0.50	ug/L	QP		
Lead	N	7439-92-1	8.8	1.0	0.50	ug/L			
Lead	T	7439-92-1	8.8	1.0	0.50	ug/L			
Lead	D	7439-92-1	1.1	1.0	0.50	ug/L	QP		
Thallium	N	7440-28-0		1.0	0.50	ug/L	U	U	
Thallium	T	7440-28-0		1.0	0.50	ug/L	U	U	
Thallium	D	7440-28-0		1.0	0.50	ug/L	UQP	U	

Analysis Method E900

Sample Name Outfall_009_20141213_C **Matrix Type:** WM **Result Type:** TRG

Sample Date: 12/13/2014 3:06:00 PM **Validation Level:** 3

Lab Sample Name: 440-96605-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Gross Alpha Analytes	N	GROSSALPHA	2.53	3.00	1.75	pCi/L		J	C
Gross Beta Analytes	N	GROSSBETA	9.90	4.00	1.05	pCi/L			

Analysis Method E901.1

Sample Name Outfall_009_20141213_C **Matrix Type:** WM **Result Type:** TRG

Sample Date: 12/13/2014 3:06:00 PM **Validation Level:** 3

Lab Sample Name: 440-96605-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cesium-137	N	10045-97-3	1.06	20.0	9.94	pCi/L	U	U	
Potassium-40	N	13966-00-2	-73.0		244	pCi/L	U	U	

Analysis Method E903.0

Sample Name Outfall_009_20141213_C **Matrix Type:** WM **Result Type:** TRG

Sample Date: 12/13/2014 3:06:00 PM **Validation Level:** 3

Lab Sample Name: 440-96605-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-226	N	13982-63-3	0.284	1.00	0.281	pCi/L		J	C

Analysis Method E904.0

Sample Name Outfall_009_20141213_C **Matrix Type:** WM **Result Type:** TRG

Sample Date: 12/13/2014 3:06:00 PM **Validation Level:** 3

Lab Sample Name: 440-96605-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-228	N	15262-20-1	0.564	1.00	0.686	pCi/L	U	U	

Analysis Method E905.0

Sample Name Outfall_009_20141213_C **Matrix Type:** WM **Result Type:** TRG

Sample Date: 12/13/2014 3:06:00 PM **Validation Level:** 3

Lab Sample Name: 440-96605-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Strontium-90	N	10098-97-2	-0.175	3.00	1.14	pCi/L	U	U	

Analysis Method E906.0

Sample Name Outfall_009_20141213_C **Matrix Type:** WM **Result Type:** TRG

Sample Date: 12/13/2014 3:06:00 PM **Validation Level:** 3

Lab Sample Name: 440-96605-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Tritium	N	10028-17-8	91.0	500	310	pCi/L	U	U	

Analysis Method HASL-300 U Mod

Sample Name Outfall_009_20141213_C **Matrix Type:** WM **Result Type:** TRG

Sample Date: 12/13/2014 3:06:00 PM **Validation Level:** 3

Lab Sample Name: 440-96605-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Uranium	N	URANIUM	0.529	1.00	1.00	pCi/L	UG	U	

Analysis Method SM2540D

Sample Name Outfall_009_20141213_C **Matrix Type:** WM **Result Type:** TRG

Sample Date: 12/13/2014 3:06:00 PM **Validation Level:** 3

Lab Sample Name: 440-96605-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Suspended Solids (TSS)	N	TSS	78	5.0	2.5	mg/L			

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: 440-96486-1
Client Project/Site: Boeing SSFL NPDES Routine Outfall 009
Revision: 2

For:
Haley & Aldrich, Inc.
5333 Mission Center Road
Suite 300
San Diego, California 92108

Attn: Nancy Gardiner

Debby Wilson

Authorized for release by:
1/20/2015 4:33:00 PM

Debby Wilson, Manager of Project Management
(949)261-1022
debby.wilson@testamericainc.com

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
Manager of Project Management
1/20/2015 4:33:00 PM

Table of Contents

Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing SSFL NPDES Routine Outfall 009

TestAmerica Job ID: 440-96486-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-96486-1	Outfall009_20141212_Grab	Water	12/12/14 07:00	12/12/14 16:39
440-96605-1	Outfall009_20141213_Comp	Water	12/13/14 03:06	12/13/14 12:25
440-96605-2	Trip_Blank	Water	12/13/14 12:25	12/13/14 12:25

Job ID: 440-96486-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-96486-1

Receipt
The samples were received on 12/12/2014 4:39 PM and 12/13/2014 12:25 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 0.5º C, 1.0º C and 3.6º C.

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

RAD
Method(s) 905: Prep Batch 165620: The strontium-90 sample has negative activity greater than the 3 sigma uncertainty. The sample cannot be recounted to verify activity due to the rapid decay rate of the yttrium carrier. The data have been qualified and reported. Trip_Blank (440-96594-2)

Method(s) ExtChrom: Uranium (165361): The samples are a dark yellow-brown color. A reduced aliquot of 100 mL was used to prevent matrix interference. Outfall009_20141213_Comp (440-96605-1)

Method(s) PrecSep_0: radium-228 batch #168188: The following samples were reduced to 500 mL because they were orange and contained sediment: Outfall009_20141213_Comp (440-96605-1).

Method(s) PrecSep_0: radium-228 batch #168188: Insufficient volume of the following samples was available to perform a sample duplicate associated with this batch: Outfall009_20141213_Comp (440-96605-1), Trip_Blank (440-96605-2). A LCSD was performed.

Method(s) PrecSep-21: radium-228 batch #164116 and radium-226 batch #164103: The following samples were reduced to 500 mL due to sediment: Outfall009_20141213_Comp (440-96605-1).

Method(s) PrecSep-7: strontium-90: The following samples in batch #165620 were prepped at a reduced aliquot due to the presence of sediment: Outfall009_20141213_Comp (440-96605-1).

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.

General Chemistry
Method(s) SM 4500 CN E: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for batch 224827 were outside control limits. Sample matrix interference is suspected because the associated laboratory control sample / laboratory control sample duplicate (LCS/LCSD) recovery were 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) 1664A: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD/DUP) associated with batch 226034. 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.

Subcontract Work
Method 1613 dioxin: This method was subcontracted to TestAmerica Knoxville. The subcontract laboratory certification is different from

Job ID: 440-96486-1 (Continued)

Laboratory: TestAmerica Irvine (Continued)

that of the facility issuing the final report. Refer to case narrative in appended report.

Client Sample ID: Outfall009_20141212_Grab

Lab Sample ID: 440-96486-1

Date Collected: 12/12/14 07:00

Matrix: Water

Date Received: 12/12/14 16:39

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM	ND		4.8	1.4	mg/L		12/21/14 14:30	12/21/14 17:01	1

Client Sample ID: Outfall009_20141213_Comp

Lab Sample ID: 440-96605-1

Date Collected: 12/13/14 03:06

Matrix: Water

Date Received: 12/13/14 12:25

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**13**		0.50	0.25	mg/L			12/13/14 15:00	1
Sulfate	**4.3**		0.50	0.25	mg/L			12/13/14 15:00	1

Method: NO3NO2 Calc - Nitrogen, Nitrate-Nitrite

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	**3.0**		0.15	0.070	mg/L			12/29/14 16:22	1

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

Analyte	Result	Qualifier	ML	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.0000101	0.00000505	ug/L		12/17/14 23:30	01/10/15 06:44	1
Total TCDD	ND		0.0000101	0.00000505	ug/L		12/17/14 23:30	01/10/15 06:44	1
1,2,3,7,8-PeCDD	ND		0.0000505	0.00000314	ug/L		12/17/14 23:30	01/10/15 06:44	1
Total PeCDD	ND		0.0000505	0.00000314	ug/L		12/17/14 23:30	01/10/15 06:44	1
1,2,3,4,7,8-HxCDD	ND		0.0000505	0.00000251	ug/L		12/17/14 23:30	01/10/15 06:44	1
1,2,3,6,7,8-HxCDD	**0.00000957**	**J**	0.0000505	0.00000268	ug/L		12/17/14 23:30	01/10/15 06:44	1
1,2,3,7,8,9-HxCDD	**0.00000801**	**J**	0.0000505	0.00000241	ug/L		12/17/14 23:30	01/10/15 06:44	1
Total HxCDD	**0.0000490**	**J**	0.0000505	0.00000253	ug/L		12/17/14 23:30	01/10/15 06:44	1
1,2,3,4,6,7,8-HpCDD	**0.000175**		0.0000505	0.00000411	ug/L		12/17/14 23:30	01/10/15 06:44	1
Total HpCDD	**0.000438**		0.0000505	0.00000411	ug/L		12/17/14 23:30	01/10/15 06:44	1
OCDD	**0.00180**	**B**	0.000101	0.00000340	ug/L		12/17/14 23:30	01/10/15 06:44	1
2,3,7,8-TCDF	ND		0.0000101	0.00000352	ug/L		12/17/14 23:30	01/10/15 06:44	1
Total TCDF	**0.0000115**	**Q J**	0.0000101	0.00000352	ug/L		12/17/14 23:30	01/10/15 06:44	1
1,2,3,7,8-PeCDF	ND		0.0000505	0.00000212	ug/L		12/17/14 23:30	01/10/15 06:44	1
2,3,4,7,8-PeCDF	ND		0.0000505	0.00000199	ug/L		12/17/14 23:30	01/10/15 06:44	1
Total PeCDF	**0.0000145**	**Q J**	0.0000505	0.00000205	ug/L		12/17/14 23:30	01/10/15 06:44	1
1,2,3,4,7,8-HxCDF	ND		0.0000505	0.00000181	ug/L		12/17/14 23:30	01/10/15 06:44	1
1,2,3,6,7,8-HxCDF	**0.00000340**	**Q J**	0.0000505	0.00000176	ug/L		12/17/14 23:30	01/10/15 06:44	1
2,3,4,6,7,8-HxCDF	ND		0.0000505	0.00000156	ug/L		12/17/14 23:30	01/10/15 06:44	1
1,2,3,7,8,9-HxCDF	ND		0.0000505	0.00000216	ug/L		12/17/14 23:30	01/10/15 06:44	1
Total HxCDF	**0.0000570**	**J Q**	0.0000505	0.00000180	ug/L		12/17/14 23:30	01/10/15 06:44	1
1,2,3,4,6,7,8-HpCDF	**0.0000330**	**Q J**	0.0000505	0.00000233	ug/L		12/17/14 23:30	01/10/15 06:44	1
1,2,3,4,7,8,9-HpCDF	ND		0.0000505	0.00000305	ug/L		12/17/14 23:30	01/10/15 06:44	1
Total HpCDF	**0.0000881**	**Q**	0.0000505	0.00000265	ug/L		12/17/14 23:30	01/10/15 06:44	1
OCDF	**0.0000978**	**J**	0.000101	0.00000237	ug/L		12/17/14 23:30	01/10/15 06:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*107*		*35 - 197*	*12/17/14 23:30*	*01/10/15 06:44*	*1*

Internal Standard	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*88*		*25 - 164*	*12/17/14 23:30*	*01/10/15 06:44*	*1*
13C-1,2,3,7,8-PeCDD	*86*		*25 - 181*	*12/17/14 23:30*	*01/10/15 06:44*	*1*
13C-1,2,3,4,7,8-HxCDD	*90*		*32 - 141*	*12/17/14 23:30*	*01/10/15 06:44*	*1*

Client Sample ID: Outfall009_20141213_Comp
Date Collected: 12/13/14 03:06
Date Received: 12/13/14 12:25

Lab Sample ID: 440-96605-1
Matrix: Water

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

Internal Standard	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,6,7,8-HxCDD	96		28 - 130	12/17/14 23:30	01/10/15 06:44	1
13C-1,2,3,4,6,7,8-HpCDD	98		23 - 140	12/17/14 23:30	01/10/15 06:44	1
13C-OCDD	102		17 - 157	12/17/14 23:30	01/10/15 06:44	1
13C-2,3,7,8-TCDF	79		24 - 169	12/17/14 23:30	01/10/15 06:44	1
13C-1,2,3,7,8-PeCDF	78		24 - 185	12/17/14 23:30	01/10/15 06:44	1
13C-2,3,4,7,8-PeCDF	75		21 - 178	12/17/14 23:30	01/10/15 06:44	1
13C-1,2,3,4,7,8-HxCDF	73		26 - 152	12/17/14 23:30	01/10/15 06:44	1
13C-1,2,3,6,7,8-HxCDF	77		26 - 123	12/17/14 23:30	01/10/15 06:44	1
13C-2,3,4,6,7,8-HxCDF	86		28 - 136	12/17/14 23:30	01/10/15 06:44	1
13C-1,2,3,7,8,9-HxCDF	84		29 - 147	12/17/14 23:30	01/10/15 06:44	1
13C-1,2,3,4,6,7,8-HpCDF	82		28 - 143	12/17/14 23:30	01/10/15 06:44	1
13C-1,2,3,4,7,8,9-HpCDF	89		26 - 138	12/17/14 23:30	01/10/15 06:44	1
13C-OCDF	100		17 - 157	12/17/14 23:30	01/10/15 06:44	1

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	**0.31**	**J,DX**	1.0	0.25	ug/L		12/23/14 09:41	12/23/14 16:46	1
Copper	**9.0**		2.0	0.50	ug/L		12/23/14 09:41	12/23/14 16:46	1
Lead	**8.8**		1.0	0.50	ug/L		12/23/14 09:41	12/23/14 16:46	1
Antimony	**0.74**	**J,DX**	2.0	0.50	ug/L		12/23/14 09:41	12/23/14 16:46	1
Thallium	ND		1.0	0.50	ug/L		12/23/14 09:41	12/23/14 16:46	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		12/24/14 09:59	12/24/14 17:17	1
Copper	**4.6**	**QP**	2.0	0.50	ug/L		12/24/14 09:59	12/24/14 17:17	1
Lead	**1.1**	**QP**	1.0	0.50	ug/L		12/24/14 09:59	12/24/14 17:17	1
Antimony	ND	QP	2.0	0.50	ug/L		12/24/14 09:59	12/24/14 17:17	1
Thallium	ND	QP	1.0	0.50	ug/L		12/24/14 09:59	12/24/14 17:17	1

Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		12/17/14 09:30	12/17/14 17:36	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**140**		10	5.0	mg/L			12/18/14 10:49	1
Total Suspended Solids	**78**		5.0	2.5	mg/L			12/20/14 07:26	1
Cyanide, Total	ND		5.0	2.5	ug/L		12/15/14 15:08	12/15/14 17:51	1

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	**2.53**		1.32	1.35	1.75	pCi/L	12/22/14 10:58	01/04/15 16:40	1
Gross Beta	**9.90**		1.20	1.55	1.05	pCi/L	12/22/14 10:58	01/04/15 16:40	1

Client: Haley & Aldrich, Inc.
Project/Site: Boeing SSFL NPDES Routine Outfall 009

TestAmerica Job ID: 440-96486-1

Client Sample ID: Outfall009_20141213_Comp
Date Collected: 12/13/14 03:06
Date Received: 12/13/14 12:25

Lab Sample ID: 440-96605-1
Matrix: Water

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	1.06	U	5.14	5.14	9.94	pCi/L	12/19/14 11:40	12/22/14 15:28	1
Potassium-40	-73.0	U	536	536	244	pCi/L	12/19/14 11:40	12/22/14 15:28	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.284**		0.189	0.191	0.281	pCi/L	12/18/14 00:17	01/13/15 07:19	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*84.4*		*40 - 110*	*12/18/14 00:17*	*01/13/15 07:19*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.564	U	0.436	0.439	0.686	pCi/L	01/13/15 12:50	01/16/15 11:18	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*93.2*		*40 - 110*	*01/13/15 12:50*	*01/16/15 11:18*	*1*
Y Carrier	*84.5*		*40 - 110*	*01/13/15 12:50*	*01/16/15 11:18*	*1*

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.175	U	0.614	0.614	1.14	pCi/L	12/29/14 18:01	01/07/15 15:56	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Sr Carrier	*84.6*		*40 - 110*	*12/29/14 18:01*	*01/07/15 15:56*	*1*
Y Carrier	*91.6*		*40 - 110*	*12/29/14 18:01*	*01/07/15 15:56*	*1*

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	91.0	U	182	182	310	pCi/L	01/02/15 09:02	01/02/15 16:28	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	MDC	Unit	Prepared	Analyzed	Dil Fac
Total Uranium	0.529	U G	0.650	0.652	1.00	pCi/L	12/24/14 10:49	12/31/14 14:22	1

Client Sample ID: Trip_Blank
Date Collected: 12/13/14 12:25
Date Received: 12/13/14 12:25

Lab Sample ID: 440-96605-2
Matrix: Water

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	-0.358	U	0.717	0.718	1.51	pCi/L	12/22/14 10:58	01/04/15 18:30	1
Gross Beta	-0.440	U	0.461	0.463	0.913	pCi/L	12/22/14 10:58	01/04/15 18:30	1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	0.000	U	1.19	1.19	11.4	pCi/L	12/19/14 11:40	12/22/14 15:27	1
Potassium-40	-56.4	U	522	522	221	pCi/L	12/19/14 11:40	12/22/14 15:27	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.00724	U	0.0669	0.0669	0.124	pCi/L	12/18/14 00:17	01/13/15 07:19	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*104*		*40 - 110*	*12/18/14 00:17*	*01/13/15 07:19*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.000	U	0.168	0.168	0.302	pCi/L	01/13/15 12:50	01/16/15 11:18	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*107*		*40 - 110*	*01/13/15 12:50*	*01/16/15 11:18*	*1*
Y Carrier	*90.5*		*40 - 110*	*01/13/15 12:50*	*01/16/15 11:18*	*1*

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0721	U	0.169	0.169	0.291	pCi/L	12/29/14 18:01	01/07/15 15:56	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Sr Carrier	*82.7*		*40 - 110*	*12/29/14 18:01*	*01/07/15 15:56*	*1*
Y Carrier	*90.8*		*40 - 110*	*12/29/14 18:01*	*01/07/15 15:56*	*1*

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	MDC	Unit	Prepared	Analyzed	Dil Fac
Total Uranium	-0.0221	U	0.209	0.209	0.295	pCi/L	12/24/14 10:49	01/13/15 13:57	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing SSFL NPDES Routine Outfall 009

TestAmerica Job ID: 440-96486-1

Method	Method Description	Protocol	Laboratory
300.0	Anions, Ion Chromatography	MCAWW	TAL IRV
NO3NO2 Calc	Nitrogen, Nitrate-Nitrite	EPA	TAL IRV
1613B	Dioxins/Furans, HRGC/HRMS (1613B)	EPA-5	TAL KNX
200.8	Metals (ICP/MS)	EPA	TAL IRV
245.1	Mercury (CVAA)	EPA	TAL IRV
1664A	HEM and SGT-HEM	1664A	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

Protocol References:

1664A = EPA-821-98-002

DOE = U.S. Department of Energy

EPA = US Environmental Protection Agency

EPA-5 = EPA-5

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 KNX = TestAmerica Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL (865)291-3000

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Client Sample ID: Outfall009_20141212_Grab

Lab Sample ID: 440-96486-1

Date Collected: 12/12/14 07:00

Matrix: Water

Date Received: 12/12/14 16:39

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1664A			1035 mL	1000 mL	226034	12/21/14 14:30	JMB	TAL IRV
Total/NA	Analysis	1664A		1	1035 mL	1000 mL	226039	12/21/14 17:01	JMB	TAL IRV

Client Sample ID: Outfall009_20141213_Comp

Lab Sample ID: 440-96605-1

Date Collected: 12/13/14 03:06

Matrix: Water

Date Received: 12/13/14 12:25

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		224501	12/13/14 15:00	JRA	TAL IRV
Total/NA	Analysis	NO3NO2 Calc		1			227160	12/29/14 16:22	TN	TAL IRV
Total	Prep	1613			990 mL	20 uL	4351027_P	12/17/14 23:30		TAL KNX
Total	Analysis	1613B		1			4351027	01/10/15 06:44	PMP	TAL KNX
Dissolved	Filtration	FILTRATION			125 mL	125 mL	226565	12/23/14 18:56	APS	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	226703	12/24/14 09:59	ND	TAL IRV
Dissolved	Analysis	200.8		1	25 mL	25 mL	226988	12/24/14 17:17	NH	TAL IRV
Total Recoverable	Prep	200.2			25 mL	25 mL	226388	12/23/14 09:41	ND	TAL IRV
Total Recoverable	Analysis	200.8		1	25 mL	25 mL	226568	12/23/14 16:46	YS	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	225232	12/17/14 09:30	JS1	TAL IRV
Total/NA	Analysis	245.1		1	20 mL	20 mL	225520	12/17/14 17:36	DB	TAL IRV
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	225438	12/18/14 10:49	XL	TAL IRV
Total/NA	Analysis	SM 2540D		1	200 mL	1000 mL	225928	12/20/14 07:26	NTN	TAL IRV
Total/NA	Prep	Distill/CN			50 mL	50 mL	224778	12/15/14 15:08	BS	TAL IRV
Total/NA	Analysis	SM 4500 CN E		1	50 mL	50 mL	224827	12/15/14 17:51	BS	TAL IRV
Total/NA	Prep	Evaporation			200 mL	1.0 g	164748	12/22/14 10:58	MJS	TAL SL
Total/NA	Analysis	900.0		1	200 mL		166467	01/04/15 16:40	RTM	TAL SL
Total/NA	Prep	Fill_Geo-0			1000 mL	1.0 g	164475	12/19/14 11:40	MRB	TAL SL
Total/NA	Analysis	901.1		1	1000 mL		164820	12/22/14 15:28	SMP	TAL SL
Total/NA	Prep	PrecSep-21			501.00 g	1.0 g	164103	12/18/14 00:17	JH	TAL SL
Total/NA	Analysis	903.0		1	501.00 g		168078	01/13/15 07:19	RTM	TAL SL
Total/NA	Prep	PrecSep_0			503.90 mL	1.0 g	168188	01/13/15 12:50	LEM	TAL SL
Total/NA	Analysis	904.0		1	503.90 mL		168923	01/16/15 11:18	RTM	TAL SL
Total/NA	Prep	PrecSep-7			254.44 mL	1.0 g	165620	12/29/14 18:01	CMC	TAL SL
Total/NA	Analysis	905		1	254.44 mL		167123	01/07/15 15:56	RTM	TAL SL
Total/NA	Prep	LSC_Dist_Susp			100.31 mL	1.0 g	166399	01/02/15 09:02	JDL	TAL SL
Total/NA	Analysis	906.0		1	100.31 mL		166478	01/02/15 16:28	RTM	TAL SL
Total/NA	Prep	ExtChrom			99.83 mL	1.0 mL	165361	12/24/14 10:49	SCB	TAL SL
Total/NA	Analysis	A-01-R		1	99.83 mL		166361	12/31/14 14:22	MLK	TAL SL

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Boeing SSFL NPDES Routine Outfall 009

TestAmerica Job ID: 440-96486-1

Client Sample ID: Trip_Blank
Date Collected: 12/13/14 12:25
Date Received: 12/13/14 12:25

Lab Sample ID: 440-96605-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Evaporation			200 mL	1.0 g	164748	12/22/14 10:58	MJS	TAL SL
Total/NA	Analysis	900.0		1	200 mL		166464	01/04/15 18:30	RTM	TAL SL
Total/NA	Prep	Fill_Geo-0			1000 mL	1.0 g	164475	12/19/14 11:40	MRB	TAL SL
Total/NA	Analysis	901.1		1	1000 mL		164819	12/22/14 15:27	SMP	TAL SL
Total/NA	Prep	PrecSep-21			967.77 g	1.0 g	164103	12/18/14 00:17	JH	TAL SL
Total/NA	Analysis	903.0		1	967.77 g		168078	01/13/15 07:19	RTM	TAL SL
Total/NA	Prep	PrecSep_0			979.40 mL	1.0 g	168188	01/13/15 12:50	LEM	TAL SL
Total/NA	Analysis	904.0		1	979.40 mL		168923	01/16/15 11:18	RTM	TAL SL
Total/NA	Prep	PrecSep-7			994.51 mL	1.0 g	165620	12/29/14 18:01	CMC	TAL SL
Total/NA	Analysis	905		1	994.51 mL		167123	01/07/15 15:56	RTM	TAL SL
Total/NA	Prep	ExtChrom			499.77 mL	1.0 mL	165361	12/24/14 10:49	SCB	TAL SL
Total/NA	Analysis	A-01-R		1	499.77 mL		168253	01/13/15 13:57	MLK	TAL SL

Laboratory References:

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

TAL KNX = TestAmerica Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL (865)291-3000

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 440-224501/4
Matrix: Water
Analysis Batch: 224501

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			12/13/14 09:16	1
Sulfate	ND		0.50	0.25	mg/L			12/13/14 09:16	1

Lab Sample ID: LCS 440-224501/6
Matrix: Water
Analysis Batch: 224501

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	5.11		mg/L		102	90 - 110
Sulfate	5.00	4.88		mg/L		98	90 - 110

Lab Sample ID: 440-96539-L-1 MS
Matrix: Water
Analysis Batch: 224501

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	60		50.0	92.6	LN	mg/L		65	80 - 120
Sulfate	6.0		50.0	34.2	LN	mg/L		56	80 - 120

Lab Sample ID: 440-96539-L-1 MSD
Matrix: Water
Analysis Batch: 224501

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	60		50.0	91.0	LN	mg/L		62	80 - 120	2	20
Sulfate	6.0		50.0	33.8	LN	mg/L		56	80 - 120	1	20

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

Lab Sample ID: H4L170000027B
Matrix: Water
Analysis Batch: 4351027

Client Sample ID: Method Blank
Prep Type: Total
Prep Batch: 4351027_P

Analyte	MB Result	MB Qualifier	ML	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.0000100	0.00000589	ug/L		12/17/14 23:30	01/10/15 05:43	1
Total TCDD	ND		0.0000100	0.00000589	ug/L		12/17/14 23:30	01/10/15 05:43	1
1,2,3,7,8-PeCDD	ND		0.0000500	0.00000301	ug/L		12/17/14 23:30	01/10/15 05:43	1
Total PeCDD	ND		0.0000500	0.00000301	ug/L		12/17/14 23:30	01/10/15 05:43	1
1,2,3,4,7,8-HxCDD	ND		0.0000500	0.00000263	ug/L		12/17/14 23:30	01/10/15 05:43	1
1,2,3,6,7,8-HxCDD	ND		0.0000500	0.00000268	ug/L		12/17/14 23:30	01/10/15 05:43	1
1,2,3,7,8,9-HxCDD	ND		0.0000500	0.00000247	ug/L		12/17/14 23:30	01/10/15 05:43	1
Total HxCDD	ND		0.0000500	0.00000259	ug/L		12/17/14 23:30	01/10/15 05:43	1
1,2,3,4,6,7,8-HpCDD	ND		0.0000500	0.00000302	ug/L		12/17/14 23:30	01/10/15 05:43	1
Total HpCDD	ND		0.0000500	0.00000302	ug/L		12/17/14 23:30	01/10/15 05:43	1
OCDD	0.0000276	J	0.000100	0.00000427	ug/L		12/17/14 23:30	01/10/15 05:43	1
2,3,7,8-TCDF	ND		0.0000100	0.00000442	ug/L		12/17/14 23:30	01/10/15 05:43	1
Total TCDF	ND		0.0000100	0.00000442	ug/L		12/17/14 23:30	01/10/15 05:43	1
1,2,3,7,8-PeCDF	ND		0.0000500	0.00000249	ug/L		12/17/14 23:30	01/10/15 05:43	1
2,3,4,7,8-PeCDF	ND		0.0000500	0.00000223	ug/L		12/17/14 23:30	01/10/15 05:43	1

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

Lab Sample ID: H4L170000027B
Matrix: Water
Analysis Batch: 4351027

Client Sample ID: Method Blank
Prep Type: Total
Prep Batch: 4351027_P

Analyte	MB Result	MB Qualifier	ML	EDL	Unit	D	Prepared	Analyzed	Dil Fac
Total PeCDF	ND		0.0000500	0.00000235	ug/L		12/17/14 23:30	01/10/15 05:43	1
1,2,3,4,7,8-HxCDF	ND		0.0000500	0.00000157	ug/L		12/17/14 23:30	01/10/15 05:43	1
1,2,3,6,7,8-HxCDF	ND		0.0000500	0.00000170	ug/L		12/17/14 23:30	01/10/15 05:43	1
2,3,4,6,7,8-HxCDF	ND		0.0000500	0.00000148	ug/L		12/17/14 23:30	01/10/15 05:43	1
1,2,3,7,8,9-HxCDF	ND		0.0000500	0.00000202	ug/L		12/17/14 23:30	01/10/15 05:43	1
Total HxCDF	ND		0.0000500	0.00000167	ug/L		12/17/14 23:30	01/10/15 05:43	1
1,2,3,4,6,7,8-HpCDF	ND		0.0000500	0.00000229	ug/L		12/17/14 23:30	01/10/15 05:43	1
1,2,3,4,7,8,9-HpCDF	ND		0.0000500	0.00000302	ug/L		12/17/14 23:30	01/10/15 05:43	1
Total HpCDF	ND		0.0000500	0.00000261	ug/L		12/17/14 23:30	01/10/15 05:43	1
OCDF	ND		0.000100	0.00000307	ug/L		12/17/14 23:30	01/10/15 05:43	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*104*		*35 - 197*	*12/17/14 23:30*	*01/10/15 05:43*	*1*

Internal Standard	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*92*		*25 - 164*	*12/17/14 23:30*	*01/10/15 05:43*	*1*
13C-1,2,3,7,8-PeCDD	*87*		*25 - 181*	*12/17/14 23:30*	*01/10/15 05:43*	*1*
13C-1,2,3,4,7,8-HxCDD	*92*		*32 - 141*	*12/17/14 23:30*	*01/10/15 05:43*	*1*
13C-1,2,3,6,7,8-HxCDD	*94*		*28 - 130*	*12/17/14 23:30*	*01/10/15 05:43*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*93*		*23 - 140*	*12/17/14 23:30*	*01/10/15 05:43*	*1*
13C-OCDD	*96*		*17 - 157*	*12/17/14 23:30*	*01/10/15 05:43*	*1*
13C-2,3,7,8-TCDF	*77*		*24 - 169*	*12/17/14 23:30*	*01/10/15 05:43*	*1*
13C-1,2,3,7,8-PeCDF	*80*		*24 - 185*	*12/17/14 23:30*	*01/10/15 05:43*	*1*
13C-2,3,4,7,8-PeCDF	*78*		*21 - 178*	*12/17/14 23:30*	*01/10/15 05:43*	*1*
13C-1,2,3,4,7,8-HxCDF	*72*		*26 - 152*	*12/17/14 23:30*	*01/10/15 05:43*	*1*
13C-1,2,3,6,7,8-HxCDF	*75*		*26 - 123*	*12/17/14 23:30*	*01/10/15 05:43*	*1*
13C-2,3,4,6,7,8-HxCDF	*84*		*28 - 136*	*12/17/14 23:30*	*01/10/15 05:43*	*1*
13C-1,2,3,7,8,9-HxCDF	*79*		*29 - 147*	*12/17/14 23:30*	*01/10/15 05:43*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*79*		*28 - 143*	*12/17/14 23:30*	*01/10/15 05:43*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*86*		*26 - 138*	*12/17/14 23:30*	*01/10/15 05:43*	*1*
13C-OCDF	*93*		*17 - 157*	*12/17/14 23:30*	*01/10/15 05:43*	*1*

Lab Sample ID: H4L170000027C
Matrix: Water
Analysis Batch: 4351027

Client Sample ID: Lab Control Sample
Prep Type: Total
Prep Batch: 4351027_P

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2,3,7,8-TCDD	0.000200	0.000200		ug/L		100	67 - 158
1,2,3,7,8-PeCDD	0.00100	0.00100		ug/L		100	70 - 142
1,2,3,4,7,8-HxCDD	0.00100	0.000953		ug/L		95	70 - 164
1,2,3,6,7,8-HxCDD	0.00100	0.000949		ug/L		95	76 - 134
1,2,3,7,8,9-HxCDD	0.00100	0.000976		ug/L		98	64 - 162
1,2,3,4,6,7,8-HpCDD	0.00100	0.000934		ug/L		93	70 - 140
OCDD	0.00200	0.00179	B	ug/L		90	78 - 144
2,3,7,8-TCDF	0.000200	0.000200		ug/L		100	75 - 158
1,2,3,7,8-PeCDF	0.00100	0.000912		ug/L		91	80 - 134
2,3,4,7,8-PeCDF	0.00100	0.000949		ug/L		95	68 - 160

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

Lab Sample ID: H4L170000027C
Matrix: Water
Analysis Batch: 4351027

Client Sample ID: Lab Control Sample
Prep Type: Total
Prep Batch: 4351027_P

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2,3,4,7,8-HxCDF	0.00100	0.000952		ug/L		95	72 - 134
1,2,3,6,7,8-HxCDF	0.00100	0.000956		ug/L		96	84 - 130
2,3,4,6,7,8-HxCDF	0.00100	0.000946		ug/L		95	70 - 156
1,2,3,7,8,9-HxCDF	0.00100	0.000936		ug/L		94	78 - 130
1,2,3,4,6,7,8-HpCDF	0.00100	0.000924		ug/L		92	82 - 122
1,2,3,4,7,8,9-HpCDF	0.00100	0.000951		ug/L		95	78 - 138
OCDF	0.00200	0.00187		ug/L		93	63 - 170

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
37Cl4-2,3,7,8-TCDD	*105*		*31 - 191*

Internal Standard	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C-2,3,7,8-TCDD	*91*		*20 - 175*
13C-1,2,3,7,8-PeCDD	*95*		*21 - 227*
13C-1,2,3,4,7,8-HxCDD	*93*		*21 - 193*
13C-1,2,3,6,7,8-HxCDD	*88*		*25 - 163*
13C-1,2,3,4,6,7,8-HpCDD	*90*		*26 - 166*
13C-OCDD	*91*		*13 - 199*
13C-2,3,7,8-TCDF	*83*		*22 - 152*
13C-1,2,3,7,8-PeCDF	*88*		*21 - 192*
13C-2,3,4,7,8-PeCDF	*85*		*13 - 328*
13C-1,2,3,4,7,8-HxCDF	*78*		*19 - 202*
13C-1,2,3,6,7,8-HxCDF	*79*		*21 - 159*
13C-2,3,4,6,7,8-HxCDF	*84*		*22 - 176*
13C-1,2,3,7,8,9-HxCDF	*85*		*17 - 205*
13C-1,2,3,4,6,7,8-HpCDF	*80*		*21 - 158*
13C-1,2,3,4,7,8,9-HpCDF	*83*		*20 - 186*
13C-OCDF	*83*		*13 - 199*

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 440-226388/1-A
Matrix: Water
Analysis Batch: 226568

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 226388

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		12/23/14 09:41	12/23/14 16:39	1
Copper	ND		2.0	0.50	ug/L		12/23/14 09:41	12/23/14 16:39	1
Lead	ND		1.0	0.50	ug/L		12/23/14 09:41	12/23/14 16:39	1
Antimony	ND		2.0	0.50	ug/L		12/23/14 09:41	12/23/14 16:39	1
Thallium	ND		1.0	0.50	ug/L		12/23/14 09:41	12/23/14 16:39	1

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

Lab Sample ID: LCS 440-226388/2-A
Matrix: Water
Analysis Batch: 226568

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 226388

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	80.0	81.6		ug/L		102	85 - 115
Copper	80.0	81.6		ug/L		102	85 - 115
Lead	80.0	81.4		ug/L		102	85 - 115
Antimony	80.0	83.9		ug/L		105	85 - 115
Thallium	80.0	78.7		ug/L		98	85 - 115

Lab Sample ID: LCSD 440-226388/3-A
Matrix: Water
Analysis Batch: 226568

Client Sample ID: Lab Control Sample Dup
Prep Type: Total Recoverable
Prep Batch: 226388

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cadmium	80.0	82.0		ug/L		103	85 - 115	1	20
Copper	80.0	81.3		ug/L		102	85 - 115	0	20
Lead	80.0	82.7		ug/L		103	85 - 115	2	20
Antimony	80.0	84.4		ug/L		106	85 - 115	1	20
Thallium	80.0	81.8		ug/L		102	85 - 115	4	20

Lab Sample ID: 440-96605-1 MS
Matrix: Water
Analysis Batch: 226568

Client Sample ID: Outfall009_20141213_Comp
Prep Type: Total Recoverable
Prep Batch: 226388

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	0.31	J,DX	80.0	81.9		ug/L		102	70 - 130
Copper	9.0		80.0	85.8		ug/L		96	70 - 130
Lead	8.8		80.0	91.8		ug/L		104	70 - 130
Antimony	0.74	J,DX	80.0	80.6		ug/L		100	70 - 130
Thallium	ND		80.0	81.4		ug/L		102	70 - 130

Lab Sample ID: 440-96605-1 MSD
Matrix: Water
Analysis Batch: 226568

Client Sample ID: Outfall009_20141213_Comp
Prep Type: Total Recoverable
Prep Batch: 226388

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cadmium	0.31	J,DX	80.0	82.9		ug/L		103	70 - 130	1	20
Copper	9.0		80.0	88.3		ug/L		99	70 - 130	3	20
Lead	8.8		80.0	93.3		ug/L		106	70 - 130	2	20
Antimony	0.74	J,DX	80.0	81.2		ug/L		101	70 - 130	1	20
Thallium	ND		80.0	81.6		ug/L		102	70 - 130	0	20

Lab Sample ID: MB 440-226565/1-D
Matrix: Water
Analysis Batch: 226988

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 226703

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		12/24/14 09:59	12/24/14 16:39	1
Copper	ND		2.0	0.50	ug/L		12/24/14 09:59	12/24/14 16:39	1
Lead	ND		1.0	0.50	ug/L		12/24/14 09:59	12/24/14 16:39	1
Antimony	ND		2.0	0.50	ug/L		12/24/14 09:59	12/24/14 16:39	1
Thallium	ND		1.0	0.50	ug/L		12/24/14 09:59	12/24/14 16:39	1

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

Lab Sample ID: LCS 440-226565/2-D
Matrix: Water
Analysis Batch: 226988

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 226703

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	80.0	79.5		ug/L		99	85 - 115
Copper	80.0	83.3		ug/L		104	85 - 115
Lead	80.0	79.3		ug/L		99	85 - 115
Antimony	80.0	82.1		ug/L		103	85 - 115
Thallium	80.0	77.0		ug/L		96	85 - 115

Lab Sample ID: LCSD 440-226565/3-B
Matrix: Water
Analysis Batch: 226988

Client Sample ID: Lab Control Sample Dup
Prep Type: Dissolved
Prep Batch: 226703

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cadmium	80.0	81.2		ug/L		101	85 - 115	2	20
Copper	80.0	83.7		ug/L		105	85 - 115	0	20
Lead	80.0	80.4		ug/L		100	85 - 115	1	20
Antimony	80.0	83.2		ug/L		104	85 - 115	1	20
Thallium	80.0	77.5		ug/L		97	85 - 115	1	20

Lab Sample ID: 440-97088-D-1-D MS
Matrix: Water
Analysis Batch: 226988

Client Sample ID: Matrix Spike
Prep Type: Dissolved
Prep Batch: 226703

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	0.36	J,DX QP	80.0	79.7		ug/L		99	70 - 130
Copper	7.8	QP	80.0	86.4		ug/L		98	70 - 130
Lead	ND	QP	80.0	79.7		ug/L		100	70 - 130
Antimony	1.6	J,DX QP	80.0	85.7		ug/L		105	70 - 130
Thallium	ND	QP	80.0	75.8		ug/L		95	70 - 130

Lab Sample ID: 440-97088-D-1-E MSD
Matrix: Water
Analysis Batch: 226988

Client Sample ID: Matrix Spike Duplicate
Prep Type: Dissolved
Prep Batch: 226703

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cadmium	0.36	J,DX QP	80.0	78.7		ug/L		98	70 - 130	1	20
Copper	7.8	QP	80.0	85.3		ug/L		97	70 - 130	1	20
Lead	ND	QP	80.0	80.3		ug/L		100	70 - 130	1	20
Antimony	1.6	J,DX QP	80.0	83.1		ug/L		102	70 - 130	3	20
Thallium	ND	QP	80.0	75.5		ug/L		94	70 - 130	0	20

Method: 245.1 - Mercury (CVAA)

Lab Sample ID: MB 440-225232/1-A
Matrix: Water
Analysis Batch: 225520

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 225232

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		12/17/14 09:30	12/17/14 17:17	1

Method: 245.1 - Mercury (CVAA) (Continued)

Lab Sample ID: LCS 440-225232/2-A
Matrix: Water
Analysis Batch: 225520

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 225232

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	8.00	8.12		ug/L		102	85 - 115

Lab Sample ID: 440-96890-D-1-B MS
Matrix: Water
Analysis Batch: 225520

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 225232

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	ND		8.00	8.03		ug/L		100	70 - 130

Lab Sample ID: 440-96890-D-1-C MSD
Matrix: Water
Analysis Batch: 225520

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 225232

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	ND		8.00	8.32		ug/L		104	70 - 130	4	20

Method: 1664A - HEM and SGT-HEM

Lab Sample ID: MB 440-226034/1-A
Matrix: Water
Analysis Batch: 226039

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 226034

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM	ND		5.0	1.4	mg/L		12/21/14 14:30	12/21/14 17:01	1

Lab Sample ID: LCS 440-226034/2-A
Matrix: Water
Analysis Batch: 226039

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 226034

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
HEM	20.0	18.5		mg/L		93	78 - 114

Lab Sample ID: LCSD 440-226034/3-A
Matrix: Water
Analysis Batch: 226039

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 226034

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
HEM	20.0	19.0		mg/L		95	78 - 114	3	11

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

Lab Sample ID: MB 440-225438/1
Matrix: Water
Analysis Batch: 225438

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			12/18/14 05:37	1

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

Lab Sample ID: LCS 440-225438/2
Matrix: Water
Analysis Batch: 225438

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	978		mg/L		98	90 - 110

Lab Sample ID: 440-96682-G-14 DU
Matrix: Water
Analysis Batch: 225438

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	620		631		mg/L		2	5

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

Lab Sample ID: MB 440-225928/2
Matrix: Water
Analysis Batch: 225928

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			12/20/14 07:26	1

Lab Sample ID: LCS 440-225928/1
Matrix: Water
Analysis Batch: 225928

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	1030		mg/L		103	85 - 115

Lab Sample ID: 440-96877-B-1 DU
Matrix: Water
Analysis Batch: 225928

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	44		46.0		mg/L		4	10

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

Lab Sample ID: MB 440-224778/1-A
Matrix: Water
Analysis Batch: 224827

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 224778

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	ND		5.0	2.5	ug/L		12/15/14 15:08	12/15/14 17:50	1

Lab Sample ID: LCS 440-224778/2-A
Matrix: Water
Analysis Batch: 224827

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 224778

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	100	99.8		ug/L		100	90 - 110

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

Lab Sample ID: LCSD 440-224778/3-A
Matrix: Water
Analysis Batch: 224827

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 224778

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cyanide, Total	100	99.0		ug/L		99	90 - 110	1	10

Lab Sample ID: 440-96113-A-5-B MS
Matrix: Water
Analysis Batch: 224827

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 224778

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	ND		100	2.54	J,DX LN	ug/L		3	70 - 115

Lab Sample ID: 440-96113-A-5-C MSD
Matrix: Water
Analysis Batch: 224827

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 224778

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cyanide, Total	ND		100	ND	LN	ug/L		0	70 - 115	NC	15

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Lab Sample ID: MB 160-164748/1-A
Matrix: Water
Analysis Batch: 166173

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 164748

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	-0.2181	U	0.804	0.805	1.60	pCi/L	12/22/14 10:58	12/31/14 08:26	1
Gross Beta	0.6397	U	0.588	0.591	0.952	pCi/L	12/22/14 10:58	12/31/14 08:26	1

Lab Sample ID: LCS 160-164748/2-A
Matrix: Water
Analysis Batch: 166173

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 164748

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	MDC	Unit	%Rec	%Rec. Limits
Gross Alpha	50.1	51.89		7.52	2.37	pCi/L	104	73 - 133

