

**APPENDIX E**

**First Quarter 2018 Analytical Laboratory  
Reports and Validation Reports**

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**DATA VALIDATION REPORT**

**Boeing SSFL NPDES**

**SAMPLE DELIVERY GROUP: 440-206832-3, 440-206741-3**

**Prepared for**

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

**May 1, 2018**

MEC<sup>x</sup>, Inc.  
8864 Interchange Drive  
Houston, Texas 77054

[www.mecx.net](http://www.mecx.net)





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## I. INTRODUCTION

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**Task Order Title:** Boeing SSFL NPDES

**Contract:** 40458-078 and 40458-083

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

**Sample Delivery Group:** 440-206832-3, 440-206741-3

**Project Manager:** Katherine Miller

**Matrix:** Water

**QC Level:** IV

**No. of Samples:** 2

**No. of Reanalyses/Dilutions:** 0

**Laboratory:** TestAmerica-Irvine

**TABLE 1 - SAMPLE IDENTIFICATION**

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall002_20180323_Comp	440-206832-3	N/A	Water	3/23/2018 10:00:00 AM	Radium
Outfall009_20180322_Comp	440-206741-3	N/A	Water	3/22/2018 03:30:00 PM	Radium



## II. SAMPLE MANAGEMENT

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According to the case narrative, sample condition upon receipt forms and the chains-of-custody (COCs) provided by the laboratory for multiple sample delivery groups (SDGs):

- The laboratories received the samples in these SDGs on ice and within the temperature limits of  $\leq 6$  degrees Celsius ( $^{\circ}\text{C}$ ) and  $> 0^{\circ}\text{C}$ .
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs.

The following issues were noted:

- Some corrections to the original COCs were not initialed or dated.
- The client issued a list of sample collection times which affected samples in several SDGs; therefore, the sample collection dates and times on the COCs do not always match the revised collection dates and times used in the laboratory's raw data package and in this report.



TABLE 2 - DATA QUALIFIER REFERENCE

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





TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination ( $r^2$ ) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



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



### III. VARIOUS EPA METHODS — RADIONUCLIDES; RADIUM <sup>226</sup> AND RADIUM <sup>228</sup>

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Elizabeth Wessling of MEC<sup>X</sup> reviewed the SDGs on May 1, 2018

The samples listed in Table 1 for these analyses were validated based on the guidelines outlined in the *EPA Methods 903.0 and 904.0*, and the *National Functional Guidelines for Inorganic Data Review (2014)*.

#### III.1. HOLDING TIMES:

The samples were received unpreserved. The samples were acidified and allowed to equilibrate. The samples were prepared within five days of preservation and analyzed following in-growth.

#### III.2. CALIBRATION:

The radium-226 detector efficiencies were less than 20%; therefore, the nondetected results for radium-226 were qualified as estimated (UJ) in both site samples. Carrier/tracer recoveries were within the laboratory control limits of 40-110%. All calibration checks were acceptable.

#### III.3. QUALITY CONTROL SAMPLES

##### III.3.1. METHOD BLANKS

Qualifications for activity in method blanks were not required as all sample results were nondetect.

##### III.3.2. LABORATORY CONTROL SAMPLES:

The recoveries and RPDs were within laboratory-established control limits.

##### III.3.3. LABORATORY DUPLICATES:

Laboratory duplicates were performed for radium-226 and radium-228 for sample Outfall009\_20180322. Both the sample and duplicate results were nondetect.

##### III.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE:

Matrix spike (MS)/MSD analyses were performed for radium-226 and radium-228 for sample Outfall009\_20180322. Recoveries and RPDs were within the laboratory control limits.

#### III.4. SAMPLE RESULT VERIFICATION:

An EPA Level IV review was performed on a representative number of samples 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.

#### III.5. FIELD QC SAMPLES:

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. The following are findings associated with field QC samples:

##### III.5.1. FIELD BLANKS AND EQUIPMENT BLANKS:

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

##### III.5.2. FIELD DUPLICATES:

There were no field duplicate samples identified for this SDG.

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# Validated Sample Result Forms: 4402067413

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*Analysis Method*    *RADIUM*

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**Sample Name**      Outfall009\_20180322\_Comp      **Matrix Type:** WM      **Result Type:** TRG

**Sample Date:** 3/22/2018 3:30:00 PM      **Validation Level:** 8

**Lab Sample Name:** 440-206741-3

<b>Analyte</b>	<b>CAS No</b>	<b>Result Value</b>	<b>Total Uncert.</b>	<b>RL</b>	<b>MDC</b>	<b>Result Units</b>	<b>Lab Qualifier</b>	<b>Validation Qualifier</b>	<b>Validation Notes</b>
Radium-226 & 228	RADIUM226228	0.412	0.238				U, U	UJ	C, \$

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# Validated Sample Result Forms: 4402068323

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*Analysis Method*    *RADIUM*

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**Sample Name**      Outfall002\_20180323\_Comp      **Matrix Type:** WM      **Result Type:** TRG

**Sample Date:** 3/23/2018 10:00:00 AM      **Validation Level:** 8

**Lab Sample Name:** 440-206832-3

<b>Analyte</b>	<b>CAS No</b>	<b>Result Value</b>	<b>Total Uncert.</b>	<b>RL</b>	<b>MDC</b>	<b>Result Units</b>	<b>Lab Qualifier</b>	<b>Validation Qualifier</b>	<b>Validation Notes</b>
Radium-226 & 228	RADIUM226228	0.558	0.302				U, U	<b>UJ</b>	<b>C, \$</b>

---

# 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: 440-206832-3

Client Project/Site: Annual Outfall 002 Comp

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

4/23/2018 5:42:28 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

[urvashi.patel@testamericainc.com](mailto:urvashi.patel@testamericainc.com)

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

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

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

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



---

Urvashi Patel  
Manager of Project Management  
4/23/2018 5:42:28 PM



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# Sample Summary

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

TestAmerica Job ID: 440-206832-3

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Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-206832-2	Outfall002_20180323_Comp	Water	03/23/18 10:00	03/23/18 18:10

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# Case Narrative

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

TestAmerica Job ID: 440-206832-3

**Job ID: 440-206832-3**

**Laboratory: TestAmerica Irvine**

## Narrative

### Job Narrative 440-206832-3

#### Comments

Sample time was changed to 10:00am per client request..

#### Receipt

The samples were received on 3/23/2018 6:10 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 1.8° C, 2.3° C and 3.9° C.

#### Receipt Exceptions

The Field Sampler was not listed on the Chain of Custody.

The following samples were received at the laboratory without a sample collection time documented on the chain of custody: Outfall002\_20180323\_Comp\_F (440-206832-1), Outfall002\_20180323\_Comp (440-206832-2) and Outfall002\_20180323\_Comp\_Extra (440-206832-3). Logged in with 0001.

Please re-calculate all methods as client changed sample time to 10:00am. Please re-run the level IV as well.

Outfall002\_20180323\_Comp\_F (440-206832-1), Outfall002\_20180323\_Comp (440-206832-2) and Outfall002\_20180323\_Comp\_Extra (440-206832-3)

#### RAD

Method(s) 900.0: Gross Alpha/Beta Prep Batch 160-359958

The gross alpha detection goal was not met for the following samples due to a reduction of the sample size attributed to high residual mass: (240-93696-D-5-A) and (240-93696-D-5-D DU). Analytical results are reported with the detection limit achieved.

Method(s) A-01-R: Uranium prep batch 160-358015

The detection goal was not met for the following sample due to a reduced aliquot attributed to the presence of matrix interferences: (440-206741-M-1-O). See prep NCM 135817. Analytical results are reported with the MDC achieved.

Method(s) ExtChrom: Uranium prep batch 160-358015: The following samples were yellow in color and had a strong odor. The sample was weighed at a reduced aliquot to prevent possible matrix interference.

Outfall002\_20180323\_Comp (440-206832-2)

Method(s) PrecSep\_0: Radium 228 Prep Batch 160-358165:

Insufficient sample volume was available to perform a sample duplicate (DUP,MS, MSD) for the following samples: Outfall002\_20180323\_Comp (440-206832-2). A laboratory control sample/ laboratory control sample duplicate (LCS/ LCSD) were prepared instead to demonstrate batch precision.

Method(s) PrecSep\_0: Radium 228 Prep Batch 160-358165:

Sample aliquots reduced due to potential matrix interference. Sample was brown, cloudy and contained undissolved particulates.

Outfall002\_20180323\_Comp (440-206832-2)

Method(s) PrecSep-21: Radium 226 Prep Batch 160-358155:

Insufficient sample volume was available to perform a sample duplicate (DUP,MS, MSD) for the following samples: Outfall002\_20180323\_Comp (440-206832-2). A laboratory control sample/ laboratory control sample duplicate (LCS/ LCSD) were prepared instead to demonstrate batch precision.

Method(s) PrecSep-21: Radium 226 Prep batch 160-358155:

# Case Narrative

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

TestAmerica Job ID: 440-206832-3

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## Job ID: 440-206832-3 (Continued)

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### Laboratory: TestAmerica Irvine (Continued)

Sample aliquots reduced due to potential matrix interference. Sample was brown, cloudy, and contained undissolved particulates.

Outfall002\_20180323\_Comp (440-206832-2)

Method(s) PrecSep-7: Strontium 90 Prep Batch 160-358324:

Insufficient sample volume was available to perform a sample duplicate (DUP) for the following samples: Outfall002\_20180323\_Comp (440-206832-2). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead to demonstrate batch precision.

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

### Metals

There is only one sample in batch no. 468327 and it's volume was not enough for source and MS and MSD, so sample (LCS) was performed in duplicate to provide precision data for the batch.

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



# Client Sample Results

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

TestAmerica Job ID: 440-206832-3

**Client Sample ID: Outfall002\_20180323\_Comp**

**Lab Sample ID: 440-206832-2**

**Date Collected: 03/23/18 10:00**

**Matrix: Water**

**Date Received: 03/23/18 18:10**

## Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	3.73		1.59	1.64	3.00	1.99	pCi/L	04/10/18 08:43	04/15/18 14:17	1
Gross Beta	2.67		0.777	0.822	4.00	0.934	pCi/L	04/10/18 08:43	04/15/18 14:17	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	-2.93	U	10.7	10.7	20.0	12.4	pCi/L	03/28/18 16:18	04/01/18 17:31	1
Potassium-40	-53.3	U	158	158		211	pCi/L	03/28/18 16:18	04/01/18 17:31	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.129	U	0.102	0.103	1.00	0.148	pCi/L	03/29/18 11:10	04/20/18 06:17	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	82.9		40 - 110					03/29/18 11:10	04/20/18 06:17	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.282	U	0.282	0.284	1.00	0.558	pCi/L	03/29/18 12:02	04/06/18 14:38	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	82.9		40 - 110					03/29/18 12:02	04/06/18 14:38	1
Y Carrier	92.3		40 - 110					03/29/18 12:02	04/06/18 14:38	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.214	U	0.199	0.200	3.00	0.322	pCi/L	03/30/18 10:31	04/10/18 09:31	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Sr Carrier	73.8		40 - 110					03/30/18 10:31	04/10/18 09:31	1
Y Carrier	90.8		40 - 110					03/30/18 10:31	04/10/18 09:31	1

## Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-210	U	180	181	500	358	pCi/L	04/17/18 15:33	04/18/18 15:49	1

TestAmerica Irvine

# Client Sample Results

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

TestAmerica Job ID: 440-206832-3

**Client Sample ID: Outfall002\_20180323\_Comp**

**Lab Sample ID: 440-206832-2**

**Date Collected: 03/23/18 10:00**

**Matrix: Water**

**Date Received: 03/23/18 18:10**

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
<b>Total Uranium</b>	<b>1.38</b>		0.845	0.849	1.00	0.736	pCi/L	03/28/18 13:56	03/31/18 19:25	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	85.2		30 - 110					03/28/18 13:56	03/31/18 19:25	1

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# Method Summary

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

TestAmerica Job ID: 440-206832-3

Method	Method Description	Protocol	Laboratory
900.0	Gross Alpha and Gross Beta Radioactivity	EPA	TAL SL
901.1	Cesium 137 & Other Gamma Emitters (GS)	EPA	TAL SL
903.0	Radium-226 (GFPC)	EPA	TAL SL
904.0	Radium-228 (GFPC)	EPA	TAL SL
905	Strontium-90 (GFPC)	EPA	TAL SL
906.0	Tritium, Total (LSC)	EPA	TAL SL
A-01-R	Isotopic Uranium (Alpha Spectrometry)	DOE	TAL SL
Evaporation	Preparation, Evaporation	None	TAL SL
ExtChrom	Preparation, Extraction Chromatography Resin Actinide Separation	None	TAL SL
Fill_Geo-0	Fill Geometry, No In-Growth	None	TAL SL
LSC_Dist_Susp	Distillation and Suspension (LSC)	None	TAL SL
PrecSep_0	Preparation, Precipitate Separation	None	TAL SL
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	TAL SL
PrecSep-7	Preparation, Precipitate Separation (7-Day In-Growth)	None	TAL SL

#### Protocol References:

DOE = U.S. Department of Energy  
EPA = US Environmental Protection Agency  
None = None

#### Laboratory References:

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

# Lab Chronicle

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

TestAmerica Job ID: 440-206832-3

**Client Sample ID: Outfall002\_20180323\_Comp**

**Lab Sample ID: 440-206832-2**

**Date Collected: 03/23/18 10:00**

**Matrix: Water**

**Date Received: 03/23/18 18:10**

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	359958	04/10/18 08:43	MRB	TAL SL
Total/NA	Analysis	900.0		1			360899	04/15/18 14:17	CDR	TAL SL
Total/NA	Prep	Fill_Geo-0			1000 mL	1.0 g	358034	03/28/18 16:18	SJS	TAL SL
Total/NA	Analysis	901.1		1			358382	04/01/18 17:31	CDR	TAL SL
Total/NA	Prep	PrecSep-21			750.14 mL	1.0 g	358155	03/29/18 11:10	TJT	TAL SL
Total/NA	Analysis	903.0		1			362022	04/20/18 06:17	RTM	TAL SL
Total/NA	Prep	PrecSep_0			750.14 mL	1.0 g	358165	03/29/18 12:02	TJT	TAL SL
Total/NA	Analysis	904.0		1			359142	04/06/18 14:38	ALD	TAL SL
Total/NA	Prep	PrecSep-7			999.56 mL	1.0 g	358324	03/30/18 10:31	TJT	TAL SL
Total/NA	Analysis	905		1			359778	04/10/18 09:31	RTM	TAL SL
Total/NA	Prep	LSC_Dist_Susp			100.2 mL	1.0 g	361491	04/17/18 15:33	JDL	TAL SL
Total/NA	Analysis	906.0		1			361708	04/18/18 15:49	SMR	TAL SL
Total/NA	Prep	ExtChrom			100.38 mL	1.0 mL	358015	03/28/18 13:56	CMM	TAL SL
Total/NA	Analysis	A-01-R		1			358416	03/31/18 19:25	ALD	TAL SL

**Laboratory References:**

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

# QC Sample Results

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

TestAmerica Job ID: 440-206832-3

## Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

**Lab Sample ID: MB 160-359958/1-A**  
**Matrix: Water**  
**Analysis Batch: 360897**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 359958**

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Gross Alpha	-0.2333	U	0.412	0.413	3.00	0.919	pCi/L	04/10/18 08:43	04/15/18 14:08	1
Gross Beta	-0.3822	U	0.539	0.541	4.00	1.02	pCi/L	04/10/18 08:43	04/15/18 14:08	1

**Lab Sample ID: LCS 160-359958/2-A**  
**Matrix: Water**  
**Analysis Batch: 360897**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 359958**

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec.
				Uncert. (2σ+/-)					Limits
Gross Alpha	49.8	46.09		6.62	3.00	1.37	pCi/L	93	73 - 133

**Lab Sample ID: LCSB 160-359958/3-A**  
**Matrix: Water**  
**Analysis Batch: 360897**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 359958**

Analyte	Spike Added	LCSB Result	LCSB Qual	Total	RL	MDC	Unit	%Rec	%Rec.
				Uncert. (2σ+/-)					Limits
Gross Beta	88.6	83.02		8.84	4.00	1.02	pCi/L	94	75 - 125

**Lab Sample ID: 240-93696-D-5-B MS**  
**Matrix: Water**  
**Analysis Batch: 360897**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**  
**Prep Batch: 359958**

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total	RL	MDC	Unit	%Rec	%Rec.
						Uncert. (2σ+/-)					Limits
Gross Alpha	-0.747	U G	112	91.64		14.5	3.00	3.95	pCi/L	82	60 - 140

**Lab Sample ID: 240-93696-D-5-C MSBT**  
**Matrix: Water**  
**Analysis Batch: 360899**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**  
**Prep Batch: 359958**

Analyte	Sample Result	Sample Qual	Spike Added	MSBT Result	MSBT Qual	Total	RL	MDC	Unit	%Rec	%Rec.
						Uncert. (2σ+/-)					Limits
Gross Beta	2.22	U	199	203.5		21.6	4.00	2.24	pCi/L	101	60 - 140

**Lab Sample ID: 240-93696-D-5-D DU**  
**Matrix: Water**  
**Analysis Batch: 360899**

**Client Sample ID: Duplicate**  
**Prep Type: Total/NA**  
**Prep Batch: 359958**

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total	RL	MDC	Unit	RER	%Rec.	RER	Limit
					Uncert. (2σ+/-)					Limits		
Gross Alpha	-0.747	U G	0.8557	U G	2.37	3.00	4.34	pCi/L		0.34		1
Gross Beta	2.22	U	1.725	U	1.27	4.00	1.93	pCi/L		0.18		1

TestAmerica Irvine



# QC Sample Results

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

TestAmerica Job ID: 440-206832-3

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

**Lab Sample ID: MB 160-358034/1-A**  
**Matrix: Water**  
**Analysis Batch: 358380**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 358034**

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Cesium-137	3.946	U	7.81	7.82	20.0	9.82	pCi/L	03/28/18 16:18	04/01/18 17:34	1
Potassium-40	12.47	U	76.1	76.1		138	pCi/L	03/28/18 16:18	04/01/18 17:34	1

**Lab Sample ID: LCS 160-358034/2-A**  
**Matrix: Water**  
**Analysis Batch: 358381**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 358034**

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Americium-241	136000	132900		15400		529	pCi/L	98	90 - 111
Cesium-137	45800	44350		4450	20.0	166	pCi/L	97	90 - 111
Cobalt-60	34300	32950		3270		107	pCi/L	96	89 - 110

**Lab Sample ID: 440-206832-2 DU**  
**Matrix: Water**  
**Analysis Batch: 358380**

**Client Sample ID: Outfall002\_20180323\_Comp**  
**Prep Type: Total/NA**  
**Prep Batch: 358034**

Analyte	Sample Sample		DU	DU	Total	RL	MDC	Unit	RER	RER Limit
	Result	Qual	Result	Qual	Uncert. (2σ+/-)					
Cesium-137	-2.93	U	1.793	U	9.04	20.0	11.7	pCi/L	0.24	1
Potassium-40	-53.3	U	-46.78	U	159		210	pCi/L	0.02	1

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

**Lab Sample ID: MB 160-358155/23-A**  
**Matrix: Water**  
**Analysis Batch: 362022**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 358155**

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	0.008176	U	0.0450	0.0450	1.00	0.0902	pCi/L	03/29/18 11:10	04/20/18 08:11	1
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Ba Carrier	104		40 - 110					03/29/18 11:10	04/20/18 08:11	1

**Lab Sample ID: LCS 160-358155/1-A**  
**Matrix: Water**  
**Analysis Batch: 361927**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 358155**

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Radium-226	11.8	9.556		0.988	1.00	0.0675	pCi/L	81	68 - 137
<b>Carrier</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>						
Ba Carrier	101		40 - 110						

TestAmerica Irvine

# QC Sample Results

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

TestAmerica Job ID: 440-206832-3

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

Lab Sample ID: LCSD 160-358155/2-A  
Matrix: Water  
Analysis Batch: 361927

Client Sample ID: Lab Control Sample Dup  
Prep Type: Total/NA  
Prep Batch: 358155

Analyte	Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226	11.8	9.474		0.976	1.00	0.0632	pCi/L	80	68 - 137	0.04	1
<b>Carrier</b>	<b>%Yield</b>	<b>LCSD Qualifier</b>	<b>Limits</b>								
Ba Carrier	103		40 - 110								

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

Lab Sample ID: MB 160-358165/23-A  
Matrix: Water  
Analysis Batch: 359142

Client Sample ID: Method Blank  
Prep Type: Total/NA  
Prep Batch: 358165

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.2223	U	0.192	0.193	1.00	0.307	pCi/L	03/29/18 12:02	04/06/18 14:38	1
<b>Carrier</b>	<b>%Yield</b>	<b>MB Qualifier</b>	<b>Limits</b>							
Ba Carrier	104		40 - 110							
Y Carrier	93.5		40 - 110							
								<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
								03/29/18 12:02	04/06/18 14:38	1
								03/29/18 12:02	04/06/18 14:38	1

Lab Sample ID: LCS 160-358165/1-A  
Matrix: Water  
Analysis Batch: 359142

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA  
Prep Batch: 358165

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	8.42	8.106		0.943	1.00	0.313	pCi/L	96	56 - 140
<b>Carrier</b>	<b>%Yield</b>	<b>LCS Qualifier</b>	<b>Limits</b>						
Ba Carrier	101		40 - 110						
Y Carrier	92.3		40 - 110						

Lab Sample ID: LCSD 160-358165/2-A  
Matrix: Water  
Analysis Batch: 359142

Client Sample ID: Lab Control Sample Dup  
Prep Type: Total/NA  
Prep Batch: 358165

Analyte	Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228	8.42	7.914		0.934	1.00	0.392	pCi/L	94	56 - 140	0.10	1
<b>Carrier</b>	<b>%Yield</b>	<b>LCSD Qualifier</b>	<b>Limits</b>								
Ba Carrier	103		40 - 110								
Y Carrier	91.2		40 - 110								

TestAmerica Irvine

# QC Sample Results

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

TestAmerica Job ID: 440-206832-3

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

**Lab Sample ID: MB 160-358324/10-A**  
**Matrix: Water**  
**Analysis Batch: 359778**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 358324**

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.06403	U	0.181	0.181	3.00	0.313	pCi/L	03/30/18 10:31	04/10/18 09:31	1

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	82.3		40 - 110	03/30/18 10:31	04/10/18 09:31	1
Y Carrier	88.2		40 - 110	03/30/18 10:31	04/10/18 09:31	1

**Lab Sample ID: LCS 160-358324/1-A**  
**Matrix: Water**  
**Analysis Batch: 359778**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 358324**

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Strontium-90	8.28	8.755		0.895	3.00	0.249	pCi/L	106	75 - 125

Carrier	LCS %Yield	LCS Qualifier	Limits
Sr Carrier	85.4		40 - 110
Y Carrier	92.3		40 - 110

**Lab Sample ID: LCSD 160-358324/2-A**  
**Matrix: Water**  
**Analysis Batch: 359778**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 358324**

Analyte	Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Strontium-90	8.28	9.026		0.928	3.00	0.323	pCi/L	109	75 - 125	0.15	1

Carrier	LCSD %Yield	LCSD Qualifier	Limits
Sr Carrier	83.4		40 - 110
Y Carrier	92.7		40 - 110

## Method: 906.0 - Tritium, Total (LSC)

**Lab Sample ID: MB 160-361491/1-A**  
**Matrix: Water**  
**Analysis Batch: 361708**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 361491**

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-172.5	U	183	183	500	355	pCi/L	04/17/18 15:33	04/18/18 14:05	1

# QC Sample Results

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

TestAmerica Job ID: 440-206832-3

## Method: 906.0 - Tritium, Total (LSC) (Continued)

**Lab Sample ID: LCS 160-361491/2-A**  
**Matrix: Water**  
**Analysis Batch: 361708**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 361491**

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	2760	2640		432	500	367	pCi/L	96	74 - 114

**Lab Sample ID: 440-206741-S-1-D MS**  
**Matrix: Water**  
**Analysis Batch: 361708**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**  
**Prep Batch: 361491**

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	-140	U	2760	2509		422	500	369	pCi/L	91	67 - 130

**Lab Sample ID: 440-206741-S-1-E MSD**  
**Matrix: Water**  
**Analysis Batch: 361708**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Total/NA**  
**Prep Batch: 361491**

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Tritium	-140	U	2760	2347		391	500	335	pCi/L	85	67 - 130	0.20	1

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

**Lab Sample ID: MB 160-358015/1-A**  
**Matrix: Water**  
**Analysis Batch: 358407**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 358015**

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Total Uranium	0.08637	U	0.1188	0.1188	1.00	0.159	pCi/L	03/28/18 13:56	03/31/18 19:25	1
<b>Tracer</b>	<b>%Yield</b>	<b>MB Qualifier</b>	<b>Limits</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Uranium-232	96.5		30 - 110					03/28/18 13:56	03/31/18 19:25	1

**Lab Sample ID: LCS 160-358015/2-A**  
**Matrix: Water**  
**Analysis Batch: 358445**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 358015**

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Uranium-234	12.7	12.75		1.52	1.00	0.156	pCi/L	100	84 - 120
Uranium-238	13.0	13.94		1.63	1.00	0.148	pCi/L	107	83 - 121
<b>Tracer</b>	<b>LCS %Yield</b>	<b>LCS Qualifier</b>	<b>Limits</b>						
Uranium-232	93.5		30 - 110						

# QC Sample Results

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

TestAmerica Job ID: 440-206832-3

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

**Lab Sample ID: 440-206741-A-1-G MS**  
**Matrix: Water**  
**Analysis Batch: 358462**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**  
**Prep Batch: 358015**

Analyte	Sample		Spike Added	MS		Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
	Result	Qual		Result	Qual						
Uranium-234	-0.144	U G	64.1	61.00		8.10	1.00	1.34	pCi/L	95	65 - 146
Uranium-238	0.338	U G	65.5	68.71		8.80	1.00	1.34	pCi/L	104	68 - 143
<b>MS MS</b>											
<b>Tracer</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>								
Uranium-232	64.3		30 - 110								

**Lab Sample ID: 440-206741-A-1-H MSD**  
**Matrix: Water**  
**Analysis Batch: 358408**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Total/NA**  
**Prep Batch: 358015**

Analyte	Sample		Spike Added	MSD		Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	Limit
	Result	Qual		Result	Qual								
Uranium-234	-0.144	U G	63.8	59.79		8.01	1.00	1.05	pCi/L	94	65 - 146	0.07	1
Uranium-238	0.338	U G	65.2	64.10		8.40	1.00	0.920	pCi/L	98	68 - 143	0.27	1
<b>MSD MSD</b>													
<b>Tracer</b>	<b>%Yield</b>	<b>Qualifier</b>	<b>Limits</b>										
Uranium-232	65.0		30 - 110										

# QC Association Summary

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

TestAmerica Job ID: 440-206832-3

## Rad

### Prep Batch: 358015

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206832-2	Outfall002_20180323_Comp	Total/NA	Water	ExtChrom	
MB 160-358015/1-A	Method Blank	Total/NA	Water	ExtChrom	
LCS 160-358015/2-A	Lab Control Sample	Total/NA	Water	ExtChrom	
440-206741-A-1-G MS	Matrix Spike	Total/NA	Water	ExtChrom	
440-206741-A-1-H MSD	Matrix Spike Duplicate	Total/NA	Water	ExtChrom	

### Prep Batch: 358034

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206832-2	Outfall002_20180323_Comp	Total/NA	Water	Fill_Geo-0	
MB 160-358034/1-A	Method Blank	Total/NA	Water	Fill_Geo-0	
LCS 160-358034/2-A	Lab Control Sample	Total/NA	Water	Fill_Geo-0	
440-206832-2 DU	Outfall002_20180323_Comp	Total/NA	Water	Fill_Geo-0	

### Prep Batch: 358155

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206832-2	Outfall002_20180323_Comp	Total/NA	Water	PrecSep-21	
MB 160-358155/23-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-358155/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-358155/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

### Prep Batch: 358165

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206832-2	Outfall002_20180323_Comp	Total/NA	Water	PrecSep_0	
MB 160-358165/23-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-358165/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-358165/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	

### Prep Batch: 358324

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206832-2	Outfall002_20180323_Comp	Total/NA	Water	PrecSep-7	
MB 160-358324/10-A	Method Blank	Total/NA	Water	PrecSep-7	
LCS 160-358324/1-A	Lab Control Sample	Total/NA	Water	PrecSep-7	
LCSD 160-358324/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-7	

### Prep Batch: 359958

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206832-2	Outfall002_20180323_Comp	Total/NA	Water	Evaporation	
MB 160-359958/1-A	Method Blank	Total/NA	Water	Evaporation	
LCS 160-359958/2-A	Lab Control Sample	Total/NA	Water	Evaporation	
LCSB 160-359958/3-A	Lab Control Sample	Total/NA	Water	Evaporation	
240-93696-D-5-B MS	Matrix Spike	Total/NA	Water	Evaporation	
240-93696-D-5-C MSBT	Matrix Spike	Total/NA	Water	Evaporation	
240-93696-D-5-D DU	Duplicate	Total/NA	Water	Evaporation	

### Prep Batch: 361491

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206832-2	Outfall002_20180323_Comp	Total/NA	Water	LSC_Dist_Susp	
MB 160-361491/1-A	Method Blank	Total/NA	Water	LSC_Dist_Susp	
LCS 160-361491/2-A	Lab Control Sample	Total/NA	Water	LSC_Dist_Susp	
440-206741-S-1-D MS	Matrix Spike	Total/NA	Water	LSC_Dist_Susp	
440-206741-S-1-E MSD	Matrix Spike Duplicate	Total/NA	Water	LSC_Dist_Susp	

TestAmerica Irvine

# Definitions/Glossary

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

TestAmerica Job ID: 440-206832-3

## Qualifiers

### Rad

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

## Glossary

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

# Accreditation/Certification Summary

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

TestAmerica Job ID: 440-206832-3

## Laboratory: TestAmerica Irvine

The accreditations/certifications listed below are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	CA ELAP 2706	06-30-18

## Laboratory: TestAmerica St. Louis

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

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska	State Program	10	MO00054	06-30-18 *
Arizona	State Program	9	AZ0813	12-08-18
California	State Program	9	2886	06-30-18 *
Connecticut	State Program	1	PH-0241	03-31-19
Florida	NELAP	4	E87689	06-30-18 *
Illinois	NELAP	5	200023	11-30-18
Iowa	State Program	7	373	12-01-18
Kansas	NELAP	7	E-10236	10-31-18
Kentucky (DW)	State Program	4	90125	12-31-18
L-A-B	DoD ELAP		L2305	04-06-19
Louisiana	NELAP	6	04080	06-30-18
Louisiana (DW)	NELAP	6	LA180017	12-31-18
Maryland	State Program	3	310	09-30-18
Michigan	State Program	5	9005	06-30-18
Missouri	State Program	7	780	06-30-18
Nevada	State Program	9	MO000542018-1	07-31-18
New Jersey	NELAP	2	MO002	06-30-18 *
New York	NELAP	2	11616	03-31-19
North Dakota	State Program	8	R207	06-30-18
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-18
Pennsylvania	NELAP	3	68-00540	02-28-19
South Carolina	State Program	4	85002001	06-30-18
Texas	NELAP	6	T104704193-17-11	07-31-18
US Fish & Wildlife	Federal		058448	08-31-18
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542016-8	07-31-18
Virginia	NELAP	3	460230	06-14-18 *
Washington	State Program	10	C592	08-30-18
West Virginia DEP	State Program	3	381	08-31-18 *

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



## Patel, Urvashi

---

**From:** Miller, Katherine <KMiller@haleyaldrich.com>  
**Sent:** Wednesday, April 18, 2018 10:36 AM  
**To:** Patel, Urvashi; Marshall, Leandra  
**Subject:** RE: March rain event sample times

### -External Email-

---

Yes please make the change to 10AM.

