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# FIELD ACTIVITIES SUMMARY REPORT

## ISCHUA LANDFILL (CITY OF OLEAN) REGION 9

### INACTIVE LANDFILL INITIATIVE WORK ASSIGNMENTS # D007623-33 / D009811-02

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Prepared For:



**Department of  
Environmental  
Conservation**

New York State Department of Environmental Conservation  
Division of Materials Management  
625 Broadway  
Albany, NY 12233-7250

Prepared By:



301 Plainfield Road, Suite 350  
Syracuse, New York 13212

**SEPTEMBER 2021**

## CERTIFICATION

### Ischua Landfill (City of Olean), Olean, NY

I, George H. Moreau, certify that all activities detailed in this Field Activity Summary Report were conducted as described and in full accordance with the approved workplan and any DEC approved modifications, unless otherwise noted herein.

George H. Moreau  
Regional Coordinator

9/7/21  
Date



Signature

*Reviewed/Accepted By:*

Steven McDonnell  
Division of Materials Management

9/7/2021  
Date



Signature

New York State Department of Environmental Conservation  
 Division of Materials Management  
 Inactive Landfill Initiative  
 Field Activities Summary

**Landfill Name:** Ischua landfill (City of Olean)

**Region:** 9

**Database ID:** 9073

**Date of Field Activities:** 10/06/20-10/08/20

**Summary of Field Activities**

As shown on Figure 1, six monitoring wells were sampled to assess impacts to drinking water sources and nearby receptors. Monitoring wells were sampled according to the program Field Activities Plan, with the exception that the wells were purged within 48 hours prior to sampling by the facility's sampling team.

**Monitoring Wells Installed**

Monitoring Well ID	Northing	Easting	Elevation (ft)	Well Development Date	Comments
Existing wells were not surveyed.					

**Monitoring Wells Sampled**

Monitoring Well ID	Date	Sample Collected (yes/no)	Comments
MW-7C	10/08/20	Yes	
MW-8B	10/06/20	Yes	
MW-10B	10/06/20	Yes	
MW-12B	10/07/20	Yes	
MW-13	10/07/20	Yes	
MW-14	10/07/20	Yes	

## Other Samples

<b>Sample Location</b>	<b>Date</b>	<b>Sample Type</b>	<b>Sample Collected (yes/no)</b>	<b>Comments</b>
MW-8B	10/06/20	Field Duplicate	Yes	Field QC Sample
NA	10/06/20	Equipment Blank	Yes	Field QC Sample
NA	10/06/20	Field Blank	Yes	Field QC Sample
NA	10/06/20	Trip Blank	Yes	Field QC Sample
NA	10/07/20	Equipment Blank	Yes	Field QC Sample
NA	10/07/20	Field Blank	Yes	Field QC Sample
NA	10/07/20	Trip Blank	Yes	Field QC Sample
NA	10/08/20	Equipment Blank	Yes	Field QC Sample
NA	10/08/20	Field Blank	Yes	Field QC Sample
NA	10/08/20	Trip Blank	Yes	Field QC Sample

## Figures

Figure 1	Sample Locations
Figure 2	Groundwater Contours and Flow

## Attachments

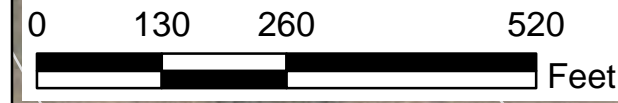
Attachment 1	Old Land Reclamation Site Work Plan [Not Required]
Attachment 2	Boring and Well Construction Logs [Not Available]
Attachment 3	Groundwater Sample Logs
Attachment 4	Analytical Laboratory Level II Data Deliverable



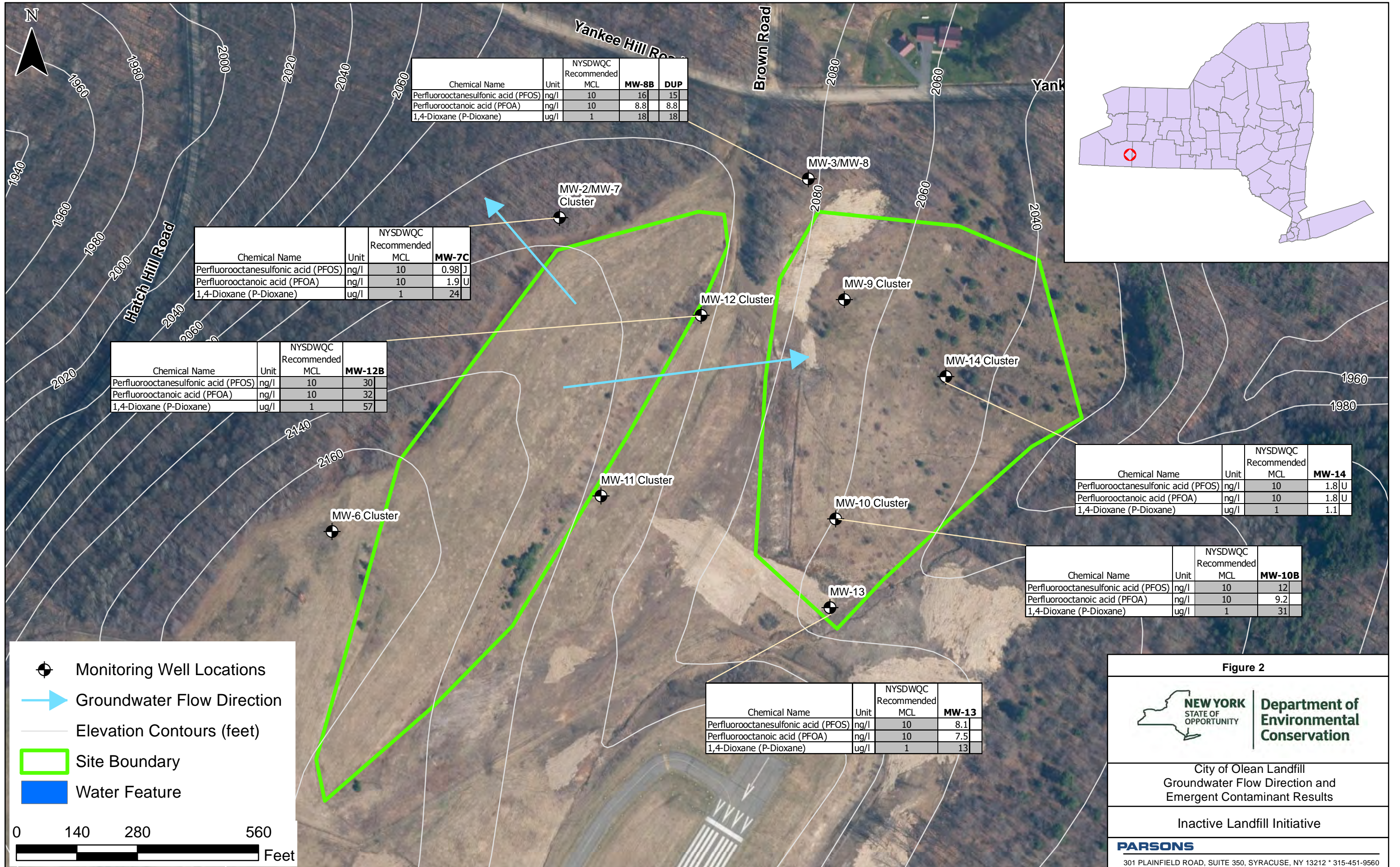


Plotted By: CS

Plot Date: 8/31/2021







Chemical Name	Unit	NYSDWQC Recommended MCL	MW-8B	DUP
Perfluorooctanesulfonic acid (PFOS)	ng/l	10	16	15
Perfluorooctanoic acid (PFOA)	ng/l	10	8.8	8.8
1,4-Dioxane (P-Dioxane)	ug/l	1	18	18

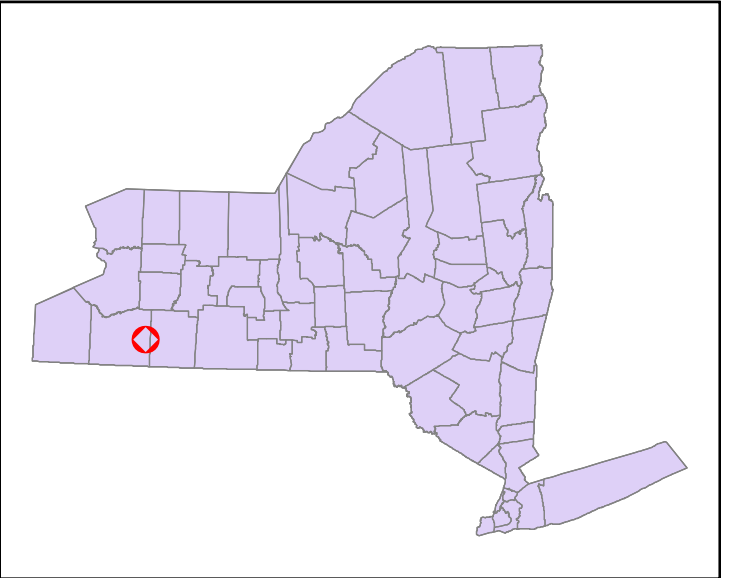
Chemical Name	Unit	NYSDWQC Recommended MCL	MW-7C
Perfluorooctanesulfonic acid (PFOS)	ng/l	10	0.98 J
Perfluorooctanoic acid (PFOA)	ng/l	10	1.9 U
1,4-Dioxane (P-Dioxane)	ug/l	1	24

Chemical Name	Unit	NYSDWQC Recommended MCL	MW-12B
Perfluorooctanesulfonic acid (PFOS)	ng/l	10	30
Perfluorooctanoic acid (PFOA)	ng/l	10	32
1,4-Dioxane (P-Dioxane)	ug/l	1	57

Chemical Name	Unit	NYSDWQC Recommended MCL	MW-14
Perfluorooctanesulfonic acid (PFOS)	ng/l	10	1.8 U
Perfluorooctanoic acid (PFOA)	ng/l	10	1.8 U
1,4-Dioxane (P-Dioxane)	ug/l	1	1.1

Chemical Name	Unit	NYSDWQC Recommended MCL	MW-10B
Perfluorooctanesulfonic acid (PFOS)	ng/l	10	12
Perfluorooctanoic acid (PFOA)	ng/l	10	9.2
1,4-Dioxane (P-Dioxane)	ug/l	1	31

Chemical Name	Unit	NYSDWQC Recommended MCL	MW-13
Perfluorooctanesulfonic acid (PFOS)	ng/l	10	8.1
Perfluorooctanoic acid (PFOA)	ng/l	10	7.5
1,4-Dioxane (P-Dioxane)	ug/l	1	13



Plotted By: CS

Plot Date: 9/7/2021

- Monitoring Well Locations
- Groundwater Flow Direction
- Elevation Contours (feet)
- Site Boundary
- Water Feature

0 140 280 560 Feet

**Figure 2**

City of Olean Landfill  
Groundwater Flow Direction and  
Emergent Contaminant Results

Inactive Landfill Initiative

**PARSONS**  
301 PLAINFIELD ROAD, SUITE 350, SYRACUSE, NY 13212 \* 315-451-9560



**ATTACHMENT 1**

**WORK PLAN [NOT REQUIRED]**

**ATTACHMENT 2**

**SOIL BORING/ WELL INSTALLATION LOGS [NOT AVAILABLE]**



**ATTACHMENT 3**

**SAMPLING LOGS**

**Low Flow Ground Water Sampling Log**

Date	10/08/20	Personnel	FM/KM	Weather	40's; Sunny
Site Name	Olean Ischua LF	Evacuation Method	Bailer	Well #	MW-7C
Site Location	Olean, NY	Sampling Method	Low Flow	Project #	452148.09000

**Well information:**

Depth of Well	44.62 ft.	*Measurements taken from:						
Depth to Water	36.73 ft.							
H <sub>wc</sub>	7.89 ft.							
Depth to Intake	- ft.							
		<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td align="center">X</td> <td>Top of Well Casing</td> </tr> <tr> <td></td> <td>Top of Protective Casing</td> </tr> <tr> <td></td> <td>(Other, Specify)</td> </tr> </table>	X	Top of Well Casing		Top of Protective Casing		(Other, Specify)
X	Top of Well Casing							
	Top of Protective Casing							
	(Other, Specify)							

**Start Purge Time:**

		10%	0.1	3%	10 mV	10%	10%	100 - 500 mL/min
Elapsed Time (min)	Depth to Water (ft)	Temperature (celsius)	pH	Conductivity (ms/cm)	Oxidation Reduction Potential	Dissolved Oxygen (mg/L)	Turbidity (NTU)	Flow Rate (mL/min)

**End Purge Time:**

<b>Water Sample</b>
Time Collected: <u>0830</u> Total volume of purged water removed: _____ (gallons)
Physical appearance at start: _____ Physical appearance at start: _____
Color _____ Color _____
Odor _____ Odor _____
Sheen/Free Product _____ Sheen/Free Product _____

**Samples:**  
Bladder Pump could not fit down well casing, possibly due to a dent. Did not purge and used bailer to collect sample.

Sample	Container Type	# Collected	Field Filtered	Preservative	Container pH
Alkalinity	125 mL Plastic	1	no	none	-
Ammonia/COD	250 mL Plastic	1	no	H2SO4	-
PAHs + 1,4-Dioxane	1 L Amber	2	no	none	-
Chl/Tds/Bro/SO4	60 mL Plastic	1	no	none	-
TOC	40 mL Glass	2	no	HCl	-
TDS	500 mL Plastic	1	no	none	-
VOCs	40 mL Glass	3	no	HCl	-
Mod. Bsln Metals / Hardness	250 mL Plastic	2	no	HNO3	-
PFAS	250 mL Plastic	2	no	none	-
PAHs	250 mL Amber	2	no	none	-



### Low Flow Ground Water Sampling Log

Date 10/06/20 Personnel \_\_\_\_\_ FM/KM \_\_\_\_\_ Weather 50's; Sunny  
 Site Name Olean Ischua LF Evacuation Method Peri pump/silicon/hdpe tube Well # MW-8B  
 Site Location Olean, NY Sampling Method Low Flow Project # 452148.09000

**Well information:**

Depth of Well <u>23.9</u> ft. Depth to Water <u>18.64</u> ft. H <sub>wc</sub> <u>5.26</u> ft. Depth to Intake <u>21</u> ft.	*Measurements taken from: <input checked="" type="checkbox"/> Top of Well Casing <input type="checkbox"/> Top of Protective Casing <input type="checkbox"/> (Other, Specify)
--------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Start Purge Time: 1200

Elapsed Time (min)	Depth to Water (ft)	10% Temperature (celsius)	0.1 pH	3% Conductivity (ms/cm)	10 mV Oxidation Reduction Potential	10% Dissolved Oxygen (mg/L)	10% Turbidity (NTU)	100 - 500 mL/min Flow Rate (mL/min)
0	18.91	15.58	5.67	0.700	24	3.88	0	300
5	18.90	12.08	6.05	0.619	24	1.12	0	300
10	18.85	12.00	6.20	0.610	24	0.98	0	300

End Purge Time: 1210

**Water Sample**  
 Time Collected: 1230 Total volume of purged water removed: 1 (gallons)  
 Physical appearance at start: \_\_\_\_\_ Physical appearance at start: \_\_\_\_\_  
 Color Clear Color Clear  
 Odor None Odor None  
 Sheen/Free Product None Sheen/Free Product None

**Samples:** (See list of parameters collected below)

Field Dup @ 1235

Sample	Container Type	# Collected	Field Filtered	Preservative	Container pH
Alkalinity	125 mL Plastic	1	no	none	-
Ammonia/COD	250 mL Plastic	1	no	H2SO4	-
PAHs + 1,4-Dioxane	1 L Amber	2	no	none	-
Chl/Tds/Bro/SO4	60 mL Plastic	1	no	none	-
TOC	40 mL Glass	2	no	HCl	-
TDS	500 mL Plastic	1	no	none	-
VOCs	40 mL Glass	3	no	HCl	-
Mod. Bsln Metals / Hardness	250 mL Plastic	2	no	HNO3	-
PFAS	250 mL Plastic	2	no	none	-
PAHs	250 mL Amber	2	no	none	-





### Low Flow Ground Water Sampling Log

Date: 10/07/20 Personnel: FM/KM Weather: 50's; rain  
 Site Name: Olean Ischua LF Evacuation Method: Peri pump/hdpe/silicon tube Well #: MW-12B  
 Site Location: Olean, NY Sampling Method: Low Flow Project #: 452148.09000

**Well information:**  
 Depth of Well: 21.1 ft. \*Measurements taken from:  
 Depth to Water: 17.61 ft.  Top of Well Casing  
 $H_{wc}$ : 3.49 ft.  Top of Protective Casing  
 Depth to Intake: 20.8 ft.  (Other, Specify)

Start Purge Time:

Elapsed Time (min)	Depth to Water (ft)	10% Temperature (celsius)	0.1 pH	3% Conductivity (ms/cm)	10 mV Oxidation Reduction Potential	10% Dissolved Oxygen (mg/L)	10% Turbidity (NTU)	100 - 500 mL/min Flow Rate (mL/min)

End Purge Time:

**Water Sample**  
 Time Collected: 1315 Total volume of purged water removed: \_\_\_\_\_ (gallons)  
 Physical appearance at start: \_\_\_\_\_ Physical appearance at start: \_\_\_\_\_  
 Color: \_\_\_\_\_ Color: \_\_\_\_\_  
 Odor: \_\_\_\_\_ Odor: \_\_\_\_\_  
 Sheen/Free Product: \_\_\_\_\_ Sheen/Free Product: \_\_\_\_\_

**Samples:** (See list of parameters collected below)  
 Sampled immediately due to low water volume. Had sulfurous odor.

Sample	Container Type	# Collected	Field Filtered	Preservative	Container pH
Alkalinity	125 mL Plastic	1	no	none	-
Ammonia/COD	250 mL Plastic	1	no	H2SO4	-
PAHs + 1,4-Dioxane	1 L Amber	2	no	none	-
Chl/Tds/Bro/SO4	60 mL Plastic	1	no	none	-
TOC	40 mL Glass	2	no	HCl	-
TDS	500 mL Plastic	1	no	none	-
VOCs	40 mL Glass	3	no	HCl	-
Mod. Bsln Metals / Hardness	250 mL Plastic	2	no	HNO3	-
PFAS	250 mL Plastic	2	no	none	-
PAHs	250 mL Amber	2	no	none	-







## **ATTACHMENT 4**

### **Analytical Laboratory Level II Data Deliverable**





October 27, 2020

Service Request No:R2009314

Mr. George Moreau  
Parsons Engineering Science  
301 Plainfield Road  
Suite 350  
Syracuse, NY 13212

**Laboratory Results for: ILI - Region 9 Olean Ischua LF**

Dear Mr.Moreau,

Enclosed are the results of the sample(s) submitted to our laboratory October 07, 2020  
For your reference, these analyses have been assigned our service request number **R2009314**.

All testing was performed according to our laboratory's quality assurance program and met the requirements of the TNI standards except as noted in the case narrative report. Any testing not included in the lab's accreditation is identified on a Non-Certified Analytes report. All results are intended to be considered in their entirety. ALS Environmental is not responsible for use of less than the complete report. Results apply only to the individual samples submitted to the lab for analysis, as listed in the report. The measurement uncertainty of the results included in this report is within that expected when using the prescribed method(s), and represented by Laboratory Control Sample control limits. Any events, such as QC failures or Holding Time exceedances, which may add to the uncertainty are explained in the report narrative or are flagged with qualifiers. The flags are explained in the Report Qualifiers and Definitions page of this report.

Please contact me if you have any questions. My extension is 7472. You may also contact me via email at [Janice.Jaeger@alsglobal.com](mailto:Janice.Jaeger@alsglobal.com).

Respectfully submitted,

**ALS Group USA, Corp. dba ALS Environmental**

Janice Jaeger  
Project Manager

CC: Maryanne  
Kosciewicz

**ADDRESS**

1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623

**PHONE** +1 585 288 5380 | **FAX** +1 585 288 8475

ALS Group USA, Corp.  
dba ALS Environmental



# Narrative Documents

**ALS Environmental—Rochester Laboratory**  
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623  
Phone (585) 288-5380 Fax (585) 288-8475  
[www.alsglobal.com](http://www.alsglobal.com)



**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF  
**Sample Matrix:** Water

**Service Request:** R2009314  
**Date Received:** 10/07/2020

**CASE NARRATIVE**

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier level IV requested by the client.

**Sample Receipt:**

Six water samples were received for analysis at ALS Environmental on 10/07/2020. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

One or more samples were subcontracted to another laboratory for testing. The certified analytical report from the subcontractor has been included in its entirety at the end of this report and includes the name and address of the subcontracted laboratory.

**Semivolatiles by GC/MS:**

No significant anomalies were noted with this analysis.

**Metals:**

No significant anomalies were noted with this analysis.

**General Chemistry:**

No significant anomalies were noted with this analysis.

**Subcontracted Analytical Parameters:**

No significant anomalies were noted with this analysis.

**Volatiles by GC/MS:**

Method 8260C, 10/17/2020: The lower control limit was exceeded for one or more analytes in the Continuing Calibration Verification (CCV). Since there were no detections of the analyte(s) above the MRL in the associated field samples, the quantitation is not affected. The data quality was not significantly affected and no further corrective action was taken.