Lab Sample ID: LCSB 160-164748/3-A
Matrix: Water
Analysis Batch: 166173

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 164748

Analyte	Spike Added	LCSB Result	LCSB Qual	Total Uncert. (2σ+/-)	MDC	Unit	%Rec	%Rec. Limits
Gross Beta	95.9	97.40		10.3	0.936	pCi/L	102	75 - 125

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity (Continued)

Lab Sample ID: 440-96594-R-1-F MS
Matrix: Water
Analysis Batch: 166172

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 164748

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)		MDC	Unit	%Rec	%Rec. Limits		
Gross Alpha	-0.942	U	50.1	41.79		6.16		1.47	pCi/L	83	35 - 150		

Lab Sample ID: 440-96594-R-1-G MSBT
Matrix: Water
Analysis Batch: 166172

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 164748

Analyte	Sample Result	Sample Qual	Spike Added	MSBT Result	MSBT Qual	Total Uncert. (2σ+/-)		MDC	Unit	%Rec	%Rec. Limits		
Gross Beta	3.86		95.9	103.3		10.9		1.01	pCi/L	104	89 - 143		

Lab Sample ID: 440-96594-R-1-H DU
Matrix: Water
Analysis Batch: 166172

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 164748

Analyte	Sample Result	Sample Qual		DU Result	DU Qual	Total Uncert. (2σ+/-)		MDC	Unit			RER	RER Limit
Gross Alpha	-0.942	U		0.4884	U	0.954		1.68	pCi/L			0.75	1
Gross Beta	3.86			2.472		0.803		1.01	pCi/L			0.81	1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Lab Sample ID: MB 160-164475/1-A
Matrix: Water
Analysis Batch: 164603

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 164475

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	1.528	U	6.99	7.00	13.0	pCi/L	12/19/14 11:40	12/21/14 22:44	1
Potassium-40	-17.38	U	169	169	224	pCi/L	12/19/14 11:40	12/21/14 22:44	1

Lab Sample ID: LCS 160-164475/2-A
Matrix: Water
Analysis Batch: 164814

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 164475

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)		MDC	Unit	%Rec	%Rec. Limits		
Americium-241			137000	132000		15300		465	pCi/L	96	90 - 111		
Cesium-137			49400	48080		4820		149	pCi/L	97	90 - 111		
Cobalt-60			52800	50140		4960		116	pCi/L	95	89 - 110		

Lab Sample ID: 440-96594-R-1-D DU
Matrix: Water
Analysis Batch: 164822

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 164475

Analyte	Sample Result	Sample Qual		DU Result	DU Qual	Total Uncert. (2σ+/-)		MDC	Unit			RER	RER Limit
Cesium-137	-2.27	U		-0.3150	U	5.09		9.60	pCi/L			0.15	1
Potassium-40	-81.3	U		-95.09	U	3800		173	pCi/L			0	1

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-164103/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 168026 — **Prep Batch: 164103**

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.01830	U	0.0554	0.0554	0.114	pCi/L	12/18/14 00:17	01/12/15 20:12	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*96.2*		*40 - 110*	*12/18/14 00:17*	*01/12/15 20:12*	*1*

Lab Sample ID: LCS 160-164103/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 168026 — **Prep Batch: 164103**

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	MDC	Unit	%Rec	%Rec. Limits
Radium-226	11.2	8.867		0.920	0.104	pCi/L	79	68 - 137

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*96.5*		*40 - 110*

Lab Sample ID: 160-9831-E-8-B DU — **Client Sample ID: Duplicate**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 168078 — **Prep Batch: 164103**

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	MDC	Unit	RER	RER Limit
Radium-226	-0.0295	U	0.04535	U	0.0690	0.117	pCi/L	0.58	1

Carrier	*DU %Yield*	*DU Qualifier*	*Limits*
Ba Carrier	*109*		*40 - 110*

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-168188/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 168922 — **Prep Batch: 168188**

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.2395	U	0.189	0.191	0.299	pCi/L	01/13/15 12:50	01/16/15 11:14	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*102*		*40 - 110*	*01/13/15 12:50*	*01/16/15 11:14*	*1*
Y Carrier	*89.0*		*40 - 110*	*01/13/15 12:50*	*01/16/15 11:14*	*1*

Method: 904.0 - Radium-228 (GFPC) (Continued)

Lab Sample ID: LCS 160-168188/2-A
Matrix: Water
Analysis Batch: 168922

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 168188

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)		MDC	Unit	%Rec	%Rec. Limits		
Radium-228			3.56	3.966		0.557		0.324	pCi/L	111	56 - 140		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*105*		*40 - 110*
Y Carrier	*85.6*		*40 - 110*

Lab Sample ID: LCSD 160-168188/3-A
Matrix: Water
Analysis Batch: 168923

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 168188

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)		MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228			3.56	2.968		0.459		0.317	pCi/L	83	56 - 140	0.98	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*104*		*40 - 110*
Y Carrier	*87.9*		*40 - 110*

Method: 905 - Strontium-90 (GFPC)

Lab Sample ID: MB 160-165620/1-A
Matrix: Water
Analysis Batch: 167123

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 165620

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.04484	U	0.176	0.176	0.321	pCi/L	12/29/14 18:01	01/07/15 15:55	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Sr Carrier	*90.0*		*40 - 110*	*12/29/14 18:01*	*01/07/15 15:55*	*1*
Y Carrier	*89.3*		*40 - 110*	*12/29/14 18:01*	*01/07/15 15:55*	*1*

Lab Sample ID: LCS 160-165620/2-A
Matrix: Water
Analysis Batch: 167123

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 165620

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)		MDC	Unit	%Rec	%Rec. Limits		
Strontium-90			8.95	8.768		0.905		0.298	pCi/L	98	90 - 134		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Sr Carrier	*88.6*		*40 - 110*
Y Carrier	*92.7*		*40 - 110*

Method: 905 - Strontium-90 (GFPC) (Continued)

Lab Sample ID: 440-96594-A-2-G DU
Matrix: Water
Analysis Batch: 167123

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 165620

Analyte	Sample Result	Sample Qual		DU Result	DU Qual	Total Uncert. (2σ+/-)		MDC	Unit			RER	RER Limit
Strontium-90	-0.255	U		-0.01446	U	0.155		0.281	pCi/L			0.79	1

Carrier	*DU %Yield*	*DU Qualifier*	*Limits*
Sr Carrier	*88.2*		*40 - 110*
Y Carrier	*90.8*		*40 - 110*

Method: 906.0 - Tritium, Total (LSC)

Lab Sample ID: MB 160-166399/1-A
Matrix: Water
Analysis Batch: 166478

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 166399

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	158.1	U	187	187	304	pCi/L	01/02/15 08:35	01/02/15 14:05	1

Lab Sample ID: LCS 160-166399/2-A
Matrix: Water
Analysis Batch: 166478

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 166399

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)		MDC	Unit	%Rec	%Rec. Limits		
Tritium			3440	3383		509		306	pCi/L	98	74 - 114		

Lab Sample ID: 280-63961-C-3-B MS
Matrix: Water
Analysis Batch: 166478

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 166399

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)		MDC	Unit	%Rec	%Rec. Limits		
Tritium	1050		3450	4424		603		306	pCi/L	98	67 - 130		

Lab Sample ID: 280-63670-A-3-D DU
Matrix: Water
Analysis Batch: 166478

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 166399

Analyte	Sample Result	Sample Qual		DU Result	DU Qual	Total Uncert. (2σ+/-)		MDC	Unit			RER	RER Limit
Tritium	2030			1865		366		307	pCi/L			0.22	1

Client: Haley & Aldrich, Inc.
Project/Site: Boeing SSFL NPDES Routine Outfall 009

TestAmerica Job ID: 440-96486-1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Lab Sample ID: MB 160-165361/1-A
Matrix: Water
Analysis Batch: 166357

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 165361

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	MDC	Unit	Prepared	Analyzed	Dil Fac
Total Uranium	0.03958	U	0.06314	0.06318	0.0995	pCi/L	12/24/14 10:49	12/31/14 14:22	1

Lab Sample ID: LCS 160-165361/2-A
Matrix: Water
Analysis Batch: 166358

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 165361

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	MDC	Unit	%Rec	%Rec. Limits
Uranium-234	12.7	13.13		1.57	0.0712	pCi/L	103	84 - 120
Uranium-238	13.0	14.40		1.68	0.108	pCi/L	111	83 - 121

Tracer	*LCS %Yield*	*LCS Qualifier*	*Limits*
Uranium-232	*83.7*		*30 - 110*

Lab Sample ID: 440-97211-A-2-D DU
Matrix: Water
Analysis Batch: 166370

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 165361

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	MDC	Unit	RER	RER Limit
Total Uranium	0.0479	U	0.2654	U	0.274	0.343	pCi/L	0.62	1

HPLC/IC

Analysis Batch: 224501

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-96539-L-1 MS	Matrix Spike	Total/NA	Water	300.0	
440-96539-L-1 MSD	Matrix Spike Duplicate	Total/NA	Water	300.0	
440-96605-1	Outfall009_20141213_Comp	Total/NA	Water	300.0	
LCS 440-224501/6	Lab Control Sample	Total/NA	Water	300.0	
MB 440-224501/4	Method Blank	Total/NA	Water	300.0	

Analysis Batch: 227160

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-96605-1	Outfall009_20141213_Comp	Total/NA	Water	NO3NO2 Calc	

Specialty Organics

Analysis Batch: 4351027

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-96605-1	Outfall009_20141213_Comp	Total	Water	1613B	
H4L170000027B	Method Blank	Total	Water	1613B	
H4L170000027C	Lab Control Sample	Total	Water	1613B	

Prep Batch: 4351027_P

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-96605-1	Outfall009_20141213_Comp	Total	Water	1613	
H4L170000027B	Method Blank	Total	Water	1613	
H4L170000027C	Lab Control Sample	Total	Water	1613	

Metals

Prep Batch: 225232

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-96605-1	Outfall009_20141213_Comp	Total/NA	Water	245.1	
440-96890-D-1-B MS	Matrix Spike	Total/NA	Water	245.1	
440-96890-D-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	
LCS 440-225232/2-A	Lab Control Sample	Total/NA	Water	245.1	
MB 440-225232/1-A	Method Blank	Total/NA	Water	245.1	

Analysis Batch: 225520

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-96605-1	Outfall009_20141213_Comp	Total/NA	Water	245.1	225232
440-96890-D-1-B MS	Matrix Spike	Total/NA	Water	245.1	225232
440-96890-D-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	225232
LCS 440-225232/2-A	Lab Control Sample	Total/NA	Water	245.1	225232
MB 440-225232/1-A	Method Blank	Total/NA	Water	245.1	225232

Prep Batch: 226388

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-96605-1	Outfall009_20141213_Comp	Total Recoverable	Water	200.2	
440-96605-1 MS	Outfall009_20141213_Comp	Total Recoverable	Water	200.2	
440-96605-1 MSD	Outfall009_20141213_Comp	Total Recoverable	Water	200.2	
LCS 440-226388/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
LCSD 440-226388/3-A	Lab Control Sample Dup	Total Recoverable	Water	200.2	
MB 440-226388/1-A	Method Blank	Total Recoverable	Water	200.2	

Metals (Continued)

Filtration Batch: 226565

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-96605-1	Outfall009_20141213_Comp	Dissolved	Water	FILTRATION	
440-97088-D-1-D MS	Matrix Spike	Dissolved	Water	FILTRATION	
440-97088-D-1-E MSD	Matrix Spike Duplicate	Dissolved	Water	FILTRATION	
LCS 440-226565/2-D	Lab Control Sample	Dissolved	Water	FILTRATION	
LCSD 440-226565/3-B	Lab Control Sample Dup	Dissolved	Water	FILTRATION	
MB 440-226565/1-D	Method Blank	Dissolved	Water	FILTRATION	

Analysis Batch: 226568

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-96605-1	Outfall009_20141213_Comp	Total Recoverable	Water	200.8	226388
440-96605-1 MS	Outfall009_20141213_Comp	Total Recoverable	Water	200.8	226388
440-96605-1 MSD	Outfall009_20141213_Comp	Total Recoverable	Water	200.8	226388
LCS 440-226388/2-A	Lab Control Sample	Total Recoverable	Water	200.8	226388
LCSD 440-226388/3-A	Lab Control Sample Dup	Total Recoverable	Water	200.8	226388
MB 440-226388/1-A	Method Blank	Total Recoverable	Water	200.8	226388

Prep Batch: 226703

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-96605-1	Outfall009_20141213_Comp	Dissolved	Water	200.2	226565
440-97088-D-1-D MS	Matrix Spike	Dissolved	Water	200.2	226565
440-97088-D-1-E MSD	Matrix Spike Duplicate	Dissolved	Water	200.2	226565
LCS 440-226565/2-D	Lab Control Sample	Dissolved	Water	200.2	226565
LCSD 440-226565/3-B	Lab Control Sample Dup	Dissolved	Water	200.2	226565
MB 440-226565/1-D	Method Blank	Dissolved	Water	200.2	226565

Analysis Batch: 226988

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-96605-1	Outfall009_20141213_Comp	Dissolved	Water	200.8	226703
440-97088-D-1-D MS	Matrix Spike	Dissolved	Water	200.8	226703
440-97088-D-1-E MSD	Matrix Spike Duplicate	Dissolved	Water	200.8	226703
LCS 440-226565/2-D	Lab Control Sample	Dissolved	Water	200.8	226703
LCSD 440-226565/3-B	Lab Control Sample Dup	Dissolved	Water	200.8	226703
MB 440-226565/1-D	Method Blank	Dissolved	Water	200.8	226703

General Chemistry

Prep Batch: 224778

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-96113-A-5-B MS	Matrix Spike	Total/NA	Water	Distill/CN	
440-96113-A-5-C MSD	Matrix Spike Duplicate	Total/NA	Water	Distill/CN	
440-96605-1	Outfall009_20141213_Comp	Total/NA	Water	Distill/CN	
LCS 440-224778/2-A	Lab Control Sample	Total/NA	Water	Distill/CN	
LCSD 440-224778/3-A	Lab Control Sample Dup	Total/NA	Water	Distill/CN	
MB 440-224778/1-A	Method Blank	Total/NA	Water	Distill/CN	

Analysis Batch: 224827

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-96113-A-5-B MS	Matrix Spike	Total/NA	Water	SM 4500 CN E	224778
440-96113-A-5-C MSD	Matrix Spike Duplicate	Total/NA	Water	SM 4500 CN E	224778
440-96605-1	Outfall009_20141213_Comp	Total/NA	Water	SM 4500 CN E	224778

General Chemistry (Continued)

Analysis Batch: 224827 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 440-224778/2-A	Lab Control Sample	Total/NA	Water	SM 4500 CN E	224778
LCSD 440-224778/3-A	Lab Control Sample Dup	Total/NA	Water	SM 4500 CN E	224778
MB 440-224778/1-A	Method Blank	Total/NA	Water	SM 4500 CN E	224778

Analysis Batch: 225438

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-96605-1	Outfall009_20141213_Comp	Total/NA	Water	SM 2540C	
440-96682-G-14 DU	Duplicate	Total/NA	Water	SM 2540C	
LCS 440-225438/2	Lab Control Sample	Total/NA	Water	SM 2540C	
MB 440-225438/1	Method Blank	Total/NA	Water	SM 2540C	

Analysis Batch: 225928

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-96605-1	Outfall009_20141213_Comp	Total/NA	Water	SM 2540D	
440-96877-B-1 DU	Duplicate	Total/NA	Water	SM 2540D	
LCS 440-225928/1	Lab Control Sample	Total/NA	Water	SM 2540D	
MB 440-225928/2	Method Blank	Total/NA	Water	SM 2540D	

Prep Batch: 226034

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-96486-1	Outfall009_20141212_Grab	Total/NA	Water	1664A	
LCS 440-226034/2-A	Lab Control Sample	Total/NA	Water	1664A	
LCSD 440-226034/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	
MB 440-226034/1-A	Method Blank	Total/NA	Water	1664A	

Analysis Batch: 226039

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-96486-1	Outfall009_20141212_Grab	Total/NA	Water	1664A	226034
LCS 440-226034/2-A	Lab Control Sample	Total/NA	Water	1664A	226034
LCSD 440-226034/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	226034
MB 440-226034/1-A	Method Blank	Total/NA	Water	1664A	226034

Rad

Prep Batch: 164103

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-9831-E-8-B DU	Duplicate	Total/NA	Water	PrecSep-21	
440-96605-1	Outfall009_20141213_Comp	Total/NA	Water	PrecSep-21	
440-96605-2	Trip_Blank	Total/NA	Water	PrecSep-21	
LCS 160-164103/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
MB 160-164103/1-A	Method Blank	Total/NA	Water	PrecSep-21	

Prep Batch: 164475

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-96594-R-1-D DU	Duplicate	Total/NA	Water	Fill_Geo-0	
440-96605-1	Outfall009_20141213_Comp	Total/NA	Water	Fill_Geo-0	
440-96605-2	Trip_Blank	Total/NA	Water	Fill_Geo-0	
LCS 160-164475/2-A	Lab Control Sample	Total/NA	Water	Fill_Geo-0	
MB 160-164475/1-A	Method Blank	Total/NA	Water	Fill_Geo-0	

Rad (Continued)

Prep Batch: 164748

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-96594-R-1-F MS	Matrix Spike	Total/NA	Water	Evaporation	
440-96594-R-1-G MSBT	Matrix Spike	Total/NA	Water	Evaporation	
440-96594-R-1-H DU	Duplicate	Total/NA	Water	Evaporation	
440-96605-1	Outfall009_20141213_Comp	Total/NA	Water	Evaporation	
440-96605-2	Trip_Blank	Total/NA	Water	Evaporation	
LCS 160-164748/2-A	Lab Control Sample	Total/NA	Water	Evaporation	
LCSB 160-164748/3-A	Lab Control Sample	Total/NA	Water	Evaporation	
MB 160-164748/1-A	Method Blank	Total/NA	Water	Evaporation	

Prep Batch: 165361

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-96605-1	Outfall009_20141213_Comp	Total/NA	Water	ExtChrom	
440-96605-2	Trip_Blank	Total/NA	Water	ExtChrom	
440-97211-A-2-D DU	Duplicate	Total/NA	Water	ExtChrom	
LCS 160-165361/2-A	Lab Control Sample	Total/NA	Water	ExtChrom	
MB 160-165361/1-A	Method Blank	Total/NA	Water	ExtChrom	

Prep Batch: 165620

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-96594-A-2-G DU	Duplicate	Total/NA	Water	PrecSep-7	
440-96605-1	Outfall009_20141213_Comp	Total/NA	Water	PrecSep-7	
440-96605-2	Trip_Blank	Total/NA	Water	PrecSep-7	
LCS 160-165620/2-A	Lab Control Sample	Total/NA	Water	PrecSep-7	
MB 160-165620/1-A	Method Blank	Total/NA	Water	PrecSep-7	

Prep Batch: 166399

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-63670-A-3-D DU	Duplicate	Total/NA	Water	LSC_Dist_Susp	
280-63961-C-3-B MS	Matrix Spike	Total/NA	Water	LSC_Dist_Susp	
440-96605-1	Outfall009_20141213_Comp	Total/NA	Water	LSC_Dist_Susp	
LCS 160-166399/2-A	Lab Control Sample	Total/NA	Water	LSC_Dist_Susp	
MB 160-166399/1-A	Method Blank	Total/NA	Water	LSC_Dist_Susp	

Prep Batch: 168188

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-96605-1	Outfall009_20141213_Comp	Total/NA	Water	PrecSep_0	
440-96605-2	Trip_Blank	Total/NA	Water	PrecSep_0	
LCS 160-168188/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-168188/3-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	
MB 160-168188/1-A	Method Blank	Total/NA	Water	PrecSep_0	

Qualifiers

HPLC/IC

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

DIOXIN

Qualifier	Qualifier Description
J	Estimated result. Result is less than the reporting limit.
Q	Estimated maximum possible concentration (EMPC).
B	Method blank contamination. The associated method blank contains the target analyte at a reportable level.

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

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)

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.
G	The Sample MDC is greater than the requested RL.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, 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 SSFL NPDES Routine Outfall 009

TestAmerica Job ID: 440-96486-1

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	06-30-15
Arizona	State Program	9	AZ0671	10-13-15
California	LA Cty Sanitation Districts	9	10256	01-31-15 *
California	State Program	9	2706	06-30-16
Guam	State Program	9	Cert. No. 12.002r	01-23-15 *
Hawaii	State Program	9	N/A	01-29-15 *
Nevada	State Program	9	CA015312007A	07-31-15
New Mexico	State Program	6	N/A	01-29-15 *
Northern Mariana Islands	State Program	9	MP0002	01-29-15 *
Oregon	NELAP	10	4005	01-29-15 *
USDA	Federal		P330-09-00080	06-06-15
USEPA UCMR	Federal	1	CA01531	01-31-15

Laboratory: TestAmerica Knoxville

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

Authority	Program	EPA Region	Certification ID	Expiration Date
Arkansas DEQ	State Program	6	88-0688	06-17-15
California	State Program	9	2423	06-30-16
Colorado	State Program	8	N/A	02-28-15
Connecticut	State Program	1	PH-0223	09-30-15
Florida	NELAP	4	E87177	06-30-15
Georgia	State Program	4	906	04-13-17
Hawaii	State Program	9	N/A	04-13-15
Kansas	NELAP	7	E-10349	01-31-15
Kentucky (DW)	State Program	4	90101	12-31-15
L-A-B	DoD ELAP		L2311	02-13-16
Louisiana	NELAP	6	83979	06-30-15
Louisiana	NELAP	6	LA110001	12-31-15
Maryland	State Program	3	277	03-31-15
Michigan	State Program	5	9933	04-13-17
Nevada	State Program	9	TN00009	07-31-15
New Jersey	NELAP	2	TN001	06-30-15
New York	NELAP	2	10781	03-31-15
North Carolina (DW)	State Program	4	21705	07-31-15
North Carolina (WW/SW)	State Program	4	64	12-31-15
Ohio VAP	State Program	5	CL0059	03-26-15
Oklahoma	State Program	6	9415	08-31-15
Pennsylvania	NELAP	3	68-00576	12-31-15
South Carolina	State Program	4	84001	06-30-15
Tennessee	State Program	4	2014	04-13-17
Texas	NELAP	6	T104704380-TX	08-31-15
USDA	Federal		P330-13-00260	08-29-16
Utah	NELAP	8	QUAN3	07-31-15
Virginia	NELAP	3	460176	09-14-15
Virginia	State Program	3	165	06-30-15
Washington	State Program	10	C593	01-19-16
West Virginia (DW)	State Program	3	9955C	12-31-14
West Virginia DEP	State Program	3	345	04-30-15
Wisconsin	State Program	5	998044300	08-31-15

* Certification renewal pending - certification considered valid.

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing SSFL NPDES Routine Outfall 009

TestAmerica Job ID: 440-96486-1

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	06-30-15
California	NELAP	9	2886	03-31-15
Connecticut	State Program	1	PH-0241	03-31-15
Florida	NELAP	4	E87689	06-30-15
Illinois	NELAP	5	200023	11-30-15
Iowa	State Program	7	373	12-01-14 *
Kansas	NELAP	7	E-10236	03-31-15 *
Kentucky (DW)	State Program	4	90125	12-31-14 *
L-A-B	DoD ELAP		L2305	01-10-16
Louisiana	NELAP	6	LA150017	12-31-16
Maryland	State Program	3	310	09-30-15
Missouri	State Program	7	780	06-30-15
Nevada	State Program	9	MO000542013-1	07-31-15
New Jersey	NELAP	2	MO002	06-30-15
New Mexico	State Program	6		06-30-10 *
New York	NELAP	2	11616	03-31-15 *
North Dakota	State Program	8	R207	06-30-15
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-15
Pennsylvania	NELAP	3	68-00540	02-28-15 *
South Carolina	State Program	4	85002001	06-30-15
Texas	NELAP	6	T104704193-13-6	07-31-15
USDA	Federal		P330-07-00122	01-09-17
Utah	NELAP	8	MO000542013-5	07-31-15
Virginia	NELAP	3	460230	06-14-15
Washington	State Program	10	C592	08-30-15
West Virginia DEP	State Program	3	381	08-31-15

* Certification renewal pending - certification considered valid.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

ANALYTICAL REPORT

PROJECT NO. 440-96605-1

Boeing SSFL Outfall 009 COMPOS

Lot #: H4L160434

Debby Wilson

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TESTAMERICA LABORATORIES, INC.

Terry Wasmund
Project Manager

January 12, 2015

ANALYTICAL METHODS SUMMARY

H4L160434

PARAMETER	ANALYTICAL METHOD
Dioxins/Furans, HRGC/HRMS	EPA-5 1613B

References:

EPA-5 "Method 1613: Tetra- through Octa- Chlorinated Dioxins and Furans by Isotope Dilution, HRGC/HRMS, Revision B", EPA, OCTOBER 1994

SAMPLE SUMMARY

H4L160434

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
M5Q2L	001	Outfall_009_20141213_Comp	12/13/14	03:06

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

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The results reported herein are applicable to the samples submitted for analysis only. If you have any questions about this report, please call (865) 291-3000 to speak with the TestAmerica project manager listed on the cover page.

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

The original chain of custody documentation is included with this report.

Sample Receipt

There were no problems with the condition of the samples received.

Quality Control and Data Interpretation

Unless otherwise noted, all holding times and QC criteria were met and the test results shown in this report meet all applicable NELAC requirements.

The following flags are used to qualify results for chlorinated dioxin and furan results:

J – The reported result is an estimate. The amount reported is below the Minimum Level (ML). The qualitative definition of the ML is "the lowest level at which the analytical system must give a reliable signal and an acceptable calibration point". The ML was introduced in EPA Methods 1624 and 1625 in 1980 and was promulgated in these methods in 1984 at 40 CFR Part 136, Appendix A. For the purposes of this report, the ML is qualitatively defined as described above, and quantitatively defined as follows:

Minimum Level: The concentration or mass of analyte in the sample that corresponds to the lowest calibration level in the initial calibration. It represents a concentration (in the sample extract) equivalent to that of the lowest calibration standard, after corrections for method-specified sample weights, volumes and cleanup procedures has been employed.

Example: The lowest calibration level for TCDD in the initial calibration is 0.5 pg/uL. A mass of 10 pg of 2,3,7,8-TCDD in the sample would result in a concentration of 0.5 pg/uL in the sample extract (at a final volume of 20 uL). Since the concentration in the sample extract corresponds to the concentration in the lowest calibration standard, the 10 pg mass in the sample components is the ML. If the sample extract is further diluted, the ML will increase by the dilution factor.

Example: A 1/10 dilution is performed on the sample extract described above. The ML for 2,3,7,8-TCDD becomes 100 pg rather than the default of 10 pg.

E – The reported result is an estimate. The amount reported is above the Upper Calibration Level (UCL) described below. The quantitative definition of the UCL is listed below:

Upper Calibration Level: The concentration or mass of analyte in the sample that corresponds to the highest calibration level in the initial calibration. It is equivalent to the concentration of the highest calibration standard, assuming that all method-specified sample weights, volumes, and cleanup procedures have been employed.

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Example: The maximum calibration level for TCDD in the initial calibration is 200 pg/uL. A mass of 4000 pg of 2,3,7,8-TCDD in the sampling components would result in a concentration of 200 pg/uL in the sample extract (at a final volume of 20 uL). Since the concentration in the sample extract corresponds to the concentration in the highest calibration standard, the 4000 pg mass in the sample components is the UCL. If the sample extract is further diluted, the ML will increase by the dilution factor.

Example: A 1/10 dilution is performed on the sample extract described above. The UCL for 2,3,7,8-TCDD becomes 40,000 pg rather than the default of 4000 pg. In this example, all positive 2,3,7,8-TCDD results above 40,000 pg are flagged with an E.

B – The analyte is present in the associated method blank at a detectable level. For this analysis, there is no method specified reporting level other than the qualitative criterion that peaks must exhibit a signal-to-noise ratio of ≥2.5 to 1. Therefore, the presence of any reportable amount of the analyte in the blank will result in a B qualifier on all associated samples.

Q – Estimated maximum possible concentration. This qualifier is used when the result is generated from chromatographic data that does not meet all the qualitative criteria for a positive identification given in the method. These criteria include the following:

- Ion abundance ratios must be within specified limits (+/-15% of theoretical ion abundance ratio).
- Retention time criteria (relative to the method-specified isotope labeled retention time standard).
- Co-maximization criterion. The two quantitation ion peaks must reach their maxima within 2 seconds of each other.
- Polychlorinated dibenzofuran purity. No peak can be identified as a polychlorinated dibenzofuran if a polychlorinated diphenyl ether peak maximizes within +/- 2 seconds of the furan candidate.

S – Ion suppression evident. The trace indicating the signal from the lock mass of the calibration compound shows a deflection at the retention time of the analyte. This may indicate a temporary suppression of the instrument sensitivity due to a matrix-borne interference.

C – Coeluting Isomer. The isomer is known to coelute with another member of its homologue group, or the peak shape is shouldered, indicating the likelihood of a coeluting isomer.

X – Other. See explanation in narrative.

Laboratory studies supporting risk assessment and Total Maximum Daily Load (TMDL) evaluations, frequently use qualified data reported as low as the Method Detection Limit (MDL), or the Estimated Detection Limit (EDL). Several of EPA's isotope dilution methods employ the EDL.[1,2,3] The EDL is based on a direct measurement of the signal-to-noise (S/N) ratio acquired during sample analysis. This S/N measurement is used to calculate the concentration in the sample corresponding to the minimum intensity of the smallest quantifiable peak. The EDL

reflects the amount of the particular analyte which would be required to cause a positive result for the particular analysis. Because the S/N obtained covaries with recovery, instrument sensitivity and sample-specific cleanup efficacy, the EDL is a more valid measure of the sensitivity of the entire analytical process for the specific sample than is an MDL run periodically on a reference matrix.

The EDL is typically calculated according to the following equation:

$$\text{Estimated Detection Limit} = \frac{N \times 2.5 \times Qis}{His \times RRF \times W \times S}$$

Where:

N	=	peak to peak noise of quantitation ion signal in the region of the ion chromatogram where the compound of interest is expected to elute
His	=	peak height of quantitation ion for appropriate internal standard
Qis	=	ng of internal standard added to sample
RRF	=	mean relative response factor of compound obtained during initial calibration
W	=	amount of sample extracted (grams or liters)
S	=	percent solids (optional, if results are requested to be reported on dry weight basis)

(The area of the internal standard is sometimes used instead of height, along with an area-to-height conversion factor.)

This method of estimating the detection limit differs from the MDL in that it does not carry the requirement that the sample be statistically distinguished as being from a contaminated population. As results approach the EDL, the risk of false positives and the analytical uncertainty increase significantly. However, a low false positive well below the ML or MDL is often closer to the true value than an assumption that the target analyte is present at the detection or reporting limits. For relatively clean samples, MDL studies may give an elevated estimate of the detection limit. Additionally, on contaminated samples, the MDL may give a falsely low estimate of the detection limit.

$$\text{Analyte Concentration} = \frac{As \times Qis}{Ais \times RRF \times W \times S}$$

Where:

As	=	Sum of areas of the target peaks
Qis	=	ng of internal standard added to sample
Ais	=	Sum of areas of the internal standard peaks
RRF	=	mean relative response factor of compound obtained during initial calibration
W	=	amount of sample extracted (grams or liters)
S	=	percent solids (optional, if results are requested to be reported on dry weight basis)

In sample data, peaks must have an intensity of $\geq$2.5 times the height of the background noise in order to be considered. Careful examination of the two equations above reveals that for the concentration of the smallest peak detectable (per the EDL equation) to exactly equal the

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smallest peaks that are calculated, requires that the average height to area ratio obtained during the calibration must equal the area to height ratio for every peak obtained near 2.5 times the noise. When the area to height ratio on a peak in a sample is less than the average obtained during calibration, the calculated result will correspond to a peak that would have been less than 2.5 times the noise on the calibration. This is the result of normal variability. Because the source methods for the EDL (SW-846 8290 and 8280A) do not provide for censoring of results by any other magnitude standard than being 2.5 times the noise, the laboratory does not censor at the calculated EDL. Hence, detections may be reported below the estimated detection limits.

Footnotes:

1. Code of Federal Regulations, Part 136, Chapter 1, Appendix 1, October 1994: Method 1613 Tetra- Through Octa-Chlorinated Dioxins and Furans by Isotope Dilution High Resolution Gas Chromatography/High Resolution Mass Spectrometry.
2. U.S. EPA. Test Methods for Evaluating Solid Waste, Volume II, SW-846, Update III, December 1996. Method 8280A: The Analysis of Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by High Resolution Gas Chromatography/Low Resolution Mass Spectrometry.
3. U.S. EPA. Test Methods for Evaluating Solid Waste, SW-846. Third Edition. March 1995 Method 8290: Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by High Resolution Gas Chromatography/High Resolution Mass Spectrometry.

CERTIFICATION SUMMARY

Laboratory	Authority	Program	EPA Region	Certification ID
TestAmerica Knoxville	L-A-B	DoD ELAP		L2311
TestAmerica Knoxville	Arkansas DEQ	State Program	6	88-0688
TestAmerica Knoxville	California	State Program	9	2423
TestAmerica Knoxville	Colorado	State Program	8	N/A
TestAmerica Knoxville	Connecticut	State Program	1	PH-0223
TestAmerica Knoxville	Florida	NELAC	4	E87177
TestAmerica Knoxville	Georgia	State Program	4	906
TestAmerica Knoxville	Hawaii	State Program	9	N/A
TestAmerica Knoxville	Indiana	State Program	5	C-TN-02
TestAmerica Knoxville	Iowa	State Program	7	375
TestAmerica Knoxville	Kansas	NELAC	7	E-10349
TestAmerica Knoxville	Kentucky	State Program	4	90101
TestAmerica Knoxville	Louisiana DOHH	State Program	6	LA110001
TestAmerica Knoxville	Louisiana DEQ	NELAC	6	83979
TestAmerica Knoxville	Maryland	State Program	3	277
TestAmerica Knoxville	Michigan	State Program	5	9933
TestAmerica Knoxville	Minnesota	NELAC	5	047-999-429
TestAmerica Knoxville	Nevada	State Program	9	TN00009
TestAmerica Knoxville	New Jersey	NELAC	2	TN001
TestAmerica Knoxville	New York	NELAC	2	10781
TestAmerica Knoxville	North Carolina DENR	State Program	4	64
TestAmerica Knoxville	North Carolina DHHS	State Program	4	21705
TestAmerica Knoxville	Ohio	OVAP	5	CL0059
TestAmerica Knoxville	Oklahoma	State Program	6	9415
TestAmerica Knoxville	Pennsylvania	NELAC	3	68-00576
TestAmerica Knoxville	South Carolina	State Program	4	84001
TestAmerica Knoxville	Tennessee	State Program	4	2014
TestAmerica Knoxville	Texas	NELAC	6	T104704380-TX
TestAmerica Knoxville	Federal	USDA		P330-11-00035
TestAmerica Knoxville	Utah	NELAC	8	QUAN3
TestAmerica Knoxville	Virginia	NELAC	3	460176
TestAmerica Knoxville	Virginia	State Program	3	165
TestAmerica Knoxville	Washington	State Program	10	C593
TestAmerica Knoxville	West Virginia DEP	State Program	3	345
TestAmerica Knoxville	West Virginia DHHR	State Program	3	9955C

Accreditation may not be offered or required for all methods and analytes reported in this package. Please contact your project manager for the laboratory's current list of certified methods and analytes.

Sample Data Summary

TestAmerica Irvine

Sample ID: Outfall_009_20141213_Comp

Trace Level Organic Compounds

Lot - Sample #....:	H4L160434 - 001	**Work Order #....:**	M5Q2L1AA	**Matrix....:**	WATER
Date Sampled....:	12/13/14	**Date Received....:**	12/16/14	**Dilution Factor:**	1
Prep Date....:	12/17/14	**Analysis Date....:**	01/10/15		
Prep Batch # ....:	4351027				
Initial Wgt/Vol :	990 mL	**Instrument ID....:**	M2A	**Method:**	EPA-5 1613B
Analyst ID....:	Patricia(Trish) M. Parsly				

PARAMETER	RESULT		MINIMUM LEVEL	ESTIMATED DETECTION LIMIT	UNITS
2,3,7,8-TCDD	ND		0.0000101	0.00000505	ug/L
Total TCDD	ND		0.0000101	0.00000505	ug/L
1,2,3,7,8-PeCDD	ND		0.0000505	0.00000314	ug/L
Total PeCDD	ND		0.0000505	0.00000314	ug/L
1,2,3,4,7,8-HxCDD	ND		0.0000505	0.00000251	ug/L
1,2,3,6,7,8-HxCDD	**0.00000957**	**J**	**0.0000505**	**0.00000268**	**ug/L**
1,2,3,7,8,9-HxCDD	**0.00000801**	**J**	**0.0000505**	**0.00000241**	**ug/L**
Total HxCDD	**0.0000490**	**J**	**0.0000505**	**0.00000253**	**ug/L**
1,2,3,4,6,7,8-HpCDD	**0.000175**		**0.0000505**	**0.00000411**	**ug/L**
Total HpCDD	**0.000438**		**0.0000505**	**0.00000411**	**ug/L**
OCDD	**0.00180**	**B**	**0.000101**	**0.00000340**	**ug/L**
2,3,7,8-TCDF	ND		0.0000101	0.00000352	ug/L
Total TCDF	**0.0000115**	**Q J**	**0.0000101**	**0.00000352**	**ug/L**
1,2,3,7,8-PeCDF	ND		0.0000505	0.00000212	ug/L
2,3,4,7,8-PeCDF	ND		0.0000505	0.00000199	ug/L
Total PeCDF	**0.0000145**	**Q J**	**0.0000505**	**0.00000205**	**ug/L**
1,2,3,4,7,8-HxCDF	ND		0.0000505	0.00000181	ug/L
1,2,3,6,7,8-HxCDF	**0.00000340**	**Q J**	**0.0000505**	**0.00000176**	**ug/L**
2,3,4,6,7,8-HxCDF	ND		0.0000505	0.00000156	ug/L
1,2,3,7,8,9-HxCDF	ND		0.0000505	0.00000216	ug/L
Total HxCDF	**0.0000570**	**J Q**	**0.0000505**	**0.00000180**	**ug/L**
1,2,3,4,6,7,8-HpCDF	**0.0000330**	**Q J**	**0.0000505**	**0.00000233**	**ug/L**
1,2,3,4,7,8,9-HpCDF	ND		0.0000505	0.00000305	ug/L
Total HpCDF	**0.0000881**	**Q**	**0.0000505**	**0.00000265**	**ug/L**
OCDF	**0.0000978**	**J**	**0.000101**	**0.00000237**	**ug/L**

TestAmerica Irvine

Sample ID: Outfall_009_20141213_Comp

Trace Level Organic Compounds

Lot - Sample #....:	H4L160434 - 001	**Work Order #....:**	M5Q2L1AA	**Matrix....:**	WATER
Date Sampled....:	12/13/14	**Date Received....:**	12/16/14	**Dilution Factor:**	1
Prep Date....:	12/17/14	**Analysis Date....:**	01/10/15		
Prep Batch # ....:	4351027				
Initial Wgt/Vol :	990 mL	**Instrument ID....:**	M2A	**Method:**	EPA-5 1613B
Analyst ID....:	Patricia(Trish) M. Parsly				

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	88	25 - 164
13C-1,2,3,7,8-PeCDD	86	25 - 181
13C-1,2,3,4,7,8-HxCDD	90	32 - 141
13C-1,2,3,6,7,8-HxCDD	96	28 - 130
13C-1,2,3,4,6,7,8-HpCDD	98	23 - 140
13C-OCDD	102	17 - 157
13C-2,3,7,8-TCDF	79	24 - 169
13C-1,2,3,7,8-PeCDF	78	24 - 185
13C-2,3,4,7,8-PeCDF	75	21 - 178
13C-1,2,3,4,7,8-HxCDF	73	26 - 152
13C-1,2,3,6,7,8-HxCDF	77	26 - 123
13C-2,3,4,6,7,8-HxCDF	86	28 - 136
13C-1,2,3,7,8,9-HxCDF	84	29 - 147
13C-1,2,3,4,6,7,8-HpCDF	82	28 - 143
13C-1,2,3,4,7,8,9-HpCDF	89	26 - 138
13C-OCDF	100	17 - 157

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
37Cl4-2,3,7,8-TCDD	107	35 - 197

QUALIFIERS

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

J Estimated Result.

Q Estimated maximum possible concentration (EMPC).

Method Blank Report

Trace Level Organic Compounds

Lot - Sample #....: H4L170000 - 027B **Work Order #....:** M5RCM1AA **Matrix....:** WATER
Dilution Factor: 1
Prep Date....: 12/17/14 **Analysis Date....:** 01/10/15
Prep Batch # ....: 4351027
Initial Wgt/Vol : 1000 mL **Instrument ID....:** M2A **Method:** EPA-5 1613B
Analyst ID....: Patricia(Trish) M. Parsly

PARAMETER	RESULT		MINIMUM LEVEL	ESTIMATED DETECTION LIMIT	UNITS
2,3,7,8-TCDD	ND		0.0000100	0.00000589	ug/L
Total TCDD	ND		0.0000100	0.00000589	ug/L
1,2,3,7,8-PeCDD	ND		0.0000500	0.00000301	ug/L
Total PeCDD	ND		0.0000500	0.00000301	ug/L
1,2,3,4,7,8-HxCDD	ND		0.0000500	0.00000263	ug/L
1,2,3,6,7,8-HxCDD	ND		0.0000500	0.00000268	ug/L
1,2,3,7,8,9-HxCDD	ND		0.0000500	0.00000247	ug/L
Total HxCDD	ND		0.0000500	0.00000259	ug/L
1,2,3,4,6,7,8-HpCDD	ND		0.0000500	0.00000302	ug/L
Total HpCDD	ND		0.0000500	0.00000302	ug/L
OCDD	**0.0000276**	**J**	**0.000100**	**0.00000427**	**ug/L**
2,3,7,8-TCDF	ND		0.0000100	0.00000442	ug/L
Total TCDF	ND		0.0000100	0.00000442	ug/L
1,2,3,7,8-PeCDF	ND		0.0000500	0.00000249	ug/L
2,3,4,7,8-PeCDF	ND		0.0000500	0.00000223	ug/L
Total PeCDF	ND		0.0000500	0.00000235	ug/L
1,2,3,4,7,8-HxCDF	ND		0.0000500	0.00000157	ug/L
1,2,3,6,7,8-HxCDF	ND		0.0000500	0.00000170	ug/L
2,3,4,6,7,8-HxCDF	ND		0.0000500	0.00000148	ug/L
1,2,3,7,8,9-HxCDF	ND		0.0000500	0.00000202	ug/L
Total HxCDF	ND		0.0000500	0.00000167	ug/L
1,2,3,4,6,7,8-HpCDF	ND		0.0000500	0.00000229	ug/L
1,2,3,4,7,8,9-HpCDF	ND		0.0000500	0.00000302	ug/L
Total HpCDF	ND		0.0000500	0.00000261	ug/L
OCDF	ND		0.000100	0.00000307	ug/L

Method Blank Report

Trace Level Organic Compounds

Lot - Sample #....:	H4L170000 - 027B	**Work Order #....:**	M5RCM1AA	**Matrix....:**	WATER
Dilution Factor:	1				
Prep Date....:	12/17/14	**Analysis Date....:**	01/10/15		
Prep Batch # ....:	4351027				
Initial Wgt/Vol :	1000 mL	**Instrument ID....:**	M2A	**Method:**	EPA-5 1613B
Analyst ID....:	Patricia(Trish) M. Parsly				

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	92	25 - 164
13C-1,2,3,7,8-PeCDD	87	25 - 181
13C-1,2,3,4,7,8-HxCDD	92	32 - 141
13C-1,2,3,6,7,8-HxCDD	94	28 - 130
13C-1,2,3,4,6,7,8-HpCDD	93	23 - 140
13C-OCDD	96	17 - 157
13C-2,3,7,8-TCDF	77	24 - 169
13C-1,2,3,7,8-PeCDF	80	24 - 185
13C-2,3,4,7,8-PeCDF	78	21 - 178
13C-1,2,3,4,7,8-HxCDF	72	26 - 152
13C-1,2,3,6,7,8-HxCDF	75	26 - 123
13C-2,3,4,6,7,8-HxCDF	84	28 - 136
13C-1,2,3,7,8,9-HxCDF	79	29 - 147
13C-1,2,3,4,6,7,8-HpCDF	79	28 - 143
13C-1,2,3,4,7,8,9-HpCDF	86	26 - 138
13C-OCDF	93	17 - 157

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
37Cl4-2,3,7,8-TCDD	104	35 - 197

QUALIFIERS

J Estimated Result.