Katherine Miller  
**HALEY & ALDRICH**  
Tel: 520.289.8606

---

**From:** Patel, Urvashi <[Urvashi.Patel@testamericainc.com](mailto:Urvashi.Patel@testamericainc.com)>  
**Sent:** Wednesday, April 18, 2018 10:34 AM  
**To:** Marshall, Leandra <[LMarshall@haleyaldrich.com](mailto:LMarshall@haleyaldrich.com)>  
**Cc:** Miller, Katherine <[KMiller@haleyaldrich.com](mailto:KMiller@haleyaldrich.com)>  
**Subject:** RE: March rain event sample times

Hi Leandra

Per the email below, I need to revise SDG 440-206832 to change the sample time from 4:31 to 10:00am? We have to revise all the deliverables for job-1 so there will be a charge for the revision. I will see if we can complete this today.

Thank you,

**URVASHI PATEL**  
Manager of Project Management

### Test America

THE LEADER IN ENVIRONMENTAL TESTING

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

[www.testamericainc.com](http://www.testamericainc.com)

---

**From:** Marshall, Leandra [<mailto:LMarshall@haleyaldrich.com>]  
**Sent:** Tuesday, April 17, 2018 10:46 AM  
**To:** Patel, Urvashi  
**Subject:** RE: March rain event sample times

### -External Email-

---

Hi Urvashi,

One of our sampling times was revised, so please revise associated lab reports and resend to us:

OF002 Composite on 3/23/18 (SDG 440-206832) was sampled at 10:00.

Thanks!  
Leandra





CHAIN OF CUSTODY FORM

<b>Client Name/Address:</b> Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108		<b>Project:</b> Boeing-SSFL NPDES Permit 2018 Annual Outfall 001, 002, 011, 018 Outfall 002 Comp		<b>Project Manager:</b> Katherine Miller 520.289.8606, 520.904.6944 (cell)		<b>Field Manager:</b> Mark Dominick 978.234.5033, 818.598.0702 (cell)	
<b>Test America Contact:</b> Urvasi Patel 17461 Derian Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055		TestAmerica's services under this CoC shall be performed in accordance with the T&Cs within Blanket Service Agreement 2015-18. TestAmerica by and between Haley & Aldrich, Inc. its subsidiaries and affiliates, and TestAmerica Laboratories Inc		Total Dissolved Metals (E207), As, Ba, B, Be, Co, Cr, Fe, Mn, Ni, V, Zn (E200), Ag, Cd, Cu, Pb, Sb, Se, Tl (E200 B)		Total Dissolved Metals Mercury (E245)	
<b>Sampler:</b>		Sample Matrix: WM Sampling Date/Time: 3/23/2018 Container Type: 1 L Poly Preservative: None Bottle #: 190 MS/MSD: No		Total Organic Carbon (415 2 (SM 5310B)) 1,4-Dioxane (E624 (SM 8250M, SIM)) Chronic Toxicity - Selenium (E901 0 or E901 1) Radium 226 (E903.0 or E903 1) & Radium 228 (E906.0), Sr-90 (E905 0), Total Combined (E907)		Filtration and preserve within 24hrs of receipt at lab Sample receiving DO NOT OPEN BAG Bag to be opened in Mercury Prep using clean procedures	
Outfall 002 Sample I.D.: Outfall002_20180323_Comp_F Sampling Date/Time: 3/23/2018 Container Type: borosilicate vials Preservative: None Bottle #: 320 MS/MSD: No		WM 500 mL Poly NaOH 220 No		Total Organic Carbon (415 2 (SM 5310B)) 1,4-Dioxane (E624 (SM 8250M, SIM)) Chronic Toxicity - Selenium (E901 0 or E901 1) Radium 226 (E903.0 or E903 1) & Radium 228 (E906.0), Sr-90 (E905 0), Total Combined (E907)		Unfiltered and unpreserved analysis, Separate RAD onto another workorder Analyze duplicate, not MS/MSD. Only test if first or second rain events of the year	
Outfall 002 Sample I.D.: Outfall002_20180323_Comp Sampling Date/Time: 3/23/2018 Container Type: 1 L Glass Amber Preservative: None Bottle #: 230 MS/MSD: No		WM 40 mL VOA HCl 240 No		Total Organic Carbon (415 2 (SM 5310B)) 1,4-Dioxane (E624 (SM 8250M, SIM)) Chronic Toxicity - Selenium (E901 0 or E901 1) Radium 226 (E903.0 or E903 1) & Radium 228 (E906.0), Sr-90 (E905 0), Total Combined (E907)		Hold	
Outfall 002 Sample I.D.: Outfall002_20180323_Comp_Extra Sampling Date/Time: 3/23/2018 Container Type: 1 L Glass Amber Preservative: None Bottle #: 255 MS/MSD: No		WM 40 mL VOA HCl 240 No		Total Organic Carbon (415 2 (SM 5310B)) 1,4-Dioxane (E624 (SM 8250M, SIM)) Chronic Toxicity - Selenium (E901 0 or E901 1) Radium 226 (E903.0 or E903 1) & Radium 228 (E906.0), Sr-90 (E905 0), Total Combined (E907)		Hold	



440-206832 Chain of Custody

Relinquished By: [Signature] Date/Time: 3-23-18 11:55  
 Company: [Signature]  
 Relinquished By: [Signature] Date/Time: 3-23-18 1810  
 Company: [Signature]  
 Relinquished By: [Signature] Date/Time: 3-23-18 1810  
 Company: [Signature]

Legend: R=Routine, A=Annual, Q=Quarterly  
 Received By: [Signature] Date/Time: 3-23-18 11:55  
 Received By: [Signature] Date/Time: 3-23-18 1810  
 Received By: [Signature] Date/Time: 3-23-18 1810

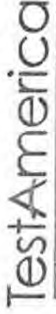
Turn-around time (Check)  
 24 Hour \_\_\_ 72 Hour \_\_\_ 10 Day \_\_\_ X \_\_\_  
 48 Hour \_\_\_ 5 Day \_\_\_ Normal \_\_\_

Sample Integrity (Check)  
 Intact \_\_\_ On Ice \_\_\_  
 Store samples for 6 months  
 Data Requirements (Check)  
 No Level IV \_\_\_ All Level IV \_\_\_ X \_\_\_

440



# Chain of Custody Record



<b>Client Information (Sub Contract Lab)</b> Client Contact: Patel, Urvasi Shipping/Receiving: urvasi.patel@testamericainc.com Company: TestAmerica Laboratories, Inc. Address: 13715 Ridler Trail North, Irvine, CA 92614-5817 City: Irvine, State: CA, Zip: 92614-5817 Phone: 314-298-8566 (Tel) 314-298-8757 (Fax) Email: urvasi.patel@testamericainc.com Project #: 44009879 Site: Boeing NPDES SSFL outfalls		Sampler: Patel, Urvasi Lab PM: Patel, Urvasi Phone: urvasi.patel@testamericainc.com E-Mail: urvasi.patel@testamericainc.com State of Origin: California Carrier Tracking No(s): 440-120500.1 Page: Page 1 of 1 Job #: 440-206832-3 Preservation Codes: A-HCL, B-NaOH, C-Zn Acetate, D-Nitric Acid, E-NaHSO4, F-MeOH, G-Amchlor, H-Ascorbic Acid, I-Ice, J-DI Water, K-EDTA, L-EDA, Other:	
Due Date Requested: 3/30/2018 TAT Requested (days):		Analysis Requested:	
PO #	WO #	Project #	SSOW#
314-298-8566(Tel) 314-298-8757(Fax)		44009879	
Boeing NPDES SSFL outfalls			
Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab) Preservation Code
Outfall002_20180323_Comp (440-206832-2)	3/23/18	04:31 Pacific	Water
Field Filtered Sample (Yes or No)		Matrix (W=water, S=solid, O=wastewater, BT=tissue, A=air)	
Perform MS/MSD (Yes or No)		Total Number of Containers	
901_1_Cs/Fill_Geo_0_K-40 and Cesium-137		2	
A01R_UExChrom_Actin Total Uranium		Special Instructions/Note: Boeing SSFL, DO NOT FILTER; use prep date from preservation	
900_0/Evaporation Gross Alpha/Beta		904_0/PreSep_21 Radium-226	
903_0/PreSep_21 Radium-226		905_Sr90/PreSep_7 Strontium-90	
904_0/PreSep_0 Radium-228		906_0/LSC_Dist_Susp Tritium	
909_0/LSC_Dist_Susp Tritium		M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Z - other (specify)	
Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/test/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.			
<b>Possible Hazard Identification</b> Unconfirmed Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2 Empty Kit Relinquished by: [Signature] Relinquished by: [Signature] Relinquished by: [Signature] Relinquished by: [Signature] Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No Custody Seal No.:			
Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months		Special Instructions/QC Requirements:	
Date/Time: 3/27/18 10:20 Received by: [Signature] Company: [Signature]		Date/Time: [Signature] Received by: [Signature] Company: [Signature]	
Date/Time: [Signature] Received by: [Signature] Company: [Signature]		Date/Time: [Signature] Received by: [Signature] Company: [Signature]	
Cooler Temperature(s) °C and Other Remarks:			



## Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-206832-3

**Login Number: 206832**

**List Source: TestAmerica Irvine**

**List Number: 1**

**Creator: Soderblom, Tim**

Question	Answer	Comment
Radioactivity wasn't checked or is $\leq$ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	Not present
Sample custody seals, if present, are intact.	N/A	Not Present
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	False	No sample date and/or time on COC, logged in per container labels.
Is the Field Sampler's name present on COC?	False	The Field Sampler was not listed on the Chain of Custody.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is $<6\text{mm}$ (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: 440-206832-3

**Login Number: 206832**

**List Number: 2**

**Creator: Taylor, Kristene N**

**List Source: TestAmerica St. Louis**

**List Creation: 03/27/18 01:56 PM**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	0.1
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

# Tracer/Carrier Summary

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

TestAmerica Job ID: 440-206832-3

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

Matrix: Water

Prep Type: Total/NA

			Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)		
440-206832-2	Outfall002_20180323_Comp	82.9		
LCS 160-358155/1-A	Lab Control Sample	101		
LCSD 160-358155/2-A	Lab Control Sample Dup	103		
MB 160-358155/23-A	Method Blank	104		
<b>Tracer/Carrier Legend</b>				
Ba Carrier = Ba Carrier				

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

Matrix: Water

Prep Type: Total/NA

			Percent Yield (Acceptance Limits)		
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	Y Carrier (40-110)		
440-206832-2	Outfall002_20180323_Comp	82.9	92.3		
LCS 160-358165/1-A	Lab Control Sample	101	92.3		
LCSD 160-358165/2-A	Lab Control Sample Dup	103	91.2		
MB 160-358165/23-A	Method Blank	104	93.5		
<b>Tracer/Carrier Legend</b>					
Ba Carrier = Ba Carrier					
Y Carrier = Y Carrier					

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

Matrix: Water

Prep Type: Total/NA

			Percent Yield (Acceptance Limits)		
Lab Sample ID	Client Sample ID	Sr Carrier (40-110)	Y Carrier (40-110)		
440-206832-2	Outfall002_20180323_Comp	73.8	90.8		
LCS 160-358324/1-A	Lab Control Sample	85.4	92.3		
LCSD 160-358324/2-A	Lab Control Sample Dup	83.4	92.7		
MB 160-358324/10-A	Method Blank	82.3	88.2		
<b>Tracer/Carrier Legend</b>					
Sr Carrier = Sr Carrier					
Y Carrier = Y Carrier					

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

Matrix: Water

Prep Type: Total/NA

			Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	uranium-235 (30-110)		
440-206741-A-1-G MS	Matrix Spike	64.3		
440-206741-A-1-H MSD	Matrix Spike Duplicate	65.0		
440-206832-2	Outfall002_20180323_Comp	85.2		
LCS 160-358015/2-A	Lab Control Sample	93.5		
MB 160-358015/1-A	Method Blank	96.5		
<b>Tracer/Carrier Legend</b>				

TestAmerica Irvine



# Tracer/Carrier Summary

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

TestAmerica Job ID: 440-206832-3

Uranium-232 = Uranium-232

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**DATA VALIDATION REPORT**

**Boeing SSFL Outfall 009**

**SAMPLE DELIVERY GROUP: 440-206580-1**

**Prepared for**  
Haley & Aldrich

**April 2, 2018**

MEC<sup>x</sup>, Inc.  
8864 Interchange Drive  
Houston, Texas 77054

[www.mecx.net](http://www.mecx.net)





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**TABLES**

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



## I. INTRODUCTION

---

**Task Order Title:** Boeing SSFL Outfall 009

**Contract:** 40458-078 and 40458-083

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

**Sample Delivery Group:** 440-206580-1

**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	Matrix	Collection	Method
Outfall009_20180321_Grab	440-206580-1	Water	3/21/2018 5:15:00 PM	SM9221F



## II. SAMPLE MANAGEMENT

---

According to the case narrative, sample condition upon receipt form and the chain-of-custody (COC) provided by the laboratory for sample delivery group (SDG) 440-206580-1:

- The laboratory received the sample in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius ( $^{\circ}\text{C}$ ) and greater than  $0^{\circ}\text{C}$ .
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COC.
- According to the sample receipt form, custody seals were absent.

MEC<sup>x</sup> noted the anomaly regarding sample management identified below.

- The time of relinquishment was not recorded on the COC.



TABLE 2 - DATA QUALIFIER REFERENCE

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



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	Not applicable.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination ( $r^2$ ) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.





Reason Code	Organic	Inorganic
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



### III. STANDARD METHODS 9221F — *E. COLI*

---

Marcia Hilchey of MEC<sup>X</sup> reviewed the SDG on April 2, 2018.

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC<sup>X</sup> Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *Standard Methods for the Examination of Water and Wastewater 9221F*, and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

#### III.1. HOLDING TIMES

The analytical holding time, 30 hours as stated in the QAPP for Method 9221F and 8 hours as requested on the CoC, was met.

#### III.2. CALIBRATION

Calibration criteria were met. Biological controls were acceptable.

#### III.3. QUALITY CONTROL SAMPLES

##### III.3.1. *METHOD BLANKS*

The method blank is not applicable to the biological method. The negative control sample was acceptable.

##### III.3.2. *LABORATORY CONTROL SAMPLES*

The presumptive test was analyzed with the positive detects for the target bacteria.

##### III.3.3. *LABORATORY DUPLICATES*

Laboratory duplicate analysis was performed on the sample from this SDG at 10x dilution. The laboratory duplicate RPD was <20%

##### III.3.4. *MATRIX SPIKE/MATRIX SPIKE DUPLICATE*

MS/MSD analysis is not applicable to this method.

#### III.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample result reported on the sample results summary was verified against the raw data. No transcription errors or calculation errors were noted.

#### III.5. FIELD QC SAMPLES

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

##### III.5.1. *FIELD BLANKS AND EQUIPMENT BLANKS*

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

##### III.5.2. *FIELD DUPLICATES*

There were no field duplicate samples identified for this SDG.

---

# Validated Sample Result Forms: 4402065801

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*Analysis Method*    *SM9221F*

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**Sample Name**    Outfall009\_20180321\_Grab

**Matrix Type:**    WM

**Result Type:**    TRG

**Sample Date:**    3/21/2018 5:15:00 PM

**Validation Level:**    8

**Lab Sample Name:**    440-206580-1

<b>Analyte</b>	<b>Fraction:</b>	<b>CAS No</b>	<b>Result Value</b>	<b>RL</b>	<b>MDL</b>	<b>Result Units</b>	<b>Lab Qualifier</b>	<b>Validation Qualifier</b>	<b>Validation Notes</b>
Escherichia coli	N	ECOLI	390	1.8	1.8	mpn/100			

# 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: 440-206580-1

Client Project/Site: Annual Outfall 009 Grab

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

3/29/2018 10:22:28 AM

Urvashi Patel, Manager of Project Management

(949)261-1022

[urvashi.patel@testamericainc.com](mailto:urvashi.patel@testamericainc.com)

### LINKS

Review your project  
results through

**TotalAccess**

Have a Question?



Visit us at:

[www.testamericainc.com](http://www.testamericainc.com)

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

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

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

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



---

Urvashi Patel  
Manager of Project Management  
3/29/2018 10:22:28 AM



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# Sample Summary

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

TestAmerica Job ID: 440-206580-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-206580-1	Outfall009_20180321_Grab	Water	03/21/18 17:15	03/21/18 20:00
440-206580-3	TB-20180321	Water	03/21/18 17:15	03/21/18 20:00

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# Case Narrative

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

TestAmerica Job ID: 440-206580-1

**Job ID: 440-206580-1**

**Laboratory: TestAmerica Irvine**

## Narrative

**Job Narrative**  
**440-206580-1**

### Comments

Client sent Human Bacti directly to sub lab.

### Receipt

The samples were received on 3/21/2018 8:00 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.4° C.

### Receipt Exceptions

Did not receive a container for SAM348-357

### GC/MS VOA

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

### Biology

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

### Organic Prep

Method(s) 1664A: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-465984 and analytical batch 440-466047. The laboratory control sample (LCS) was performed in duplicate to provide precision data for this batch

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





# Client Sample Results

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

TestAmerica Job ID: 440-206580-1

**Client Sample ID: Outfall009\_20180321\_Grab**

**Lab Sample ID: 440-206580-1**

**Date Collected: 03/21/18 17:15**

**Matrix: Water**

**Date Received: 03/21/18 20:00**

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		0.50	0.25	ug/L			03/24/18 14:04	1
2-Chloroethyl vinyl ether	ND		2.0	1.0	ug/L			03/22/18 09:56	1
1,1,2,2-Tetrachloroethane	ND		0.50	0.25	ug/L			03/24/18 14:04	1
Acrolein	ND		5.0	2.5	ug/L			03/22/18 09:56	1
1,1,2-Trichloroethane	ND		0.50	0.25	ug/L			03/24/18 14:04	1
Acrylonitrile	ND		2.0	1.0	ug/L			03/22/18 09:56	1
1,1-Dichloroethane	ND		0.50	0.25	ug/L			03/24/18 14:04	1
1,1-Dichloroethene	ND		0.50	0.25	ug/L			03/24/18 14:04	1
1,2-Dichlorobenzene	ND		0.50	0.25	ug/L			03/24/18 14:04	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			03/24/18 14:04	1
1,2-Dichloropropane	ND		0.50	0.25	ug/L			03/24/18 14:04	1
1,3-Dichlorobenzene	ND		0.50	0.25	ug/L			03/24/18 14:04	1
1,4-Dichlorobenzene	ND		0.50	0.25	ug/L			03/24/18 14:04	1
Benzene	ND		0.50	0.25	ug/L			03/24/18 14:04	1
Bromoform	ND		1.0	0.40	ug/L			03/24/18 14:04	1
Bromomethane	ND		0.50	0.25	ug/L			03/24/18 14:04	1
Carbon tetrachloride	ND		0.50	0.25	ug/L			03/24/18 14:04	1
Chlorobenzene	ND		0.50	0.25	ug/L			03/24/18 14:04	1
Dibromochloromethane	ND		0.50	0.25	ug/L			03/24/18 14:04	1
Chloroethane	ND		1.0	0.40	ug/L			03/24/18 14:04	1
Chloroform	ND		0.50	0.25	ug/L			03/24/18 14:04	1
Chloromethane	ND		0.50	0.25	ug/L			03/24/18 14:04	1
cis-1,3-Dichloropropene	ND		0.50	0.25	ug/L			03/24/18 14:04	1
Bromodichloromethane	ND		0.50	0.25	ug/L			03/24/18 14:04	1
Ethylbenzene	ND		0.50	0.25	ug/L			03/24/18 14:04	1
Methylene Chloride	ND		2.0	0.88	ug/L			03/24/18 14:04	1
Tetrachloroethene	ND		0.50	0.25	ug/L			03/24/18 14:04	1
Toluene	ND		0.50	0.25	ug/L			03/24/18 14:04	1
trans-1,2-Dichloroethene	ND		0.50	0.25	ug/L			03/24/18 14:04	1
trans-1,3-Dichloropropene	ND		0.50	0.25	ug/L			03/24/18 14:04	1
Trichlorofluoromethane	ND		0.50	0.25	ug/L			03/24/18 14:04	1
Vinyl chloride	ND		0.50	0.25	ug/L			03/24/18 14:04	1
Trichloroethene	ND		0.50	0.25	ug/L			03/24/18 14:04	1
cis-1,2-Dichloroethene	ND		0.50	0.25	ug/L			03/24/18 14:04	1
Naphthalene	ND		1.0	0.40	ug/L			03/24/18 14:04	1
Xylenes, Total	ND		1.0	0.50	ug/L			03/24/18 14:04	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	102		80 - 128		03/22/18 09:56	1
Dibromofluoromethane (Surr)	99		76 - 132		03/22/18 09:56	1
4-Bromofluorobenzene (Surr)	95		80 - 120		03/22/18 09:56	1
4-Bromofluorobenzene (Surr)	101		80 - 120		03/24/18 14:04	1
Dibromofluoromethane (Surr)	103		76 - 132		03/24/18 14:04	1
Toluene-d8 (Surr)	104		80 - 128		03/24/18 14:04	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		5.1	1.4	mg/L		03/26/18 09:43	03/26/18 12:58	1

TestAmerica Irvine

# Client Sample Results

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

TestAmerica Job ID: 440-206580-1

**Client Sample ID: Outfall009\_20180321\_Grab**

**Lab Sample ID: 440-206580-1**

**Date Collected: 03/21/18 17:15**

**Matrix: Water**

**Date Received: 03/21/18 20:00**

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

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Escherichia coli	390		1.8	1.8	MPN/100mL			03/21/18 20:53	1

**Client Sample ID: TB-20180321**

**Lab Sample ID: 440-206580-3**

**Date Collected: 03/21/18 17:15**

**Matrix: Water**

**Date Received: 03/21/18 20:00**

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		0.50	0.25	ug/L			03/24/18 14:32	1
2-Chloroethyl vinyl ether	ND		2.0	1.0	ug/L			03/22/18 09:31	1
1,1,2,2-Tetrachloroethane	ND		0.50	0.25	ug/L			03/24/18 14:32	1
Acrolein	ND		5.0	2.5	ug/L			03/22/18 09:31	1
1,1,2-Trichloroethane	ND		0.50	0.25	ug/L			03/24/18 14:32	1
Acrylonitrile	ND		2.0	1.0	ug/L			03/22/18 09:31	1
1,1-Dichloroethane	ND		0.50	0.25	ug/L			03/24/18 14:32	1
1,1-Dichloroethene	ND		0.50	0.25	ug/L			03/24/18 14:32	1
1,2-Dichlorobenzene	ND		0.50	0.25	ug/L			03/24/18 14:32	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			03/24/18 14:32	1
1,2-Dichloropropane	ND		0.50	0.25	ug/L			03/24/18 14:32	1
1,3-Dichlorobenzene	ND		0.50	0.25	ug/L			03/24/18 14:32	1
1,4-Dichlorobenzene	ND		0.50	0.25	ug/L			03/24/18 14:32	1
Benzene	ND		0.50	0.25	ug/L			03/24/18 14:32	1
Bromoform	ND		1.0	0.40	ug/L			03/24/18 14:32	1
Bromomethane	ND		0.50	0.25	ug/L			03/24/18 14:32	1
Carbon tetrachloride	ND		0.50	0.25	ug/L			03/24/18 14:32	1
Chlorobenzene	ND		0.50	0.25	ug/L			03/24/18 14:32	1
Dibromochloromethane	ND		0.50	0.25	ug/L			03/24/18 14:32	1
Chloroethane	ND		1.0	0.40	ug/L			03/24/18 14:32	1
Chloroform	ND		0.50	0.25	ug/L			03/24/18 14:32	1
Chloromethane	ND		0.50	0.25	ug/L			03/24/18 14:32	1
cis-1,3-Dichloropropene	ND		0.50	0.25	ug/L			03/24/18 14:32	1
Bromodichloromethane	ND		0.50	0.25	ug/L			03/24/18 14:32	1
Ethylbenzene	ND		0.50	0.25	ug/L			03/24/18 14:32	1
Methylene Chloride	ND		2.0	0.88	ug/L			03/24/18 14:32	1
Tetrachloroethene	ND		0.50	0.25	ug/L			03/24/18 14:32	1
Toluene	ND		0.50	0.25	ug/L			03/24/18 14:32	1
trans-1,2-Dichloroethene	ND		0.50	0.25	ug/L			03/24/18 14:32	1
trans-1,3-Dichloropropene	ND		0.50	0.25	ug/L			03/24/18 14:32	1
Trichlorofluoromethane	ND		0.50	0.25	ug/L			03/24/18 14:32	1
Vinyl chloride	ND		0.50	0.25	ug/L			03/24/18 14:32	1
Trichloroethene	ND		0.50	0.25	ug/L			03/24/18 14:32	1
cis-1,2-Dichloroethene	ND		0.50	0.25	ug/L			03/24/18 14:32	1
Naphthalene	ND		1.0	0.40	ug/L			03/24/18 14:32	1
Xylenes, Total	ND		1.0	0.50	ug/L			03/24/18 14:32	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	104		80 - 128		03/22/18 09:31	1
Dibromofluoromethane (Surr)	98		76 - 132		03/22/18 09:31	1
4-Bromofluorobenzene (Surr)	98		80 - 120		03/22/18 09:31	1
4-Bromofluorobenzene (Surr)	99		80 - 120		03/24/18 14:32	1

TestAmerica Irvine

# Client Sample Results

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

TestAmerica Job ID: 440-206580-1

**Client Sample ID: TB-20180321**

**Date Collected: 03/21/18 17:15**

**Date Received: 03/21/18 20:00**

**Lab Sample ID: 440-206580-3**

**Matrix: Water**

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

<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Dibromofluoromethane (Surr)</i>	105		76 - 132		03/24/18 14:32	1
<i>Toluene-d8 (Surr)</i>	102		80 - 128		03/24/18 14:32	1