Approved by \_\_\_\_\_

Date 10/27/2020





## Sample Receipt Information

**ALS Environmental—Rochester Laboratory**  
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623  
Phone (585) 288-5380 Fax (585) 288-8475  
[www.alsglobal.com](http://www.alsglobal.com)

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03

**Service Request:**R2009314

**SAMPLE CROSS-REFERENCE**

<u>SAMPLE #</u>	<u>CLIENT SAMPLE ID</u>	<u>DATE</u>	<u>TIME</u>
R2009314-001	9-CAT-007-001-01	10/6/2020	1230
R2009314-002	9-CAT-007-001-02	10/6/2020	1235
R2009314-003	9-CAT-007-001-03	10/6/2020	1355
R2009314-004	9-CAT-007-001-04	10/6/2020	1400
R2009314-005	9-CAT-007-001-05	10/6/2020	1500
R2009314-006	9-CAT-007-001-06	10/6/2020	

### CHAIN-OF-CUSTODY / Analytical Request Document

<b>Section A Laboratory Information</b>				<b>Section B Client Information</b>				COC #:	9-CAT-007-001					
Lab Name: ALS				Company: Parsons				Project Name:	ILI - Region 9					
Attention: Janice Jaeger				Attention: George Moreau				Project Site:	Olean Ischna LF					
Address: 1565 Jefferson Road, Bldg 300, Suite 360 Rochester, NY 14623				Address: 301 Plainfield Road, Suite 350 Syracuse, NY 13212				Project Number:	452148.09040					
Phone: 585-288-5380				Phone: 315-552-9715				<b>Preservative codes (for water only):</b> 0 1 0 0 2 2 3 3 0 0 0 * Dissolved Met/Hg/As/Hg 501/07/47/						
Email: janice.jaeger@alsglobal.com				Email: George.H.Moreau@parsons.com										
<b>Section C Deliverable Requirements</b>				Purchase Order No:										
Report To: George.H.Moreau@parsons.com				TAT - 10 Day										
Copy To: Lorraine.Weber@parsons.com; Laura.Drachenberg@parsons.com Maryanne.Kosciewicz@parsons.com; Heather.Fettig@parsons.com				<b>Section D Additional Information</b>										
Deliverables: Level 2, CAT B Report, NYSDEC EQUIS EDD														

#	Location ID	Start Depth (ft)	End Depth (ft)	Field Sample ID MUST BE UNIQUE	Sample Date	Sample Time	Sample Matrix	Sample Type	# of Cont.	MS/MSD	Composite (Y/N)												
											# Bottles	2	3	2	2	1	1	3	1	1	1		
1	9-CAT-007-MW-8B	21.0	21.0	9-CAT-007-001-01	10/16/20	1230	WG	N	18		X	X	X	X	X	X	X	X	X	X	X	X	X
2	9-CAT-007-MW-8B	21.0	21.0	9-CAT-007-001-02	10/16/20	1235	WG	FD	18		X	X	X	X	X	X	X	X	X	X	X	X	X
3	9-CAT-007-FIELDQC	-	-	9-CAT-007-001-03	10/16/20	1355	WQ	EB	2		X												
4	9-CAT-007-FIELDQC	-	-	9-CAT-007-001-04	10/16/20	1400	WQ	FB	1		X												
5	9-CAT-007-MV-10B	31.5	31.5	9-CAT-007-001-05	10/16/20	1500	WG	N	54	X	X	X	X	X	X	X	X	X	X	X	X	X	X
6	9-CAT-007-FIELDQC	-	-	9-CAT-007-001-06	10/16/20	-	WQ	TR	3		X												
7																							
8																							
9																							
10																							

**Special Instructions:**

\*\* - Dissolved Metals/Hg collected when Turbidity is greater than 50 NTU.

Samplers Name: Faith McDonald		Company: Parsons		Relinquished By: Faith McDonald		Company:		Cooler Temp.:		Custody Seals Intact: Yes <input type="checkbox"/> No <input type="checkbox"/>	
Date/Time: 10/16/20 1830		Date/Time: 10/16/20 1830		Date/Time: 10/17/2020 0900		Date/Time: 10/17/2020 0900		Rec'd on Ice: Yes <input type="checkbox"/> No <input type="checkbox"/>		Samples Intact: Yes <input type="checkbox"/> No <input type="checkbox"/>	
Shipment Method: Fed Ex		Shipment Tracking No:		Accepted By: [Signature]		Company: AL		Cooler Temp.:		Custody Seals Intact: Yes <input type="checkbox"/> No <input type="checkbox"/>	
Date/Time:		Date/Time:		Date/Time:		Date/Time:		Rec'd on Ice: Yes <input type="checkbox"/> No <input type="checkbox"/>		Samples Intact: Yes <input type="checkbox"/> No <input type="checkbox"/>	

Preservatives: 0 = None; [1 = HCL]; [2 = HNO3]; [3 = H2SO4]; [4 = NaOH]; [5 = Zn Acetate]; [6 = MeOH]; [7 = NaH2O9]; [8 = Other (H3PO4)];

R2009314 5

Parsons Engineering Science  
ILI - Region 9 Olean Ischna LF





# Cooler Receipt and Preservation Check Form

R2009314  
Parsons Engineering Science  
LL - Region 9 Clean Techua LF

5

Project/Client Parsons Folder Number \_\_\_\_\_



Cooler received on 10/7/2020 by @

COURIER: ALS UPS FEDEX VELOCITY CLIENT

1	Were Custody seals on outside of cooler?	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
2	Custody papers properly completed (ink, signed)?	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
3	Did all bottles arrive in good condition (unbroken)?	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
4	Circle: <u>Wet Ice</u> Dry Ice Gel packs present?	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>

5a	Perchlorate samples have required headspace?	Y N <input checked="" type="checkbox"/> NA
5b	Did VOA vials, <u>Alk</u> , or Sulfide have sig* bubbles?	Y <input checked="" type="checkbox"/> N NA
6	Where did the bottles originate?	<u>ALS/ROC</u> CLIENT
7	Soil VOA received as: Bulk Encore 5035set	<input checked="" type="checkbox"/> NA

3. Temperature Readings Date: 10/7/2020 Time: 1000 ID: IR#7 IR#10 From: Temp Blank Sample Bottle

Observed Temp (°C)	<u>3.3</u>	<u>3.2</u>	<u>1.7</u>	<u>1.4</u>			
Within 0-6°C?	Y <input checked="" type="checkbox"/> N	Y <input checked="" type="checkbox"/> N	Y <input checked="" type="checkbox"/> N	Y <input checked="" type="checkbox"/> N	Y N	Y N	Y N
If <0°C, were samples frozen?	Y N	Y N	Y N	Y N	Y N	Y N	Y N

If out of Temperature, note packing/ice condition: \_\_\_\_\_ Ice melted Poorly Packed (described below) Same Day Rule  
& Client Approval to Run Samples: \_\_\_\_\_ Standing Approval Client aware at drop-off Client notified by: \_\_\_\_\_

All samples held in storage location: R-002 by @ on 10/7/2020 at 1009  
5035 samples placed in storage location: \_\_\_\_\_ by \_\_\_\_\_ on \_\_\_\_\_ at \_\_\_\_\_ within 48 hours of sampling? Y N

Cooler Breakdown/Preservation Check\*\*: Date: 10/7/2020 Time: 2145 by: sk

- 9. Were all bottle labels complete (i.e. analysis, preservation, etc.)? YES NO
- 10. Did all bottle labels and tags agree with custody papers? YES NO
- 11. Were correct containers used for the tests indicated? YES NO
- 12. Were 5035 vials acceptable (no extra labels, not leaking)? YES NO
- 13. Air Samples: Cassettes / Tubes Intact with MS? Canisters Pressurized Tedlar® Bags Inflated N/A

pH	Lot of test paper	Reagent	Preserved?		Lot Received	Exp	Sample ID Adjusted	Vol. Added	Lot Added	Final pH
			Yes	No						
≥12		NaOH								
≤2	<u>228419</u>	HNO <sub>3</sub>	✓		<u>1170021</u>					
≤2	↓	H <sub>2</sub> SO <sub>4</sub>	✓		<u>5000-11</u>					
<4		NaHSO <sub>4</sub>								
5-9		For 608pest			No=Notify for 3day					
Residual Chlorine (-)		For CN, Phenol, 625, 608pest, 522			If +, contact PM to add Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> (625, 608, CN), ascorbic (phenol).					
		Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>								
		ZnAcetate	-	-						
		HCl	**	**						

\*\*VOAs and 1664 Not to be tested before analysis. Otherwise, all bottles of all samples with chemical preservatives are checked (not just representatives).

Bottle lot numbers: 20-07-09, 20-07-09, 081020-24A0, 051120-1BLT, 082420-1BMC

Explain all Discrepancies/ Other Comments:

all alk. headspace

Labels secondary reviewed by: sk

PC Secondary Review: skms 10/8/20 \*significant air bubbles: VOA > 5-6 mm : WC > 1 in. diameter

HPROD	BULK
HTR	FLDT
<u>SUB</u>	HGFB
ALS	LL3541



## Miscellaneous Forms

**ALS Environmental—Rochester Laboratory**  
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623  
Phone (585) 288-5380 Fax (585) 288-8475  
[www.alsglobal.com](http://www.alsglobal.com)

## REPORT QUALIFIERS AND DEFINITIONS

- |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
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| <p><b>U</b> Analyte was analyzed for but not detected. The sample quantitation limit has been corrected for dilution and for percent moisture, unless otherwise noted in the case narrative.</p> <p><b>J</b> Estimated value due to either being a Tentatively Identified Compound (TIC) or that the concentration is between the MRL and the MDL. Concentrations are not verified within the linear range of the calibration. For DoD: concentration &gt;40% difference between two GC columns (pesticides/Aroclors).</p> <p><b>B</b> Analyte was also detected in the associated method blank at a concentration that may have contributed to the sample result.</p> <p><b>E</b> Inorganics- Concentration is estimated due to the serial dilution was outside control limits.</p> <p><b>E</b> Organics- Concentration has exceeded the calibration range for that specific analysis.</p> <p><b>D</b> Concentration is a result of a dilution, typically a secondary analysis of the sample due to exceeding the calibration range or that a surrogate has been diluted out of the sample and cannot be assessed.</p> <p><b>*</b> Indicates that a quality control parameter has exceeded laboratory limits. Under the "Notes" column of the Form I, this qualifier denotes analysis was performed out of Holding Time.</p> <p><b>H</b> Analysis was performed out of hold time for tests that have an "immediate" hold time criteria.</p> <p><b>#</b> Spike was diluted out.</p> | <p><b>+</b> Correlation coefficient for MSA is &lt;0.995.</p> <p><b>N</b> Inorganics- Matrix spike recovery was outside laboratory limits.</p> <p><b>N</b> Organics- Presumptive evidence of a compound (reported as a TIC) based on the MS library search.</p> <p><b>S</b> Concentration has been determined using Method of Standard Additions (MSA).</p> <p><b>W</b> Post-Digestion Spike recovery is outside control limits and the sample absorbance is &lt;50% of the spike absorbance.</p> <p><b>P</b> Concentration &gt;40% difference between the two GC columns.</p> <p><b>C</b> Confirmed by GC/MS</p> <p><b>Q</b> DoD reports: indicates a pesticide/Aroclor is not confirmed (&gt;100% Difference between two GC columns).</p> <p><b>X</b> See Case Narrative for discussion.</p> <p><b>MRL</b> Method Reporting Limit. Also known as:</p> <p><b>LOQ</b> Limit of Quantitation (LOQ)<br/>The lowest concentration at which the method analyte may be reliably quantified under the method conditions.</p> <p><b>MDL</b> Method Detection Limit. A statistical value derived from a study designed to provide the lowest concentration that will be detected 99% of the time. Values between the MDL and MRL are estimated (see J qualifier).</p> <p><b>LOD</b> Limit of Detection. A value at or above the MDL which has been verified to be detectable.</p> <p><b>ND</b> Non-Detect. Analyte was not detected at the concentration listed. Same as U qualifier.</p> |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|



### Rochester Lab ID # for State Certifications<sup>1</sup>

Connecticut ID # PH0556	Maine ID #NY0032	Pennsylvania ID# 68-786
Delaware Approved	New Hampshire ID # 2941	Rhode Island ID # 158
DoD ELAP #65817	New York ID # 10145	Virginia #460167
Florida ID # E87674	North Carolina #676	

<sup>1</sup> Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state or agency requirements. The test results meet requirements of the current NELAP/TNI standards or state or agency requirements, where applicable, except as noted in the case narrative. Since not all analyte/method/matrix combinations are offered for state/NELAC accreditation, this report may contain results which are not accredited. For a specific list of accredited analytes, contact the laboratory or go to <https://www.alsglobal.com/locations/americas/north-america/usa/new-york/rochester-environmental>

# ALS Laboratory Group

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## Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.



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Analyst Summary report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03

**Service Request:** R2009314

**Sample Name:** 9-CAT-007-001-01  
**Lab Code:** R2009314-001  
**Sample Matrix:** Water

**Date Collected:** 10/6/20  
**Date Received:** 10/7/20

Analysis Method	Extracted/Digested By	Analyzed By
300.0		KWONG
350.1		SMEDBURY
410.4		SMEDBURY
6010C	AKONZEL	KMCLAEN
7470A	AKONZEL	KMCLAEN
8260C		KRUEST
8270D	KSERCU	JMISIUREWICZ
8270D SIM	AFELSER	AFELSER
PFC/537M	MSESSIONS	CCONOVER
SM 2320 B-1997(2011)		STALARICO
SM 2340 C-1997(2011)		KMENGs
SM 2540 C-1997(2011)		KAWONG
SM 5310 C-2000(2011)		SMEDBURY

**Sample Name:** 9-CAT-007-001-02  
**Lab Code:** R2009314-002  
**Sample Matrix:** Water

**Date Collected:** 10/6/20  
**Date Received:** 10/7/20

Analysis Method	Extracted/Digested By	Analyzed By
300.0		KWONG
350.1		SMEDBURY
410.4		SMEDBURY
6010C	AKONZEL	KMCLAEN
7470A	AKONZEL	KMCLAEN
8260C		KRUEST
8270D	KSERCU	JMISIUREWICZ
8270D SIM	AFELSER	AFELSER
PFC/537M	MSESSIONS	CCONOVER
SM 2320 B-1997(2011)		STALARICO
SM 2340 C-1997(2011)		KMENGs
SM 2540 C-1997(2011)		KAWONG
SM 5310 C-2000(2011)		SMEDBURY

ALS Group USA, Corp.  
dba ALS Environmental

Analyst Summary report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03

**Service Request:** R2009314

**Sample Name:** 9-CAT-007-001-03  
**Lab Code:** R2009314-003  
**Sample Matrix:** Water

**Date Collected:** 10/6/20  
**Date Received:** 10/7/20

**Analysis Method**  
PFC/537M

**Extracted/Digested By**  
MSESSIONS

**Analyzed By**  
CCONOVER

**Sample Name:** 9-CAT-007-001-04  
**Lab Code:** R2009314-004  
**Sample Matrix:** Water

**Date Collected:** 10/6/20  
**Date Received:** 10/7/20

**Analysis Method**  
PFC/537M

**Extracted/Digested By**  
MSESSIONS

**Analyzed By**  
CCONOVER

**Sample Name:** 9-CAT-007-001-05  
**Lab Code:** R2009314-005  
**Sample Matrix:** Water

**Date Collected:** 10/6/20  
**Date Received:** 10/7/20

**Analysis Method**

**Extracted/Digested By**

**Analyzed By**

300.0		KWONG
350.1		SMEDBURY
410.4		SMEDBURY
6010C	AKONZEL	KMCLAEN
7470A	AKONZEL	KMCLAEN
8260C		KRUEST
8270D	KSERCU	JMISIUREWICZ
8270D SIM	AFELSER	AFELSER
PFC/537M	MSESSIONS	CCONOVER
SM 2320 B-1997(2011)		STALARICO
SM 2340 C-1997(2011)		KMENG
SM 2540 C-1997(2011)		KAWONG
SM 5310 C-2000(2011)		SMEDBURY

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Analyst Summary report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03

**Service Request:** R2009314

**Sample Name:** 9-CAT-007-001-06  
**Lab Code:** R2009314-006  
**Sample Matrix:** Water

**Date Collected:** 10/6/20  
**Date Received:** 10/7/20

**Analysis Method**  
8260C

**Extracted/Digested By**

**Analyzed By**  
KRUEST



## INORGANIC PREPARATION METHODS

The preparation methods associated with this report are found in these tables unless discussed in the case narrative.

### Water/Liquid Matrix

Analytical Method	Preparation Method
200.7	200.2
200.8	200.2
6010C	3005A/3010A
6020A	ILM05.3
9034 Sulfide Acid Soluble	9030B
SM 4500-CN-E Residual Cyanide	SM 4500-CN-G
SM 4500-CN-E WAD Cyanide	SM 4500-CN-I

### Solid/Soil/Non-Aqueous Matrix

Analytical Method	Preparation Method
6010C	3050B
6020A	3050B
6010C TCLP (1311) extract	3005A/3010A
6010 SPLP (1312) extract	3005A/3010A
7199	3060A
300.0 Anions/ 350.1/ 353.2/ SM 2320B/ SM 5210B/ 9056A Anions	DI extraction
For analytical methods not listed, the preparation method is the same as the analytical method reference.	





# Sample Results

**ALS Environmental—Rochester Laboratory**  
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623  
Phone (585) 288-5380 Fax (585) 288-8475  
[www.alsglobal.com](http://www.alsglobal.com)



## Volatile Organic Compounds by GC/MS

**ALS Environmental—Rochester Laboratory**

1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623

Phone (585) 288-5380 Fax (585) 288-8475

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

**ALS Group USA, Corp.**  
dba ALS Environmental

Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** 9-CAT-007-001-01  
**Lab Code:** R2009314-001

**Service Request:** R2009314  
**Date Collected:** 10/06/20 12:30  
**Date Received:** 10/07/20 09:50

**Units:** ug/L  
**Basis:** NA

**Volatile Organic Compounds by GC/MS**

**Analysis Method:** 8260C  
**Prep Method:** EPA 5030C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Q
1,1,1,2-Tetrachloroethane	1.0 U	1.0	0.20	1	10/17/20 02:33	
1,1,1-Trichloroethane (TCA)	1.0 U	1.0	0.20	1	10/17/20 02:33	
1,1,2,2-Tetrachloroethane	1.0 U	1.0	0.20	1	10/17/20 02:33	
1,1,2-Trichloroethane	1.0 U	1.0	0.20	1	10/17/20 02:33	
1,1-Dichloroethane (1,1-DCA)	<b>1.7</b>	1.0	0.20	1	10/17/20 02:33	
1,1-Dichloroethene (1,1-DCE)	1.0 U	1.0	0.20	1	10/17/20 02:33	
1,2,3-Trichloropropane	1.0 U	1.0	0.26	1	10/17/20 02:33	
1,2-Dibromo-3-chloropropane (DBCP)	2.0 U	2.0	0.45	1	10/17/20 02:33	
1,2-Dibromoethane	1.0 U	1.0	0.20	1	10/17/20 02:33	
1,2-Dichlorobenzene	1.0 U	1.0	0.20	1	10/17/20 02:33	
1,2-Dichloroethane	1.0 U	1.0	0.20	1	10/17/20 02:33	
1,2-Dichloropropane	1.0 U	1.0	0.20	1	10/17/20 02:33	
1,4-Dichlorobenzene	<b>0.42 J</b>	1.0	0.20	1	10/17/20 02:33	
2-Butanone (MEK)	5.0 U	5.0	0.78	1	10/17/20 02:33	
2-Hexanone	5.0 U	5.0	0.20	1	10/17/20 02:33	
4-Methyl-2-pentanone	5.0 U	5.0	0.20	1	10/17/20 02:33	
Acetone	5.0 U	5.0	5.0	1	10/17/20 02:33	
Acrylonitrile	10 U	10	0.90	1	10/17/20 02:33	
Benzene	<b>0.69 J</b>	1.0	0.20	1	10/17/20 02:33	
Bromochloromethane	1.0 U	1.0	0.20	1	10/17/20 02:33	
Bromodichloromethane	1.0 U	1.0	0.20	1	10/17/20 02:33	
Bromoform	1.0 U	1.0	0.25	1	10/17/20 02:33	
Bromomethane	1.0 U	1.0	0.70	1	10/17/20 02:33	
Carbon Disulfide	1.0 U	1.0	0.42	1	10/17/20 02:33	
Carbon Tetrachloride	1.0 U	1.0	0.34	1	10/17/20 02:33	
Chlorobenzene	<b>1.1</b>	1.0	0.20	1	10/17/20 02:33	
Chloroethane	<b>0.95 J</b>	1.0	0.23	1	10/17/20 02:33	
Chloroform	1.0 U	1.0	0.24	1	10/17/20 02:33	
Chloromethane	1.0 U	1.0	0.28	1	10/17/20 02:33	
Dibromochloromethane	1.0 U	1.0	0.20	1	10/17/20 02:33	
Dibromomethane	1.0 U	1.0	0.20	1	10/17/20 02:33	
Methylene Chloride	1.0 U	1.0	0.65	1	10/17/20 02:33	
Ethylbenzene	1.0 U	1.0	0.20	1	10/17/20 02:33	
Iodomethane	5.0 U	5.0	4.3	1	10/17/20 02:33	
Styrene	1.0 U	1.0	0.20	1	10/17/20 02:33	
Tetrachloroethene (PCE)	1.0 U	1.0	0.21	1	10/17/20 02:33	
Toluene	1.0 U	1.0	0.20	1	10/17/20 02:33	
Trichloroethene (TCE)	<b>0.46 J</b>	1.0	0.20	1	10/17/20 02:33	
Trichlorofluoromethane (CFC 11)	1.0 U	1.0	0.24	1	10/17/20 02:33	
Vinyl Acetate	2.0 U	2.0	1.1	1	10/17/20 02:33	
Vinyl Chloride	<b>1.8</b>	1.0	0.20	1	10/17/20 02:33	
Xylenes, Total	3.0 U	3.0	0.23	1	10/17/20 02:33	
cis-1,2-Dichloroethene	<b>5.0</b>	1.0	0.23	1	10/17/20 02:33	