LABORATORY CONTROL SAMPLE DATA REPORT

Trace Level Organic Compounds

Client Lot # ...:	H4L160434	**Work Order # ...:**	M5RCM1AC-LCS	**Matrix .....:**	WATER
LCS Lot-Sample# :	H4L170000 - 027				
Prep Date .....:	12/17/14	**Analysis Date ..:**	01/07/15		
Prep Batch # ...:	4351027				
Dilution Factor :	1				
Analyst ID.....:	Patricia(Trish) M. Parsl	**Instrument ID..:**	M2A	**Method.....:**	EPA-5 1613B
Initial Wgt/Vol:	1000 mL				

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY		RECOVERY LIMITS
2,3,7,8-TCDD	**0.0002**	**0.0002**	**ug/L**	**100**		**(67 - 158)**
1,2,3,7,8-PeCDD	**0.0010**	**0.0010**	**ug/L**	**100**		**(70 - 142)**
1,2,3,4,7,8-HxCDD	**0.0010**	**0.0009**	**ug/L**	**95**		**(70 - 164)**
1,2,3,6,7,8-HxCDD	**0.0010**	**0.0009**	**ug/L**	**95**		**(76 - 134)**
1,2,3,7,8,9-HxCDD	**0.0010**	**0.0009**	**ug/L**	**98**		**(64 - 162)**
1,2,3,4,6,7,8-HpCDD	**0.0010**	**0.0009**	**ug/L**	**93**		**(70 - 140)**
OCDD	**0.0020**	**0.0017**	**ug/L**	**90**	**B**	**(78 - 144)**
2,3,7,8-TCDF	**0.0002**	**0.0002**	**ug/L**	**100**		**(75 - 158)**
1,2,3,7,8-PeCDF	**0.0010**	**0.0009**	**ug/L**	**91**		**(80 - 134)**
2,3,4,7,8-PeCDF	**0.0010**	**0.0009**	**ug/L**	**95**		**(68 - 160)**
1,2,3,4,7,8-HxCDF	**0.0010**	**0.0009**	**ug/L**	**95**		**(72 - 134)**
1,2,3,6,7,8-HxCDF	**0.0010**	**0.0009**	**ug/L**	**96**		**(84 - 130)**
2,3,4,6,7,8-HxCDF	**0.0010**	**0.0009**	**ug/L**	**95**		**(70 - 156)**
1,2,3,7,8,9-HxCDF	**0.0010**	**0.0009**	**ug/L**	**94**		**(78 - 130)**
1,2,3,4,6,7,8-HpCDF	**0.0010**	**0.0009**	**ug/L**	**92**		**(82 - 122)**
1,2,3,4,7,8,9-HpCDF	**0.0010**	**0.0009**	**ug/L**	**95**		**(78 - 138)**
OCDF	**0.0020**	**0.0018**	**ug/L**	**93**		**(63 - 170)**

INTERNAL STANDARD	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	91	(20 - 175)
13C-1,2,3,7,8-PeCDD	95	(21 - 227)
13C-1,2,3,4,7,8-HxCDD	93	(21 - 193)
13C-1,2,3,6,7,8-HxCDD	88	(25 - 163)
13C-1,2,3,4,6,7,8-HpCDD	90	(26 - 166)
13C-OCDD	91	(13 - 199)
13C-2,3,7,8-TCDF	83	(22 - 152)
13C-1,2,3,7,8-PeCDF	88	(21 - 192)
13C-2,3,4,7,8-PeCDF	85	(13 - 328)
13C-1,2,3,4,7,8-HxCDF	78	(19 - 202)
13C-1,2,3,6,7,8-HxCDF	79	(21 - 159)
13C-2,3,4,6,7,8-HxCDF	84	(22 - 176)
13C-1,2,3,7,8,9-HxCDF	85	(17 - 205)
13C-1,2,3,4,6,7,8-HpCDF	80	(21 - 158)
13C-1,2,3,4,7,8,9-HpCDF	83	(20 - 186)
13C-OCDF	83	(13 - 199)

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
37Cl4-2,3,7,8-TCDD	105	(31 - 191)

LABORATORY CONTROL SAMPLE DATA REPORT

Trace Level Organic Compounds

Notes:

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

Sample Receipt Documentation

H4W160434

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)	Sampler:	Lab PM: Wilson, Debby S	Carrier Tracking No(s):	COC No: 440-70091.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: debby.wilson@testamericainc.com		Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.				Job #: 440-96605-1
Address: 5815 Middlebrook Pike, ,	Due Date Requested: 12/29/2014			
City: Knoxville	TAT Requested (days):			
State, Zip: TN, 37921	PO #:			
Phone: 865-291-3000(Tel) 865-584-4315(Fax)	WO #:			
Email:	Project #: 44009879			
Project Name: Boeing SSFL Outfall 009 COMPOSITE	SSOW#:			
Site:				

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, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2SO3, 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=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SUB (1613 dioxin)/ 1613 dioxin	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
Outfall_009_20141213_Comp (440-96605-1)	12/13/14	03:06 Pacific		Water			X	2	See QAS,Boeing_w/u to zero. ug/L

RC/ND pH=6

RT CT
REC @ 0.9°c 0.8°c
0.7° 0.6°

CUSTODY SEALS INTACT
FED EX# 611112649740

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify)	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	Jn Bauld	12/15/14 17:00	TAI	FedEx	12/15/14 17:00	
2				Ryan Henry	12/16/14 0950	
3						

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

TESTAMERICA KNOXVILLE SAMPLE RECEIPT/CONDITION UPON RECEIPT ANOMALY CHECKLIST

Lot Number: 442160234

Review Items	Yes	No	NA	If No, what was the problem?
1. Do sample container labels match COC? (IDs, Dates, Times)	✓			☐ **1a** Do not match COC ☐ **1b** Incomplete information ☐ **1c** Marking smeared ☐ **1d** Label torn ☐ **1e** No label ☐ **1f** COC not received ☐ **1g** Other:
2. Is the cooler temperature within limits? (> freezing temp. of water to 6 °C, VOST: 10°C) Thermometer ID : 5C57 Correction factor: -0.1	✓			☐ **2a** Temp Blank = _____ ☐ **2b** Cooler Temp = _____ ☐ **2c** Cooling initiated for recently collected samples, ice present.
3. Were samples received with correct chemical preservative (excluding Encore)?			✓	☐ **3a** See box 3A for pH Preservation ☐ **3b** Other:
4. Were custody seals present/intact on cooler and/or containers?	✓			☐ **4a** Not present ☐ **4b** Not intact ☐ **4c** Other:
5. Were all of the samples listed on the COC received?	✓			☐ **5a** Samples received-not on COC ☐ **5b** Samples not received-on COC
6. Were all of the sample containers received intact?	✓			☐ **6a** Leaking ☐ **6b** Broken
7. Were VOA samples received without headspace?			✓	☐ **7a** Headspace (VOA only)
8. Were samples received in appropriate containers?	✓			☐ **8a** Improper container
9. Did you check for residual chlorine, if necessary? (e.g. 1613B, 1668) Chlorine test strip lot number: 4252 2017/07	✓			☐ **9a** Could not be determined due to matrix interference
10. Were samples received within holding time?	✓			☐ **10a** Holding time expired
11. For rad samples, was sample activity info. provided?			✓	☐ Incomplete information
12. For 1613B water samples is pH<9?	✓			If no, was pH adjusted to pH 7 - 9 with sulfuric acid? _____
13. Are the shipping containers intact?	✓			☐ **13a** Leaking ☐ **13b** Other:
14. Was COC relinquished? (Signed/Dated/Timed)	✓			☐ **14a** Not relinquished
15. Are tests/parameters listed for each sample?	✓			☐ **15a** Incomplete information
16. Is the matrix of the samples noted?	✓			☐ **15a** Incomplete information
17. Is the date/time of sample collection noted?	✓			☐ **15a** Incomplete information
18. Is the client and project name/# identified?	✓			☐ **15a** Incomplete information
19. Was the sampler identified on the COC?		✓		☐ **19a** Other

Comments/Actions Taken

pH test strip lot number: HC425511

	Box 3A: pH Preservation	Box 9A: Residual Chlorine
Preservative:		
Lot Number:		
Exp Date:		
Analyst:		
Date:		
Time:		

Quote #: _____ PM Instructions: _____

Sample Receiving Associate: Ryan Henry Date: 12/16/14

QA026R28.doc, 042414

Test America Version 1
October 2014

CHAIN OF CUSTODY FORM

440-96486 Chain of Custody

Client Name/Address	Project:	ANALYSIS REQUIRED	Field Readings	Meter serial #
Haley & Aldrich 9040 Friars Road Suite 220 San Diego, CA 92108-5860 Test America Contact: Debby Wilson	Boeing-SSFL NPDES Routine Outfall 009 GRAB Stormwater at SW-13	Oil & Grease (1664-HEM)	Field readings: (Include units) 0700 Time of readings pH 6.54 pH unit Temp 11.42 °C/°F	UH4VAADK
Project Manager: Nancy Gardiner Sampler: B. Benson D. Ea-	Phone Number: 619.285.7132, 858.337.4061(cell) Field Manager: Jeff Bannon 818.350.7340, 818.414.5608(cell)		Field readings QC Checked by: ANITRA RICE Date/Time: 12-12-14	

Sample Description	Sample Matrix	Container Type	# of Cont	Sample I D	Sampling Date/Time	Preservative	Bottle #	Comments
Outfall 009	W	1L Amber	2	Outfall 009_2014-12-12 Grab	2014-12-12/0700	HCl	1A, 1B	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	Received By	Date/Time
BRYAN DENSON	12/12/14 1440	[illegible] ART	12/12/14 1440
Relinquished By	Date/Time	Received By	Date/Time
[illegible] ART	12/12/14 1630	[illegible]	12/12/14
Relinquished By	Date/Time	Received By	Date/Time

Turnaround 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 NPDES Level IV ____

44°/3.6
1.3°/0.5

#73

CHAIN OF CUSTODY FORM

440-96605 Chain of Custody

Client Name/Address:	Project:
Haley & Aldrich 9040 Friars Road Suite 220 San Diego, CA 92108-5860 Test America Contact: Debby Wilson	Boeing-SSFL NPDES **Routine Outfall 009** **COMPOSITE** Stormwater at SW-13
Project Manager: Nancy Gardiner Sampler: B. Benson / C. Johnson	Phone Number 619.285.7132, 858 337.4061(cell) Field Manager: Jeff Bannon 818 350.7340, 818.414 5608(cell)

Sample Description	Sample Matrix	Container Type	# of Cont	Sample I.D	Sampling Date/Time	Preservative	Bottle #	Total Recoverable Metals: Sb, Cd, Cu, Pb, Hg, Tl	TCDD (and all congeners)	Cl, SO_4, NO_3+NO_2-N	TDS	TSS	Total Dissolved Metals: Sb, Cd, Cu, Pb, Hg, Tl	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	Cyanide						Comments
Outfall 009	W	1L Poly	1	Outfall 009_2014_12/3_Comp	12/13/14/0306	HNO_3	2A	X														
Outfall 009	W	1L Amber	2			None	3A, 3B		X													
Outfall 009	W	500 mL Poly	2			None	4A, 4B			X												
Outfall 009	W	500 mL Poly	1			None	5				X											
Outfall 009	W	1L Poly	1			None	6						X									Filter w/in 24hrs of receipt at lab
Outfall 009	W	2.5 Gal Cubs	1			None	7A							X								Unfiltered and unpreserved analysis
		500 mL Amber	1			None	7B															
Outfall 009	W	1 Gal Poly	1			None	8								X							Only test if first or second rain events of the year
Outfall 009	W	500 mL Poly	1			NaOH	9									X						
Outfall 009	W	1L Poly	1			None	5					X										

ANALYSIS REQUIRED

COC Page 2 of 2 list the Composite Samples for Outfall 009 for this storm event.
These must be added to the same work order for COC Page 1 of 2 for Outfall 009 for the same event.

Relinquished By	Date/Time	Received By	Date/Time
[signature]	12/13/14 1026	Shafti & NABI	12/13/14 1026
Relinquished By	Date/Time	Received By	Date/Time
Shafti & NABI	12/13/14 12:25	[signature] TAI	12/13/14 12:25
Relinquished By	Date/Time	Received By	Date/Time

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 ____ NPDES Level IV. ____

IR6A=1.8/1.0°C

UTL Shafti & NABI

1/20/2015

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-96486-1

Login Number: 96486

List Source: TestAmerica Irvine

List Number: 1

Creator: Blocker, Kristina M

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").	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: 440-96486-1

Login Number: 96605

List Source: TestAmerica Irvine

List Number: 1

Creator: Kim, Guerry

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	

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-96486-1

Login Number: 96605
List Number: 2
Creator: Clarke, Jill C

List Source: TestAmerica St. Louis
List Creation: 12/16/14 01:25 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	4.4, 4.6, 5.4
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 <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 SSFL NPDES Routine Outfall 009

TestAmerica Job ID: 440-96486-1

Method: 903.0 - Radium-226 (GFPC)

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

		Percent Yield (Acceptance Limits)							
		Ba							
Lab Sample ID	Client Sample ID	(40-110)							
160-9831-E-8-B DU	Duplicate	109							
440-96605-1	Outfall009_20141213_Comp	84.4							
440-96605-2	Trip_Blank	104							
LCS 160-164103/2-A	Lab Control Sample	96.5							
MB 160-164103/1-A	Method Blank	96.2							

Tracer/Carrier Legend

Ba = Ba Carrier

Method: 904.0 - Radium-228 (GFPC)

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

		Percent Yield (Acceptance Limits)							
		Ba	Y						
Lab Sample ID	Client Sample ID	(40-110)	(40-110)						
440-96605-1	Outfall009_20141213_Comp	93.2	84.5						
440-96605-2	Trip_Blank	107	90.5						
LCS 160-168188/2-A	Lab Control Sample	105	85.6						
LCSD 160-168188/3-A	Lab Control Sample Dup	104	87.9						
MB 160-168188/1-A	Method Blank	102	89.0						

Tracer/Carrier Legend

Ba = Ba Carrier

Y = Y Carrier

Method: 905 - Strontium-90 (GFPC)

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

		Percent Yield (Acceptance Limits)							
		Sr (C)	Y						
Lab Sample ID	Client Sample ID	(40-110)	(40-110)						
440-96594-A-2-G DU	Duplicate	88.2	90.8						
440-96605-1	Outfall009_20141213_Comp	84.6	91.6						
440-96605-2	Trip_Blank	82.7	90.8						
LCS 160-165620/2-A	Lab Control Sample	88.6	92.7						
MB 160-165620/1-A	Method Blank	90.0	89.3						

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)							
		U-232							
Lab Sample ID	Client Sample ID	(30-110)							
440-97211-A-2-D DU	Duplicate	31.1							
LCS 160-165361/2-A	Lab Control Sample	83.7							
MB 160-165361/1-A	Method Blank	87.1							

Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing SSFL NPDES Routine Outfall 009

TestAmerica Job ID: 440-96486-1

Tracer/Carrier Legend

U-232 = Uranium-232

DATA VALIDATION REPORT

Haley & Aldrich Boeing SSFL Stormwater

SAMPLE DELIVERY GROUP: 440-97027-1

Prepared by

MEC^X
12269 East Vassar Drive
Aurora, CO 80014

I. INTRODUCTION

Task Order Title:	Haley & Aldrich Boeing SSFL Stormwater
Contract Task Order:	1272.003H.01 001
Sample Delivery Group:	440-97027-1
Project Manager:	K. Miller
Matrix:	Water
QC Level:	IV
No. of Samples:	1
No. of Reanalyses/Dilutions:	0
Laboratory:	TestAmerica Irvine

Table 1. Sample Identification

Sample Name	*Lab Sample Name*	*Sub-Lab Sample Name*	*Matrix*	*Collection*	*Method*
Outfall009_20141217_Comp	440-97211-1	N/A	Water	12/17/2014 8:21:00 AM	E1613B, E200.8, E900, E901.1, E905.0, SM2540D

II. Sample Management

No anomalies were observed regarding sample management. A portion of the sample containers were received at TestAmerica-Irvine below the temperature limits of $4^{o}C \pm 2^{o}C$, at $0.5\ ^{o}C$. As the sample was not noted to be frozen or damaged, no qualification was required. According to the case narrative for this SDG, the sample container was received on ice, intact and properly preserved. No COC transferring the samples to TestAmerica-St. Louis. The COC was appropriately signed and dated by field and laboratory personnel. The samples were transferred to TestAmerica-Irvine via courier. Custody seals were intact at the remaining laboratories.

Upon receipt at TestAmerica-Irvine, the laboratory prepared the radionuclide samples and a blank that accompanied the samples to TestAmerica-St. Louis.

Data Qualifier Reference Table

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. The associated value is the quantitation limit or the estimated detection limit for dioxins or PCB congeners.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit. The associated value is the sample detection limit or the quantitation limit for perchlorate only.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
J+	Not applicable	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample, and may have a potential positive bias.
J-	Not applicable	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample, and may have a potential negative bias.
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be 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.

Qualifier	Organics	Inorganics
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.

Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D was noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination as indicated by the preparation (method) blank results.	Presumed contamination as indicated by the preparation (method) or calibration blank results.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
L1	LCS/LCSD RPD was outside control limits.	LSC/LSCD RPD was outside control limits.
Q	MS/MSD recovery was poor.	MS recovery was poor.
Q1	MS/MSD RPD was outside control limits.	MS/MSD RPD was outside control limits.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	ICPMS tune was not compliant.
T	Presumed contamination as indicated by the trip blank results.	Not applicable.
+	False positive – reported compound was not present.	Not applicable.
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination as indicated by the FB or ER results.	Presumed contamination as indicated by the FB or ER results.
$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.

Qualifier	Organics	Inorganics
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within 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	Unusual problems found with the data that have been 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.	Unusual problems found with the data that have been 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

A. EPA METHOD 1613B—Dioxin/Furans

Reviewed By: L. Calvin
Date Reviewed: January 20, 2015

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).

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

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

    - 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%.

    - Mass Spectrometer Performance: The mass spectrometer performance was acceptable with the static resolving power greater than 10,000.

- Calibration: Calibration criteria were met.

    - Initial Calibration: Initial calibration criteria were met. The initial calibration was acceptable with %RSDs ≤20% for the 15 native compounds (calibration by isotope dilution) and ≤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.

- Blanks: The method blank had a detect below the reporting limit for OCDD at 0.00000202 µg/L. The sample concentration of OCDD exceeded 10× the method blank concentration and required no qualification. The method blank had no other detects above the estimated detection limit (EDL).

- Blank Spikes and Laboratory Control Samples: Recoveries were within the acceptance criteria listed in Table 6 of Method 1613B.

- 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. Following are findings associated with field QC samples:

    - Field Blanks and Equipment Rinsates: This SDG had no identified field blank or equipment rinsate samples.

    - Field Duplicates: This SDG had no identified field duplicate samples.

- Internal Standards Performance: The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613B.

- Compound Identification: Compound identification was verified. The laboratory analyzed for polychlorinated dioxins/furans by EPA Method 1613B. Isomer 2,3,7,8-TCDF was not detected in the initial analysis of the sample; therefore, confirmation analysis was not necessary.

- Compound Quantification and Reported Detection Limits: Compound quantitation was verified by recalculating any sample detects and a representative number of blank spike concentrations. 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) were qualified as estimated, "J," and coded with "DNQ," in order to comply with the NPDES permit. Nondetects are valid to the EDL.

  The results for 1,2,3,4,7,8-HxCDF, 1,2,3,6,7,8-HxCDF, and 1,2,3,7,8-PeCDF reported as EMPCs were qualified as estimated nondetects, "UJ," at the level of the EMPC. Totals HpCDF, HxCDF, PeCDD, PeCDF, and TCDF containing one or more EMPC peaks were qualified as estimated, "J."

B. EPA METHOD 200.8—Metals

Reviewed By: M. Cherny
Date Reviewed: January 19, 2015

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

- Holding Times: The analytical holding time, six months, was met.

- Calibration: The initial and continuing calibration recoveries were within 90-110% and the CRI recoveries were within the control limits of 70-130%.

- Blanks: Total recoverable copper was detected in the method blank but not at sufficient concentration to qualify the site sample. Method blanks and CCBs had no other detects.

- Interference Check Samples: Recoveries were within 80-120%. Total recoverable and dissolved copper were reported in the ICSA at 1.68 µg/L and 1.64 µg/L; therefore copper detected in the site sample was qualified as estimated with high bias, "J+". There were no other detects in the ICSA above the certified impurity levels.

- Blank Spikes and Laboratory Control Samples: Recoveries were within the method control limits of 85-115% and the ICP MS RPDs were ≤20%.

- Laboratory Duplicates: No laboratory duplicate analyses were performed on the sample in this SDG.

- Matrix Spike/Matrix Spike Duplicate: MS/MSD analyses were not performed on the sample in this SDG. Method accuracy and precision were evaluated based upon laboratory spike results.

- Serial Dilution: No serial dilution analyses were performed on the sample in this SDG.

- 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.

- 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. Following are findings associated with field QC samples:

    - Field Blanks and Equipment Rinsates: This SDG had no identified field blank or equipment rinsate samples.

    - Field Duplicates: There were no field duplicate samples identified for this SDG.

C. VARIOUS EPA METHODS — Radionuclides

Reviewed By: P. Meeks
Date Reviewed: January 19, 2015

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the *EPA Methods 900.0, 901.1, 903.0, 904.0, 905.0, and 906.0, HASL-300,* and the *National Functional Guidelines for Inorganic Data Review* (2014).

- Holding Times: The tritium sample was analyzed within 180 days of collection. Aliquots for the remaining analytes were preserved within the five-day holding time.

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

  The gross alpha and radium-226 detector efficiencies were less than 20%; therefore, gross alpha and radium-226 in the sample was qualified as estimated, "J," for detects and, "UJ," for nondetects. The remaining detector efficiencies were greater than 20%.

  All initial and annual calibration verifications were acceptable with mean recoveries within 90-110%. All carrier recoveries were within 40-110%. The gamma spectroscopy analytes were determined at the maximum photopeak energy.

- Blanks: There were no analytes detected in the method blanks or the blank prepared by TestAmerica-Irvine.

- Blank Spikes and Laboratory Control Samples: The recoveries were within laboratory-established control limits.

- Laboratory Duplicates: There were no laboratory duplicate analyses performed on the sample in this SDG.

- Matrix Spike/Matrix Spike Duplicate: No matrix spike analyses were performed on the sample in this SDG. Method accuracy was evaluated based on LCS results.

- 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. Any detects between the MDC and the reporting limit (RL) were qualified as estimated, "J," and coded with "DNQ," in order to comply with the NPDES permit. Reported nondetects are valid to the MDC.

- 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. Following are findings associated with field QC samples:

- Field Blanks and Equipment Rinsates: This SDG had no identified field blank or equipment rinsate samples.

- Field Duplicates: There were no field duplicate samples identified for this SDG.

D. EPA METHOD 2540D—Total Suspended Solids

Reviewed By: M. Cherny
Date Reviewed: January 19, 2015

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *Standard Method for the Examination of Water and Wastewater Method 2540D,* and the *National Functional Guidelines for Inorganic Data Review* (2014).

- Holding Times: The analytical holding time, seven days, was met.

- Calibration: The daily calibration log was acceptable.

- Blanks: The method blank had no detects.

- Blank Spikes and Laboratory Control Samples: The recovery was within the method control limits of 85-115%.

- Laboratory Duplicates: No laboratory duplicate analyses were performed on the sample in this SDG.

- Matrix Spike/Matrix Spike Duplicate: MS/MSD analyses are not applicable to this method.

- 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.

- 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. Following are findings associated with field QC samples:

    - Field Blanks and Equipment Rinsates: This SDG had no identified field blank or equipment rinsate samples.

- Field Duplicates: There were no field duplicate samples identified for this SDG.

Validated Sample Result Forms: 440970271

Analysis Method E1613B

Sample Name Outfall009_20141217_Co **Matrix Type:** WM **Result Type:** TRG

Sample Date: 12/17/2014 8:21:00 AM **Validation Level:** 3

Lab Sample Name: 440-97211-1

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	0.0000593	0.000100	0.0	ug/L	J	J	DNQ
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	N	3268-87-9	0.00198	0.000100	0.0	ug/L	B		
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	N	67562-39-4	0.0000234	0.0000502	0.0	ug/L	J	J	DNQ
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	N	35822-46-9	0.000146	0.0000502	0.0	ug/L			
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	N	55673-89-7		0.0000502	0.0	ug/L	U	U	
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	N	70648-26-9	0.00000164	0.0000502	0.0	ug/L	QJ	UJ	*III
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	39227-28-6		0.0000502	0.0	ug/L	U	U	
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	57117-44-9	0.00000466	0.0000502	0.0	ug/L	QJ	UJ	*III
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	57653-85-7	0.00000846	0.0000502	0.0	ug/L	J	J	DNQ
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	N	72918-21-9		0.0000502	0.0	ug/L	U	U	
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	N	19408-74-3	0.00000610	0.0000502	0.0	ug/L	J	J	DNQ
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-41-6		0.0000502	0.0	ug/L	U	U	
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	N	40321-76-4	0.00000161	0.0000502	0.0	ug/L	QJ	UJ	*III
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	60851-34-5		0.0000502	0.0	ug/L	U	U	
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-31-4		0.0000502	0.0	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9		0.0000100	0.0	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	N	1746-01-6		0.0000100	0.0	ug/L	U	U	
Total Heptachlorodibenzofuran (HpCDF)	N	38998-75-3	0.0000699	0.0000502	0.0	ug/L	QJ	J	DNQ, *III
Total Heptachlorodibenzo-p-dioxin (HpCDD)	N	37871-00-4	0.000360	0.0000502	0.0	ug/L			
Total Hexachlorodibenzofuran (HxCDF)	N	55684-94-1	0.0000949	0.0000502	0.0	ug/L	JQ	J	DNQ, *III
Total Hexachlorodibenzo-p-dioxin (HxCDD)	N	34465-46-8	0.0000421	0.0000502	0.0	ug/L	J	J	DNQ

Analysis Method E1613B

Total Pentachlorodibenzofuran (PeCDF)	N	30402-15-4	0.0000195	0.0000502	0.0	ug/L	QJ	J	DNQ, *III
Total Pentachlorodibenzo-p-dioxin (PeCDD)	N	36088-22-9	0.00000478	0.0000502	0.0	ug/L	QJ	J	DNQ, *III
Total Tetrachlorodibenzofuran (TCDF)	N	55722-27-5	0.00000954	0.0000100	0.0	ug/L	JQ	J	DNQ, *III
Total Tetrachlorodibenzo-p-dioxin (TCDD)	N	41903-57-5		0.0000100	0.0	ug/L	U	U	

Analysis Method E200.8

Sample Name Outfall009_20141217_Co **Matrix Type:** WM **Result Type:** TRG

Sample Date: 12/17/2014 8:21:00 AM **Validation Level:** 3

Lab Sample Name: 440-97211-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Antimony	N	7440-36-0	0.83	2.0	0.50	ug/L	J,DX	J	DNQ
Antimony	D	7440-36-0	0.54	2.0	0.50	ug/L	J,DXQP	J	DNQ
Cadmium	D	7440-43-9		1.0	0.25	ug/L	UQP	U	
Cadmium	N	7440-43-9		1.0	0.25	ug/L	U	U	
Copper	N	7440-50-8	8.8	2.0	0.50	ug/L	MB	J+	I
Copper	D	7440-50-8	4.4	2.0	0.50	ug/L	QP	J+	I
Lead	N	7439-92-1	13	1.0	0.50	ug/L			
Lead	D	7439-92-1	1.3	1.0	0.50	ug/L	QP		
Thallium	D	7440-28-0		1.0	0.50	ug/L	UQP	U	
Thallium	N	7440-28-0		1.0	0.50	ug/L	U	U	

Analysis Method E900

Sample Name Outfall009_20141217_Co **Matrix Type:** WM **Result Type:** TRG

Sample Date: 12/17/2014 8:21:00 AM **Validation Level:** 3

Lab Sample Name: 440-97211-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Gross Alpha Analytes	N	GROSSALPHA	5.82	3.00	1.48	pCi/L		J	C
Gross Beta Analytes	N	GROSSBETA	6.73	4.00	1.02	pCi/L			

Analysis Method E901.1

Sample Name Outfall009_20141217_Co **Matrix Type:** WM **Result Type:** TRG

Sample Date: 12/17/2014 8:21:00 AM **Validation Level:** 3

Lab Sample Name: 440-97211-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cesium-137	N	10045-97-3	0.000	20.0	16.0	pCi/L	U	U	
Potassium-40	N	13966-00-2	2.92		170	pCi/L	U	U	

Analysis Method E903.0

Sample Name Outfall009_20141217_Co **Matrix Type:** WM **Result Type:** TRG

Sample Date: 12/17/2014 8:21:00 AM **Validation Level:** 3

Lab Sample Name: 440-97211-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-226	N	13982-63-3	0.0774	1.00	0.229	pCi/L	U	UJ	C

Analysis Method E904.0

Sample Name Outfall009_20141217_Co **Matrix Type:** WM **Result Type:** TRG

Sample Date: 12/17/2014 8:21:00 AM **Validation Level:** 3

Lab Sample Name: 440-97211-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-228	N	15262-20-1	0.539	1.00	0.814	pCi/L	U	U	

Analysis Method E905.0

Sample Name Outfall009_20141217_Co **Matrix Type:** WM **Result Type:** TRG

Sample Date: 12/17/2014 8:21:00 AM **Validation Level:** 3

Lab Sample Name: 440-97211-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Strontium-90	N	10098-97-2	-0.192	3.00	1.14	pCi/L	U	U	

Analysis Method E906.0

Sample Name Outfall009_20141217_Co **Matrix Type:** WM **Result Type:** TRG

Sample Date: 12/17/2014 8:21:00 AM **Validation Level:** 3

Lab Sample Name: 440-97211-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Tritium	N	10028-17-8	-15.8	500	346	pCi/L	U	U	

Analysis Method HASL-300 U Mod

Sample Name Outfall009_20141217_Co **Matrix Type:** WM **Result Type:** TRG

Sample Date: 12/17/2014 8:21:00 AM **Validation Level:** 3

Lab Sample Name: 440-97211-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Uranium	N	URANIUM	0.551	1.00	0.405	pCi/L		J	DNQ

Analysis Method SM2540D

Sample Name Outfall009_20141217_Co **Matrix Type:** WM **Result Type:** TRG

Sample Date: 12/17/2014 8:21:00 AM **Validation Level:** 3

Lab Sample Name: 440-97211-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Suspended Solids (TSS)	N	TSS	78	5.0	2.5	mg/L			

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: 440-97027-1
Client Project/Site: Routine Outfall 009 Grab
Revision: 1

For:
Haley & Aldrich, Inc.
5333 Mission Center Road
Suite 300
San Diego, California 92108

Attn: Nancy Gardiner

Debby Wilson

Authorized for release by:
1/19/2015 5:49:01 PM

Debby Wilson, Manager of Project Management
(949)261-1022
debby.wilson@testamericainc.com

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
Manager of Project Management
1/19/2015 5:49:01 PM

Table of Contents

Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Grab

TestAmerica Job ID: 440-97027-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-97027-1	Outfall 009_20141217_Grab	Water	12/17/14 07:30	12/17/14 13:36
440-97211-1	Outfall009_20141217_Comp	Water	12/17/14 08:21	12/18/14 17:20
440-97211-2	Trip Blank	Water	12/18/14 17:20	12/18/14 17:20

Job ID: 440-97027-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-97027-1

Comments
No additional comments.

Receipt
The samples were received on 12/17/2014 1:36 PM and 12/18/2014 5:20 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 4 coolers at receipt time were 0.5º C, 2.1º C, 2.4º C and 3.0º C.

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

RAD
Method(s) ExtChrom: Uranium (165361): The samples are a dark yellow-brown color. A reduced aliquot of 100 mL was used to prevent matrix interference. (440-97211-1), Outfall009_20141217_Comp (440-97211-1)

Method(s) PrecSep-7: strontium-90: The following samples in batch #165620 were prepped at a reduced aliquot due to the presence of sediment: (440-97211-1), Outfall009_20141217_Comp (440-97211-1).

Method(s) PrecSep-21, PrecSep_0: radium-228 batch #164779 and radium-226 batch #164776: The following samples were reduced to 500 mL due to sediment:

Method(s) 905: Prep Batch 165620: The strontium-90 sample has negative activity greater than the 3 sigma uncertainty. The sample cannot be recounted to verify activity due to the rapid decay rate of the yttrium carrier. The data have been qualified and reported. (440-96594-2), Trip_Blank (440-96594-2)

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

Metals
Method(s) 245.1: The continuing calibration verification (CCV) associated with analytical batch 227057 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 samples are impacted: Outfall009_20141217_Comp (440-97211-1).

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

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

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

Organic Prep
Method(s) 1664A: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD/DUP) associated with batch 226034. 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.

Subcontract Work
Method 1613 dioxin: This method was subcontracted to TestAmerica Knoxville. The subcontract laboratory certification is different from that of the facility issuing the final report. Refer to case narrative in appended report.

Client Sample ID: Outfall 009_20141217_Grab

Lab Sample ID: 440-97027-1

Date Collected: 12/17/14 07:30
Matrix: Water
Date Received: 12/17/14 13:36

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM	ND		4.8	1.4	mg/L		12/21/14 14:30	12/21/14 17:01	1

Client Sample ID: Outfall009_20141217_Comp

Lab Sample ID: 440-97211-1

Date Collected: 12/17/14 08:21
Matrix: Water
Date Received: 12/18/14 17:20

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**6.1**		0.50	0.25	mg/L			12/18/14 22:50	1
Sulfate	**3.9**		0.50	0.25	mg/L			12/18/14 22:50	1

Method: NO3NO2 Calc - Nitrogen, Nitrate-Nitrite

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	**1.9**		0.15	0.070	mg/L			01/05/15 12:00	1

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

Analyte	Result	Qualifier	ML	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.0000100	0.00000208	ug/L		12/30/14 14:30	01/16/15 08:53	1
Total TCDD	ND		0.0000100	0.00000208	ug/L		12/30/14 14:30	01/16/15 08:53	1
1,2,3,7,8-PeCDD	**0.00000161**	**Q J**	0.0000502	0.00000117	ug/L		12/30/14 14:30	01/16/15 08:53	1
Total PeCDD	**0.00000478**	**Q J**	0.0000502	0.00000117	ug/L		12/30/14 14:30	01/16/15 08:53	1
1,2,3,4,7,8-HxCDD	ND		0.0000502	0.00000101	ug/L		12/30/14 14:30	01/16/15 08:53	1
1,2,3,6,7,8-HxCDD	**0.00000846**	**J**	0.0000502	0.000000930	ug/L		12/30/14 14:30	01/16/15 08:53	1
1,2,3,7,8,9-HxCDD	**0.00000610**	**J**	0.0000502	0.000000900	ug/L		12/30/14 14:30	01/16/15 08:53	1
Total HxCDD	**0.0000421**	**J**	0.0000502	0.000000900	ug/L		12/30/14 14:30	01/16/15 08:53	1
1,2,3,4,6,7,8-HpCDD	**0.000146**		0.0000502	0.00000170	ug/L		12/30/14 14:30	01/16/15 08:53	1
Total HpCDD	**0.000360**		0.0000502	0.00000170	ug/L		12/30/14 14:30	01/16/15 08:53	1
OCDD	**0.00198**	**B**	0.000100	0.00000248	ug/L		12/30/14 14:30	01/16/15 08:53	1
2,3,7,8-TCDF	ND		0.0000100	0.00000148	ug/L		12/30/14 14:30	01/16/15 08:53	1
Total TCDF	**0.00000954**	**J Q**	0.0000100	0.00000148	ug/L		12/30/14 14:30	01/16/15 08:53	1
1,2,3,7,8-PeCDF	ND		0.0000502	0.000000830	ug/L		12/30/14 14:30	01/16/15 08:53	1
2,3,4,7,8-PeCDF	ND		0.0000502	0.000000740	ug/L		12/30/14 14:30	01/16/15 08:53	1
Total PeCDF	**0.0000195**	**Q J**	0.0000502	0.000000740	ug/L		12/30/14 14:30	01/16/15 08:53	1
1,2,3,4,7,8-HxCDF	**0.00000164**	**Q J**	0.0000502	0.000000670	ug/L		12/30/14 14:30	01/16/15 08:53	1
1,2,3,6,7,8-HxCDF	**0.00000466**	**Q J**	0.0000502	0.000000650	ug/L		12/30/14 14:30	01/16/15 08:53	1
2,3,4,6,7,8-HxCDF	ND		0.0000502	0.000000650	ug/L		12/30/14 14:30	01/16/15 08:53	1
1,2,3,7,8,9-HxCDF	ND		0.0000502	0.000000980	ug/L		12/30/14 14:30	01/16/15 08:53	1
Total HxCDF	**0.0000949**	**J Q**	0.0000502	0.000000650	ug/L		12/30/14 14:30	01/16/15 08:53	1
1,2,3,4,6,7,8-HpCDF	**0.0000234**	**J**	0.0000502	0.000000820	ug/L		12/30/14 14:30	01/16/15 08:53	1
1,2,3,4,7,8,9-HpCDF	ND		0.0000502	0.00000144	ug/L		12/30/14 14:30	01/16/15 08:53	1
Total HpCDF	**0.0000699**	**Q J**	0.0000502	0.000000820	ug/L		12/30/14 14:30	01/16/15 08:53	1
OCDF	**0.0000593**	**J**	0.000100	0.00000111	ug/L		12/30/14 14:30	01/16/15 08:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*80*		*35 - 197*	*12/30/14 14:30*	*01/16/15 08:53*	*1*

Internal Standard	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*70*		*25 - 164*	*12/30/14 14:30*	*01/16/15 08:53*	*1*
13C-1,2,3,7,8-PeCDD	*76*		*25 - 181*	*12/30/14 14:30*	*01/16/15 08:53*	*1*
13C-1,2,3,4,7,8-HxCDD	*82*		*32 - 141*	*12/30/14 14:30*	*01/16/15 08:53*	*1*

Client Sample ID: Outfall009_20141217_Comp
Date Collected: 12/17/14 08:21
Date Received: 12/18/14 17:20

Lab Sample ID: 440-97211-1
Matrix: Water

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

Internal Standard	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-1,2,3,6,7,8-HxCDD	*88*		*28 - 130*	*12/30/14 14:30*	*01/16/15 08:53*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*79*		*23 - 140*	*12/30/14 14:30*	*01/16/15 08:53*	*1*
13C-OCDD	*77*		*17 - 157*	*12/30/14 14:30*	*01/16/15 08:53*	*1*
13C-2,3,7,8-TCDF	*68*		*24 - 169*	*12/30/14 14:30*	*01/16/15 08:53*	*1*
13C-1,2,3,7,8-PeCDF	*68*		*24 - 185*	*12/30/14 14:30*	*01/16/15 08:53*	*1*
13C-2,3,4,7,8-PeCDF	*66*		*21 - 178*	*12/30/14 14:30*	*01/16/15 08:53*	*1*
13C-1,2,3,4,7,8-HxCDF	*72*		*26 - 152*	*12/30/14 14:30*	*01/16/15 08:53*	*1*
13C-1,2,3,6,7,8-HxCDF	*76*		*26 - 123*	*12/30/14 14:30*	*01/16/15 08:53*	*1*
13C-2,3,4,6,7,8-HxCDF	*79*		*28 - 136*	*12/30/14 14:30*	*01/16/15 08:53*	*1*
13C-1,2,3,7,8,9-HxCDF	*69*		*29 - 147*	*12/30/14 14:30*	*01/16/15 08:53*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*79*		*28 - 143*	*12/30/14 14:30*	*01/16/15 08:53*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*67*		*26 - 138*	*12/30/14 14:30*	*01/16/15 08:53*	*1*
13C-OCDF	*75*		*17 - 157*	*12/30/14 14:30*	*01/16/15 08:53*	*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		12/29/14 14:01	12/30/14 10:03	1
Copper	**8.8**	**MB**	2.0	0.50	ug/L		12/29/14 14:01	12/30/14 10:03	1
Lead	**13**		1.0	0.50	ug/L		12/29/14 14:01	12/30/14 10:03	1
Thallium	ND		1.0	0.50	ug/L		12/29/14 14:01	12/30/14 10:03	1
Antimony	**0.83**	**J,DX**	2.0	0.50	ug/L		12/29/14 14:01	12/30/14 10:03	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		12/24/14 09:59	12/24/14 17:29	1
Copper	**4.4**	**QP**	2.0	0.50	ug/L		12/24/14 09:59	12/24/14 17:29	1
Lead	**1.3**	**QP**	1.0	0.50	ug/L		12/24/14 09:59	12/24/14 17:29	1
Thallium	ND	QP	1.0	0.50	ug/L		12/24/14 09:59	12/24/14 17:29	1
Antimony	**0.54**	**J,DX QP**	2.0	0.50	ug/L		12/24/14 09:59	12/24/14 17:29	1

Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		12/19/14 14:51	12/19/14 19:31	1

Method: 245.1 - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND	IB LQ QP	0.20	0.10	ug/L		12/24/14 06:37	12/24/14 16:04	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**120**		10	5.0	mg/L			12/23/14 16:53	1
Total Suspended Solids	**78**		5.0	2.5	mg/L			12/22/14 19:52	1
Cyanide, Total	ND		5.0	2.5	ug/L		12/23/14 20:02	12/24/14 13:37	1

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	**5.82**		1.62	1.75	1.48	pCi/L	12/29/14 14:42	01/06/15 11:09	1
Gross Beta	**6.73**		1.05	1.25	1.02	pCi/L	12/29/14 14:42	01/06/15 11:09	1

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Grab

TestAmerica Job ID: 440-97027-1

Client Sample ID: Outfall009_20141217_Comp
Date Collected: 12/17/14 08:21
Date Received: 12/18/14 17:20

Lab Sample ID: 440-97211-1
Matrix: Water

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	0.000	U	2.37	2.37	16.0	pCi/L	01/02/15 14:33	01/05/15 22:15	1
Potassium-40	2.92	U	69.3	69.3	170	pCi/L	01/02/15 14:33	01/05/15 22:15	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0774	U	0.134	0.134	0.229	pCi/L	12/22/14 13:06	01/13/15 18:47	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*92.9*		*40 - 110*	*12/22/14 13:06*	*01/13/15 18:47*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.539	U	0.504	0.506	0.814	pCi/L	12/22/14 13:41	01/08/15 11:09	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*92.9*		*40 - 110*	*12/22/14 13:41*	*01/08/15 11:09*	*1*
Y Carrier	*84.5*		*40 - 110*	*12/22/14 13:41*	*01/08/15 11:09*	*1*

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.192	U	0.616	0.616	1.14	pCi/L	12/29/14 18:01	01/07/15 15:58	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Sr Carrier	*86.6*		*40 - 110*	*12/29/14 18:01*	*01/07/15 15:58*	*1*
Y Carrier	*92.7*		*40 - 110*	*12/29/14 18:01*	*01/07/15 15:58*	*1*

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-15.8	U	183	183	346	pCi/L	01/02/15 09:02	01/02/15 18:04	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	MDC	Unit	Prepared	Analyzed	Dil Fac
Total Uranium	**0.551**		0.376	0.378	0.405	pCi/L	12/24/14 10:49	01/02/15 12:39	1

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Grab

TestAmerica Job ID: 440-97027-1

Client Sample ID: Trip Blank
Date Collected: 12/18/14 17:20
Date Received: 12/18/14 17:20