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# Method Summary

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

TestAmerica Job ID: 440-206580-1

Method	Method Description	Protocol	Laboratory
624	Volatile Organic Compounds (GC/MS)	40CFR136A	TAL IRV
1664A	HEM and SGT-HEM	1664A	TAL IRV
SM 9221F	E.Coli (Multiple-Tube Fermentation; EC-MUG)	SM	TAL IRV

#### Protocol References:

1664A = EPA-821-98-002

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

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

#### Laboratory References:

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

# Lab Chronicle

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

TestAmerica Job ID: 440-206580-1

**Client Sample ID: Outfall009\_20180321\_Grab**

**Lab Sample ID: 440-206580-1**

**Date Collected: 03/21/18 17:15**

**Matrix: Water**

**Date Received: 03/21/18 20:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	10 mL	10 mL	465193	03/22/18 09:56	AYL	TAL IRV
Total/NA	Analysis	624		1	10 mL	10 mL	465795	03/24/18 14:04	AYL	TAL IRV
Total/NA	Prep	1664A			980 mL	1000 mL	465984	03/26/18 09:43	JC1	TAL IRV
Total/NA	Analysis	1664A		1			466047	03/26/18 12:58	JC1	TAL IRV
Total/NA	Analysis	SM 9221F		1	100 mL	100 mL	466348		CMM	TAL IRV
								(Start) 03/21/18 20:53		
								(End) 03/24/18 17:36		

**Client Sample ID: TB-20180321**

**Lab Sample ID: 440-206580-3**

**Date Collected: 03/21/18 17:15**

**Matrix: Water**

**Date Received: 03/21/18 20:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	10 mL	10 mL	465193	03/22/18 09:31	AYL	TAL IRV
Total/NA	Analysis	624		1	10 mL	10 mL	465795	03/24/18 14:32	AYL	TAL IRV

**Laboratory References:**

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

# QC Sample Results

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

TestAmerica Job ID: 440-206580-1

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

**Lab Sample ID: MB 440-465193/4**  
**Matrix: Water**  
**Analysis Batch: 465193**

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Chloroethyl vinyl ether	ND		2.0	1.0	ug/L			03/22/18 08:14	1
Acrolein	ND		5.0	2.5	ug/L			03/22/18 08:14	1
Acrylonitrile	ND		2.0	1.0	ug/L			03/22/18 08:14	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	102		80 - 128		03/22/18 08:14	1
Dibromofluoromethane (Surr)	98		76 - 132		03/22/18 08:14	1
4-Bromofluorobenzene (Surr)	96		80 - 120		03/22/18 08:14	1

**Lab Sample ID: LCS 440-465193/5**  
**Matrix: Water**  
**Analysis Batch: 465193**

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2-Chloroethyl vinyl ether	25.0	16.6		ug/L		66	37 - 150
Acrolein	25.0	21.7		ug/L		87	10 - 145
Acrylonitrile	250	197		ug/L		79	48 - 140

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Toluene-d8 (Surr)	101		80 - 128
Dibromofluoromethane (Surr)	97		76 - 132
4-Bromofluorobenzene (Surr)	97		80 - 120

**Lab Sample ID: 440-206580-1 MS**  
**Matrix: Water**  
**Analysis Batch: 465193**

**Client Sample ID: Outfall009\_20180321\_Grab**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
2-Chloroethyl vinyl ether	ND		25.0	19.2		ug/L		77	10 - 140
Acrolein	ND		25.0	22.2		ug/L		89	10 - 147
Acrylonitrile	ND		250	202		ug/L		81	38 - 144

Surrogate	MS %Recovery	MS Qualifier	Limits
Toluene-d8 (Surr)	97		80 - 128
Dibromofluoromethane (Surr)	100		76 - 132
4-Bromofluorobenzene (Surr)	96		80 - 120

**Lab Sample ID: 440-206580-1 MSD**  
**Matrix: Water**  
**Analysis Batch: 465193**

**Client Sample ID: Outfall009\_20180321\_Grab**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2-Chloroethyl vinyl ether	ND		25.0	20.4		ug/L		82	10 - 140	6	25
Acrolein	ND		25.0	21.1		ug/L		84	10 - 147	5	40
Acrylonitrile	ND		250	203		ug/L		81	38 - 144	0	40

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# QC Sample Results

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

TestAmerica Job ID: 440-206580-1

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

**Lab Sample ID: 440-206580-1 MSD**  
**Matrix: Water**  
**Analysis Batch: 465193**

**Client Sample ID: Outfall009\_20180321\_Grab**  
**Prep Type: Total/NA**

<i>Surrogate</i>	<i>MSD %Recovery</i>	<i>MSD Qualifier</i>	<i>Limits</i>
<i>Toluene-d8 (Surr)</i>	99		80 - 128
<i>Dibromofluoromethane (Surr)</i>	100		76 - 132
<i>4-Bromofluorobenzene (Surr)</i>	97		80 - 120

**Lab Sample ID: MB 440-465795/4**  
**Matrix: Water**  
**Analysis Batch: 465795**

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

<i>Analyte</i>	<i>MB Result</i>	<i>MB Qualifier</i>	<i>RL</i>	<i>MDL</i>	<i>Unit</i>	<i>D</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
1,1,1-Trichloroethane	ND		0.50	0.25	ug/L			03/24/18 10:48	1
1,1,2,2-Tetrachloroethane	ND		0.50	0.25	ug/L			03/24/18 10:48	1
1,1,2-Trichloroethane	ND		0.50	0.25	ug/L			03/24/18 10:48	1
1,1-Dichloroethane	ND		0.50	0.25	ug/L			03/24/18 10:48	1
1,1-Dichloroethene	ND		0.50	0.25	ug/L			03/24/18 10:48	1
1,2-Dichlorobenzene	ND		0.50	0.25	ug/L			03/24/18 10:48	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			03/24/18 10:48	1
1,2-Dichloropropane	ND		0.50	0.25	ug/L			03/24/18 10:48	1
1,3-Dichlorobenzene	ND		0.50	0.25	ug/L			03/24/18 10:48	1
1,4-Dichlorobenzene	ND		0.50	0.25	ug/L			03/24/18 10:48	1
Benzene	ND		0.50	0.25	ug/L			03/24/18 10:48	1
Bromoform	ND		1.0	0.40	ug/L			03/24/18 10:48	1
Bromomethane	ND		0.50	0.25	ug/L			03/24/18 10:48	1
Carbon tetrachloride	ND		0.50	0.25	ug/L			03/24/18 10:48	1
Chlorobenzene	ND		0.50	0.25	ug/L			03/24/18 10:48	1
Dibromochloromethane	ND		0.50	0.25	ug/L			03/24/18 10:48	1
Chloroethane	ND		1.0	0.40	ug/L			03/24/18 10:48	1
Chloroform	ND		0.50	0.25	ug/L			03/24/18 10:48	1
Chloromethane	ND		0.50	0.25	ug/L			03/24/18 10:48	1
cis-1,3-Dichloropropene	ND		0.50	0.25	ug/L			03/24/18 10:48	1
Bromodichloromethane	ND		0.50	0.25	ug/L			03/24/18 10:48	1
Ethylbenzene	ND		0.50	0.25	ug/L			03/24/18 10:48	1
Methylene Chloride	ND		2.0	0.88	ug/L			03/24/18 10:48	1
Tetrachloroethene	ND		0.50	0.25	ug/L			03/24/18 10:48	1
Toluene	ND		0.50	0.25	ug/L			03/24/18 10:48	1
trans-1,2-Dichloroethene	ND		0.50	0.25	ug/L			03/24/18 10:48	1
trans-1,3-Dichloropropene	ND		0.50	0.25	ug/L			03/24/18 10:48	1
Trichlorofluoromethane	ND		0.50	0.25	ug/L			03/24/18 10:48	1
Vinyl chloride	ND		0.50	0.25	ug/L			03/24/18 10:48	1
Trichloroethene	ND		0.50	0.25	ug/L			03/24/18 10:48	1
cis-1,2-Dichloroethene	ND		0.50	0.25	ug/L			03/24/18 10:48	1
Naphthalene	ND		1.0	0.40	ug/L			03/24/18 10:48	1
Xylenes, Total	ND		1.0	0.50	ug/L			03/24/18 10:48	1

<i>Surrogate</i>	<i>MB %Recovery</i>	<i>MB Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>4-Bromofluorobenzene (Surr)</i>	99		80 - 120		03/24/18 10:48	1
<i>Dibromofluoromethane (Surr)</i>	98		76 - 132		03/24/18 10:48	1
<i>Toluene-d8 (Surr)</i>	105		80 - 128		03/24/18 10:48	1

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# QC Sample Results

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

TestAmerica Job ID: 440-206580-1

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

**Lab Sample ID: LCS 440-465795/5**

**Matrix: Water**

**Analysis Batch: 465795**

**Client Sample ID: Lab Control Sample**

**Prep Type: Total/NA**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	25.0	24.4		ug/L		98	70 - 130
1,1,2,2-Tetrachloroethane	25.0	25.5		ug/L		102	63 - 130
1,1,2-Trichloroethane	25.0	25.9		ug/L		104	70 - 130
1,1-Dichloroethane	25.0	24.8		ug/L		99	64 - 130
1,1-Dichloroethene	25.0	24.2		ug/L		97	70 - 130
1,2-Dichlorobenzene	25.0	26.7		ug/L		107	70 - 130
1,2-Dichloroethane	25.0	26.3		ug/L		105	57 - 138
1,2-Dichloropropane	25.0	28.0		ug/L		112	67 - 130
1,3-Dichlorobenzene	25.0	25.1		ug/L		100	70 - 130
1,4-Dichlorobenzene	25.0	25.5		ug/L		102	70 - 130
Benzene	25.0	26.9		ug/L		108	68 - 130
Bromoform	25.0	25.2		ug/L		101	60 - 148
Bromomethane	25.0	23.1		ug/L		92	64 - 139
Carbon tetrachloride	25.0	23.9		ug/L		96	60 - 150
Chlorobenzene	25.0	25.3		ug/L		101	70 - 130
Dibromochloromethane	25.0	26.8		ug/L		107	69 - 145
Chloroethane	25.0	23.1		ug/L		92	64 - 135
Chloroform	25.0	27.5		ug/L		110	70 - 130
Chloromethane	25.0	18.3		ug/L		73	47 - 140
cis-1,3-Dichloropropene	25.0	29.1		ug/L		116	70 - 133
Bromodichloromethane	25.0	27.9		ug/L		111	70 - 132
Ethylbenzene	25.0	25.1		ug/L		100	70 - 130
Methylene Chloride	25.0	26.4		ug/L		106	52 - 130
Tetrachloroethene	25.0	24.1		ug/L		96	70 - 130
Toluene	25.0	26.0		ug/L		104	70 - 130
trans-1,2-Dichloroethene	25.0	25.1		ug/L		100	70 - 130
trans-1,3-Dichloropropene	25.0	28.0		ug/L		112	70 - 132
Trichlorofluoromethane	25.0	20.8		ug/L		83	60 - 150
Vinyl chloride	25.0	21.7		ug/L		87	59 - 133
Trichloroethene	25.0	26.2		ug/L		105	70 - 130
cis-1,2-Dichloroethene	25.0	26.1		ug/L		104	70 - 133
Naphthalene	25.0	29.1		ug/L		116	60 - 140
Xylenes, Total	50.0	51.3		ug/L		103	70 - 130

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	97		80 - 120
Dibromofluoromethane (Surr)	101		76 - 132
Toluene-d8 (Surr)	97		80 - 128

**Lab Sample ID: 440-206915-D-1 MS**

**Matrix: Water**

**Analysis Batch: 465795**

**Client Sample ID: Matrix Spike**

**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	ND		25.0	25.4		ug/L		102	70 - 130
1,1,2,2-Tetrachloroethane	ND		25.0	26.4		ug/L		106	63 - 130
1,1,2-Trichloroethane	ND		25.0	26.4		ug/L		106	70 - 130
1,1-Dichloroethane	ND		25.0	25.5		ug/L		102	65 - 130

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# QC Sample Results

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

TestAmerica Job ID: 440-206580-1

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

**Lab Sample ID: 440-206915-D-1 MS**

**Matrix: Water**

**Analysis Batch: 465795**

**Client Sample ID: Matrix Spike**

**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	ND		25.0	27.7		ug/L		111	70 - 130
1,2-Dichlorobenzene	ND		25.0	26.8		ug/L		107	70 - 130
1,2-Dichloroethane	ND		25.0	25.9		ug/L		104	56 - 146
1,2-Dichloropropane	ND		25.0	27.9		ug/L		112	69 - 130
1,3-Dichlorobenzene	ND		25.0	25.5		ug/L		102	70 - 130
1,4-Dichlorobenzene	ND		25.0	25.4		ug/L		102	70 - 130
Benzene	ND		25.0	26.1		ug/L		105	66 - 130
Bromoform	ND		25.0	25.9		ug/L		104	59 - 150
Bromomethane	ND		25.0	23.6		ug/L		94	62 - 131
Carbon tetrachloride	ND		25.0	26.0		ug/L		104	60 - 150
Chlorobenzene	ND		25.0	25.3		ug/L		101	70 - 130
Dibromochloromethane	ND		25.0	26.9		ug/L		108	70 - 148
Chloroethane	ND		25.0	24.3		ug/L		97	68 - 130
Chloroform	ND		25.0	26.5		ug/L		106	70 - 130
Chloromethane	ND		25.0	20.8		ug/L		83	39 - 144
cis-1,3-Dichloropropene	ND		25.0	28.7		ug/L		115	70 - 133
Bromodichloromethane	ND		25.0	27.9		ug/L		112	70 - 138
Ethylbenzene	ND		25.0	25.5		ug/L		102	70 - 130
Methylene Chloride	ND		25.0	28.6		ug/L		114	52 - 130
Tetrachloroethene	ND		25.0	25.8		ug/L		103	70 - 137
Toluene	ND		25.0	26.7		ug/L		107	70 - 130
trans-1,2-Dichloroethene	ND		25.0	26.1		ug/L		105	70 - 130
trans-1,3-Dichloropropene	ND		25.0	28.7		ug/L		115	70 - 138
Trichlorofluoromethane	ND		25.0	23.6		ug/L		94	60 - 150
Vinyl chloride	ND		25.0	23.7		ug/L		95	50 - 137
Trichloroethene	ND		25.0	26.7		ug/L		107	70 - 130
cis-1,2-Dichloroethene	ND		25.0	27.7		ug/L		111	70 - 130
Naphthalene	ND		25.0	29.1		ug/L		116	60 - 140
Xylenes, Total	ND		50.0	52.5		ug/L		105	70 - 133

Surrogate	MS %Recovery	MS Qualifier	Limits
4-Bromofluorobenzene (Surr)	99		80 - 120
Dibromofluoromethane (Surr)	104		76 - 132
Toluene-d8 (Surr)	100		80 - 128

**Lab Sample ID: 440-206915-D-1 MSD**

**Matrix: Water**

**Analysis Batch: 465795**

**Client Sample ID: Matrix Spike Duplicate**

**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1,1-Trichloroethane	ND		25.0	25.0		ug/L		100	70 - 130	2	20
1,1,2,2-Tetrachloroethane	ND		25.0	27.4		ug/L		110	63 - 130	4	30
1,1,2-Trichloroethane	ND		25.0	28.1		ug/L		112	70 - 130	6	25
1,1-Dichloroethane	ND		25.0	24.9		ug/L		100	65 - 130	2	20
1,1-Dichloroethene	ND		25.0	25.7		ug/L		103	70 - 130	7	20
1,2-Dichlorobenzene	ND		25.0	27.2		ug/L		109	70 - 130	2	20
1,2-Dichloroethane	ND		25.0	25.7		ug/L		103	56 - 146	1	20
1,2-Dichloropropane	ND		25.0	26.7		ug/L		107	69 - 130	5	20

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# QC Sample Results

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

TestAmerica Job ID: 440-206580-1

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

**Lab Sample ID: 440-206915-D-1 MSD**

**Matrix: Water**

**Analysis Batch: 465795**

**Client Sample ID: Matrix Spike Duplicate**

**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,3-Dichlorobenzene	ND		25.0	25.1		ug/L		101	70 - 130	1	20
1,4-Dichlorobenzene	ND		25.0	25.0		ug/L		100	70 - 130	1	20
Benzene	ND		25.0	25.5		ug/L		102	66 - 130	2	20
Bromoform	ND		25.0	26.4		ug/L		106	59 - 150	2	25
Bromomethane	ND		25.0	23.8		ug/L		95	62 - 131	1	25
Carbon tetrachloride	ND		25.0	24.9		ug/L		100	60 - 150	4	25
Chlorobenzene	ND		25.0	24.8		ug/L		99	70 - 130	2	20
Dibromochloromethane	ND		25.0	27.6		ug/L		110	70 - 148	2	25
Chloroethane	ND		25.0	24.4		ug/L		97	68 - 130	0	25
Chloroform	ND		25.0	26.2		ug/L		105	70 - 130	1	20
Chloromethane	ND		25.0	20.1		ug/L		81	39 - 144	3	25
cis-1,3-Dichloropropene	ND		25.0	28.8		ug/L		115	70 - 133	0	20
Bromodichloromethane	ND		25.0	25.7		ug/L		103	70 - 138	8	20
Ethylbenzene	ND		25.0	25.8		ug/L		103	70 - 130	1	20
Methylene Chloride	ND		25.0	27.5		ug/L		110	52 - 130	4	20
Tetrachloroethene	ND		25.0	26.6		ug/L		106	70 - 137	3	20
Toluene	ND		25.0	26.5		ug/L		106	70 - 130	1	20
trans-1,2-Dichloroethene	ND		25.0	25.0		ug/L		100	70 - 130	4	20
trans-1,3-Dichloropropene	ND		25.0	28.5		ug/L		114	70 - 138	1	25
Trichlorofluoromethane	ND		25.0	23.0		ug/L		92	60 - 150	3	25
Vinyl chloride	ND		25.0	23.4		ug/L		94	50 - 137	1	30
Trichloroethene	ND		25.0	26.1		ug/L		104	70 - 130	2	20
cis-1,2-Dichloroethene	ND		25.0	25.7		ug/L		103	70 - 130	7	20
Naphthalene	ND		25.0	30.8		ug/L		123	60 - 140	6	30
Xylenes, Total	ND		50.0	52.5		ug/L		105	70 - 133	0	20

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

## Method: 1664A - HEM and SGT-HEM

**Lab Sample ID: MB 440-465984/1-A**

**Matrix: Water**

**Analysis Batch: 466047**

**Client Sample ID: Method Blank**

**Prep Type: Total/NA**

**Prep Batch: 465984**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		5.0	1.4	mg/L		03/26/18 09:43	03/26/18 12:58	1

**Lab Sample ID: LCS 440-465984/2-A**

**Matrix: Water**

**Analysis Batch: 466047**

**Client Sample ID: Lab Control Sample**

**Prep Type: Total/NA**

**Prep Batch: 465984**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
HEM (Oil & Grease)	40.0	33.4		mg/L		83	78 - 114

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# QC Sample Results

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

TestAmerica Job ID: 440-206580-1

## Method: 1664A - HEM and SGT-HEM (Continued)

Lab Sample ID: LCSD 440-465984/3-A  
 Matrix: Water  
 Analysis Batch: 466047

Client Sample ID: Lab Control Sample Dup  
 Prep Type: Total/NA  
 Prep Batch: 465984

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	RPD Limit
HEM (Oil & Grease)	40.0	33.4		mg/L		83	78 - 114	0	11

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

# QC Association Summary

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

TestAmerica Job ID: 440-206580-1

## GC/MS VOA

### Analysis Batch: 465193

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206580-1	Outfall009_20180321_Grab	Total/NA	Water	624	
440-206580-3	TB-20180321	Total/NA	Water	624	
MB 440-465193/4	Method Blank	Total/NA	Water	624	
LCS 440-465193/5	Lab Control Sample	Total/NA	Water	624	
440-206580-1 MS	Outfall009_20180321_Grab	Total/NA	Water	624	
440-206580-1 MSD	Outfall009_20180321_Grab	Total/NA	Water	624	

### Analysis Batch: 465795

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206580-1	Outfall009_20180321_Grab	Total/NA	Water	624	
440-206580-3	TB-20180321	Total/NA	Water	624	
MB 440-465795/4	Method Blank	Total/NA	Water	624	
LCS 440-465795/5	Lab Control Sample	Total/NA	Water	624	
440-206915-D-1 MS	Matrix Spike	Total/NA	Water	624	
440-206915-D-1 MSD	Matrix Spike Duplicate	Total/NA	Water	624	

## General Chemistry

### Prep Batch: 465984

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206580-1	Outfall009_20180321_Grab	Total/NA	Water	1664A	
MB 440-465984/1-A	Method Blank	Total/NA	Water	1664A	
LCS 440-465984/2-A	Lab Control Sample	Total/NA	Water	1664A	
LCSD 440-465984/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	

### Analysis Batch: 466047

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206580-1	Outfall009_20180321_Grab	Total/NA	Water	1664A	465984
MB 440-465984/1-A	Method Blank	Total/NA	Water	1664A	465984
LCS 440-465984/2-A	Lab Control Sample	Total/NA	Water	1664A	465984
LCSD 440-465984/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	465984

## Biology

### Analysis Batch: 466348

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206580-1	Outfall009_20180321_Grab	Total/NA	Water	SM 9221F	

# Definitions/Glossary

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

TestAmerica Job ID: 440-206580-1

## Glossary

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

# Accreditation/Certification Summary

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

TestAmerica Job ID: 440-206580-1

## Laboratory: TestAmerica Irvine

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

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	CA ELAP 2706	06-30-18

The following analytes are included in this report, but accreditation/certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
624		Water	cis-1,2-Dichloroethene
624		Water	Naphthalene
624		Water	Xylenes, Total

# CHAIN OF CUSTODY FORM

<b>Client Name/Address:</b> Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108		<b>Project:</b> Boeing-SSFL NPDES Permit 2018 Annual Outfall 003-007, 009, 010 Outfall 009 Grab		<b>Field Readings:</b> Meter serial # Field Readings: (Include units) Time of Readings: <i>7:15</i>											
<b>Test America Contact:</b> Urvashti Patel 17481 Dierian Ave Suite #100 Irvine CA 92614 Tel 949-280-3269 Cell 949-333-9055		<b>Project Manager:</b> Katherine Miller 520.289.8606, 520.904.6944 (cell)		pH <i>6.60</i> unit Temp <i>13.02</i> °C/F											
<small>Test America's services under this CoC shall be performed in accordance with the TACs within Blanket Service Agreement# 2015-18-TestAmerica by and between Haley &amp; Aldrich, Inc., its subsidiaries and affiliates, and TestAmerica Laboratories Inc</small>		<b>Field Manager:</b> Mark Dominick 978.234.5033, 818.599.0702 (cell)		Field readings QC Checked by: <i>[Signature]</i> Date/Time: <i>3/21/18 17:20</i>											
<b>Sampler:</b> <i>Jeff Sexton / Roy Burdjas</i>				Comments Deliver to lab ASAP 8 hr hold time Deliver to lab ASAP 8 hr hold time, Need 1x, 10x, 100x dilutions											
Sample Description	Sample ID	Sampling Date/Time	Sample Matrix	Container Type	# of Cont.	Preservative	Bottle #	M/S/MSD	MST-Bacteroidales, Human (SAM348-357)	E. coli (SM9221)	Oil & Grease (E16644-HEM)	VOCs PP & xylenes, Freon 11 (E824)	VOCs - only A+A+ZCVE (E624)		
Outfall 008	Outfall009_20180321_Grab	3/21/2018 <i>17:15</i>	WM	125 mL Sterile Poly	1	None	5	No	X	X	X	X	X		
			WM	125 mL Sterile Poly	3	Na2S2O3	10	No							
			WM	1 L Glass Amber	2	HCl	15	No							
			WM	40 mL VOA	3	HCl	40	No							
			WM	40 mL VOA	9	None	55	Yes							
			WM	1 L Glass Amber	2	HCl	15	No							
	Outfall009_20180321_Grab_Extra	3/21/2018 <i>17:15</i>	WM	40 mL VOA	3	HCl	40	No							
			WM	40 mL VOA	3	None	55	No							
Trip Blanks	TB-20180321	3/21/2018 <i>17:15</i>	WQ	40 mL VOA	2	HCl	40	No							
			WQ	40 mL VOA	2	None	55	No							

**Legend: R = Routine, A = Annual**

Relinquished By: *[Signature]* Date/Time: *3/21/18 17:15* Company: *Haley & Aldrich*

Relinquished By: *[Signature]* Date/Time: *3/21/18 20:00* Company: *[Signature]*

Relinquished By: *[Signature]* Date/Time: *3/21/18 17:20* Company: *[Signature]*

Turn-around time: (Check)  
 24 Hour:  72 Hour:  10 Day:   
 48 Hour:  5 Day:  Normal:

Sample Integrity: (Check)  
 Intact:  On Ice:

Store samples for 6 months:

Data Requirements: (Check)  
 No Level IV:  All Level IV:

*34 / 3.4 1R87*



## Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-206580-1

**Login Number: 206580**

**List Number: 1**

**Creator: Escalante, Maria I**

**List Source: TestAmerica Irvine**

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





4985 SW 74th Court, Miami, FL 33155 USA  
 Tel: (1) 786-220-0379 Fax: (1) 786-513-2733



## Human Fecal Quantification ID

Detection and quantification of the fecal associated Human gene biomarker by real-time quantitative Polymerase Chain Reaction (qPCR) DNA analytical technology

**Submitter:** Haley and Aldrich  
**Date Received:** March 23, 2018  
**Report Generated:** March 29, 2018

*ND: Not Detected*

SM #	Sample ID	Analysis Requested	Marker Quantified (copies/100 ml)	DNA Analytical Results
SM-8C23021	Outfall009_20180321_Grab	Human Bacteroidetes ID: Dorei	ND	Not Detected

Limitation of Damages – Repayment of Service Price

It is agreed that in the event of breach of any warranty or breach of contract, or negligence of Source Molecular Corporation, as well as its agents or representatives, the liability of the company shall be limited to the repayment, to the purchaser (submitter), of the individual analysis price paid by him/her to Source Molecular Corp. The company shall not be liable for any damages, either direct or consequential. Source Molecular Corp. provides analytical services on a PRIME CONTRACT BASIS ONLY. Terms are available upon request. The sample(s) cited in this report may be used for research purposes after an archiving period of 3 months from the date of this report. Research includes, but is not limited to internal validation studies and peer-reviewed research publications. Anonymity of the sample(s), including the exact geographic location will be maintained by assigning an arbitrary internal reference. These anonymous samples will only be grouped by state / province of origin for research purposes. The client must contact Source Molecular in writing within 10 days from the date of this report if he/she does not wish for their submitted sample(s) to be used for any type of future research.

**Revision 1.2**  
**Effective Date 11/2/17**



4985 SW 74th Court, Miami, FL 33155 USA  
 Tel: (1) 786-220-0379 Fax: (1) 786-513-2733



## Preliminary Interpretation of Human Fecal “Quantification” ID Results

Detection and quantification of the fecal associated Human gene biomarker by real-time quantitative Polymerase Chain Reaction (qPCR) DNA analytical technology

**Submitter:** Haley and Aldrich  
**Date Received:** March 23, 2018  
**Report Generated:** March 29, 2018

Sample ID	INTERPRETATION	
	Concentration of Human Fecal Pollution in Sample	Comment
Outfall009_20180321_Grab	Not Detected	Human fecal biomarker not detected

The opinions/interpretations identified/expressed in this report are outside the scope of this organization’s A2LA Accreditation.

## Laboratory Comments

Submitter: Haley and Aldrich

Report Generated: March 29, 2018

### **Non-Detect Results**

In sample(s) classified as non-detect, the host-associated fecal gene biomarker(s) was either not detected in test replicates, one replicate was detected at a cycle threshold greater than 35 and the other was not, or one replicate was detected at a cycle threshold less than 35 and the other was not after repeated analysis.

### **Detected Results**

In sample(s) classified as detected, the host-associated fecal gene biomarker(s) was detected in both test replicates suggesting that the host's fecal contamination is present in the sample(s). Copy number measurements reported are relative, not absolute, quantification.

### **Detected Not Quantified (DNQ) Results**

In sample(s) classified as Detected Not Quantified (DNQ), the host-associated fecal biomarker was detected in both test replicates but in quantities below the limit of quantification. This result indicates that fecal indicators associated with the respective host was present in the sample(s) but in low concentrations.