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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** 9-CAT-007-001-01  
**Lab Code:** R2009314-001

**Service Request:** R2009314  
**Date Collected:** 10/06/20 12:30  
**Date Received:** 10/07/20 09:50

**Units:** ug/L  
**Basis:** NA

**Volatile Organic Compounds by GC/MS**

**Analysis Method:** 8260C  
**Prep Method:** EPA 5030C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Q
cis-1,3-Dichloropropene	1.0 U	1.0	0.20	1	10/17/20 02:33	
m,p-Xylenes	2.0 U	2.0	0.20	1	10/17/20 02:33	
o-Xylene	1.0 U	1.0	0.20	1	10/17/20 02:33	
trans-1,2-Dichloroethene	<b>0.21 J</b>	1.0	0.20	1	10/17/20 02:33	
trans-1,3-Dichloropropene	1.0 U	1.0	0.23	1	10/17/20 02:33	
trans-1,4-Dichloro-2-butene	1.0 U	1.0	0.78	1	10/17/20 02:33	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	93	85 - 122	10/17/20 02:33	
Dibromofluoromethane	93	89 - 119	10/17/20 02:33	
Toluene-d8	96	87 - 121	10/17/20 02:33	

ALS Group USA, Corp.  
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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water

**Service Request:** R2009314  
**Date Collected:** 10/06/20 12:35  
**Date Received:** 10/07/20 09:50

**Sample Name:** 9-CAT-007-001-02  
**Lab Code:** R2009314-002

**Units:** ug/L  
**Basis:** NA

Volatile Organic Compounds by GC/MS

**Analysis Method:** 8260C  
**Prep Method:** EPA 5030C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Q
1,1,1,2-Tetrachloroethane	1.0 U	1.0	0.20	1	10/17/20 02:55	
1,1,1-Trichloroethane (TCA)	1.0 U	1.0	0.20	1	10/17/20 02:55	
1,1,2,2-Tetrachloroethane	1.0 U	1.0	0.20	1	10/17/20 02:55	
1,1,2-Trichloroethane	1.0 U	1.0	0.20	1	10/17/20 02:55	
1,1-Dichloroethane (1,1-DCA)	<b>1.8</b>	1.0	0.20	1	10/17/20 02:55	
1,1-Dichloroethene (1,1-DCE)	1.0 U	1.0	0.20	1	10/17/20 02:55	
1,2,3-Trichloropropane	1.0 U	1.0	0.26	1	10/17/20 02:55	
1,2-Dibromo-3-chloropropane (DBCP)	2.0 U	2.0	0.45	1	10/17/20 02:55	
1,2-Dibromoethane	1.0 U	1.0	0.20	1	10/17/20 02:55	
1,2-Dichlorobenzene	1.0 U	1.0	0.20	1	10/17/20 02:55	
1,2-Dichloroethane	1.0 U	1.0	0.20	1	10/17/20 02:55	
1,2-Dichloropropane	1.0 U	1.0	0.20	1	10/17/20 02:55	
1,4-Dichlorobenzene	<b>0.39 J</b>	1.0	0.20	1	10/17/20 02:55	
2-Butanone (MEK)	5.0 U	5.0	0.78	1	10/17/20 02:55	
2-Hexanone	5.0 U	5.0	0.20	1	10/17/20 02:55	
4-Methyl-2-pentanone	5.0 U	5.0	0.20	1	10/17/20 02:55	
Acetone	5.0 U	5.0	5.0	1	10/17/20 02:55	
Acrylonitrile	10 U	10	0.90	1	10/17/20 02:55	
Benzene	<b>0.70 J</b>	1.0	0.20	1	10/17/20 02:55	
Bromochloromethane	1.0 U	1.0	0.20	1	10/17/20 02:55	
Bromodichloromethane	1.0 U	1.0	0.20	1	10/17/20 02:55	
Bromoform	1.0 U	1.0	0.25	1	10/17/20 02:55	
Bromomethane	1.0 U	1.0	0.70	1	10/17/20 02:55	
Carbon Disulfide	1.0 U	1.0	0.42	1	10/17/20 02:55	
Carbon Tetrachloride	1.0 U	1.0	0.34	1	10/17/20 02:55	
Chlorobenzene	<b>1.2</b>	1.0	0.20	1	10/17/20 02:55	
Chloroethane	<b>0.50 J</b>	1.0	0.23	1	10/17/20 02:55	
Chloroform	1.0 U	1.0	0.24	1	10/17/20 02:55	
Chloromethane	1.0 U	1.0	0.28	1	10/17/20 02:55	
Dibromochloromethane	1.0 U	1.0	0.20	1	10/17/20 02:55	
Dibromomethane	1.0 U	1.0	0.20	1	10/17/20 02:55	
Methylene Chloride	1.0 U	1.0	0.65	1	10/17/20 02:55	
Ethylbenzene	1.0 U	1.0	0.20	1	10/17/20 02:55	
Iodomethane	5.0 U	5.0	4.3	1	10/17/20 02:55	
Styrene	1.0 U	1.0	0.20	1	10/17/20 02:55	
Tetrachloroethene (PCE)	1.0 U	1.0	0.21	1	10/17/20 02:55	
Toluene	1.0 U	1.0	0.20	1	10/17/20 02:55	
Trichloroethene (TCE)	<b>0.55 J</b>	1.0	0.20	1	10/17/20 02:55	
Trichlorofluoromethane (CFC 11)	1.0 U	1.0	0.24	1	10/17/20 02:55	
Vinyl Acetate	2.0 U	2.0	1.1	1	10/17/20 02:55	
Vinyl Chloride	<b>1.9</b>	1.0	0.20	1	10/17/20 02:55	
Xylenes, Total	3.0 U	3.0	0.23	1	10/17/20 02:55	
cis-1,2-Dichloroethene	<b>5.0</b>	1.0	0.23	1	10/17/20 02:55	



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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** 9-CAT-007-001-02  
**Lab Code:** R2009314-002

**Service Request:** R2009314  
**Date Collected:** 10/06/20 12:35  
**Date Received:** 10/07/20 09:50

**Units:** ug/L  
**Basis:** NA

**Volatile Organic Compounds by GC/MS**

**Analysis Method:** 8260C  
**Prep Method:** EPA 5030C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Q
cis-1,3-Dichloropropene	1.0 U	1.0	0.20	1	10/17/20 02:55	
m,p-Xylenes	2.0 U	2.0	0.20	1	10/17/20 02:55	
o-Xylene	1.0 U	1.0	0.20	1	10/17/20 02:55	
trans-1,2-Dichloroethene	<b>0.23 J</b>	1.0	0.20	1	10/17/20 02:55	
trans-1,3-Dichloropropene	1.0 U	1.0	0.23	1	10/17/20 02:55	
trans-1,4-Dichloro-2-butene	1.0 U	1.0	0.78	1	10/17/20 02:55	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	93	85 - 122	10/17/20 02:55	
Dibromofluoromethane	89	89 - 119	10/17/20 02:55	
Toluene-d8	94	87 - 121	10/17/20 02:55	

**ALS Group USA, Corp.**  
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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** 9-CAT-007-001-05  
**Lab Code:** R2009314-005

**Service Request:** R2009314  
**Date Collected:** 10/06/20 15:00  
**Date Received:** 10/07/20 09:50

**Units:** ug/L  
**Basis:** NA

**Volatile Organic Compounds by GC/MS**

**Analysis Method:** 8260C  
**Prep Method:** EPA 5030C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Q
1,1,1,2-Tetrachloroethane	1.0 U	1.0	0.20	1	10/17/20 03:17	
1,1,1-Trichloroethane (TCA)	1.0 U	1.0	0.20	1	10/17/20 03:17	
1,1,2,2-Tetrachloroethane	1.0 U	1.0	0.20	1	10/17/20 03:17	
1,1,2-Trichloroethane	1.0 U	1.0	0.20	1	10/17/20 03:17	
1,1-Dichloroethane (1,1-DCA)	<b>13</b>	1.0	0.20	1	10/17/20 03:17	
1,1-Dichloroethene (1,1-DCE)	<b>0.35 J</b>	1.0	0.20	1	10/17/20 03:17	
1,2,3-Trichloropropane	1.0 U	1.0	0.26	1	10/17/20 03:17	
1,2-Dibromo-3-chloropropane (DBCP)	2.0 U	2.0	0.45	1	10/17/20 03:17	
1,2-Dibromoethane	1.0 U	1.0	0.20	1	10/17/20 03:17	
1,2-Dichlorobenzene	1.0 U	1.0	0.20	1	10/17/20 03:17	
1,2-Dichloroethane	<b>0.30 J</b>	1.0	0.20	1	10/17/20 03:17	
1,2-Dichloropropane	1.0 U	1.0	0.20	1	10/17/20 03:17	
1,4-Dichlorobenzene	<b>0.27 J</b>	1.0	0.20	1	10/17/20 03:17	
2-Butanone (MEK)	5.0 U	5.0	0.78	1	10/17/20 03:17	
2-Hexanone	5.0 U	5.0	0.20	1	10/17/20 03:17	
4-Methyl-2-pentanone	5.0 U	5.0	0.20	1	10/17/20 03:17	
Acetone	5.0 U	5.0	5.0	1	10/17/20 03:17	
Acrylonitrile	10 U	10	0.90	1	10/17/20 03:17	
Benzene	<b>1.6</b>	1.0	0.20	1	10/17/20 03:17	
Bromochloromethane	1.0 U	1.0	0.20	1	10/17/20 03:17	
Bromodichloromethane	1.0 U	1.0	0.20	1	10/17/20 03:17	
Bromoform	1.0 U	1.0	0.25	1	10/17/20 03:17	
Bromomethane	1.0 U	1.0	0.70	1	10/17/20 03:17	
Carbon Disulfide	1.0 U	1.0	0.42	1	10/17/20 03:17	
Carbon Tetrachloride	1.0 U	1.0	0.34	1	10/17/20 03:17	
Chlorobenzene	<b>1.2</b>	1.0	0.20	1	10/17/20 03:17	
Chloroethane	<b>0.94 J</b>	1.0	0.23	1	10/17/20 03:17	
Chloroform	1.0 U	1.0	0.24	1	10/17/20 03:17	
Chloromethane	1.0 U	1.0	0.28	1	10/17/20 03:17	
Dibromochloromethane	1.0 U	1.0	0.20	1	10/17/20 03:17	
Dibromomethane	1.0 U	1.0	0.20	1	10/17/20 03:17	
Methylene Chloride	1.0 U	1.0	0.65	1	10/17/20 03:17	
Ethylbenzene	1.0 U	1.0	0.20	1	10/17/20 03:17	
Iodomethane	5.0 U	5.0	4.3	1	10/17/20 03:17	
Styrene	1.0 U	1.0	0.20	1	10/17/20 03:17	
Tetrachloroethene (PCE)	1.0 U	1.0	0.21	1	10/17/20 03:17	
Toluene	1.0 U	1.0	0.20	1	10/17/20 03:17	
Trichloroethene (TCE)	<b>1.1</b>	1.0	0.20	1	10/17/20 03:17	
Trichlorofluoromethane (CFC 11)	1.0 U	1.0	0.24	1	10/17/20 03:17	
Vinyl Acetate	2.0 U	2.0	1.1	1	10/17/20 03:17	
Vinyl Chloride	<b>7.2</b>	1.0	0.20	1	10/17/20 03:17	
Xylenes, Total	3.0 U	3.0	0.23	1	10/17/20 03:17	
cis-1,2-Dichloroethene	<b>37</b>	1.0	0.23	1	10/17/20 03:17	

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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** 9-CAT-007-001-05  
**Lab Code:** R2009314-005

**Service Request:** R2009314  
**Date Collected:** 10/06/20 15:00  
**Date Received:** 10/07/20 09:50

**Units:** ug/L  
**Basis:** NA

**Volatile Organic Compounds by GC/MS**

**Analysis Method:** 8260C  
**Prep Method:** EPA 5030C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Q
cis-1,3-Dichloropropene	1.0 U	1.0	0.20	1	10/17/20 03:17	
m,p-Xylenes	2.0 U	2.0	0.20	1	10/17/20 03:17	
o-Xylene	1.0 U	1.0	0.20	1	10/17/20 03:17	
trans-1,2-Dichloroethene	<b>0.81 J</b>	1.0	0.20	1	10/17/20 03:17	
trans-1,3-Dichloropropene	1.0 U	1.0	0.23	1	10/17/20 03:17	
trans-1,4-Dichloro-2-butene	1.0 U	1.0	0.78	1	10/17/20 03:17	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	92	85 - 122	10/17/20 03:17	
Dibromofluoromethane	93	89 - 119	10/17/20 03:17	
Toluene-d8	94	87 - 121	10/17/20 03:17	

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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** 9-CAT-007-001-06  
**Lab Code:** R2009314-006

**Service Request:** R2009314  
**Date Collected:** 10/06/20  
**Date Received:** 10/07/20 09:50

**Units:** ug/L  
**Basis:** NA

Volatile Organic Compounds by GC/MS

**Analysis Method:** 8260C  
**Prep Method:** EPA 5030C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Q
1,1,1,2-Tetrachloroethane	1.0 U	1.0	0.20	1	10/17/20 03:39	
1,1,1-Trichloroethane (TCA)	1.0 U	1.0	0.20	1	10/17/20 03:39	
1,1,2,2-Tetrachloroethane	1.0 U	1.0	0.20	1	10/17/20 03:39	
1,1,2-Trichloroethane	1.0 U	1.0	0.20	1	10/17/20 03:39	
1,1-Dichloroethane (1,1-DCA)	1.0 U	1.0	0.20	1	10/17/20 03:39	
1,1-Dichloroethene (1,1-DCE)	1.0 U	1.0	0.20	1	10/17/20 03:39	
1,2,3-Trichloropropane	1.0 U	1.0	0.26	1	10/17/20 03:39	
1,2-Dibromo-3-chloropropane (DBCP)	2.0 U	2.0	0.45	1	10/17/20 03:39	
1,2-Dibromoethane	1.0 U	1.0	0.20	1	10/17/20 03:39	
1,2-Dichlorobenzene	1.0 U	1.0	0.20	1	10/17/20 03:39	
1,2-Dichloroethane	1.0 U	1.0	0.20	1	10/17/20 03:39	
1,2-Dichloropropane	1.0 U	1.0	0.20	1	10/17/20 03:39	
1,4-Dichlorobenzene	1.0 U	1.0	0.20	1	10/17/20 03:39	
2-Butanone (MEK)	5.0 U	5.0	0.78	1	10/17/20 03:39	
2-Hexanone	5.0 U	5.0	0.20	1	10/17/20 03:39	
4-Methyl-2-pentanone	5.0 U	5.0	0.20	1	10/17/20 03:39	
Acetone	5.0 U	5.0	5.0	1	10/17/20 03:39	
Acrylonitrile	10 U	10	0.90	1	10/17/20 03:39	
Benzene	1.0 U	1.0	0.20	1	10/17/20 03:39	
Bromochloromethane	1.0 U	1.0	0.20	1	10/17/20 03:39	
Bromodichloromethane	1.0 U	1.0	0.20	1	10/17/20 03:39	
Bromoform	1.0 U	1.0	0.25	1	10/17/20 03:39	
Bromomethane	1.0 U	1.0	0.70	1	10/17/20 03:39	
Carbon Disulfide	1.0 U	1.0	0.42	1	10/17/20 03:39	
Carbon Tetrachloride	1.0 U	1.0	0.34	1	10/17/20 03:39	
Chlorobenzene	1.0 U	1.0	0.20	1	10/17/20 03:39	
Chloroethane	1.0 U	1.0	0.23	1	10/17/20 03:39	
Chloroform	1.0 U	1.0	0.24	1	10/17/20 03:39	
Chloromethane	<b>0.30 BJ</b>	1.0	0.28	1	10/17/20 03:39	
Dibromochloromethane	1.0 U	1.0	0.20	1	10/17/20 03:39	
Dibromomethane	1.0 U	1.0	0.20	1	10/17/20 03:39	
Methylene Chloride	1.0 U	1.0	0.65	1	10/17/20 03:39	
Ethylbenzene	1.0 U	1.0	0.20	1	10/17/20 03:39	
Iodomethane	5.0 U	5.0	4.3	1	10/17/20 03:39	
Styrene	1.0 U	1.0	0.20	1	10/17/20 03:39	
Tetrachloroethene (PCE)	1.0 U	1.0	0.21	1	10/17/20 03:39	
Toluene	1.0 U	1.0	0.20	1	10/17/20 03:39	
Trichloroethene (TCE)	1.0 U	1.0	0.20	1	10/17/20 03:39	
Trichlorofluoromethane (CFC 11)	1.0 U	1.0	0.24	1	10/17/20 03:39	
Vinyl Acetate	2.0 U	2.0	1.1	1	10/17/20 03:39	
Vinyl Chloride	1.0 U	1.0	0.20	1	10/17/20 03:39	
Xylenes, Total	3.0 U	3.0	0.23	1	10/17/20 03:39	
cis-1,2-Dichloroethene	1.0 U	1.0	0.23	1	10/17/20 03:39	

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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** 9-CAT-007-001-06  
**Lab Code:** R2009314-006

**Service Request:** R2009314  
**Date Collected:** 10/06/20  
**Date Received:** 10/07/20 09:50

**Units:** ug/L  
**Basis:** NA

**Volatile Organic Compounds by GC/MS**

**Analysis Method:** 8260C  
**Prep Method:** EPA 5030C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Q
cis-1,3-Dichloropropene	1.0 U	1.0	0.20	1	10/17/20 03:39	
m,p-Xylenes	2.0 U	2.0	0.20	1	10/17/20 03:39	
o-Xylene	1.0 U	1.0	0.20	1	10/17/20 03:39	
trans-1,2-Dichloroethene	1.0 U	1.0	0.20	1	10/17/20 03:39	
trans-1,3-Dichloropropene	1.0 U	1.0	0.23	1	10/17/20 03:39	
trans-1,4-Dichloro-2-butene	1.0 U	1.0	0.78	1	10/17/20 03:39	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	92	85 - 122	10/17/20 03:39	
Dibromofluoromethane	92	89 - 119	10/17/20 03:39	
Toluene-d8	96	87 - 121	10/17/20 03:39	





## Semivolatile Organic Compounds by GC/MS

**ALS Environmental—Rochester Laboratory**  
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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** 9-CAT-007-001-01  
**Lab Code:** R2009314-001

**Service Request:** R2009314  
**Date Collected:** 10/06/20 12:30  
**Date Received:** 10/07/20 09:50

**Units:** ug/L  
**Basis:** NA

**Low Level Semivolatile Organic Compounds by GC/MS**

**Analysis Method:** 8270D  
**Prep Method:** EPA 3510C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Acenaphthene	0.20 U	0.20	0.055	1	10/10/20 02:23	10/8/20	
Acenaphthylene	0.20 U	0.20	0.053	1	10/10/20 02:23	10/8/20	
Anthracene	0.20 U	0.20	0.071	1	10/10/20 02:23	10/8/20	
Benz(a)anthracene	0.20 U	0.20	0.13	1	10/10/20 02:23	10/8/20	
Benzo(b)fluoranthene	0.20 U	0.20	0.13	1	10/10/20 02:23	10/8/20	
Benzo(k)fluoranthene	0.20 U	0.20	0.11	1	10/10/20 02:23	10/8/20	
Benzo(g,h,i)perylene	0.20 U	0.20	0.15	1	10/10/20 02:23	10/8/20	
Benzo(a)pyrene	0.20 U	0.20	0.12	1	10/10/20 02:23	10/8/20	
Chrysene	0.20 U	0.20	0.089	1	10/10/20 02:23	10/8/20	
Dibenz(a,h)anthracene	0.20 U	0.20	0.14	1	10/10/20 02:23	10/8/20	
Fluoranthene	0.20 U	0.20	0.14	1	10/10/20 02:23	10/8/20	
Fluorene	0.20 U	0.20	0.065	1	10/10/20 02:23	10/8/20	
Indeno(1,2,3-cd)pyrene	0.20 U	0.20	0.11	1	10/10/20 02:23	10/8/20	
Naphthalene	0.20 U	0.20	0.058	1	10/10/20 02:23	10/8/20	
Phenanthrene	0.20 U	0.20	0.10	1	10/10/20 02:23	10/8/20	
Pyrene	0.20 U	0.20	0.11	1	10/10/20 02:23	10/8/20	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	82	27 - 133	10/10/20 02:23	
Nitrobenzene-d5	84	31 - 167	10/10/20 02:23	
p-Terphenyl-d14	73	25 - 151	10/10/20 02:23	