Lab Sample ID: 440-97211-2
Matrix: Water

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	0.597	U	1.02	1.02	1.74	pCi/L	12/29/14 14:42	01/06/15 11:09	1
Gross Beta	-0.277	U	0.531	0.531	0.978	pCi/L	12/29/14 14:42	01/06/15 11:09	1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	0.113	U	5.54	5.54	10.4	pCi/L	01/02/15 14:33	01/05/15 22:15	1
Potassium-40	-11.9	U	77.5	77.5	156	pCi/L	01/02/15 14:33	01/05/15 22:15	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0117	U	0.0509	0.0509	0.0946	pCi/L	12/22/14 13:06	01/13/15 18:47	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*95.6*		*40 - 110*	*12/22/14 13:06*	*01/13/15 18:47*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.339	U	0.245	0.247	0.383	pCi/L	12/22/14 13:41	01/08/15 11:10	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*95.6*		*40 - 110*	*12/22/14 13:41*	*01/08/15 11:10*	*1*
Y Carrier	*84.1*		*40 - 110*	*12/22/14 13:41*	*01/08/15 11:10*	*1*

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.0125	U	0.168	0.168	0.306	pCi/L	12/29/14 18:01	01/07/15 15:58	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Sr Carrier	*76.1*		*40 - 110*	*12/29/14 18:01*	*01/07/15 15:58*	*1*
Y Carrier	*94.2*		*40 - 110*	*12/29/14 18:01*	*01/07/15 15:58*	*1*

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	MDC	Unit	Prepared	Analyzed	Dil Fac
Total Uranium	0.0591	U	0.1019	0.1019	0.150	pCi/L	12/24/14 10:49	01/13/15 13:57	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Grab

TestAmerica Job ID: 440-97027-1

Method	Method Description	Protocol	Laboratory
300.0	Anions, Ion Chromatography	MCAWW	TAL IRV
NO3NO2 Calc	Nitrogen, Nitrate-Nitrite	EPA	TAL IRV
1613B	Dioxins/Furans, HRGC/HRMS (1613B)	EPA-5	TAL KNX
200.8	Metals (ICP/MS)	EPA	TAL IRV
245.1	Mercury (CVAA)	EPA	TAL IRV
1664A	HEM and SGT-HEM	1664A	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

Protocol References:

1664A = EPA-821-98-002

DOE = U.S. Department of Energy

EPA = US Environmental Protection Agency

EPA-5 = EPA-5

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 KNX = TestAmerica Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL (865)291-3000

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Client Sample ID: Outfall 009_20141217_Grab

Lab Sample ID: 440-97027-1

Date Collected: 12/17/14 07:30

Matrix: Water

Date Received: 12/17/14 13:36

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1664A			1035 mL	1000 mL	226034	12/21/14 14:30	JMB	TAL IRV
Total/NA	Analysis	1664A		1	1035 mL	1000 mL	226039	12/21/14 17:01	JMB	TAL IRV

Client Sample ID: Outfall009_20141217_Comp

Lab Sample ID: 440-97211-1

Date Collected: 12/17/14 08:21

Matrix: Water

Date Received: 12/18/14 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	300.0		1	5 mL	1.0 mL	225477	12/18/14 22:50	JRA	TAL IRV
Total/NA	Analysis	NO3NO2 Calc		1			228039	01/05/15 12:00	TN	TAL IRV
Total	Prep	1613			995 mL	20 uL	4364015_P	12/30/14 14:30		TAL KNX
Total	Analysis	1613B		1			4364015	01/16/15 08:53	PMP	TAL KNX
Dissolved	Filtration	FILTRATION			125 mL	125 mL	226565	12/23/14 18:56	APS	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	226703	12/24/14 09:59	ND	TAL IRV
Dissolved	Analysis	200.8		1	25 mL	25 mL	226988	12/24/14 17:29	NH	TAL IRV
Total Recoverable	Prep	200.2			25 mL	25 mL	227112	12/29/14 14:01	APS	TAL IRV
Total Recoverable	Analysis	200.8		1	25 mL	25 mL	227345	12/30/14 10:03	NH	TAL IRV
Dissolved	Filtration	FILTRATION			125 mL	125 mL	226565	12/23/14 18:56	APS	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	226624	12/24/14 06:37	JS1	TAL IRV
Dissolved	Analysis	245.1		1	20 mL	20 mL	227057	12/24/14 16:04	DB	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	225851	12/19/14 14:51	JS1	TAL IRV
Total/NA	Analysis	245.1		1	20 mL	20 mL	225931	12/19/14 19:31	DB	TAL IRV
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	226535	12/23/14 16:53	NTN	TAL IRV
Total/NA	Analysis	SM 2540D		1	200 mL	1000 mL	226269	12/22/14 19:52	NTN	TAL IRV
Total/NA	Prep	Distill/CN			50 mL	50 mL	226574	12/23/14 20:02	BS	TAL IRV
Total/NA	Analysis	SM 4500 CN E		1	50 mL	50 mL	226768	12/24/14 13:37	BS	TAL IRV
Total/NA	Prep	Evaporation			200 mL	1.0 g	165591	12/29/14 14:42	MJS	TAL SL
Total/NA	Analysis	900.0		1	200 mL		166871	01/06/15 11:09	RTM	TAL SL
Total/NA	Prep	Fill_Geo-0			1000 mL	1.0 mL	166424	01/02/15 14:33	MRB	TAL SL
Total/NA	Analysis	901.1		1	1000 mL		166597	01/05/15 22:15	JLW	TAL SL
Total/NA	Prep	PrecSep-21			503.33 mL	1.0 g	164776	12/22/14 13:06	LEM	TAL SL
Total/NA	Analysis	903.0		1	503.33 mL		168077	01/13/15 18:47	RTM	TAL SL
Total/NA	Prep	PrecSep_0			503.33 mL	1.0 g	164779	12/22/14 13:41	LEM	TAL SL
Total/NA	Analysis	904.0		1	503.33 mL		167475	01/08/15 11:09	MLK	TAL SL
Total/NA	Prep	PrecSep-7			251.80 mL	1.0 g	165620	12/29/14 18:01	CMC	TAL SL
Total/NA	Analysis	905		1	251.80 mL		167353	01/07/15 15:58	RTM	TAL SL
Total/NA	Prep	LSC_Dist_Susp			100.07 mL	1.0 g	166399	01/02/15 09:02	JDL	TAL SL
Total/NA	Analysis	906.0		1	100.07 mL		166478	01/02/15 18:04	RTM	TAL SL
Total/NA	Prep	ExtChrom			100.20 mL	1.0 mL	165361	12/24/14 10:49	SCB	TAL SL
Total/NA	Analysis	A-01-R		1	100.20 mL		166495	01/02/15 12:39	MLK	TAL SL

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Grab

TestAmerica Job ID: 440-97027-1

Client Sample ID: Trip Blank
Date Collected: 12/18/14 17:20
Date Received: 12/18/14 17:20

Lab Sample ID: 440-97211-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Evaporation			200 mL	1.0 g	165591	12/29/14 14:42	MJS	TAL SL
Total/NA	Analysis	900.0		1	200 mL		166871	01/06/15 11:09	RTM	TAL SL
Total/NA	Prep	Fill_Geo-0			1000 mL	1.0 mL	166424	01/02/15 14:33	MRB	TAL SL
Total/NA	Analysis	901.1		1	1000 mL		166600	01/05/15 22:15	SMP	TAL SL
Total/NA	Prep	PrecSep-21			973.02 mL	1.0 g	164776	12/22/14 13:06	LEM	TAL SL
Total/NA	Analysis	903.0		1	973.02 mL		168077	01/13/15 18:47	RTM	TAL SL
Total/NA	Prep	PrecSep_0			973.02 mL	1.0 g	164779	12/22/14 13:41	LEM	TAL SL
Total/NA	Analysis	904.0		1	973.02 mL		167475	01/08/15 11:10	MLK	TAL SL
Total/NA	Prep	PrecSep-7			995.02 mL	1.0 g	165620	12/29/14 18:01	CMC	TAL SL
Total/NA	Analysis	905		1	995.02 mL		167353	01/07/15 15:58	RTM	TAL SL
Total/NA	Prep	ExtChrom			499.44 mL	1.0 mL	165361	12/24/14 10:49	SCB	TAL SL
Total/NA	Analysis	A-01-R		1	499.44 mL		168256	01/13/15 13:57	MLK	TAL SL

Laboratory References:

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

TAL KNX = TestAmerica Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL (865)291-3000

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 440-225477/4
Matrix: Water
Analysis Batch: 225477

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			12/18/14 09:35	1
Sulfate	ND		0.50	0.25	mg/L			12/18/14 09:35	1

Lab Sample ID: LCS 440-225477/6
Matrix: Water
Analysis Batch: 225477

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	4.58		mg/L		92	90 - 110
Sulfate	5.00	4.78		mg/L		96	90 - 110

Lab Sample ID: 320-10924-D-2 MS
Matrix: Water
Analysis Batch: 225477

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	12		5.00	16.0		mg/L		83	80 - 120
Sulfate	20		5.00	24.3		mg/L		93	80 - 120

Lab Sample ID: 320-10924-D-2 MSD
Matrix: Water
Analysis Batch: 225477

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	12		5.00	16.1		mg/L		84	80 - 120	0	20
Sulfate	20		5.00	23.8		mg/L		83	80 - 120	2	20

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

Lab Sample ID: H4L300000015B
Matrix: Water
Analysis Batch: 4364015

Client Sample ID: Method Blank
Prep Type: Total
Prep Batch: 4364015_P

Analyte	MB Result	MB Qualifier	ML	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.0000100	0.00000222	ug/L		12/30/14 14:30	01/15/15 03:43	1
Total TCDD	ND		0.0000100	0.00000222	ug/L		12/30/14 14:30	01/15/15 03:43	1
1,2,3,7,8-PeCDD	ND		0.0000500	0.00000105	ug/L		12/30/14 14:30	01/15/15 03:43	1
Total PeCDD	ND		0.0000500	0.00000105	ug/L		12/30/14 14:30	01/15/15 03:43	1
1,2,3,4,7,8-HxCDD	ND		0.0000500	0.000000850	ug/L		12/30/14 14:30	01/15/15 03:43	1
1,2,3,6,7,8-HxCDD	ND		0.0000500	0.000000890	ug/L		12/30/14 14:30	01/15/15 03:43	1
1,2,3,7,8,9-HxCDD	ND		0.0000500	0.000000810	ug/L		12/30/14 14:30	01/15/15 03:43	1
Total HxCDD	ND		0.0000500	0.000000850	ug/L		12/30/14 14:30	01/15/15 03:43	1
1,2,3,4,6,7,8-HpCDD	ND		0.0000500	0.00000113	ug/L		12/30/14 14:30	01/15/15 03:43	1
Total HpCDD	ND		0.0000500	0.00000113	ug/L		12/30/14 14:30	01/15/15 03:43	1
OCDD	0.00000202	Q J	0.000100	0.000000970	ug/L		12/30/14 14:30	01/15/15 03:43	1
2,3,7,8-TCDF	ND		0.0000100	0.00000144	ug/L		12/30/14 14:30	01/15/15 03:43	1
Total TCDF	ND		0.0000100	0.00000144	ug/L		12/30/14 14:30	01/15/15 03:43	1
1,2,3,7,8-PeCDF	ND		0.0000500	0.000000820	ug/L		12/30/14 14:30	01/15/15 03:43	1
2,3,4,7,8-PeCDF	ND		0.0000500	0.000000710	ug/L		12/30/14 14:30	01/15/15 03:43	1

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

Lab Sample ID: H4L300000015B — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total**
Analysis Batch: 4364015 — **Prep Batch: 4364015_P**

Analyte	MB Result	MB Qualifier	ML	EDL	Unit	D	Prepared	Analyzed	Dil Fac
Total PeCDF	ND		0.0000500	0.000000710	ug/L		12/30/14 14:30	01/15/15 03:43	1
1,2,3,4,7,8-HxCDF	ND		0.0000500	0.000000500	ug/L		12/30/14 14:30	01/15/15 03:43	1
1,2,3,6,7,8-HxCDF	ND		0.0000500	0.000000490	ug/L		12/30/14 14:30	01/15/15 03:43	1
2,3,4,6,7,8-HxCDF	ND		0.0000500	0.000000500	ug/L		12/30/14 14:30	01/15/15 03:43	1
1,2,3,7,8,9-HxCDF	ND		0.0000500	0.000000600	ug/L		12/30/14 14:30	01/15/15 03:43	1
Total HxCDF	ND		0.0000500	0.000000490	ug/L		12/30/14 14:30	01/15/15 03:43	1
1,2,3,4,6,7,8-HpCDF	ND		0.0000500	0.000000680	ug/L		12/30/14 14:30	01/15/15 03:43	1
1,2,3,4,7,8,9-HpCDF	ND		0.0000500	0.000000960	ug/L		12/30/14 14:30	01/15/15 03:43	1
Total HpCDF	ND		0.0000500	0.000000680	ug/L		12/30/14 14:30	01/15/15 03:43	1
OCDF	ND		0.000100	0.00000103	ug/L		12/30/14 14:30	01/15/15 03:43	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
37Cl4-2,3,7,8-TCDD	*94*		*35 - 197*	*12/30/14 14:30*	*01/15/15 03:43*	*1*

Internal Standard	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*83*		*25 - 164*	*12/30/14 14:30*	*01/15/15 03:43*	*1*
13C-1,2,3,7,8-PeCDD	*89*		*25 - 181*	*12/30/14 14:30*	*01/15/15 03:43*	*1*
13C-1,2,3,4,7,8-HxCDD	*86*		*32 - 141*	*12/30/14 14:30*	*01/15/15 03:43*	*1*
13C-1,2,3,6,7,8-HxCDD	*94*		*28 - 130*	*12/30/14 14:30*	*01/15/15 03:43*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*91*		*23 - 140*	*12/30/14 14:30*	*01/15/15 03:43*	*1*
13C-OCDD	*89*		*17 - 157*	*12/30/14 14:30*	*01/15/15 03:43*	*1*
13C-2,3,7,8-TCDF	*84*		*24 - 169*	*12/30/14 14:30*	*01/15/15 03:43*	*1*
13C-1,2,3,7,8-PeCDF	*83*		*24 - 185*	*12/30/14 14:30*	*01/15/15 03:43*	*1*
13C-2,3,4,7,8-PeCDF	*79*		*21 - 178*	*12/30/14 14:30*	*01/15/15 03:43*	*1*
13C-1,2,3,4,7,8-HxCDF	*77*		*26 - 152*	*12/30/14 14:30*	*01/15/15 03:43*	*1*
13C-1,2,3,6,7,8-HxCDF	*79*		*26 - 123*	*12/30/14 14:30*	*01/15/15 03:43*	*1*
13C-2,3,4,6,7,8-HxCDF	*86*		*28 - 136*	*12/30/14 14:30*	*01/15/15 03:43*	*1*
13C-1,2,3,7,8,9-HxCDF	*89*		*29 - 147*	*12/30/14 14:30*	*01/15/15 03:43*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*84*		*28 - 143*	*12/30/14 14:30*	*01/15/15 03:43*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*87*		*26 - 138*	*12/30/14 14:30*	*01/15/15 03:43*	*1*
13C-OCDF	*81*		*17 - 157*	*12/30/14 14:30*	*01/15/15 03:43*	*1*

Lab Sample ID: H4L300000015C — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total**
Analysis Batch: 4364015 — **Prep Batch: 4364015_P**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2,3,7,8-TCDD	0.000200	0.000197		ug/L		98	67 - 158
1,2,3,7,8-PeCDD	0.00100	0.000995		ug/L		99	70 - 142
1,2,3,4,7,8-HxCDD	0.00100	0.000966		ug/L		97	70 - 164
1,2,3,6,7,8-HxCDD	0.00100	0.000937		ug/L		94	76 - 134
1,2,3,7,8,9-HxCDD	0.00100	0.000941		ug/L		94	64 - 162
1,2,3,4,6,7,8-HpCDD	0.00100	0.000921		ug/L		92	70 - 140
OCDD	0.00200	0.00179	B	ug/L		90	78 - 144
2,3,7,8-TCDF	0.000200	0.000216		ug/L		108	75 - 158
1,2,3,7,8-PeCDF	0.00100	0.000951		ug/L		95	80 - 134
2,3,4,7,8-PeCDF	0.00100	0.000991		ug/L		99	68 - 160

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

Lab Sample ID: H4L300000015C
Matrix: Water
Analysis Batch: 4364015

Client Sample ID: Lab Control Sample
Prep Type: Total
Prep Batch: 4364015_P

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2,3,4,7,8-HxCDF	0.00100	0.000982		ug/L		98	72 - 134
1,2,3,6,7,8-HxCDF	0.00100	0.000993		ug/L		99	84 - 130
2,3,4,6,7,8-HxCDF	0.00100	0.000987		ug/L		99	70 - 156
1,2,3,7,8,9-HxCDF	0.00100	0.000982		ug/L		98	78 - 130
1,2,3,4,6,7,8-HpCDF	0.00100	0.000932		ug/L		93	82 - 122
1,2,3,4,7,8,9-HpCDF	0.00100	0.000956		ug/L		96	78 - 138
OCDF	0.00200	0.00179		ug/L		89	63 - 170

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
37Cl4-2,3,7,8-TCDD	*82*		*31 - 191*

Internal Standard	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C-2,3,7,8-TCDD	*79*		*20 - 175*
13C-1,2,3,7,8-PeCDD	*85*		*21 - 227*
13C-1,2,3,4,7,8-HxCDD	*82*		*21 - 193*
13C-1,2,3,6,7,8-HxCDD	*90*		*25 - 163*
13C-1,2,3,4,6,7,8-HpCDD	*87*		*26 - 166*
13C-OCDD	*65*		*13 - 199*
13C-2,3,7,8-TCDF	*71*		*22 - 152*
13C-1,2,3,7,8-PeCDF	*80*		*21 - 192*
13C-2,3,4,7,8-PeCDF	*76*		*13 - 328*
13C-1,2,3,4,7,8-HxCDF	*77*		*19 - 202*
13C-1,2,3,6,7,8-HxCDF	*84*		*21 - 159*
13C-2,3,4,6,7,8-HxCDF	*80*		*22 - 176*
13C-1,2,3,7,8,9-HxCDF	*67*		*17 - 205*
13C-1,2,3,4,6,7,8-HpCDF	*74*		*21 - 158*
13C-1,2,3,4,7,8,9-HpCDF	*58*		*20 - 186*
13C-OCDF	*49*		*13 - 199*

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 440-227112/1-A
Matrix: Water
Analysis Batch: 227345

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 227112

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		12/29/14 14:01	12/30/14 09:38	1
Copper	1.27	J,DX	2.0	0.50	ug/L		12/29/14 14:01	12/30/14 09:38	1
Lead	ND		1.0	0.50	ug/L		12/29/14 14:01	12/30/14 09:38	1
Thallium	ND		1.0	0.50	ug/L		12/29/14 14:01	12/30/14 09:38	1
Antimony	ND		2.0	0.50	ug/L		12/29/14 14:01	12/30/14 09:38	1

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

Lab Sample ID: LCS 440-227112/2-A
Matrix: Water
Analysis Batch: 227345

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 227112

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	80.0	78.6		ug/L		98	85 - 115
Copper	80.0	79.5		ug/L		99	85 - 115
Lead	80.0	78.2		ug/L		98	85 - 115
Thallium	80.0	77.2		ug/L		97	85 - 115
Antimony	80.0	80.2		ug/L		100	85 - 115

Lab Sample ID: LCSD 440-227112/3-A
Matrix: Water
Analysis Batch: 227345

Client Sample ID: Lab Control Sample Dup
Prep Type: Total Recoverable
Prep Batch: 227112

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cadmium	80.0	78.3		ug/L		98	85 - 115	0	20
Copper	80.0	80.2		ug/L		100	85 - 115	1	20
Lead	80.0	79.5		ug/L		99	85 - 115	2	20
Thallium	80.0	77.6		ug/L		97	85 - 115	1	20
Antimony	80.0	79.0		ug/L		99	85 - 115	1	20

Lab Sample ID: 440-97790-A-2-B MS ^5
Matrix: Water
Analysis Batch: 227345

Client Sample ID: Matrix Spike
Prep Type: Total Recoverable
Prep Batch: 227112

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	ND		80.0	78.2		ug/L		98	70 - 130
Copper	5.2	J,DX MB	80.0	82.1		ug/L		96	70 - 130
Lead	ND		80.0	81.2		ug/L		101	70 - 130
Thallium	ND		80.0	69.5		ug/L		87	70 - 130
Antimony	ND		80.0	81.0		ug/L		101	70 - 130

Lab Sample ID: 440-97790-A-2-D MSD ^5
Matrix: Water
Analysis Batch: 227345

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total Recoverable
Prep Batch: 227112

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cadmium	ND		80.0	79.0		ug/L		99	70 - 130	1	20
Copper	5.2	J,DX MB	80.0	82.7		ug/L		97	70 - 130	1	20
Lead	ND		80.0	83.2		ug/L		104	70 - 130	2	20
Thallium	ND		80.0	74.0		ug/L		92	70 - 130	6	20
Antimony	ND		80.0	83.4		ug/L		104	70 - 130	3	20

Lab Sample ID: MB 440-226565/1-D
Matrix: Water
Analysis Batch: 226988

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 226703

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		12/24/14 09:59	12/24/14 16:39	1
Copper	ND		2.0	0.50	ug/L		12/24/14 09:59	12/24/14 16:39	1
Lead	ND		1.0	0.50	ug/L		12/24/14 09:59	12/24/14 16:39	1
Thallium	ND		1.0	0.50	ug/L		12/24/14 09:59	12/24/14 16:39	1
Antimony	ND		2.0	0.50	ug/L		12/24/14 09:59	12/24/14 16:39	1

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

Lab Sample ID: LCS 440-226565/2-D — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Dissolved**
Analysis Batch: 226988 — **Prep Batch: 226703**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	80.0	79.5		ug/L		99	85 - 115
Copper	80.0	83.3		ug/L		104	85 - 115
Lead	80.0	79.3		ug/L		99	85 - 115
Thallium	80.0	77.0		ug/L		96	85 - 115
Antimony	80.0	82.1		ug/L		103	85 - 115

Lab Sample ID: LCSD 440-226565/3-B — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Dissolved**
Analysis Batch: 226988 — **Prep Batch: 226703**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cadmium	80.0	81.2		ug/L		101	85 - 115	2	20
Copper	80.0	83.7		ug/L		105	85 - 115	0	20
Lead	80.0	80.4		ug/L		100	85 - 115	1	20
Thallium	80.0	77.5		ug/L		97	85 - 115	1	20
Antimony	80.0	83.2		ug/L		104	85 - 115	1	20

Lab Sample ID: 440-96606-R-1-G MS — **Client Sample ID: Matrix Spike**
Matrix: Water — **Prep Type: Dissolved**
Analysis Batch: 226988 — **Prep Batch: 226703**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	ND	QP	80.0	80.2		ug/L		100	70 - 130
Copper	3.2	QP	80.0	84.0		ug/L		101	70 - 130
Lead	ND	QP	80.0	80.5		ug/L		101	70 - 130
Thallium	ND	QP	80.0	79.0		ug/L		99	70 - 130
Antimony	ND	QP	80.0	83.4		ug/L		104	70 - 130

Lab Sample ID: 440-96606-R-1-H MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Water — **Prep Type: Dissolved**
Analysis Batch: 226988 — **Prep Batch: 226703**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cadmium	ND	QP	80.0	79.8		ug/L		100	70 - 130	1	20
Copper	3.2	QP	80.0	83.7		ug/L		101	70 - 130	0	20
Lead	ND	QP	80.0	80.1		ug/L		100	70 - 130	1	20
Thallium	ND	QP	80.0	76.4		ug/L		96	70 - 130	3	20
Antimony	ND	QP	80.0	81.8		ug/L		102	70 - 130	2	20

Method: 245.1 - Mercury (CVAA)

Lab Sample ID: MB 440-225851/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 225915 — **Prep Batch: 225851**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		12/19/14 14:51	12/19/14 18:09	1

Method: 245.1 - Mercury (CVAA) (Continued)

Lab Sample ID: LCS 440-225851/2-A
Matrix: Water
Analysis Batch: 225915

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 225851

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Mercury			8.00	8.24		ug/L		103	85 - 115		

Lab Sample ID: 440-96316-G-1-F MS
Matrix: Water
Analysis Batch: 225915

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 225851

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Mercury	ND		8.00	8.40		ug/L		105	70 - 130		

Lab Sample ID: 440-96316-G-1-G MSD
Matrix: Water
Analysis Batch: 225915

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 225851

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	ND		8.00	8.36		ug/L		104	70 - 130	0	20

Lab Sample ID: MB 440-226565/1-B
Matrix: Water
Analysis Batch: 227057

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 226624

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND	IB	0.20	0.10	ug/L		12/24/14 06:37	12/24/14 15:22	1

Lab Sample ID: LCS 440-226565/2-B
Matrix: Water
Analysis Batch: 227057

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 226624

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Mercury			8.00	10.0	LQ IB	ug/L		125	85 - 115		

Lab Sample ID: 440-96606-R-1-C MS
Matrix: Water
Analysis Batch: 227057

Client Sample ID: Matrix Spike
Prep Type: Dissolved
Prep Batch: 226624

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Mercury	ND	LQ IB	8.00	10.2	IB	ug/L		128	70 - 130		

Lab Sample ID: 440-96606-R-1-D MSD
Matrix: Water
Analysis Batch: 227057

Client Sample ID: Matrix Spike Duplicate
Prep Type: Dissolved
Prep Batch: 226624

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	ND	LQ IB	8.00	10.0	IB	ug/L		126	70 - 130	2	20

Method: 1664A - HEM and SGT-HEM

Lab Sample ID: MB 440-226034/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 226039 — **Prep Batch: 226034**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM	ND		5.0	1.4	mg/L		12/21/14 14:30	12/21/14 17:01	1

Lab Sample ID: LCS 440-226034/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 226039 — **Prep Batch: 226034**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
HEM	20.0	18.5		mg/L		93	78 - 114

Lab Sample ID: LCSD 440-226034/3-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 226039 — **Prep Batch: 226034**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
HEM	20.0	19.0		mg/L		95	78 - 114	3	11

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

Lab Sample ID: MB 440-226535/1 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 226535

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10	5.0	mg/L			12/23/14 16:53	1

Lab Sample ID: LCS 440-226535/2 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 226535

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	1000	970		mg/L		97	90 - 110

Lab Sample ID: 440-97110-A-1 DU — **Client Sample ID: Duplicate**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 226535

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	2500		2450		mg/L		0.6	5

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

Lab Sample ID: MB 440-226269/2 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 226269

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		1.0	0.50	mg/L			12/22/14 17:30	1

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

Lab Sample ID: LCS 440-226269/1
Matrix: Water
Analysis Batch: 226269

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	992		mg/L		99	85 - 115		

Lab Sample ID: 440-97384-A-2 DU
Matrix: Water
Analysis Batch: 226269

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	250			263		mg/L				4	10

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

Lab Sample ID: MB 440-226574/1-A
Matrix: Water
Analysis Batch: 226768

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 226574

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	ND		5.0	2.5	ug/L		12/23/14 20:02	12/24/14 13:36	1

Lab Sample ID: LCS 440-226574/2-A
Matrix: Water
Analysis Batch: 226768

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 226574

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Cyanide, Total			100	99.6		ug/L		100	90 - 110		

Lab Sample ID: 440-97518-O-1-B MS
Matrix: Water
Analysis Batch: 226768

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 226574

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Cyanide, Total	ND		100	108		ug/L		108	70 - 115		

Lab Sample ID: 440-97518-O-1-C MSD
Matrix: Water
Analysis Batch: 226768

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 226574

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cyanide, Total	ND		100	99.5		ug/L		100	70 - 115	8	15

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Lab Sample ID: MB 160-165591/1-A
Matrix: Water
Analysis Batch: 166749

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 165591

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	0.8022	U	0.881	0.886	1.43	pCi/L	12/29/14 14:42	01/06/15 07:08	1
Gross Beta	0.7705	U	0.602	0.606	0.935	pCi/L	12/29/14 14:42	01/06/15 07:08	1

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity (Continued)

Lab Sample ID: LCS 160-165591/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 166749 — **Prep Batch: 165591**

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	MDC	Unit	%Rec	%Rec. Limits
Gross Alpha	50.1	54.04		7.72	1.68	pCi/L	108	73 - 133

Lab Sample ID: LCSB 160-165591/3-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 166749 — **Prep Batch: 165591**

Analyte	Spike Added	LCSB Result	LCSB Qual	Total Uncert. (2σ+/-)	MDC	Unit	%Rec	%Rec. Limits
Gross Beta	95.9	98.18		10.4	1.03	pCi/L	102	75 - 125

Lab Sample ID: 440-97209-R-1-E MS — **Client Sample ID: Matrix Spike**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 166748 — **Prep Batch: 165591**

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	MDC	Unit	%Rec	%Rec. Limits
Gross Alpha	1.23	U	50.1	45.66		6.60	1.38	pCi/L	91	35 - 150

Lab Sample ID: 440-97209-R-1-F MSBT — **Client Sample ID: Matrix Spike**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 166748 — **Prep Batch: 165591**

Analyte	Sample Result	Sample Qual	Spike Added	MSBT Result	MSBT Qual	Total Uncert. (2σ+/-)	MDC	Unit	%Rec	%Rec. Limits
Gross Beta	2.69		95.9	99.59		10.5	0.893	pCi/L	101	89 - 143

Lab Sample ID: 440-97209-R-1-G DU — **Client Sample ID: Duplicate**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 166748 — **Prep Batch: 165591**

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	MDC	Unit	RER	RER Limit
Gross Alpha	1.23	U	0.3675	U	0.994	1.79	pCi/L	0.41	1
Gross Beta	2.69		2.410		0.773	0.954	pCi/L	0.18	1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Lab Sample ID: MB 160-166424/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 166598 — **Prep Batch: 166424**

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	-1.386	U	9.43	9.43	17.2	pCi/L	01/02/15 14:33	01/05/15 20:30	1
Potassium-40	-68.28	U	427	427	237	pCi/L	01/02/15 14:33	01/05/15 20:30	1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS) (Continued)

Lab Sample ID: LCS 160-166424/2-A
Matrix: Water
Analysis Batch: 166598

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 166424

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	MDC	Unit	%Rec	%Rec. Limits
Americium-241	137000	134900		15600	552	pCi/L	99	90 - 111
Cesium-137	49400	48130		4830	215	pCi/L	97	90 - 111
Cobalt-60	52500	51470		5090	118	pCi/L	98	89 - 110

Lab Sample ID: 440-97209-R-1-J DU
Matrix: Water
Analysis Batch: 166594

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 166424

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	MDC	Unit	RER	RER Limit
Cesium-137	-2.12	U	0.0000	U	1.79	9.30	pCi/L	0.23	1
Potassium-40	-79.6	U	-32.82	U	164	171	pCi/L	0.01	1

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-164776/1-A
Matrix: Water
Analysis Batch: 168077

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 164776

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.02365	U	0.0573	0.0574	0.102	pCi/L	12/22/14 13:06	01/13/15 18:46	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*89.7*		*40 - 110*	*12/22/14 13:06*	*01/13/15 18:46*	*1*

Lab Sample ID: LCS 160-164776/2-A
Matrix: Water
Analysis Batch: 168077

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 164776

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	MDC	Unit	%Rec	%Rec. Limits
Radium-226	11.2	10.62		1.06	0.112	pCi/L	95	68 - 137

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*94.7*		*40 - 110*

Lab Sample ID: 480-73271-AA-5-A DU
Matrix: Water
Analysis Batch: 168078

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 164776

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	MDC	Unit	RER	RER Limit
Radium-226	0.692		0.6244		0.139	0.113	pCi/L	0.24	1

Method: 903.0 - Radium-226 (GFPC) (Continued)

Lab Sample ID: 480-73271-AA-5-A DU
Matrix: Water
Analysis Batch: 168078

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 164776

Carrier	DU %Yield	DU Qualifier	Limits
Ba Carrier	89.4		40 - 110

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-164779/1-A
Matrix: Water
Analysis Batch: 167475

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 164779

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.1131	U	0.254	0.254	0.434	pCi/L	12/22/14 13:41	01/08/15 11:09	1

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	89.7		40 - 110	12/22/14 13:41	01/08/15 11:09	1
Y Carrier	88.6		40 - 110	12/22/14 13:41	01/08/15 11:09	1

Lab Sample ID: LCS 160-164779/2-A
Matrix: Water
Analysis Batch: 167475

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 164779

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)		MDC	Unit	%Rec	%Rec. Limits		
Radium-228			3.57	3.923		0.599		0.428	pCi/L	110	56 - 140		

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	94.7		40 - 110
Y Carrier	84.1		40 - 110

Lab Sample ID: 480-73271-AA-5-B DU
Matrix: Water
Analysis Batch: 167476

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 164779

Analyte	Sample Result	Sample Qual		DU Result	DU Qual	Total Uncert. (2σ+/-)		MDC	Unit			RER	RER Limit
Radium-228	0.255	U		0.1179	U	0.229		0.391	pCi/L			0.29	1

Carrier	DU %Yield	DU Qualifier	Limits
Ba Carrier	89.4		40 - 110
Y Carrier	86.4		40 - 110

Method: 905 - Strontium-90 (GFPC)

Lab Sample ID: MB 160-165620/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 167123 — **Prep Batch: 165620**

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.04484	U	0.176	0.176	0.321	pCi/L	12/29/14 18:01	01/07/15 15:55	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Sr Carrier	*90.0*		*40 - 110*	*12/29/14 18:01*	*01/07/15 15:55*	*1*
Y Carrier	*89.3*		*40 - 110*	*12/29/14 18:01*	*01/07/15 15:55*	*1*

Lab Sample ID: LCS 160-165620/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 167123 — **Prep Batch: 165620**

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)		MDC	Unit	%Rec	%Rec. Limits		
Strontium-90			8.95	8.768		0.905		0.298	pCi/L	98	90 - 134		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Sr Carrier	*88.6*		*40 - 110*
Y Carrier	*92.7*		*40 - 110*

Lab Sample ID: 440-96594-A-2-G DU — **Client Sample ID: Duplicate**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 167123 — **Prep Batch: 165620**

Analyte	Sample Result	Sample Qual		DU Result	DU Qual	Total Uncert. (2σ+/-)		MDC	Unit			RER	RER Limit
Strontium-90	-0.255	U		-0.01446	U	0.155		0.281	pCi/L			0.79	1

Carrier	*DU %Yield*	*DU Qualifier*	*Limits*
Sr Carrier	*88.2*		*40 - 110*
Y Carrier	*90.8*		*40 - 110*

Method: 906.0 - Tritium, Total (LSC)

Lab Sample ID: MB 160-166399/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 166478 — **Prep Batch: 166399**

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	158.1	U	187	187	304	pCi/L	01/02/15 08:35	01/02/15 14:05	1

Method: 906.0 - Tritium, Total (LSC) (Continued)

Lab Sample ID: LCS 160-166399/2-A
Matrix: Water
Analysis Batch: 166478

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 166399

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)		MDC	Unit	%Rec	%Rec. Limits		
Tritium			3440	3383		509		306	pCi/L	98	74 - 114		

Lab Sample ID: 280-63961-C-3-B MS
Matrix: Water
Analysis Batch: 166478

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 166399

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)		MDC	Unit	%Rec	%Rec. Limits		
Tritium	1050		3450	4424		603		306	pCi/L	98	67 - 130		

Lab Sample ID: 280-63670-A-3-D DU
Matrix: Water
Analysis Batch: 166478

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 166399

Analyte	Sample Result	Sample Qual		DU Result	DU Qual	Total Uncert. (2σ+/-)		MDC	Unit			RER	RER Limit
Tritium	2030			1865		366		307	pCi/L			0.22	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Lab Sample ID: MB 160-165361/1-A
Matrix: Water
Analysis Batch: 166357

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 165361

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	MDC	Unit	Prepared	Analyzed	Dil Fac
Total Uranium	0.03958	U	0.06314	0.06318	0.0995	pCi/L	12/24/14 10:49	12/31/14 14:22	1

Lab Sample ID: LCS 160-165361/2-A
Matrix: Water
Analysis Batch: 166358

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 165361

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)		MDC	Unit	%Rec	%Rec. Limits		
Uranium-234			12.7	13.13		1.57		0.0712	pCi/L	103	84 - 120		
Uranium-238			13.0	14.40		1.68		0.108	pCi/L	111	83 - 121		

Tracer	*LCS %Yield*	*LCS Qualifier*	*Limits*
Uranium-232	*83.7*		*30 - 110*

Lab Sample ID: 440-97211-2 DU
Matrix: Water
Analysis Batch: 166370

Client Sample ID: Trip Blank
Prep Type: Total/NA
Prep Batch: 165361

Analyte	Sample Result	Sample Qual		DU Result	DU Qual	Total Uncert. (2σ+/-)		MDC	Unit			RER	RER Limit
Total Uranium	0.0479	U		0.2654	U	0.274		0.343	pCi/L			0.62	1

HPLC/IC

Analysis Batch: 225477

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-10924-D-2 MS	Matrix Spike	Total/NA	Water	300.0	
320-10924-D-2 MSD	Matrix Spike Duplicate	Total/NA	Water	300.0	
440-97211-1	Outfall009_20141217_Comp	Total/NA	Water	300.0	
LCS 440-225477/6	Lab Control Sample	Total/NA	Water	300.0	
MB 440-225477/4	Method Blank	Total/NA	Water	300.0	

Analysis Batch: 228039

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-97211-1	Outfall009_20141217_Comp	Total/NA	Water	NO3NO2 Calc	

Specialty Organics

Analysis Batch: 4364015

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-97211-1	Outfall009_20141217_Comp	Total	Water	1613B	
H4L300000015B	Method Blank	Total	Water	1613B	
H4L300000015C	Lab Control Sample	Total	Water	1613B	

Prep Batch: 4364015_P

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-97211-1	Outfall009_20141217_Comp	Total	Water	1613	
H4L300000015B	Method Blank	Total	Water	1613	
H4L300000015C	Lab Control Sample	Total	Water	1613	

Metals

Prep Batch: 225851

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-96316-G-1-F MS	Matrix Spike	Total/NA	Water	245.1	
440-96316-G-1-G MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	
440-97211-1	Outfall009_20141217_Comp	Total/NA	Water	245.1	
LCS 440-225851/2-A	Lab Control Sample	Total/NA	Water	245.1	
MB 440-225851/1-A	Method Blank	Total/NA	Water	245.1	

Analysis Batch: 225915

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-96316-G-1-F MS	Matrix Spike	Total/NA	Water	245.1	225851
440-96316-G-1-G MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	225851
LCS 440-225851/2-A	Lab Control Sample	Total/NA	Water	245.1	225851
MB 440-225851/1-A	Method Blank	Total/NA	Water	245.1	225851

Analysis Batch: 225931

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-97211-1	Outfall009_20141217_Comp	Total/NA	Water	245.1	225851

Filtration Batch: 226565

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-96606-R-1-C MS	Matrix Spike	Dissolved	Water	FILTRATION	
440-96606-R-1-D MSD	Matrix Spike Duplicate	Dissolved	Water	FILTRATION	
440-96606-R-1-G MS	Matrix Spike	Dissolved	Water	FILTRATION	

Metals (Continued)

Filtration Batch: 226565 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-96606-R-1-H MSD	Matrix Spike Duplicate	Dissolved	Water	FILTRATION	
440-97211-1	Outfall009_20141217_Comp	Dissolved	Water	FILTRATION	
LCS 440-226565/2-B	Lab Control Sample	Dissolved	Water	FILTRATION	
LCS 440-226565/2-D	Lab Control Sample	Dissolved	Water	FILTRATION	
LCSD 440-226565/3-B	Lab Control Sample Dup	Dissolved	Water	FILTRATION	
MB 440-226565/1-B	Method Blank	Dissolved	Water	FILTRATION	
MB 440-226565/1-D	Method Blank	Dissolved	Water	FILTRATION	

Prep Batch: 226624

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-96606-R-1-C MS	Matrix Spike	Dissolved	Water	245.1	226565
440-96606-R-1-D MSD	Matrix Spike Duplicate	Dissolved	Water	245.1	226565
440-97211-1	Outfall009_20141217_Comp	Dissolved	Water	245.1	226565
LCS 440-226565/2-B	Lab Control Sample	Dissolved	Water	245.1	226565
MB 440-226565/1-B	Method Blank	Dissolved	Water	245.1	226565

Prep Batch: 226703

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-96606-R-1-G MS	Matrix Spike	Dissolved	Water	200.2	226565
440-96606-R-1-H MSD	Matrix Spike Duplicate	Dissolved	Water	200.2	226565
440-97211-1	Outfall009_20141217_Comp	Dissolved	Water	200.2	226565
LCS 440-226565/2-D	Lab Control Sample	Dissolved	Water	200.2	226565
LCSD 440-226565/3-B	Lab Control Sample Dup	Dissolved	Water	200.2	226565
MB 440-226565/1-D	Method Blank	Dissolved	Water	200.2	226565

Analysis Batch: 226988

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-96606-R-1-G MS	Matrix Spike	Dissolved	Water	200.8	226703
440-96606-R-1-H MSD	Matrix Spike Duplicate	Dissolved	Water	200.8	226703
440-97211-1	Outfall009_20141217_Comp	Dissolved	Water	200.8	226703
LCS 440-226565/2-D	Lab Control Sample	Dissolved	Water	200.8	226703
LCSD 440-226565/3-B	Lab Control Sample Dup	Dissolved	Water	200.8	226703
MB 440-226565/1-D	Method Blank	Dissolved	Water	200.8	226703

Analysis Batch: 227057

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-96606-R-1-C MS	Matrix Spike	Dissolved	Water	245.1	226624
440-96606-R-1-D MSD	Matrix Spike Duplicate	Dissolved	Water	245.1	226624
440-97211-1	Outfall009_20141217_Comp	Dissolved	Water	245.1	226624
LCS 440-226565/2-B	Lab Control Sample	Dissolved	Water	245.1	226624
MB 440-226565/1-B	Method Blank	Dissolved	Water	245.1	226624

Prep Batch: 227112

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-97211-1	Outfall009_20141217_Comp	Total Recoverable	Water	200.2	
440-97790-A-2-B MS ^5	Matrix Spike	Total Recoverable	Water	200.2	
440-97790-A-2-D MSD ^5	Matrix Spike Duplicate	Total Recoverable	Water	200.2	
LCS 440-227112/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
LCSD 440-227112/3-A	Lab Control Sample Dup	Total Recoverable	Water	200.2	
MB 440-227112/1-A	Method Blank	Total Recoverable	Water	200.2	

Metals (Continued)

Analysis Batch: 227345

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-97211-1	Outfall009_20141217_Comp	Total Recoverable	Water	200.8	227112
440-97790-A-2-B MS ^5	Matrix Spike	Total Recoverable	Water	200.8	227112
440-97790-A-2-D MSD ^5	Matrix Spike Duplicate	Total Recoverable	Water	200.8	227112
LCS 440-227112/2-A	Lab Control Sample	Total Recoverable	Water	200.8	227112
LCSD 440-227112/3-A	Lab Control Sample Dup	Total Recoverable	Water	200.8	227112
MB 440-227112/1-A	Method Blank	Total Recoverable	Water	200.8	227112

General Chemistry

Prep Batch: 226034

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-97027-1	Outfall 009_20141217_Grab	Total/NA	Water	1664A	
LCS 440-226034/2-A	Lab Control Sample	Total/NA	Water	1664A	
LCSD 440-226034/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	
MB 440-226034/1-A	Method Blank	Total/NA	Water	1664A	

Analysis Batch: 226039

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-97027-1	Outfall 009_20141217_Grab	Total/NA	Water	1664A	226034
LCS 440-226034/2-A	Lab Control Sample	Total/NA	Water	1664A	226034
LCSD 440-226034/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	226034
MB 440-226034/1-A	Method Blank	Total/NA	Water	1664A	226034

Analysis Batch: 226269

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-97211-1	Outfall009_20141217_Comp	Total/NA	Water	SM 2540D	
440-97384-A-2 DU	Duplicate	Total/NA	Water	SM 2540D	
LCS 440-226269/1	Lab Control Sample	Total/NA	Water	SM 2540D	
MB 440-226269/2	Method Blank	Total/NA	Water	SM 2540D	

Analysis Batch: 226535

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-97110-A-1 DU	Duplicate	Total/NA	Water	SM 2540C	
440-97211-1	Outfall009_20141217_Comp	Total/NA	Water	SM 2540C	
LCS 440-226535/2	Lab Control Sample	Total/NA	Water	SM 2540C	
MB 440-226535/1	Method Blank	Total/NA	Water	SM 2540C	

Prep Batch: 226574

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-97211-1	Outfall009_20141217_Comp	Total/NA	Water	Distill/CN	
440-97518-O-1-B MS	Matrix Spike	Total/NA	Water	Distill/CN	
440-97518-O-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	Distill/CN	
LCS 440-226574/2-A	Lab Control Sample	Total/NA	Water	Distill/CN	
MB 440-226574/1-A	Method Blank	Total/NA	Water	Distill/CN	

Analysis Batch: 226768

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-97211-1	Outfall009_20141217_Comp	Total/NA	Water	SM 4500 CN E	226574
440-97518-O-1-B MS	Matrix Spike	Total/NA	Water	SM 4500 CN E	226574
440-97518-O-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	SM 4500 CN E	226574

General Chemistry (Continued)

Analysis Batch: 226768 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 440-226574/2-A	Lab Control Sample	Total/NA	Water	SM 4500 CN E	226574
MB 440-226574/1-A	Method Blank	Total/NA	Water	SM 4500 CN E	226574

Rad

Prep Batch: 164776

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-97211-1	Outfall009_20141217_Comp	Total/NA	Water	PrecSep-21	
440-97211-2	Trip Blank	Total/NA	Water	PrecSep-21	
480-73271-AA-5-A DU	Duplicate	Total/NA	Water	PrecSep-21	
LCS 160-164776/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
MB 160-164776/1-A	Method Blank	Total/NA	Water	PrecSep-21	

Prep Batch: 164779

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-97211-1	Outfall009_20141217_Comp	Total/NA	Water	PrecSep_0	
440-97211-2	Trip Blank	Total/NA	Water	PrecSep_0	
480-73271-AA-5-B DU	Duplicate	Total/NA	Water	PrecSep_0	
LCS 160-164779/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
MB 160-164779/1-A	Method Blank	Total/NA	Water	PrecSep_0	

Prep Batch: 165361

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-97211-1	Outfall009_20141217_Comp	Total/NA	Water	ExtChrom	
440-97211-2	Trip Blank	Total/NA	Water	ExtChrom	
440-97211-2 DU	Trip Blank	Total/NA	Water	ExtChrom	
LCS 160-165361/2-A	Lab Control Sample	Total/NA	Water	ExtChrom	
MB 160-165361/1-A	Method Blank	Total/NA	Water	ExtChrom	

Prep Batch: 165591

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-97209-R-1-E MS	Matrix Spike	Total/NA	Water	Evaporation	
440-97209-R-1-F MSBT	Matrix Spike	Total/NA	Water	Evaporation	
440-97209-R-1-G DU	Duplicate	Total/NA	Water	Evaporation	
440-97211-1	Outfall009_20141217_Comp	Total/NA	Water	Evaporation	
440-97211-2	Trip Blank	Total/NA	Water	Evaporation	
LCS 160-165591/2-A	Lab Control Sample	Total/NA	Water	Evaporation	
LCSB 160-165591/3-A	Lab Control Sample	Total/NA	Water	Evaporation	
MB 160-165591/1-A	Method Blank	Total/NA	Water	Evaporation	

Prep Batch: 165620

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-96594-A-2-G DU	Duplicate	Total/NA	Water	PrecSep-7	
440-97211-1	Outfall009_20141217_Comp	Total/NA	Water	PrecSep-7	
440-97211-2	Trip Blank	Total/NA	Water	PrecSep-7	
LCS 160-165620/2-A	Lab Control Sample	Total/NA	Water	PrecSep-7	
MB 160-165620/1-A	Method Blank	Total/NA	Water	PrecSep-7	

Rad (Continued)

Prep Batch: 166399

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-63670-A-3-D DU	Duplicate	Total/NA	Water	LSC_Dist_Susp	
280-63961-C-3-B MS	Matrix Spike	Total/NA	Water	LSC_Dist_Susp	
440-97211-1	Outfall009_20141217_Comp	Total/NA	Water	LSC_Dist_Susp	
LCS 160-166399/2-A	Lab Control Sample	Total/NA	Water	LSC_Dist_Susp	
MB 160-166399/1-A	Method Blank	Total/NA	Water	LSC_Dist_Susp	

Prep Batch: 166424

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-97209-R-1-J DU	Duplicate	Total/NA	Water	Fill_Geo-0	
440-97211-1	Outfall009_20141217_Comp	Total/NA	Water	Fill_Geo-0	
440-97211-2	Trip Blank	Total/NA	Water	Fill_Geo-0	
LCS 160-166424/2-A	Lab Control Sample	Total/NA	Water	Fill_Geo-0	
MB 160-166424/1-A	Method Blank	Total/NA	Water	Fill_Geo-0	

Qualifiers

DIOXIN

Qualifier	Qualifier Description
J	Estimated result. Result is less than the reporting limit.
Q	Estimated maximum possible concentration (EMPC).
B	Method blank contamination. The associated method blank contains the target analyte at a reportable level.