### **Fecal Reference Samples**

The client is encouraged to submit fecal samples from suspected sources in the surrounding area in order to gain a better understanding of the concentration of the host-associated biomarker with the regional population. A more precise interpretation would be available to the client with the submittal of such baseline samples.

### **Result Interpretations**

Quantitative results are reported along with interpretations. Interpretations are given as "non-detect", "low concentration", "moderate concentration", or "high concentration" based on the concentration of the genetic markers found in the sample(s).

The presence of the biomarker does not signify the presence or absence of that form of fecal pollution conclusively. Only repeated sampling will enable you to draw more definitive conclusions as to the contributor(s) of fecal pollution.

### **Additional Testing**

A portion of all samples has been frozen and will be archived for 3 months. The client is encouraged to perform additional tests on the sample(s) for other hosts suspected of contributing to the fecal contamination. A list of available tests can be found at [sourcemolecular.com/tests](http://sourcemolecular.com/tests)

### **DNA Analytical Method Explanation**

**Water Samples:** Each submitted water sample is filtered through 0.45 micron membrane filter(s). Each filter is placed in a separate, sterile 2ml disposable tube containing a unique mix of beads and lysis buffer. The sample is homogenized for 1min and the DNA extracted using the Generite DNA-EZ ST1 extraction kit (GeneRite, NJ), as per manufacturer's protocol. Deviations to these procedures may occur at the client's request.

**Non-Water Samples:** Each non-water sample submitted by the client is processed as per internal laboratory extraction procedures. An extracted DNA sample is proceed directly to PCR analysis. Details available upon request.

Amplifications to detect the target gene biomarker were run on an Applied Biosystems StepOnePlus real-time thermal cycler (Applied Biosystems, Foster City, CA) in a final reaction volume of 20ul sample extract, forward primer, reverse primer, probe and an optimized buffer. All assays are run in duplicate. Quantification is achieved by extrapolating target gene copy numbers from a standard curve generated from serial dilutions of known gene copy numbers.

For quality control purposes, a positive control and a negative control, were run alongside the sample(s) to ensure a properly functioning reaction and reveal any false negatives or false positives.

## Human Bacteroidetes ID™ Species: *B. dorei*

The **Human Bacteroidetes ID™ Species: *B. dorei*** service targets the species *Bacteroides dorei*. *B. dorei* is an anaerobe that is frequently shed from the gastrointestinal tract and isolated from human feces worldwide. It is a newly discovered species that is widely distributed in the USA.<sup>1,2</sup> The human-associated marker DNA sequence is located on the 16S rRNA gene of *B. dorei*.<sup>3</sup> The marker is the microbial source tracking (MST) marker of choice for detecting human fecal pollution due to its exceptional sensitivity and specificity. Internal validations have been conducted on hundreds of sewage, septage, human and animal host fecal samples collected from throughout the U.S and archived in the Source Molecular fecal bank. The marker has also been evaluated in both inland and coastal waters. A recent, comprehensive, multi-laboratory MST method evaluation study, exploring the performance of current MST methods, concluded the *B. dorei* qPCR assay to be the top performing human-associated assay amongst those tested. The success and consistency of this marker in numerous studies around the world<sup>1,3,4</sup> makes the **Human Bacteroidetes ID™ Species: *B. dorei*** service the primary service for identifying human fecal pollution at Source Molecular.

Fecal *Bacteroidetes* are considered for several reasons an interesting alternative to more traditional indicator organisms such as *E. coli* and *Enterococci*.<sup>5</sup> Since they are strict anaerobes, they are indicative of recent fecal contamination when found in water systems. This is a particularly strong reference point when trying to determine recent outbreaks in fecal pollution. They are also more abundant in feces of warm-blooded animals than *E. coli* and *Enterococci*.

The Human Bacteroidetes ID™ service is designed around the principle that fecal *Bacteroidetes* are found in large quantities in feces of warm-blooded animals.<sup>3,5,6,7,8</sup> Furthermore, certain strains of *Bacteroidetes* have been found to be associated with humans.<sup>3,6</sup> As such, these bacterial strains can be used as indicators of human fecal contamination.

Accuracy of the results is possible because the method amplifies DNA into a large number of small copies of the gene biomarker of interest. This is accomplished with small pieces of DNA called primers that are complementary and specific to the unique *B. dorei* DNA sequence. Through a heating process called thermal cycling, the double stranded DNA is denatured, hybridized to the complementary primers and amplified to create many copies of the DNA fragment desired. If the primers are successful in finding a site on the DNA fragment that is specific to the *B. dorei* DNA sequence, then billions of copies of the DNA fragment will be available and detected in real-time. The accumulation of DNA product is plotted as an amplification curve by the qPCR software. The absence of an amplification curve indicates that the *B. dorei* gene biomarker is not detected in the water sample because it is either not present or present at concentrations below the analytical detection limit.

To strengthen the validity of the results, additional tests targeting other high-ranking, human-associated *Bacteroidetes* species should be performed, such as

**Human Bacteroidetes ID™ Species: *B. stercoris*,**  
**Human Bacteroidetes ID™ Species: *B. fragilis*,** and  
**Human Bacteroidetes ID™ Species: *B. thetaiotaomicron*.**

<sup>1</sup>Boehm, A., Fuhrman, J., Mrse, R., Grant, S. **Tiered approach for identification of a human fecal pollution source at a recreational beach: case study at Avalon Bay, Catalina Island, California.** Environ Sci Technol. 2003 37: 673–680.

<sup>2</sup>Bakir, M., Sakamoto, M., Kitahara, M., Matsumoto, M., Benno, Y. **Bacteroides dorei sp. nov., isolated from human faeces.** Int. J. Syst. Evol. Microbiol. 2006 56: 1639–1641.

<sup>3</sup>Bernhard, A., Field, K. **A PCR assay to discriminate human and ruminant feces on the basis of host differences in Bacteroides-Prevotella genes encoding 16S rRNA.** Appl. Environ. Microbiol. 2000b 66: 4571–4574.

<sup>4</sup>Ahmed, w., Masters, N., Toze, S. **Consistency in the host specificity and host sensitivity of the Bacteroides HF183 marker for sewage pollution tracking.** Lett. Appl. Microbiol. 2012 55: 283–289.

<sup>5</sup>Scott, T., Rose, J., Jenkins, T., Farrah, S., Lukasuk, J. **Microbial Source Tracking: Current Methodology and Future Directions.** Appl. Environ. Microbiol. 2002 68: 5796–5803.

<sup>6</sup>Bernhard, A., Field, K. **Identification of nonpoint sources of fecal pollution in coastal waters by using host-specific 16S ribosomal DNA genetic markers from fecal anaerobes.** Appl. Environ. Microbiol. 2000a 66: 1587–1594.

<sup>7</sup>Fogarty, L., Voytek, M. **A Comparison of Bacteroides-Prevotella 16S rRNA Genetic Markers for Fecal Samples from Different Animal Species.** Appl. Environ. Microbiol. 2005 71: 5999–6007.

<sup>8</sup>Dick, L., Bernhard, A., Brodeur, T., Santo Domingo, J., *et al.* **Host Distributions of Uncultivated Fecal Bacteroidales Bacteria Reveal Genetic Markers for Fecal Source Identification.** Appl. Environ. Microbiol. 2005 71: 3184–3191.

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**DATA VALIDATION REPORT**

**Boeing SSFL Outfall 009**

**SAMPLE DELIVERY GROUP: 440-206741-1**

**Prepared for**  
Haley & Aldrich

**April 4, 2018**

MEC<sup>x</sup>, Inc.  
8864 Interchange Drive  
Houston, Texas 77054

[www.mecx.net](http://www.mecx.net)





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



I. INTRODUCTION

**Task Order Title:** Boeing SSFL Outfall 009

**Contract:** 40458-078 and 40458-083

**MECX Project No.:** 1272.003D.01 002

**Sample Delivery Group:** 440-206741-1

**Project Manager:** K. Miller

**Matrix:** Water

**QC Level:** IV

**No. of Samples:** 2

**No. of Reanalyses/Dilutions:** 0

**Laboratory:** TestAmerica - Irvine

**TABLE 1 - SAMPLE IDENTIFICATION**

Sample Name	Lab Sample Name	Matrix	Collection	Method
Outfall009_20180322_Comp	440-206741-1	Water	3/22/2018 3:30:00 PM	E200.7, E200.8, E218.6, E245.1, E300, SM2340B, SM2540C/D
Outfall009_20180322_Comp_F	440-206741-2	Water	3/22/2018 3:30:00 PM	E200.7, E200.8, E245.1, SM2340B





## II. SAMPLE MANAGEMENT

---

According to the case narrative, sample condition upon receipt form and the chain-of-custody (COC) provided by the laboratory for sample delivery group (SDG) 440-206741-1:

- The laboratory received the samples in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius ( $^{\circ}\text{C}$ ) and greater than  $0^{\circ}\text{C}$ .
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COC.
- According to the sample receipt form, custody seals were absent; however, the sample receipt checklist indicated that the containers did not appear to have been compromised or tampered with.
- Sample Outfall009\_20180322\_Comp\_F was filtered and preserved upon receipt at the laboratory.
- A borosilicate vial was not provided for total mercury analysis. The laboratory obtained the aliquot for this analysis from the 1 L poly container, as directed on the COC.

MECX<sup>x</sup> noted the anomaly regarding sample management identified below.

- Corrections to the COC were not initialed and/or dated.
- Sample collection times were not recorded on the COC.



TABLE 2 - DATA QUALIFIER REFERENCE

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



**TABLE 3 - REASON CODE REFERENCE**

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	Not applicable.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination ( $r^2$ ) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.



Reason Code	Organic	Inorganic
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



### III. EPA METHODS 200.8, 200.7, 245.1 AND 2340B — METALS, MERCURY AND HARDNESS

---

Marcia Hilchey of MEC<sup>x</sup> reviewed the SDG on April 4, 2018.

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

#### III.1. HOLDING TIMES

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

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

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

QAPP calibration criteria were met. A blank and two to four standards were used for calibration of all target analytes. The initial calibration  $r$  values were  $\geq 0.995$ . CRQL recoveries were within the laboratory control limits of 50-150%. ICV and CCV recoveries were within NFG control limits of 90-110%.

#### III.3. QUALITY CONTROL SAMPLES

##### III.3.1. METHOD BLANKS

There were no target analyte detections in the calibration blanks or method blanks of sufficient concentration to warrant qualification of site sample results.

##### III.3.2. INTERFERENCE CHECK SAMPLES:

ICP-MS ICSAB recoveries were within the control limits of 80-120% or  $\pm 2x$  the reporting limit, whichever is greater. All of the interferents were present in the site samples at concentrations less than half that of the ICSAs, therefore, the samples were not further assessed for matrix interference.

##### III.3.3. LABORATORY CONTROL SAMPLES

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

##### III.3.4. LABORATORY DUPLICATES:

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

##### III.3.5. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on both samples in this SDG for Methods 200.7 and 200.8. MS/MSD analyses were performed on sample Outfall009\_20180322\_Comp\_F, and MS analysis was performed on sample Outfall009\_20180322\_Comp for Method 245.1. Results were not assessed when the parent sample concentration exceeded the spike amount by  $4x$ . Recoveries and RPDs were within the method control limits of 70-130% and  $\leq 20\%$ , respectively with the exception of total aluminum recoveries (155%/165%). The result for total aluminum was qualified as estimated with high bias (J+).

#### III.4. SERIAL DILUTION

No serial dilution analyses were reported.



### III.1. INTERNAL STANDARDS PERFORMANCE

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

### III.2. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Calculations were verified and the reported sample results were verified against the raw data. No transcription errors or calculation errors were noted. Detects between the MDL and the RL were qualified as estimated (J) and coded with DNQ to comply with the NPDES permit. Nondetects are valid to the MDL.

### III.3. FIELD QC SAMPLES

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

#### III.3.1. FIELD BLANKS AND EQUIPMENT BLANKS

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

#### III.3.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

## IV. METHODS SM2540D, SM2540C, EPA 300.0, EPA 218.6— TOTAL SUSPENDED SOLIDS (TSS), TOTAL DISSOLVED SOLIDS (TDS), ANIONS, AND HEXAVALENT CHROMIUM

---

Marcia Hilchey of MEC<sup>X</sup> reviewed the SDG on April 5, 2018.

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC<sup>X</sup> *Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *Standard Methods for the Examination of Water and Wastewater 2540D and 2540C*, *EPA Methods 300.0 and 218.6*, and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

### IV.1. HOLDING TIMES

The analytical holding times as listed below were met:

- 7 days for TDS
- 7 days for TSS
- 28 days for chloride, fluoride and sulfate
- 48 hours for nitrate as N and nitrite as N
- 24 hours for hexavalent chromium

### IV.2. CALIBRATION

Initial calibration criteria were met. The initial calibration  $r^2$  values were  $\geq 0.995$ . The analytical balance was properly calibrated. Initial (ICV) and continuing (CCV) calibration recoveries were within QAPP control limits for hexavalent chromium, and CCV recoveries were within QAPP control limits for anions. ICV



recoveries for chloride (91%) and nitrate as N (94%) exceeded QAPP control limits of 95-105%. Accepted sample results for chloride, nitrate as N, and nitrite/nitrate were qualified as estimated with low bias (J-).

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

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

Method blanks and calibration blanks had no detects.

##### **IV.3.2. LABORATORY CONTROL SAMPLES**

Laboratory control sample recoveries met QAPP control limits.

##### **IV.3.3. LABORATORY DUPLICATES**

Laboratory duplicate analyses were performed on the sample in this SDG for TSS and TDS. QAPP RPD requirements were met.

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

MS/MSD analyses were performed on the sample in this SDG for anions and hexavalent chromium. QAPP recovery and RPD requirements were met.

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

Calculations were verified and the reported sample results were verified against the raw data. No transcription errors or calculation errors were noted. Detects between the MDL and the RL were qualified as estimated (J) and coded with DNQ to comply with the NPDES permit. Nondetects are valid to the MDL.

The laboratory analyzed and reported results for both diluted and undiluted analyses for chloride, nitrate and N, and sulfate. The results of the undiluted analyses were accepted and the results of the diluted analyses were rejected (R) as there were no technical differences between the analyses.

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

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

##### **IV.5.1. FIELD BLANKS AND EQUIPMENT BLANKS**

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

##### **IV.5.2. FIELD DUPLICATES**

Field duplicate samples were not identified in this SDG.

# Validated Sample Result Forms: 4402067411

## Analysis Method E200.7

Sample Name Outfall009\_20180322\_Comp Matrix Type: WM Result Type: TRG

Sample Date: 3/22/2018 3:30:00 PM Validation Level: 8

Lab Sample Name: 440-206741-1

Analyte	Fraction:	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Aluminum	T	7429-90-5	800	100	50	ug/L		J+	Q
Arsenic	T	7440-38-2		10	8.9	ug/L	U	U	
Beryllium	T	7440-41-7		2.0	1.0	ug/L	U	U	
Boron	T	7440-42-8	0.041	0.050	0.025	mg/L	J,DX	J	DNQ
Chromium	T	7440-47-3		5.0	2.5	ug/L	U	U	
Iron	T	7439-89-6	0.77	0.10	0.050	mg/L			
Nickel	T	7440-02-0		10	5.0	ug/L	U	U	
Silver	T	7440-22-4		10	5.0	ug/L	U	U	
Vanadium	T	7440-62-2		10	5.0	ug/L	U	U	
Zinc	T	7440-66-6		20	12	ug/L	U	U	

Sample Name Outfall009\_20180322\_Comp\_F Matrix Type: WM Result Type: TRG

Sample Date: 3/22/2018 3:30:00 PM Validation Level: 8

Lab Sample Name: 440-206741-2

Analyte	Fraction:	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Aluminum	D	7429-90-5	140	100	50	ug/L			
Arsenic	D	7440-38-2		10	8.9	ug/L	U	U	
Beryllium	D	7440-41-7		2.0	1.0	ug/L	U	U	
Boron	D	7440-42-8	0.044	0.050	0.025	mg/L	J,DX	J	DNQ
Chromium	D	7440-47-3		5.0	2.5	ug/L	U	U	
Iron	D	7439-89-6	0.16	0.10	0.050	mg/L			
Nickel	D	7440-02-0		10	5.0	ug/L	U	U	
Silver	D	7440-22-4		10	5.0	ug/L	U	U	
Vanadium	D	7440-62-2		10	5.0	ug/L	U	U	
Zinc	D	7440-66-6		20	12	ug/L	U	U	

## Analysis Method E200.8

Sample Name Outfall009\_20180322\_Comp Matrix Type: WM Result Type: TRG

Sample Date: 3/22/2018 3:30:00 PM Validation Level: 8

Lab Sample Name: 440-206741-1

Analyte	Fraction:	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Antimony	T	7440-36-0	0.69	2.0	0.50	ug/L	J,DX	J	DNQ
Cadmium	T	7440-43-9		1.0	0.25	ug/L	U	U	



**Analysis Method E200.8**

Copper	T	7440-50-8	5.8	2.0	0.50	ug/L		
Lead	T	7439-92-1	2.1	1.0	0.50	ug/L		
Selenium	T	7782-49-2		2.0	0.50	ug/L	U	U
Thallium	T	7440-28-0		1.0	0.50	ug/L	U	U

**Sample Name** Outfall009\_20180322\_Comp\_F **Matrix Type:** WM **Result Type:** TRG

**Sample Date:** 3/22/2018 3:30:00 PM **Validation Level:** 8

**Lab Sample Name:** 440-206741-2

Analyte	Fraction:	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Antimony	D	7440-36-0	1.3	2.0	0.50	ug/L	J,DX	J	DNQ
Cadmium	D	7440-43-9		1.0	0.25	ug/L	U	U	
Copper	D	7440-50-8	4.9	2.0	0.50	ug/L			
Lead	D	7439-92-1	0.52	1.0	0.50	ug/L	J,DX	J	DNQ
Selenium	D	7782-49-2		2.0	0.50	ug/L	U	U	
Thallium	D	7440-28-0		1.0	0.50	ug/L	U	U	

**Analysis Method E218.6**

**Sample Name** Outfall009\_20180322\_Comp **Matrix Type:** WM **Result Type:** TRG

**Sample Date:** 3/22/2018 3:30:00 PM **Validation Level:** 8

**Lab Sample Name:** 440-206741-1

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

**Analysis Method E245.1**

**Sample Name** Outfall009\_20180322\_Comp **Matrix Type:** WM **Result Type:** TRG

**Sample Date:** 3/22/2018 3:30:00 PM **Validation Level:** 8

**Lab Sample Name:** 440-206741-1

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

**Sample Name** Outfall009\_20180322\_Comp\_F **Matrix Type:** WM **Result Type:** TRG

**Sample Date:** 3/22/2018 3:30:00 PM **Validation Level:** 8

**Lab Sample Name:** 440-206741-2

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

**Analysis Method E300****Sample Name** Outfall009\_20180322\_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 3/22/2018 3:30:00 PM **Validation Level:** 8**Lab Sample Name:** 440-206741-1

Analyte	Fraction:	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chloride	N	16887-00-6	2.3	0.50	0.25	mg/L		J-	R
Chloride	N	16887-00-6	2.7	2.5	1.3	mg/L		R	D
Nitrate (as N)	N	14797-55-8	0.42	0.11	0.055	mg/L		J-	R
Nitrate (as N)	N	14797-55-8	0.43	0.55	0.28	mg/L	J,DX	R	D
Nitrite/Nitrate	N	NO2NO3	0.42	0.15	0.070	mg/L		J-	R
Sulfate	N	14808-79-8	2.7	0.50	0.25	mg/L			
Sulfate	N	14808-79-8	2.7	2.5	1.3	mg/L		R	D

**Analysis Method SM2340****Sample Name** Outfall009\_20180322\_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 3/22/2018 3:30:00 PM **Validation Level:** 8**Lab Sample Name:** 440-206741-1

Analyte	Fraction:	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Hardness as CaCO3	T	HARDNESSCA CO3	20	0.33	0.17	mg/L			

**Sample Name** Outfall009\_20180322\_Comp\_F **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 3/22/2018 3:30:00 PM **Validation Level:** 8**Lab Sample Name:** 440-206741-2

Analyte	Fraction:	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Hardness as CaCO3	D	HARDNESSCA CO3	19	0.33	0.17	mg/L			

**Analysis Method SM2540C****Sample Name** Outfall009\_20180322\_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 3/22/2018 3:30:00 PM **Validation Level:** 8**Lab Sample Name:** 440-206741-1

Analyte	Fraction:	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Dissolved Solids (TDS)	N	TDS	75	10	5.0	mg/L			

*Analysis Method*    *SM2540D*

**Sample Name**    Outfall009\_20180322\_Comp                      **Matrix Type:**    WM                      **Result Type:**    TRG

**Sample Date:**    3/22/2018 3:30:00 PM                      **Validation Level:**    8

**Lab Sample Name:**    440-206741-1

<b>Analyte</b>	<b>Fraction:</b>	<b>CAS No</b>	<b>Result Value</b>	<b>RL</b>	<b>MDL</b>	<b>Result Units</b>	<b>Lab Qualifier</b>	<b>Validation Qualifier</b>	<b>Validation Notes</b>
Total Suspended Solids (TSS)	N	TSS	9.0	2.0	1.0	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: 440-206741-1

Client Project/Site: Annual Outfall 009 Comp

Revision: 1

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

4/5/2018 4:28:28 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

[urvashi.patel@testamericainc.com](mailto:urvashi.patel@testamericainc.com)

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

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

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



---

Urvashi Patel  
Manager of Project Management  
4/5/2018 4:28:28 PM



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# Sample Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Annual Outfall 009 Comp

TestAmerica Job ID: 440-206741-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-206741-1	Outfall009_20180322_Comp	Water	03/22/18 15:30	03/22/18 20:00
440-206741-2	Outfall009_20180322_Comp_F	Water	03/22/18 15:30	03/22/18 20:00

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- 12
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- 14

# Case Narrative

Client: Haley & Aldrich, Inc.  
Project/Site: Annual Outfall 009 Comp

TestAmerica Job ID: 440-206741-1

**Job ID: 440-206741-1**

**Laboratory: TestAmerica Irvine**

## Narrative

### Job Narrative 440-206741-1

#### Comments

Revision created to report Silver by 200.8 instead of 200.7

#### Receipt

The samples were received on 3/22/2018 8:00 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 5 coolers at receipt time were 2.1° C, 2.1° C, 2.3° C, 3.5° C and 3.6° C.

#### GC/MS Semi VOA

Method(s) 625: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 440-466272 and analytical batch 440-466864 were outside control limits. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Method(s) 625: The matrix spike / matrix spike duplicate (MS/MSD) precision for preparation batch 440-466272 and analytical batch 440-466864 was outside control limits. Sample matrix interference is suspected.

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

#### HPLC/IC

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

#### GC Semi VOA

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

#### Metals

Method(s) 200.7 Rev 4.4: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 440-466017 and analytical batch 440-466147 were outside control limits for Aluminum. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Method(s) 200.7 Rev 4.4: The method blank for preparation batch 440-465710 and 440-466029 and analytical batch 440-466147 contained Calcium above the method detection limit (MDL). Associated samples were not re-analyzed because results were less than the reporting limit (RL) OR practical quantitation limit (PQL).

Method(s) 200.8: The following samples requested dissolved metals and were not filtered in the field: Outfall009\_20180322\_Comp\_F (440-206741-2). These samples were filtered and preserved upon receipt to the laboratory.

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

#### General Chemistry

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 Results

Client: Haley & Aldrich, Inc.  
 Project/Site: Annual Outfall 009 Comp

TestAmerica Job ID: 440-206741-1

**Client Sample ID: Outfall009\_20180322\_Comp**

**Lab Sample ID: 440-206741-1**

**Date Collected: 03/22/18 15:30**

**Matrix: Water**

**Date Received: 03/22/18 20:00**

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		0.478	0.191	ug/L		03/27/18 09:48	03/29/18 15:14	1
Acenaphthylene	ND		0.478	0.191	ug/L		03/27/18 09:48	03/29/18 15:14	1
Anthracene	ND		0.478	0.191	ug/L		03/27/18 09:48	03/29/18 15:14	1
Benzidine	ND		9.57	4.78	ug/L		03/27/18 09:48	03/29/18 15:14	1
Benzo[a]anthracene	ND		4.78	1.91	ug/L		03/27/18 09:48	03/29/18 15:14	1
Benzo[b]fluoranthene	ND		1.91	0.957	ug/L		03/27/18 09:48	03/29/18 15:14	1
Benzo[k]fluoranthene	ND		0.478	0.239	ug/L		03/27/18 09:48	03/29/18 15:14	1
Benzo[a]pyrene	ND		1.91	0.478	ug/L		03/27/18 09:48	03/29/18 15:14	1
Bis(2-chloroethoxy)methane	ND		0.478	0.191	ug/L		03/27/18 09:48	03/29/18 15:14	1
Bis(2-chloroethyl)ether	ND		0.478	0.191	ug/L		03/27/18 09:48	03/29/18 15:14	1
Bis(2-ethylhexyl) phthalate	ND		4.78	1.91	ug/L		03/27/18 09:48	03/29/18 15:14	1
4-Bromophenyl phenyl ether	ND		0.957	0.478	ug/L		03/27/18 09:48	03/29/18 15:14	1
Butyl benzyl phthalate	ND		4.78	1.91	ug/L		03/27/18 09:48	03/29/18 15:14	1
4-Chloro-3-methylphenol	ND		1.91	0.191	ug/L		03/27/18 09:48	03/29/18 15:14	1
2-Chloronaphthalene	ND		0.478	0.191	ug/L		03/27/18 09:48	03/29/18 15:14	1
2-Chlorophenol	ND		0.957	0.478	ug/L		03/27/18 09:48	03/29/18 15:14	1
4-Chlorophenyl phenyl ether	ND		0.478	0.191	ug/L		03/27/18 09:48	03/29/18 15:14	1
Chrysene	ND		0.478	0.191	ug/L		03/27/18 09:48	03/29/18 15:14	1
Dibenz(a,h)anthracene	ND		0.478	0.239	ug/L		03/27/18 09:48	03/29/18 15:14	1
Di-n-butyl phthalate	ND		1.91	0.957	ug/L		03/27/18 09:48	03/29/18 15:14	1
1,2-Dichlorobenzene	ND		0.478	0.191	ug/L		03/27/18 09:48	03/29/18 15:14	1
1,3-Dichlorobenzene	ND		0.478	0.191	ug/L		03/27/18 09:48	03/29/18 15:14	1
1,4-Dichlorobenzene	ND		0.478	0.191	ug/L		03/27/18 09:48	03/29/18 15:14	1
3,3'-Dichlorobenzidine	ND		4.78	1.91	ug/L		03/27/18 09:48	03/29/18 15:14	1
2,4-Dichlorophenol	ND		1.91	0.957	ug/L		03/27/18 09:48	03/29/18 15:14	1
Diethyl phthalate	ND		0.957	0.478	ug/L		03/27/18 09:48	03/29/18 15:14	1
2,4-Dimethylphenol	ND		1.91	0.957	ug/L		03/27/18 09:48	03/29/18 15:14	1
Dimethyl phthalate	ND		0.478	0.239	ug/L		03/27/18 09:48	03/29/18 15:14	1
4,6-Dinitro-2-methylphenol	ND		4.78	1.91	ug/L		03/27/18 09:48	03/29/18 15:14	1
2,4-Dinitrophenol	ND		4.78	1.91	ug/L		03/27/18 09:48	03/29/18 15:14	1
2,4-Dinitrotoluene	ND		4.78	1.91	ug/L		03/27/18 09:48	03/29/18 15:14	1
2,6-Dinitrotoluene	ND		4.78	1.91	ug/L		03/27/18 09:48	03/29/18 15:14	1
Di-n-octyl phthalate	ND		4.78	1.91	ug/L		03/27/18 09:48	03/29/18 15:14	1
1,2-Diphenylhydrazine(as Azobenzene)	ND		0.957	0.478	ug/L		03/27/18 09:48	03/29/18 15:14	1
Fluoranthene	ND		0.478	0.191	ug/L		03/27/18 09:48	03/29/18 15:14	1
Fluorene	ND		0.478	0.191	ug/L		03/27/18 09:48	03/29/18 15:14	1
Hexachlorobenzene	ND		0.957	0.478	ug/L		03/27/18 09:48	03/29/18 15:14	1
Hexachlorobutadiene	ND		1.91	0.478	ug/L		03/27/18 09:48	03/29/18 15:14	1
Hexachloroethane	ND		2.87	0.478	ug/L		03/27/18 09:48	03/29/18 15:14	1
Hexachlorocyclopentadiene	ND		4.78	1.91	ug/L		03/27/18 09:48	03/29/18 15:14	1
Indeno[1,2,3-cd]pyrene	ND		1.91	0.957	ug/L		03/27/18 09:48	03/29/18 15:14	1
Isophorone	ND		0.957	0.478	ug/L		03/27/18 09:48	03/29/18 15:14	1
Naphthalene	ND		0.957	0.478	ug/L		03/27/18 09:48	03/29/18 15:14	1
Nitrobenzene	ND		0.957	0.478	ug/L		03/27/18 09:48	03/29/18 15:14	1
2-Nitrophenol	ND		1.91	0.957	ug/L		03/27/18 09:48	03/29/18 15:14	1
4-Nitrophenol	ND		4.78	1.91	ug/L		03/27/18 09:48	03/29/18 15:14	1
N-Nitrosodimethylamine	ND		1.91	0.957	ug/L		03/27/18 09:48	03/29/18 15:14	1
N-Nitrosodiphenylamine	ND		0.957	0.478	ug/L		03/27/18 09:48	03/29/18 15:14	1