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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** 9-CAT-007-001-02  
**Lab Code:** R2009314-002

**Service Request:** R2009314  
**Date Collected:** 10/06/20 12:35  
**Date Received:** 10/07/20 09:50

**Units:** ug/L  
**Basis:** NA

**Low Level Semivolatile Organic Compounds by GC/MS**

**Analysis Method:** 8270D  
**Prep Method:** EPA 3510C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Acenaphthene	0.20 U	0.20	0.055	1	10/10/20 02:51	10/8/20	
Acenaphthylene	0.20 U	0.20	0.053	1	10/10/20 02:51	10/8/20	
Anthracene	0.20 U	0.20	0.071	1	10/10/20 02:51	10/8/20	
Benz(a)anthracene	0.20 U	0.20	0.13	1	10/10/20 02:51	10/8/20	
Benzo(b)fluoranthene	0.20 U	0.20	0.13	1	10/10/20 02:51	10/8/20	
Benzo(k)fluoranthene	0.20 U	0.20	0.11	1	10/10/20 02:51	10/8/20	
Benzo(g,h,i)perylene	0.20 U	0.20	0.15	1	10/10/20 02:51	10/8/20	
Benzo(a)pyrene	0.20 U	0.20	0.12	1	10/10/20 02:51	10/8/20	
Chrysene	0.20 U	0.20	0.089	1	10/10/20 02:51	10/8/20	
Dibenz(a,h)anthracene	0.20 U	0.20	0.14	1	10/10/20 02:51	10/8/20	
Fluoranthene	0.20 U	0.20	0.14	1	10/10/20 02:51	10/8/20	
Fluorene	0.20 U	0.20	0.065	1	10/10/20 02:51	10/8/20	
Indeno(1,2,3-cd)pyrene	0.20 U	0.20	0.11	1	10/10/20 02:51	10/8/20	
Naphthalene	0.20 U	0.20	0.058	1	10/10/20 02:51	10/8/20	
Phenanthrene	0.20 U	0.20	0.10	1	10/10/20 02:51	10/8/20	
Pyrene	0.20 U	0.20	0.11	1	10/10/20 02:51	10/8/20	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	82	27 - 133	10/10/20 02:51	
Nitrobenzene-d5	79	31 - 167	10/10/20 02:51	
p-Terphenyl-d14	70	25 - 151	10/10/20 02:51	

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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** 9-CAT-007-001-05  
**Lab Code:** R2009314-005

**Service Request:** R2009314  
**Date Collected:** 10/06/20 15:00  
**Date Received:** 10/07/20 09:50

**Units:** ug/L  
**Basis:** NA

**Low Level Semivolatile Organic Compounds by GC/MS**

**Analysis Method:** 8270D  
**Prep Method:** EPA 3510C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Acenaphthene	0.20 U	0.20	0.055	1	10/14/20 23:42	10/12/20	
Acenaphthylene	0.20 U	0.20	0.053	1	10/14/20 23:42	10/12/20	
Anthracene	0.20 U	0.20	0.071	1	10/14/20 23:42	10/12/20	
Benz(a)anthracene	0.20 U	0.20	0.13	1	10/14/20 23:42	10/12/20	
Benzo(b)fluoranthene	0.20 U	0.20	0.13	1	10/14/20 23:42	10/12/20	
Benzo(k)fluoranthene	0.20 U	0.20	0.11	1	10/14/20 23:42	10/12/20	
Benzo(g,h,i)perylene	0.20 U	0.20	0.15	1	10/14/20 23:42	10/12/20	
Benzo(a)pyrene	0.20 U	0.20	0.12	1	10/14/20 23:42	10/12/20	
Chrysene	0.20 U	0.20	0.089	1	10/14/20 23:42	10/12/20	
Dibenz(a,h)anthracene	0.20 U	0.20	0.14	1	10/14/20 23:42	10/12/20	
Fluoranthene	0.20 U	0.20	0.14	1	10/14/20 23:42	10/12/20	
Fluorene	0.20 U	0.20	0.065	1	10/14/20 23:42	10/12/20	
Indeno(1,2,3-cd)pyrene	0.20 U	0.20	0.11	1	10/14/20 23:42	10/12/20	
Naphthalene	0.20 U	0.20	0.058	1	10/14/20 23:42	10/12/20	
Phenanthrene	0.20 U	0.20	0.10	1	10/14/20 23:42	10/12/20	
Pyrene	0.20 U	0.20	0.11	1	10/14/20 23:42	10/12/20	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	74	27 - 133	10/14/20 23:42	
Nitrobenzene-d5	77	31 - 167	10/14/20 23:42	
p-Terphenyl-d14	61	25 - 151	10/14/20 23:42	

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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** 9-CAT-007-001-01  
**Lab Code:** R2009314-001

**Service Request:** R2009314  
**Date Collected:** 10/06/20 12:30  
**Date Received:** 10/07/20 09:50

**Units:** ug/L  
**Basis:** NA

1,4-Dioxane by GC/MS

**Analysis Method:** 8270D SIM  
**Prep Method:** EPA 3535A

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
1,4-Dioxane	18	0.040	0.027	1	10/15/20 18:18	10/12/20	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
1,4-Dioxane-d8	102	64 - 124	10/15/20 18:18	

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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** 9-CAT-007-001-02  
**Lab Code:** R2009314-002

**Service Request:** R2009314  
**Date Collected:** 10/06/20 12:35  
**Date Received:** 10/07/20 09:50

**Units:** ug/L  
**Basis:** NA

1,4-Dioxane by GC/MS

**Analysis Method:** 8270D SIM  
**Prep Method:** EPA 3535A

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
1,4-Dioxane	18	0.040	0.027	1	10/15/20 19:13	10/12/20	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
1,4-Dioxane-d8	106	64 - 124	10/15/20 19:13	



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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** 9-CAT-007-001-05  
**Lab Code:** R2009314-005

**Service Request:** R2009314  
**Date Collected:** 10/06/20 15:00  
**Date Received:** 10/07/20 09:50

**Units:** ug/L  
**Basis:** NA

1,4-Dioxane by GC/MS

**Analysis Method:** 8270D SIM  
**Prep Method:** EPA 3535A

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
1,4-Dioxane	31	0.040	0.027	1	10/15/20 19:31	10/12/20	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
1,4-Dioxane-d8	106	64 - 124	10/15/20 19:31	



# Metals

**ALS Environmental—Rochester Laboratory**  
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**METALS**  
 - 1 -  
**INORGANIC ANALYSIS DATA PACKAGE**

<b>Client:</b> Parsons Engineering Science	<b>Service Request:</b> 9-CAT-007-001-01
<b>Project No.:</b> R2009314	<b>Date Collected:</b> 10/6/2020
<b>Project Name:</b>	<b>Date Received:</b> 10/7/2020
<b>Matrix:</b> WATER	<b>Units:</b> ug/L
	<b>Basis:</b>

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<b>Sample Name:</b> 9-CAT-007-001-01	<b>Lab Code:</b> R2009314-001
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Analyte	Analysis Method	PQL	MDL	Dil. Factor	Result	C	Q
Aluminum	6010C	100	23.0	1.0	100	U	
Antimony	6010C	60.0	4.7	1.0	60.0	U	
Arsenic	6010C	10.0	5.5	1.0	9.0	J	
Barium	6010C	20.0	3.0	1.0	161		
Beryllium	6010C	3.0	0.130	1.0	3.0	U	
Boron	6010C	200	12.0	1.0	36.6	J	
Cadmium	6010C	5.0	0.350	1.0	5.0	U	
Mercury	7470A	0.200	0.077	1.0	0.200	U	
Calcium	6010C	1000	220	1.0	90900		
Chromium	6010C	10.0	0.590	1.0	10.0	U	
Cobalt	6010C	50.0	0.890	1.0	4.6	J	
Copper	6010C	20.0	3.9	1.0	20.0	U	
Iron	6010C	100	61.0	1.0	2200		
Lead	6010C	50.0	2.1	1.0	50.0	U	
Magnesium	6010C	1000	29.0	1.0	13200		
Manganese	6010C	10.0	3.7	1.0	6360		
Nickel	6010C	40.0	2.6	1.0	3.1	J	
Potassium	6010C	2000	200	1.0	2010		
Selenium	6010C	10.0	6.4	1.0	10.0	U	
Silver	6010C	10.0	0.570	1.0	10.0	U	
Sodium	6010C	1000	130	1.0	7960		
Thallium	6010C	10.0	6.6	1.0	10.0	U	
Vanadium	6010C	50.0	0.670	1.0	50.0	U	
Zinc	6010C	20.0	9.4	1.0	20.0	U	

% Solids: 0.0

Comments:

**METALS**  
- 1 -  
**INORGANIC ANALYSIS DATA PACKAGE**

Client:	Parsons Engineering Science	Service Request:	9-CAT-007-001-01
Project No.:	R2009314	Date Collected:	10/6/2020
Project Name:		Date Received:	10/7/2020
Matrix:	WATER	Units:	ug/L
		Basis:	

Sample Name: 9-CAT-007-001-02                      Lab Code: R2009314-002

Analyte	Analysis Method	PQL	MDL	Dil. Factor	Result	C	Q
Aluminum	6010C	100	23.0	1.0	100	U	
Antimony	6010C	60.0	4.7	1.0	60.0	U	
Arsenic	6010C	10.0	5.5	1.0	8.6	J	
Barium	6010C	20.0	3.0	1.0	163		
Beryllium	6010C	3.0	0.130	1.0	3.0	U	
Boron	6010C	200	12.0	1.0	36.1	J	
Cadmium	6010C	5.0	0.350	1.0	5.0	U	
Mercury	7470A	0.200	0.077	1.0	0.200	U	
Calcium	6010C	1000	220	1.0	92100		
Chromium	6010C	10.0	0.590	1.0	10.0	U	
Cobalt	6010C	50.0	0.890	1.0	4.6	J	
Copper	6010C	20.0	3.9	1.0	20.0	U	
Iron	6010C	100	61.0	1.0	2230		
Lead	6010C	50.0	2.1	1.0	50.0	U	
Magnesium	6010C	1000	29.0	1.0	13400		
Manganese	6010C	10.0	3.7	1.0	6460		
Nickel	6010C	40.0	2.6	1.0	3.4	J	
Potassium	6010C	2000	200	1.0	2020		
Selenium	6010C	10.0	6.4	1.0	10.0	U	
Silver	6010C	10.0	0.570	1.0	10.0	U	
Sodium	6010C	1000	130	1.0	8050		
Thallium	6010C	10.0	6.6	1.0	10.0	U	
Vanadium	6010C	50.0	0.670	1.0	50.0	U	
Zinc	6010C	20.0	9.4	1.0	20.0	U	

% Solids: 0.0

Comments:

**METALS**  
- 1 -  
**INORGANIC ANALYSIS DATA PACKAGE**

<b>Client:</b>	Parsons Engineering Science	<b>Service Request:</b>	9-CAT-007-001-01
<b>Project No.:</b>	R2009314	<b>Date Collected:</b>	10/6/2020
<b>Project Name:</b>		<b>Date Received:</b>	10/7/2020
<b>Matrix:</b>	WATER	<b>Units:</b>	ug/L
		<b>Basis:</b>	

<b>Sample Name:</b>	9-CAT-007-001-05	<b>Lab Code:</b>	R2009314-005
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Analyte	Analysis Method	PQL	MDL	Dil. Factor	Result	C	Q
Aluminum	6010C	100	23.0	1.0	100	U	
Antimony	6010C	60.0	4.7	1.0	60.0	U	
Arsenic	6010C	10.0	5.5	1.0	10.2		
Barium	6010C	20.0	3.0	1.0	77.0		
Beryllium	6010C	3.0	0.130	1.0	3.0	U	
Boron	6010C	200	12.0	1.0	50.4	J	
Cadmium	6010C	5.0	0.350	1.0	5.0	U	
Mercury	7470A	0.200	0.077	1.0	0.200	U	
Calcium	6010C	1000	220	1.0	79200		
Chromium	6010C	10.0	0.590	1.0	10.0	U	
Cobalt	6010C	50.0	0.890	1.0	6.0	J	
Copper	6010C	20.0	3.9	1.0	20.0	U	
Iron	6010C	100	61.0	1.0	2880		
Lead	6010C	50.0	2.1	1.0	50.0	U	
Magnesium	6010C	1000	29.0	1.0	25100		
Manganese	6010C	100	37.0	10.0	11000		
Nickel	6010C	40.0	2.6	1.0	4.3	J	
Potassium	6010C	2000	200	1.0	2230		
Selenium	6010C	10.0	6.4	1.0	10.0	U	
Silver	6010C	10.0	0.570	1.0	10.0	U	
Sodium	6010C	1000	130	1.0	8700		
Thallium	6010C	10.0	6.6	1.0	10.0	U	
Vanadium	6010C	50.0	0.670	1.0	50.0	U	
Zinc	6010C	20.0	9.4	1.0	20.0	U	

% Solids: 0.0

Comments:



## General Chemistry

**ALS Environmental—Rochester Laboratory**  
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**ALS Group USA, Corp.**  
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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** 9-CAT-007-001-01  
**Lab Code:** R2009314-001

**Service Request:** R2009314  
**Date Collected:** 10/06/20 12:30  
**Date Received:** 10/07/20 09:50

**Basis:** NA

**Inorganic Parameters**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Q</b>
Alkalinity, Total as CaCO3	SM 2320 B-1997(2011)	<b>264</b>	mg/L	2.0	1.8	1	10/16/20 17:33	
Ammonia as Nitrogen, undistilled	350.1	<b>0.664</b>	mg/L	0.050	0.026	1	10/17/20 11:12	
Bromide	300.0	1.0 U	mg/L	1.0	0.4	10	10/15/20 18:10	
Carbon, Total Organic (TOC)	SM 5310 C-2000(2011)	<b>2.4</b>	mg/L	1.0	0.5	1	10/16/20 20:19	
Chemical Oxygen Demand, Total	410.4	5.0 U	mg/L	5.0	3.8	1	10/17/20 07:30	
Chloride	300.0	<b>8.6</b>	mg/L	2.0	0.5	10	10/15/20 18:10	
Hardness, Total as CaCO3	SM 2340 C-1997(2011)	<b>300</b>	mg/L	20	7	1	10/18/20 07:33	
Solids, Total Dissolved (TDS)	SM 2540 C-1997(2011)	<b>338</b>	mg/L	10	9	1	10/11/20 07:50	
Sulfate	300.0	<b>6.9</b>	mg/L	2.0	0.4	10	10/15/20 18:10	



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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** 9-CAT-007-001-02  
**Lab Code:** R2009314-002

**Service Request:** R2009314  
**Date Collected:** 10/06/20 12:35  
**Date Received:** 10/07/20 09:50

**Basis:** NA

**Inorganic Parameters**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Q</b>
Alkalinity, Total as CaCO3	SM 2320 B-1997(2011)	<b>267</b>	mg/L	2.0	1.8	1	10/16/20 17:39	
Ammonia as Nitrogen, undistilled	350.1	<b>0.649</b>	mg/L	0.050	0.026	1	10/17/20 12:00	
Bromide	300.0	1.0 U	mg/L	1.0	0.4	10	10/15/20 18:17	
Carbon, Total Organic (TOC)	SM 5310 C-2000(2011)	<b>2.3</b>	mg/L	1.0	0.5	1	10/16/20 20:40	
Chemical Oxygen Demand, Total	410.4	5.0 U	mg/L	5.0	3.8	1	10/17/20 07:30	
Chloride	300.0	<b>8.7</b>	mg/L	2.0	0.5	10	10/15/20 18:17	
Hardness, Total as CaCO3	SM 2340 C-1997(2011)	<b>335</b>	mg/L	20	7	1	10/18/20 07:33	
Solids, Total Dissolved (TDS)	SM 2540 C-1997(2011)	<b>342</b>	mg/L	10	9	1	10/11/20 07:50	
Sulfate	300.0	<b>6.9</b>	mg/L	2.0	0.4	10	10/15/20 18:17	

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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** 9-CAT-007-001-05  
**Lab Code:** R2009314-005

**Service Request:** R2009314  
**Date Collected:** 10/06/20 15:00  
**Date Received:** 10/07/20 09:50

**Basis:** NA

**Inorganic Parameters**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Q</b>
Alkalinity, Total as CaCO3	SM 2320 B-1997(2011)	<b>295</b>	mg/L	2.0	1.8	1	10/16/20 18:05	
Ammonia as Nitrogen, undistilled	350.1	<b>0.932</b>	mg/L	0.050	0.026	1	10/17/20 12:01	
Bromide	300.0	1.0 U	mg/L	1.0	0.4	10	10/15/20 18:23	
Carbon, Total Organic (TOC)	SM 5310 C-2000(2011)	<b>2.8</b>	mg/L	1.0	0.5	1	10/16/20 21:01	
Chemical Oxygen Demand, Total	410.4	5.0 U	mg/L	5.0	3.8	1	10/17/20 07:30	
Chloride	300.0	<b>7.8</b>	mg/L	2.0	0.5	10	10/15/20 18:23	
Hardness, Total as CaCO3	SM 2340 C-1997(2011)	<b>335</b>	mg/L	20	7	1	10/18/20 07:33	
Solids, Total Dissolved (TDS)	SM 2540 C-1997(2011)	<b>345</b>	mg/L	10	9	1	10/11/20 07:50	
Sulfate	300.0	<b>5.1</b>	mg/L	2.0	0.4	10	10/15/20 18:23	



## QC Summary Forms

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## Volatile Organic Compounds by GC/MS

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**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water

**Service Request:** R2009314

**SURROGATE RECOVERY SUMMARY**  
**Volatile Organic Compounds by GC/MS**

**Analysis Method:** 8260C  
**Extraction Method:** EPA 5030C

Sample Name	Lab Code	4-Bromofluorobenzene	Dibromofluoromethane	Toluene-d8
		85-122	89-119	87-121
9-CAT-007-001-01	R2009314-001	93	93	96
9-CAT-007-001-02	R2009314-002	93	89	94
9-CAT-007-001-05	R2009314-005	92	93	94
9-CAT-007-001-06	R2009314-006	92	92	96
Method Blank	RQ2012514-04	94	93	97
Lab Control Sample	RQ2012514-03	98	97	99
9-CAT-007-001-05 MS	RQ2012514-07	94	97	96
9-CAT-007-001-05 DMS	RQ2012514-08	97	97	97

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water

**Service Request:** R2009314  
**Date Collected:** 10/06/20  
**Date Received:** 10/07/20  
**Date Analyzed:** 10/17/20  
**Date Extracted:** NA

**Duplicate Matrix Spike Summary**  
**Volatile Organic Compounds by GC/MS**

**Sample Name:** 9-CAT-007-001-05  
**Lab Code:** R2009314-005  
**Analysis Method:** 8260C  
**Prep Method:** EPA 5030C

**Units:** ug/L  
**Basis:** NA

Analyte Name	Matrix Spike RQ2012514-07				Duplicate Matrix Spike RQ2012514-08				% Rec Limits	RPD	RPD Limit
	Sample Result	Result	Spike Amount	% Rec	Result	Spike Amount	% Rec				
1,1,1,2-Tetrachloroethane	1.0 U	48.7	50.0	97	49.2	50.0	98	68-146	1	30	
1,1,1-Trichloroethane (TCA)	1.0 U	42.8	50.0	86	42.1	50.0	84	74-127	2	30	
1,1,2,2-Tetrachloroethane	1.0 U	52.8	50.0	106	52.2	50.0	104	72-122	1	30	
1,1,2-Trichloroethane	1.0 U	43.6	50.0	87	43.8	50.0	88	82-121	<1	30	
1,1-Dichloroethane (1,1-DCA)	13	56.4	50.0	88	56.4	50.0	88	74-132	<1	30	
1,1-Dichloroethene (1,1-DCE)	0.35 J	50.4	50.0	100	49.2	50.0	98	71-118	2	30	
1,2,3-Trichloropropane	1.0 U	39.2	50.0	78	39.6	50.0	79	75-122	<1	30	
1,2-Dibromo-3-chloropropane (DBCP)	2.0 U	48.3	50.0	97	50.1	50.0	100	37-150	4	30	
1,2-Dibromoethane	1.0 U	43.3	50.0	87	44.1	50.0	88	67-127	2	30	
1,2-Dichlorobenzene	1.0 U	43.0	50.0	86	42.9	50.0	86	77-120	<1	30	
1,2-Dichloroethane	0.30 J	39.0	50.0	77	38.9	50.0	77	68-130	<1	30	
1,2-Dichloropropane	1.0 U	44.8	50.0	90	45.1	50.0	90	79-124	<1	30	
1,4-Dichlorobenzene	0.27 J	42.0	50.0	83	41.7	50.0	83	82-120	<1	30	
2-Butanone (MEK)	5.0 U	41.6	50.0	83	43.4	50.0	87	61-137	4	30	
2-Hexanone	5.0 U	46.2	50.0	92	47.3	50.0	95	56-132	2	30	
4-Methyl-2-pentanone	5.0 U	45.0	50.0	90	44.6	50.0	89	60-141	<1	30	
Acetone	5.0 U	43.1	50.0	86	43.2	50.0	86	35-183	<1	30	
Acrylonitrile	10 U	224	250	89	225	250	90	69-131	<1	30	
Benzene	1.6	47.0	50.0	91	46.6	50.0	90	76-129	<1	30	
Bromochloromethane	1.0 U	40.8	50.0	82	40.5	50.0	81	80-122	<1	30	
Bromodichloromethane	1.0 U	41.2	50.0	82	40.7	50.0	81	78-133	1	30	
Bromoform	1.0 U	48.6	50.0	97	48.7	50.0	97	58-133	<1	30	
Bromomethane	1.0 U	30.6	50.0	61	30.4	50.0	61	10-184	<1	30	
Carbon Disulfide	1.0 U	44.9	50.0	90	44.3	50.0	89	59-140	1	30	
Carbon Tetrachloride	1.0 U	44.3	50.0	89	43.9	50.0	88	65-135	1	30	
Chlorobenzene	1.2	45.0	50.0	88	45.3	50.0	88	76-125	<1	30	
Chloroethane	0.94 J	35.8	50.0	70	36.2	50.0	71	48-146	1	30	
Chloroform	1.0 U	43.7	50.0	87	42.3	50.0	85	75-130	3	30	
Chloromethane	1.0 U	47.4	50.0	95	45.9	50.0	92	55-160	3	30	
Dibromochloromethane	1.0 U	47.8	50.0	96	47.3	50.0	95	72-128	1	30	
Dibromomethane	1.0 U	43.0	50.0	86	42.9	50.0	86	77-119	<1	30	
Methylene Chloride	1.0 U	41.3	50.0	83	41.6	50.0	83	73-122	<1	30	
Ethylbenzene	1.0 U	44.7	50.0	89	44.2	50.0	88	72-134	1	30	

Results flagged with an asterisk (\*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Matrix Spike and Matrix Spike Duplicate Data is presented for information purposes only. The matrix may or may not be relevant to samples reported in this report. The laboratory evaluates system performance based on the LCS and LCSD control limits.