Metals

Qualifier	Qualifier Description
IB	CCV recovery above limit; analyte not detected
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
QP	Holding time Immediate. Analyzed as close to receipt as possible
LQ	LCS/LCSD recovery above method control limits
MB	Analyte present in the method blank

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.
¤	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: 440-97027-1

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	06-30-15
Arizona	State Program	9	AZ0671	10-13-15
California	LA Cty Sanitation Districts	9	10256	01-31-15 *
California	State Program	9	2706	06-30-16
Guam	State Program	9	Cert. No. 12.002r	01-23-15 *
Hawaii	State Program	9	N/A	01-29-15 *
Nevada	State Program	9	CA015312007A	07-31-15
New Mexico	State Program	6	N/A	01-29-15 *
Northern Mariana Islands	State Program	9	MP0002	01-29-15 *
Oregon	NELAP	10	4005	01-29-15 *
USDA	Federal		P330-09-00080	06-06-15
USEPA UCMR	Federal	1	CA01531	01-31-15

Laboratory: TestAmerica Knoxville

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

Authority	Program	EPA Region	Certification ID	Expiration Date
Arkansas DEQ	State Program	6	88-0688	06-17-15
California	State Program	9	2423	06-30-16
Colorado	State Program	8	N/A	02-28-15
Connecticut	State Program	1	PH-0223	09-30-15
Florida	NELAP	4	E87177	06-30-15
Georgia	State Program	4	906	04-13-17
Hawaii	State Program	9	N/A	04-13-15
Kentucky (DW)	State Program	4	90101	12-31-15
L-A-B	DoD ELAP		L2311	02-13-16
Louisiana	NELAP	6	83979	06-30-15
Louisiana	NELAP	6	LA110001	12-31-15
Maryland	State Program	3	277	03-31-15
Michigan	State Program	5	9933	04-13-17
Nevada	State Program	9	TN00009	07-31-15
New Jersey	NELAP	2	TN001	06-30-15
New York	NELAP	2	10781	03-31-15
North Carolina (DW)	State Program	4	21705	07-31-15
North Carolina (WW/SW)	State Program	4	64	12-31-15
Ohio VAP	State Program	5	CL0059	03-26-15
Oklahoma	State Program	6	9415	08-31-15
Pennsylvania	NELAP	3	68-00576	12-31-15
South Carolina	State Program	4	84001	06-30-15
Tennessee	State Program	4	2014	04-13-17
Texas	NELAP	6	T104704380-TX	08-31-15
USDA	Federal		P330-13-00260	08-29-16
Utah	NELAP	8	QUAN3	07-31-15
Virginia	NELAP	3	460176	09-14-15
Virginia	State Program	3	165	06-30-15
Washington	State Program	10	C593	01-19-16
West Virginia (DW)	State Program	3	9955C	12-31-14
West Virginia DEP	State Program	3	345	04-30-15
Wisconsin	State Program	5	998044300	08-31-15

Laboratory: TestAmerica St. Louis

* Certification renewal pending - certification considered valid.

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Grab

TestAmerica Job ID: 440-97027-1

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
Alaska	State Program	10	MO00054	06-30-15
California	NELAP	9	2886	03-31-15
Connecticut	State Program	1	PH-0241	03-31-15
Florida	NELAP	4	E87689	06-30-15
Illinois	NELAP	5	200023	11-30-15
Iowa	State Program	7	373	12-01-14 *
Kansas	NELAP	7	E-10236	03-31-15 *
Kentucky (DW)	State Program	4	90125	12-31-14 *
L-A-B	DoD ELAP		L2305	01-10-16
Louisiana	NELAP	6	LA150017	12-31-16
Maryland	State Program	3	310	09-30-15
Missouri	State Program	7	780	06-30-15
Nevada	State Program	9	MO000542013-1	07-31-15
New Jersey	NELAP	2	MO002	06-30-15
New Mexico	State Program	6		06-30-10 *
New York	NELAP	2	11616	03-31-15 *
North Dakota	State Program	8	R207	06-30-15
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-15
Pennsylvania	NELAP	3	68-00540	02-28-15 *
South Carolina	State Program	4	85002001	06-30-15
Texas	NELAP	6	T104704193-13-6	07-31-15
USDA	Federal		P330-07-00122	01-09-17
Utah	NELAP	8	MO000542013-5	07-31-15
Virginia	NELAP	3	460230	06-14-15
Washington	State Program	10	C592	08-30-15
West Virginia DEP	State Program	3	381	08-31-15

* Certification renewal pending - certification considered valid.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

ANALYTICAL REPORT

PROJECT NO. 440-97027-1

Routine Outfall 009

Lot #: H4L290401

Debby Wilson

TestAmerica Irvine
17461 Derian Ave
Suite 100
Irvine, CA 92614-5817

TESTAMERICA LABORATORIES, INC.

Terry Wasmund
Project Manager

January 19, 2015

ANALYTICAL METHODS SUMMARY

H4L290401

PARAMETER	ANALYTICAL METHOD
Dioxins/Furans, HRGC/HRMS	EPA-5 1613B

References:

EPA-5 "Method 1613: Tetra- through Octa- Chlorinated Dioxins and Furans by Isotope Dilution, HRGC/HRMS, Revision B", EPA, OCTOBER 1994

SAMPLE SUMMARY

H4L290401

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
M5T3X	001	OUTFALL009_20141217_COMP	12/17/14	08:21

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

PROJECT NARRATIVE
H4L290401

The results reported herein are applicable to the samples submitted for analysis only. If you have any questions about this report, please call (865) 291-3000 to speak with the TestAmerica project manager listed on the cover page.

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

The original chain of custody documentation is included with this report.

Sample Receipt

There were no problems with the condition of the samples received.

Quality Control and Data Interpretation

Unless otherwise noted, all holding times and QC criteria were met and the test results shown in this report meet all applicable NELAC requirements.

Comments:

Several Estimated Detection Limits (EDL's) for the total homolog groups were changed to the lowest EDL from each group. This was done per request of the client.

The following flags are used to qualify results for chlorinated dioxin and furan results:

J – The reported result is an estimate. The amount reported is below the Minimum Level (ML). The qualitative definition of the ML is "the lowest level at which the analytical system must give a reliable signal and an acceptable calibration point". The ML was introduced in EPA Methods 1624 and 1625 in 1980 and was promulgated in these methods in 1984 at 40 CFR Part 136, Appendix A. For the purposes of this report, the ML is qualitatively defined as described above, and quantitatively defined as follows:

Minimum Level: The concentration or mass of analyte in the sample that corresponds to the lowest calibration level in the initial calibration. It represents a concentration (in the sample extract) equivalent to that of the lowest calibration standard, after corrections for method-specified sample weights, volumes and cleanup procedures has been employed.

Example: The lowest calibration level for TCDD in the initial calibration is 0.5 pg/uL. A mass of 10 pg of 2,3,7,8-TCDD in the sample would result in a concentration of 0.5 pg/uL in the sample extract (at a final volume of 20 uL). Since the concentration in the sample extract corresponds to the concentration in the lowest calibration standard, the 10 pg mass in the sample components is the ML. If the sample extract is further diluted, the ML will increase by the dilution factor.

Example: A 1/10 dilution is performed on the sample extract described above. The ML for 2,3,7,8-TCDD becomes 100 pg rather than the default of 10 pg.

PROJECT NARRATIVE
H4L290401

E – The reported result is an estimate. The amount reported is above the Upper Calibration Level (UCL) described below. The quantitative definition of the UCL is listed below:

Upper Calibration Level: The concentration or mass of analyte in the sample that corresponds to the highest calibration level in the initial calibration. It is equivalent to the concentration of the highest calibration standard, assuming that all method-specified sample weights, volumes, and cleanup procedures have been employed.

Example: The maximum calibration level for TCDD in the initial calibration is 200 pg/uL. A mass of 4000 pg of 2,3,7,8-TCDD in the sampling components would result in a concentration of 200 pg/uL in the sample extract (at a final volume of 20 uL). Since the concentration in the sample extract corresponds to the concentration in the highest calibration standard, the 4000 pg mass in the sample components is the UCL. If the sample extract is further diluted, the ML will increase by the dilution factor.

Example: A 1/10 dilution is performed on the sample extract described above. The UCL for 2,3,7,8-TCDD becomes 40,000 pg rather than the default of 4000 pg. In this example, all positive 2,3,7,8-TCDD results above 40,000 pg are flagged with an E.

B – The analyte is present in the associated method blank at a detectable level. For this analysis, there is no method specified reporting level other than the qualitative criterion that peaks must exhibit a signal-to-noise ratio of $\geq$2.5 to 1. Therefore, the presence of any reportable amount of the analyte in the blank will result in a B qualifier on all associated samples.

Q – Estimated maximum possible concentration. This qualifier is used when the result is generated from chromatographic data that does not meet all the qualitative criteria for a positive identification given in the method. These may include one or more of the following:

- Ion abundance ratios must be within specified limits (+/-15% of theoretical ion abundance ratio).
- Retention time criteria (relative to the method-specified isotope labeled retention time standard).
- Co-maximization criterion. The two quantitation ion peaks must reach their maxima within 2 seconds of each other.
- 2,3,7,8-TCDF result is reported from the non-isomer specific Rtx-5 column.
- Polychlorinated dibenzofuran purity. An interference may be present on the indicated polychlorinated dibenzofuran when a polychlorinated diphenyl ether peak is present and maximizes within +/- 3 seconds of the dibenzofuran candidate.

S – Ion suppression evident. The trace indicating the signal from the lock mass of the calibration compound shows a deflection at the retention time of the analyte. This may indicate a temporary suppression of the instrument sensitivity due to a matrix-borne interference.

C – Coeluting Isomer. The isomer is known to coelute with another member of its homologue group, or the peak shape is shouldered, indicating the likelihood of a coeluting isomer.

PROJECT NARRATIVE
H4L290401

X – Other. See explanation in narrative.

Laboratory studies supporting risk assessment and Total Maximum Daily Load (TMDL) evaluations, frequently use qualified data reported as low as the Method Detection Limit (MDL), or the Estimated Detection Limit (EDL). Several of EPA's isotope dilution methods employ the EDL.[1,2,3] The EDL is based on a direct measurement of the signal-to-noise (S/N) ratio acquired during sample analysis. This S/N measurement is used to calculate the concentration in the sample corresponding to the minimum intensity of the smallest quantifiable peak. The EDL reflects the amount of the particular analyte which would be required to cause a positive result for the particular analysis. Because the S/N obtained covaries with recovery, instrument sensitivity and sample-specific cleanup efficacy, the EDL is a more valid measure of the sensitivity of the entire analytical process for the specific sample than is an MDL run periodically on a reference matrix.

The EDL is typically calculated according to the following equation:

$$\text{Estimated Detection Limit} = \frac{N \times 2.5 \times Qis}{His \times RRF \times W \times S}$$

Where:

N	=	peak to peak noise of quantitation ion signal in the region of the ion chromatogram where the compound of interest is expected to elute
His	=	peak height of quantitation ion for appropriate internal standard
Qis	=	ng of internal standard added to sample
RRF	=	mean relative response factor of compound obtained during initial calibration
W	=	amount of sample extracted (grams or liters)
S	=	percent solids (optional, if results are requested to be reported on dry weight basis)

(The area of the internal standard is sometimes used instead of height, along with an area-to-height conversion factor.)

This method of estimating the detection limit differs from the MDL in that it does not carry the requirement that the sample be statistically distinguished as being from a contaminated population. As results approach the EDL, the risk of false positives and the analytical uncertainty increase significantly. However, a low false positive well below the ML or MDL is often closer to the true value than an assumption that the target analyte is present at the detection or reporting limits. For relatively clean samples, MDL studies may give an elevated estimate of the detection limit. Additionally, on contaminated samples, the MDL may give a falsely low estimate of the detection limit.

$$\text{Analyte Concentration} = \frac{As \times Qis}{Ais \times RRF \times W \times S}$$

Where:

As	=	Sum of areas of the target peaks

PROJECT NARRATIVE
H4L290401

Qis	=	ng of internal standard added to sample
Ais	=	Sum of areas of the internal standard peaks
RRF	=	mean relative response factor of compound obtained during initial calibration
W	=	amount of sample extracted (grams or liters)
S	=	percent solids (optional, if results are requested to be reported on dry weight basis)

In sample data, peaks must have an intensity of ≥2.5 times the height of the background noise in order to be considered. Careful examination of the two equations above reveals that for the concentration of the smallest peak detectable (per the EDL equation) to exactly equal the smallest peaks that are calculated, requires that the average height to area ratio obtained during the calibration must equal the area to height ratio for every peak obtained near 2.5 times the noise. When the area to height ratio on a peak in a sample is less than the average obtained during calibration, the calculated result will correspond to a peak that would have been less than 2.5 times the noise on the calibration. This is the result of normal variability. Because the source methods for the EDL (SW-846 8290 and 8280A) do not provide for censoring of results by any other magnitude standard than being 2.5 times the noise, the laboratory does not censor at the calculated EDL. Hence, detections may be reported below the estimated detection limits.

Footnotes:

1. Code of Federal Regulations, Part 136, Chapter 1, Appendix 1, October 1994: Method 1613 Tetra- Through Octa-Chlorinated Dioxins and Furans by Isotope Dilution High Resolution Gas Chromatography/High Resolution Mass Spectrometry.
2. U.S. EPA. Test Methods for Evaluating Solid Waste, Volume II, SW-846, Update III, December 1996. Method 8280A: The Analysis of Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by High Resolution Gas Chromatography/Low Resolution Mass Spectrometry.
3. U.S. EPA. Test Methods for Evaluating Solid Waste, SW-846. Third Edition. March 1995 Method 8290: Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by High Resolution Gas Chromatography/High Resolution Mass Spectrometry.

CERTIFICATION SUMMARY

Laboratory	Authority	Program	EPA Region	Certification ID
TestAmerica Knoxville	L-A-B	DoD ELAP		L2311
TestAmerica Knoxville	Arkansas DEQ	State Program	6	88-0688
TestAmerica Knoxville	California	State Program	9	2423
TestAmerica Knoxville	Colorado	State Program	8	N/A
TestAmerica Knoxville	Connecticut	State Program	1	PH-0223
TestAmerica Knoxville	Florida	NELAC	4	E87177
TestAmerica Knoxville	Georgia	State Program	4	906
TestAmerica Knoxville	Hawaii	State Program	9	N/A
TestAmerica Knoxville	Indiana	State Program	5	C-TN-02
TestAmerica Knoxville	Iowa	State Program	7	375
TestAmerica Knoxville	Kansas	NELAC	7	E-10349
TestAmerica Knoxville	Kentucky	State Program	4	90101
TestAmerica Knoxville	Louisiana DOHH	State Program	6	LA110001
TestAmerica Knoxville	Louisiana DEQ	NELAC	6	83979
TestAmerica Knoxville	Maryland	State Program	3	277
TestAmerica Knoxville	Michigan	State Program	5	9933
TestAmerica Knoxville	Minnesota	NELAC	5	047-999-429
TestAmerica Knoxville	Nevada	State Program	9	TN00009
TestAmerica Knoxville	New Jersey	NELAC	2	TN001
TestAmerica Knoxville	New York	NELAC	2	10781
TestAmerica Knoxville	North Carolina DENR	State Program	4	64
TestAmerica Knoxville	North Carolina DHHS	State Program	4	21705
TestAmerica Knoxville	Ohio	OVAP	5	CL0059
TestAmerica Knoxville	Oklahoma	State Program	6	9415
TestAmerica Knoxville	Pennsylvania	NELAC	3	68-00576
TestAmerica Knoxville	South Carolina	State Program	4	84001
TestAmerica Knoxville	Tennessee	State Program	4	2014
TestAmerica Knoxville	Texas	NELAC	6	T104704380-TX
TestAmerica Knoxville	Federal	USDA		P330-11-00035
TestAmerica Knoxville	Utah	NELAC	8	QUAN3
TestAmerica Knoxville	Virginia	NELAC	3	460176
TestAmerica Knoxville	Virginia	State Program	3	165
TestAmerica Knoxville	Washington	State Program	10	C593
TestAmerica Knoxville	West Virginia DEP	State Program	3	345
TestAmerica Knoxville	West Virginia DHHR	State Program	3	9955C

Accreditation may not be offered or required for all methods and analytes reported in this package. Please contact your project manager for the laboratory's current list of certified methods and analytes.

Sample Data Summary

TestAmerica Irvine

Sample ID: OUTFALL009_20141217_COMP

Trace Level Organic Compounds

Lot - Sample #....:	H4L290401 - 001	**Work Order #....:**	M5T3X1AA	**Matrix....:**	WATER
Date Sampled....:	12/17/14	**Date Received....:**	12/27/14	**Dilution Factor:**	1
Prep Date....:	12/30/14	**Analysis Date....:**	01/16/15		
Prep Batch # ....:	4364015				
Initial Wgt/Vol :	995 mL	**Instrument ID....:**	M2A	**Method:**	EPA-5 1613B
Analyst ID....:	Patricia(Trish) M. Parsly				

PARAMETER	RESULT		MINIMUM LEVEL	ESTIMATED DETECTION LIMIT	UNITS
2,3,7,8-TCDD	ND		0.0000100	0.00000208	ug/L
Total TCDD	ND		0.0000100	0.00000208	ug/L
1,2,3,7,8-PeCDD	**0.00000161**	**Q J**	**0.0000502**	**0.00000117**	**ug/L**
Total PeCDD	**0.00000478**	**Q J**	**0.0000502**	**0.00000117**	**ug/L**
1,2,3,4,7,8-HxCDD	ND		0.0000502	0.00000101	ug/L
1,2,3,6,7,8-HxCDD	**0.00000846**	**J**	**0.0000502**	**0.000000930**	**ug/L**
1,2,3,7,8,9-HxCDD	**0.00000610**	**J**	**0.0000502**	**0.000000900**	**ug/L**
Total HxCDD	**0.0000421**	**J**	**0.0000502**	**0.000000900**	**ug/L**
1,2,3,4,6,7,8-HpCDD	**0.000146**		**0.0000502**	**0.00000170**	**ug/L**
Total HpCDD	**0.000360**		**0.0000502**	**0.00000170**	**ug/L**
OCDD	**0.00198**	**B**	**0.000100**	**0.00000248**	**ug/L**
2,3,7,8-TCDF	ND		0.0000100	0.00000148	ug/L
Total TCDF	**0.00000954**	**J Q**	**0.0000100**	**0.00000148**	**ug/L**
1,2,3,7,8-PeCDF	ND		0.0000502	0.000000830	ug/L
2,3,4,7,8-PeCDF	ND		0.0000502	0.000000740	ug/L
Total PeCDF	**0.0000195**	**Q J**	**0.0000502**	**0.000000740**	**ug/L**
1,2,3,4,7,8-HxCDF	**0.00000164**	**Q J**	**0.0000502**	**0.000000670**	**ug/L**
1,2,3,6,7,8-HxCDF	**0.00000466**	**Q J**	**0.0000502**	**0.000000650**	**ug/L**
2,3,4,6,7,8-HxCDF	ND		0.0000502	0.000000650	ug/L
1,2,3,7,8,9-HxCDF	ND		0.0000502	0.000000980	ug/L
Total HxCDF	**0.0000949**	**J Q**	**0.0000502**	**0.000000650**	**ug/L**
1,2,3,4,6,7,8-HpCDF	**0.0000234**	**J**	**0.0000502**	**0.000000820**	**ug/L**
1,2,3,4,7,8,9-HpCDF	ND		0.0000502	0.00000144	ug/L
Total HpCDF	**0.0000699**	**Q J**	**0.0000502**	**0.000000820**	**ug/L**
OCDF	**0.0000593**	**J**	**0.000100**	**0.00000111**	**ug/L**

TestAmerica Irvine

Sample ID: OUTFALL009_20141217_COMP

Trace Level Organic Compounds

Lot - Sample #....:	H4L290401 - 001	**Work Order #....:**	M5T3X1AA	**Matrix....:**	WATER
Date Sampled....:	12/17/14	**Date Received....:**	12/27/14	**Dilution Factor:**	1
Prep Date....:	12/30/14	**Analysis Date....:**	01/16/15		
Prep Batch # ....:	4364015				
Initial Wgt/Vol :	995 mL	**Instrument ID....:**	M2A	**Method:**	EPA-5 1613B
Analyst ID....:	Patricia(Trish) M. Parsly				

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	70	25 - 164
13C-1,2,3,7,8-PeCDD	76	25 - 181
13C-1,2,3,4,7,8-HxCDD	82	32 - 141
13C-1,2,3,6,7,8-HxCDD	88	28 - 130
13C-1,2,3,4,6,7,8-HpCDD	79	23 - 140
13C-OCDD	77	17 - 157
13C-2,3,7,8-TCDF	68	24 - 169
13C-1,2,3,7,8-PeCDF	68	24 - 185
13C-2,3,4,7,8-PeCDF	66	21 - 178
13C-1,2,3,4,7,8-HxCDF	72	26 - 152
13C-1,2,3,6,7,8-HxCDF	76	26 - 123
13C-2,3,4,6,7,8-HxCDF	79	28 - 136
13C-1,2,3,7,8,9-HxCDF	69	29 - 147
13C-1,2,3,4,6,7,8-HpCDF	79	28 - 143
13C-1,2,3,4,7,8,9-HpCDF	67	26 - 138
13C-OCDF	75	17 - 157

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
37Cl4-2,3,7,8-TCDD	80	35 - 197

QUALIFIERS

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

J Estimated Result.

Q Estimated maximum possible concentration (EMPC).

Method Blank Report

Trace Level Organic Compounds

Lot - Sample #....:	H4L300000 - 015B	**Work Order #....:**	M5T6F1AA	**Matrix....:**	WATER
Dilution Factor:	1				
Prep Date....:	12/30/14	**Analysis Date....:**	01/15/15		
Prep Batch # ....:	4364015				
Initial Wgt/Vol :	1000 mL	**Instrument ID....:**	M2A	**Method:**	EPA-5 1613B
Analyst ID....:	Patricia(Trish) M. Parsly				

PARAMETER	RESULT		MINIMUM LEVEL	ESTIMATED DETECTION LIMIT	UNITS
2,3,7,8-TCDD	ND		0.0000100	0.00000222	ug/L
Total TCDD	ND		0.0000100	0.00000222	ug/L
1,2,3,7,8-PeCDD	ND		0.0000500	0.00000105	ug/L
Total PeCDD	ND		0.0000500	0.00000105	ug/L
1,2,3,4,7,8-HxCDD	ND		0.0000500	0.000000850	ug/L
1,2,3,6,7,8-HxCDD	ND		0.0000500	0.000000890	ug/L
1,2,3,7,8,9-HxCDD	ND		0.0000500	0.000000810	ug/L
Total HxCDD	ND		0.0000500	0.000000850	ug/L
1,2,3,4,6,7,8-HpCDD	ND		0.0000500	0.00000113	ug/L
Total HpCDD	ND		0.0000500	0.00000113	ug/L
OCDD	**0.00000202**	**Q J**	**0.000100**	**0.000000970**	**ug/L**
2,3,7,8-TCDF	ND		0.0000100	0.00000144	ug/L
Total TCDF	ND		0.0000100	0.00000144	ug/L
1,2,3,7,8-PeCDF	ND		0.0000500	0.000000820	ug/L
2,3,4,7,8-PeCDF	ND		0.0000500	0.000000710	ug/L
Total PeCDF	ND		0.0000500	0.000000710	ug/L
1,2,3,4,7,8-HxCDF	ND		0.0000500	0.000000500	ug/L
1,2,3,6,7,8-HxCDF	ND		0.0000500	0.000000490	ug/L
2,3,4,6,7,8-HxCDF	ND		0.0000500	0.000000500	ug/L
1,2,3,7,8,9-HxCDF	ND		0.0000500	0.000000600	ug/L
Total HxCDF	ND		0.0000500	0.000000490	ug/L
1,2,3,4,6,7,8-HpCDF	ND		0.0000500	0.000000680	ug/L
1,2,3,4,7,8,9-HpCDF	ND		0.0000500	0.000000960	ug/L
Total HpCDF	ND		0.0000500	0.000000680	ug/L
OCDF	ND		0.000100	0.00000103	ug/L

Method Blank Report

Trace Level Organic Compounds

Lot - Sample #....:	H4L300000 - 015B	**Work Order #....:**	M5T6F1AA	**Matrix....:**	WATER
Dilution Factor:	1				
Prep Date....:	12/30/14	**Analysis Date....:**	01/15/15		
Prep Batch # ....:	4364015				
Initial Wgt/Vol :	1000 mL	**Instrument ID....:**	M2A	**Method:**	EPA-5 1613B
Analyst ID....:	Patricia(Trish) M. Parsly				

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	83	25 - 164
13C-1,2,3,7,8-PeCDD	89	25 - 181
13C-1,2,3,4,7,8-HxCDD	86	32 - 141
13C-1,2,3,6,7,8-HxCDD	94	28 - 130
13C-1,2,3,4,6,7,8-HpCDD	91	23 - 140
13C-OCDD	89	17 - 157
13C-2,3,7,8-TCDF	84	24 - 169
13C-1,2,3,7,8-PeCDF	83	24 - 185
13C-2,3,4,7,8-PeCDF	79	21 - 178
13C-1,2,3,4,7,8-HxCDF	77	26 - 152
13C-1,2,3,6,7,8-HxCDF	79	26 - 123
13C-2,3,4,6,7,8-HxCDF	86	28 - 136
13C-1,2,3,7,8,9-HxCDF	89	29 - 147
13C-1,2,3,4,6,7,8-HpCDF	84	28 - 143
13C-1,2,3,4,7,8,9-HpCDF	87	26 - 138
13C-OCDF	81	17 - 157

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
37Cl4-2,3,7,8-TCDD	94	35 - 197

QUALIFIERS

J Estimated Result.

Q Estimated maximum possible concentration (EMPC).

LABORATORY CONTROL SAMPLE DATA REPORT

Trace Level Organic Compounds

Client Lot # ...:	H4L290401	**Work Order # ...:**	M5T6F1AC-LCS	**Matrix .....:**	WATER
LCS Lot-Sample# :	H4L300000 - 015				
Prep Date .....:	12/30/14	**Analysis Date ..:**	01/15/15		
Prep Batch # ...:	4364015				
Dilution Factor :	1				
Analyst ID.....:	Kathryn B. Lay	**Instrument ID..:**	M2A	**Method.....:**	EPA-5 1613B
Initial Wgt/Vol:	1000 mL				

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY		RECOVERY LIMITS
2,3,7,8-TCDD	**0.0002**	**0.0001**	**ug/L**	**98**		**(67 - 158)**
1,2,3,7,8-PeCDD	**0.0010**	**0.0009**	**ug/L**	**99**		**(70 - 142)**
1,2,3,4,7,8-HxCDD	**0.0010**	**0.0009**	**ug/L**	**97**		**(70 - 164)**
1,2,3,6,7,8-HxCDD	**0.0010**	**0.0009**	**ug/L**	**94**		**(76 - 134)**
1,2,3,7,8,9-HxCDD	**0.0010**	**0.0009**	**ug/L**	**94**		**(64 - 162)**
1,2,3,4,6,7,8-HpCDD	**0.0010**	**0.0009**	**ug/L**	**92**		**(70 - 140)**
OCDD	**0.0020**	**0.0017**	**ug/L**	**90**	**B**	**(78 - 144)**
2,3,7,8-TCDF	**0.0002**	**0.0002**	**ug/L**	**108**		**(75 - 158)**
1,2,3,7,8-PeCDF	**0.0010**	**0.0009**	**ug/L**	**95**		**(80 - 134)**
2,3,4,7,8-PeCDF	**0.0010**	**0.0009**	**ug/L**	**99**		**(68 - 160)**
1,2,3,4,7,8-HxCDF	**0.0010**	**0.0009**	**ug/L**	**98**		**(72 - 134)**
1,2,3,6,7,8-HxCDF	**0.0010**	**0.0009**	**ug/L**	**99**		**(84 - 130)**
2,3,4,6,7,8-HxCDF	**0.0010**	**0.0009**	**ug/L**	**99**		**(70 - 156)**
1,2,3,7,8,9-HxCDF	**0.0010**	**0.0009**	**ug/L**	**98**		**(78 - 130)**
1,2,3,4,6,7,8-HpCDF	**0.0010**	**0.0009**	**ug/L**	**93**		**(82 - 122)**
1,2,3,4,7,8,9-HpCDF	**0.0010**	**0.0009**	**ug/L**	**96**		**(78 - 138)**
OCDF	**0.0020**	**0.0017**	**ug/L**	**89**		**(63 - 170)**

INTERNAL STANDARD	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	79	(20 - 175)
13C-1,2,3,7,8-PeCDD	85	(21 - 227)
13C-1,2,3,4,7,8-HxCDD	82	(21 - 193)
13C-1,2,3,6,7,8-HxCDD	90	(25 - 163)
13C-1,2,3,4,6,7,8-HpCDD	87	(26 - 166)
13C-OCDD	65	(13 - 199)
13C-2,3,7,8-TCDF	71	(22 - 152)
13C-1,2,3,7,8-PeCDF	80	(21 - 192)
13C-2,3,4,7,8-PeCDF	76	(13 - 328)
13C-1,2,3,4,7,8-HxCDF	77	(19 - 202)
13C-1,2,3,6,7,8-HxCDF	84	(21 - 159)
13C-2,3,4,6,7,8-HxCDF	80	(22 - 176)
13C-1,2,3,7,8,9-HxCDF	67	(17 - 205)
13C-1,2,3,4,6,7,8-HpCDF	74	(21 - 158)
13C-1,2,3,4,7,8,9-HpCDF	58	(20 - 186)
13C-OCDF	49	(13 - 199)

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
37Cl4-2,3,7,8-TCDD	82	(31 - 191)

LABORATORY CONTROL SAMPLE DATA REPORT

Trace Level Organic Compounds

Notes:

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

Sample Receipt Documentation

TestAmerica Irvine
17461 Derian Ave Suite 100
Irvine, CA 92614-5817
Phone (949) 261-1022 Fax (949) 260-3297

H4L290401

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Wilson, Debby S	Carrier Tracking No(s):	COC No: 440-71868.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: debby.wilson@testamericainc.com		Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.				Job #: 440-97027-1
Address: 5815 Middlebrook Pike,	Due Date Requested: 1/6/2015			
City: Knoxville	TAT Requested (days):			
State, Zip: TN, 37921				
Phone: 865-291-3000(Tel) 865-584-4315(Fax)	PO #:			
Email:	WO #:			
Project Name: Routine Outfall 009 Grab	Project #: 44009879			
Site:	SSOW#:			

Analysis Requested

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 - Na2S2SO3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - ph 4-5
L - EDA	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=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SUB (1613 dioxin)/ 1613 dioxin	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
Outfall009_20141217_Comp (440-97211-1)	12/17/14	08:21 Pacific		Water			X	1	See QAS,Boeing_w/u to zero. ug/L

A/ND PB7

RT: 0.1°C CT: 0.0°C
Custody seal intact
SC-57, Fedex PO
#KH6111 1265 0799
1 Cooler, KLJ 12/27/14

Possible Hazard Identification
Unconfirmed
Deliverable Requested: I, II, III, IV, Other (specify)

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	12-24-14 1400	TA		12-24-14 1700	
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
				12/27/14 0920	TA
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

TESTAMERICA KNOXVILLE SAMPLE RECEIPT/CONDITION UPON RECEIPT ANOMALY CHECKLIST

Lot Number: H4L290401

Review Items	Yes	No	NA	If No, what was the problem?
1. Do sample container labels match COC? (IDs, Dates, Times)	✓			☐ **1a** Do not match COC ☐ **1b** Incomplete information ☐ **1c** Marking smeared ☐ **1d** Label torn ☐ **1e** No label ☐ **1f** COC not received ☐ **1g** Other:
2. Is the cooler temperature within limits? (> freezing temp. of water to 6 °C, VOST: 10°C) Thermometer ID : S057 Correction factor: -0.1	✓			☐ **2a** Temp Blank = _____ ☐ **2b** Cooler Temp = _____ ☐ **2c** Cooling initiated for recently collected samples, ice present.
3. Were samples received with correct chemical preservative (excluding Encore)?			✓	☐ **3a** See box 3A for pH Preservation ☐ **3b** Other:
4. Were custody seals present/intact on cooler and/or containers?	✓			☐ **4a** Not present ☐ **4b** Not intact ☐ **4c** Other:
5. Were all of the samples listed on the COC received?	✓			☐ **5a** Samples received-not on COC ☐ **5b** Samples not received-on COC
6. Were all of the sample containers received intact?	✓			☐ **6a** Leaking ☐ **6b** Broken
7. Were VOA samples received without headspace?	✓		✓	☐ **7a** Headspace (VOA only)
8. Were samples received in appropriate containers?	✓			☐ **8a** Improper container
9. Did you check for residual chlorine, if necessary? (e.g. 1613B, 1668) Chlorine test strip lot number: 4252017/07	✓ ✓			☐ **9a** Could not be determined due to matrix interference
10. Were samples received within holding time?	✓			☐ **10a** Holding time expired
11. For rad samples, was sample activity info. provided?			✓	☐ Incomplete information
12. For 1613B water samples is pH<9?	✓			If no, was pH adjusted to pH 7 - 9 with sulfuric acid? _____
13. Are the shipping containers intact?	✓			☐ **13a** Leaking ☐ **13b** Other:
14. Was COC relinquished? (Signed/Dated/Timed)	✓			☐ **14a** Not relinquished
15. Are tests/parameters listed for each sample?	✓			☐ **15a** Incomplete information
16. Is the matrix of the samples noted?	✓			☐ **15a** Incomplete information
17. Is the date/time of sample collection noted?	✓			☐ **15a** Incomplete information
18. Is the client and project name/# identified?	✓			☐ **15a** Incomplete information
19. Was the sampler identified on the COC?		✓		☐ **19a** Other

Comments/Actions Taken

pH test strip lot number: HC411869

	Box 3A: pH Preservation	Box 9A: Residual Chlorine
Preservative:		
Lot Number:		
Exp Date:		
Analyst:		
Date:		
Time:		

Quote #: 90493 PM Instructions: NA

Sample Receiving Associate: _____ Date: 12-29-14

QA026R28.doc, 042414

Project:
Boeing-SSFL NPDES
Routine Outfall 009
COMPOSITE
Stormwater at SW-13

Phone Number
619.285.7132, 858.337.4061(cell)
Field Manager: Jeff Bannon
818.350.7340, 818.414.5608(cell)

ANALYSIS REQUIRED

Sample I.D	Sampling Date/Time	Preservative	Bottle #	Total Recoverable Metals: Sb, Cd, Cu, Pb, Hg, Tl	TCDD (and all congeners)	Cl, SO_4, NO_3+NO_2-N	TDS	TSS	Total Dissolved Metals: Sb, Cd, Cu, Pb, Hg, Tl	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)	Chromic Acid	Cyanide	Comments
9_2014 1837_Comp	12.17.14/0821	HNO_3	2A	X									
		None	3A, 3B		X								
		None	4A, 4B			X							
		None	5				X						
		None	6						X				Filter w/in 24hrs of receipt at lab
		None	7A							X			Unfiltered and unpreserved analysis
		None	7B										
		None	8								X		Only test if first or second rain events of the year
		NaOH	9									X	
		None	5					X					

12/30/14 ZF

CO 12/18/14 19:20

440-97211 Chain of Custody

COC Page 2 of 2 list the Composite Samples for Outfall 009 for this storm event.
These must be added to the same work order for COC Page 1 of 2 for Outfall 009 for the same event.

	Received By	Date/Time
12/18/14 / 9:40am	Shafi@NABI	12/18/14
12/18/14 / 17:20	VubBanh	12/18/14 17:20
	Received By	Date/Time

Turn-around time (Check)
24 Hour ____ 72 Hour ____ 10 Day: ____
48 Hour ____ 5 Day ____ Normal ✓
19:40am

Sample Integrity: (Check)
Intact: ____ On Ice ____

Data Requirements (Check)
No Level IV ____ All Level IV ____ NPDES Level IV ____

2.9/2.1
3.3/2.4
3.8/3.0 IR-64

4TC. Shafi@NABI SK

Client Name/Address:
Haley & Aldrich
9040 Friars Road Suite 220
San Diego, CA 92108-5860

Test America Contact: Debby Wilson

Project:
Boeing-SSFL NPDES
Routine Outfall 009
GRAB
Stormwater et SW-13

Project Manager Nancy Gardiner

Sampler. B. Benson
D. Ear

Phone Number
619.285 7132, 858.337.4061(cell)
Field Manager. Jeff Bannon
818 350.7340,
818.414.5608(cell)

ANALYSIS REQUIRED

Sample Description	Sample Matrix	Container Type	# of Cont	Sample I D	Sampling Date/Time	Preservative	Bottle #	Oil & Grease (1664-HEM)
Outfall 009	W	1L Amber	2	Outfall 009_2014 1217 Grab	12.17.14/0730	HCl	1A, 1B	X

Field Readings
Field readings: (Include units) UH4VAADK
Time of readings 0735
pH 6.64 pH unit
Temp 8.41 °C/F

Meter serial #

Field readings QC
Checked by ANITRA Rice
Date/Time 12.17.14/0900

Comments

440-97027 Chain of Custody

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	Received By	Date/Time
ANITRA RICE	12.17.14/1030	Shafi Qadri	12-17-14 10:30
Shafi Qadri	12-17-14/1336		
		Mayetta S	12/17/14 13:36

Turn-around time (Check)
24 Hour ____ 72 Hour __ 10 Day ____
48 Hour ____ 5 Day __ Normal X

Sample Integrity (Check)
Intact ____ On Ice ____

Data Requirements: (Check)
No Level IV ____ All Level IV NPDES Level IV ____

UTC Shafi Qadri

1.3/0.5

CHAIN OF CUSTODY FORM

Client Name/Address:
Haley & Aldrich
9040 Friars Road Suite 220
San Diego, CA 92108-5860

Test America Contact: Debby Wilson

Project:
Boeing-SSFL NPDES
Routine Outfall 009
COMPOSITE
Stormwater at SW-13

Project Manager: Nancy Gardiner
Sampler: B. Benson, S. Dawson

Phone Number:
619.285.7132, 858.337.4061(cell)
Field Manager: Jeff Bannon
818.350.7340, 818.414.5608(cell)

ANALYSIS REQUIRED

Sample Description	Sample Matrix	Container Type	# of Cont.	Sample I.D	Sampling Date/Time	Preservative	Bottle #	Total Recoverable Metals: Sb, Cd, Cu, Pb, Hg, Tl	TCDD (and all congeners)	Cl^-, SO_4, NO_3+NO_2-N	TDS	TSS	Total Dissolved Metals: Sb, Cd, Cu, Pb, Hg, Tl	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	Cyanide	Comments
Outfall 009	W	1L Poly	1	Outfall 009_2014 12.17_Comp	12.17.14/0821	HNO_3	2A ✓	X									
Outfall 009	W	1L Amber	2			None	✓3A, 3B✓		X								
Outfall 009	W	500 mL Poly	2			None	✓4A, 4B✓			X							
Outfall 009	W	500 mL Poly	1			None	5A				X						
Outfall 009	W	1L Poly	1			None	6 ✓						X				Filter w/in 24hrs of receipt at lab
Outfall 009	W	2.5 Gal Cube	1			None	7A ✓							X			Unfiltered and unpreserved analysis
		500 mL Amber	1			None	7B ✓										
Outfall 009	W	1 Gal Poly	1			None	8 ✓								X		Only test if first or second rain events of the year
Outfall 009	W	500 mL Poly	1			NaOH	9 ✓									X	
Outfall 009	W	1L Poly	1			None	5 ✓					X					

440-97211 Chain of Custody

CO 12/18/14 19:20

COC Page 2 of 2 list the Composite Samples for Outfall 009 for this storm event.
These must be added to the same work order for COC Page 1 of 2 for Outfall 009 for the same event.