TestAmerica Irvine

# Client Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Annual Outfall 009 Comp

TestAmerica Job ID: 440-206741-1

**Client Sample ID: Outfall009\_20180322\_Comp**

**Lab Sample ID: 440-206741-1**

**Date Collected: 03/22/18 15:30**

**Matrix: Water**

**Date Received: 03/22/18 20:00**

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-Nitrosodi-n-propylamine	ND		1.91	0.957	ug/L		03/27/18 09:48	03/29/18 15:14	1
Pentachlorophenol	ND		1.91	0.957	ug/L		03/27/18 09:48	03/29/18 15:14	1
Phenanthrene	ND		0.478	0.191	ug/L		03/27/18 09:48	03/29/18 15:14	1
Phenol	ND		0.957	0.478	ug/L		03/27/18 09:48	03/29/18 15:14	1
Pyrene	ND		0.478	0.191	ug/L		03/27/18 09:48	03/29/18 15:14	1
1,2,4-Trichlorobenzene	ND		0.957	0.478	ug/L		03/27/18 09:48	03/29/18 15:14	1
2,4,6-Trichlorophenol	ND		0.957	0.478	ug/L		03/27/18 09:48	03/29/18 15:14	1
Benzo[g,h,i]perylene	ND		4.78	1.91	ug/L		03/27/18 09:48	03/29/18 15:14	1
bis (2-chloroisopropyl) ether	ND		0.478	0.191	ug/L		03/27/18 09:48	03/29/18 15:14	1
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
2-Fluorobiphenyl	80		50 - 120				03/27/18 09:48	03/29/18 15:14	1
2-Fluorophenol	68		30 - 120				03/27/18 09:48	03/29/18 15:14	1
2,4,6-Tribromophenol	93		40 - 120				03/27/18 09:48	03/29/18 15:14	1
Nitrobenzene-d5	80		45 - 120				03/27/18 09:48	03/29/18 15:14	1
Terphenyl-d14	89		37 - 144				03/27/18 09:48	03/29/18 15:14	1
Phenol-d6	72		35 - 120				03/27/18 09:48	03/29/18 15:14	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor 1016	ND		0.48	0.24	ug/L		03/27/18 06:02	03/27/18 15:03	1
Aroclor 1221	ND		0.48	0.24	ug/L		03/27/18 06:02	03/27/18 15:03	1
Aroclor 1232	ND		0.48	0.24	ug/L		03/27/18 06:02	03/27/18 15:03	1
Aroclor 1242	ND		0.48	0.24	ug/L		03/27/18 06:02	03/27/18 15:03	1
Aroclor 1248	ND		0.48	0.24	ug/L		03/27/18 06:02	03/27/18 15:03	1
Aroclor 1254	ND		0.48	0.24	ug/L		03/27/18 06:02	03/27/18 15:03	1
Aroclor 1260	ND		0.48	0.24	ug/L		03/27/18 06:02	03/27/18 15:03	1
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
DCB Decachlorobiphenyl (Surr)	92		29 - 115				03/27/18 06:02	03/27/18 15:03	1

## Method: 608 Pesticides - Organochlorine Pesticides Low level

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	ND		0.0048	0.0014	ug/L		03/27/18 06:02	03/28/18 11:25	1
alpha-BHC	ND		0.0048	0.0024	ug/L		03/27/18 06:02	03/28/18 11:25	1
beta-BHC	ND		0.0096	0.0038	ug/L		03/27/18 06:02	03/28/18 11:25	1
Chlordane (technical)	ND		0.096	0.077	ug/L		03/27/18 06:02	03/28/18 11:25	1
delta-BHC	ND		0.0048	0.0033	ug/L		03/27/18 06:02	03/28/18 11:25	1
Dieldrin	ND		0.0048	0.0019	ug/L		03/27/18 06:02	03/28/18 11:25	1
Endosulfan I	ND		0.0048	0.0029	ug/L		03/27/18 06:02	03/28/18 11:25	1
Endosulfan II	ND		0.0048	0.0019	ug/L		03/27/18 06:02	03/28/18 11:25	1
Endosulfan sulfate	ND		0.0096	0.0029	ug/L		03/27/18 06:02	03/28/18 11:25	1
Endrin	ND		0.0048	0.0019	ug/L		03/27/18 06:02	03/28/18 11:25	1
Endrin aldehyde	ND		0.0096	0.0019	ug/L		03/27/18 06:02	03/28/18 11:25	1
gamma-BHC (Lindane)	ND		0.0096	0.0029	ug/L		03/27/18 06:02	03/28/18 11:25	1
Heptachlor	ND		0.0096	0.0029	ug/L		03/27/18 06:02	03/28/18 11:25	1
Heptachlor epoxide	ND		0.0048	0.0024	ug/L		03/27/18 06:02	03/28/18 11:25	1
Toxaphene	ND		0.48	0.24	ug/L		03/27/18 06:02	03/28/18 11:25	1
4,4'-DDD	ND		0.0048	0.0038	ug/L		03/27/18 06:02	03/28/18 11:25	1
4,4'-DDE	ND		0.0048	0.0029	ug/L		03/27/18 06:02	03/28/18 11:25	1

TestAmerica Irvine

# Client Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Annual Outfall 009 Comp

TestAmerica Job ID: 440-206741-1

**Client Sample ID: Outfall009\_20180322\_Comp**

**Lab Sample ID: 440-206741-1**

**Date Collected: 03/22/18 15:30**

**Matrix: Water**

**Date Received: 03/22/18 20:00**

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4,4'-DDT	ND		0.0096	0.0038	ug/L		03/27/18 06:02	03/28/18 11:25	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	54		10 - 150	03/27/18 06:02	03/28/18 11:25	1

**Method: 218.6 - Chromium, Hexavalent (Ion Chromatography)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	ND		1.0	0.25	ug/L			03/22/18 23:25	1

**Method: 300.0 - Anions, Ion Chromatography**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	2.3		0.50	0.25	mg/L			03/23/18 00:11	1
Nitrate as N	0.42		0.11	0.055	mg/L			03/23/18 00:11	1
Fluoride	ND		0.50	0.25	mg/L			03/23/18 00:11	1
Nitrite as N	ND		0.15	0.070	mg/L			03/23/18 00:11	1
Sulfate	2.7		0.50	0.25	mg/L			03/23/18 00:11	1

**Method: 314.0 - Perchlorate (IC)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		4.0	0.95	ug/L			03/30/18 09:12	1

**Method: NO3NO2 Calc - Nitrogen, Nitrate-Nitrite**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	0.42		0.15	0.070	mg/L			04/03/18 09:18	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	800		100	50	ug/L		03/26/18 11:35	03/26/18 18:21	1
Arsenic	ND		10	8.9	ug/L		03/26/18 11:35	03/26/18 18:21	1
Boron	0.041	J,DX	0.050	0.025	mg/L		03/26/18 11:35	03/26/18 18:21	1
Beryllium	ND		2.0	1.0	ug/L		03/26/18 11:35	03/26/18 18:21	1
Chromium	ND		5.0	2.5	ug/L		03/26/18 11:35	03/26/18 18:21	1
Iron	0.77		0.10	0.050	mg/L		03/26/18 11:35	03/26/18 18:21	1
Nickel	ND		10	5.0	ug/L		03/26/18 11:35	03/26/18 18:21	1
Vanadium	ND		10	5.0	ug/L		03/26/18 11:35	03/26/18 18:21	1
Zinc	ND		20	12	ug/L		03/26/18 11:35	03/26/18 18:21	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		03/26/18 11:37	03/26/18 18:34	1
Copper	5.8		2.0	0.50	ug/L		03/26/18 11:37	03/26/18 18:34	1
Lead	2.1		1.0	0.50	ug/L		03/26/18 11:37	03/26/18 18:34	1
Antimony	0.69	J,DX	2.0	0.50	ug/L		03/26/18 11:37	03/26/18 18:34	1
Selenium	ND		2.0	0.50	ug/L		03/26/18 11:37	03/26/18 18:34	1
Thallium	ND		1.0	0.50	ug/L		03/26/18 11:37	03/26/18 18:34	1
Silver	ND		1.0	0.50	ug/L		03/26/18 11:37	03/26/18 18:34	1

**Method: 245.1 - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		03/23/18 13:27	03/23/18 20:57	1

TestAmerica Irvine

# Client Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Annual Outfall 009 Comp

TestAmerica Job ID: 440-206741-1

## Client Sample ID: Outfall009\_20180322\_Comp

## Lab Sample ID: 440-206741-1

Date Collected: 03/22/18 15:30

Matrix: Water

Date Received: 03/22/18 20:00

### 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	20		0.33	0.17	mg/L			03/27/18 17:57	1

### General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	75		10	5.0	mg/L			03/26/18 12:09	1
Total Suspended Solids	9.0		2.0	1.0	mg/L			03/26/18 16:12	1
Cyanide, Total	ND		5.0	2.5	ug/L		03/23/18 10:40	03/24/18 09:57	1

## Client Sample ID: Outfall009\_20180322\_Comp\_F

## Lab Sample ID: 440-206741-2

Date Collected: 03/22/18 15:30

Matrix: Water

Date Received: 03/22/18 20:00

### Method: 200.7 Rev 4.4 - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	140		100	50	ug/L		03/26/18 12:21	03/26/18 18:05	1
Arsenic	ND		10	8.9	ug/L		03/26/18 12:21	03/26/18 18:05	1
Boron	0.044	J,DX	0.050	0.025	mg/L		03/26/18 12:21	03/26/18 18:05	1
Beryllium	ND		2.0	1.0	ug/L		03/26/18 12:21	03/26/18 18:05	1
Chromium	ND		5.0	2.5	ug/L		03/28/18 14:11	03/28/18 18:44	1
Iron	0.16		0.10	0.050	mg/L		03/26/18 12:21	03/26/18 18:05	1
Nickel	ND		10	5.0	ug/L		03/26/18 12:21	03/26/18 18:05	1
Vanadium	ND		10	5.0	ug/L		03/26/18 12:21	03/26/18 18:05	1
Zinc	ND		20	12	ug/L		03/26/18 12:21	03/26/18 18:05	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		03/26/18 12:22	03/26/18 12:59	1
Copper	4.9		2.0	0.50	ug/L		03/26/18 12:22	03/26/18 12:59	1
Lead	0.52	J,DX	1.0	0.50	ug/L		03/26/18 12:22	03/26/18 12:59	1
Antimony	1.3	J,DX	2.0	0.50	ug/L		03/26/18 12:22	03/26/18 12:59	1
Selenium	ND		2.0	0.50	ug/L		03/26/18 12:22	03/26/18 12:59	1
Thallium	ND		1.0	0.50	ug/L		03/26/18 12:22	03/26/18 12:59	1
Silver	ND		1.0	0.50	ug/L		04/04/18 17:07	04/04/18 22:53	1

### Method: 245.1 - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		03/26/18 13:15	03/27/18 16:34	1

### Method: SM 2340B - Total Hardness (as CaCO3) by calculation - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hardness, as CaCO3	19		0.33	0.17	mg/L			03/27/18 17:57	1

# Method Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Annual Outfall 009 Comp

TestAmerica Job ID: 440-206741-1

Method	Method Description	Protocol	Laboratory
625	Semivolatile Organic Compounds (GC/MS)	EPA	TAL IRV
608 PCB LL	Polychlorinated Biphenyls (PCBs) Low level	40CFR136A	TAL IRV
608 Pesticides	Organochlorine Pesticides Low level	40CFR136A	TAL IRV
218.6	Chromium, Hexavalent (Ion Chromatography)	EPA	TAL IRV
300.0	Anions, Ion Chromatography	MCAWW	TAL IRV
314.0	Perchlorate (IC)	EPA	TAL IRV
NO3NO2 Calc	Nitrogen, Nitrate-Nitrite	EPA	TAL IRV
200.7 Rev 4.4	Metals (ICP)	EPA	TAL IRV
200.8	Metals (ICP/MS)	EPA	TAL IRV
245.1	Mercury (CVAA)	EPA	TAL IRV
SM 2340B	Total Hardness (as CaCO3) by calculation	SM	TAL IRV
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL IRV
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL IRV
SM 4500 CN E	Cyanide, Total (Low Level)	SM	TAL IRV

#### Protocol References:

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

EPA = US Environmental Protection Agency

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

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

#### Laboratory References:

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

# Lab Chronicle

Client: Haley & Aldrich, Inc.  
Project/Site: Annual Outfall 009 Comp

TestAmerica Job ID: 440-206741-1

**Client Sample ID: Outfall009\_20180322\_Comp**

**Lab Sample ID: 440-206741-1**

**Date Collected: 03/22/18 15:30**

**Matrix: Water**

**Date Received: 03/22/18 20:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	625			1045 mL	2.0 mL	466272	03/27/18 09:48	JS1	TAL IRV
Total/NA	Analysis	625		1			466864	03/29/18 15:14	DF	TAL IRV
Total/NA	Prep	608			1045 mL	2 mL	466200	03/27/18 06:02	L1H	TAL IRV
Total/NA	Analysis	608 PCB LL		1			466278	03/27/18 15:03	JM	TAL IRV
Total/NA	Prep	608			1045 mL	2 mL	466200	03/27/18 06:02	L1H	TAL IRV
Total/NA	Analysis	608 Pesticides		1			466528	03/28/18 11:25	IVA	TAL IRV
Total/NA	Analysis	218.6		1			465186	03/22/18 23:25	MN	TAL IRV
Total/NA	Analysis	300.0		1			465264	03/23/18 00:11	NTN	TAL IRV
Total/NA	Analysis	300.0		1			465265	03/23/18 00:11	NTN	TAL IRV
Total/NA	Analysis	300.0	DL	5			465264	03/23/18 00:27	NTN	TAL IRV
Total/NA	Analysis	300.0	DL	5			465265	03/23/18 00:27	NTN	TAL IRV
Total/NA	Analysis	314.0		1			467055	03/30/18 09:12	CTH	TAL IRV
Total/NA	Analysis	NO3NO2 Calc		1			467739	04/03/18 09:18	TLN	TAL IRV
Total Recoverable	Prep	200.2			25 mL	25 mL	466017	03/26/18 11:35	Q1N	TAL IRV
Total Recoverable	Analysis	200.7 Rev 4.4		1			466147	03/26/18 18:21	K1E	TAL IRV
Total Recoverable	Prep	200.2			25 mL	25 mL	466018	03/26/18 11:37	Q1N	TAL IRV
Total Recoverable	Analysis	200.8		1			466136	03/26/18 18:34	B1H	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	465644	03/23/18 13:27	DB	TAL IRV
Total/NA	Analysis	245.1		1			465777	03/23/18 20:57	P1P	TAL IRV
Total Recoverable	Analysis	SM 2340B		1			466444	03/27/18 17:57	A1S	TAL IRV
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	466028	03/26/18 12:09	XL	TAL IRV
Total/NA	Analysis	SM 2540D		1	500 mL	1000 mL	466101	03/26/18 16:12	HTL	TAL IRV
Total/NA	Prep	Distill/CN			50 mL	50 mL	465583	03/23/18 10:40	KMY	TAL IRV
Total/NA	Analysis	SM 4500 CN E		1			465829	03/24/18 09:57	KMY	TAL IRV

**Client Sample ID: Outfall009\_20180322\_Comp\_F**

**Lab Sample ID: 440-206741-2**

**Date Collected: 03/22/18 15:30**

**Matrix: Water**

**Date Received: 03/22/18 20:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			200 mL	200 mL	465710	03/23/18 17:38	MN1	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	466029	03/26/18 12:21	Q1N	TAL IRV
Dissolved	Analysis	200.7 Rev 4.4		1			466147	03/26/18 18:05	K1E	TAL IRV
Dissolved	Filtration	FILTRATION			200 mL	200 mL	465710	03/23/18 17:38	MN1	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	466646	03/28/18 14:11	JL	TAL IRV
Dissolved	Analysis	200.7 Rev 4.4		1			466739	03/28/18 18:44	K1E	TAL IRV
Dissolved	Filtration	FILTRATION			200 mL	200 mL	465710	03/23/18 17:38	MN1	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	466030	03/26/18 12:22	Q1N	TAL IRV
Dissolved	Analysis	200.8		1			466054	03/26/18 12:59	B1H	TAL IRV
Dissolved	Filtration	FILTRATION			200 mL	200 mL	465710	03/23/18 17:38	MN1	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	468190	04/04/18 17:07	JL	TAL IRV
Dissolved	Analysis	200.8		1			468347	04/04/18 22:53	B1H	TAL IRV
Dissolved	Filtration	FILTRATION			200 mL	200 mL	465710	03/23/18 17:38	MN1	TAL IRV

TestAmerica Irvine

# Lab Chronicle

Client: Haley & Aldrich, Inc.  
Project/Site: Annual Outfall 009 Comp

TestAmerica Job ID: 440-206741-1

**Client Sample ID: Outfall009\_20180322\_Comp\_F**

**Lab Sample ID: 440-206741-2**

**Date Collected: 03/22/18 15:30**

**Matrix: Water**

**Date Received: 03/22/18 20:00**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	245.1			20 mL	20 mL	466055	03/26/18 13:15	DB	TAL IRV
Dissolved	Analysis	245.1		1			466636	03/27/18 16:34	DB	TAL IRV
Dissolved	Analysis	SM 2340B		1			466444	03/27/18 17:57	A1S	TAL IRV

#### Laboratory References:

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

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Annual Outfall 009 Comp

TestAmerica Job ID: 440-206741-1

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

**Lab Sample ID: MB 440-466272/1-A**

**Matrix: Water**

**Analysis Batch: 466864**

**Client Sample ID: Method Blank**

**Prep Type: Total/NA**

**Prep Batch: 466272**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		0.505	0.202	ug/L		03/27/18 09:48	03/29/18 12:03	1
Acenaphthylene	ND		0.505	0.202	ug/L		03/27/18 09:48	03/29/18 12:03	1
Anthracene	ND		0.505	0.202	ug/L		03/27/18 09:48	03/29/18 12:03	1
Benzidine	ND		10.1	5.05	ug/L		03/27/18 09:48	03/29/18 12:03	1
Benzo[a]anthracene	ND		5.05	2.02	ug/L		03/27/18 09:48	03/29/18 12:03	1
Benzo[b]fluoranthene	ND		2.02	1.01	ug/L		03/27/18 09:48	03/29/18 12:03	1
Benzo[k]fluoranthene	ND		0.505	0.253	ug/L		03/27/18 09:48	03/29/18 12:03	1
Benzo[a]pyrene	ND		2.02	0.505	ug/L		03/27/18 09:48	03/29/18 12:03	1
Bis(2-chloroethoxy)methane	ND		0.505	0.202	ug/L		03/27/18 09:48	03/29/18 12:03	1
Bis(2-chloroethyl)ether	ND		0.505	0.202	ug/L		03/27/18 09:48	03/29/18 12:03	1
Bis(2-ethylhexyl) phthalate	ND		5.05	2.02	ug/L		03/27/18 09:48	03/29/18 12:03	1
4-Bromophenyl phenyl ether	ND		1.01	0.505	ug/L		03/27/18 09:48	03/29/18 12:03	1
Butyl benzyl phthalate	ND		5.05	2.02	ug/L		03/27/18 09:48	03/29/18 12:03	1
4-Chloro-3-methylphenol	ND		2.02	0.202	ug/L		03/27/18 09:48	03/29/18 12:03	1
2-Chloronaphthalene	ND		0.505	0.202	ug/L		03/27/18 09:48	03/29/18 12:03	1
2-Chlorophenol	ND		1.01	0.505	ug/L		03/27/18 09:48	03/29/18 12:03	1
4-Chlorophenyl phenyl ether	ND		0.505	0.202	ug/L		03/27/18 09:48	03/29/18 12:03	1
Chrysene	ND		0.505	0.202	ug/L		03/27/18 09:48	03/29/18 12:03	1
Dibenz(a,h)anthracene	ND		0.505	0.253	ug/L		03/27/18 09:48	03/29/18 12:03	1
Di-n-butyl phthalate	ND		2.02	1.01	ug/L		03/27/18 09:48	03/29/18 12:03	1
1,2-Dichlorobenzene	ND		0.505	0.202	ug/L		03/27/18 09:48	03/29/18 12:03	1
1,3-Dichlorobenzene	ND		0.505	0.202	ug/L		03/27/18 09:48	03/29/18 12:03	1
1,4-Dichlorobenzene	ND		0.505	0.202	ug/L		03/27/18 09:48	03/29/18 12:03	1
3,3'-Dichlorobenzidine	ND		5.05	2.02	ug/L		03/27/18 09:48	03/29/18 12:03	1
2,4-Dichlorophenol	ND		2.02	1.01	ug/L		03/27/18 09:48	03/29/18 12:03	1
Diethyl phthalate	ND		1.01	0.505	ug/L		03/27/18 09:48	03/29/18 12:03	1
2,4-Dimethylphenol	ND		2.02	1.01	ug/L		03/27/18 09:48	03/29/18 12:03	1
Dimethyl phthalate	ND		0.505	0.253	ug/L		03/27/18 09:48	03/29/18 12:03	1
4,6-Dinitro-2-methylphenol	ND		5.05	2.02	ug/L		03/27/18 09:48	03/29/18 12:03	1
2,4-Dinitrophenol	ND		5.05	2.02	ug/L		03/27/18 09:48	03/29/18 12:03	1
2,4-Dinitrotoluene	ND		5.05	2.02	ug/L		03/27/18 09:48	03/29/18 12:03	1
2,6-Dinitrotoluene	ND		5.05	2.02	ug/L		03/27/18 09:48	03/29/18 12:03	1
Di-n-octyl phthalate	ND		5.05	2.02	ug/L		03/27/18 09:48	03/29/18 12:03	1
1,2-Diphenylhydrazine(as Azobenzene)	ND		1.01	0.505	ug/L		03/27/18 09:48	03/29/18 12:03	1
Fluoranthene	ND		0.505	0.202	ug/L		03/27/18 09:48	03/29/18 12:03	1
Fluorene	ND		0.505	0.202	ug/L		03/27/18 09:48	03/29/18 12:03	1
Hexachlorobenzene	ND		1.01	0.505	ug/L		03/27/18 09:48	03/29/18 12:03	1
Hexachlorobutadiene	ND		2.02	0.505	ug/L		03/27/18 09:48	03/29/18 12:03	1
Hexachloroethane	ND		3.03	0.505	ug/L		03/27/18 09:48	03/29/18 12:03	1
Hexachlorocyclopentadiene	ND		5.05	2.02	ug/L		03/27/18 09:48	03/29/18 12:03	1
Indeno[1,2,3-cd]pyrene	ND		2.02	1.01	ug/L		03/27/18 09:48	03/29/18 12:03	1
Isophorone	ND		1.01	0.505	ug/L		03/27/18 09:48	03/29/18 12:03	1
Naphthalene	ND		1.01	0.505	ug/L		03/27/18 09:48	03/29/18 12:03	1
Nitrobenzene	ND		1.01	0.505	ug/L		03/27/18 09:48	03/29/18 12:03	1
2-Nitrophenol	ND		2.02	1.01	ug/L		03/27/18 09:48	03/29/18 12:03	1
4-Nitrophenol	ND		5.05	2.02	ug/L		03/27/18 09:48	03/29/18 12:03	1
N-Nitrosodimethylamine	ND		2.02	1.01	ug/L		03/27/18 09:48	03/29/18 12:03	1

TestAmerica Irvine



# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Annual Outfall 009 Comp

TestAmerica Job ID: 440-206741-1

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

**Lab Sample ID: MB 440-466272/1-A**  
**Matrix: Water**  
**Analysis Batch: 466864**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 466272**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-Nitrosodiphenylamine	ND		1.01	0.505	ug/L		03/27/18 09:48	03/29/18 12:03	1
N-Nitrosodi-n-propylamine	ND		2.02	1.01	ug/L		03/27/18 09:48	03/29/18 12:03	1
Pentachlorophenol	ND		2.02	1.01	ug/L		03/27/18 09:48	03/29/18 12:03	1
Phenanthrene	ND		0.505	0.202	ug/L		03/27/18 09:48	03/29/18 12:03	1
Phenol	ND		1.01	0.505	ug/L		03/27/18 09:48	03/29/18 12:03	1
Pyrene	ND		0.505	0.202	ug/L		03/27/18 09:48	03/29/18 12:03	1
1,2,4-Trichlorobenzene	ND		1.01	0.505	ug/L		03/27/18 09:48	03/29/18 12:03	1
2,4,6-Trichlorophenol	ND		1.01	0.505	ug/L		03/27/18 09:48	03/29/18 12:03	1
Benzo[g,h,i]perylene	ND		5.05	2.02	ug/L		03/27/18 09:48	03/29/18 12:03	1
bis (2-chloroisopropyl) ether	ND		0.505	0.202	ug/L		03/27/18 09:48	03/29/18 12:03	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl	71		50 - 120	03/27/18 09:48	03/29/18 12:03	1
2-Fluorophenol	66		30 - 120	03/27/18 09:48	03/29/18 12:03	1
2,4,6-Tribromophenol	95		40 - 120	03/27/18 09:48	03/29/18 12:03	1
Nitrobenzene-d5	74		45 - 120	03/27/18 09:48	03/29/18 12:03	1
Terphenyl-d14	83		37 - 144	03/27/18 09:48	03/29/18 12:03	1
Phenol-d6	71		35 - 120	03/27/18 09:48	03/29/18 12:03	1

**Lab Sample ID: LCS 440-466272/2-A**  
**Matrix: Water**  
**Analysis Batch: 466864**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 466272**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Acenaphthene	10.2	8.031		ug/L		79	47 - 145
Acenaphthylene	10.2	7.949		ug/L		78	33 - 145
Anthracene	10.2	8.037		ug/L		79	27 - 133
Benzidine	10.2	ND		ug/L		33	5 - 66
Benzo[a]anthracene	10.2	8.265		ug/L		81	33 - 143
Benzo[b]fluoranthene	10.2	8.071		ug/L		79	24 - 150
Benzo[k]fluoranthene	10.2	8.234		ug/L		81	11 - 150
Benzo[a]pyrene	10.2	8.051		ug/L		79	17 - 150
Bis(2-chloroethoxy)methane	10.2	7.948		ug/L		78	33 - 150
Bis(2-chloroethyl)ether	10.2	8.040		ug/L		79	12 - 150
Bis(2-ethylhexyl) phthalate	10.2	8.614		ug/L		85	10 - 150
4-Bromophenyl phenyl ether	10.2	7.758		ug/L		76	53 - 127
Butyl benzyl phthalate	10.2	8.578		ug/L		84	10 - 150
4-Chloro-3-methylphenol	10.2	8.551		ug/L		84	22 - 147
2-Chloronaphthalene	10.2	7.858		ug/L		77	60 - 118
2-Chlorophenol	10.2	7.397		ug/L		73	23 - 134
4-Chlorophenyl phenyl ether	10.2	7.862		ug/L		77	25 - 150
Chrysene	10.2	8.188		ug/L		81	17 - 150
Dibenz(a,h)anthracene	10.2	7.596		ug/L		75	10 - 150
Di-n-butyl phthalate	10.2	8.540		ug/L		84	10 - 118
1,2-Dichlorobenzene	10.2	7.083		ug/L		70	32 - 129
1,3-Dichlorobenzene	10.2	6.868		ug/L		68	10 - 150
1,4-Dichlorobenzene	10.2	6.990		ug/L		69	20 - 124
3,3'-Dichlorobenzidine	10.2	7.083		ug/L		70	10 - 150