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water

**Service Request:** R2009314  
**Date Collected:** 10/06/20  
**Date Received:** 10/07/20  
**Date Analyzed:** 10/17/20  
**Date Extracted:** NA

**Duplicate Matrix Spike Summary**  
**Volatile Organic Compounds by GC/MS**

**Sample Name:** 9-CAT-007-001-05  
**Lab Code:** R2009314-005  
**Analysis Method:** 8260C  
**Prep Method:** EPA 5030C

**Units:** ug/L  
**Basis:** NA

Analyte Name	Sample Result	Matrix Spike RQ2012514-07			Duplicate Matrix Spike RQ2012514-08			% Rec Limits	RPD	RPD Limit
		Result	Spike Amount	% Rec	Result	Spike Amount	% Rec			
Iodomethane	5.0 U	50.2	50.0	100	47.9	50.0	96	18-160	5	30
Styrene	1.0 U	46.0	50.0	92	46.1	50.0	92	74-136	<1	30
Tetrachloroethene (PCE)	1.0 U	43.7	50.0	87	44.1	50.0	88	72-125	<1	30
Toluene	1.0 U	45.7	50.0	91	45.3	50.0	91	79-119	<1	30
Trichloroethene (TCE)	1.1	39.4	50.0	77	39.6	50.0	77	74-122	<1	30
Trichlorofluoromethane (CFC 11)	1.0 U	41.2	50.0	82	41.8	50.0	84	71-136	2	30
Vinyl Acetate	2.0 U	37.4	50.0	75	35.3	50.0	71	48-172	6	30
Vinyl Chloride	7.2	44.4	50.0	74	45.0	50.0	75	74-159	1	30
cis-1,2-Dichloroethene	37	83.3	50.0	92	83.7	50.0	93	77-127	<1	30
cis-1,3-Dichloropropene	1.0 U	42.8	50.0	86	42.4	50.0	85	52-134	1	30
m,p-Xylenes	2.0 U	93.0	100	93	91.8	100	92	80-126	1	30
o-Xylene	1.0 U	45.9	50.0	92	45.8	50.0	92	79-123	<1	30
trans-1,2-Dichloroethene	0.81 J	50.0	50.0	98	50.9	50.0	100	73-118	2	30
trans-1,3-Dichloropropene	1.0 U	42.4	50.0	85	41.5	50.0	83	71-133	2	30
trans-1,4-Dichloro-2-butene	1.0 U	40.2	50.0	80	41.7	50.0	83	27-155	4	30

Results flagged with an asterisk (\*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Matrix Spike and Matrix Spike Duplicate Data is presented for information purposes only. The matrix may or may not be relevant to samples reported in this report. The laboratory evaluates system performance based on the LCS and LCSD control limits.

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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** Method Blank  
**Lab Code:** RQ2012514-04

**Service Request:** R2009314  
**Date Collected:** NA  
**Date Received:** NA

**Units:** ug/L  
**Basis:** NA

Volatile Organic Compounds by GC/MS

**Analysis Method:** 8260C  
**Prep Method:** EPA 5030C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Q
1,1,1,2-Tetrachloroethane	1.0 U	1.0	0.20	1	10/16/20 22:54	
1,1,1-Trichloroethane (TCA)	1.0 U	1.0	0.20	1	10/16/20 22:54	
1,1,2,2-Tetrachloroethane	1.0 U	1.0	0.20	1	10/16/20 22:54	
1,1,2-Trichloroethane	1.0 U	1.0	0.20	1	10/16/20 22:54	
1,1-Dichloroethane (1,1-DCA)	1.0 U	1.0	0.20	1	10/16/20 22:54	
1,1-Dichloroethene (1,1-DCE)	1.0 U	1.0	0.20	1	10/16/20 22:54	
1,2,3-Trichloropropane	1.0 U	1.0	0.26	1	10/16/20 22:54	
1,2-Dibromo-3-chloropropane (DBCP)	2.0 U	2.0	0.45	1	10/16/20 22:54	
1,2-Dibromoethane	1.0 U	1.0	0.20	1	10/16/20 22:54	
1,2-Dichlorobenzene	1.0 U	1.0	0.20	1	10/16/20 22:54	
1,2-Dichloroethane	1.0 U	1.0	0.20	1	10/16/20 22:54	
1,2-Dichloropropane	1.0 U	1.0	0.20	1	10/16/20 22:54	
1,4-Dichlorobenzene	1.0 U	1.0	0.20	1	10/16/20 22:54	
2-Butanone (MEK)	2.0 J	5.0	0.78	1	10/16/20 22:54	
2-Hexanone	5.0 U	5.0	0.20	1	10/16/20 22:54	
4-Methyl-2-pentanone	5.0 U	5.0	0.20	1	10/16/20 22:54	
Acetone	5.0 U	5.0	5.0	1	10/16/20 22:54	
Acrylonitrile	10 U	10	0.90	1	10/16/20 22:54	
Benzene	1.0 U	1.0	0.20	1	10/16/20 22:54	
Bromochloromethane	1.0 U	1.0	0.20	1	10/16/20 22:54	
Bromodichloromethane	1.0 U	1.0	0.20	1	10/16/20 22:54	
Bromoform	1.0 U	1.0	0.25	1	10/16/20 22:54	
Bromomethane	1.0 U	1.0	0.70	1	10/16/20 22:54	
Carbon Disulfide	1.0 U	1.0	0.42	1	10/16/20 22:54	
Carbon Tetrachloride	1.0 U	1.0	0.34	1	10/16/20 22:54	
Chlorobenzene	1.0 U	1.0	0.20	1	10/16/20 22:54	
Chloroethane	1.0 U	1.0	0.23	1	10/16/20 22:54	
Chloroform	1.0 U	1.0	0.24	1	10/16/20 22:54	
Chloromethane	1.5	1.0	0.28	1	10/16/20 22:54	
Dibromochloromethane	1.0 U	1.0	0.20	1	10/16/20 22:54	
Dibromomethane	1.0 U	1.0	0.20	1	10/16/20 22:54	
Methylene Chloride	1.0 U	1.0	0.65	1	10/16/20 22:54	
Ethylbenzene	1.0 U	1.0	0.20	1	10/16/20 22:54	
Iodomethane	5.0 U	5.0	4.3	1	10/16/20 22:54	
Styrene	1.0 U	1.0	0.20	1	10/16/20 22:54	
Tetrachloroethene (PCE)	1.0 U	1.0	0.21	1	10/16/20 22:54	
Toluene	1.0 U	1.0	0.20	1	10/16/20 22:54	
Trichloroethene (TCE)	1.0 U	1.0	0.20	1	10/16/20 22:54	
Trichlorofluoromethane (CFC 11)	1.0 U	1.0	0.24	1	10/16/20 22:54	
Vinyl Acetate	2.0 U	2.0	1.1	1	10/16/20 22:54	
Vinyl Chloride	1.0 U	1.0	0.20	1	10/16/20 22:54	
Xylenes, Total	3.0 U	3.0	0.23	1	10/16/20 22:54	
cis-1,2-Dichloroethene	1.0 U	1.0	0.23	1	10/16/20 22:54	



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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** Method Blank  
**Lab Code:** RQ2012514-04

**Service Request:** R2009314  
**Date Collected:** NA  
**Date Received:** NA  
**Units:** ug/L  
**Basis:** NA

**Volatile Organic Compounds by GC/MS**

**Analysis Method:** 8260C  
**Prep Method:** EPA 5030C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Q
cis-1,3-Dichloropropene	1.0 U	1.0	0.20	1	10/16/20 22:54	
m,p-Xylenes	2.0 U	2.0	0.20	1	10/16/20 22:54	
o-Xylene	1.0 U	1.0	0.20	1	10/16/20 22:54	
trans-1,2-Dichloroethene	1.0 U	1.0	0.20	1	10/16/20 22:54	
trans-1,3-Dichloropropene	1.0 U	1.0	0.23	1	10/16/20 22:54	
trans-1,4-Dichloro-2-butene	1.0 U	1.0	0.78	1	10/16/20 22:54	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	94	85 - 122	10/16/20 22:54	
Dibromofluoromethane	93	89 - 119	10/16/20 22:54	
Toluene-d8	97	87 - 121	10/16/20 22:54	

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QA/QC Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water

**Service Request:** R2009314  
**Date Analyzed:** 10/16/20

**Lab Control Sample Summary**  
**Volatile Organic Compounds by GC/MS**

**Units:**ug/L  
**Basis:**NA

**Lab Control Sample**  
RQ2012514-03

Analyte Name	Analytical Method	Result	Spike Amount	% Rec	% Rec Limits
1,1,1,2-Tetrachloroethane	8260C	21.3	20.0	106	76-129
1,1,1-Trichloroethane (TCA)	8260C	19.2	20.0	96	75-125
1,1,2,2-Tetrachloroethane	8260C	24.8	20.0	124	78-126
1,1,2-Trichloroethane	8260C	20.2	20.0	101	82-121
1,1-Dichloroethane (1,1-DCA)	8260C	19.7	20.0	99	80-124
1,1-Dichloroethene (1,1-DCE)	8260C	21.3	20.0	106	71-118
1,2,3-Trichloropropane	8260C	18.7	20.0	94	75-118
1,2-Dibromo-3-chloropropane (DBCP)	8260C	23.7	20.0	119	55-136
1,2-Dibromoethane	8260C	20.6	20.0	103	82-127
1,2-Dichlorobenzene	8260C	19.2	20.0	96	80-119
1,2-Dichloroethane	8260C	17.2	20.0	86	71-127
1,2-Dichloropropane	8260C	20.3	20.0	102	80-119
1,4-Dichlorobenzene	8260C	18.8	20.0	94	79-119
2-Butanone (MEK)	8260C	19.9	20.0	100	61-137
2-Hexanone	8260C	22.7	20.0	114	63-124
4-Methyl-2-pentanone	8260C	21.6	20.0	108	66-124
Acetone	8260C	17.4	20.0	87	40-161
Acrylonitrile	8260C	109	100	109	71-130
Benzene	8260C	19.8	20.0	99	79-119
Bromochloromethane	8260C	18.4	20.0	92	81-126
Bromodichloromethane	8260C	18.1	20.0	91	81-123
Bromoform	8260C	21.4	20.0	107	65-146
Bromomethane	8260C	15.4	20.0	77	42-166
Carbon Disulfide	8260C	20.3	20.0	102	66-128
Carbon Tetrachloride	8260C	18.6	20.0	93	70-127
Chlorobenzene	8260C	19.2	20.0	96	80-121
Chloroethane	8260C	16.6	20.0	83	62-131
Chloroform	8260C	20.0	20.0	100	79-120
Chloromethane	8260C	20.8	20.0	104	65-135
Dibromochloromethane	8260C	21.8	20.0	109	72-128
Dibromomethane	8260C	19.5	20.0	98	80-118
Methylene Chloride	8260C	19.2	20.0	96	73-122
Ethylbenzene	8260C	19.2	20.0	96	76-120

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QA/QC Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water

**Service Request:** R2009314  
**Date Analyzed:** 10/16/20

**Lab Control Sample Summary**  
**Volatile Organic Compounds by GC/MS**

**Units:**ug/L  
**Basis:**NA

**Lab Control Sample**  
RQ2012514-03

<b>Analyte Name</b>	<b>Analytical Method</b>	<b>Result</b>	<b>Spike Amount</b>	<b>% Rec</b>	<b>% Rec Limits</b>
Iodomethane	8260C	14.9	20.0	74	18-160
Styrene	8260C	20.2	20.0	101	80-124
Tetrachloroethene (PCE)	8260C	19.7	20.0	98	72-125
Toluene	8260C	19.9	20.0	99	79-119
Trichloroethene (TCE)	8260C	17.1	20.0	85	74-122
Trichlorofluoromethane (CFC 11)	8260C	18.8	20.0	94	71-136
Vinyl Acetate	8260C	22.9	20.0	114	52-174
Vinyl Chloride	8260C	17.1	20.0	85	74-159
cis-1,2-Dichloroethene	8260C	19.7	20.0	99	80-121
cis-1,3-Dichloropropene	8260C	19.4	20.0	97	77-122
m,p-Xylenes	8260C	40.7	40.0	102	80-126
o-Xylene	8260C	20.8	20.0	104	79-123
trans-1,2-Dichloroethene	8260C	21.1	20.0	106	73-118
trans-1,3-Dichloropropene	8260C	19.6	20.0	98	71-133
trans-1,4-Dichloro-2-butene	8260C	20.7	20.0	104	39-137



## Semivolatile Organic Compounds by GC/MS

**ALS Environmental—Rochester Laboratory**  
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623  
Phone (585) 288-5380 Fax (585) 288-8475  
[www.alsglobal.com](http://www.alsglobal.com)

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water

**Service Request:** R2009314

**SURROGATE RECOVERY SUMMARY**  
**Low Level Semivolatile Organic Compounds by GC/MS**

**Analysis Method:** 8270D  
**Extraction Method:** EPA 3510C

Sample Name	Lab Code	2-Fluorobiphenyl	Nitrobenzene-d5	p-Terphenyl-d14
		27-133	31-167	25-151
9-CAT-007-001-01	R2009314-001	82	84	73
9-CAT-007-001-02	R2009314-002	82	79	70
9-CAT-007-001-05	R2009314-005	74	77	61
Method Blank	RQ2012026-05	69	80	72
Method Blank	RQ2012202-03	70	78	65
Lab Control Sample	RQ2012026-06	88	82	71
Duplicate Lab Control Sample	RQ2012026-07	81	77	71
Lab Control Sample	RQ2012202-04	85	84	72
Duplicate Lab Control Sample	RQ2012202-05	82	80	70
9-CAT-007-001-05 MS	RQ2012202-01	79	74	58
9-CAT-007-001-05 DMS	RQ2012202-02	80	76	55

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water

**Service Request:** R2009314  
**Date Collected:** 10/06/20  
**Date Received:** 10/07/20  
**Date Analyzed:** 10/15/20  
**Date Extracted:** 10/12/20

**Duplicate Matrix Spike Summary**  
**Low Level Semivolatile Organic Compounds by GC/MS**

**Sample Name:** 9-CAT-007-001-05  
**Lab Code:** R2009314-005  
**Analysis Method:** 8270D  
**Prep Method:** EPA 3510C

**Units:** ug/L  
**Basis:** NA

Analyte Name	Sample Result	Result	Matrix Spike RQ2012202-01		Duplicate Matrix Spike RQ2012202-02		% Rec Limits	RPD	RPD Limit	
			Spike Amount	% Rec	Result	Spike Amount				% Rec
Acenaphthene	0.21 U	4.86	6.25	78	4.56	5.94	77	24-158	6	30
Acenaphthylene	0.21 U	5.10	6.25	82	4.91	5.94	83	41-140	4	30
Anthracene	0.21 U	5.45	6.25	87	5.26	5.94	89	27-150	4	30
Benz(a)anthracene	0.21 U	3.83	6.25	61	3.59	5.94	60	36-140	7	30
Benzo(b)fluoranthene	0.21 U	3.03	6.25	48	2.86	5.94	48	30-151	6	30
Benzo(k)fluoranthene	0.21 U	2.75	6.25	44	2.50	5.94	42	18-145	9	30
Benzo(g,h,i)perylene	0.21 U	2.53	6.25	40	2.35	5.94	40	10-174	7	30
Benzo(a)pyrene	0.21 U	3.43	6.25	55	3.20	5.94	54	10-154	7	30
Chrysene	0.21 U	3.65	6.25	58	3.34	5.94	56	39-141	9	30
Dibenz(a,h)anthracene	0.21 U	1.86	6.25	30	1.71	5.94	29	10-173	9	30
Fluoranthene	0.21 U	5.33	6.25	85	4.95	5.94	83	45-154	7	30
Fluorene	0.21 U	5.29	6.25	85	4.93	5.94	83	33-152	7	30
Indeno(1,2,3-cd)pyrene	0.21 U	2.37	6.25	38	2.16	5.94	36	10-167	9	30
Naphthalene	0.21 U	4.43	6.25	71	4.18	5.94	70	30-133	6	30
Phenanthrene	0.21 U	5.23	6.25	84	4.90	5.94	82	29-170	7	30
Pyrene	0.21 U	5.85	6.25	94	5.27	5.94	89	40-166	11	30

Results flagged with an asterisk (\*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Matrix Spike and Matrix Spike Duplicate Data is presented for information purposes only. The matrix may or may not be relevant to samples reported in this report. The laboratory evaluates system performance based on the LCS and LCSD control limits.