Relinquished By	Date/Time	Received By	Date/Time
Anitra Rice	12/18/14 / 9:40am	Shafiq NABI	12/18/14 9:40am
Shafiq NABI	12/18/14 / 17:20	VuBanh	12/18/14 17:20

Turn-around time (Check): 24 Hour ___ 48 Hour ___ 72 Hour ___ 5 Day ___ 10 Day ___ Normal ✓

Sample Integrity (Check): Intact ___ On Ice ___

2.9/2.1
3.3/2.4
3.8/3.0 IR-64

Data Requirements (Check): No Level IV ___ All Level IV ___ NPDES Level IV ___

4TC. Shafiq NABI SK

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-97027-1

Login Number: 97027

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.	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	

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-97027-1

Login Number: 97211

List Source: TestAmerica Irvine

List Number: 1

Creator: Blocker, Kristina M

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	

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-97027-1

Login Number: 97211
List Number: 2
Creator: Clarke, Jill C

List Source: TestAmerica St. Louis
List Creation: 12/20/14 11:56 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	5.8
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 <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: Routine Outfall 009 Grab

TestAmerica Job ID: 440-97027-1

Method: 903.0 - Radium-226 (GFPC)

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

		Percent Yield (Acceptance Limits)						
		Ba						
Lab Sample ID	Client Sample ID	(40-110)						
440-97211-1	Outfall009_20141217_Comp	92.9						
440-97211-2	Trip Blank	95.6						
480-73271-AA-5-A DU	Duplicate	89.4						
LCS 160-164776/2-A	Lab Control Sample	94.7						
MB 160-164776/1-A	Method Blank	89.7						

Tracer/Carrier Legend

Ba = Ba Carrier

Method: 904.0 - Radium-228 (GFPC)

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

		Percent Yield (Acceptance Limits)						
		Ba	Y					
Lab Sample ID	Client Sample ID	(40-110)	(40-110)					
440-97211-1	Outfall009_20141217_Comp	92.9	84.5					
440-97211-2	Trip Blank	95.6	84.1					
480-73271-AA-5-B DU	Duplicate	89.4	86.4					
LCS 160-164779/2-A	Lab Control Sample	94.7	84.1					
MB 160-164779/1-A	Method Blank	89.7	88.6					

Tracer/Carrier Legend

Ba = Ba Carrier

Y = Y Carrier

Method: 905 - Strontium-90 (GFPC)

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

		Percent Yield (Acceptance Limits)						
		Sr (C)	Y					
Lab Sample ID	Client Sample ID	(40-110)	(40-110)					
440-96594-A-2-G DU	Duplicate	88.2	90.8					
440-97211-1	Outfall009_20141217_Comp	86.6	92.7					
440-97211-2	Trip Blank	76.1	94.2					
LCS 160-165620/2-A	Lab Control Sample	88.6	92.7					
MB 160-165620/1-A	Method Blank	90.0	89.3					

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)						
		U-232						
Lab Sample ID	Client Sample ID	(30-110)						
440-97211-2 DU	Trip Blank	31.1						
LCS 160-165361/2-A	Lab Control Sample	83.7						
MB 160-165361/1-A	Method Blank	87.1						

Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Grab

TestAmerica Job ID: 440-97027-1

Tracer/Carrier Legend

U-232 = Uranium-232

DATA VALIDATION REPORT

Haley & Aldrich Boeing SSFL Stormwater

SAMPLE DELIVERY GROUP: 440-93180-1

Prepared by

MEC^X
12269 East Vassar Drive
Aurora, CO 80014

I. INTRODUCTION

Task Order Title:	Haley & Aldrich Boeing SSFL Stormwater
Contract Task Order:	1272.003H.01 001
Sample Delivery Group:	440-93180-1
Project Manager:	K. Miller
Matrix:	Water
QC Level:	IV
No. of Samples:	1
No. of Reanalyses/Dilutions:	0
Laboratory:	TestAmerica Irvine

Table 1. Sample Identification

Sample Name	*Lab Sample Name*	*Sub-Lab Sample Name*	*Matrix*	*Collection*	*Method*
ArroyoSimi_20141113	440-93180-1	N/A	Water	11/13/2014 8:20:00 AM	SM2340

II. Sample Management

No anomalies were observed regarding sample management. The sample in this SDG was received at the laboratory on ice and within the temperature limits of 4°C ±2°C. According to the case narrative for this SDG, the sample container was received intact and properly preserved, as applicable. The COC was appropriately signed and dated by field and laboratory personnel. Custody seals were intact.

The sample ID listed on the COC was ArroyoSimi_2014. A revised COC, dated 12/11/2014, accounted for the ID change.

Data Qualifier Reference Table

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. The associated value is the quantitation limit or the estimated detection limit for dioxins or PCB congeners.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit. The associated value is the sample detection limit or the quantitation limit for perchlorate only.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
J+	Not applicable	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample, and may have a potential positive bias.
J-	Not applicable	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample, and may have a potential negative bias.
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be 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.

Qualifier	Organics	Inorganics
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.

Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D was noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination as indicated by the preparation (method) blank results.	Presumed contamination as indicated by the preparation (method) or calibration blank results.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
L1	LCS/LCSD RPD was outside control limits.	LSC/LSCD RPD was outside control limits.
Q	MS/MSD recovery was poor.	MS recovery was poor.
Q1	MS/MSD RPD was outside control limits.	MS/MSD RPD was outside control limits.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	Not applicable.
T	Presumed contamination as indicated by the trip blank results.	Not applicable.
+	False positive – reported compound was not present.	Not applicable.
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination as indicated by the FB or ER results.	Presumed contamination as indicated by the FB or ER results.
$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.

Qualifier	Organics	Inorganics
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within 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	Unusual problems found with the data that have been 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.	Unusual problems found with the data that have been 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

A. EPA METHOD SM2340B—Hardness

Reviewed By: P. Meeks
Date Reviewed: December 10, 2014

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

- Holding Times: The analytical holding time, six months, was met.

- Calibration: The ICV and CCV recoveries were within the control limits of 90-110%. The CRI recoveries were within the control limits of 70-130%.

- Blanks: The method blank and CCBs had no detects affecting sample results.

- Interference Check Samples: Recoveries were within 80-120%.

- Blank Spikes and Laboratory Control Samples: The recoveries were within the laboratory control limits of 85-115%.

- Laboratory Duplicates: No laboratory duplicate analyses were performed on the sample in this SDG.

- Matrix Spike/Matrix Spike Duplicate: MS/MSD analyses were performed on the sample in this SDG for calcium and magnesium. As the sample results were more than 4× the spike amount, the results were not assessed.

- Serial Dilution: No serial dilution analyses were performed on the sample in this SDG.

- 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.

- 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.

Following are findings associated with field QC samples:

- Field Blanks and Equipment Rinsates: This SDG had no identified field blank or equipment rinsate samples.

- Field Duplicates: There were no field duplicate samples identified for this SDG.

Validated Sample Result Forms: 440931801

Analysis Method SM2340

Sample Name ArroyoSimi_20141113 **Matrix Type:** WM **Result Type:** TRG

Sample Date: 11/13/2014 8:20:00 AM **Validation Level:** 3

Lab Sample Name: 440-93180-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Hardness as CaCO3	T	HARDNESSCACO3	710	0.33	0.17	mg/L			

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: 440-93180-1
Client Project/Site: Boeing SSFL outfalls

For:
Haley & Aldrich, Inc.
5333 Mission Center Road
Suite 300
San Diego, California 92108

Attn: Nancy Gardiner

Debby Wilson

Authorized for release by:
11/28/2014 3:47:05 PM

Debby Wilson, Manager of Project Management
(949)261-1022
debby.wilson@testamericainc.com

Table of Contents

Sample Summary

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

TestAmerica Job ID: 440-93180-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-93180-1	ArroyoSimi_20141113	Water	11/13/14 08:20	11/13/14 12:15

Job ID: 440-93180-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-93180-1

Comments
No additional comments.

Receipt
The sample was received on 11/13/2014 12:15 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.

GC/MS Semi VOA
Method(s) 525.2: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD/DUP) associated with batch 218473. 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.

GC Semi VOA
Method(s) 608: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with batch 218074 and 218586. (LCS 440-218586/4-A)The laboratory control sample (LCS) was performed in duplicate to provide precision data for this batch.

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

Metals
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.

Client Sample ID: ArroyoSimi_20141113
Date Collected: 11/13/14 08:20
Date Received: 11/13/14 12:15

Lab Sample ID: 440-93180-1
Matrix: Water

Method: 525.2 - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlorpyrifos	ND		0.98	0.49	ug/L		11/13/14 14:32	11/13/14 23:09	1
Diazinon	ND		0.24	0.12	ug/L		11/13/14 14:32	11/13/14 23:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,3-Dimethyl-2-nitrobenzene	*101*		*70 - 130*	*11/13/14 14:32*	*11/13/14 23:09*	*1*
Perylene-d12	*96*		*70 - 130*	*11/13/14 14:32*	*11/13/14 23:09*	*1*
Triphenylphosphate	*120*		*70 - 130*	*11/13/14 14:32*	*11/13/14 23:09*	*1*

Method: 608 - Organochlorine Pesticides in Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlordane (technical)	ND		0.087	0.070	ug/L		11/14/14 09:49	11/14/14 20:44	1
Dieldrin	ND		0.0043	0.0017	ug/L		11/14/14 09:49	11/14/14 20:44	1
Toxaphene	ND		0.43	0.22	ug/L		11/14/14 09:49	11/14/14 20:44	1
4,4'-DDD	ND		0.0043	0.0035	ug/L		11/14/14 09:49	11/14/14 20:44	1
4,4'-DDE	ND		0.0043	0.0026	ug/L		11/14/14 09:49	11/14/14 20:44	1
4,4'-DDT	ND		0.0087	0.0035	ug/L		11/14/14 09:49	11/14/14 20:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*50*		*10 - 139*	*11/14/14 09:49*	*11/14/14 20:44*	*1*

Method: 608 - Polychlorinated Biphenyls (PCBs) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor 1016	ND		0.43	0.22	ug/L		11/14/14 09:49	11/14/14 15:38	1
Aroclor 1221	ND		0.43	0.22	ug/L		11/14/14 09:49	11/14/14 15:38	1
Aroclor 1232	ND		0.43	0.22	ug/L		11/14/14 09:49	11/14/14 15:38	1
Aroclor 1242	ND		0.43	0.22	ug/L		11/14/14 09:49	11/14/14 15:38	1
Aroclor 1248	ND		0.43	0.22	ug/L		11/14/14 09:49	11/14/14 15:38	1
Aroclor 1254	ND		0.43	0.22	ug/L		11/14/14 09:49	11/14/14 15:38	1
Aroclor 1260	ND		0.43	0.22	ug/L		11/14/14 09:49	11/14/14 15:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl (Surr)	*51*		*29 - 115*	*11/14/14 09:49*	*11/14/14 15:38*	*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	**710**		0.33	0.17	mg/L			11/24/14 10:04	1

Method Summary

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

TestAmerica Job ID: 440-93180-1

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
SM 2340B	Total Hardness (as CaCO3) by calculation	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

Lab Chronicle

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

TestAmerica Job ID: 440-93180-1

Client Sample ID: ArroyoSimi_20141113
Date Collected: 11/13/14 08:20
Date Received: 11/13/14 12:15

Lab Sample ID: 440-93180-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	525.2			1025 mL	1 mL	218399	11/13/14 14:32	CN	TAL IRV
Total/NA	Analysis	525.2		1	1025 mL	1 mL	218473	11/13/14 23:09	CN	TAL IRV
Total/NA	Prep	608			1150 mL	2 mL	218586	11/14/14 09:49	AP	TAL IRV
Total/NA	Analysis	608		1	1150 mL	2 mL	218656	11/14/14 20:44	JM	TAL IRV
Total/NA	Prep	608			1150 mL	2 mL	218586	11/14/14 09:49	AP	TAL IRV
Total/NA	Analysis	608		1	1150 mL	2 mL	218306	11/14/14 15:38	JM	TAL IRV
Total Recoverable	Analysis	SM 2340B		1			215947	11/24/14 10:04	DT	TAL IRV

Laboratory References:

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

Method: 525.2 - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-218399/1-A
Matrix: Water
Analysis Batch: 218473

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 218399

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlorpyrifos	ND		1.0	0.50	ug/L		11/13/14 14:32	11/13/14 21:19	1
Diazinon	ND		0.25	0.12	ug/L		11/13/14 14:32	11/13/14 21:19	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,3-Dimethyl-2-nitrobenzene	*95*		*70 - 130*	*11/13/14 14:32*	*11/13/14 21:19*	*1*
Perylene-d12	*94*		*70 - 130*	*11/13/14 14:32*	*11/13/14 21:19*	*1*
Triphenylphosphate	*109*		*70 - 130*	*11/13/14 14:32*	*11/13/14 21:19*	*1*

Lab Sample ID: LCS 440-218399/2-A
Matrix: Water
Analysis Batch: 218473

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 218399

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Chlorpyrifos			5.00	5.62		ug/L		112	70 - 130		
Diazinon			5.00	4.65		ug/L		93	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,3-Dimethyl-2-nitrobenzene	*100*		*70 - 130*
Perylene-d12	*101*		*70 - 130*
Triphenylphosphate	*112*		*70 - 130*

Lab Sample ID: LCSD 440-218399/3-A
Matrix: Water
Analysis Batch: 218473

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 218399

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chlorpyrifos			5.00	5.55		ug/L		111	70 - 130	1	30
Diazinon			5.00	3.83		ug/L		77	70 - 130	20	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,3-Dimethyl-2-nitrobenzene	*98*		*70 - 130*
Perylene-d12	*99*		*70 - 130*
Triphenylphosphate	*113*		*70 - 130*

Method: 608 - Organochlorine Pesticides in Water

Lab Sample ID: MB 440-218586/1-A
Matrix: Water
Analysis Batch: 218656

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 218586

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlordane (technical)	ND		0.10	0.080	ug/L		11/14/14 09:49	11/14/14 18:26	1
Dieldrin	ND		0.0050	0.0020	ug/L		11/14/14 09:49	11/14/14 18:26	1
Toxaphene	ND		0.50	0.25	ug/L		11/14/14 09:49	11/14/14 18:26	1
4,4'-DDD	ND		0.0050	0.0040	ug/L		11/14/14 09:49	11/14/14 18:26	1
4,4'-DDE	ND		0.0050	0.0030	ug/L		11/14/14 09:49	11/14/14 18:26	1
4,4'-DDT	ND		0.010	0.0040	ug/L		11/14/14 09:49	11/14/14 18:26	1

Method: 608 - Organochlorine Pesticides in Water (Continued)

Lab Sample ID: MB 440-218586/1-A
Matrix: Water
Analysis Batch: 218656

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 218586

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	56		10 - 139	11/14/14 09:49	11/14/14 18:26	1

Lab Sample ID: LCS 440-218586/2-A
Matrix: Water
Analysis Batch: 218656

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 218586

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Dieldrin			0.250	0.155		ug/L		62	32 - 139		
4,4'-DDD			0.250	0.157		ug/L		63	37 - 142		
4,4'-DDE			0.250	0.147		ug/L		59	33 - 139		
4,4'-DDT			0.250	0.161		ug/L		64	36 - 145		

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Tetrachloro-m-xylene	49		10 - 139

Lab Sample ID: LCSD 440-218586/3-A
Matrix: Water
Analysis Batch: 218656

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 218586

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Dieldrin			0.250	0.160		ug/L		64	32 - 139	3	35
4,4'-DDD			0.250	0.163		ug/L		65	37 - 142	0	35
4,4'-DDE			0.250	0.152		ug/L		61	33 - 139	1	35
4,4'-DDT			0.250	0.167		ug/L		67	36 - 145	5	35

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
Tetrachloro-m-xylene	52		10 - 139

Method: 608 - Polychlorinated Biphenyls (PCBs) (GC)

Lab Sample ID: MB 440-218586/1-A
Matrix: Water
Analysis Batch: 218306

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 218586

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor 1016	ND		0.50	0.25	ug/L		11/14/14 09:49	11/14/14 14:31	1
Aroclor 1221	ND		0.50	0.25	ug/L		11/14/14 09:49	11/14/14 14:31	1
Aroclor 1232	ND		0.50	0.25	ug/L		11/14/14 09:49	11/14/14 14:31	1
Aroclor 1242	ND		0.50	0.25	ug/L		11/14/14 09:49	11/14/14 14:31	1
Aroclor 1248	ND		0.50	0.25	ug/L		11/14/14 09:49	11/14/14 14:31	1
Aroclor 1254	ND		0.50	0.25	ug/L		11/14/14 09:49	11/14/14 14:31	1
Aroclor 1260	ND		0.50	0.25	ug/L		11/14/14 09:49	11/14/14 14:31	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl (Surr)	62		29 - 115	11/14/14 09:49	11/14/14 14:31	1

Method: 608 - Polychlorinated Biphenyls (PCBs) (GC) (Continued)

Lab Sample ID: LCS 440-218586/4-A
Matrix: Water
Analysis Batch: 218306

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 218586

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Aroclor 1016			4.00	2.50		ug/L		63	39 - 145		
Aroclor 1260			4.00	2.54		ug/L		64	37 - 137		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
DCB Decachlorobiphenyl (Surr)	*61*		*29 - 115*

Lab Sample ID: LCSD 440-218586/5-A
Matrix: Water
Analysis Batch: 218306

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 218586

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aroclor 1016			4.00	2.53		ug/L		63	39 - 145	1	30
Aroclor 1260			4.00	2.56		ug/L		64	37 - 137	1	25

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
DCB Decachlorobiphenyl (Surr)	*60*		*29 - 115*

GC/MS Semi VOA

Prep Batch: 218399

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-93180-1	ArroyoSimi_20141113	Total/NA	Water	525.2	
LCS 440-218399/2-A	Lab Control Sample	Total/NA	Water	525.2	
LCSD 440-218399/3-A	Lab Control Sample Dup	Total/NA	Water	525.2	
MB 440-218399/1-A	Method Blank	Total/NA	Water	525.2	

Analysis Batch: 218473

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-93180-1	ArroyoSimi_20141113	Total/NA	Water	525.2	218399
LCS 440-218399/2-A	Lab Control Sample	Total/NA	Water	525.2	218399
LCSD 440-218399/3-A	Lab Control Sample Dup	Total/NA	Water	525.2	218399
MB 440-218399/1-A	Method Blank	Total/NA	Water	525.2	218399

GC Semi VOA

Analysis Batch: 218306

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-93180-1	ArroyoSimi_20141113	Total/NA	Water	608	218586
LCS 440-218586/4-A	Lab Control Sample	Total/NA	Water	608	218586
LCSD 440-218586/5-A	Lab Control Sample Dup	Total/NA	Water	608	218586
MB 440-218586/1-A	Method Blank	Total/NA	Water	608	218586

Prep Batch: 218586

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-93180-1	ArroyoSimi_20141113	Total/NA	Water	608	
LCS 440-218586/2-A	Lab Control Sample	Total/NA	Water	608	
LCS 440-218586/4-A	Lab Control Sample	Total/NA	Water	608	
LCSD 440-218586/3-A	Lab Control Sample Dup	Total/NA	Water	608	
LCSD 440-218586/5-A	Lab Control Sample Dup	Total/NA	Water	608	
MB 440-218586/1-A	Method Blank	Total/NA	Water	608	

Analysis Batch: 218656

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-93180-1	ArroyoSimi_20141113	Total/NA	Water	608	218586
LCS 440-218586/2-A	Lab Control Sample	Total/NA	Water	608	218586
LCSD 440-218586/3-A	Lab Control Sample Dup	Total/NA	Water	608	218586
MB 440-218586/1-A	Method Blank	Total/NA	Water	608	218586

Metals

Analysis Batch: 215947

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-93180-1	ArroyoSimi_20141113	Total Recoverable	Water	SM 2340B	

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: Boeing SSFL outfalls

TestAmerica Job ID: 440-93180-1

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	06-30-15
Arizona	State Program	9	AZ0671	10-13-15
California	LA Cty Sanitation Districts	9	10256	01-31-15
California	State Program	9	2706	06-30-16
Guam	State Program	9	Cert. No. 12.002r	01-23-15
Hawaii	State Program	9	N/A	01-29-15 *
Nevada	State Program	9	CA015312007A	07-31-15
New Mexico	State Program	6	N/A	01-29-15
Northern Mariana Islands	State Program	9	MP0002	01-29-15
Oregon	NELAP	10	4005	01-29-15
USDA	Federal		P330-09-00080	06-06-15
USEPA UCMR	Federal	1	CA01531	01-31-15

* Certification renewal pending - certification considered valid.

CHAIN OF CUSTODY FORM

Client Name/Address:
Haley & Aldrich
9040 Friars Road Suite 220
San Diego, CA 92108-5860

Test America Contact: Debby Wilson

Project:
Boeing-SSFL NPDES
Quarterly Arroyo Simi-Frontier Park

Project Manager: Nancy Gardiner

Phone Number:

Sampler:
Shelby Dawsiel
Daniel Ear

Field Manager: Jeff Bannon
818.350.7340, 818.414.5608(cell)

ANALYSIS REQUIRED

Sample Description	Sample Matrix	Container Type	# of Cont.	Sample I.D.	Sampling Date/Time	Preservative	Bottle #	Hardness as CaCO3	PCBs (608)	Chlorpyrifos, Diazinon (525.2)	Chlordane, Dieldrin, Toxaphene (608), 4,4-DDD, 4,4-DDE, 4,4-DDT			
Arroyo Simi	W	1L Poly	1	ArroyoSimi_2014	11/13/14 0920	HNO_3	1	X						
Arroyo Simi	W	1L Amber	2			None	2A, 2B		X					
Arroyo Simi	W	1L Amber	2			HCl	3A, 3B			X				
Arroyo Simi	W	1L Amber	2			None	4A, 4B				X			

Field Readings | Meter serial #

Field readings: (Include units)
Time of readings 0820
pH 6.91 pH unit
Temp 13.57 °C/°F
Velocity 0.0 ft/sec

Field readings QC
Checked by: SD / DE
Date/Time: 11/13/14 0820

Comments

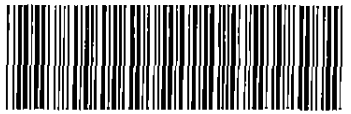
Relinquished By	Date/Time	Received By	Date/Time
Daniel Ear	11/13/14 1015	Latif	11/13/14 10:16
Latif	11/13/14 12:15		
		Felicia Isaacson	11/13/14 12:15

Turn-around time: (Check)
24 Hour: ____ 72 Hour: ____ 10 Day: ____
48 Hour: ____ 5 Day: ____ Normal: X

Sample Integrity: (Check)
Intact: ____ On Ice: ✓

Data Requirements: (Check)
No Level IV: ____ All Level IV: ____ NPDES Level IV: ____

IR-64 3.2/2.4°C



440-93180 Chain of Custody

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-93180-1

Login Number: 93180

List Source: TestAmerica Irvine

List Number: 1

Creator: Gonzales, Steve

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

Haley & Aldrich Boeing SSFL Stormwater

SAMPLE DELIVERY GROUP: 440-94939-1

Prepared by

MEC^X
12269 East Vassar Drive
Aurora, CO 80014

I. INTRODUCTION

Task Order Title:	Haley & Aldrich Boeing SSFL Stormwater
Contract Task Order:	1272.003H.01 001
Sample Delivery Group:	440-94939-1
Project Manager:	K. Miller
Matrix:	Water
QC Level:	IV
No. of Samples:	1
No. of Reanalyses/Dilutions:	0
Laboratory:	TestAmerica Irvine

Table 1. Sample Identification

Sample Name	*Lab Sample Name*	*Sub-Lab Sample Name*	*Matrix*	*Collection*	*Method*
ArroyoSimi_20141203	440-94939-1	N/A	Water	12/3/2014 8:50:00 AM	SM2340

II. Sample Management

No anomalies were observed regarding sample management. The sample in this SDG was received at the laboratory on ice and within the temperature limits of 4°C ±2°C. According to the case narrative for this SDG, the sample container was received intact and properly preserved. The COC was appropriately signed and dated by field and laboratory personnel. Custody seals were intact.

Data Qualifier Reference Table

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. The associated value is the quantitation limit or the estimated detection limit for dioxins or PCB congeners.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit. The associated value is the sample detection limit or the quantitation limit for perchlorate only.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
J+	Not applicable	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample, and may have a potential positive bias.
J-	Not applicable	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample, and may have a potential negative bias.
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be 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.

Qualifier	Organics	Inorganics
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.

Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D was noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination as indicated by the preparation (method) blank results.	Presumed contamination as indicated by the preparation (method) or calibration blank results.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
L1	LCS/LCSD RPD was outside control limits.	LSC/LSCD RPD was outside control limits.
Q	MS/MSD recovery was poor.	MS recovery was poor.
Q1	MS/MSD RPD was outside control limits.	MS/MSD RPD was outside control limits.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	ICPMS tune was not compliant.
T	Presumed contamination as indicated by the trip blank results.	Not applicable.
+	False positive – reported compound was not present.	Not applicable.
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination as indicated by the FB or ER results.	Presumed contamination as indicated by the FB or ER results.
$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.

Qualifier	Organics	Inorganics
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within 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	Unusual problems found with the data that have been 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.	Unusual problems found with the data that have been 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

A. EPA METHOD SM2340B—Hardness

Reviewed By: P. Meeks
Date Reviewed: January 9, 2015

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

- Holding Times: The analytical holding time, six months, was met.

- Calibration: The ICV and CCV recoveries were within the control limits of 90-110%. The CRI recoveries were within the control limits of 70-130%.

- Blanks: The method blank and CCBs had no detects affecting sample results.

- Interference Check Samples: Recoveries were within 80-120%.

- Blank Spikes and Laboratory Control Samples: The recoveries were within the laboratory control limits of 85-115%.

- Laboratory Duplicates: No laboratory duplicate analyses were performed on the sample in this SDG.

- Matrix Spike/Matrix Spike Duplicate: MS/MSD analyses were performed on the sample in this SDG for calcium and magnesium. As the sample results were more than 4× the spike amount, the results were not assessed.

- Serial Dilution: No serial dilution analyses were performed on the sample in this SDG.

- 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.

- 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.

Following are findings associated with field QC samples:

- Field Blanks and Equipment Rinsates: This SDG had no identified field blank or equipment rinsate samples.

- Field Duplicates: There were no field duplicate samples identified for this SDG.

Validated Sample Result Forms: 440949391

Analysis Method SM2340

Sample Name ArroyoSimi_20141203 **Matrix Type:** WM **Result Type:** TRG

Sample Date: 12/3/2014 8:50:00 AM **Validation Level:** 3

Lab Sample Name: 440-94939-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Hardness as CaCO3	N	HARDNESSCACO3	220	0.33	0.17	mg/L			

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: 440-94939-1

Client Project/Site: Boeing SSFL NPDES Arroyo Simi-Frontier

For:

Haley & Aldrich, Inc.
5333 Mission Center Road
Suite 300
San Diego, California 92108

Attn: Nancy Gardiner

Debby Wilson

Authorized for release by:
12/17/2014 2:32:43 PM

Debby Wilson, Manager of Project Management
(949)261-1022
debby.wilson@testamericainc.com

Table of Contents

Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing SSFL NPDES Arroyo Simi-Frontier

TestAmerica Job ID: 440-94939-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-94939-1	ArroyoSimi_20141203	Water	12/03/14 08:50	12/03/14 21:00

Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Boeing SSFL NPDES Arroyo Simi-Frontier

TestAmerica Job ID: 440-94939-1

Job ID: 440-94939-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-94939-1

Comments
No additional comments.

Receipt
The sample was received on 12/3/2014 9:00 PM; the sample arrived in good condition, properly preserved and, where required, on ice.
The temperature of the cooler at receipt was 3.3º C.

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

Client: Haley & Aldrich, Inc.
Project/Site: Boeing SSFL NPDES Arroyo Simi-Frontier

TestAmerica Job ID: 440-94939-1

Client Sample ID: ArroyoSimi_20141203
Date Collected: 12/03/14 08:50
Date Received: 12/03/14 21:00

Lab Sample ID: 440-94939-1
Matrix: Water

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	220		0.33	0.17	mg/L			12/15/14 16:43	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing SSFL NPDES Arroyo Simi-Frontier

TestAmerica Job ID: 440-94939-1

Method	Method Description	Protocol	Laboratory
SM 2340B	Total Hardness (as CaCO3) by calculation	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: Boeing SSFL NPDES Arroyo Simi-Frontier

TestAmerica Job ID: 440-94939-1

Client Sample ID: ArroyoSimi_20141203
Date Collected: 12/03/14 08:50
Date Received: 12/03/14 21:00

Lab Sample ID: 440-94939-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Analysis	SM 2340B		1			221687	12/15/14 16:43	DT	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 SSFL NPDES Arroyo Simi-Frontier

TestAmerica Job ID: 440-94939-1

Metals

Analysis Batch: 221687

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-94939-1	ArroyoSimi_20141203	Total Recoverable	Water	SM 2340B	

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: Boeing SSFL NPDES Arroyo Simi-Frontier

TestAmerica Job ID: 440-94939-1

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	06-30-15
Arizona	State Program	9	AZ0671	10-13-15
California	LA Cty Sanitation Districts	9	10256	01-31-15
California	State Program	9	2706	06-30-16
Guam	State Program	9	Cert. No. 12.002r	01-23-15
Hawaii	State Program	9	N/A	01-29-15 *
Nevada	State Program	9	CA015312007A	07-31-15
New Mexico	State Program	6	N/A	01-29-15
Northern Mariana Islands	State Program	9	MP0002	01-29-15
Oregon	NELAP	10	4005	01-29-15
USDA	Federal		P330-09-00080	06-06-15
USEPA UCMR	Federal	1	CA01531	01-31-15

* Certification renewal pending - certification considered valid.

Project:
loeing-SSFL NPDES
rroyo Simi-Frontier Park (Footnote 2 E-26 with effluent)

Phone Number:

ield Manager: Jeff Bannon
18.350.7340, 818.414.5608(cell)

ANALYSIS REQUIRED

Sample I.D	Sampling Date/Time	Preservative	Bottle #	Hardness as CaCO3						
royoSimi_2014 1203	12/3/14 0850	HNO_3	1	X						

Field Readings | Meter serial #

Field readings: (Include units) pH
Time of readings 0950 0850

pH 6.74 pH unit

Velocity 0.1 ft/sec

ULJOUVKT

ZF 12 10-14

Field readings QC
Checked by:
Date/Time: 12-3-14/0955

Comments

Footnote 2 page E-26 of the permit states only pH and hardness must be collected at the same time as effluent samples. Velocity was added for informational purposes.

12/3/14 14:55

12/3/14 21:00

Received By: Date/Time: 12/3/14 1455

Received By: Date/Time: 12/03/14 2100

Received By: Date/Time

Turn-around time (Check)
24 Hour: ___ 72 Hour: ___ 10 Day: ___
48 Hour: ___ 5 Day: ___ Normal: ___

Sample Integrity: (Check)
Intact: ✓ On Ice: ___

4.1/3.3°C IR-64

Data Requirements: (Check)
No Level IV: ___ All Level IV ___ NPDES Level IV ___

nge sample ID to ArroyoSimi_20141203 ZF 12/11/14

440-94939 Chain of Custody

CHAIN OF CUSTODY FORM

Client Name/Address:
Haley & Aldrich
9040 Friars Road Suite 220
San Diego, CA 92108-5860

Test America Contact: Debby Wilson

Project:
Boeing-SSFL NPDES
Arroyo Simi-Frontier Park (Footnote 2 E-26 with effluent)

Project Manager: Nancy Gardiner

Phone Number:

Sampler: D. Eal
B. Benson

Field Manager: Jeff Bannon
818.350.7340, 818.414.5608(cell)

ANALYSIS REQUIRED

Field Readings | Meter serial #

Field readings: (Include units) DO
Time of readings 0950 0850
pH 6.74 pH unit
Velocity 0.1 ft/sec

Field readings QC
Checked by:
Date/Time: 12-3-14/0855

Sample Description	Sample Matrix	Container Type	# of Cont.	Sample I.D	Sampling Date/Time	Preservative	Bottle #	Hardness as CaCO3
Arroyo Simi	W	1L Poly	1	ArroyoSimi_2014	12/2/14 0850	HNO_3	1	X

Comments

Footnote 2 page E-26 of the permit states only pH and hardness must be collected at the same time as effluent samples. Velocity was added for informational purposes.

Relinquished By: Daniel Eal — Date/Time: 12/3/14 14:55
Received By: Latif — Date/Time: 12/3/14 1455

Relinquished By: Latif — Date/Time: 12/3/14 21:00
Received By: [illegible] — Date/Time: 12/03/14 2100

Relinquished By — Date/Time:
Received By — Date/Time

Turn-around time: (Check)
24 Hour: ___ 72 Hour: ___ 10 Day: ___
48 Hour: ___ 5 Day: ___ Normal: ___

Sample Integrity: (Check) ✓
Intact: ✓ On Ice: ___

4.1 / 3.3°C IR-64

Data Requirements: (Check)
No Level IV: ___ All Level IV ___ NPDES Level IV ___

440-94939 Chain of Custody

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-94939-1

Login Number: 94939

List Source: TestAmerica Irvine

List Number: 1

Creator: Blocker, Kristina M

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

Haley & Aldrich Boeing SSFL Stormwater

SAMPLE DELIVERY GROUP: 440-96485-1

Prepared by

MEC^X
12269 East Vassar Drive
Aurora, CO 80014

I. INTRODUCTION

Task Order Title:	Haley & Aldrich Boeing SSFL Stormwater
Contract Task Order:	1272.003H.01 001
Sample Delivery Group:	440-96485-1
Project Manager:	K. Miller
Matrix:	Water
QC Level:	IV
No. of Samples:	1
No. of Reanalyses/Dilutions:	0
Laboratory:	TestAmerica Irvine

Table 1. Sample Identification

Sample Name	*Lab Sample Name*	*Sub-Lab Sample Name*	*Matrix*	*Collection*	*Method*
ArroyoSimi_20141212	440-96485-1	N/A	Water	12/12/2014 1:50:00 PM	SM2340

II. Sample Management

No anomalies were observed regarding sample management. Sample receipt temperatures were noted to be 3.6 and 0.5. As the sample was not noted to be frozen or damaged, no qualification was required. The sample in this SDG was received at the laboratory on ice. According to the case narrative for this SDG, the sample container was received intact and properly preserved. The COC was appropriately signed and dated by field and laboratory personnel. Custody seals were intact.

Data Qualifier Reference Table

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. The associated value is the quantitation limit or the estimated detection limit for dioxins or PCB congeners.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit. The associated value is the sample detection limit or the quantitation limit for perchlorate only.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
J+	Not applicable	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample, and may have a potential positive bias.
J-	Not applicable	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample, and may have a potential negative bias.
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be 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.

Qualifier	Organics	Inorganics
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.

Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D was noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination as indicated by the preparation (method) blank results.	Presumed contamination as indicated by the preparation (method) or calibration blank results.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
L1	LCS/LCSD RPD was outside control limits.	LSC/LSCD RPD was outside control limits.
Q	MS/MSD recovery was poor.	MS recovery was poor.
Q1	MS/MSD RPD was outside control limits.	MS/MSD RPD was outside control limits.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	ICPMS tune was not compliant.
T	Presumed contamination as indicated by the trip blank results.	Not applicable.
+	False positive – reported compound was not present.	Not applicable.
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination as indicated by the FB or ER results.	Presumed contamination as indicated by the FB or ER results.
$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.

Qualifier	Organics	Inorganics
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within 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	Unusual problems found with the data that have been 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.	Unusual problems found with the data that have been 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

A. EPA METHOD SM2340B—Hardness

Reviewed By: P. Meeks
Date Reviewed: January 9, 2015

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

- Holding Times: The analytical holding time, six months, was met.

- Calibration: The ICV and CCV recoveries were within the control limits of 90-110%. The CRI recoveries were within the control limits of 70-130%.

- Blanks: The method blank and CCBs had no detects affecting sample results.

- Interference Check Samples: Recoveries were within 80-120%.

- Blank Spikes and Laboratory Control Samples: The recoveries were within the laboratory control limits of 85-115%.

- Laboratory Duplicates: No laboratory duplicate analyses were performed on the sample in this SDG.

- Matrix Spike/Matrix Spike Duplicate: No MS/MSD analyses were performed on the sample in this SDG. Method accuracy was assessed based on the LCS results.

- Serial Dilution: No serial dilution analyses were performed on the sample in this SDG.

- 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.

- 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. Following are findings associated with field QC samples:

- Field Blanks and Equipment Rinsates: This SDG had no identified field blank or equipment rinsate samples.

- Field Duplicates: There were no field duplicate samples identified for this SDG.

Validated Sample Result Forms: 440964851

Analysis Method SM2340

Sample Name ArroyoSimi_20141212 **Matrix Type:** WM **Result Type:** TRG

Sample Date: 12/12/2014 1:50:00 PM **Validation Level:** 3

Lab Sample Name: 440-96485-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Hardness as CaCO3	N	HARDNESSCACO3	290	0.33	0.17	mg/L			

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: 440-96485-1
Client Project/Site: Boeing SSFL NPDES Arroyo Simi-Frontier

For:
Haley & Aldrich, Inc.
5333 Mission Center Road
Suite 300
San Diego, California 92108

Attn: Nancy Gardiner

Debby Wilson

Authorized for release by:
12/24/2014 9:07:48 AM

Debby Wilson, Manager of Project Management
(949)261-1022
debby.wilson@testamericainc.com

Table of Contents

Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing SSFL NPDES Arroyo Simi-Frontier

TestAmerica Job ID: 440-96485-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-96485-1	ArroyoSimi_20141212	Water	12/12/14 13:50	12/12/14 16:39

Job ID: 440-96485-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-96485-1

Comments
No additional comments.

Receipt
The samples were received on 12/12/2014 4:39 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 0.5º C and 3.6º C.

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

Client: Haley & Aldrich, Inc.
Project/Site: Boeing SSFL NPDES Arroyo Simi-Frontier

TestAmerica Job ID: 440-96485-1

Client Sample ID: ArroyoSimi_20141212
Date Collected: 12/12/14 13:50
Date Received: 12/12/14 16:39

Lab Sample ID: 440-96485-1
Matrix: Water

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	290		0.33	0.17	mg/L			12/23/14 13:24	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing SSFL NPDES Arroyo Simi-Frontier

TestAmerica Job ID: 440-96485-1

Method	Method Description	Protocol	Laboratory
SM 2340B	Total Hardness (as CaCO3) by calculation	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: Boeing SSFL NPDES Arroyo Simi-Frontier

TestAmerica Job ID: 440-96485-1

Client Sample ID: ArroyoSimi_20141212
Date Collected: 12/12/14 13:50
Date Received: 12/12/14 16:39

Lab Sample ID: 440-96485-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Analysis	SM 2340B		1			221687	12/23/14 13:24	DT	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 SSFL NPDES Arroyo Simi-Frontier

TestAmerica Job ID: 440-96485-1

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: MB 440-225839/1-A
Matrix: Water
Analysis Batch: 226193

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 225839

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	ND		0.10	0.050	mg/L		12/19/14 14:09	12/22/14 11:50	1
Magnesium	ND		0.020	0.010	mg/L		12/19/14 14:09	12/22/14 11:50	1

Lab Sample ID: LCS 440-225839/2-A
Matrix: Water
Analysis Batch: 226193

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 225839

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Calcium	2.50	2.36		mg/L		95	85 - 115
Magnesium	2.50	2.38		mg/L		95	85 - 115

Lab Sample ID: 440-96219-G-2-B MS
Matrix: Water
Analysis Batch: 226193

Client Sample ID: Matrix Spike
Prep Type: Total Recoverable
Prep Batch: 225839

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Calcium	52		2.50	54.2	BB	mg/L		104	70 - 130
Magnesium	8.9		2.50	11.4		mg/L		101	70 - 130

Lab Sample ID: 440-96219-G-2-C MSD
Matrix: Water
Analysis Batch: 226193

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total Recoverable
Prep Batch: 225839

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Calcium	52		2.50	54.4	BB	mg/L		113	70 - 130	0	20
Magnesium	8.9		2.50	11.2		mg/L		95	70 - 130	1	20

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing SSFL NPDES Arroyo Simi-Frontier

TestAmerica Job ID: 440-96485-1

Metals

Analysis Batch: 221687

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-96485-1	ArroyoSimi_20141212	Total Recoverable	Water	SM 2340B	

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: Boeing SSFL NPDES Arroyo Simi-Frontier

TestAmerica Job ID: 440-96485-1

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	06-30-15
Arizona	State Program	9	AZ0671	10-13-15
California	LA Cty Sanitation Districts	9	10256	01-31-15
California	State Program	9	2706	06-30-16
Guam	State Program	9	Cert. No. 12.002r	01-23-15
Hawaii	State Program	9	N/A	01-29-15 *
Nevada	State Program	9	CA015312007A	07-31-15
New Mexico	State Program	6	N/A	01-29-15
Northern Mariana Islands	State Program	9	MP0002	01-29-15
Oregon	NELAP	10	4005	01-29-15
USDA	Federal		P330-09-00080	06-06-15
USEPA UCMR	Federal	1	CA01531	01-31-15

* Certification renewal pending - certification considered valid.

Test America Version 1
October 2014

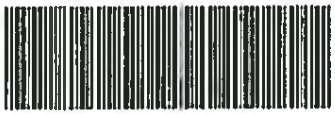
CHAIN OF CUSTODY FORM

Client Name/Address	Project:	ANALYSIS REQUIRED	Field Re
Haley & Aldrich 9040 Friars Road Suite 220 San Diego, CA 92108-5860 Test America Contact: Debby Wilson	Boeing-SSFL NPDES Arroyo Simi-Frontier Park (Footnote 2 E-26 with effluent)	Hardness as CaCO3	Field readings: (Time of readings pH 7.33 Velocity 0. Field readings C Checked by: Date/Time: 12
Project Manager: Nancy Gardiner Sampler: B. Benson D. Ear	Phone Number: Field Manager: Jeff Bannon 818 350 7340, 818 414 5608(cell)		

Sample Description	Sample Matrix	Container Type	# of Cont.	Sample I.D.	Sampling Date/Time	Preservative	Bottle #	Hardness as CaCO3							
Arroyo Simi	W	1L Poly	1	~~Grab~~ ArroyoSimi_2014 12 12 2E 12/12	12/12/14 1350	HNO_3	1	X							Footnote 2 page E-2 collected at the sam informational purpo

Relinquished By	Date/Time	Received By	Date/Time	Temperature Time (Check)
B BENSON	12/12/14 1440	Shahid Nabi	12/12/14 1439	24 Hour ___ 72 Hour ___ 10 Day ___ 48 Hour ___ 5 Day ___ Normal ___
Shahid Nabi	12/12/14 1634		12/12/14	Sample Integrity (Check) Intact ✓ On Ice ✓
Relinquished By	Date/Time	Received By	Date/Time:	Data Reporting Format (Check) Std Level IV ___ All Level IV ___ NPDES Level IV ___

*please remove the word "grab" from the sample ID
It should be:
ArroyoSimi_20141212


440-96485 Chain of Custody

4.4°/3.6 #73
3.3°/0.5

CHAIN OF CUSTODY FORM

Client Name/Address
Haley & Aldrich
9040 Friars Road Suite 220
San Diego, CA 92108-5860

Test America Contact. Debby Wilson

Project:
Boeing-SSFL NPDES
Arroyo Simi-Frontier Park (Footnote 2 E-26 with effluent)

Project Manager. Nancy Gardiner

Phone Number:

Sampler: B. Benson
D. Ear

Field Manager. Jeff Bannon
818 350 7340, 818 414 5608(cell)

ANALYSIS REQUIRED

Sample Description	Sample Matrix	Container Type	# of Cont.	Sample I.D.	Sampling Date/Time	Preservative	Bottle #	Hardness as CaCO3
Arroyo Simi	W	1L Poly	1	ArroyoSimi_2014 ~~1212~~ E-26	12/12/14 1350	HNO_3	1	X

Field Readings | Meter serial #

Field readings: (include units) UH4VAADK

Time of readings 1350

pH 7.30 pH unit

Velocity 0.6 ft/sec

Field readings QC

Checked by:

Date/Time: 12/12/14 1350

Comments

Footnote 2 page E-26 of the permit states only pH and hardness must be collected at the same time as effluent samples. Velocity was added for informational purposes.