TestAmerica Irvine

# QC Sample Results

Client: Haley & Aldrich, Inc.  
 Project/Site: Annual Outfall 009 Comp

TestAmerica Job ID: 440-206741-1

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

**Lab Sample ID: LCS 440-466272/2-A**  
**Matrix: Water**  
**Analysis Batch: 466864**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 466272**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2,4-Dichlorophenol	10.2	7.801		ug/L		77	39 - 135
Diethyl phthalate	10.2	8.136		ug/L		80	10 - 114
2,4-Dimethylphenol	10.2	7.566		ug/L		75	32 - 119
Dimethyl phthalate	10.2	7.954		ug/L		78	10 - 112
4,6-Dinitro-2-methylphenol	20.3	15.44		ug/L		76	10 - 150
2,4-Dinitrophenol	20.3	13.90		ug/L		68	50 - 150
2,4-Dinitrotoluene	10.2	7.950		ug/L		78	39 - 139
2,6-Dinitrotoluene	10.2	8.066		ug/L		79	50 - 150
Di-n-octyl phthalate	10.2	8.989		ug/L		89	10 - 146
1,2-Diphenylhydrazine(as Azobenzene)	10.3	7.646		ug/L		75	47 - 116
Fluoranthene	10.2	8.634		ug/L		85	26 - 137
Fluorene	10.2	7.974		ug/L		79	59 - 121
Hexachlorobenzene	10.2	8.139		ug/L		80	10 - 150
Hexachlorobutadiene	10.2	6.205		ug/L		61	24 - 116
Hexachloroethane	10.2	6.210		ug/L		61	40 - 113
Hexachlorocyclopentadiene	10.2	3.903	J,DX	ug/L		38	10 - 67
Indeno[1,2,3-cd]pyrene	10.2	8.113		ug/L		80	10 - 150
Isophorone	10.2	8.559		ug/L		84	21 - 150
Naphthalene	10.2	7.377		ug/L		73	21 - 133
Nitrobenzene	10.2	7.602		ug/L		75	35 - 150
2-Nitrophenol	10.2	7.443		ug/L		73	29 - 150
4-Nitrophenol	20.3	14.35		ug/L		71	10 - 132
N-Nitrosodimethylamine	10.2	8.272		ug/L		81	26 - 117
N-Nitrosodiphenylamine	10.2	7.673		ug/L		76	54 - 110
N-Nitrosodi-n-propylamine	10.2	8.247		ug/L		81	10 - 150
Pentachlorophenol	20.3	14.13		ug/L		70	14 - 150
Phenanthrene	10.2	8.169		ug/L		80	54 - 120
Phenol	10.2	7.026		ug/L		69	10 - 112
Pyrene	10.2	8.160		ug/L		80	52 - 115
1,2,4-Trichlorobenzene	10.2	7.170		ug/L		71	44 - 142
2,4,6-Trichlorophenol	10.2	8.278		ug/L		82	37 - 144
Benzo[g,h,i]perylene	10.2	7.599		ug/L		75	10 - 150
bis (2-chloroisopropyl) ether	10.2	7.265		ug/L		72	47 - 103

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2-Fluorobiphenyl	77		50 - 120
2-Fluorophenol	67		30 - 120
2,4,6-Tribromophenol	86		40 - 120
Nitrobenzene-d5	75		45 - 120
Terphenyl-d14	79		37 - 144
Phenol-d6	74		35 - 120

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Annual Outfall 009 Comp

TestAmerica Job ID: 440-206741-1

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

**Lab Sample ID: 440-206741-1 MS**

**Matrix: Water**

**Analysis Batch: 466864**

**Client Sample ID: Outfall009\_20180322\_Comp**

**Prep Type: Total/NA**

**Prep Batch: 466272**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Acenaphthene	ND		9.71	7.630		ug/L		79	47 - 145
Acenaphthylene	ND		9.71	3.848		ug/L		40	33 - 145
Anthracene	ND		9.71	6.008		ug/L		62	27 - 133
Benzidine	ND		9.71	ND	LN	ug/L		0	30 - 160
Benzo[a]anthracene	ND		9.71	7.868		ug/L		81	33 - 143
Benzo[b]fluoranthene	ND		9.71	9.597		ug/L		99	24 - 150
Benzo[k]fluoranthene	ND		9.71	9.334		ug/L		96	11 - 150
Benzo[a]pyrene	ND		9.71	5.917		ug/L		61	17 - 150
Bis(2-chloroethoxy)methane	ND		9.71	0.7542	LN	ug/L		8	33 - 150
Bis(2-chloroethyl)ether	ND		9.71	6.855		ug/L		71	12 - 150
Bis(2-ethylhexyl) phthalate	ND		9.71	9.068		ug/L		93	10 - 150
4-Bromophenyl phenyl ether	ND		9.71	8.050		ug/L		83	53 - 127
Butyl benzyl phthalate	ND		9.71	8.121		ug/L		84	10 - 150
4-Chloro-3-methylphenol	ND		9.71	8.763		ug/L		90	22 - 147
2-Chloronaphthalene	ND		9.71	7.638		ug/L		79	60 - 118
2-Chlorophenol	ND		9.71	7.168		ug/L		74	23 - 134
4-Chlorophenyl phenyl ether	ND		9.71	8.231		ug/L		85	25 - 150
Chrysene	ND		9.71	7.978		ug/L		82	17 - 150
Dibenz(a,h)anthracene	ND		9.71	7.217		ug/L		74	10 - 150
Di-n-butyl phthalate	ND		9.71	8.849		ug/L		91	10 - 118
1,2-Dichlorobenzene	ND		9.71	6.679		ug/L		69	32 - 129
1,3-Dichlorobenzene	ND		9.71	6.470		ug/L		67	10 - 150
1,4-Dichlorobenzene	ND		9.71	6.592		ug/L		68	20 - 124
3,3'-Dichlorobenzidine	ND		9.71	ND	LN	ug/L		0	10 - 150
2,4-Dichlorophenol	ND		9.71	7.750		ug/L		80	39 - 135
Diethyl phthalate	ND		9.71	8.532		ug/L		88	10 - 114
2,4-Dimethylphenol	ND		9.71	7.614		ug/L		78	32 - 119
Dimethyl phthalate	ND		9.71	8.086		ug/L		83	10 - 112
4,6-Dinitro-2-methylphenol	ND		19.4	15.65		ug/L		81	10 - 150
2,4-Dinitrophenol	ND		19.4	15.33		ug/L		79	50 - 150
2,4-Dinitrotoluene	ND		9.71	8.376		ug/L		86	39 - 139
2,6-Dinitrotoluene	ND		9.71	8.322		ug/L		86	50 - 150
Di-n-octyl phthalate	ND		9.71	9.142		ug/L		94	10 - 146
1,2-Diphenylhydrazine(as Azobenzene)	ND		9.81	0.8200	J,DX LN	ug/L		8	60 - 120
Fluoranthene	ND		9.71	8.754		ug/L		90	26 - 137
Fluorene	ND		9.71	8.131		ug/L		84	59 - 121
Hexachlorobenzene	ND		9.71	8.042		ug/L		83	10 - 150
Hexachlorobutadiene	ND		9.71	6.583		ug/L		68	24 - 116
Hexachloroethane	ND		9.71	6.006		ug/L		62	40 - 113
Hexachlorocyclopentadiene	ND		9.71	3.630	J,DX	ug/L		37	25 - 120
Indeno[1,2,3-cd]pyrene	ND		9.71	7.167		ug/L		74	10 - 150
Isophorone	ND		9.71	8.242		ug/L		85	21 - 150
Naphthalene	ND		9.71	7.147		ug/L		74	21 - 133
Nitrobenzene	ND		9.71	7.179		ug/L		74	35 - 150
2-Nitrophenol	ND		9.71	7.337		ug/L		76	29 - 150
4-Nitrophenol	ND		19.4	15.54		ug/L		80	10 - 132
N-Nitrosodimethylamine	ND		9.71	7.460		ug/L		77	12 - 123

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# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Annual Outfall 009 Comp

TestAmerica Job ID: 440-206741-1

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

**Lab Sample ID: 440-206741-1 MS**

**Matrix: Water**

**Analysis Batch: 466864**

**Client Sample ID: Outfall009\_20180322\_Comp**

**Prep Type: Total/NA**

**Prep Batch: 466272**

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	Limits
	Result	Qualifier	Added	Result	Qualifier				
N-Nitrosodiphenylamine	ND		9.71	3.731	LN	ug/L		38	60 - 120
N-Nitrosodi-n-propylamine	ND		9.71	7.681		ug/L		79	10 - 150
Pentachlorophenol	ND		19.4	15.29		ug/L		79	14 - 150
Phenanthrene	ND		9.71	8.076		ug/L		83	54 - 120
Phenol	ND		9.71	6.438		ug/L		66	10 - 112
Pyrene	ND		9.71	7.844		ug/L		81	52 - 115
1,2,4-Trichlorobenzene	ND		9.71	7.041		ug/L		73	44 - 142
2,4,6-Trichlorophenol	ND		9.71	8.235		ug/L		85	37 - 144
Benzo[g,h,i]perylene	ND		9.71	6.686		ug/L		69	10 - 150
bis (2-chloroisopropyl) ether	ND		9.71	6.582		ug/L		68	45 - 120

Surrogate	MS	MS	Limits
	%Recovery	Qualifier	
2-Fluorobiphenyl	77		50 - 120
2-Fluorophenol	67		30 - 120
2,4,6-Tribromophenol	92		40 - 120
Nitrobenzene-d5	74		45 - 120
Terphenyl-d14	93		37 - 144
Phenol-d6	64		35 - 120

**Lab Sample ID: 440-206741-1 MSD**

**Matrix: Water**

**Analysis Batch: 466864**

**Client Sample ID: Outfall009\_20180322\_Comp**

**Prep Type: Total/NA**

**Prep Batch: 466272**

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	Limits	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier						
Acenaphthene	ND		9.62	6.859		ug/L		71	47 - 145	11	25
Acenaphthylene	ND		9.62	2.778	LN BA	ug/L		29	33 - 145	32	25
Anthracene	ND		9.62	5.557		ug/L		58	27 - 133	8	25
Benzidine	ND		9.62	ND	LN	ug/L		0	30 - 160	NC	35
Benzo[a]anthracene	ND		9.62	6.822		ug/L		71	33 - 143	14	20
Benzo[b]fluoranthene	ND		9.62	8.092		ug/L		84	24 - 150	17	25
Benzo[k]fluoranthene	ND		9.62	7.614		ug/L		79	11 - 150	20	30
Benzo[a]pyrene	ND		9.62	4.242	BA	ug/L		44	17 - 150	33	25
Bis(2-chloroethoxy)methane	ND		9.62	0.3898	J,DX LN BA	ug/L		4	33 - 150	64	25
Bis(2-chloroethyl)ether	ND		9.62	7.190		ug/L		75	12 - 150	5	25
Bis(2-ethylhexyl) phthalate	ND		9.62	7.671		ug/L		80	10 - 150	17	25
4-Bromophenyl phenyl ether	ND		9.62	7.247		ug/L		75	53 - 127	11	25
Butyl benzyl phthalate	ND		9.62	4.422	J,DX BA	ug/L		46	10 - 150	59	25
4-Chloro-3-methylphenol	ND		9.62	7.766		ug/L		81	22 - 147	12	25
2-Chloronaphthalene	ND		9.62	7.116		ug/L		74	60 - 118	7	20
2-Chlorophenol	ND		9.62	6.505		ug/L		68	23 - 134	10	25
4-Chlorophenyl phenyl ether	ND		9.62	7.711		ug/L		80	25 - 150	7	25
Chrysene	ND		9.62	6.961		ug/L		72	17 - 150	14	25
Dibenz(a,h)anthracene	ND		9.62	6.106		ug/L		64	10 - 150	17	30
Di-n-butyl phthalate	ND		9.62	7.834		ug/L		81	10 - 118	12	25
1,2-Dichlorobenzene	ND		9.62	6.506		ug/L		68	32 - 129	3	25
1,3-Dichlorobenzene	ND		9.62	6.199		ug/L		64	10 - 150	4	25
1,4-Dichlorobenzene	ND		9.62	6.276		ug/L		65	20 - 124	5	25

TestAmerica Irvine

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Annual Outfall 009 Comp

TestAmerica Job ID: 440-206741-1

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

Lab Sample ID: 440-206741-1 MSD

Matrix: Water

Analysis Batch: 466864

Client Sample ID: Outfall009\_20180322\_Comp

Prep Type: Total/NA

Prep Batch: 466272

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier				Limits		
3,3'-Dichlorobenzidine	ND		9.62	ND	LN	ug/L		0	10 - 150	NC	25
2,4-Dichlorophenol	ND		9.62	6.908		ug/L		72	39 - 135	12	25
Diethyl phthalate	ND		9.62	7.616		ug/L		79	10 - 114	11	30
2,4-Dimethylphenol	ND		9.62	6.869		ug/L		71	32 - 119	10	25
Dimethyl phthalate	ND		9.62	7.357		ug/L		77	10 - 112	9	30
4,6-Dinitro-2-methylphenol	ND		19.2	14.18		ug/L		74	10 - 150	10	25
2,4-Dinitrophenol	ND		19.2	13.45		ug/L		70	50 - 150	13	25
2,4-Dinitrotoluene	ND		9.62	7.447		ug/L		77	39 - 139	12	25
2,6-Dinitrotoluene	ND		9.62	7.602		ug/L		79	50 - 150	9	20
Di-n-octyl phthalate	ND		9.62	8.001		ug/L		83	10 - 146	13	20
1,2-Diphenylhydrazine(as Azobenzene)	ND		9.71	1.132	LN BA	ug/L		12	60 - 120	32	25
Fluoranthene	ND		9.62	7.797		ug/L		81	26 - 137	12	25
Fluorene	ND		9.62	7.485		ug/L		78	59 - 121	8	25
Hexachlorobenzene	ND		9.62	7.366		ug/L		77	10 - 150	9	25
Hexachlorobutadiene	ND		9.62	6.376		ug/L		66	24 - 116	3	25
Hexachloroethane	ND		9.62	5.922		ug/L		62	40 - 113	1	25
Hexachlorocyclopentadiene	ND		9.62	3.791	J,DX	ug/L		39	25 - 120	4	30
Indeno[1,2,3-cd]pyrene	ND		9.62	5.768		ug/L		60	10 - 150	22	30
Isophorone	ND		9.62	7.567		ug/L		79	21 - 150	9	25
Naphthalene	ND		9.62	6.580		ug/L		68	21 - 133	8	25
Nitrobenzene	ND		9.62	6.635		ug/L		69	35 - 150	8	25
2-Nitrophenol	ND		9.62	6.629		ug/L		69	29 - 150	10	25
4-Nitrophenol	ND		19.2	13.71		ug/L		71	10 - 132	13	30
N-Nitrosodimethylamine	ND		9.62	7.451		ug/L		77	12 - 123	0	35
N-Nitrosodiphenylamine	ND		9.62	2.702	LN BA	ug/L		28	60 - 120	32	25
N-Nitrosodi-n-propylamine	ND		9.62	7.129		ug/L		74	10 - 150	7	25
Pentachlorophenol	ND		19.2	13.48		ug/L		70	14 - 150	13	25
Phenanthrene	ND		9.62	7.313		ug/L		76	54 - 120	10	25
Phenol	ND		9.62	5.856		ug/L		61	10 - 112	9	25
Pyrene	ND		9.62	6.399		ug/L		67	52 - 115	20	25
1,2,4-Trichlorobenzene	ND		9.62	6.552		ug/L		68	44 - 142	7	20
2,4,6-Trichlorophenol	ND		9.62	7.398		ug/L		77	37 - 144	11	30
Benzo[g,h,i]perylene	ND		9.62	4.957		ug/L		52	10 - 150	30	30
bis (2-chloroisopropyl) ether	ND		9.62	6.165		ug/L		64	45 - 120	7	25

Surrogate	MSD	MSD	Limits
	%Recovery	Qualifier	
2-Fluorobiphenyl	71		50 - 120
2-Fluorophenol	62		30 - 120
2,4,6-Tribromophenol	84		40 - 120
Nitrobenzene-d5	67		45 - 120
Terphenyl-d14	79		37 - 144
Phenol-d6	54		35 - 120

TestAmerica Irvine

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Annual Outfall 009 Comp

TestAmerica Job ID: 440-206741-1

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

**Lab Sample ID: MB 440-466200/1-A**  
**Matrix: Water**  
**Analysis Batch: 466278**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 466200**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor 1016	ND		0.50	0.25	ug/L		03/27/18 06:02	03/27/18 14:09	1
Aroclor 1221	ND		0.50	0.25	ug/L		03/27/18 06:02	03/27/18 14:09	1
Aroclor 1232	ND		0.50	0.25	ug/L		03/27/18 06:02	03/27/18 14:09	1
Aroclor 1242	ND		0.50	0.25	ug/L		03/27/18 06:02	03/27/18 14:09	1
Aroclor 1248	ND		0.50	0.25	ug/L		03/27/18 06:02	03/27/18 14:09	1
Aroclor 1254	ND		0.50	0.25	ug/L		03/27/18 06:02	03/27/18 14:09	1
Aroclor 1260	ND		0.50	0.25	ug/L		03/27/18 06:02	03/27/18 14:09	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl (Surr)	79		29 - 115	03/27/18 06:02	03/27/18 14:09	1

**Lab Sample ID: LCS 440-466200/5-A**  
**Matrix: Water**  
**Analysis Batch: 466278**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 466200**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aroclor 1016	4.00	3.94		ug/L		99	10 - 127
Aroclor 1260	4.00	4.05		ug/L		101	50 - 115

Surrogate	LCS %Recovery	LCS Qualifier	Limits
DCB Decachlorobiphenyl (Surr)	93		29 - 115

**Lab Sample ID: 440-206741-1 MS**  
**Matrix: Water**  
**Analysis Batch: 466278**

**Client Sample ID: Outfall009\_20180322\_Comp**  
**Prep Type: Total/NA**  
**Prep Batch: 466200**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Aroclor 1016	ND		3.81	3.74		ug/L		98	45 - 120
Aroclor 1260	ND		3.81	3.82		ug/L		100	55 - 125

Surrogate	MS %Recovery	MS Qualifier	Limits
DCB Decachlorobiphenyl (Surr)	91		29 - 115

**Lab Sample ID: 440-206741-1 MSD**  
**Matrix: Water**  
**Analysis Batch: 466278**

**Client Sample ID: Outfall009\_20180322\_Comp**  
**Prep Type: Total/NA**  
**Prep Batch: 466200**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aroclor 1016	ND		3.86	3.49		ug/L		90	45 - 120	7	30
Aroclor 1260	ND		3.86	3.76		ug/L		97	55 - 125	2	25

Surrogate	MSD %Recovery	MSD Qualifier	Limits
DCB Decachlorobiphenyl (Surr)	89		29 - 115

TestAmerica Irvine

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Annual Outfall 009 Comp

TestAmerica Job ID: 440-206741-1

## Method: 608 Pesticides - Organochlorine Pesticides Low level

**Lab Sample ID: MB 440-466200/1-A**  
**Matrix: Water**  
**Analysis Batch: 466528**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 466200**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	ND		0.0050	0.0015	ug/L		03/27/18 06:02	03/28/18 09:42	1
alpha-BHC	ND		0.0050	0.0025	ug/L		03/27/18 06:02	03/28/18 09:42	1
beta-BHC	ND		0.010	0.0040	ug/L		03/27/18 06:02	03/28/18 09:42	1
Chlordane (technical)	ND		0.10	0.080	ug/L		03/27/18 06:02	03/28/18 09:42	1
delta-BHC	ND		0.0050	0.0035	ug/L		03/27/18 06:02	03/28/18 09:42	1
Dieldrin	ND		0.0050	0.0020	ug/L		03/27/18 06:02	03/28/18 09:42	1
Endosulfan I	ND		0.0050	0.0030	ug/L		03/27/18 06:02	03/28/18 09:42	1
Endosulfan II	ND		0.0050	0.0020	ug/L		03/27/18 06:02	03/28/18 09:42	1
Endosulfan sulfate	ND		0.010	0.0030	ug/L		03/27/18 06:02	03/28/18 09:42	1
Endrin	ND		0.0050	0.0020	ug/L		03/27/18 06:02	03/28/18 09:42	1
Endrin aldehyde	ND		0.010	0.0020	ug/L		03/27/18 06:02	03/28/18 09:42	1
gamma-BHC (Lindane)	ND		0.010	0.0030	ug/L		03/27/18 06:02	03/28/18 09:42	1
Heptachlor	ND		0.010	0.0030	ug/L		03/27/18 06:02	03/28/18 09:42	1
Heptachlor epoxide	ND		0.0050	0.0025	ug/L		03/27/18 06:02	03/28/18 09:42	1
Toxaphene	ND		0.50	0.25	ug/L		03/27/18 06:02	03/28/18 09:42	1
4,4'-DDD	ND		0.0050	0.0040	ug/L		03/27/18 06:02	03/28/18 09:42	1
4,4'-DDE	ND		0.0050	0.0030	ug/L		03/27/18 06:02	03/28/18 09:42	1
4,4'-DDT	ND		0.010	0.0040	ug/L		03/27/18 06:02	03/28/18 09:42	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	59		10 - 150	03/27/18 06:02	03/28/18 09:42	1

**Lab Sample ID: LCS 440-466200/2-A**  
**Matrix: Water**  
**Analysis Batch: 466528**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 466200**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aldrin	0.200	0.162		ug/L		81	42 - 122
alpha-BHC	0.200	0.162		ug/L		81	37 - 134
beta-BHC	0.200	0.165		ug/L		83	17 - 147
delta-BHC	0.200	0.171		ug/L		85	19 - 140
Dieldrin	0.200	0.170		ug/L		85	36 - 146
Endosulfan I	0.200	0.168		ug/L		84	45 - 150
Endosulfan II	0.200	0.167		ug/L		83	10 - 150
Endosulfan sulfate	0.200	0.163		ug/L		81	26 - 144
Endrin	0.200	0.154		ug/L		77	30 - 147
Endrin aldehyde	0.200	0.155		ug/L		77	47 - 115
gamma-BHC (Lindane)	0.200	0.157		ug/L		79	32 - 127
Heptachlor	0.200	0.147		ug/L		73	34 - 115
Heptachlor epoxide	0.200	0.169		ug/L		85	37 - 142
4,4'-DDD	0.200	0.163		ug/L		81	31 - 141
4,4'-DDE	0.200	0.165		ug/L		82	30 - 145
4,4'-DDT	0.200	0.141		ug/L		71	25 - 150

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Tetrachloro-m-xylene	69		10 - 150

TestAmerica Irvine

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Annual Outfall 009 Comp

TestAmerica Job ID: 440-206741-1

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

**Lab Sample ID: 440-206741-1 MS**

**Matrix: Water**

**Analysis Batch: 466528**

**Client Sample ID: Outfall009\_20180322\_Comp**

**Prep Type: Total/NA**

**Prep Batch: 466200**

Analyte	Sample	Sample	Spike	MS MS		Unit	D	%Rec	Limits
	Result	Qualifier		Result	Qualifier				
Aldrin	ND		0.193	0.147		ug/L		76	35 - 120
alpha-BHC	ND		0.193	0.138		ug/L		71	40 - 120
beta-BHC	ND		0.193	0.132		ug/L		68	50 - 120
delta-BHC	ND		0.193	0.156		ug/L		81	50 - 120
Dieldrin	ND		0.193	0.148		ug/L		76	50 - 120
Endosulfan I	ND		0.193	0.143		ug/L		74	50 - 120
Endosulfan II	ND		0.193	0.140		ug/L		72	50 - 125
Endosulfan sulfate	ND		0.193	0.151		ug/L		78	55 - 125
Endrin	ND		0.193	0.147		ug/L		76	50 - 120
Endrin aldehyde	ND		0.193	0.138		ug/L		71	45 - 125
gamma-BHC (Lindane)	ND		0.193	0.140		ug/L		72	40 - 120
Heptachlor	ND		0.193	0.152		ug/L		79	40 - 120
Heptachlor epoxide	ND		0.193	0.155		ug/L		80	50 - 120
4,4'-DDD	ND		0.193	0.140		ug/L		73	50 - 125
4,4'-DDE	ND		0.193	0.142		ug/L		73	45 - 125
4,4'-DDT	ND		0.193	0.124		ug/L		64	50 - 125

Surrogate	MS %Recovery	MS Qualifier	Limits
Tetrachloro-m-xylene	62		10 - 150

**Lab Sample ID: 440-206741-1 MSD**

**Matrix: Water**

**Analysis Batch: 466528**

**Client Sample ID: Outfall009\_20180322\_Comp**

**Prep Type: Total/NA**

**Prep Batch: 466200**

Analyte	Sample	Sample	Spike	MSD MSD		Unit	D	%Rec	Limits	RPD	Limit
	Result	Qualifier		Result	Qualifier						
Aldrin	ND		0.191	0.143		ug/L		75	35 - 120	3	30
alpha-BHC	ND		0.191	0.135		ug/L		70	40 - 120	2	30
beta-BHC	ND		0.191	0.143		ug/L		75	50 - 120	8	30
delta-BHC	ND		0.191	0.146		ug/L		77	50 - 120	6	30
Dieldrin	ND		0.191	0.134		ug/L		70	50 - 120	10	30
Endosulfan I	ND		0.191	0.134		ug/L		70	50 - 120	7	30
Endosulfan II	ND		0.191	0.129		ug/L		67	50 - 125	8	30
Endosulfan sulfate	ND		0.191	0.133		ug/L		69	55 - 125	13	30
Endrin	ND		0.191	0.131		ug/L		68	50 - 120	11	30
Endrin aldehyde	ND		0.191	0.115		ug/L		60	45 - 125	18	30
gamma-BHC (Lindane)	ND		0.191	0.149		ug/L		78	40 - 120	6	30
Heptachlor	ND		0.191	0.141		ug/L		74	40 - 120	8	30
Heptachlor epoxide	ND		0.191	0.139		ug/L		72	50 - 120	11	30
4,4'-DDD	ND		0.191	0.123		ug/L		64	50 - 125	13	30
4,4'-DDE	ND		0.191	0.133		ug/L		69	45 - 125	7	30
4,4'-DDT	ND		0.191	0.112		ug/L		59	50 - 125	10	30

Surrogate	MSD %Recovery	MSD Qualifier	Limits
Tetrachloro-m-xylene	58		10 - 150

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# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Annual Outfall 009 Comp

TestAmerica Job ID: 440-206741-1

## Method: 218.6 - Chromium, Hexavalent (Ion Chromatography)

**Lab Sample ID: MB 440-465186/6**  
**Matrix: Water**  
**Analysis Batch: 465186**

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	ND		1.0	0.25	ug/L			03/22/18 07:05	1

**Lab Sample ID: LCS 440-465186/5**  
**Matrix: Water**  
**Analysis Batch: 465186**

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chromium, hexavalent	50.0	50.2		ug/L		100	90 - 110

**Lab Sample ID: MRL 440-465186/4**  
**Matrix: Water**  
**Analysis Batch: 465186**

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

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chromium, hexavalent	1.00	1.15		ug/L		115	50 - 150

**Lab Sample ID: 440-206741-1 MS**  
**Matrix: Water**  
**Analysis Batch: 465186**

**Client Sample ID: Outfall009\_20180322\_Comp**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chromium, hexavalent	ND		50.0	49.5		ug/L		99	90 - 110

**Lab Sample ID: 440-206741-1 MSD**  
**Matrix: Water**  
**Analysis Batch: 465186**

**Client Sample ID: Outfall009\_20180322\_Comp**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
Chromium, hexavalent	ND		50.0	47.8		ug/L		96	90 - 110	3	10

## Method: 300.0 - Anions, Ion Chromatography

**Lab Sample ID: MB 440-465264/14**  
**Matrix: Water**  
**Analysis Batch: 465264**

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50	0.25	mg/L			03/22/18 18:21	1
Fluoride	ND		0.50	0.25	mg/L			03/22/18 18:21	1
Sulfate	ND		0.50	0.25	mg/L			03/22/18 18:21	1

**Lab Sample ID: LCS 440-465264/13**  
**Matrix: Water**  
**Analysis Batch: 465264**

**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	4.63		mg/L		93	90 - 110
Fluoride	5.00	4.75		mg/L		95	90 - 110
Sulfate	5.00	4.90		mg/L		98	90 - 110

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# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Annual Outfall 009 Comp

TestAmerica Job ID: 440-206741-1

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

**Lab Sample ID: MB 440-465265/14**  
**Matrix: Water**  
**Analysis Batch: 465265**

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	ND		0.11	0.055	mg/L			03/22/18 18:21	1
Nitrite as N	ND		0.15	0.070	mg/L			03/22/18 18:21	1

**Lab Sample ID: LCS 440-465265/13**  
**Matrix: Water**  
**Analysis Batch: 465265**

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	1.13	1.10		mg/L		97	90 - 110
Nitrite as N	1.52	1.48		mg/L		97	90 - 110

## Method: 300.0 - Anions, Ion Chromatography - DL

**Lab Sample ID: 440-206741-1 MS**  
**Matrix: Water**  
**Analysis Batch: 465264**

**Client Sample ID: Outfall009\_20180322\_Comp**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride - DL	2.7		25.0	25.9		mg/L		93	80 - 120
Fluoride - DL	ND		25.0	24.3		mg/L		97	80 - 120
Sulfate - DL	2.7		25.0	28.0		mg/L		101	80 - 120