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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water

**Service Request:** R2009314  
**Date Collected:** NA  
**Date Received:** NA

**Sample Name:** Method Blank  
**Lab Code:** RQ2012026-05

**Units:** ug/L  
**Basis:** NA

**Low Level Semivolatile Organic Compounds by GC/MS**

**Analysis Method:** 8270D  
**Prep Method:** EPA 3510C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Acenaphthene	0.20 U	0.20	0.055	1	10/09/20 20:38	10/8/20	
Acenaphthylene	0.20 U	0.20	0.053	1	10/09/20 20:38	10/8/20	
Anthracene	0.20 U	0.20	0.071	1	10/09/20 20:38	10/8/20	
Benz(a)anthracene	0.20 U	0.20	0.13	1	10/09/20 20:38	10/8/20	
Benzo(b)fluoranthene	0.20 U	0.20	0.13	1	10/09/20 20:38	10/8/20	
Benzo(k)fluoranthene	0.20 U	0.20	0.11	1	10/09/20 20:38	10/8/20	
Benzo(g,h,i)perylene	0.20 U	0.20	0.15	1	10/09/20 20:38	10/8/20	
Benzo(a)pyrene	0.20 U	0.20	0.12	1	10/09/20 20:38	10/8/20	
Chrysene	0.20 U	0.20	0.089	1	10/09/20 20:38	10/8/20	
Dibenz(a,h)anthracene	0.20 U	0.20	0.14	1	10/09/20 20:38	10/8/20	
Fluoranthene	0.20 U	0.20	0.14	1	10/09/20 20:38	10/8/20	
Fluorene	0.20 U	0.20	0.065	1	10/09/20 20:38	10/8/20	
Indeno(1,2,3-cd)pyrene	0.20 U	0.20	0.11	1	10/09/20 20:38	10/8/20	
Naphthalene	<b>0.071 J</b>	0.20	0.058	1	10/09/20 20:38	10/8/20	
Phenanthrene	0.20 U	0.20	0.10	1	10/09/20 20:38	10/8/20	
Pyrene	0.20 U	0.20	0.11	1	10/09/20 20:38	10/8/20	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	69	27 - 133	10/09/20 20:38	
Nitrobenzene-d5	80	31 - 167	10/09/20 20:38	
p-Terphenyl-d14	72	25 - 151	10/09/20 20:38	

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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** Method Blank  
**Lab Code:** RQ2012202-03

**Service Request:** R2009314  
**Date Collected:** NA  
**Date Received:** NA  
**Units:** ug/L  
**Basis:** NA

**Low Level Semivolatile Organic Compounds by GC/MS**

**Analysis Method:** 8270D  
**Prep Method:** EPA 3510C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Acenaphthene	0.20 U	0.20	0.055	1	10/14/20 17:26	10/12/20	
Acenaphthylene	0.20 U	0.20	0.053	1	10/14/20 17:26	10/12/20	
Anthracene	0.20 U	0.20	0.071	1	10/14/20 17:26	10/12/20	
Benz(a)anthracene	0.20 U	0.20	0.13	1	10/14/20 17:26	10/12/20	
Benzo(b)fluoranthene	0.20 U	0.20	0.13	1	10/14/20 17:26	10/12/20	
Benzo(k)fluoranthene	0.20 U	0.20	0.11	1	10/14/20 17:26	10/12/20	
Benzo(g,h,i)perylene	0.20 U	0.20	0.15	1	10/14/20 17:26	10/12/20	
Benzo(a)pyrene	0.20 U	0.20	0.12	1	10/14/20 17:26	10/12/20	
Chrysene	0.20 U	0.20	0.089	1	10/14/20 17:26	10/12/20	
Dibenz(a,h)anthracene	0.20 U	0.20	0.14	1	10/14/20 17:26	10/12/20	
Fluoranthene	0.20 U	0.20	0.14	1	10/14/20 17:26	10/12/20	
Fluorene	0.20 U	0.20	0.065	1	10/14/20 17:26	10/12/20	
Indeno(1,2,3-cd)pyrene	0.20 U	0.20	0.11	1	10/14/20 17:26	10/12/20	
Naphthalene	0.20 U	0.20	0.058	1	10/14/20 17:26	10/12/20	
Phenanthrene	0.20 U	0.20	0.10	1	10/14/20 17:26	10/12/20	
Pyrene	0.20 U	0.20	0.11	1	10/14/20 17:26	10/12/20	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	70	27 - 133	10/14/20 17:26	
Nitrobenzene-d5	78	31 - 167	10/14/20 17:26	
p-Terphenyl-d14	65	25 - 151	10/14/20 17:26	



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QA/QC Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water

**Service Request:** R2009314  
**Date Analyzed:** 10/09/20

**Duplicate Lab Control Sample Summary**  
**Low Level Semivolatile Organic Compounds by GC/MS**

**Units:**ug/L  
**Basis:**NA

Analyte Name	Lab Control Sample RQ2012026-06				Duplicate Lab Control Sample RQ2012026-07				RPD	RPD Limit
	Analytical Method	Result	Spike Amount	% Rec	Result	Spike Amount	% Rec	% Rec Limits		
Acenaphthene	8270D	5.26	6.00	88	5.01	6.00	84	48-118	5	30
Acenaphthylene	8270D	5.61	6.00	93	5.29	6.00	88	48-121	6	30
Anthracene	8270D	5.92	6.00	99	5.89	6.00	98	52-124	<1	30
Benz(a)anthracene	8270D	5.01	6.00	83	4.97	6.00	83	54-120	<1	30
Benzo(b)fluoranthene	8270D	4.78	6.00	80	4.69	6.00	78	57-117	2	30
Benzo(k)fluoranthene	8270D	5.00	6.00	83	4.90	6.00	82	59-123	2	30
Benzo(g,h,i)perylene	8270D	3.95	6.00	66	3.77	6.00	63	47-154	5	30
Benzo(a)pyrene	8270D	5.80	6.00	97	5.67	6.00	94	57-124	2	30
Chrysene	8270D	5.61	6.00	94	5.53	6.00	92	58-124	2	30
Dibenz(a,h)anthracene	8270D	4.14	6.00	69	3.91	6.00	65	43-147	6	30
Fluoranthene	8270D	5.87	6.00	98	5.90	6.00	98	50-117	<1	30
Fluorene	8270D	5.79	6.00	96	5.52	6.00	92	47-107	5	30
Indeno(1,2,3-cd)pyrene	8270D	3.62	6.00	60	3.53	6.00	59	55-129	3	30
Naphthalene	8270D	4.65	6.00	77	4.43	6.00	74	37-114	5	30
Phenanthrene	8270D	5.57	6.00	93	5.46	6.00	91	54-116	2	30
Pyrene	8270D	6.18	6.00	103	6.10	6.00	102	56-123	1	30

ALS Group USA, Corp.  
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QA/QC Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water

**Service Request:** R2009314  
**Date Analyzed:** 10/14/20

**Duplicate Lab Control Sample Summary**  
**Low Level Semivolatile Organic Compounds by GC/MS**

**Units:**ug/L  
**Basis:**NA

Analyte Name	Lab Control Sample RQ2012202-04				Duplicate Lab Control Sample RQ2012202-05				RPD	RPD Limit
	Analytical Method	Result	Spike Amount	% Rec	Result	Spike Amount	% Rec	% Rec Limits		
Acenaphthene	8270D	4.95	6.00	82	4.85	6.00	81	48-118	2	30
Acenaphthylene	8270D	5.21	6.00	87	5.12	6.00	85	48-121	2	30
Anthracene	8270D	5.57	6.00	93	5.36	6.00	89	52-124	4	30
Benz(a)anthracene	8270D	4.70	6.00	78	4.64	6.00	77	54-120	1	30
Benzo(b)fluoranthene	8270D	4.78	6.00	80	4.44	6.00	74	57-117	7	30
Benzo(k)fluoranthene	8270D	4.79	6.00	80	4.60	6.00	77	59-123	4	30
Benzo(g,h,i)perylene	8270D	4.18	6.00	70	3.94	6.00	66	47-154	6	30
Benzo(a)pyrene	8270D	5.68	6.00	95	5.39	6.00	90	57-124	5	30
Chrysene	8270D	5.07	6.00	85	4.98	6.00	83	58-124	2	30
Dibenz(a,h)anthracene	8270D	3.28	6.00	55	3.12	6.00	52	43-147	5	30
Fluoranthene	8270D	5.59	6.00	93	5.53	6.00	92	50-117	1	30
Fluorene	8270D	5.24	6.00	87	5.06	6.00	84	47-107	4	30
Indeno(1,2,3-cd)pyrene	8270D	3.93	6.00	66	3.71	6.00	62	55-129	6	30
Naphthalene	8270D	4.46	6.00	74	4.40	6.00	73	37-114	1	30
Phenanthrene	8270D	5.26	6.00	88	5.21	6.00	87	54-116	<1	30
Pyrene	8270D	5.83	6.00	97	5.80	6.00	97	56-123	<1	30

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water

**Service Request:** R2009314

**SURROGATE RECOVERY SUMMARY**  
**1,4-Dioxane by GC/MS**

**Analysis Method:** 8270D SIM  
**Extraction Method:** EPA 3535A

Sample Name	Lab Code	1,4-Dioxane-d8
		64-124
9-CAT-007-001-01	R2009314-001	102
9-CAT-007-001-02	R2009314-002	106
9-CAT-007-001-05	R2009314-005	106
Method Blank	RQ2012219-01	118
Lab Control Sample	RQ2012219-02	104
Duplicate Lab Control Sample	RQ2012219-03	94
9-CAT-007-001-01 MS	RQ2012219-04	102
9-CAT-007-001-01 DMS	RQ2012219-05	106
9-CAT-007-001-05 MS	RQ2012219-06	108
9-CAT-007-001-05 DMS	RQ2012219-07	107

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QA/QC Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water

**Service Request:** R2009314  
**Date Collected:** 10/06/20  
**Date Received:** 10/07/20  
**Date Analyzed:** 10/15/20  
**Date Extracted:** 10/12/20

**Duplicate Matrix Spike Summary**  
**1,4-Dioxane by GC/MS**

**Sample Name:** 9-CAT-007-001-01  
**Lab Code:** R2009314-001  
**Analysis Method:** 8270D SIM  
**Prep Method:** EPA 3535A

**Units:** ug/L  
**Basis:** NA

Analyte Name	Sample Result	Result	Matrix Spike RQ2012219-04		Duplicate Matrix Spike RQ2012219-05		% Rec Limits	RPD	RPD Limit	
			Spike Amount	% Rec	Result	Spike Amount				% Rec
1,4-Dioxane	18	27.8	10.0	102	28.7	10.0	110	33-146	3	30

Results flagged with an asterisk (\*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Matrix Spike and Matrix Spike Duplicate Data is presented for information purposes only. The matrix may or may not be relevant to samples reported in this report. The laboratory evaluates system performance based on the LCS and LCSD control limits.

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QA/QC Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water

**Service Request:** R2009314  
**Date Collected:** 10/06/20  
**Date Received:** 10/07/20  
**Date Analyzed:** 10/15/20  
**Date Extracted:** 10/12/20

**Duplicate Matrix Spike Summary**  
**1,4-Dioxane by GC/MS**

**Sample Name:** 9-CAT-007-001-05  
**Lab Code:** R2009314-005  
**Analysis Method:** 8270D SIM  
**Prep Method:** EPA 3535A

**Units:** ug/L  
**Basis:** NA

Analyte Name	Sample Result	Result	Matrix Spike RQ2012219-06		Duplicate Matrix Spike RQ2012219-07		% Rec Limits	RPD	RPD Limit	
			Spike Amount	% Rec	Result	Spike Amount				% Rec
1,4-Dioxane	31	40.8	10.0	102	40.8	10.0	102	33-146	<1	30

Results flagged with an asterisk (\*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Matrix Spike and Matrix Spike Duplicate Data is presented for information purposes only. The matrix may or may not be relevant to samples reported in this report. The laboratory evaluates system performance based on the LCS and LCSD control limits.

ALS Group USA, Corp.  
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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** Method Blank  
**Lab Code:** RQ2012219-01

**Service Request:** R2009314  
**Date Collected:** NA  
**Date Received:** NA  
**Units:** ug/L  
**Basis:** NA

1,4-Dioxane by GC/MS

**Analysis Method:** 8270D SIM  
**Prep Method:** EPA 3535A

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
1,4-Dioxane	0.040 U	0.040	0.027	1	10/15/20 14:24	10/12/20	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
1,4-Dioxane-d8	118	64 - 124	10/15/20 14:24	

ALS Group USA, Corp.  
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QA/QC Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water

**Service Request:** R2009314  
**Date Analyzed:** 10/15/20

**Duplicate Lab Control Sample Summary**  
**1,4-Dioxane by GC/MS**

**Units:**ug/L  
**Basis:**NA

Analyte Name	Analytical Method	Result	Lab Control Sample		Duplicate Lab Control Sample		% Rec Limits	RPD	RPD Limit	
			Spike Amount	% Rec	Result	Spike Amount				% Rec
1,4-Dioxane	8270D SIM	10.2	10.0	102	10.1	10.0	101	58-124	<1	30



# Metals

**ALS Environmental—Rochester Laboratory**  
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METALS

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BLANKS

Contract: R2009314

Lab Code: \_\_\_\_\_ Case No.: \_\_\_\_\_ SAS No.: \_\_\_\_\_ SDG NO.: 9-CAT-007-00

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L, ppt, or mg/kg): UG/L

Analyte	Initial Calib. Blank ug/L	Continuing Calibration Blank ug/L						Preparation Blank		M
		1	C	2	C	3	C	C		
Aluminum	23.00 U	23.00	U	23.00	U	23.00	U	23.00	U	P
Antimony	4.70 U	4.70	U	4.70	U	4.70	U	4.700	U	P
Arsenic	5.50 U	5.50	U	5.50	U	5.50	U	5.500	U	P
Barium	3.00 U	3.00	U	3.00	U	3.00	U	3.000	U	P
Beryllium	0.13 U	0.13	U	0.13	U	0.13	U	0.130	U	P
Boron	27.50 J	29.70	J	29.50	J	27.70	J	12.000	U	P
Cadmium	0.35 U	0.35	U	0.35	U	0.35	U	0.350	U	P
Mercury	0.077 U	0.077	U	0.077	U	0.077	U	0.077	U	CV
Calcium	220.00 U	220.00	U	220.00	U	220.00	U	220.000	U	P
Chromium	0.59 U	0.59	U	0.59	U	0.59	U	0.590	U	P
Cobalt	0.89 U	0.89	U	0.89	U	0.89	U	0.890	U	P
Copper	3.90 U	3.90	U	3.90	U	3.90	U	3.900	U	P
Iron	61.00 U	61.00	U	61.00	U	61.00	U	61.000	U	P
Lead	2.10 U	2.10	U	2.10	U	2.10	U	2.100	U	P
Magnesium	29.00 U	29.00	U	29.00	U	29.00	U	29.000	U	P
Manganese	3.70 U	3.70	U	3.70	U	3.70	U	3.700	U	P
Nickel	2.60 U	2.60	U	2.60	U	2.60	U	2.600	U	P
Potassium	200.00 U	405.60	J	200.00	U	200.00	U	200.000	U	P
Selenium	6.40 U	6.40	U	6.40	U	6.40	U	6.400	U	P
Silver	0.57 U	-0.60	J	-0.60	J	-0.60	J	0.570	U	P
Thallium	6.60 U	6.60	U	6.60	U	6.60	U	6.600	U	P
Vanadium	0.67 U	0.67	U	0.67	U	0.67	U	0.670	U	P
Zinc	9.40 U	9.40	U	9.40	U	9.40	U	9.400	U	P

Comments:

METALS

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BLANKS

Contract: R2009314

Lab Code: \_\_\_\_\_ Case No.: \_\_\_\_\_ SAS No.: \_\_\_\_\_ SDG NO.: 9-CAT-007-00

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L, ppt, or mg/kg): UG/L

Analyte	Initial Calib. Blank ug/L	Continuing Calibration Blank ug/L						Preparation Blank		M
		1	C	2	C	3	C	C		
Aluminum		23.00	U	23.00	U	23.00	U			P
Antimony		4.70	U	4.70	U	4.70	U			P
Arsenic		5.50	U	5.50	U	5.50	U			P
Barium		3.00	U	3.00	U	3.00	U			P
Beryllium		0.13	U	0.13	U	0.13	U			P
Boron		30.40	J	30.30	J	30.60	J			P
Cadmium		0.35	U	0.35	U	0.35	U			P
Mercury		0.077	U							CV
Calcium		220.00	U	220.00	U	220.00	U			P
Chromium		0.59	U	0.59	U	0.59	U			P
Cobalt		0.89	U	0.89	U	0.89	U			P
Copper		3.90	U	3.90	U	3.90	U			P
Iron		61.00	U	61.00	U	61.00	U			P
Lead		2.10	U	2.10	U	2.10	U			P
Magnesium		29.00	U	29.00	U	29.00	U			P
Manganese		3.70	U	3.70	U	3.70	U			P
Nickel		2.60	U	2.60	U	2.60	U			P
Potassium		200.00	U	200.00	U	200.00	U			P
Selenium		7.20	J	6.40	U	6.40	U			P
Silver		-0.70	J	-0.80	J	-0.70	J			P
Thallium		6.60	U	6.60	U	6.60	U			P
Vanadium		0.67	U	0.67	U	0.67	U			P
Zinc		9.40	U	9.40	U	9.40	U			P

Comments:

**METALS**

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**BLANKS**

Contract: R2009314

Lab Code: \_\_\_\_\_ Case No.: \_\_\_\_\_ SAS No.: \_\_\_\_\_ SDG NO.: 9-CAT-007-00

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L, ppt, or mg/kg): UG/L

Analyte	Initial Calib. Blank ug/L	Continuing Calibration Blank ug/L						Preparation Blank	C	M
		1	C	2	C	3	C			
Arsenic	5.50 U	5.50	U	5.50	U	5.50	U			P
Manganese	3.70 U	3.70	U	3.70	U	3.70	U			P
Sodium	130.00 U	130.00	U	130.00	U	130.00	U	130.000	U	P

Comments:

**METALS**

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**BLANKS**

Contract: R2009314

Lab Code: \_\_\_\_\_ Case No.: \_\_\_\_\_ SAS No.: \_\_\_\_\_ SDG NO.: 9-CAT-007-00

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L, ppt, or mg/kg): UG/L

Analyte	Initial Calib. Blank ug/L	Continuing Calibration Blank ug/L						Preparation Blank	C	M
		1	C	2	C	3	C			
Arsenic		5.50	U	5.50	U	5.50	U			P
Manganese		3.70	U	3.70	U	3.70	U			P
Sodium		130.00	U	130.00	U	130.00	U			P

Comments:

**METALS**

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**BLANKS**

Contract: R2009314

Lab Code: \_\_\_\_\_ Case No.: \_\_\_\_\_ SAS No.: \_\_\_\_\_ SDG NO.: 9-CAT-007-00

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L, ppt, or mg/kg): UG/L

Analyte	Initial Calib. Blank ug/L	Continuing Calibration Blank ug/L						Preparation Blank	C	M
		1	C	2	C	3	C			
Arsenic		5.50	U							P
Manganese		3.70	U							P
Sodium		130.00	U							P

Comments:

METALS

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SPIKE SAMPLE RECOVERY

SAMPLE NO.

9-CAT-007-001-05S

Contract: R2009314

Lab Code: \_\_\_\_\_ Case No.: \_\_\_\_\_ SAS No.: \_\_\_\_\_ SDG NO.: 9-CAT-007-00

Matrix (soil/water): WATER Level (low/med): LOW

% Solids for Sample: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit %R	Spiked Sample Result (SSR) C	Sample Result (SR) C	Spike Added (SA)	%R	Q	M
Aluminum	75 - 125	1990.00	23.00 U	2000.0	100		P
Antimony	75 - 125	484.00	4.70 U	500.0	97		P
Arsenic	75 - 125	49.40	10.20	40.0	98		P
Barium	75 - 125	2090.00	77.00	2000.0	101		P
Beryllium	75 - 125	49.10	0.13 U	50.0	98		P
Boron	75 - 125	1000.00	50.40 J	1000.0	95		P
Cadmium	75 - 125	49.10	0.35 U	50.0	98		P
Mercury	75 - 125	0.939	0.077 U	1.00	94		CV
Calcium		80100.00	79200.00	2000.0	45		P
Chromium	75 - 125	195.00	0.59 U	200.0	98		P
Cobalt	75 - 125	498.00	6.00 J	500.0	98		P
Copper	75 - 125	238.00	3.90 U	250.0	95		P
Iron	75 - 125	3830.00	2880.00	1000.0	95		P
Lead	75 - 125	500.00	2.10 U	500.0	100		P
Magnesium		26900.00	25000.00	2000.0	95		P
Manganese		11200.00	11000.00	500.0	40		P
Nickel	75 - 125	508.00	4.30 J	500.0	101		P
Potassium	75 - 125	21800.00	2230.00	20000.0	98		P
Selenium	75 - 125	980.00	6.40 U	1010.0	97		P
Silver	75 - 125	49.80	0.57 U	50.0	100		P
Sodium	75 - 125	28800.00	8700.00	20000.0	100		P
Thallium	75 - 125	1960.00	6.60 U	2000.0	98		P
Vanadium	75 - 125	511.00	0.67 U	500.0	102		P
Zinc	75 - 125	486.00	9.40 U	500.0	97		P

Comments:

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 \_\_\_\_\_  
 \_\_\_\_\_

METALS

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SPIKE SAMPLE RECOVERY

SAMPLE NO.

9-CAT-007-001-05SD

Contract: R2009314

Lab Code: \_\_\_\_\_ Case No.: \_\_\_\_\_ SAS No.: \_\_\_\_\_ SDG NO.: 9-CAT-007-00

Matrix (soil/water): WATER Level (low/med): LOW

% Solids for Sample: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit %R	Spiked Sample Result (SSR) C	Sample Result (SR) C	Spike Added (SA)	%R	Q	M
Aluminum	75 - 125	1990.00	23.00 U	2000.0	100		P
Antimony	75 - 125	484.00	4.70 U	500.0	97		P
Arsenic	75 - 125	48.00	10.20	40.0	94		P
Barium	75 - 125	2080.00	77.00	2000.0	100		P
Beryllium	75 - 125	48.80	0.13 U	50.0	98		P
Boron	75 - 125	1010.00	50.40 J	1000.0	96		P
Cadmium	75 - 125	48.90	0.35 U	50.0	98		P
Mercury	75 - 125	0.952	0.077 U	1.00	95		CV
Calcium		80600.00	79200.00	2000.0	70		P
Chromium	75 - 125	194.00	0.59 U	200.0	97		P
Cobalt	75 - 125	496.00	6.00 J	500.0	98		P
Copper	75 - 125	237.00	3.90 U	250.0	95		P
Iron	75 - 125	3840.00	2880.00	1000.0	96		P
Lead	75 - 125	497.00	2.10 U	500.0	99		P
Magnesium		27000.00	25000.00	2000.0	100		P
Manganese		11100.00	11000.00	500.0	20		P
Nickel	75 - 125	506.00	4.30 J	500.0	100		P
Potassium	75 - 125	21700.00	2230.00	20000.0	97		P
Selenium	75 - 125	979.00	6.40 U	1010.0	97		P
Silver	75 - 125	49.40	0.57 U	50.0	99		P
Sodium	75 - 125	28700.00	8700.00	20000.0	100		P
Thallium	75 - 125	1950.00	6.60 U	2000.0	98		P
Vanadium	75 - 125	510.00	0.67 U	500.0	102		P
Zinc	75 - 125	485.00	9.40 U	500.0	97		P

Comments:

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

METALS  
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DUPLICATES

SAMPLE NO.