Relinquished By	Date/Time	Received By	Date/Time
B Benson	12/12/14 1440	Shahid Nabi	12/12/14 1439
Shahid Nabi	12/12/14 1639		12/12/14
Relinquished By	Date/Time	Received By	Date/Time

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 ___ NPDES Level IV ___

440-96485 Chain of Custody

4-44/36 #73
1-34/05

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-96485-1

Login Number: 96485

List Source: TestAmerica Irvine

List Number: 1

Creator: Blocker, Kristina M

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").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

DATA VALIDATION REPORT

Haley & Aldrich Boeing SSFL Stormwater

SAMPLE DELIVERY GROUP: 440-97153-1

Prepared by

MEC^X
12269 East Vassar Drive
Aurora, CO 80014

I. INTRODUCTION

Task Order Title:	Haley & Aldrich Boeing SSFL Stormwater
Contract Task Order:	1272.003H.01 001
Sample Delivery Group:	440-97153-1
Project Manager:	K. Miller
Matrix:	Water
QC Level:	IV
No. of Samples:	1
No. of Reanalyses/Dilutions:	0
Laboratory:	TestAmerica Irvine

Table 1. Sample Identification

Sample Name	*Lab Sample Name*	*Sub-Lab Sample Name*	*Matrix*	*Collection*	*Method*
ArroyoSimi_20141217	440-97153-1	N/A	Water	12/17/2014 9:45:00 AM	SM2340

II. Sample Management

No anomalies were observed regarding sample management. The sample in this SDG was received at the laboratory on ice below the temperature limits of 4°C ±2°C, at 1°C; however, as the sample was not noted to be frozen or damaged, no qualifications were required. According to the case narrative for this SDG, the sample container was received intact and properly preserved, as applicable. The COC was appropriately signed and dated by field and laboratory personnel. Custody seals were not utilized as the samples were delivered by courier.

Data Qualifier Reference Table

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. The associated value is the quantitation limit or the estimated detection limit for dioxins or PCB congeners.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit. The associated value is the sample detection limit or the quantitation limit for perchlorate only.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The associated value is an estimated quantity.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The data are unusable. The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.

Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D was noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination as indicated by the preparation (method) blank results.	Presumed contamination as indicated by the preparation (method) or calibration blank results.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
L1	LCS/LCSD RPD was outside control limits.	LSC/LSCD RPD was outside control limits.
Q	MS/MSD recovery was poor.	MS recovery was poor.
Q1	MS/MSD RPD was outside control limits.	MS/MSD RPD was outside control limits.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	ICPMS tune was not compliant.
T	Presumed contamination as indicated by the trip blank results.	Not applicable.
+	False positive – reported compound was not present.	Not applicable.
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination as indicated by the FB or ER results.	Presumed contamination as indicated by the FB or ER results.
$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.

Qualifier	Organics	Inorganics
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within 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	Unusual problems found with the data that have been 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.	Unusual problems found with the data that have been 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.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within 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	Unusual problems found with the data that have been 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.	Unusual problems found with the data that have been 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

A. EPA METHOD SM2340B—Hardness

Reviewed By: P. Meeks
Date Reviewed: January 12, 2015

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

- Holding Times: The analytical holding time, six months, was met.
- Calibration: The ICV and CCV recoveries were within the control limits of 90-110%. The CRI recoveries were within the control limits of 70-130%.
- Blanks: The method blank and CCBs had no detects affecting sample results.
- Interference Check Samples: Recoveries were within 80-120%.
- Blank Spikes and Laboratory Control Samples: The recoveries were within the method control limits of 85-115%.
- Laboratory Duplicates: No laboratory duplicate analyses were performed on the sample in this SDG.
- Matrix Spike/Matrix Spike Duplicate: No MS/MSD analyses were performed on the sample in this SDG. Method accuracy was evaluated based on LCS results.
- Serial Dilution: No serial dilution analyses were performed on the sample in this SDG.
- 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.
- 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. Following are findings associated with field QC samples:

- Field Blanks and Equipment Rinsates: This SDG had no identified field blank or equipment rinsate samples.

- Field Duplicates: There were no field duplicate samples identified for this SDG.

Validated Sample Result Forms: 440971531

Analysis Method SM2340

Sample Name ArroyoSimi_20141217 **Matrix Type:** WS **Result Type:** TRG

Sample Date: 12/17/2014 9:45:00 AM **Validation Level:** 3

Lab Sample Name: 440-97153-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Hardness as CaCO3	T	HARDNESSCACO3	280	0.33	0.17	mg/L			

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: 440-97153-1
Client Project/Site: Arroyo Simi-Frontier Park

For:
Haley & Aldrich, Inc.
5333 Mission Center Road
Suite 300
San Diego, California 92108

Attn: Nancy Gardiner

Debby Wilson

Authorized for release by:
1/5/2015 6:41:56 PM

Debby Wilson, Manager of Project Management
(949)261-1022
debby.wilson@testamericainc.com

Table of Contents

Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-97153-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-97153-1	ArroyoSimi_20141217	Water	12/17/14 09:45	12/17/14 13:36

Client: Haley & Aldrich, Inc.
Project/Site: Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-97153-1

Job ID: 440-97153-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-97153-1

Comments
No additional comments.

Receipt
The sample was received on 12/17/2014 1:36 PM; the sample arrived in good condition, properly preserved and, where required, on ice.
The temperature of the cooler at receipt was 1.0º C.

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

Client: Haley & Aldrich, Inc.
Project/Site: Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-97153-1

Client Sample ID: ArroyoSimi_20141217
Date Collected: 12/17/14 09:45
Date Received: 12/17/14 13:36

Lab Sample ID: 440-97153-1
Matrix: Water

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	280		0.33	0.17	mg/L			12/31/14 12:16	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Arroyro Simi-Frontier Park

TestAmerica Job ID: 440-97153-1

Method	Method Description	Protocol	Laboratory
SM 2340B	Total Hardness (as CaCO3) by calculation	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: Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-97153-1

Client Sample ID: ArroyoSimi_20141217
Date Collected: 12/17/14 09:45
Date Received: 12/17/14 13:36

Lab Sample ID: 440-97153-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Analysis	SM 2340B		1			221687	12/31/14 12:16	DT	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: Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-97153-1

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: MB 440-226721/1-A
Matrix: Water
Analysis Batch: 226974

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 226721

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	ND		0.10	0.050	mg/L		12/24/14 10:59	12/24/14 17:12	1
Magnesium	ND		0.020	0.010	mg/L		12/24/14 10:59	12/24/14 17:12	1

Lab Sample ID: LCS 440-226721/2-A
Matrix: Water
Analysis Batch: 226974

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 226721

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Calcium	2.50	2.63		mg/L		105	85 - 115
Magnesium	2.50	2.51		mg/L		100	85 - 115

Lab Sample ID: 440-97240-H-1-B MS
Matrix: Water
Analysis Batch: 226974

Client Sample ID: Matrix Spike
Prep Type: Total Recoverable
Prep Batch: 226721

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Calcium	520		2.50	513	BB	mg/L		-142	70 - 130
Magnesium	260		2.50	248	BB	mg/L		-361	70 - 130

Lab Sample ID: 440-97240-H-1-C MSD
Matrix: Water
Analysis Batch: 226974

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total Recoverable
Prep Batch: 226721

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Calcium	520		2.50	528	BB	mg/L		440	70 - 130	3	20
Magnesium	260		2.50	257	BB	mg/L		-15	70 - 130	3	20

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-97153-1

Metals

Analysis Batch: 221687

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-97153-1	ArroyoSimi_20141217	Total Recoverable	Water	SM 2340B	

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: Arroyro Simi-Frontier Park

TestAmerica Job ID: 440-97153-1

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	06-30-15
Arizona	State Program	9	AZ0671	10-13-15
California	LA Cty Sanitation Districts	9	10256	01-31-15 *
California	State Program	9	2706	06-30-16
Guam	State Program	9	Cert. No. 12.002r	01-23-15 *
Hawaii	State Program	9	N/A	01-29-15 *
Nevada	State Program	9	CA015312007A	07-31-15
New Mexico	State Program	6	N/A	01-29-15 *
Northern Mariana Islands	State Program	9	MP0002	01-29-15 *
Oregon	NELAP	10	4005	01-29-15 *
USDA	Federal		P330-09-00080	06-06-15
USEPA UCMR	Federal	1	CA01531	01-31-15

* Certification renewal pending - certification considered valid.

CHAIN OF CUSTODY FORM

Client Name/Address:
Haley & Aldrich
9040 Friars Road Suite 220
San Diego, CA 92108-5860

Test America Contact: Debby Wilson

Project Manager: Nancy Gardiner

Sampler: B. Benson, D. Ear

Project:
Boeing-SSFL NPDES
Arroyo Simi-Frontier Park (Footnote 2 E-26 with effluent)

Phone Number:

Field Manager: Jeff Bannon
818.350 7340, 818.414 5608(cell)

ANALYSIS REQUIRED

Field Readings — Meter serial #: UH4VAADK
Field readings: (include units)
Time of readings: 0950
pH: 7.18 pH unit
Temp: 10.61 °C/F (°C circled)
Velocity: 0.2 ft/sec

Field readings QC
Checked by: AR ANITRA RICO
Date/Time: 12.17.14 / 0958

Sample Description	Sample Matrix	Container Type	# of Cont.	Sample I D	Sampling Date/Time	Preservative	Bottle #	Hardness as CaCO3							Comments
Arroyo Simi	W	1L Poly	1	ArroyoSimi_20141217_Grab	12/17/14 / 0945	HNO_3	1	X							Footnote 2 page E-26 of the permit states only pH and hardness must be collected at the same time as effluent samples. Velocity was added for informational purposes

Relinquished By	Date/Time	Received By	Date/Time
ANITRA RICO (signature)	12.17.14 / 1030	ShaSQNABI	12-17-14 10:30
ShaSQNABI	12-17-14 / 1356		
		(signature)	12-17-14 13:36

Turn-around time (Check)
24 Hour ___ 72 Hour ___ 10 Day ___
48 Hour ___ 5 Day ___ Normal X

Sample Integrity (Check)
Intact ___ On Ice ___

Data Requirements (Check)
No Level IV ___ All Level IV ___ NPDES Level IV ___

440-97153 Chain of Custody

uTC ShaSQNABT AR

1.3/1.0 IR 73

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

Test America Version 1
October 2014

CHAIN OF CUSTODY FORM

1/5/2015

Client Name/Address:
Haley & Aldrich
9040 Friars Road Suite 220
San Diego, CA 92108-5860

Test America Contact: Debby Wilson

Project:
Boeing-SSFL NPDES
Arroyo Simi-Frontier Park (Footnote 2 E-26 with effluent)

Project Manager: Nancy Gardiner

Phone Number:

Sampler: B. Benson
D. Ear

Field Manager: Jeff Bannon
818.350 7340, 818.414 5608(cell)

ANALYSIS REQUIRED

Sample Description	Sample Matrix	Container Type	# of Cont.	Sample I D	Sampling Date/Time	Preservative	Bottle #	Hardness as CaCO3						
Arroyo Simi	W	1L Poly	1	ArroyoSimi_2014~~12.17~~	12/17/14 0945	HNO_3	1	X						
					12/30/14									

Field Readings | Meter serial #

Field readings: (include units) UH4VAADK

Time of readings 0950

pH 7.18 pH unit

Temp 10.61 °F

Velocity 0.2 ft/sec

Field readings QC

Checked by: ANITRA RAO

Date/Time: 12.17.14 0958

Comments

Footnote 2 page E-26 of the permit states only pH and hardness must be collected at the same time as effluent samples. Velocity was added for informational purposes

Relinquished By ANITRA RAO Date/Time 12.17.14/1030

Received By Stafford ABT Date/Time 12-17-14 10:30

Relinquished By Stafford ABT Date/Time 12-17-14 /1356

Received By Date/Time

Relinquished By Date/Time

Received By Date/Time 12-17-14 13:36

Turn-around time (Check)
24 Hour ___ 72 Hour ___ 10 Day ___
48 Hour ___ 5 Day ___ Normal X

Sample Integrity (Check)
Intact ___ On Ice ___

Data Requirements (Check)
No Level IV ___ All Level IV ___ NPDES Level IV ___

440-97153 Chain of Custody

UTC Stafford ABT

1.3|1.0 X 73

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-97153-1

Login Number: 97153

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.	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	

APPENDIX F

Fourth Quarter 2014 Reasonable Potential Analysis (RPA)
Summary Tables

FIRST QUARTER 2014
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 37, of the NPDES Permit Effective June 3, 2010.

4. In calculating the average, standard deviation, coefficient of variation, and projected maximum effluent concentration (99/99), one-half of the MDL was used for concentration results reported as ND. Data reported with qualifiers 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, 2000). 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.
Annually	The 2010 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

Definition of Acronyms, Abbreviations, and Terminology Used (Continued)

[1] SIP, p. 5.

FIRST QUARTER 2014
REASONABLE POTENTIAL ANALYSIS SUMMARY NOTES
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY
NPDES PERMIT CA0001309

HH O	Human Health criteria for consumption of Organisms only
HH W&O	Human Health criteria for consumption of Water and Organisms
MEC	Maximum Observed Effluent Concentration
Min	Minimum
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.
Once Per Discharge	The 2010 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 2010 NPDES Permit.
MEC	Provides the outfall monitoring group's maximum value from the applicable data set.
CV	Equal to the standard deviation divided by the average of the applicable data set. If the number of samples is less than 10, the CV is assumed to be 0.6.
Step 1 identifies all applicable water quality criteria.	
CTR Criteria	Concentration criteria as listed in the CTR.
CMC = Acute	The Freshwater CMC is listed as the acute concentration criterion.
CCC = Chronic	The Freshwater CCC is listed as the chronic concentration criterion.
HH W&O (Not App)	The HH W&O is deemed not applicable based on past Regional Board RPAs.
HH O = HH	The HH O is listed as the CTR human health concentration criterion.
Basin Plan Criteria	Applicable Basin Plan Criteria are listed for the Los Angeles River and/or Calleguas Creek watersheds.
C = Lowest Criteria	The comparison concentration (C) is equal to the lowest criterion for a constituent based on the CMC, CCC, HH O, and Basin Plan Criteria listed.
Step 2 defines the applicable data set.	
Is Effluent Data Available	If all data is qualified, then NO. If not, then YES.

Priority Pollutant RPA Column Explanation (Continued)

Step 3 determines the maximum observed effluent concentration.

FIRST QUARTER 2014
REASONABLE POTENTIAL ANALYSIS SUMMARY NOTES
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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 DL >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.
Step 4 compares the MEC to the lowest applicable water quality criteria.	
MEC >= C	If the MEC is greater than or equal to the comparison concentration then YES, if not then NO.

Note: Steps 5 and 6 of the Priority Pollutant RPA do not apply to 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 2010 NPDES Permit directed monitoring frequency
Units	Provides the data set's concentration units as referenced by 2009 NPDES Permit
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.
Background Concentration	The Regional Board allocates no background concentration to Boeing SSFL.
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 2014
REASONABLE POTENTIAL ANALYSIS SUMMARY NOTES
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY
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References:

1. Los Angeles Regional Water Quality Control Board, "Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties, (Basin Plan)." June 13, 1994.

2. MWH and Flow Science, "Reasonable Potential Analysis Methodology Technical Memo- Version 1, Final, Santa Susan Field Laboratory, Ventura County, California." April 28, 2006.

3. State Water Resources Control Board, "Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California, (SIP)" Resolution No. 2005-0019, February 24, 2005.

4. US EPA, *40CFR part 131, Water Quality Standards; Establishment of numeric Criteria for Priority Toxic Pollutants for the State of California*,(CTR) Federal Registry, 2011, pp. 496 - 507

5. US EPA, "Technical Support Document for Water Quality-based Toxics Control." EPA/505/2-90-001, PB-91-127415, March 1991.

TABLE F-1
REASONABLE POTENTIAL ANALYSIS - PRIORITY POLLUTANTS (OUTFALLS 001, 002, 011 AND 018)

FOURTH QUARTER 2014 REPORTING SUMMARY
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY
NPDES PERMIT CA0001309

					Step 1: Water Quality Criteria, Determine C						Step 2	Step 3			Step 4
					CTR CRITERIA				Basin Plan	C = Lowest Criteria	Is Effluent Data Available	Was Constituent Detected in Effluent Data	Are all Detection Limits > C	If DL > C, MEC = Min (DL)	MEC >= C
					Freshwater		Human Health								
CTR	Constituent	Units	MEC	CV	CMC = Acute	CCC = Chronic	HH W&O (Not App)	HH O = HH	Title 22 GWR						
001	Antimony	ug/L	Available Data <DL	0.60	NONE	NONE	14	4,300	6	6	Yes	No	No	NA	No
002	Arsenic	ug/L	All Data Qualified	0.60	340	150	NONE	NONE	50	50	No	No	No	NA	No
003	Beryllium	ug/L	Available Data <DL	0.60	NONE	NONE	Narrative	Narrative	4	4	Yes	No	No	NA	No
004	Cadmium	ug/L	Available Data <DL	0.60	4.3	2.2	Narrative	Narrative	5	2.2	Yes	No	No	NA	No
005a	Chromium	ug/L	Available Data <DL	0.60	550	180	Narrative	Narrative	50	50	Yes	No	No	NA	No
005b	Chromium VI	ug/L	Available Data <DL	0.60	16	11	Narrative	Narrative	NONE	11	Yes	No	No	NA	No
006	Copper	ug/L	3.2	0.60	13	9	1,300	NONE	NONE	9	Yes	Yes	NA	NA	No
007	Lead	ug/L	Available Data <DL	0.60	65	2.5	Narrative	Narrative	NONE	2.5	Yes	No	No	NA	No
008	Mercury	ug/L	Available Data <DL	0.60	Reserved	Reserved	0.05	0.051	2	0.051	Yes	No	Yes	0.051	No
009	Nickel	ug/L	Available Data <DL	0.60	470	52	610	4,600	100	52	Yes	No	No	NA	No
010	Selenium	ug/L	Available Data <DL	0.60	Reserved	5	Narrative	Narrative	50	5	Yes	No	No	NA	No
011	Silver	ug/L	Available Data <DL	0.60	3.4	NONE	NONE	NONE	NONE	3.4	Yes	No	No	NA	No
012	Thallium	ug/L	All Data Qualified	0.60	NONE	NONE	1.7	6.3	2	2	No	No	No	NA	No
013	Zinc	ug/L	All Data Qualified	0.60	120	120	NONE	NONE	NONE	120	No	No	No	NA	No
014	Total Cyanide	ug/L	Available Data <DL	0.60	22	5.2	700	220,000	200	5.2	Yes	No	No	NA	No
015	Asbestos	Fibers/L	Not Analyzed	0.60	NONE	NONE	7,000,000	NONE	7,000,000	7000000	No	NA	NA	NA	NA
016	TCDD TEQ_NoDNQ	ug/L	Not Analyzed	0.60	NONE	NONE	1.30E-08	1.40E-08	3.00E-08	0.000000014	No	NA	NA	NA	NA
017	Acrolein	ug/L	Available Data <DL	0.60	NONE	NONE	320	780	NONE	780	Yes	No	No	NA	No
018	Acrylonitrile	ug/L	Available Data <DL	0.60	NONE	NONE	0.059	0.66	NONE	0.66	Yes	No	Yes	0.66	No
019	Benzene	ug/L	Available Data <DL	0.60	NONE	NONE	1.2	71	1	1	Yes	No	No	NA	No
020	Bromoform	ug/L	Available Data <DL	0.60	NONE	NONE	4.3	360	NONE	360	Yes	No	No	NA	No
021	Carbon Tetrachloride	ug/L	Available Data <DL	0.60	NONE	NONE	0.25	4.4	0.5	0.5	Yes	No	No	NA	No
022	Chlorobenzene	ug/L	Available Data <DL	0.60	NONE	NONE	680	21,000	70	70	Yes	No	No	NA	No
023	Dibromochloromethane	ug/L	Available Data <DL	0.60	NONE	NONE	0.401	34	NONE	34	Yes	No	No	NA	No
024	Chloroethane	ug/L	Available Data <DL	0.60	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
025	2-Chloroethylvinylether	ug/L	Available Data <DL	0.60	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
026	Chloroform	ug/L	Available Data <DL	0.60	NONE	NONE	Reserved	Reserved	NONE	NONE	Yes	No	No	NA	No
027	Bromodichloromethane	ug/L	Available Data <DL	0.60	NONE	NONE	0.56	46	NONE	46	Yes	No	No	NA	No
028	1,1-Dichloroethane	ug/L	Available Data <DL	0.60	NONE	NONE	NONE	NONE	5	5	Yes	No	No	NA	No
029	1,2-Dichloroethane	ug/L	Available Data <DL	0.60	NONE	NONE	0.38	99	0.5	0.5	Yes	No	No	NA	No
030	1,1-Dichloroethene	ug/L	Available Data <DL	0.60	NONE	NONE	0.057	3.2	6	3.2	Yes	No	No	NA	No
031	1,2-Dichloropropane	ug/L	Available Data <DL	0.60	NONE	NONE	0.52	39	5	5	Yes	No	No	NA	No
032	cis-1,3-Dichloropropene	ug/L	Available Data <DL	0.60	NONE	NONE	10	1,700	0.5	0.5	Yes	No	No	NA	No
032a	trans-1,3-Dichloropropene	ug/L	Available Data <DL	0.60	NONE	NONE	10	1,700	0.5	0.5	Yes	No	No	NA	No

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

TABLE F-1
REASONABLE POTENTIAL ANALYSIS - PRIORITY POLLUTANTS (OUTFALLS 001, 002, 011 AND 018)

FOURTH QUARTER 2014 REPORTING SUMMARY
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY
NPDES PERMIT CA0001309

					Step 1: Water Quality Criteria, Determine C						Step 2	Step 3			Step 4
					CTR CRITERIA				Basin Plan	C = Lowest Criteria	Is Effluent Data Available	Was Constituent Detected in Effluent Data	Are all Detection Limits > C	If DL > C, MEC = Min (DL)	MEC >= C
					Freshwater		Human Health								
CTR	Constituent	Units	MEC	CV	CMC = Acute	CCC = Chronic	HH W&O (Not App)	HH O = HH	Title 22 GWR						
033	Ethylbenzene	ug/L	Available Data <DL	0.60	NONE	NONE	3,100	29,000	700	700	Yes	No	No	NA	No
034	Bromomethane	ug/L	Available Data <DL	0.60	NONE	NONE	48	4,000	NONE	4000	Yes	No	No	NA	No
035	Chloromethane	ug/L	Available Data <DL	0.60	NONE	NONE	Narrative	Narrative	NONE	NONE	Yes	No	No	NA	No
036	Methylene chloride	ug/L	Available Data <DL	0.60	NONE	NONE	4.7	1,600	NONE	1600	Yes	No	No	NA	No
037	1,1,2,2-Tetrachloroethane	ug/L	Available Data <DL	0.60	NONE	NONE	0.17	11	1	1	Yes	No	No	NA	No
038	Tetrachloroethene	ug/L	Available Data <DL	0.60	NONE	NONE	0.8	8.85	5	5	Yes	No	No	NA	No
039	Toluene	ug/L	Available Data <DL	0.60	NONE	NONE	6,800	200,000	150	150	Yes	No	No	NA	No
040	trans-1,2-Dichloroethene	ug/L	Available Data <DL	0.60	NONE	NONE	700	140,000	10	10	Yes	No	No	NA	No
041	1,1,1-Trichloroethane	ug/L	Available Data <DL	0.60	NONE	NONE	Narrative	Narrative	200	200	Yes	No	No	NA	No
042	1,1,2-trichloroethane	ug/L	Available Data <DL	0.60	NONE	NONE	0.6	42	5	5	Yes	No	No	NA	No
043	Trichloroethene	ug/L	Available Data <DL	0.60	NONE	NONE	2.7	81	5	5	Yes	No	No	NA	No
044	Vinyl chloride	ug/L	Available Data <DL	0.60	NONE	NONE	2	525	0.5	0.5	Yes	No	No	NA	No
045	2-chlorophenol	ug/L	Available Data <DL	0.60	NONE	NONE	120	400	NONE	400	Yes	No	No	NA	No
046	2,4-Dichlorophenol	ug/L	Available Data <DL	0.60	NONE	NONE	93	790	NONE	790	Yes	No	No	NA	No
047	2,4-dimethylphenol	ug/L	Available Data <DL	0.60	NONE	NONE	540	2,300	NONE	2300	Yes	No	No	NA	No
048	2-Methyl-4,6-dinitrophenol	ug/L	Available Data <DL	0.60	NONE	NONE	13.4	765	NONE	765	Yes	No	No	NA	No
049	2,4-dinitrophenol	ug/L	Available Data <DL	0.60	NONE	NONE	70	14,000	NONE	14000	Yes	No	No	NA	No
050	2-nitrophenol	ug/L	Available Data <DL	0.60	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
051	4-nitrophenol	ug/L	Available Data <DL	0.60	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
052	4-Chloro-3-methylphenol	ug/L	Available Data <DL	0.60	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
053	Pentachlorophenol	ug/L	Available Data <DL	0.60	pH dependent	pH dependent	0.28	8.2	1	1	Yes	No	Yes	1	No
054	Phenol	ug/L	Available Data <DL	0.60	NONE	NONE	21,000	4,600,000	NONE	4600000	Yes	No	No	NA	No
055	2,4,6-Trichlorophenol	ug/L	Available Data <DL	0.60	NONE	NONE	2.1	6.5	NONE	6.5	Yes	No	No	NA	No
056	Acenaphthene	ug/L	Available Data <DL	0.60	NONE	NONE	1,200	2,700	NONE	2700	Yes	No	No	NA	No
057	Acenaphthylene	ug/L	Available Data <DL	0.60	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
058	Anthracene	ug/L	Available Data <DL	0.60	NONE	NONE	9,600	110,000	NONE	110000	Yes	No	No	NA	No
059	Benzidine	ug/L	Available Data <DL	0.60	NONE	NONE	0.00012	0.00054	NONE	0.00054	Yes	No	Yes	0.00054	No
060	Benzo(a)Anthracene	ug/L	Available Data <DL	0.60	NONE	NONE	0.0044	0.049	NONE	0.049	Yes	No	Yes	0.049	No
061	Benzo(a)Pyrene	ug/L	Available Data <DL	0.60	NONE	NONE	0.0044	0.049	0.2	0.049	Yes	No	No	NA	No
062	Benzo(b)Fluoranthene	ug/L	Available Data <DL	0.60	NONE	NONE	0.0044	0.049	NONE	0.049	Yes	No	Yes	0.049	No
063	Benzo(g,h,i)Perylene	ug/L	Available Data <DL	0.60	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
064	Benzo(k)Fluoranthene	ug/L	Available Data <DL	0.60	NONE	NONE	0.0044	0.049	NONE	0.049	Yes	No	Yes	0.049	No
065	Bis(2-Chloroethoxy) methane	ug/L	Available Data <DL	0.60	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
066	bis (2-Chloroethyl) ether	ug/L	Available Data <DL	0.60	NONE	NONE	0.031	1.4	NONE	1.4	Yes	No	No	NA	No

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TABLE F-1
REASONABLE POTENTIAL ANALYSIS - PRIORITY POLLUTANTS (OUTFALLS 001, 002, 011 AND 018)

FOURTH QUARTER 2014 REPORTING SUMMARY
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY
NPDES PERMIT CA0001309

					Step 1: Water Quality Criteria, Determine C						Step 2	Step 3			Step 4
					CTR CRITERIA				Basin Plan	C = Lowest Criteria	Is Effluent Data Available	Was Constituent Detected in Effluent Data	Are all Detection Limits > C	If DL > C, MEC = Min (DL)	MEC >= C
					Freshwater		Human Health								
CTR	Constituent	Units	MEC	CV	CMC = Acute	CCC = Chronic	HH W&O (Not App)	HH O = HH	Title 22 GWR						
067	Bis(2-Chloroisopropyl) Ether	ug/L	Available Data <DL	0.60	NONE	NONE	1,400	170,000	NONE	170000	Yes	No	No	NA	No
068	bis (2-ethylhexyl) Phthalate	ug/L	Available Data <DL	0.60	NONE	NONE	1.8	5.9	4	4	Yes	No	No	NA	No
069	4-Bromophenylphenylether	ug/L	Available Data <DL	0.60	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
070	Butylbenzylphthalate	ug/L	Available Data <DL	0.60	NONE	NONE	3,000	5,200	NONE	5200	Yes	No	No	NA	No
071	2-Chloronaphthalene	ug/L	Available Data <DL	0.60	NONE	NONE	1,700	4,300	NONE	4300	Yes	No	No	NA	No
072	4-Chlorophenylphenylether	ug/L	Available Data <DL	0.60	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
073	Chrysene	ug/L	Available Data <DL	0.60	NONE	NONE	0.0044	0.049	NONE	0.049	Yes	No	Yes	0.049	No
074	Dibenzo(a,h)Anthracene	ug/L	Available Data <DL	0.60	NONE	NONE	0.0044	0.049	NONE	0.049	Yes	No	Yes	0.049	No
075	1,2-Dichlorobenzene	ug/L	Available Data <DL	0.60	NONE	NONE	2,700	17,000	600	600	Yes	No	No	NA	No
076	1,3-Dichlorobenzene	ug/L	Available Data <DL	0.60	NONE	NONE	400	2,600	NONE	2600	Yes	No	No	NA	No
077	1,4-Dichlorobenzene	ug/L	Available Data <DL	0.60	NONE	NONE	400	2,600	5	5	Yes	No	No	NA	No
078	3,3'-Dichlorobenzidine	ug/L	Available Data <DL	0.60	NONE	NONE	0.04	0.077	NONE	0.077	Yes	No	Yes	0.077	No
079	Diethylphthalate	ug/L	Available Data <DL	0.60	NONE	NONE	23,000	120,000	NONE	120000	Yes	No	No	NA	No
080	Dimethylphthalate	ug/L	Available Data <DL	0.60	NONE	NONE	313,000	2,900,000	NONE	2900000	Yes	No	No	NA	No
081	Di-n-butylphthalate	ug/L	Available Data <DL	0.60	NONE	NONE	2,700	12,000	NONE	12000	Yes	No	No	NA	No
082	2,4-Dinitrotoluene	ug/L	Available Data <DL	0.60	NONE	NONE	0.11	9.1	NONE	9.1	Yes	No	No	NA	No
083	2,6-Dinitrotoluene	ug/L	Available Data <DL	0.60	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
084	Di-n-octylphthalate	ug/L	Available Data <DL	0.60	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
085	1,2-Diphenylhydrazine	ug/L	Available Data <DL	0.60	NONE	NONE	0.04	0.54	NONE	0.54	Yes	No	No	NA	No
086	Fluoranthene	ug/L	Available Data <DL	0.60	NONE	NONE	300	370	NONE	370	Yes	No	No	NA	No
087	Fluorene	ug/L	Available Data <DL	0.60	NONE	NONE	1,300	14,000	NONE	14000	Yes	No	No	NA	No
088	Hexachlorobenzene	ug/L	Available Data <DL	0.60	NONE	NONE	0.00075	0.00077	1	0.00077	Yes	No	Yes	0.00077	No
089	Hexachlorobutadiene	ug/L	Available Data <DL	0.60	NONE	NONE	0.44	50	NONE	50	Yes	No	No	NA	No
090	Hexachlorocyclopentadiene	ug/L	Available Data <DL	0.60	NONE	NONE	240	17,000	50	50	Yes	No	No	NA	No
091	Hexachloroethane	ug/L	Available Data <DL	0.60	NONE	NONE	1.9	8.9	NONE	8.9	Yes	No	No	NA	No
092	Indeno(1,2,3-cd)Pyrene	ug/L	Available Data <DL	0.60	NONE	NONE	0.0044	0.049	NONE	0.049	Yes	No	Yes	0.049	No
093	Isophorone	ug/L	Available Data <DL	0.60	NONE	NONE	8.4	600	NONE	600	Yes	No	No	NA	No
094	Naphthalene	ug/L	Available Data <DL	0.60	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
095	Nitrobenzene	ug/L	Available Data <DL	0.60	NONE	NONE	17	1,900	NONE	1900	Yes	No	No	NA	No
096	N-Nitrosodimethylamine	ug/L	Available Data <DL	0.60	NONE	NONE	0.00069	8.1	NONE	8.1	Yes	No	No	NA	No
097	n-Nitroso-di-n-propylamine	ug/L	Available Data <DL	0.60	NONE	NONE	0.005	1.4	NONE	1.4	Yes	No	No	NA	No
098	N-Nitrosodiphenylamine	ug/L	Available Data <DL	0.60	NONE	NONE	5	16	NONE	16	Yes	No	No	NA	No
099	Phenanthrene	ug/L	Available Data <DL	0.60	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
100	Pyrene	ug/L	Available Data <DL	0.60	NONE	NONE	960	11,000	NONE	11000	Yes	No	No	NA	No

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

TABLE F-1
REASONABLE POTENTIAL ANALYSIS - PRIORITY POLLUTANTS (OUTFALLS 001, 002, 011 AND 018)

FOURTH QUARTER 2014 REPORTING SUMMARY
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY
NPDES PERMIT CA0001309

					Step 1: Water Quality Criteria, Determine C						Step 2	Step 3			Step 4
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					Freshwater		Human Health								
CTR	Constituent	Units	MEC	CV	CMC = Acute	CCC = Chronic	HH W&O (Not App)	HH O = HH	Title 22 GWR						
101	1,2,4-Trichlorobenzene	ug/L	Available Data <DL	0.60	NONE	NONE	NONE	NONE	70	70	Yes	No	No	NA	No
102	Aldrin	ug/L	Available Data <DL	0.60	3	NONE	0.00013	0.00014	NONE	0.00014	Yes	No	Yes	0.00014	No
103	alpha-BHC	ug/L	Available Data <DL	0.60	NONE	NONE	0.0039	0.013	NONE	0.013	Yes	No	No	NA	No
104	beta-BHC	ug/L	Available Data <DL	0.60	NONE	NONE	0.014	0.046	NONE	0.046	Yes	No	No	NA	No
105	Lindane (gamma-BHC)	ug/L	Available Data <DL	0.60	0.95	NONE	0.019	0.063	0.2	0.063	Yes	No	No	NA	No
106	delta-BHC	ug/L	Available Data <DL	0.60	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
107	Chlordane	ug/L	Available Data <DL	0.60	2.4	0.0043	0.00057	0.00059	0.1	0.00059	Yes	No	Yes	0.00059	No
108	4,4'-DDT	ug/L	Available Data <DL	0.60	1.1	0.001	0.00059	0.00059	NONE	0.00059	Yes	No	Yes	0.00059	No
109	4,4'-DDE	ug/L	Available Data <DL	0.60	NONE	NONE	0.00059	0.00059	NONE	0.00059	Yes	No	Yes	0.00059	No
110	4,4'-DDD	ug/L	Available Data <DL	0.60	NONE	NONE	0.00083	0.00084	NONE	0.00084	Yes	No	Yes	0.00084	No
111	Dieldrin	ug/L	Available Data <DL	0.60	0.24	0.056	0.00014	0.00014	NONE	0.00014	Yes	No	Yes	0.00014	No
112	Endosulfan I	ug/L	Available Data <DL	0.60	0.22	0.056	110	240	NONE	0.056	Yes	No	No	NA	No
113	Endosulfan II	ug/L	Available Data <DL	0.60	0.22	0.056	110	240	NONE	0.056	Yes	No	No	NA	No
114	Endosulfan Sulfate	ug/L	Available Data <DL	0.60	NONE	NONE	110	240	NONE	240	Yes	No	No	NA	No
115	Endrin	ug/L	Available Data <DL	0.60	0.086	0.036	0.76	0.81	2	0.036	Yes	No	No	NA	No
116	Endrin Aldehyde	ug/L	Available Data <DL	0.60	NONE	NONE	0.76	0.81	NONE	0.81	Yes	No	No	NA	No
117	Heptachlor	ug/L	Available Data <DL	0.60	0.52	0.0038	0.00021	0.00021	0.01	0.00021	Yes	No	Yes	0.00021	No
118	Heptachlor Epoxide	ug/L	Available Data <DL	0.60	0.52	0.0038	0.0001	0.00011	0.01	0.00011	Yes	No	Yes	0.00011	No
119	Aroclor-1016	ug/L	Available Data <DL	0.60	NONE	0.014	0.00017	0.00017	0.5	0.00017	Yes	No	Yes	0.00017	No
120	Aroclor-1221	ug/L	Available Data <DL	0.60	NONE	0.014	0.00017	0.00017	0.5	0.00017	Yes	No	Yes	0.00017	No
121	Aroclor-1232	ug/L	Available Data <DL	0.60	NONE	0.014	0.00017	0.00017	0.5	0.00017	Yes	No	Yes	0.00017	No
122	Aroclor-1242	ug/L	Available Data <DL	0.60	NONE	0.014	0.00017	0.00017	0.5	0.00017	Yes	No	Yes	0.00017	No
123	Aroclor-1248	ug/L	Available Data <DL	0.60	NONE	0.014	0.00017	0.00017	0.5	0.00017	Yes	No	Yes	0.00017	No
124	Aroclor-1254	ug/L	Available Data <DL	0.60	NONE	0.014	0.00017	0.00017	0.5	0.00017	Yes	No	Yes	0.00017	No
125	Aroclor-1260	ug/L	Available Data <DL	0.60	NONE	0.014	0.00017	0.00017	0.5	0.00017	Yes	No	Yes	0.00017	No
126	Toxaphene	ug/L	Available Data <DL	0.60	0.73	0.0002	0.00073	0.00075	3	0.0002	Yes	No	Yes	0.0002	No
127	E. Coli	MPN/100ml	540	0.60	NA	NA	NA	NA	235	235	Yes	Yes	NA	NA	Yes

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

TABLE F-2
REASONABLE POTENTIAL ANALYSIS - NONPRIORITY POLLUTANTS (OUTFALLS 001, 002, 011 AND 018)

FOURTH QUARTER 2014 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
1, 2, 11, 18	Barium	Annual	mg/L	1	13	0.60	13.2	171.6	0	0	171.6	1	BU
1, 2, 11, 18	Biochemical Oxygen Demand (BOD 5 day)	Discharge	mg/L	2	3.7	0.60	7.4	27.38	0	0	27.38	30	BU
1, 2, 11, 18	Chloride	Discharge	mg/L	2	5.5	0.60	7.4	40.7	0	0	40.7	150	BU
1, 2, 11, 18	Fluoride	Annual	mg/L	1	0.18	0.60	13.2	2.376	0	0	2.376	1.6	BU
1, 2, 11, 18	Nitrate + Nitrite as Nitrogen (N)	Discharge	mg/L	2	3.5	0.60	7.4	25.9	0	0	25.9	8	BU/TMDL
1, 2, 11, 18	Oil & Grease	Discharge	mg/L	2	Available Data <DL	0.60	Available Data <DL	Available Data <DL	0	0	NA	10	BU
1, 2, 11, 18	Sulfate	Discharge	mg/L	2	10	0.60	7.4	74	0	0	74	300	BU
1, 2, 11, 18	Surfactants (MBAS)	Discharge	mg/L	2	All Data Qualified	0.60	All Data Qualified	All Data Qualified	0	0	NA	0.5	BU
1, 2, 11, 18	Total Dissolved Solids	Discharge	mg/L	2	170	0.60	7.4	1258	0	0	1258	150	BU
1, 2, 11, 18	Total Settleable Solids	Discharge	ml/L	2	Available Data <DL	0.60	Available Data <DL	Available Data <DL	0	0	NA	0.3	BU
1, 2, 11, 18	Total Suspended Solids	Discharge	mg/L	2	4.3	0.60	7.4	31.82	0	0	31.82	45	BU

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

TABLE F-3
REASONABLE POTENTIAL ANALYSIS - PRIORITY POLLUTANTS (OUTFALLS 003-007, 009 AND 010)

FOURTH QUARTER 2014 REPORTING SUMMARY
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY
NPDES PERMIT CA0001309

					Step 1: Water Quality Criteria, Determine C						Step 2	Step 3			Step 4
					CTR CRITERIA				Basin Plan	C = Lowest Criteria	Is Effluent Data Available	Was Constituent Detected in Effluent Data	Are all Detection Limits > C	If DL > C, MEC = Min (DL)	MEC >= C
					Freshwater		Human Health								
CTR	Constituent	Units	MEC	CV	CMC = Acute	CCC = Chronic	HH W&O (Not App)	HH O = HH	Title 22 GWR						
001	Antimony	ug/L	All Data Qualified	0.60	NONE	NONE	14	4,300	6	6	No	No	No	NA	No
002	Arsenic	ug/L	Not Analyzed	0.60	340	150	NONE	NONE	50	50	No	NA	NA	NA	NA
003	Beryllium	ug/L	Not Analyzed	0.60	NONE	NONE	Narrative	Narrative	4	4	No	NA	NA	NA	NA
004	Cadmium	ug/L	All Data Qualified	0.60	4.3	2.2	Narrative	Narrative	5	2.2	No	No	No	NA	No
005a	Chromium	ug/L	Not Analyzed	0.60	550	180	Narrative	Narrative	50	50	No	NA	NA	NA	NA
005b	Chromium VI	ug/L	Not Analyzed	0.60	16	11	Narrative	Narrative	NONE	11	No	NA	NA	NA	NA
006	Copper	ug/L	9	0.60	13	9	1,300	NONE	NONE	9	Yes	Yes	NA	NA	No
007	Lead	ug/L	13	0.60	65	2.5	Narrative	Narrative	NONE	2.5	Yes	Yes	NA	NA	Yes
008	Mercury	ug/L	0.11	0.60	Reserved	Reserved	0.05	0.051	2	0.051	Yes	Yes	NA	NA	Yes
009	Nickel	ug/L	Not Analyzed	0.60	470	52	610	4,600	100	52	No	NA	NA	NA	NA
010	Selenium	ug/L	Not Analyzed	0.60	Reserved	5	Narrative	Narrative	50	5	No	NA	NA	NA	NA
011	Silver	ug/L	Not Analyzed	0.60	3.4	NONE	NONE	NONE	NONE	3.4	No	NA	NA	NA	NA
012	Thallium	ug/L	Available Data <DL	0.60	NONE	NONE	1.7	6.3	2	2	Yes	No	No	NA	No
013	Zinc	ug/L	Not Analyzed	0.60	120	120	NONE	NONE	NONE	120	No	NA	NA	NA	NA
014	Total Cyanide	ug/L	Available Data <DL	0.60	22	5.2	700	220,000	200	5.2	Yes	No	No	NA	No
015	Asbestos	Fibers/L	Not Analyzed	0.60	NONE	NONE	7,000,000	NONE	7,000,000	7000000	No	NA	NA	NA	NA
016	TCDD TEQ_NoDNQ	ug/L	8.93E-08	0.60	NONE	NONE	1.30E-08	1.40E-08	3.00E-08	1.40E-08	Yes	Yes	No	NA	Yes
017	Acrolein	ug/L	Not Analyzed	0.60	NONE	NONE	320	780	NONE	780	No	NA	NA	NA	NA
018	Acrylonitrile	ug/L	Not Analyzed	0.60	NONE	NONE	0.059	0.66	NONE	0.66	No	NA	NA	NA	NA
019	Benzene	ug/L	Not Analyzed	0.60	NONE	NONE	1.2	71	1	1	No	NA	NA	NA	NA
020	Bromoform	ug/L	Not Analyzed	0.60	NONE	NONE	4.3	360	NONE	360	No	NA	NA	NA	NA
021	Carbon Tetrachloride	ug/L	Not Analyzed	0.60	NONE	NONE	0.25	4.4	0.5	0.5	No	NA	NA	NA	NA
022	Chlorobenzene	ug/L	Not Analyzed	0.60	NONE	NONE	680	21,000	70	70	No	NA	NA	NA	NA
023	Dibromochloromethane	ug/L	Not Analyzed	0.60	NONE	NONE	0.401	34	NONE	34	No	NA	NA	NA	NA
024	Chloroethane	ug/L	Not Analyzed	0.60	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
025	2-Chloroethylvinylether	ug/L	Not Analyzed	0.60	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
026	Chloroform	ug/L	Not Analyzed	0.60	NONE	NONE	Reserved	Reserved	NONE	NONE	No	NA	NA	NA	NA
027	Bromodichloromethane	ug/L	Not Analyzed	0.60	NONE	NONE	0.56	46	NONE	46	No	NA	NA	NA	NA
028	1,1-Dichloroethane	ug/L	Not Analyzed	0.60	NONE	NONE	NONE	NONE	5	5	No	NA	NA	NA	NA
029	1,2-Dichloroethane	ug/L	Not Analyzed	0.60	NONE	NONE	0.38	99	0.5	0.5	No	NA	NA	NA	NA
030	1,1-Dichloroethene	ug/L	Not Analyzed	0.60	NONE	NONE	0.057	3.2	6	3.2	No	NA	NA	NA	NA
031	1,2-Dichloropropane	ug/L	Not Analyzed	0.60	NONE	NONE	0.52	39	5	5	No	NA	NA	NA	NA
032	cis-1,3-Dichloropropene	ug/L	Not Analyzed	0.60	NONE	NONE	10	1,700	0.5	0.5	No	NA	NA	NA	NA
032a	trans-1,3-Dichloropropene	ug/L	Not Analyzed	0.60	NONE	NONE	10	1,700	0.5	0.5	No	NA	NA	NA	NA