**Lab Sample ID: 440-206741-1 MSD**  
**Matrix: Water**  
**Analysis Batch: 465264**

**Client Sample ID: Outfall009\_20180322\_Comp**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride - DL	2.7		25.0	26.1		mg/L		93	80 - 120	1	20
Fluoride - DL	ND		25.0	24.4		mg/L		97	80 - 120	0	20
Sulfate - DL	2.7		25.0	28.1		mg/L		101	80 - 120	0	20

**Lab Sample ID: 440-206741-1 MS**  
**Matrix: Water**  
**Analysis Batch: 465265**

**Client Sample ID: Outfall009\_20180322\_Comp**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N - DL	0.43	J,DX	5.65	6.00		mg/L		99	80 - 120
Nitrite as N - DL	ND		7.61	7.42		mg/L		97	80 - 120

**Lab Sample ID: 440-206741-1 MSD**  
**Matrix: Water**  
**Analysis Batch: 465265**

**Client Sample ID: Outfall009\_20180322\_Comp**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Nitrate as N - DL	0.43	J,DX	5.65	6.09		mg/L		100	80 - 120	2	20
Nitrite as N - DL	ND		7.61	7.44		mg/L		98	80 - 120	0	20

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# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Annual Outfall 009 Comp

TestAmerica Job ID: 440-206741-1

## Method: 314.0 - Perchlorate (IC)

**Lab Sample ID: MB 440-467055/6**  
**Matrix: Water**  
**Analysis Batch: 467055**

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		4.0	0.95	ug/L			03/30/18 08:09	1

**Lab Sample ID: LCS 440-467055/5**  
**Matrix: Water**  
**Analysis Batch: 467055**

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	25.0	23.0		ug/L		92	85 - 115

**Lab Sample ID: MRL 440-467055/4**  
**Matrix: Water**  
**Analysis Batch: 467055**

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

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	1.00	ND		ug/L		84	75 - 125

**Lab Sample ID: 440-206741-1 MS**  
**Matrix: Water**  
**Analysis Batch: 467055**

**Client Sample ID: Outfall009\_20180322\_Comp**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	ND		25.0	25.4		ug/L		102	80 - 120

**Lab Sample ID: 440-206741-1 MSD**  
**Matrix: Water**  
**Analysis Batch: 467055**

**Client Sample ID: Outfall009\_20180322\_Comp**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perchlorate	ND		25.0	26.3		ug/L		105	80 - 120	3	20

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

**Lab Sample ID: MB 440-466017/1-A**  
**Matrix: Water**  
**Analysis Batch: 466147**

**Client Sample ID: Method Blank**  
**Prep Type: Total Recoverable**  
**Prep Batch: 466017**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		100	50	ug/L		03/26/18 11:35	03/26/18 18:16	1
Arsenic	ND		10	8.9	ug/L		03/26/18 11:35	03/26/18 18:16	1
Boron	ND		0.050	0.025	mg/L		03/26/18 11:35	03/26/18 18:16	1
Beryllium	ND		2.0	1.0	ug/L		03/26/18 11:35	03/26/18 18:16	1
Chromium	ND		5.0	2.5	ug/L		03/26/18 11:35	03/26/18 18:16	1
Iron	ND		0.10	0.050	mg/L		03/26/18 11:35	03/26/18 18:16	1
Nickel	ND		10	5.0	ug/L		03/26/18 11:35	03/26/18 18:16	1
Vanadium	ND		10	5.0	ug/L		03/26/18 11:35	03/26/18 18:16	1
Zinc	ND		20	12	ug/L		03/26/18 11:35	03/26/18 18:16	1

TestAmerica Irvine

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Annual Outfall 009 Comp

TestAmerica Job ID: 440-206741-1

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

**Lab Sample ID: LCS 440-466017/2-A**  
**Matrix: Water**  
**Analysis Batch: 466147**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total Recoverable**  
**Prep Batch: 466017**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Aluminum	500	472		ug/L		94	85 - 115
Arsenic	500	475		ug/L		95	85 - 115
Boron	0.500	0.462		mg/L		92	85 - 115
Beryllium	500	467		ug/L		93	85 - 115
Calcium	2.50	2.33		mg/L		93	85 - 115
Chromium	500	464		ug/L		93	85 - 115
Iron	0.500	0.466		mg/L		93	85 - 115
Magnesium	2.50	2.34		mg/L		94	85 - 115
Nickel	500	472		ug/L		94	85 - 115
Vanadium	500	460		ug/L		92	85 - 115
Zinc	500	470		ug/L		94	85 - 115

**Lab Sample ID: 440-206741-1 MS**  
**Matrix: Water**  
**Analysis Batch: 466147**

**Client Sample ID: Outfall009\_20180322\_Comp**  
**Prep Type: Total Recoverable**  
**Prep Batch: 466017**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Aluminum	800		500	1580	LM	ug/L		155	70 - 130
Arsenic	ND		500	475		ug/L		95	70 - 130
Boron	0.041	J,DX	0.500	0.507		mg/L		93	70 - 130
Beryllium	ND		500	477		ug/L		95	70 - 130
Calcium	5.4		2.50	7.73		mg/L		92	70 - 130
Chromium	ND		500	472		ug/L		94	70 - 130
Iron	0.77		0.500	1.29		mg/L		102	70 - 130
Magnesium	1.6		2.50	3.98		mg/L		94	70 - 130
Nickel	ND		500	477		ug/L		95	70 - 130
Vanadium	ND		500	475		ug/L		95	70 - 130
Zinc	ND		500	482		ug/L		96	70 - 130

**Lab Sample ID: 440-206741-1 MSD**  
**Matrix: Water**  
**Analysis Batch: 466147**

**Client Sample ID: Outfall009\_20180322\_Comp**  
**Prep Type: Total Recoverable**  
**Prep Batch: 466017**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Aluminum	800		500	1630	LM	ug/L		165	70 - 130	3	20
Arsenic	ND		500	473		ug/L		95	70 - 130	0	20
Boron	0.041	J,DX	0.500	0.510		mg/L		94	70 - 130	1	20
Beryllium	ND		500	479		ug/L		96	70 - 130	0	20
Calcium	5.4		2.50	7.93		mg/L		100	70 - 130	3	20
Chromium	ND		500	473		ug/L		95	70 - 130	0	20
Iron	0.77		0.500	1.32		mg/L		109	70 - 130	2	20
Magnesium	1.6		2.50	4.04		mg/L		97	70 - 130	2	20
Nickel	ND		500	478		ug/L		96	70 - 130	0	20
Vanadium	ND		500	475		ug/L		95	70 - 130	0	20
Zinc	ND		500	483		ug/L		97	70 - 130	0	20

TestAmerica Irvine

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Annual Outfall 009 Comp

TestAmerica Job ID: 440-206741-1

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

**Lab Sample ID: MB 440-465710/1-B**  
**Matrix: Water**  
**Analysis Batch: 466147**

**Client Sample ID: Method Blank**  
**Prep Type: Dissolved**  
**Prep Batch: 466029**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		100	50	ug/L		03/26/18 12:21	03/26/18 18:00	1
Arsenic	ND		10	8.9	ug/L		03/26/18 12:21	03/26/18 18:00	1
Boron	ND		0.050	0.025	mg/L		03/26/18 12:21	03/26/18 18:00	1
Beryllium	ND		2.0	1.0	ug/L		03/26/18 12:21	03/26/18 18:00	1
Iron	ND		0.10	0.050	mg/L		03/26/18 12:21	03/26/18 18:00	1
Nickel	ND		10	5.0	ug/L		03/26/18 12:21	03/26/18 18:00	1
Vanadium	ND		10	5.0	ug/L		03/26/18 12:21	03/26/18 18:00	1
Zinc	ND		20	12	ug/L		03/26/18 12:21	03/26/18 18:00	1

**Lab Sample ID: LCS 440-465710/2-B**  
**Matrix: Water**  
**Analysis Batch: 466147**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Dissolved**  
**Prep Batch: 466029**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Aluminum	500	481		ug/L		96	85 - 115
Arsenic	500	454		ug/L		91	85 - 115
Boron	0.500	0.455		mg/L		91	85 - 115
Beryllium	500	457		ug/L		91	85 - 115
Calcium	2.50	2.35		mg/L		94	85 - 115
Iron	0.500	0.465		mg/L		93	85 - 115
Magnesium	2.50	2.29		mg/L		92	85 - 115
Nickel	500	462		ug/L		92	85 - 115
Vanadium	500	451		ug/L		90	85 - 115
Zinc	500	457		ug/L		91	85 - 115

**Lab Sample ID: 440-206741-2 MS**  
**Matrix: Water**  
**Analysis Batch: 466147**

**Client Sample ID: Outfall009\_20180322\_Comp\_F**  
**Prep Type: Dissolved**  
**Prep Batch: 466029**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Aluminum	140		500	609		ug/L		94	70 - 130
Arsenic	ND		500	449		ug/L		90	70 - 130
Boron	0.044	J,DX	0.500	0.490		mg/L		89	70 - 130
Beryllium	ND		500	457		ug/L		91	70 - 130
Calcium	5.4	MB	2.50	7.52		mg/L		87	70 - 130
Iron	0.16		0.500	0.593		mg/L		87	70 - 130
Magnesium	1.5		2.50	3.71		mg/L		90	70 - 130
Nickel	ND		500	454		ug/L		91	70 - 130
Vanadium	ND		500	451		ug/L		90	70 - 130
Zinc	ND		500	457		ug/L		91	70 - 130

**Lab Sample ID: 440-206741-2 MSD**  
**Matrix: Water**  
**Analysis Batch: 466147**

**Client Sample ID: Outfall009\_20180322\_Comp\_F**  
**Prep Type: Dissolved**  
**Prep Batch: 466029**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Aluminum	140		500	608		ug/L		94	70 - 130	0	20
Arsenic	ND		500	465		ug/L		93	70 - 130	4	20
Boron	0.044	J,DX	0.500	0.492		mg/L		90	70 - 130	1	20

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# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Annual Outfall 009 Comp

TestAmerica Job ID: 440-206741-1

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

**Lab Sample ID: 440-206741-2 MSD**  
**Matrix: Water**  
**Analysis Batch: 466147**

**Client Sample ID: Outfall009\_20180322\_Comp\_F**  
**Prep Type: Dissolved**  
**Prep Batch: 466029**

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier				Limits		
Beryllium	ND		500	462		ug/L		92	70 - 130	1	20
Calcium	5.4	MB	2.50	7.44		mg/L		84	70 - 130	1	20
Iron	0.16		0.500	0.589		mg/L		86	70 - 130	1	20
Magnesium	1.5		2.50	3.71		mg/L		90	70 - 130	0	20
Nickel	ND		500	458		ug/L		92	70 - 130	1	20
Vanadium	ND		500	456		ug/L		91	70 - 130	1	20
Zinc	ND		500	464		ug/L		93	70 - 130	1	20

**Lab Sample ID: MB 440-465710/1-G**  
**Matrix: Water**  
**Analysis Batch: 466739**

**Client Sample ID: Method Blank**  
**Prep Type: Dissolved**  
**Prep Batch: 466646**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Chromium	ND		5.0	2.5	ug/L		03/28/18 14:11	03/28/18 18:39	1

**Lab Sample ID: LCS 440-465710/2-G**  
**Matrix: Water**  
**Analysis Batch: 466739**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Dissolved**  
**Prep Batch: 466646**

Analyte	Spike Added	LCS	LCS	Unit	D	%Rec	%Rec.
		Result	Qualifier				Limits
Chromium	500	507		ug/L		101	85 - 115

**Lab Sample ID: 440-206741-2 MS**  
**Matrix: Water**  
**Analysis Batch: 466739**

**Client Sample ID: Outfall009\_20180322\_Comp\_F**  
**Prep Type: Dissolved**  
**Prep Batch: 466646**

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec.	Limits
	Result	Qualifier	Added	Result	Qualifier					
Chromium	ND		500	499		ug/L		100	70 - 130	

**Lab Sample ID: 440-206741-2 MSD**  
**Matrix: Water**  
**Analysis Batch: 466739**

**Client Sample ID: Outfall009\_20180322\_Comp\_F**  
**Prep Type: Dissolved**  
**Prep Batch: 466646**

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier						
Chromium	ND		500	504		ug/L		101	70 - 130	1	20

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

**Lab Sample ID: MB 440-466018/1-A**  
**Matrix: Water**  
**Analysis Batch: 466136**

**Client Sample ID: Method Blank**  
**Prep Type: Total Recoverable**  
**Prep Batch: 466018**

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Cadmium	ND		1.0	0.25	ug/L		03/26/18 11:37	03/26/18 18:28	1
Copper	ND		2.0	0.50	ug/L		03/26/18 11:37	03/26/18 18:28	1
Lead	ND		1.0	0.50	ug/L		03/26/18 11:37	03/26/18 18:28	1
Antimony	ND		2.0	0.50	ug/L		03/26/18 11:37	03/26/18 18:28	1
Selenium	ND		2.0	0.50	ug/L		03/26/18 11:37	03/26/18 18:28	1
Thallium	ND		1.0	0.50	ug/L		03/26/18 11:37	03/26/18 18:28	1

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# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Annual Outfall 009 Comp

TestAmerica Job ID: 440-206741-1

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

**Lab Sample ID: MB 440-466018/1-A**  
**Matrix: Water**  
**Analysis Batch: 466136**

**Client Sample ID: Method Blank**  
**Prep Type: Total Recoverable**  
**Prep Batch: 466018**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	ND		1.0	0.50	ug/L		03/26/18 11:37	03/26/18 18:28	1

**Lab Sample ID: LCS 440-466018/2-A**  
**Matrix: Water**  
**Analysis Batch: 466136**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total Recoverable**  
**Prep Batch: 466018**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Cadmium	80.0	76.0		ug/L		95	85 - 115
Copper	80.0	74.1		ug/L		93	85 - 115
Lead	80.0	74.5		ug/L		93	85 - 115
Antimony	80.0	78.4		ug/L		98	85 - 115
Selenium	80.0	79.2		ug/L		99	85 - 115
Thallium	80.0	75.9		ug/L		95	85 - 115
Silver	80.0	74.3		ug/L		93	85 - 115

**Lab Sample ID: 440-206741-1 MS**  
**Matrix: Water**  
**Analysis Batch: 466136**

**Client Sample ID: Outfall009\_20180322\_Comp**  
**Prep Type: Total Recoverable**  
**Prep Batch: 466018**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Cadmium	ND		80.0	80.6		ug/L		101	70 - 130
Copper	5.8		80.0	83.2		ug/L		97	70 - 130
Lead	2.1		80.0	80.9		ug/L		99	70 - 130
Antimony	0.69	J,DX	80.0	83.7		ug/L		104	70 - 130
Selenium	ND		80.0	78.7		ug/L		98	70 - 130
Thallium	ND		80.0	80.1		ug/L		100	70 - 130
Silver	ND		80.0	79.0		ug/L		99	70 - 130

**Lab Sample ID: 440-206741-1 MSD**  
**Matrix: Water**  
**Analysis Batch: 466136**

**Client Sample ID: Outfall009\_20180322\_Comp**  
**Prep Type: Total Recoverable**  
**Prep Batch: 466018**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Cadmium	ND		80.0	76.7		ug/L		96	70 - 130	5	20
Copper	5.8		80.0	79.4		ug/L		92	70 - 130	5	20
Lead	2.1		80.0	77.3		ug/L		94	70 - 130	5	20
Antimony	0.69	J,DX	80.0	81.1		ug/L		101	70 - 130	3	20
Selenium	ND		80.0	78.8		ug/L		99	70 - 130	0	20
Thallium	ND		80.0	75.6		ug/L		94	70 - 130	6	20
Silver	ND		80.0	75.4		ug/L		94	70 - 130	5	20

**Lab Sample ID: MB 440-465710/1-C**  
**Matrix: Water**  
**Analysis Batch: 466054**

**Client Sample ID: Method Blank**  
**Prep Type: Dissolved**  
**Prep Batch: 466030**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		03/26/18 12:22	03/26/18 12:54	1
Copper	ND		2.0	0.50	ug/L		03/26/18 12:22	03/26/18 12:54	1
Lead	ND		1.0	0.50	ug/L		03/26/18 12:22	03/26/18 12:54	1

TestAmerica Irvine

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Annual Outfall 009 Comp

TestAmerica Job ID: 440-206741-1

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

**Lab Sample ID: MB 440-465710/1-C**  
**Matrix: Water**  
**Analysis Batch: 466054**

**Client Sample ID: Method Blank**  
**Prep Type: Dissolved**  
**Prep Batch: 466030**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		2.0	0.50	ug/L		03/26/18 12:22	03/26/18 12:54	1
Selenium	ND		2.0	0.50	ug/L		03/26/18 12:22	03/26/18 12:54	1
Thallium	ND		1.0	0.50	ug/L		03/26/18 12:22	03/26/18 12:54	1

**Lab Sample ID: LCS 440-465710/2-C**  
**Matrix: Water**  
**Analysis Batch: 466054**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Dissolved**  
**Prep Batch: 466030**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Cadmium	80.0	76.1		ug/L		95	85 - 115
Copper	80.0	75.7		ug/L		95	85 - 115
Lead	80.0	70.5		ug/L		88	85 - 115
Antimony	80.0	75.2		ug/L		94	85 - 115
Selenium	80.0	75.5		ug/L		94	85 - 115
Thallium	80.0	78.3		ug/L		98	85 - 115

**Lab Sample ID: 440-206741-2 MS**  
**Matrix: Water**  
**Analysis Batch: 466054**

**Client Sample ID: Outfall009\_20180322\_Comp\_F**  
**Prep Type: Dissolved**  
**Prep Batch: 466030**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Cadmium	ND		80.0	78.1		ug/L		98	70 - 130
Copper	4.9		80.0	84.1		ug/L		99	70 - 130
Lead	0.52	J,DX	80.0	73.0		ug/L		91	70 - 130
Antimony	1.3	J,DX	80.0	78.7		ug/L		97	70 - 130
Selenium	ND		80.0	76.9		ug/L		96	70 - 130
Thallium	ND		80.0	80.3		ug/L		100	70 - 130

**Lab Sample ID: 440-206741-2 MSD**  
**Matrix: Water**  
**Analysis Batch: 466054**

**Client Sample ID: Outfall009\_20180322\_Comp\_F**  
**Prep Type: Dissolved**  
**Prep Batch: 466030**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Cadmium	ND		80.0	73.8		ug/L		92	70 - 130	6	20
Copper	4.9		80.0	79.0		ug/L		93	70 - 130	6	20
Lead	0.52	J,DX	80.0	69.6		ug/L		86	70 - 130	5	20
Antimony	1.3	J,DX	80.0	73.5		ug/L		90	70 - 130	7	20
Selenium	ND		80.0	75.0		ug/L		94	70 - 130	2	20
Thallium	ND		80.0	74.6		ug/L		93	70 - 130	7	20

**Lab Sample ID: MB 440-465710/1-K**  
**Matrix: Water**  
**Analysis Batch: 468347**

**Client Sample ID: Method Blank**  
**Prep Type: Dissolved**  
**Prep Batch: 468190**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	ND		1.0	0.50	ug/L		04/04/18 17:07	04/04/18 22:40	1

TestAmerica Irvine



# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Annual Outfall 009 Comp

TestAmerica Job ID: 440-206741-1

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

**Lab Sample ID: LCS 440-465710/2-K**  
**Matrix: Water**  
**Analysis Batch: 468347**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Dissolved**  
**Prep Batch: 468190**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Silver	80.0	69.5		ug/L		87	85 - 115

**Lab Sample ID: 440-206741-2 MS**  
**Matrix: Water**  
**Analysis Batch: 468347**

**Client Sample ID: Outfall009\_20180322\_Comp\_F**  
**Prep Type: Dissolved**  
**Prep Batch: 468190**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Silver	ND		80.0	74.4		ug/L		93	70 - 130

**Lab Sample ID: 440-206741-2 MSD**  
**Matrix: Water**  
**Analysis Batch: 468347**

**Client Sample ID: Outfall009\_20180322\_Comp\_F**  
**Prep Type: Dissolved**  
**Prep Batch: 468190**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Silver	ND		80.0	79.2		ug/L		99	70 - 130	6	20

## Method: 245.1 - Mercury (CVAA)

**Lab Sample ID: MB 440-465644/1-A**  
**Matrix: Water**  
**Analysis Batch: 465777**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 465644**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		03/23/18 13:27	03/23/18 20:52	1

**Lab Sample ID: LCS 440-465644/2-A**  
**Matrix: Water**  
**Analysis Batch: 465777**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 465644**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	8.00	8.01		ug/L		100	85 - 115

**Lab Sample ID: 440-206741-1 MS**  
**Matrix: Water**  
**Analysis Batch: 465777**

**Client Sample ID: Outfall009\_20180322\_Comp**  
**Prep Type: Total/NA**  
**Prep Batch: 465644**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Mercury	ND		8.00	7.98		ug/L		100	70 - 130

**Lab Sample ID: 440-206741-1 MSD**  
**Matrix: Water**  
**Analysis Batch: 465777**

**Client Sample ID: Outfall009\_20180322\_Comp**  
**Prep Type: Total/NA**  
**Prep Batch: 465644**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	ND		8.00	7.90		ug/L		99	70 - 130	1	20

TestAmerica Irvine

# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Annual Outfall 009 Comp

TestAmerica Job ID: 440-206741-1

## Method: 245.1 - Mercury (CVAA) (Continued)

**Lab Sample ID: MB 440-465710/1-D**  
**Matrix: Water**  
**Analysis Batch: 466636**

**Client Sample ID: Method Blank**  
**Prep Type: Dissolved**  
**Prep Batch: 466055**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		03/26/18 13:15	03/27/18 16:22	1

**Lab Sample ID: LCS 440-465710/2-D**  
**Matrix: Water**  
**Analysis Batch: 466636**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Dissolved**  
**Prep Batch: 466055**

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

**Lab Sample ID: 440-206741-2 MS**  
**Matrix: Water**  
**Analysis Batch: 466636**

**Client Sample ID: Outfall009\_20180322\_Comp\_F**  
**Prep Type: Dissolved**  
**Prep Batch: 466055**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	ND		8.00	8.07		ug/L		101	70 - 130

**Lab Sample ID: 440-206741-2 MSD**  
**Matrix: Water**  
**Analysis Batch: 466636**

**Client Sample ID: Outfall009\_20180322\_Comp\_F**  
**Prep Type: Dissolved**  
**Prep Batch: 466055**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	ND		8.00	8.24		ug/L		103	70 - 130	2	20

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

**Lab Sample ID: MB 440-466028/1**  
**Matrix: Water**  
**Analysis Batch: 466028**

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10	5.0	mg/L			03/26/18 12:09	1

**Lab Sample ID: LCS 440-466028/2**  
**Matrix: Water**  
**Analysis Batch: 466028**

**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	996		mg/L		100	90 - 110

**Lab Sample ID: 440-206741-1 DU**  
**Matrix: Water**  
**Analysis Batch: 466028**

**Client Sample ID: Outfall009\_20180322\_Comp**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	75		76.0		mg/L		1	5

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# QC Sample Results

Client: Haley & Aldrich, Inc.  
Project/Site: Annual Outfall 009 Comp

TestAmerica Job ID: 440-206741-1

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

**Lab Sample ID: MB 440-466101/1**  
**Matrix: Water**  
**Analysis Batch: 466101**

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		1.0	0.50	mg/L			03/26/18 16:12	1

**Lab Sample ID: LCS 440-466101/2**  
**Matrix: Water**  
**Analysis Batch: 466101**

**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	960		mg/L		96	85 - 115

**Lab Sample ID: 440-206741-1 DU**  
**Matrix: Water**  
**Analysis Batch: 466101**

**Client Sample ID: Outfall009\_20180322\_Comp**  
**Prep Type: Total/NA**

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Suspended Solids	9.0		9.60		mg/L		6	10

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

**Lab Sample ID: MB 440-465583/1-A**  
**Matrix: Water**  
**Analysis Batch: 465829**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 465583**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	ND		5.0	2.5	ug/L		03/23/18 10:40	03/24/18 09:55	1

**Lab Sample ID: LCS 440-465583/2-A**  
**Matrix: Water**  
**Analysis Batch: 465829**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 465583**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	100	105		ug/L		105	90 - 110

**Lab Sample ID: 440-206741-1 MS**  
**Matrix: Water**  
**Analysis Batch: 465829**

**Client Sample ID: Outfall009\_20180322\_Comp**  
**Prep Type: Total/NA**  
**Prep Batch: 465583**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	ND		100	93.2		ug/L		93	70 - 115

**Lab Sample ID: 440-206741-1 MSD**  
**Matrix: Water**  
**Analysis Batch: 465829**

**Client Sample ID: Outfall009\_20180322\_Comp**  
**Prep Type: Total/NA**  
**Prep Batch: 465583**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cyanide, Total	ND		100	100		ug/L		100	70 - 115	7	15

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# QC Association Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Annual Outfall 009 Comp

TestAmerica Job ID: 440-206741-1

## GC/MS Semi VOA

### Prep Batch: 466272

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206741-1	Outfall009_20180322_Comp	Total/NA	Water	625	
MB 440-466272/1-A	Method Blank	Total/NA	Water	625	
LCS 440-466272/2-A	Lab Control Sample	Total/NA	Water	625	
440-206741-1 MS	Outfall009_20180322_Comp	Total/NA	Water	625	
440-206741-1 MSD	Outfall009_20180322_Comp	Total/NA	Water	625	

### Analysis Batch: 466864

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206741-1	Outfall009_20180322_Comp	Total/NA	Water	625	466272
MB 440-466272/1-A	Method Blank	Total/NA	Water	625	466272
LCS 440-466272/2-A	Lab Control Sample	Total/NA	Water	625	466272
440-206741-1 MS	Outfall009_20180322_Comp	Total/NA	Water	625	466272
440-206741-1 MSD	Outfall009_20180322_Comp	Total/NA	Water	625	466272

## GC Semi VOA

### Prep Batch: 466200

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206741-1	Outfall009_20180322_Comp	Total/NA	Water	608	
MB 440-466200/1-A	Method Blank	Total/NA	Water	608	
LCS 440-466200/2-A	Lab Control Sample	Total/NA	Water	608	
LCS 440-466200/5-A	Lab Control Sample	Total/NA	Water	608	
440-206741-1 MS	Outfall009_20180322_Comp	Total/NA	Water	608	
440-206741-1 MS	Outfall009_20180322_Comp	Total/NA	Water	608	
440-206741-1 MSD	Outfall009_20180322_Comp	Total/NA	Water	608	
440-206741-1 MSD	Outfall009_20180322_Comp	Total/NA	Water	608	

### Analysis Batch: 466278

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206741-1	Outfall009_20180322_Comp	Total/NA	Water	608 PCB LL	466200
MB 440-466200/1-A	Method Blank	Total/NA	Water	608 PCB LL	466200
LCS 440-466200/5-A	Lab Control Sample	Total/NA	Water	608 PCB LL	466200
440-206741-1 MS	Outfall009_20180322_Comp	Total/NA	Water	608 PCB LL	466200
440-206741-1 MSD	Outfall009_20180322_Comp	Total/NA	Water	608 PCB LL	466200

### Analysis Batch: 466528

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206741-1	Outfall009_20180322_Comp	Total/NA	Water	608 Pesticides	466200
MB 440-466200/1-A	Method Blank	Total/NA	Water	608 Pesticides	466200
LCS 440-466200/2-A	Lab Control Sample	Total/NA	Water	608 Pesticides	466200
440-206741-1 MS	Outfall009_20180322_Comp	Total/NA	Water	608 Pesticides	466200
440-206741-1 MSD	Outfall009_20180322_Comp	Total/NA	Water	608 Pesticides	466200

## HPLC/IC

### Analysis Batch: 465186

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206741-1	Outfall009_20180322_Comp	Total/NA	Water	218.6	
MB 440-465186/6	Method Blank	Total/NA	Water	218.6	
LCS 440-465186/5	Lab Control Sample	Total/NA	Water	218.6	

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# QC Association Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Annual Outfall 009 Comp

TestAmerica Job ID: 440-206741-1

## HPLC/IC (Continued)

### Analysis Batch: 465186 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MRL 440-465186/4	Lab Control Sample	Total/NA	Water	218.6	
440-206741-1 MS	Outfall009_20180322_Comp	Total/NA	Water	218.6	
440-206741-1 MSD	Outfall009_20180322_Comp	Total/NA	Water	218.6	