9-CAT-007-001-05SD

Contract: R2009314

Lab Code: \_\_\_\_\_ Case No.: \_\_\_\_\_ SAS No.: \_\_\_\_\_ SDG NO.: 9-CAT-007-00

Matrix (soil/water): WATER Level (low/med): LOW

% Solids for Sample: 0.0 % Solids for Duplicate: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit	Sample (S) C	Duplicate (D) C	RPD	Q	M
Aluminum		1990.00	1990.00	0		P
Antimony		484.00	484.00	0		P
Arsenic		49.40	48.00	3		P
Barium		2090.00	2080.00	0		P
Beryllium		49.10	48.80	1		P
Boron		1000.00	1010.00	1		P
Cadmium		49.10	48.90	0		P
Mercury		0.939	0.952	1		CV
Calcium		80100.00	80600.00	1		P
Chromium		195.00	194.00	1		P
Cobalt		498.00	496.00	0		P
Copper		238.00	237.00	0		P
Iron		3830.00	3840.00	0		P
Lead		500.00	497.00	1		P
Magnesium		26900.00	27000.00	0		P
Manganese		11200.00	11100.00	1		P
Nickel		508.00	506.00	0		P
Potassium		21800.00	21700.00	0		P
Selenium		980.00	979.00	0		P
Silver		49.80	49.40	1		P
Sodium		28800.00	28700.00	0		P
Thallium		1960.00	1950.00	1		P
Vanadium		511.00	510.00	0		P
Zinc		486.00	485.00	0		P

Comments:



METALS

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LABORATORY CONTROL SAMPLE

Contract: R2009314

Lab Code: \_\_\_\_\_ Case No.: \_\_\_\_\_ SAS No.: \_\_\_\_\_ SDG NO.: 9-CAT-007-00

Solid LCS Source: \_\_\_\_\_

Aqueous LCS Source: CPI

Analyte	Aqueous (ug/L)			Solid (mg/K)				
	True	Found	%R	True	Found	C	Limits	%R
Aluminum	2000	1980	99					
Antimony	500	479	96					
Arsenic	40	43	108					
Barium	2000	2050	102					
Beryllium	50	49	98					
Boron	1000	935	94					
Cadmium	50	51	102					
Mercury	1.000	1.010	101					
Calcium	2000	2060	103					
Chromium	200	199	100					
Cobalt	500	506	101					
Copper	250	236	94					
Iron	1000	990	99					
Lead	500	510	102					
Magnesium	2000	1990	100					
Manganese	500	504	101					
Nickel	500	519	104					
Potassium	20000	18900	94					
Selenium	1010	970	96					
Silver	50	48	96					
Sodium	20000	19800	99					
Thallium	2000	1860	93					
Vanadium	500	506	101					
Zinc	500	496	99					

Comments: \_\_\_\_\_



## General Chemistry

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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** Method Blank  
**Lab Code:** R2009314-MB1

**Service Request:** R2009314  
**Date Collected:** NA  
**Date Received:** NA  
**Basis:** NA

**Inorganic Parameters**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Q</b>
Alkalinity, Total as CaCO3	SM 2320 B-1997(2011)	2.0 U	mg/L	2.0	1.8	1	10/16/20 14:45	
Ammonia as Nitrogen, undistilled	350.1	0.050 U	mg/L	0.050	0.026	1	10/17/20 10:42	
Bromide	300.0	0.10 U	mg/L	0.10	0.04	1	10/15/20 16:40	
Carbon, Total Organic (TOC)	SM 5310 C-2000(2011)	1.0 U	mg/L	1.0	0.5	1	10/16/20 13:48	
Chemical Oxygen Demand, Total	410.4	5.0 U	mg/L	5.0	3.8	1	10/17/20 07:30	
Chloride	300.0	0.20 U	mg/L	0.20	0.05	1	10/15/20 16:40	
Hardness, Total as CaCO3	SM 2340 C-1997(2011)	2.0 U	mg/L	2.0	0.7	1	10/18/20 07:33	
Solids, Total Dissolved (TDS)	SM 2540 C-1997(2011)	10 U	mg/L	10	9	1	10/11/20 07:50	
Sulfate	300.0	0.20 U	mg/L	0.20	0.04	1	10/15/20 16:40	

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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** Method Blank  
**Lab Code:** R2009314-MB2

**Service Request:** R2009314  
**Date Collected:** NA  
**Date Received:** NA  
**Basis:** NA

**Inorganic Parameters**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Q</b>
Alkalinity, Total as CaCO3	SM 2320 B-1997(2011)	2.0 U	mg/L	2.0	1.8	1	10/16/20 17:59	
Chemical Oxygen Demand, Total	410.4	5.0 U	mg/L	5.0	3.8	1	10/17/20 07:30	
Solids, Total Dissolved (TDS)	SM 2540 C-1997(2011)	10 U	mg/L	10	9	1	10/11/20 07:50	

ALS Group USA, Corp.  
dba ALS Environmental

QA/QC Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water

**Service Request:** R2009314  
**Date Collected:** 10/06/20  
**Date Received:** 10/07/20  
**Date Analyzed:** 10/17/20

**Duplicate Matrix Spike Summary**  
**Ammonia as Nitrogen, undistilled**

**Sample Name:** 9-CAT-007-001-01  
**Lab Code:** R2009314-001  
**Analysis Method:** 350.1

**Units:** mg/L  
**Basis:** NA

Analyte Name	Sample Result	Matrix Spike R2009314-001MS			Duplicate Matrix Spike R2009314-001DMS			% Rec Limits	RPD	RPD Limit
		Result	Spike Amount	% Rec	Result	Spike Amount	% Rec			
Ammonia as Nitrogen, undistilled	0.664	1.13	0.500	93	1.13	0.500	94	90-110	<1	20

Results flagged with an asterisk (\*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Matrix Spike and Matrix Spike Duplicate Data is presented for information purposes only. The matrix may or may not be relevant to samples reported in this report. The laboratory evaluates system performance based on the LCS and LCSD control limits.

ALS Group USA, Corp.  
dba ALS Environmental

QA/QC Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water

**Service Request:**R2009314  
**Date Collected:**10/06/20  
**Date Received:**10/07/20  
**Date Analyzed:**10/15/20 - 10/17/20

**Duplicate Matrix Spike Summary  
General Chemistry Parameters**

**Sample Name:** 9-CAT-007-001-05  
**Lab Code:** R2009314-005

**Units:**mg/L  
**Basis:**NA

**Matrix Spike**  
R2009314-005MS

**Duplicate Matrix Spike**  
R2009314-005DMS

Analyte Name	Method	Matrix Spike			Duplicate Matrix Spike			% Rec	% Rec Limits	RPD	RPD Limit
		Sample Result	Result	Spike Amount	Result	Spike Amount	% Rec				
Ammonia as Nitrogen, undistilled	350.1	0.932	1.33	0.500	79 *	1.36	0.500	85 *	90-110	2	20
Bromide	300.0	1.0 U	10.3	10.0	103	10.1	10.0	101	90-110	1	20
Chloride	300.0	7.8	28.3	20.0	103	28.4	20.0	103	90-110	<1	20
Chemical Oxygen Demand, Total	410.4	5.0 U	28.5	25.0	114 *	23.9	25.0	96	90-110	18	20
Sulfate	300.0	5.1	24.0	20.0	94	24.1	20.0	95	90-110	<1	20
Carbon, Total Organic (TOC)	SM 5310 C-2000(2011)	2.8	12.5	10.0	97	12.4	10.0	96	48-135	1	20

Results flagged with an asterisk (\*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.

dba ALS Environmental

QA/QC Report

**Client:** Parsons Engineering Science  
**Project** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water

**Service Request:** R2009314  
**Date Collected:** 10/06/20  
**Date Received:** 10/07/20  
**Date Analyzed:** 10/11/20 - 10/18/20

**Replicate Sample Summary**  
**General Chemistry Parameters**

**Sample Name:** 9-CAT-007-001-05  
**Lab Code:** R2009314-005

**Units:** mg/L  
**Basis:** NA

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>MRL</b>	<b>Sample Result</b>	<b>Duplicate Sample R2009314-005DUP Result</b>	<b>Average</b>	<b>RPD</b>	<b>RPD Limit</b>
Alkalinity, Total as CaCO3	SM 2320 B-1997(2011)	2.0	295	295	295	<1	20
Hardness, Total as CaCO3	SM 2340 C-1997(2011)	20	335	320	328	5	20
Solids, Total Dissolved (TDS)	SM 2540 C-1997(2011)	10	345	354	350	3	10

Results flagged with an asterisk (\*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.  
dba ALS Environmental

QA/QC Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water

**Service Request:** R2009314  
**Date Analyzed:** 10/11/20 - 10/18/20

**Lab Control Sample Summary**  
**General Chemistry Parameters**

**Units:**mg/L  
**Basis:**NA

**Lab Control Sample**  
R2009314-LCS1

<b>Analyte Name</b>	<b>Analytical Method</b>	<b>Result</b>	<b>Spike Amount</b>	<b>% Rec</b>	<b>% Rec Limits</b>
Alkalinity, Total as CaCO3	SM 2320 B-1997(2011)	18.0	20.0	90	80-120
Ammonia as Nitrogen, undistilled	350.1	0.517	0.500	103	90-110
Bromide	300.0	1.01	1.00	101	90-110
Carbon, Total Organic (TOC)	SM 5310 C-2000(2011)	9.46	10.0	95	80-121
Chemical Oxygen Demand, Total	410.4	45.2	50.0	90	90-110
Chloride	300.0	1.97	2.00	98	90-110
Hardness, Total as CaCO3	SM 2340 C-1997(2011)	20.5	20.0	103	85-112
Solids, Total Dissolved (TDS)	SM 2540 C-1997(2011)	914	914	100	90-110
Sulfate	300.0	1.84	2.00	92	90-110



ALS Group USA, Corp.  
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QA/QC Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water

**Service Request:** R2009314  
**Date Analyzed:** 10/11/20 - 10/17/20

**Lab Control Sample Summary**  
**General Chemistry Parameters**

**Units:**mg/L  
**Basis:**NA

**Lab Control Sample**  
R2009314-LCS2

<b>Analyte Name</b>	<b>Analytical Method</b>	<b>Result</b>	<b>Spike Amount</b>	<b>% Rec</b>	<b>% Rec Limits</b>
Alkalinity, Total as CaCO3	SM 2320 B-1997(2011)	18.0	20.0	90	80-120
Chemical Oxygen Demand, Total	410.4	45.9	50.0	92	90-110
Solids, Total Dissolved (TDS)	SM 2540 C-1997(2011)	892	914	98	90-110



## Subcontracted Analytical Parameters

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October 20, 2020

**Analytical Report for Service Request No: R2009314**

Janice Jaeger  
ALS Environmental  
1565 Jefferson Rd, Building 300  
Suite 360  
Rochester, NY 14623

**RE: ILI - Region 9 Olean Ischua LF / 452148.60007.03**

Dear Janice Jaeger,

Enclosed are the results of the sample(s) submitted to our laboratory October 07, 2020  
For your reference, these analyses have been assigned our service request number **R2009314**.

All testing was performed according to our laboratory's quality assurance program and met the requirements of the TNI standards except as noted in the case narrative report. Any testing not included in the lab's accreditation is identified on a Non-Certified Analytes report. All results are intended to be considered in their entirety. ALS Environmental is not responsible for use of less than the complete report. Results apply only to the individual samples submitted to the lab for analysis, as listed in the report. The measurement uncertainty of the results included in this report is within that expected when using the prescribed method(s), and represented by Laboratory Control Sample control limits. Any events, such as QC failures or Holding Time exceedances, which may add to the uncertainty are explained in the report narrative or are flagged with qualifiers. The flags are explained in the Report Qualifiers and Definitions page of this report.

Please contact me if you have any questions. My extension is 3376. You may also contact me via email at [Mark.Harris@alsglobal.com](mailto:Mark.Harris@alsglobal.com).

Respectfully submitted,

**ALS Group USA, Corp. dba ALS Environmental**

Mark Harris  
Project Manager



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PFAS by HPLCMSMS

## Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

### Inorganic Data Qualifiers

- \* The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.  
*DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.
- H The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

### Metals Data Qualifiers

- # The control limit criteria is not applicable. See case narrative.
- J The result is an estimated value.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.  
*DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.  
  - i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.
- Q See case narrative. One or more quality control criteria was outside the limits.

### Organic Data Qualifiers

- \* The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimated value.
- J The result is an estimated value.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.  
*DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

### Additional Petroleum Hydrocarbon Specific Qualifiers

- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

**ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso  
State Certifications, Accreditations, and Licenses**

<b>Agency</b>	<b>Web Site</b>	<b>Number</b>
Alaska DEH	<a href="http://dec.alaska.gov/eh/lab/cs/csapproval.htm">http://dec.alaska.gov/eh/lab/cs/csapproval.htm</a>	UST-040
Arizona DHS	<a href="http://www.azdhs.gov/lab/license/env.htm">http://www.azdhs.gov/lab/license/env.htm</a>	AZ0339
Arkansas - DEQ	<a href="http://www.adeq.state.ar.us/techsvs/labcert.htm">http://www.adeq.state.ar.us/techsvs/labcert.htm</a>	88-0637
California DHS (ELAP)	<a href="http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx">http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx</a>	2795
DOD ELAP	<a href="http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm">http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm</a>	L16-58-R4
Florida DOH	<a href="http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm">http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm</a>	E87412
Hawaii DOH	<a href="http://health.hawaii.gov/">http://health.hawaii.gov/</a>	-
ISO 17025	<a href="http://www.pjllabs.com/">http://www.pjllabs.com/</a>	L16-57
Louisiana DEQ	<a href="http://www.deq.louisiana.gov/page/la-lab-accreditation">http://www.deq.louisiana.gov/page/la-lab-accreditation</a>	03016
Maine DHS	<a href="http://www.maine.gov/dhhs/">http://www.maine.gov/dhhs/</a>	WA01276
Minnesota DOH	<a href="http://www.health.state.mn.us/accreditation">http://www.health.state.mn.us/accreditation</a>	053-999-457
Nevada DEP	<a href="http://ndep.nv.gov/bsdw/labservice.htm">http://ndep.nv.gov/bsdw/labservice.htm</a>	WA01276
New Jersey DEP	<a href="http://www.nj.gov/dep/enforcement/oqa.html">http://www.nj.gov/dep/enforcement/oqa.html</a>	WA005
New York - DOH	<a href="https://www.wadsworth.org/regulatory/elap">https://www.wadsworth.org/regulatory/elap</a>	12060
North Carolina DEQ	<a href="https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification">https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification</a>	605
Oklahoma DEQ	<a href="http://www.deq.state.ok.us/CSDnew/labcert.htm">http://www.deq.state.ok.us/CSDnew/labcert.htm</a>	9801
Oregon – DEQ (NELAP)	<a href="http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx">http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx</a>	WA100010
South Carolina DHEC	<a href="http://www.scdhec.gov/environment/EnvironmentalLabCertification/">http://www.scdhec.gov/environment/EnvironmentalLabCertification/</a>	61002
Texas CEQ	<a href="http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html">http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html</a>	T104704427
Washington DOE	<a href="http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html">http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html</a>	C544
Wyoming (EPA Region 8)	<a href="https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water">https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water</a>	-
Kelso Laboratory Website	<a href="http://www.alsglobal.com">www.alsglobal.com</a>	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at [www.ALSGlobal.com](http://www.ALSGlobal.com) or at the accreditation bodies web site.

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/analyte is offered by that state.



## Case Narrative

**ALS Environmental—Kelso Laboratory**  
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**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF  
**Sample Matrix:** Water

**Service Request:** R2009314  
**Date Received:** 10/07/2020

**CASE NARRATIVE**

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier level II requested by the client.

**Sample Receipt:**

Five water samples were received for analysis at ALS Environmental on 10/07/2020. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

**Organic LC:**

Method PFC/537M, 10/16/2020: The upper control criterion was exceeded for one or more surrogates in samples 9-CAT-007-001-01, 9-CAT-007-001-04, 9-CAT-007-001-05, and 9-CAT-007-001-02. The associated native analytes were not detected above the Method Reporting Limit (MRL) in this sample. The error associated with an elevated recovery equated to a high bias. Assuming the native analytes performed similar to the labeled analogs, the effect on the reported results was minimal. The quality of the sample data was not significantly affected. No further corrective action was appropriate.

Method PFC/537M, 10/16/2020: The upper control criterion was exceeded for list surrogates in Method Blank KQ2015481-06. No target analytes were detected in the Method Blank. Since the apparent problem equates to a high bias, the data quality was not significantly affected. No further corrective action was appropriate.

Method PFC/537M, 10/16/2020: The control criteria were exceeded for one or more surrogates in 9-CAT-007-001-05 MS KQ2015481-03, DMS KQ2015481-04, and LCS KQ2015481-05. The associated matrix spike recoveries of target compounds were in control, indicating the analysis was in control. The surrogate outlier was flagged accordingly. No further corrective action was appropriate.

Method PFC/537M, 10/16/2020: The matrix spike recoveries of Perfluoroundecanoic acid (PFUnDA) for sample 9-CAT-007-001-05 was outside control criteria. Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicated the analytical batch was in control. The matrix spike outlier suggested a potential high bias in this matrix. No further corrective action was appropriate.

Method PFC/537M, 10/16/2020: The control criteria was exceeded for one or more surrogates in Continuing Calibration Verification (CCV) KQ2015760-01. The recoveries of the associated native analytes were within control criteria, which indicated the analysis was in control. No further corrective action was appropriate.

*Noel D. O'Neil*

Approved by \_\_\_\_\_

Date 10/20/2020



## Chain of Custody

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# Intra-Network Chain of Custody

1565 Jefferson Rd, Building 300 • Rochester, NY 14623 • 585-288-5380 • FAX 585-288-8475

ALS Contact: Janice Jaeger

**Project Name:** ILI - Region 9 Olean Ischua LF  
**Project Number:** 452148.60007.03  
**Project Manager:** George Moreau  
**Company:** Parsons Engineering Science  
**QAP:** LAB QAP

PFAS  
PFC/537M

Lab Code	Client Sample ID	# of Cont.	Matrix	Sample		Date Received	Send To	
				Date	Time			
<del>R2009314-001</del>	9-CAT-007-001-01	2	Water	10/6/20	1230	10/7/20	KELSO	IV
<del>R2009314-002</del>	9-CAT-007-001-02	↓	Water	10/6/20	1235	10/7/20	KELSO	IV
<del>R2009314-003</del>	9-CAT-007-001-03	↓	Water	10/6/20	1355	10/7/20	KELSO	IV
<del>R2009314-004</del>	9-CAT-007-001-04	1	Water	10/6/20	1400	10/7/20	KELSO	IV
<del>R2009314-005</del>	9-CAT-007-001-05	6	Water	10/6/20	1500	10/7/20	KELSO	IV

**Folder Comments:**  
 need Tier 2 and Tier 4  
 Run QC on sample R2009314-005 for PFC/537M/PFAS

Special Instructions/Comments   NPDES   pH Checked _____	<b>Turnaround Requirements</b> _____ RUSH (Surcharges Apply) <b>PLEASE CIRCLE WORK DAYS</b> 1 2 3 4 5 _____ STANDARD	<b>Report Requirements</b> _____ I. Results Only <input checked="" type="checkbox"/> II. Results + QC Summaries _____ III. Results + QC and Calibration Summaries <input checked="" type="checkbox"/> IV. Data Validation Report with Raw Data	<b>Invoice Information</b>	
		Requested FAX Date: _____ Requested Report Date: <u>10/23/20</u>	PQL/MDL/J <u>Y</u> EDD <u>Y</u>	PO# 58R2009314
				Bill to

Relinquished By: *[Signature]* 10/18/2020/ 1130
 Received By: *[Signature]* 88 of 110/19/20 0945
 Airbill Number: \_\_\_\_\_

PM NH

### Cooler Receipt and Preservation Form

Client ALS / Roche Service Request K20- 27009314  
Received: 10/9/20 Opened: 10/9/20 By: [Signature] Unloaded: 10/9/20 By: [Signature]

- 1. Samples were received via? USPS Fed Ex UPS DHL PDX Courier Hand Delivered
- 2. Samples were received in: (circle) Cooler Box Envelope Other NA
- 3. Were custody seals on coolers? NA Y N If yes, how many and where? one, front  
If present, were custody seals intact? Y N If present, were they signed and dated? Y N
- 4. Was a Temperature Blank present in cooler? NA Y N If yes, notate the temperature in the appropriate column below:  
If no, take the temperature of a representative sample bottle contained within the cooler; notate in the column "Sample Temp":
- 5. Were samples received within the method specified temperature ranges? NA Y N  
If no, were they received on ice and same day as collected? If not, notate the cooler # below and notify the PM. NA Y N

If applicable, tissue samples were received: Frozen Partially Thawed Thawed

Temp Blank	Sample Temp	IR Gun	Cooler #/COC ID /NA	Out of temp indicate with "X"	PM Notified If out of temp	Tracking Number NA	Filed
-	1.6	1R02				17302432 5615	