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

TABLE F-3
REASONABLE POTENTIAL ANALYSIS - PRIORITY POLLUTANTS (OUTFALLS 003-007, 009 AND 010)

FOURTH QUARTER 2014 REPORTING SUMMARY
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY
NPDES PERMIT CA0001309

					Step 1: Water Quality Criteria, Determine C						Step 2	Step 3			Step 4
					CTR CRITERIA				Basin Plan	C = Lowest Criteria	Is Effluent Data Available	Was Constituent Detected in Effluent Data	Are all Detection Limits > C	If DL > C, MEC = Min (DL)	MEC >= C
					Freshwater		Human Health								
CTR	Constituent	Units	MEC	CV	CMC = Acute	CCC = Chronic	HH W&O (Not App)	HH O = HH	Title 22 GWR						
033	Ethylbenzene	ug/L	Not Analyzed	0.60	NONE	NONE	3,100	29,000	700	700	No	NA	NA	NA	NA
034	Bromomethane	ug/L	Not Analyzed	0.60	NONE	NONE	48	4,000	NONE	4000	No	NA	NA	NA	NA
035	Chloromethane	ug/L	Not Analyzed	0.60	NONE	NONE	Narrative	Narrative	NONE	NONE	No	NA	NA	NA	NA
036	Methylene chloride	ug/L	Not Analyzed	0.60	NONE	NONE	4.7	1,600	NONE	1600	No	NA	NA	NA	NA
037	1,1,2,2-Tetrachloroethane	ug/L	Not Analyzed	0.60	NONE	NONE	0.17	11	1	1	No	NA	NA	NA	NA
038	Tetrachloroethene	ug/L	Not Analyzed	0.60	NONE	NONE	0.8	8.85	5	5	No	NA	NA	NA	NA
039	Toluene	ug/L	Not Analyzed	0.60	NONE	NONE	6,800	200,000	150	150	No	NA	NA	NA	NA
040	trans-1,2-Dichloroethene	ug/L	Not Analyzed	0.60	NONE	NONE	700	140,000	10	10	No	NA	NA	NA	NA
041	1,1,1-Trichloroethane	ug/L	Not Analyzed	0.60	NONE	NONE	Narrative	Narrative	200	200	No	NA	NA	NA	NA
042	1,1,2-trichloroethane	ug/L	Not Analyzed	0.60	NONE	NONE	0.6	42	5	5	No	NA	NA	NA	NA
043	Trichloroethene	ug/L	Not Analyzed	0.60	NONE	NONE	2.7	81	5	5	No	NA	NA	NA	NA
044	Vinyl chloride	ug/L	Not Analyzed	0.60	NONE	NONE	2	525	0.5	0.5	No	NA	NA	NA	NA
045	2-chlorophenol	ug/L	Not Analyzed	0.60	NONE	NONE	120	400	NONE	400	No	NA	NA	NA	NA
046	2,4-Dichlorophenol	ug/L	Not Analyzed	0.60	NONE	NONE	93	790	NONE	790	No	NA	NA	NA	NA
047	2,4-dimethylphenol	ug/L	Not Analyzed	0.60	NONE	NONE	540	2,300	NONE	2300	No	NA	NA	NA	NA
048	2-Methyl-4,6-dinitrophenol	ug/L	Not Analyzed	0.60	NONE	NONE	13.4	765	NONE	765	No	NA	NA	NA	NA
049	2,4-dinitrophenol	ug/L	Not Analyzed	0.60	NONE	NONE	70	14,000	NONE	14000	No	NA	NA	NA	NA
050	2-nitrophenol	ug/L	Not Analyzed	0.60	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
051	4-nitrophenol	ug/L	Not Analyzed	0.60	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
052	4-Chloro-3-methylphenol	ug/L	Not Analyzed	0.60	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
053	Pentachlorophenol	ug/L	Not Analyzed	0.60	pH dependent	pH dependent	0.28	8.2	1	1	No	NA	NA	NA	NA
054	Phenol	ug/L	Not Analyzed	0.60	NONE	NONE	21,000	4,600,000	NONE	4600000	No	NA	NA	NA	NA
055	2,4,6-Trichlorophenol	ug/L	Not Analyzed	0.60	NONE	NONE	2.1	6.5	NONE	6.5	No	NA	NA	NA	NA
056	Acenaphthene	ug/L	Not Analyzed	0.60	NONE	NONE	1,200	2,700	NONE	2700	No	NA	NA	NA	NA
057	Acenaphthylene	ug/L	Not Analyzed	0.60	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
058	Anthracene	ug/L	Not Analyzed	0.60	NONE	NONE	9,600	110,000	NONE	110000	No	NA	NA	NA	NA
059	Benzidine	ug/L	Not Analyzed	0.60	NONE	NONE	0.00012	0.00054	NONE	0.00054	No	NA	NA	NA	NA
060	Benzo(a)Anthracene	ug/L	Not Analyzed	0.60	NONE	NONE	0.0044	0.049	NONE	0.049	No	NA	NA	NA	NA
061	Benzo(a)Pyrene	ug/L	Not Analyzed	0.60	NONE	NONE	0.0044	0.049	0.2	0.049	No	NA	NA	NA	NA
062	Benzo(b)Fluoranthene	ug/L	Not Analyzed	0.60	NONE	NONE	0.0044	0.049	NONE	0.049	No	NA	NA	NA	NA
063	Benzo(g,h,i)Perylene	ug/L	Not Analyzed	0.60	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
064	Benzo(k)Fluoranthene	ug/L	Not Analyzed	0.60	NONE	NONE	0.0044	0.049	NONE	0.049	No	NA	NA	NA	NA
065	Bis(2-Chloroethoxy) methane	ug/L	Not Analyzed	0.60	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
066	bis (2-Chloroethyl) ether	ug/L	Not Analyzed	0.60	NONE	NONE	0.031	1.4	NONE	1.4	No	NA	NA	NA	NA

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

TABLE F-3
REASONABLE POTENTIAL ANALYSIS - PRIORITY POLLUTANTS (OUTFALLS 003-007, 009 AND 010)

FOURTH QUARTER 2014 REPORTING SUMMARY
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY
NPDES PERMIT CA0001309

					Step 1: Water Quality Criteria, Determine C						Step 2	Step 3			Step 4
					CTR CRITERIA				Basin Plan	C = Lowest Criteria	Is Effluent Data Available	Was Constituent Detected in Effluent Data	Are all Detection Limits > C	If DL > C, MEC = Min (DL)	MEC >= C
					Freshwater		Human Health								
CTR	Constituent	Units	MEC	CV	CMC = Acute	CCC = Chronic	HH W&O (Not App)	HH O = HH	Title 22 GWR						
067	Bis(2-Chloroisopropyl) Ether	ug/L	Not Analyzed	0.60	NONE	NONE	1,400	170,000	NONE	170000	No	NA	NA	NA	NA
068	bis (2-ethylhexyl) Phthalate	ug/L	Not Analyzed	0.60	NONE	NONE	1.8	5.9	4	4	No	NA	NA	NA	NA
069	4-Bromophenylphenylether	ug/L	Not Analyzed	0.60	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
070	Butylbenzylphthalate	ug/L	Not Analyzed	0.60	NONE	NONE	3,000	5,200	NONE	5200	No	NA	NA	NA	NA
071	2-Chloronaphthalene	ug/L	Not Analyzed	0.60	NONE	NONE	1,700	4,300	NONE	4300	No	NA	NA	NA	NA
072	4-Chlorophenylphenylether	ug/L	Not Analyzed	0.60	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
073	Chrysene	ug/L	Not Analyzed	0.60	NONE	NONE	0.0044	0.049	NONE	0.049	No	NA	NA	NA	NA
074	Dibenzo(a,h)Anthracene	ug/L	Not Analyzed	0.60	NONE	NONE	0.0044	0.049	NONE	0.049	No	NA	NA	NA	NA
075	1,2-Dichlorobenzene	ug/L	Not Analyzed	0.60	NONE	NONE	2,700	17,000	600	600	No	NA	NA	NA	NA
076	1,3-Dichlorobenzene	ug/L	Not Analyzed	0.60	NONE	NONE	400	2,600	NONE	2600	No	NA	NA	NA	NA
077	1,4-Dichlorobenzene	ug/L	Not Analyzed	0.60	NONE	NONE	400	2,600	5	5	No	NA	NA	NA	NA
078	3,3'-Dichlorobenzidine	ug/L	Not Analyzed	0.60	NONE	NONE	0.04	0.077	NONE	0.077	No	NA	NA	NA	NA
079	Diethylphthalate	ug/L	Not Analyzed	0.60	NONE	NONE	23,000	120,000	NONE	120000	No	NA	NA	NA	NA
080	Dimethylphthalate	ug/L	Not Analyzed	0.60	NONE	NONE	313,000	2,900,000	NONE	2900000	No	NA	NA	NA	NA
081	Di-n-butylphthalate	ug/L	Not Analyzed	0.60	NONE	NONE	2,700	12,000	NONE	12000	No	NA	NA	NA	NA
082	2,4-Dinitrotoluene	ug/L	Not Analyzed	0.60	NONE	NONE	0.11	9.1	NONE	9.1	No	NA	NA	NA	NA
083	2,6-Dinitrotoluene	ug/L	Not Analyzed	0.60	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
084	Di-n-octylphthalate	ug/L	Not Analyzed	0.60	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
085	1,2-Diphenylhydrazine	ug/L	Not Analyzed	0.60	NONE	NONE	0.04	0.54	NONE	0.54	No	NA	NA	NA	NA
086	Fluoranthene	ug/L	Not Analyzed	0.60	NONE	NONE	300	370	NONE	370	No	NA	NA	NA	NA
087	Fluorene	ug/L	Not Analyzed	0.60	NONE	NONE	1,300	14,000	NONE	14000	No	NA	NA	NA	NA
088	Hexachlorobenzene	ug/L	Not Analyzed	0.60	NONE	NONE	0.00075	0.00077	1	0.00077	No	NA	NA	NA	NA
089	Hexachlorobutadiene	ug/L	Not Analyzed	0.60	NONE	NONE	0.44	50	NONE	50	No	NA	NA	NA	NA
090	Hexachlorocyclopentadiene	ug/L	Not Analyzed	0.60	NONE	NONE	240	17,000	50	50	No	NA	NA	NA	NA
091	Hexachloroethane	ug/L	Not Analyzed	0.60	NONE	NONE	1.9	8.9	NONE	8.9	No	NA	NA	NA	NA
092	Indeno(1,2,3-cd)Pyrene	ug/L	Not Analyzed	0.60	NONE	NONE	0.0044	0.049	NONE	0.049	No	NA	NA	NA	NA
093	Isophorone	ug/L	Not Analyzed	0.60	NONE	NONE	8.4	600	NONE	600	No	NA	NA	NA	NA
094	Naphthalene	ug/L	Not Analyzed	0.60	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
095	Nitrobenzene	ug/L	Not Analyzed	0.60	NONE	NONE	17	1,900	NONE	1900	No	NA	NA	NA	NA
096	N-Nitrosodimethylamine	ug/L	Not Analyzed	0.60	NONE	NONE	0.00069	8.1	NONE	8.1	No	NA	NA	NA	NA
097	n-Nitroso-di-n-propylamine	ug/L	Not Analyzed	0.60	NONE	NONE	0.005	1.4	NONE	1.4	No	NA	NA	NA	NA
098	N-Nitrosodiphenylamine	ug/L	Not Analyzed	0.60	NONE	NONE	5	16	NONE	16	No	NA	NA	NA	NA
099	Phenanthrene	ug/L	Not Analyzed	0.60	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
100	Pyrene	ug/L	Not Analyzed	0.60	NONE	NONE	960	11,000	NONE	11000	No	NA	NA	NA	NA

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

TABLE F-3
REASONABLE POTENTIAL ANALYSIS - PRIORITY POLLUTANTS (OUTFALLS 003-007, 009 AND 010)

FOURTH QUARTER 2014 REPORTING SUMMARY
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY
NPDES PERMIT CA0001309

					Step 1: Water Quality Criteria, Determine C						Step 2	Step 3			Step 4
					CTR CRITERIA				Basin Plan	C = Lowest Criteria	Is Effluent Data Available	Was Constituent Detected in Effluent Data	Are all Detection Limits > C	If DL > C, MEC = Min (DL)	MEC >= C
					Freshwater		Human Health								
CTR	Constituent	Units	MEC	CV	CMC = Acute	CCC = Chronic	HH W&O (Not App)	HH O = HH	Title 22 GWR						
101	1,2,4-Trichlorobenzene	ug/L	Not Analyzed	0.60	NONE	NONE	NONE	NONE	70	70	No	NA	NA	NA	NA
102	Aldrin	ug/L	Not Analyzed	0.60	3	NONE	0.00013	0.00014	NONE	0.00014	No	NA	NA	NA	NA
103	alpha-BHC	ug/L	Not Analyzed	0.60	NONE	NONE	0.0039	0.013	NONE	0.013	No	NA	NA	NA	NA
104	beta-BHC	ug/L	Not Analyzed	0.60	NONE	NONE	0.014	0.046	NONE	0.046	No	NA	NA	NA	NA
105	Lindane (gamma-BHC)	ug/L	Not Analyzed	0.60	0.95	NONE	0.019	0.063	0.2	0.063	No	NA	NA	NA	NA
106	delta-BHC	ug/L	Not Analyzed	0.60	NONE	NONE	NONE	NONE	NONE	NONE	No	NA	NA	NA	NA
107	Chlordane	ug/L	Not Analyzed	0.60	2.4	0.0043	0.00057	0.00059	0.1	0.00059	No	NA	NA	NA	NA
108	4,4'-DDT	ug/L	Not Analyzed	0.60	1.1	0.001	0.00059	0.00059	NONE	0.00059	No	NA	NA	NA	NA
109	4,4'-DDE	ug/L	Not Analyzed	0.60	NONE	NONE	0.00059	0.00059	NONE	0.00059	No	NA	NA	NA	NA
110	4,4'-DDD	ug/L	Not Analyzed	0.60	NONE	NONE	0.00083	0.00084	NONE	0.00084	No	NA	NA	NA	NA
111	Dieldrin	ug/L	Not Analyzed	0.60	0.24	0.056	0.00014	0.00014	NONE	0.00014	No	NA	NA	NA	NA
112	Endosulfan I	ug/L	Not Analyzed	0.60	0.22	0.056	110	240	NONE	0.056	No	NA	NA	NA	NA
113	Endosulfan II	ug/L	Not Analyzed	0.60	0.22	0.056	110	240	NONE	0.056	No	NA	NA	NA	NA
114	Endosulfan Sulfate	ug/L	Not Analyzed	0.60	NONE	NONE	110	240	NONE	240	No	NA	NA	NA	NA
115	Endrin	ug/L	Not Analyzed	0.60	0.086	0.036	0.76	0.81	2	0.036	No	NA	NA	NA	NA
116	Endrin Aldehyde	ug/L	Not Analyzed	0.60	NONE	NONE	0.76	0.81	NONE	0.81	No	NA	NA	NA	NA
117	Heptachlor	ug/L	Not Analyzed	0.60	0.52	0.0038	0.00021	0.00021	0.01	0.00021	No	NA	NA	NA	NA
118	Heptachlor Epoxide	ug/L	Not Analyzed	0.60	0.52	0.0038	0.0001	0.00011	0.01	0.00011	No	NA	NA	NA	NA
119	Aroclor-1016	ug/L	Not Analyzed	0.60	NONE	0.014	0.00017	0.00017	0.5	0.00017	No	NA	NA	NA	NA
120	Aroclor-1221	ug/L	Not Analyzed	0.60	NONE	0.014	0.00017	0.00017	0.5	0.00017	No	NA	NA	NA	NA
121	Aroclor-1232	ug/L	Not Analyzed	0.60	NONE	0.014	0.00017	0.00017	0.5	0.00017	No	NA	NA	NA	NA
122	Aroclor-1242	ug/L	Not Analyzed	0.60	NONE	0.014	0.00017	0.00017	0.5	0.00017	No	NA	NA	NA	NA
123	Aroclor-1248	ug/L	Not Analyzed	0.60	NONE	0.014	0.00017	0.00017	0.5	0.00017	No	NA	NA	NA	NA
124	Aroclor-1254	ug/L	Not Analyzed	0.60	NONE	0.014	0.00017	0.00017	0.5	0.00017	No	NA	NA	NA	NA
125	Aroclor-1260	ug/L	Not Analyzed	0.60	NONE	0.014	0.00017	0.00017	0.5	0.00017	No	NA	NA	NA	NA
126	Toxaphene	ug/L	Not Analyzed	0.60	0.73	0.0002	0.00073	0.00075	3	0.0002	No	NA	NA	NA	NA
127	E. Coli	MPN/100ml	Not Analyzed	0.60	NA	NA	NA	NA	235	235	No	NA	NA	NA	NA

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

TABLE F-4
REASONABLE POTENTIAL ANALYSIS - NONPRIORITY POLLUTANTS (OUTFALLS 003-007, 009 AND 010)

FOURTH QUARTER 2014 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
3-7, 9, 10	Boron	Annual	mg/L	0	Not Analyzed	0.60	Not Analyzed	Not Analyzed	0	0	NA	1	BU
3-7, 9, 10	Chloride	Discharge	mg/L	3	18	0.60	5.6	100.8	0	0	100.8	150	BU
3-7, 9, 10	Fluoride	Annual	mg/L	0	Not Analyzed	0.60	Not Analyzed	Not Analyzed	0	0	NA	1.6	BU
3-7, 9, 10	Nitrate + Nitrite as Nitrogen (N)	Discharge	mg/L	3	3.0	0.60	5.6	16.8	0	0	16.8	8	BU/TMDL
3-7, 9, 10	Oil & Grease	Discharge	mg/L	3	Available Data <DL	0.60	Available Data <DL	Available Data <DL	0	0	NA	10	BU
3-7, 9, 10	Sulfate	Discharge	mg/L	3	8.8	0.60	5.6	49.28	0	0	49.28	300	BU
3-7, 9, 10	Total Dissolved Solids	Discharge	mg/L	3	160	0.60	5.6	896	0	0	896	150	BU
3-7, 9, 10	Total Suspended Solids	Annual	mg/L	3	78	0.60	5.6	436.8	0	0	436.8	45	BU

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

TABLE F-5
REASONABLE POTENTIAL ANALYSIS - PRIORITY POLLUTANTS (OUTFALL 008)

FOURTH QUARTER 2014 REPORTING SUMMARY
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY
NPDES PERMIT CA0001309

					Step 1: Water Quality Criteria, Determine C						Step 2	Step 3			Step 4
					CTR CRITERIA				Basin Plan	C = Lowest Criteria	Is Effluent Data Available	Was Constituent Detected in Effluent Data	Are all Detection Limits > C	If DL > C, MEC = Min (DL)	MEC >= C
					Freshwater		Human Health								
CTR	Constituent	Units	MEC	CV	CMC = Acute	CCC = Chronic	HH W&O (Not App)	HH O = HH	Title 22 GWR						
001	Antimony	ug/L	Available Data <DL	0.60	NONE	NONE	14	4,300	6	6	Yes	No	Yes	4,300	No
002	Arsenic	ug/L	Available Data <DL	0.60	340	150	NONE	NONE	50	50	Yes	No	No	NA	No
003	Beryllium	ug/L	Available Data <DL	0.60	NONE	NONE	Narrative	Narrative	4	4	Yes	No	No	NA	No
004	Cadmium	ug/L	Available Data <DL	0.60	4.3	2.2	Narrative	Narrative	5	2.2	Yes	No	No	NA	No
005a	Chromium	ug/L	Available Data <DL	0.60	550	180	Narrative	Narrative	50	50	Yes	No	No	NA	No
005b	Chromium VI	ug/L	Available Data <DL	0.60	16	11	Narrative	Narrative	NONE	11	Yes	No	No	NA	No
006	Copper	ug/L	5.2	0.60	13	9	1,300	NONE	NONE	9	Yes	Yes	NA	NA	No
007	Lead	ug/L	2	0.60	65	2.5	Narrative	Narrative	NONE	2.5	Yes	Yes	NA	NA	No
008	Mercury	ug/L	Available Data <DL	0.60	Reserved	Reserved	0.05	0.051	2	0.051	Yes	No	Yes	0.051	No
009	Nickel	ug/L	Available Data <DL	0.60	470	52	610	4,600	100	52	Yes	No	Yes	4,600	No
010	Selenium	ug/L	Available Data <DL	0.60	Reserved	5	Narrative	Narrative	50	5	Yes	No	No	NA	No
011	Silver	ug/L	Available Data <DL	0.60	3.4	NONE	NONE	NONE	NONE	3.4	Yes	No	No	NA	No
012	Thallium	ug/L	Available Data <DL	0.60	NONE	NONE	1.7	6.3	2	2	Yes	No	Yes	6.3	No
013	Zinc	ug/L	31	0.60	120	120	NONE	NONE	NONE	120	Yes	Yes	NA	NA	No
014	Total Cyanide	ug/L	Available Data <DL	0.60	22	5.2	700	220,000	200	5.2	Yes	No	No	NA	No
015	Asbestos	Fibers/L	Not Analyzed	0.60	NONE	NONE	7,000,000	NONE	7,000,000	7000000	No	NA	NA	NA	NA
016	TCDD TEQ_NoDNQ	ug/L	Available Data <DL	0.60	NONE	NONE	1.30E-08	1.40E-08	3.00E-08	0.000000014	Yes	No	No	220,000	No
017	Acrolein	ug/L	Available Data <DL	0.60	NONE	NONE	320	780	NONE	780	Yes	No	Yes	1.40E-08	No
018	Acrylonitrile	ug/L	Available Data <DL	0.60	NONE	NONE	0.059	0.66	NONE	0.66	Yes	No	Yes	780	No
019	Benzene	ug/L	Available Data <DL	0.60	NONE	NONE	1.2	71	1	1	Yes	No	Yes	0.66	No
020	Bromoform	ug/L	Available Data <DL	0.60	NONE	NONE	4.3	360	NONE	360	Yes	No	Yes	71	No
021	Carbon Tetrachloride	ug/L	Available Data <DL	0.60	NONE	NONE	0.25	4.4	0.5	0.5	Yes	No	Yes	360	No
022	Chlorobenzene	ug/L	Available Data <DL	0.60	NONE	NONE	680	21,000	70	70	Yes	No	Yes	4.4	No
023	Dibromochloromethane	ug/L	Available Data <DL	0.60	NONE	NONE	0.401	34	NONE	34	Yes	No	Yes	21,000	No
024	Chloroethane	ug/L	Available Data <DL	0.60	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	Yes	34	No
025	2-Chloroethylvinylether	ug/L	Available Data <DL	0.60	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
026	Chloroform	ug/L	Available Data <DL	0.60	NONE	NONE	Reserved	Reserved	NONE	NONE	Yes	No	No	NA	No
027	Bromodichloromethane	ug/L	Available Data <DL	0.60	NONE	NONE	0.56	46	NONE	46	Yes	No	Yes	46	No
028	1,1-Dichloroethane	ug/L	Available Data <DL	0.60	NONE	NONE	NONE	NONE	5	5	Yes	No	No	NA	No
029	1,2-Dichloroethane	ug/L	Available Data <DL	0.60	NONE	NONE	0.38	99	0.5	0.5	Yes	No	Yes	99	No
030	1,1-Dichloroethene	ug/L	Available Data <DL	0.60	NONE	NONE	0.057	3.2	6	3.2	Yes	No	Yes	3.2	No
031	1,2-Dichloropropane	ug/L	Available Data <DL	0.60	NONE	NONE	0.52	39	5	5	Yes	No	Yes	39	No
032	cis-1,3-Dichloropropene	ug/L	Available Data <DL	0.60	NONE	NONE	10	1,700	0.5	0.5	Yes	No	Yes	1,700	No
032a	trans-1,3-Dichloropropene	ug/L	Available Data <DL	0.60	NONE	NONE	10	1,700	0.5	0.5	Yes	No	Yes	1,700	No

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

TABLE F-5
REASONABLE POTENTIAL ANALYSIS - PRIORITY POLLUTANTS (OUTFALL 008)

FOURTH QUARTER 2014 REPORTING SUMMARY
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY
NPDES PERMIT CA0001309

					Step 1: Water Quality Criteria, Determine C						Step 2	Step 3			Step 4
					CTR CRITERIA				Basin Plan	C = Lowest Criteria	Is Effluent Data Available	Was Constituent Detected in Effluent Data	Are all Detection Limits > C	If DL > C, MEC = Min (DL)	MEC >= C
					Freshwater		Human Health								
CTR	Constituent	Units	MEC	CV	CMC = Acute	CCC = Chronic	HH W&O (Not App)	HH O = HH	Title 22 GWR						
033	Ethylbenzene	ug/L	Available Data <DL	0.60	NONE	NONE	3,100	29,000	700	700	Yes	No	Yes	29,000	No
034	Bromomethane	ug/L	Available Data <DL	0.60	NONE	NONE	48	4,000	NONE	4000	Yes	No	Yes	4,000	No
035	Chloromethane	ug/L	Available Data <DL	0.60	NONE	NONE	Narrative	Narrative	NONE	NONE	Yes	No	No	NA	No
036	Methylene chloride	ug/L	Available Data <DL	0.60	NONE	NONE	4.7	1,600	NONE	1600	Yes	No	Yes	1,600	No
037	1,1,2,2-Tetrachloroethane	ug/L	Available Data <DL	0.60	NONE	NONE	0.17	11	1	1	Yes	No	Yes	11	No
038	Tetrachloroethene	ug/L	Available Data <DL	0.60	NONE	NONE	0.8	8.85	5	5	Yes	No	Yes	8.85	No
039	Toluene	ug/L	Available Data <DL	0.60	NONE	NONE	6,800	200,000	150	150	Yes	No	Yes	200,000	No
040	trans-1,2-Dichloroethene	ug/L	Available Data <DL	0.60	NONE	NONE	700	140,000	10	10	Yes	No	Yes	140,000	No
041	1,1,1-Trichloroethane	ug/L	Available Data <DL	0.60	NONE	NONE	Narrative	Narrative	200	200	Yes	No	No	NA	No
042	1,1,2-trichloroethane	ug/L	Available Data <DL	0.60	NONE	NONE	0.6	42	5	5	Yes	No	Yes	42	No
043	Trichloroethene	ug/L	Available Data <DL	0.60	NONE	NONE	2.7	81	5	5	Yes	No	Yes	81	No
044	Vinyl chloride	ug/L	Available Data <DL	0.60	NONE	NONE	2	525	0.5	0.5	Yes	No	Yes	525	No
045	2-chlorophenol	ug/L	Available Data <DL	0.60	NONE	NONE	120	400	NONE	400	Yes	No	Yes	400	No
046	2,4-Dichlorophenol	ug/L	Available Data <DL	0.60	NONE	NONE	93	790	NONE	790	Yes	No	Yes	790	No
047	2,4-dimethylphenol	ug/L	Available Data <DL	0.60	NONE	NONE	540	2,300	NONE	2300	Yes	No	Yes	2,300	No
048	2-Methyl-4,6-dinitrophenol	ug/L	Available Data <DL	0.60	NONE	NONE	13.4	765	NONE	765	Yes	No	Yes	765	No
049	2,4-dinitrophenol	ug/L	Available Data <DL	0.60	NONE	NONE	70	14,000	NONE	14000	Yes	No	Yes	14,000	No
050	2-nitrophenol	ug/L	Available Data <DL	0.60	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
051	4-nitrophenol	ug/L	Available Data <DL	0.60	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
052	4-Chloro-3-methylphenol	ug/L	Available Data <DL	0.60	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
053	Pentachlorophenol	ug/L	Available Data <DL	0.60	pH dependent	pH dependent	0.28	8.2	1	1	Yes	No	Yes	8.2	No
054	Phenol	ug/L	Available Data <DL	0.60	NONE	NONE	21,000	4,600,000	NONE	4600000	Yes	No	Yes	4,600,000	No
055	2,4,6-Trichlorophenol	ug/L	Available Data <DL	0.60	NONE	NONE	2.1	6.5	NONE	6.5	Yes	No	Yes	6.5	No
056	Acenaphthene	ug/L	Available Data <DL	0.60	NONE	NONE	1,200	2,700	NONE	2700	Yes	No	Yes	2,700	No
057	Acenaphthylene	ug/L	Available Data <DL	0.60	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
058	Anthracene	ug/L	Available Data <DL	0.60	NONE	NONE	9,600	110,000	NONE	110000	Yes	No	Yes	110,000	No
059	Benzidine	ug/L	Available Data <DL	0.60	NONE	NONE	0.00012	0.00054	NONE	0.00054	Yes	No	Yes	0.00054	No
060	Benzo(a)Anthracene	ug/L	Available Data <DL	0.60	NONE	NONE	0.0044	0.049	NONE	0.049	Yes	No	Yes	0.049	No
061	Benzo(a)Pyrene	ug/L	Not Analyzed	0.60	NONE	NONE	0.0044	0.049	0.2	0.049	No	NA	NA	0.049	NA
062	Benzo(b)Fluoranthene	ug/L	Available Data <DL	0.60	NONE	NONE	0.0044	0.049	NONE	0.049	Yes	No	Yes	0.049	No
063	Benzo(g,h,i)Perylene	ug/L	Available Data <DL	0.60	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
064	Benzo(k)Fluoranthene	ug/L	Available Data <DL	0.60	NONE	NONE	0.0044	0.049	NONE	0.049	Yes	No	Yes	0.049	No
065	Bis(2-Chloroethoxy) methane	ug/L	Available Data <DL	0.60	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
066	bis (2-Chloroethyl) ether	ug/L	Available Data <DL	0.60	NONE	NONE	0.031	1.4	NONE	1.4	Yes	No	Yes	1.4	No

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

TABLE F-5
REASONABLE POTENTIAL ANALYSIS - PRIORITY POLLUTANTS (OUTFALL 008)

FOURTH QUARTER 2014 REPORTING SUMMARY
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY
NPDES PERMIT CA0001309

					Step 1: Water Quality Criteria, Determine C						Step 2	Step 3			Step 4
					CTR CRITERIA				Basin Plan	C = Lowest Criteria	Is Effluent Data Available	Was Constituent Detected in Effluent Data	Are all Detection Limits > C	If DL > C, MEC = Min (DL)	MEC >= C
					Freshwater		Human Health								
CTR	Constituent	Units	MEC	CV	CMC = Acute	CCC = Chronic	HH W&O (Not App)	HH O = HH	Title 22 GWR						
067	Bis(2-Chloroisopropyl) Ether	ug/L	Available Data <DL	0.60	NONE	NONE	1,400	170,000	NONE	170000	Yes	No	No	NA	No
068	bis (2-ethylhexyl) Phthalate	ug/L	Available Data <DL	0.60	NONE	NONE	1.8	5.9	4	4	Yes	No	Yes	5.9	No
069	4-Bromophenylphenylether	ug/L	Available Data <DL	0.60	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
070	Butylbenzylphthalate	ug/L	Available Data <DL	0.60	NONE	NONE	3,000	5,200	NONE	5200	Yes	No	Yes	5,200	No
071	2-Chloronaphthalene	ug/L	Available Data <DL	0.60	NONE	NONE	1,700	4,300	NONE	4300	Yes	No	Yes	4,300	No
072	4-Chlorophenylphenylether	ug/L	Available Data <DL	0.60	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	Yes	NONE	No
073	Chrysene	ug/L	Available Data <DL	0.60	NONE	NONE	0.0044	0.049	NONE	0.049	Yes	No	Yes	0.049	No
074	Dibenzo(a,h)Anthracene	ug/L	Available Data <DL	0.60	NONE	NONE	0.0044	0.049	NONE	0.049	Yes	No	Yes	0.049	No
075	1,2-Dichlorobenzene	ug/L	Available Data <DL	0.60	NONE	NONE	2,700	17,000	600	600	Yes	No	Yes	17,000	No
076	1,3-Dichlorobenzene	ug/L	Available Data <DL	0.60	NONE	NONE	400	2,600	NONE	2600	Yes	No	Yes	2,600	No
077	1,4-Dichlorobenzene	ug/L	Available Data <DL	0.60	NONE	NONE	400	2,600	5	5	Yes	No	Yes	2,600	No
078	3,3'-Dichlorobenzidine	ug/L	Available Data <DL	0.60	NONE	NONE	0.04	0.077	NONE	0.077	Yes	No	Yes	0.077	No
079	Diethylphthalate	ug/L	Available Data <DL	0.60	NONE	NONE	23,000	120,000	NONE	120000	Yes	No	Yes	120,000	No
080	Dimethylphthalate	ug/L	Available Data <DL	0.60	NONE	NONE	313,000	2,900,000	NONE	2900000	Yes	No	Yes	2,900,000	No
081	Di-n-butylphthalate	ug/L	Available Data <DL	0.60	NONE	NONE	2,700	12,000	NONE	12000	Yes	No	Yes	12,000	No
082	2,4-Dinitrotoluene	ug/L	Available Data <DL	0.60	NONE	NONE	0.11	9.1	NONE	9.1	Yes	No	Yes	9.1	No
083	2,6-Dinitrotoluene	ug/L	Available Data <DL	0.60	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
084	Di-n-octylphthalate	ug/L	Available Data <DL	0.60	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
085	1,2-Diphenylhydrazine	ug/L	Available Data <DL	0.60	NONE	NONE	0.04	0.54	NONE	0.54	Yes	No	Yes	0.54	No
086	Fluoranthene	ug/L	Available Data <DL	0.60	NONE	NONE	300	370	NONE	370	Yes	No	Yes	370	No
087	Fluorene	ug/L	Available Data <DL	0.60	NONE	NONE	1,300	14,000	NONE	14000	Yes	No	Yes	14,000	No
088	Hexachlorobenzene	ug/L	Available Data <DL	0.60	NONE	NONE	0.00075	0.00077	1	0.00077	Yes	No	Yes	0.00077	No
089	Hexachlorobutadiene	ug/L	Available Data <DL	0.60	NONE	NONE	0.44	50	NONE	50	Yes	No	Yes	50	No
090	Hexachlorocyclopentadiene	ug/L	Available Data <DL	0.60	NONE	NONE	240	17,000	50	50	Yes	No	Yes	17,000	No
091	Hexachloroethane	ug/L	Available Data <DL	0.60	NONE	NONE	1.9	8.9	NONE	8.9	Yes	No	Yes	8.9	No
092	Indeno(1,2,3-cd)Pyrene	ug/L	Available Data <DL	0.60	NONE	NONE	0.0044	0.049	NONE	0.049	Yes	No	Yes	0.049	No
093	Isophorone	ug/L	Available Data <DL	0.60	NONE	NONE	8.4	600	NONE	600	Yes	No	Yes	600	No
094	Naphthalene	ug/L	Available Data <DL	0.60	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
095	Nitrobenzene	ug/L	Available Data <DL	0.60	NONE	NONE	17	1,900	NONE	1900	Yes	No	Yes	1,900	No
096	N-Nitrosodimethylamine	ug/L	Available Data <DL	0.60	NONE	NONE	0.00069	8.1	NONE	8.1	Yes	No	Yes	8.1	No
097	n-Nitroso-di-n-propylamine	ug/L	Available Data <DL	0.60	NONE	NONE	0.005	1.4	NONE	1.4	Yes	No	Yes	1.4	No
098	N-Nitrosodiphenylamine	ug/L	Available Data <DL	0.60	NONE	NONE	5	16	NONE	16	Yes	No	Yes	16	No
099	Phenanthrene	ug/L	Available Data <DL	0.60	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
100	Pyrene	ug/L	Available Data <DL	0.60	NONE	NONE	960	11,000	NONE	11000	Yes	No	Yes	11,000	No

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

TABLE F-5
REASONABLE POTENTIAL ANALYSIS - PRIORITY POLLUTANTS (OUTFALL 008)

FOURTH QUARTER 2014 REPORTING SUMMARY
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY
NPDES PERMIT CA0001309

					Step 1: Water Quality Criteria, Determine C						Step 2	Step 3			Step 4
					CTR CRITERIA				Basin Plan	C = Lowest Criteria	Is Effluent Data Available	Was Constituent Detected in Effluent Data	Are all Detection Limits > C	If DL > C, MEC = Min (DL)	MEC >= C
					Freshwater		Human Health								
CTR	Constituent	Units	MEC	CV	CMC = Acute	CCC = Chronic	HH W&O (Not App)	HH O = HH	Title 22 GWR						
101	1,2,4-Trichlorobenzene	ug/L	Available Data <DL	0.60	NONE	NONE	NONE	NONE	70	70	Yes	No	No	NA	No
102	Aldrin	ug/L	Available Data <DL	0.60	3	NONE	0.00013	0.00014	NONE	0.00014	Yes	No	Yes	0.00014	No
103	alpha-BHC	ug/L	Available Data <DL	0.60	NONE	NONE	0.0039	0.013	NONE	0.013	Yes	No	Yes	0.013	No
104	beta-BHC	ug/L	Available Data <DL	0.60	NONE	NONE	0.014	0.046	NONE	0.046	Yes	No	Yes	0.046	No
105	Lindane (gamma-BHC)	ug/L	Available Data <DL	0.60	0.95	NONE	0.019	0.063	0.2	0.063	Yes	No	Yes	0.063	No
106	delta-BHC	ug/L	Available Data <DL	0.60	NONE	NONE	NONE	NONE	NONE	NONE	Yes	No	No	NA	No
107	Chlordane	ug/L	Available Data <DL	0.60	2.4	0.0043	0.00057	0.00059	0.1	0.00059	Yes	No	Yes	0.00059	No
108	4,4'-DDT	ug/L	Available Data <DL	0.60	1.1	0.001	0.00059	0.00059	NONE	0.00059	Yes	No	Yes	0.00059	No
109	4,4'-DDE	ug/L	Available Data <DL	0.60	NONE	NONE	0.00059	0.00059	NONE	0.00059	Yes	No	Yes	0.00059	No
110	4,4'-DDD	ug/L	Available Data <DL	0.60	NONE	NONE	0.00083	0.00084	NONE	0.00084	Yes	No	Yes	0.00084	No
111	Dieldrin	ug/L	Available Data <DL	0.60	0.24	0.056	0.00014	0.00014	NONE	0.00014	Yes	No	Yes	0.00014	No
112	Endosulfan I	ug/L	Available Data <DL	0.60	0.22	0.056	110	240	NONE	0.056	Yes	No	Yes	240	No
113	Endosulfan II	ug/L	Available Data <DL	0.60	0.22	0.056	110	240	NONE	0.056	Yes	No	Yes	240	No
114	Endosulfan Sulfate	ug/L	Available Data <DL	0.60	NONE	NONE	110	240	NONE	240	Yes	No	Yes	240	No
115	Endrin	ug/L	Available Data <DL	0.60	0.086	0.036	0.76	0.81	2	0.036	Yes	No	Yes	0.81	No
116	Endrin Aldehyde	ug/L	Available Data <DL	0.60	NONE	NONE	0.76	0.81	NONE	0.81	Yes	No	Yes	0.81	No
117	Heptachlor	ug/L	Available Data <DL	0.60	0.52	0.0038	0.00021	0.00021	0.01	0.00021	Yes	No	Yes	0.00021	No
118	Heptachlor Epoxide	ug/L	Available Data <DL	0.60	0.52	0.0038	0.0001	0.00011	0.01	0.00011	Yes	No	Yes	0.00011	No
119	Aroclor-1016	ug/L	Available Data <DL	0.60	NONE	0.014	0.00017	0.00017	0.5	0.00017	Yes	No	Yes	0.00017	No
120	Aroclor-1221	ug/L	Available Data <DL	0.60	NONE	0.014	0.00017	0.00017	0.5	0.00017	Yes	No	Yes	0.00017	No
121	Aroclor-1232	ug/L	Available Data <DL	0.60	NONE	0.014	0.00017	0.00017	0.5	0.00017	Yes	No	Yes	0.00017	No
122	Aroclor-1242	ug/L	Available Data <DL	0.60	NONE	0.014	0.00017	0.00017	0.5	0.00017	Yes	No	Yes	0.00017	No
123	Aroclor-1248	ug/L	Available Data <DL	0.60	NONE	0.014	0.00017	0.00017	0.5	0.00017	Yes	No	Yes	0.00017	No
124	Aroclor-1254	ug/L	Available Data <DL	0.60	NONE	0.014	0.00017	0.00017	0.5	0.00017	Yes	No	Yes	0.00017	No
125	Aroclor-1260	ug/L	Available Data <DL	0.60	NONE	0.014	0.00017	0.00017	0.5	0.00017	Yes	No	Yes	0.00017	No
126	Toxaphene	ug/L	Available Data <DL	0.60	0.73	0.0002	0.00073	0.00075	3	0.0002	Yes	No	Yes	0.00075	No
127	E. Coli	MPN/100ml	1600	0.60	NA	NA	NA	NA	235	235	Yes	Yes	NA	NA	Yes

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

TABLE F-6
REASONABLE POTENTIAL ANALYSIS - NONPRIORITY POLLUTANTS (OUTFALL 008)

FOURTH QUARTER 2014 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
8	Boron	Annual	mg/L	1	0.095	0.60	13.2	1.254	0	0	1.254	1	BU
8	Chloride	Discharge	mg/L	1	4.9	0.60	13.2	64.68	0	0	64.68	150	BU
8	Fluoride	Annual	mg/L	1	0.15	0.60	13.2	1.98	0	0	1.98	1.6	BU
8	Nitrate + Nitrite as Nitrogen (N)	Discharge	mg/L	1	4.3	0.60	13.2	56.76	0	0	56.76	8	BU/TMDL
8	Oil & Grease	Discharge	mg/L	1	Available Data <DL	0.60	Available Data <DL	Available Data <DL	0	0	NA	10	BU
8	Sulfate	Discharge	mg/L	1	4.3	0.60	13.2	56.76	0	0	56.76	300	BU
8	Total Dissolved Solids	Discharge	mg/L	1	120	0.60	13.2	1584	0	0	1584	150	BU
8	Total Suspended Solids	Annual	mg/L	1	27	0.60	13.2	356.4	0	0	356.4	45	BU

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