### Analysis Batch: 465264

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206741-1	Outfall009_20180322_Comp	Total/NA	Water	300.0	
440-206741-1 - DL	Outfall009_20180322_Comp	Total/NA	Water	300.0	
MB 440-465264/14	Method Blank	Total/NA	Water	300.0	
LCS 440-465264/13	Lab Control Sample	Total/NA	Water	300.0	
440-206741-1 MS - DL	Outfall009_20180322_Comp	Total/NA	Water	300.0	
440-206741-1 MSD - DL	Outfall009_20180322_Comp	Total/NA	Water	300.0	

### Analysis Batch: 465265

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206741-1	Outfall009_20180322_Comp	Total/NA	Water	300.0	
440-206741-1 - DL	Outfall009_20180322_Comp	Total/NA	Water	300.0	
MB 440-465265/14	Method Blank	Total/NA	Water	300.0	
LCS 440-465265/13	Lab Control Sample	Total/NA	Water	300.0	
440-206741-1 MS - DL	Outfall009_20180322_Comp	Total/NA	Water	300.0	
440-206741-1 MSD - DL	Outfall009_20180322_Comp	Total/NA	Water	300.0	

### Analysis Batch: 467055

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206741-1	Outfall009_20180322_Comp	Total/NA	Water	314.0	
MB 440-467055/6	Method Blank	Total/NA	Water	314.0	
LCS 440-467055/5	Lab Control Sample	Total/NA	Water	314.0	
MRL 440-467055/4	Lab Control Sample	Total/NA	Water	314.0	
440-206741-1 MS	Outfall009_20180322_Comp	Total/NA	Water	314.0	
440-206741-1 MSD	Outfall009_20180322_Comp	Total/NA	Water	314.0	

### Analysis Batch: 467739

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206741-1	Outfall009_20180322_Comp	Total/NA	Water	NO3NO2 Calc	

## Metals

### Prep Batch: 465644

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206741-1	Outfall009_20180322_Comp	Total/NA	Water	245.1	
MB 440-465644/1-A	Method Blank	Total/NA	Water	245.1	
LCS 440-465644/2-A	Lab Control Sample	Total/NA	Water	245.1	
440-206741-1 MS	Outfall009_20180322_Comp	Total/NA	Water	245.1	
440-206741-1 MSD	Outfall009_20180322_Comp	Total/NA	Water	245.1	

### Filtration Batch: 465710

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206741-2	Outfall009_20180322_Comp_F	Dissolved	Water	FILTRATION	
MB 440-465710/1-B	Method Blank	Dissolved	Water	FILTRATION	
MB 440-465710/1-C	Method Blank	Dissolved	Water	FILTRATION	

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# QC Association Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Annual Outfall 009 Comp

TestAmerica Job ID: 440-206741-1

## Metals (Continued)

### Filtration Batch: 465710 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 440-465710/1-D	Method Blank	Dissolved	Water	FILTRATION	
MB 440-465710/1-G	Method Blank	Dissolved	Water	FILTRATION	
MB 440-465710/1-K	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-465710/2-B	Lab Control Sample	Dissolved	Water	FILTRATION	
LCS 440-465710/2-C	Lab Control Sample	Dissolved	Water	FILTRATION	
LCS 440-465710/2-D	Lab Control Sample	Dissolved	Water	FILTRATION	
LCS 440-465710/2-G	Lab Control Sample	Dissolved	Water	FILTRATION	
LCS 440-465710/2-K	Lab Control Sample	Dissolved	Water	FILTRATION	
440-206741-2 MS	Outfall009_20180322_Comp_F	Dissolved	Water	FILTRATION	
440-206741-2 MSD	Outfall009_20180322_Comp_F	Dissolved	Water	FILTRATION	

### Analysis Batch: 465777

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206741-1	Outfall009_20180322_Comp	Total/NA	Water	245.1	465644
MB 440-465644/1-A	Method Blank	Total/NA	Water	245.1	465644
LCS 440-465644/2-A	Lab Control Sample	Total/NA	Water	245.1	465644
440-206741-1 MS	Outfall009_20180322_Comp	Total/NA	Water	245.1	465644
440-206741-1 MSD	Outfall009_20180322_Comp	Total/NA	Water	245.1	465644

### Prep Batch: 466017

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206741-1	Outfall009_20180322_Comp	Total Recoverable	Water	200.2	
MB 440-466017/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-466017/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-206741-1 MS	Outfall009_20180322_Comp	Total Recoverable	Water	200.2	
440-206741-1 MSD	Outfall009_20180322_Comp	Total Recoverable	Water	200.2	

### Prep Batch: 466018

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206741-1	Outfall009_20180322_Comp	Total Recoverable	Water	200.2	
MB 440-466018/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-466018/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-206741-1 MS	Outfall009_20180322_Comp	Total Recoverable	Water	200.2	
440-206741-1 MSD	Outfall009_20180322_Comp	Total Recoverable	Water	200.2	

### Prep Batch: 466029

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206741-2	Outfall009_20180322_Comp_F	Dissolved	Water	200.2	465710
MB 440-465710/1-B	Method Blank	Dissolved	Water	200.2	465710
LCS 440-465710/2-B	Lab Control Sample	Dissolved	Water	200.2	465710
440-206741-2 MS	Outfall009_20180322_Comp_F	Dissolved	Water	200.2	465710
440-206741-2 MSD	Outfall009_20180322_Comp_F	Dissolved	Water	200.2	465710

### Prep Batch: 466030

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206741-2	Outfall009_20180322_Comp_F	Dissolved	Water	200.2	465710
MB 440-465710/1-C	Method Blank	Dissolved	Water	200.2	465710
LCS 440-465710/2-C	Lab Control Sample	Dissolved	Water	200.2	465710
440-206741-2 MS	Outfall009_20180322_Comp_F	Dissolved	Water	200.2	465710
440-206741-2 MSD	Outfall009_20180322_Comp_F	Dissolved	Water	200.2	465710

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# QC Association Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Annual Outfall 009 Comp

TestAmerica Job ID: 440-206741-1

## Metals (Continued)

### Analysis Batch: 466054

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206741-2	Outfall009_20180322_Comp_F	Dissolved	Water	200.8	466030
MB 440-465710/1-C	Method Blank	Dissolved	Water	200.8	466030
LCS 440-465710/2-C	Lab Control Sample	Dissolved	Water	200.8	466030
440-206741-2 MS	Outfall009_20180322_Comp_F	Dissolved	Water	200.8	466030
440-206741-2 MSD	Outfall009_20180322_Comp_F	Dissolved	Water	200.8	466030

### Prep Batch: 466055

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206741-2	Outfall009_20180322_Comp_F	Dissolved	Water	245.1	465710
MB 440-465710/1-D	Method Blank	Dissolved	Water	245.1	465710
LCS 440-465710/2-D	Lab Control Sample	Dissolved	Water	245.1	465710
440-206741-2 MS	Outfall009_20180322_Comp_F	Dissolved	Water	245.1	465710
440-206741-2 MSD	Outfall009_20180322_Comp_F	Dissolved	Water	245.1	465710

### Analysis Batch: 466136

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206741-1	Outfall009_20180322_Comp	Total Recoverable	Water	200.8	466018
MB 440-466018/1-A	Method Blank	Total Recoverable	Water	200.8	466018
LCS 440-466018/2-A	Lab Control Sample	Total Recoverable	Water	200.8	466018
440-206741-1 MS	Outfall009_20180322_Comp	Total Recoverable	Water	200.8	466018
440-206741-1 MSD	Outfall009_20180322_Comp	Total Recoverable	Water	200.8	466018

### Analysis Batch: 466147

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206741-1	Outfall009_20180322_Comp	Total Recoverable	Water	200.7 Rev 4.4	466017
440-206741-2	Outfall009_20180322_Comp_F	Dissolved	Water	200.7 Rev 4.4	466029
MB 440-465710/1-B	Method Blank	Dissolved	Water	200.7 Rev 4.4	466029
MB 440-466017/1-A	Method Blank	Total Recoverable	Water	200.7 Rev 4.4	466017
LCS 440-465710/2-B	Lab Control Sample	Dissolved	Water	200.7 Rev 4.4	466029
LCS 440-466017/2-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	466017
440-206741-1 MS	Outfall009_20180322_Comp	Total Recoverable	Water	200.7 Rev 4.4	466017
440-206741-1 MSD	Outfall009_20180322_Comp	Total Recoverable	Water	200.7 Rev 4.4	466017
440-206741-2 MS	Outfall009_20180322_Comp_F	Dissolved	Water	200.7 Rev 4.4	466029
440-206741-2 MSD	Outfall009_20180322_Comp_F	Dissolved	Water	200.7 Rev 4.4	466029

### Analysis Batch: 466444

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206741-1	Outfall009_20180322_Comp	Total Recoverable	Water	SM 2340B	
440-206741-2	Outfall009_20180322_Comp_F	Dissolved	Water	SM 2340B	

### Analysis Batch: 466636

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206741-2	Outfall009_20180322_Comp_F	Dissolved	Water	245.1	466055
MB 440-465710/1-D	Method Blank	Dissolved	Water	245.1	466055
LCS 440-465710/2-D	Lab Control Sample	Dissolved	Water	245.1	466055
440-206741-2 MS	Outfall009_20180322_Comp_F	Dissolved	Water	245.1	466055
440-206741-2 MSD	Outfall009_20180322_Comp_F	Dissolved	Water	245.1	466055

### Prep Batch: 466646

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206741-2	Outfall009_20180322_Comp_F	Dissolved	Water	200.2	465710

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# QC Association Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Annual Outfall 009 Comp

TestAmerica Job ID: 440-206741-1

## Metals (Continued)

### Prep Batch: 466646 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 440-465710/1-G	Method Blank	Dissolved	Water	200.2	465710
LCS 440-465710/2-G	Lab Control Sample	Dissolved	Water	200.2	465710
440-206741-2 MS	Outfall009_20180322_Comp_F	Dissolved	Water	200.2	465710
440-206741-2 MSD	Outfall009_20180322_Comp_F	Dissolved	Water	200.2	465710

### Analysis Batch: 466739

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206741-2	Outfall009_20180322_Comp_F	Dissolved	Water	200.7 Rev 4.4	466646
MB 440-465710/1-G	Method Blank	Dissolved	Water	200.7 Rev 4.4	466646
LCS 440-465710/2-G	Lab Control Sample	Dissolved	Water	200.7 Rev 4.4	466646
440-206741-2 MS	Outfall009_20180322_Comp_F	Dissolved	Water	200.7 Rev 4.4	466646
440-206741-2 MSD	Outfall009_20180322_Comp_F	Dissolved	Water	200.7 Rev 4.4	466646

### Prep Batch: 468190

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206741-2	Outfall009_20180322_Comp_F	Dissolved	Water	200.2	465710
MB 440-465710/1-K	Method Blank	Dissolved	Water	200.2	465710
LCS 440-465710/2-K	Lab Control Sample	Dissolved	Water	200.2	465710
440-206741-2 MS	Outfall009_20180322_Comp_F	Dissolved	Water	200.2	465710
440-206741-2 MSD	Outfall009_20180322_Comp_F	Dissolved	Water	200.2	465710

### Analysis Batch: 468347

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206741-2	Outfall009_20180322_Comp_F	Dissolved	Water	200.8	468190
MB 440-465710/1-K	Method Blank	Dissolved	Water	200.8	468190
LCS 440-465710/2-K	Lab Control Sample	Dissolved	Water	200.8	468190
440-206741-2 MS	Outfall009_20180322_Comp_F	Dissolved	Water	200.8	468190
440-206741-2 MSD	Outfall009_20180322_Comp_F	Dissolved	Water	200.8	468190

## General Chemistry

### Prep Batch: 465583

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206741-1	Outfall009_20180322_Comp	Total/NA	Water	Distill/CN	
MB 440-465583/1-A	Method Blank	Total/NA	Water	Distill/CN	
LCS 440-465583/2-A	Lab Control Sample	Total/NA	Water	Distill/CN	
440-206741-1 MS	Outfall009_20180322_Comp	Total/NA	Water	Distill/CN	
440-206741-1 MSD	Outfall009_20180322_Comp	Total/NA	Water	Distill/CN	

### Analysis Batch: 465829

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206741-1	Outfall009_20180322_Comp	Total/NA	Water	SM 4500 CN E	465583
MB 440-465583/1-A	Method Blank	Total/NA	Water	SM 4500 CN E	465583
LCS 440-465583/2-A	Lab Control Sample	Total/NA	Water	SM 4500 CN E	465583
440-206741-1 MS	Outfall009_20180322_Comp	Total/NA	Water	SM 4500 CN E	465583
440-206741-1 MSD	Outfall009_20180322_Comp	Total/NA	Water	SM 4500 CN E	465583

### Analysis Batch: 466028

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206741-1	Outfall009_20180322_Comp	Total/NA	Water	SM 2540C	

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# QC Association Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Annual Outfall 009 Comp

TestAmerica Job ID: 440-206741-1

## General Chemistry (Continued)

### Analysis Batch: 466028 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 440-466028/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 440-466028/2	Lab Control Sample	Total/NA	Water	SM 2540C	
440-206741-1 DU	Outfall009_20180322_Comp	Total/NA	Water	SM 2540C	

### Analysis Batch: 466101

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206741-1	Outfall009_20180322_Comp	Total/NA	Water	SM 2540D	
MB 440-466101/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 440-466101/2	Lab Control Sample	Total/NA	Water	SM 2540D	
440-206741-1 DU	Outfall009_20180322_Comp	Total/NA	Water	SM 2540D	

# Definitions/Glossary

Client: Haley & Aldrich, Inc.  
Project/Site: Annual Outfall 009 Comp

TestAmerica Job ID: 440-206741-1

## Qualifiers

### GC/MS Semi VOA

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

### Metals

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
LM	MS and/or MSD above acceptance limits. See Blank Spike (LCS)

## Glossary

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

# Accreditation/Certification Summary

Client: Haley & Aldrich, Inc.  
Project/Site: Annual Outfall 009 Comp

TestAmerica Job ID: 440-206741-1

## Laboratory: TestAmerica Irvine

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

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	CA ELAP 2706	06-30-18

The following analytes are included in this report, but accreditation/certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
625	625	Water	1,2-Diphenylhydrazine(as Azobenzene)

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

## Patel, Urvashi

---

**From:** Baluran, Dwayne <DBaluran@haleyaldrich.com>  
**Sent:** Friday, March 30, 2018 3:25 PM  
**To:** Patel, Urvashi  
**Cc:** Miller, Katherine  
**Subject:** SSFL Boeing - COC 440-206741  
**Attachments:** COC 440-206741 (201803222242)\_20180328\_DB update.pdf

### -External Email-

---

Hi Urvashi,

Catching up on the recent sampling events that occurred, could you please ensure that sample delivery group **440-206741** (OF009 – Annual Composite) reflects the following:

- COC had no sample time written on; lab listed time in receipt from labels. Updated COC sample times to 15:30, scanned, and is attached here.

If you have any questions feel free to contact me.

Thank you,

**Dwayne Baluran, EIT, QSP**

Staff Engineer

**Haley & Aldrich, Inc.**

5850 Canoga Avenue | Suite 400

Woodland Hills, CA 91367

T: (978) 234.5022

C: (818) 224.0704

[www.haleyaldrich.com](http://www.haleyaldrich.com)

## Patel, Urvashi

---

**From:** Miller, Katherine <KMiller@haleyaldrich.com>  
**Sent:** Friday, March 23, 2018 2:07 PM  
**To:** Patel, Urvashi  
**Subject:** OF009 sample time comp

**Follow Up Flag:** Follow up  
**Flag Status:** Flagged

**Categories:** Red Category

### **-External Email-**

---

OF009 sample time comp is 1530 on 3/22.

**Katherine Miller**  
Project Manager

**Haley Aldrich, Inc.**  
600 South Meyer Ave. | Suite 100  
Tucson, AZ 85701

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

[www.haleyaldrich.com](http://www.haleyaldrich.com)

CHAIN OF CUSTODY FORM

<p>Client Name/Address:                  Haley &amp; Aldrich                  5333 Mission Center Rd Suite 300                  San Diego, CA 92108                  Test America Contact: Urveshi Patel                  Irvine CA 92614                  Tel 949-280-5269                  Call 949-333-9055</p>		<p>Project:                  Boeing-SSFL NIPDES                  Permit 2018                  Annual Outfall 003-007, 008, 010                  Outfall 008                  Comp</p>		<p>Project Manager: Katherine Miller                  520.289.9606; 520.904.6844 (cell)                  Field Manager: Mark Dominick                  916.234.5033; 818.599.0702 (cell)</p>		<p>Sample Description</p>		<p>Sample I.D.</p>		<p>Sampling Date/Time</p>		<p>Sample Matrix</p>		<p>Container Type</p>		<p># of Cont.</p>		<p># of Preservative</p>		<p>MS/MSD</p>		<p>Yes</p>		<p>No</p>		<p>Comments</p>	
<p>Outfall 008</p>		<p>Outfall008_20180322_Comp</p>		<p>3/22/2018</p>		<p>WA</p>		<p>500 ml. Poly</p>		<p>3</p>		<p>HNO<sub>3</sub></p>		<p>86</p>		<p>Yes</p>		<p>None</p>		<p>None</p>		<p>48 hour Holding Time H03 &amp; H02</p>					
<p>Outfall 008</p>		<p>Outfall008_20180322_Comp_F</p>		<p>3/22/2018</p>		<p>WA</p>		<p>1 L. Poly</p>		<p>3</p>		<p>None</p>		<p>195</p>		<p>Yes</p>		<p>None</p>		<p>None</p>		<p>Unlabeled and unprocessed samples. Separate RAD into another workorder. Analyze duplicate, not USMSD. Only used if first or second rain events of the year.</p>					
<p>Outfall 008</p>		<p>Outfall008_20180322_Comp_Suba</p>		<p>3/22/2018</p>		<p>WA</p>		<p>1 L. Glass Amber</p>		<p>2</p>		<p>None</p>		<p>110</p>		<p>No</p>		<p>None</p>		<p>None</p>		<p>Sample receiving DO NOT OPEN BAG Bag to be opened in Mercury Prep using clean procedures.</p>					
<p>Outfall 008</p>		<p>Outfall008_20180322_Comp_Suba</p>		<p>3/22/2018</p>		<p>WA</p>		<p>500 ml. Poly</p>		<p>2</p>		<p>None</p>		<p>135</p>		<p>No</p>		<p>None</p>		<p>None</p>		<p>Sample receiving DO NOT OPEN BAG Bag to be opened in Mercury Prep using clean procedures.</p>					
<p>Outfall 008</p>		<p>Outfall008_20180322_Comp_Suba</p>		<p>3/22/2018</p>		<p>WA</p>		<p>1 L. Glass Amber</p>		<p>2</p>		<p>None</p>		<p>250</p>		<p>No</p>		<p>None</p>		<p>None</p>		<p>Sample receiving DO NOT OPEN BAG Bag to be opened in Mercury Prep using clean procedures.</p>					

16 8/22

Legend: R = Routine, A = Annual

Relinquished By: *[Signature]* Date/Time: 3/22/18/17:30 Company: *[Signature]*

Relinquished By: *[Signature]* Date/Time: 3/22/18/17:30 Company: *[Signature]*

Relinquished By: *[Signature]* Date/Time: 3/22/18/17:30 Company: *[Signature]*

Relinquished By: *[Signature]* Date/Time: 3/22/18/17:30 Company: *[Signature]*

Turn-around time: (Check) 24 Hour:  72 Hour:  10 Day:  X  
 48 Hour:  5 Day:  Normal:

Sample integrity: (Check)  On Ice   
 intact

Store samples for 6 months. Data Requirements: (Check) No Level IV:  All Level IV:

1.8/2.3  
 1.6/2.1  
 3.1/3.6  
 3.0/3.5

3/22/18 2000

1266

1.6/2.1



440-206741 Chain of Custody



CHAIN OF CUSTODY FORM

<p><b>Client Name/Address:</b>                  Haley &amp; Aldrich                  5333 Mission Center Rd Suite 300                  San Diego, CA 92108                  Test America Contact: Unveshi Patel                  17461 Derian Ave Suite #100                  Irvine CA 92614                  Tel 949-260-3269                  Cell 949-333-9035</p>		<p><b>Project:</b>                  Boeing-SSFL NPDES                  Permit 2018                  Annual Outfall 003-007, 009, 010                  Outfall 009                  Comp</p>		<p><b>ANALYSIS REQUIRED</b></p>																					
<p><b>Project Manager:</b> Katherine Miller                  520-289-8606, 520-904-6944 (cell)</p>		<p><b>Field Manager:</b> Mark Dominick                  978-234-5033, 818-599-0702 (cell)</p>		<p>Asbestos (EPA1002) <input type="checkbox"/></p> <p>Priority Pollutants-SVOCs (625) <input type="checkbox"/></p> <p>Chlorpyrifos, Diazinon (6252) <input type="checkbox"/></p> <p>Cr (V), Total (E218.6) <input type="checkbox"/></p>																					
<p><b>Sampler:</b></p>		<p>Sample I.D. <input type="checkbox"/></p>		<p>Comments</p>																					
<p>Sample Description</p>	<p>Sample I.D.</p>	<p>Sampling Date/Time</p>	<p>Sample Matrix</p>	<p>Container Type</p>	<p># of Cont.</p>	<p>Preservative</p>	<p>Bottle #</p>	<p>MSMSD</p>	<p>Yes</p>	<p>No</p>	<p>Yes</p>	<p>No</p>	<p>Yes</p>	<p>No</p>	<p>Yes</p>	<p>No</p>	<p>Yes</p>	<p>No</p>	<p>Yes</p>	<p>No</p>	<p>Yes</p>	<p>No</p>			
<p>Outfall 009</p>	<p>Outfall009_20180322_Comp</p>	<p>3/22/2018</p>	<p>WM</p>	<p>1 L Glass Amber</p>	<p>6</p>	<p>None</p>	<p>175</p>	<p>Yes</p>	<p>No</p>	<p>No</p>	<p>Yes</p>	<p>No</p>	<p>Yes</p>	<p>No</p>	<p>Yes</p>	<p>No</p>	<p>Yes</p>	<p>No</p>	<p>Yes</p>	<p>No</p>	<p>Yes</p>	<p>No</p>	<p>Yes</p>	<p>No</p>	
	<p>Outfall009_20180322_Comp_Extra</p>	<p>3/22/2018</p>	<p>WM</p>	<p>500 mL Poly</p>	<p>3</p>	<p>None</p>	<p>260</p>	<p>Yes</p>	<p>No</p>	<p>No</p>	<p>Yes</p>	<p>No</p>	<p>Yes</p>	<p>No</p>	<p>Yes</p>	<p>No</p>	<p>Yes</p>	<p>No</p>	<p>Yes</p>	<p>No</p>	<p>Yes</p>	<p>No</p>	<p>Yes</p>	<p>No</p>	
				<p>1 L Glass Amber</p>	<p>2</p>	<p>HCl</p>	<p>275</p>	<p>No</p>	<p>No</p>	<p>No</p>	<p>Yes</p>	<p>No</p>	<p>Yes</p>	<p>No</p>	<p>Yes</p>	<p>No</p>	<p>Yes</p>	<p>No</p>	<p>Yes</p>	<p>No</p>	<p>Yes</p>	<p>No</p>	<p>Yes</p>	<p>No</p>	

Relinquished By: *[Signature]* Date/Time: 3-22-18/17:30 Company: Haley & Aldrich

Relinquished By: *[Signature]* Date/Time: 3-22-18/20:00 Company: DAS

Received By: *[Signature]* Date/Time: 3/22/18

Received By: *[Signature]* Date/Time: 3/22/18

Legend: R = Routine, A = Annual

Turn-around time: (Check) 24 Hour:  48 Hour:  72 Hour:  10 Day:  Normal:

Sample Integrity: (Check) Intact:  On Ice:

Store samples for 6 months. Data Requirements: (Check) No Level IV:  All Level IV:

2000



Test America

CHAIN OF CUSTODY FORM

Page 1 of 2

Client Name/Address:  
 Harley & Aldrich  
 5333 Mission Center Rd Suite 300  
 San Diego, CA 92108  
 Test America Contact: Urashil Patel  
 17461 Denton Ave Suite #100  
 Irvine CA 92614  
 Tel 949-280-3269  
 Cell 949-333-9055

Project:  
 Boeing-SSPL NPDES  
 Permit 2018  
 Annual Outfall (03-007, 008, 010)  
 Outfall 009  
 Camp

Project Manager: Katherine Miller  
 520.289.8606, 520.904.8944 (cell)  
 Field Manager: Mark Donnick  
 978.234.5033, 978.688.0702 (cell)

ANALYSIS REQUIRED  
 R/A R R/A R A R/A R R R A R R  
 Total Recoverable Metals (E200.7): Al, As, B, Be, Cr, Fe, Ni, V, Zn, Hardness as CaCO3 (E200.8): Ag, Cd, Cu, Pb, Sb, Se, Si  
 TCDD (and all congeners) (E1613B)  
 Cl-, F-, SO4, NO3+NO2-N, Perchlorate (E300)  
 TDS (SM2540C/E160.1)  
 TSS (160.2) (SM2540D)  
 Total Dissolved Metals (E200.7) Al, As, B, Be, Cr, Fe, Ni, V, Zn, Hardness as CaCO3 (E200.8): Ag, Cd, Cu, Pb, Sb, Se, Si  
 Gross Alpha (E900.0), Gross Beta (E900.0), Tritium (H-3) (E906.0), Sr-90 (E905.0), Total Combined Radium 226 (E903.0 or E903.1) & Radium 228 (E904.0), Uranium (E908.0), K-40, Cs-137 (E901.0 or E901.1)  
 Chronic Toxicity - Selenium (EPA-821-R-02-013)  
 Cyanide (SM4500-CN-E / E335.2)  
 Priority Pollutants-Pesticides+PCBs (E606)  
 Total Recoverable Metals Mercury (E245.1)  
 Total Dissolved Metals Mercury (E245.1)  
 Comments

Sample Description	Sample ID	Sampling Date/Time	Sample Matrix	Container Type	# of Cont.	Preservative	Bottle #	MS/MSD	Total Recoverable Metals (E200.7): Al, As, B, Be, Cr, Fe, Ni, V, Zn, Hardness as CaCO3 (E200.8): Ag, Cd, Cu, Pb, Sb, Se, Si	TCDD (and all congeners) (E1613B)	Cl-, F-, SO4, NO3+NO2-N, Perchlorate (E300)	TDS (SM2540C/E160.1)	TSS (160.2) (SM2540D)	Total Dissolved Metals (E200.7) Al, As, B, Be, Cr, Fe, Ni, V, Zn, Hardness as CaCO3 (E200.8): Ag, Cd, Cu, Pb, Sb, Se, Si	Gross Alpha (E900.0), Gross Beta (E900.0), Tritium (H-3) (E906.0), Sr-90 (E905.0), Total Combined Radium 226 (E903.0 or E903.1) & Radium 228 (E904.0), Uranium (E908.0), K-40, Cs-137 (E901.0 or E901.1)	Chronic Toxicity - Selenium (EPA-821-R-02-013)	Cyanide (SM4500-CN-E / E335.2)	Priority Pollutants-Pesticides+PCBs (E606)	Total Recoverable Metals Mercury (E245.1)	Total Dissolved Metals Mercury (E245.1)	Comments
Outfall 009	DB	3/22/2018 15:30	VM	1 L Glass Amber	3	HNO3	110	Yes	X	X	X	X	X	X	X	X	X	X	X	X	48 hours holding Time NCS & NO2
Outfall 009, 20180322_Camp F	DB	3/22/2018 15:30	VM	1 L Glass Amber	3	HNO3	110	Yes	X	X	X	X	X	X	X	X	X	X	X	X	Sample receiving DO NOT OPEN BAG Bag to be opened in Mercury Prep using clean procedures. Filter and preserve with 2hrs of recalc at lab
Outfall 009, 20180322_Camp East	DB	3/22/2018 15:30	VM	1 L Glass Amber	3	HNO3	110	Yes	X	X	X	X	X	X	X	X	X	X	X	X	Sample receiving DO NOT OPEN BAG Bag to be opened in Mercury Prep using clean procedures. Hold

Relinquished By: *[Signature]* Date/Time: 3-22-18/1830 Company: *[Signature]* Received By: *[Signature]* Date/Time: 3-22-18

Relinquished By: *[Signature]* Date/Time: 3-22-18/1800 Company: *[Signature]* Received By: *[Signature]* Date/Time: 3/22/18 2000

Relinquished By: *[Signature]* Date/Time: 3-22-18/1800 Company: *[Signature]* Received By: *[Signature]* Date/Time: 3/22/18 2000

1.8/2.3  
 1.6/2.1  
 3.1/3.6  
 3.0/3.5



440-206741 Chain of Custody

16 3/22





## Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-206741-1

**Login Number: 206741**

**List Number: 1**

**Creator: Garcia, Veronica G**

**List Source: TestAmerica Irvine**

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