- 6. Packing material: Inserts Baggies Bubble Wrap Gel Packs Wet Ice Dry Ice Sleeves
- 7. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
- 8. Were samples received in good condition (unbroken) NA Y N
- 9. Were all sample labels complete (ie, analysis, preservation, etc.)? NA Y N
- 10. Did all sample labels and tags agree with custody papers? NA Y N
- 11. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
- 12. Were the pH-preserved bottles (see SMO GEN SOP) received at the appropriate pH? Indicate in the table below NA Y N
- 13. Were VOA vials received without headspace? Indicate in the table below NA Y N
- 14. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, Resolutions: \_\_\_\_\_



## PFAS by HPLC/MS/MS

**ALS Environmental—Kelso Laboratory**  
1317 South 13th Avenue, Kelso, WA 98626  
Phone (360)577-7222 Fax (360)636-1068  
[www.alsglobal.com](http://www.alsglobal.com)



# Sample Results

**ALS Environmental—Kelso Laboratory**  
1317 South 13th Avenue, Kelso, WA 98626  
Phone (360) 577-7222 Fax (360) 425-9096  
[www.alsglobal.com](http://www.alsglobal.com)



## Organic Compounds by HPLC/MS/MS

**ALS Environmental—Kelso Laboratory**  
1317 South 13th Avenue, Kelso, WA 98626  
Phone (360) 577-7222 Fax (360) 425-9096  
[www.alsglobal.com](http://www.alsglobal.com)

**ALS Group USA, Corp.**  
dba ALS Environmental

Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** 9-CAT-007-001-01  
**Lab Code:** R2009314-001

**Service Request:** R2009314  
**Date Collected:** 10/06/20 12:30  
**Date Received:** 10/07/20 09:50

**Units:** ng/L  
**Basis:** NA

**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**Analysis Method:** PFC/537M  
**Prep Method:** ALS SOP

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
<b>Perfluoroalkyl Sulfonic Acids (PFSAs)</b>							
Perfluorobutane sulfonic acid (PFBS)	<b>0.75 J</b>	4.5	0.28	1	10/16/20 15:01	10/14/20	
Perfluorohexane sulfonic acid (PFHxS)	<b>1.6 J</b>	4.5	1.3	1	10/16/20 15:01	10/14/20	
Perfluoroheptane sulfonic acid (PFHpS)	4.5 U	4.5	0.44	1	10/16/20 15:01	10/14/20	
Perfluorooctane sulfonic acid (PFOS)	<b>16</b>	1.8	0.44	1	10/16/20 15:01	10/14/20	
Perfluorodecane sulfonic acid (PFDS)	4.5 U	4.5	0.30	1	10/16/20 15:01	10/14/20	
<b>Perfluoroalkyl Carboxylic Acids (PFCAs)</b>							
Perfluorobutanoic acid (PFBA)	<b>2.9 J</b>	4.5	0.40	1	10/16/20 15:01	10/14/20	
Perfluoropentanoic acid (PFPeA)	4.5 U	4.5	1.7	1	10/16/20 15:01	10/14/20	
Perfluorohexanoic acid (PFHxA)	9.2 U	9.2	8.8	1	10/16/20 15:01	10/14/20	
Perfluoroheptanoic acid (PFHpA)	<b>1.4 J</b>	4.5	0.63	1	10/16/20 15:01	10/14/20	
Perfluorooctanoic acid (PFOA)	<b>8.6</b>	1.8	0.35	1	10/16/20 15:01	10/14/20	
Perfluorononanoic acid (PFNA)	4.5 U	4.5	1.1	1	10/16/20 15:01	10/14/20	
Perfluorodecanoic acid (PFDA)	4.5 U	4.5	1.2	1	10/16/20 15:01	10/14/20	
Perfluoroundecanoic acid (PFUnDA)	4.5 U	4.5	1.5	1	10/16/20 15:01	10/14/20	
Perfluorododecanoic acid (PFDoDA)	4.5 U	4.5	1.3	1	10/16/20 15:01	10/14/20	
Perfluorotridecanoic acid (PFTrDA)	4.5 U	4.5	1.3	1	10/16/20 15:01	10/14/20	
Perfluorotetradecanoic acid (PFTeDA)	4.5 U	4.5	2.0	1	10/16/20 15:01	10/14/20	
<b>Perfluoroalkyl Sulfonamido Substances</b>							
Perfluorooctane sulfonamide (FOSA)	4.5 U	4.5	0.52	1	10/16/20 15:01	10/14/20	
N-Methyl perfluorooctane sulfonamidoacetic acid	4.5 U	4.5	1.4	1	10/16/20 15:01	10/14/20	
N-Ethyl perfluorooctane sulfonamidoacetic acid	<b>1.3 J</b>	4.5	0.50	1	10/16/20 15:01	10/14/20	
<b>n:2 Fluorotelomer Sulfonic Acids (n:2 FTSAs)</b>							
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	4.5 U	4.5	0.55	1	10/16/20 15:01	10/14/20	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	4.5 U	4.5	0.15	1	10/16/20 15:01	10/14/20	



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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** 9-CAT-007-001-01  
**Lab Code:** R2009314-001

**Service Request:** R2009314  
**Date Collected:** 10/06/20 12:30  
**Date Received:** 10/07/20 09:50

**Units:** ng/L  
**Basis:** NA

**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**Analysis Method:** PFC/537M  
**Prep Method:** ALS SOP

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
13C3-PFBS	61	20 - 109	10/16/20 15:01	
18O2-PFHxS	84	26 - 122	10/16/20 15:01	
13C4-PFOS	88	25 - 121	10/16/20 15:01	
13C4-PFBA	66	27 - 124	10/16/20 15:01	
13C5-PFPeA	85	27 - 138	10/16/20 15:01	
13C2-PFHxA	83	28 - 132	10/16/20 15:01	
13C4-PFHpA	71	19 - 139	10/16/20 15:01	
13C4-PFOA	107	22 - 130	10/16/20 15:01	
13C5-PFNA	116	20 - 127	10/16/20 15:01	
13C2-PFDA	91	24 - 125	10/16/20 15:01	
13C2-PFUnDA	85	22 - 125	10/16/20 15:01	
13C2-PFDoDA	79	19 - 122	10/16/20 15:01	
13C2-PFTeDA	79	13 - 124	10/16/20 15:01	
13C8-FOSA	86	18 - 109	10/16/20 15:01	
D3-MeFOSAA	56	9 - 123	10/16/20 15:01	
D5-EtFOSAA	64	12 - 126	10/16/20 15:01	
13C2-6:2 FTS	273	10 - 226	10/16/20 15:01	*
13C2-8:2 FTS	160	10 - 202	10/16/20 15:01	

**ALS Group USA, Corp.**  
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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water

**Service Request:** R2009314  
**Date Collected:** 10/06/20 12:35  
**Date Received:** 10/07/20 09:50

**Sample Name:** 9-CAT-007-001-02  
**Lab Code:** R2009314-002

**Units:** ng/L  
**Basis:** NA

**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**Analysis Method:** PFC/537M  
**Prep Method:** ALS SOP

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
<b>Perfluoroalkyl Sulfonic Acids (PFSAs)</b>							
Perfluorobutane sulfonic acid (PFBS)	<b>0.92 J</b>	4.6	0.28	1	10/16/20 15:12	10/14/20	
Perfluorohexane sulfonic acid (PFHxS)	4.6 U	4.6	1.3	1	10/16/20 15:12	10/14/20	
Perfluoroheptane sulfonic acid (PFHpS)	4.6 U	4.6	0.44	1	10/16/20 15:12	10/14/20	
Perfluorooctane sulfonic acid (PFOS)	<b>15</b>	1.9	0.44	1	10/16/20 15:12	10/14/20	
Perfluorodecane sulfonic acid (PFDS)	4.6 U	4.6	0.30	1	10/16/20 15:12	10/14/20	
<b>Perfluoroalkyl Carboxylic Acids (PFCAs)</b>							
Perfluorobutanoic acid (PFBA)	<b>2.9 J</b>	4.6	0.40	1	10/16/20 15:12	10/14/20	
Perfluoropentanoic acid (PFPeA)	4.6 U	4.6	1.7	1	10/16/20 15:12	10/14/20	
Perfluorohexanoic acid (PFHxA)	9.3 U	9.3	8.8	1	10/16/20 15:12	10/14/20	
Perfluoroheptanoic acid (PFHpA)	<b>1.2 J</b>	4.6	0.63	1	10/16/20 15:12	10/14/20	
Perfluorooctanoic acid (PFOA)	<b>8.8</b>	1.9	0.35	1	10/16/20 15:12	10/14/20	
Perfluorononanoic acid (PFNA)	4.6 U	4.6	1.1	1	10/16/20 15:12	10/14/20	
Perfluorodecanoic acid (PFDA)	4.6 U	4.6	1.2	1	10/16/20 15:12	10/14/20	
Perfluoroundecanoic acid (PFUnDA)	4.6 U	4.6	1.5	1	10/16/20 15:12	10/14/20	
Perfluorododecanoic acid (PFDoDA)	4.6 U	4.6	1.3	1	10/16/20 15:12	10/14/20	
Perfluorotridecanoic acid (PFTrDA)	4.6 U	4.6	1.3	1	10/16/20 15:12	10/14/20	
Perfluorotetradecanoic acid (PFTeDA)	4.6 U	4.6	2.0	1	10/16/20 15:12	10/14/20	
<b>Perfluoroalkyl Sulfonamido Substances</b>							
Perfluorooctane sulfonamide (FOSA)	4.6 U	4.6	0.52	1	10/16/20 15:12	10/14/20	
N-Methyl perfluorooctane sulfonamidoacetic acid	4.6 U	4.6	1.4	1	10/16/20 15:12	10/14/20	
N-Ethyl perfluorooctane sulfonamidoacetic acid	<b>1.2 J</b>	4.6	0.50	1	10/16/20 15:12	10/14/20	
<b>n:2 Fluorotelomer Sulfonic Acids (n:2 FTSAs)</b>							
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	4.6 U	4.6	0.55	1	10/16/20 15:12	10/14/20	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	4.6 U	4.6	0.15	1	10/16/20 15:12	10/14/20	

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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** 9-CAT-007-001-02  
**Lab Code:** R2009314-002

**Service Request:** R2009314  
**Date Collected:** 10/06/20 12:35  
**Date Received:** 10/07/20 09:50

**Units:** ng/L  
**Basis:** NA

**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**Analysis Method:** PFC/537M  
**Prep Method:** ALS SOP

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
13C3-PFBS	65	20 - 109	10/16/20 15:12	
18O2-PFHxS	98	26 - 122	10/16/20 15:12	
13C4-PFOS	94	25 - 121	10/16/20 15:12	
13C4-PFBA	73	27 - 124	10/16/20 15:12	
13C5-PFPeA	89	27 - 138	10/16/20 15:12	
13C2-PFHxA	95	28 - 132	10/16/20 15:12	
13C4-PFHpA	75	19 - 139	10/16/20 15:12	
13C4-PFOA	115	22 - 130	10/16/20 15:12	
13C5-PFNA	127	20 - 127	10/16/20 15:12	
13C2-PFDA	104	24 - 125	10/16/20 15:12	
13C2-PFUnDA	92	22 - 125	10/16/20 15:12	
13C2-PFDoDA	88	19 - 122	10/16/20 15:12	
13C2-PFTeDA	91	13 - 124	10/16/20 15:12	
13C8-FOSA	96	18 - 109	10/16/20 15:12	
D3-MeFOSAA	66	9 - 123	10/16/20 15:12	
D5-EtFOSAA	74	12 - 126	10/16/20 15:12	
13C2-6:2 FTS	309	10 - 226	10/16/20 15:12	*
13C2-8:2 FTS	176	10 - 202	10/16/20 15:12	

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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water

**Service Request:** R2009314  
**Date Collected:** 10/06/20 13:55  
**Date Received:** 10/07/20 09:50

**Sample Name:** 9-CAT-007-001-03  
**Lab Code:** R2009314-003

**Units:** ng/L  
**Basis:** NA

**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**Analysis Method:** PFC/537M  
**Prep Method:** ALS SOP

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
<b>Perfluoroalkyl Sulfonic Acids (PFASs)</b>							
Perfluorobutane sulfonic acid (PFBS)	4.5 U	4.5	0.28	1	10/16/20 15:22	10/14/20	
Perfluorohexane sulfonic acid (PFHxS)	4.5 U	4.5	1.3	1	10/16/20 15:22	10/14/20	
Perfluoroheptane sulfonic acid (PFHpS)	4.5 U	4.5	0.44	1	10/16/20 15:22	10/14/20	
Perfluorooctane sulfonic acid (PFOS)	1.8 U	1.8	0.44	1	10/16/20 15:22	10/14/20	
Perfluorodecane sulfonic acid (PFDS)	4.5 U	4.5	0.30	1	10/16/20 15:22	10/14/20	
<b>Perfluoroalkyl Carboxylic Acids (PFCAs)</b>							
Perfluorobutanoic acid (PFBA)	4.5 U	4.5	0.40	1	10/16/20 15:22	10/14/20	
Perfluoropentanoic acid (PFPeA)	4.5 U	4.5	1.7	1	10/16/20 15:22	10/14/20	
Perfluorohexanoic acid (PFHxA)	9.2 U	9.2	8.8	1	10/16/20 15:22	10/14/20	
Perfluoroheptanoic acid (PFHpA)	4.5 U	4.5	0.63	1	10/16/20 15:22	10/14/20	
Perfluorooctanoic acid (PFOA)	1.8 U	1.8	0.35	1	10/16/20 15:22	10/14/20	
Perfluorononanoic acid (PFNA)	4.5 U	4.5	1.1	1	10/16/20 15:22	10/14/20	
Perfluorodecanoic acid (PFDA)	4.5 U	4.5	1.2	1	10/16/20 15:22	10/14/20	
Perfluoroundecanoic acid (PFUnDA)	4.5 U	4.5	1.5	1	10/16/20 15:22	10/14/20	
Perfluorododecanoic acid (PFDoDA)	4.5 U	4.5	1.3	1	10/16/20 15:22	10/14/20	
Perfluorotridecanoic acid (PFTrDA)	4.5 U	4.5	1.3	1	10/16/20 15:22	10/14/20	
Perfluorotetradecanoic acid (PFTeDA)	4.5 U	4.5	2.0	1	10/16/20 15:22	10/14/20	
<b>Perfluoroalkyl Sulfonamido Substances</b>							
Perfluorooctane sulfonamide (FOSA)	4.5 U	4.5	0.52	1	10/16/20 15:22	10/14/20	
N-Methyl perfluorooctane sulfonamidoacetic acid	4.5 U	4.5	1.4	1	10/16/20 15:22	10/14/20	
N-Ethyl perfluorooctane sulfonamidoacetic acid	4.5 U	4.5	0.50	1	10/16/20 15:22	10/14/20	
<b>n:2 Fluorotelomer Sulfonic Acids (n:2 FTSAs)</b>							
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	<b>1.0 J</b>	4.5	0.55	1	10/16/20 15:22	10/14/20	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	4.5 U	4.5	0.15	1	10/16/20 15:22	10/14/20	

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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water

**Service Request:** R2009314  
**Date Collected:** 10/06/20 13:55  
**Date Received:** 10/07/20 09:50

**Sample Name:** 9-CAT-007-001-03  
**Lab Code:** R2009314-003

**Units:** ng/L  
**Basis:** NA

Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS

**Analysis Method:** PFC/537M  
**Prep Method:** ALS SOP

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
13C3-PFBS	79	20 - 109	10/16/20 15:22	
18O2-PFHxS	105	26 - 122	10/16/20 15:22	
13C4-PFOS	99	25 - 121	10/16/20 15:22	
13C4-PFBA	79	27 - 124	10/16/20 15:22	
13C5-PFPeA	99	27 - 138	10/16/20 15:22	
13C2-PFHxA	97	28 - 132	10/16/20 15:22	
13C4-PFHpA	89	19 - 139	10/16/20 15:22	
13C4-PFOA	112	22 - 130	10/16/20 15:22	
13C5-PFNA	121	20 - 127	10/16/20 15:22	
13C2-PFDA	106	24 - 125	10/16/20 15:22	
13C2-PFUnDA	97	22 - 125	10/16/20 15:22	
13C2-PFDoDA	96	19 - 122	10/16/20 15:22	
13C2-PFTeDA	90	13 - 124	10/16/20 15:22	
13C8-FOSA	100	18 - 109	10/16/20 15:22	
D3-MeFOSAA	85	9 - 123	10/16/20 15:22	
D5-EtFOSAA	89	12 - 126	10/16/20 15:22	
13C2-6:2 FTS	220	10 - 226	10/16/20 15:22	
13C2-8:2 FTS	177	10 - 202	10/16/20 15:22	

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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** 9-CAT-007-001-04  
**Lab Code:** R2009314-004

**Service Request:** R2009314  
**Date Collected:** 10/06/20 14:00  
**Date Received:** 10/07/20 09:50

**Units:** ng/L  
**Basis:** NA

**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**Analysis Method:** PFC/537M  
**Prep Method:** ALS SOP

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
<b>Perfluoroalkyl Sulfonic Acids (PFASs)</b>							
Perfluorobutane sulfonic acid (PFBS)	4.7 U	4.7	0.28	1	10/16/20 15:33	10/14/20	
Perfluorohexane sulfonic acid (PFHxS)	4.7 U	4.7	1.3	1	10/16/20 15:33	10/14/20	
Perfluoroheptane sulfonic acid (PFHpS)	4.7 U	4.7	0.44	1	10/16/20 15:33	10/14/20	
Perfluorooctane sulfonic acid (PFOS)	1.9 U	1.9	0.44	1	10/16/20 15:33	10/14/20	
Perfluorodecane sulfonic acid (PFDS)	4.7 U	4.7	0.30	1	10/16/20 15:33	10/14/20	
<b>Perfluoroalkyl Carboxylic Acids (PFCAs)</b>							
Perfluorobutanoic acid (PFBA)	4.7 U	4.7	0.40	1	10/16/20 15:33	10/14/20	
Perfluoropentanoic acid (PFPeA)	4.7 U	4.7	1.7	1	10/16/20 15:33	10/14/20	
Perfluorohexanoic acid (PFHxA)	9.4 U	9.4	8.8	1	10/16/20 15:33	10/14/20	
Perfluoroheptanoic acid (PFHpA)	4.7 U	4.7	0.63	1	10/16/20 15:33	10/14/20	
Perfluorooctanoic acid (PFOA)	1.9 U	1.9	0.35	1	10/16/20 15:33	10/14/20	
Perfluorononanoic acid (PFNA)	4.7 U	4.7	1.1	1	10/16/20 15:33	10/14/20	
Perfluorodecanoic acid (PFDA)	4.7 U	4.7	1.2	1	10/16/20 15:33	10/14/20	
Perfluoroundecanoic acid (PFUnDA)	4.7 U	4.7	1.5	1	10/16/20 15:33	10/14/20	
Perfluorododecanoic acid (PFDoDA)	4.7 U	4.7	1.3	1	10/16/20 15:33	10/14/20	
Perfluorotridecanoic acid (PFTTrDA)	4.7 U	4.7	1.3	1	10/16/20 15:33	10/14/20	
Perfluorotetradecanoic acid (PFTeDA)	4.7 U	4.7	2.0	1	10/16/20 15:33	10/14/20	
<b>Perfluoroalkyl Sulfonamido Substances</b>							
Perfluorooctane sulfonamide (FOSA)	4.7 U	4.7	0.52	1	10/16/20 15:33	10/14/20	
N-Methyl perfluorooctane sulfonamidoacetic acid	4.7 U	4.7	1.4	1	10/16/20 15:33	10/14/20	
N-Ethyl perfluorooctane sulfonamidoacetic acid	4.7 U	4.7	0.50	1	10/16/20 15:33	10/14/20	
<b>n:2 Fluorotelomer Sulfonic Acids (n:2 FTSAs)</b>							
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	4.7 U	4.7	0.55	1	10/16/20 15:33	10/14/20	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	4.7 U	4.7	0.15	1	10/16/20 15:33	10/14/20	

**ALS Group USA, Corp.**  
dba ALS Environmental

Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** 9-CAT-007-001-04  
**Lab Code:** R2009314-004

**Service Request:** R2009314  
**Date Collected:** 10/06/20 14:00  
**Date Received:** 10/07/20 09:50

**Units:** ng/L  
**Basis:** NA

**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**Analysis Method:** PFC/537M  
**Prep Method:** ALS SOP

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
13C3-PFBS	73	20 - 109	10/16/20 15:33	
18O2-PFHxS	96	26 - 122	10/16/20 15:33	
13C4-PFOS	94	25 - 121	10/16/20 15:33	
13C4-PFBA	74	27 - 124	10/16/20 15:33	
13C5-PFPeA	94	27 - 138	10/16/20 15:33	
13C2-PFHxA	92	28 - 132	10/16/20 15:33	
13C4-PFHpA	82	19 - 139	10/16/20 15:33	
13C4-PFOA	108	22 - 130	10/16/20 15:33	
13C5-PFNA	109	20 - 127	10/16/20 15:33	
13C2-PFDA	101	24 - 125	10/16/20 15:33	
13C2-PFUnDA	88	22 - 125	10/16/20 15:33	
13C2-PFDoDA	88	19 - 122	10/16/20 15:33	
13C2-PFTeDA	103	13 - 124	10/16/20 15:33	
13C8-FOSA	86	18 - 109	10/16/20 15:33	
D3-MeFOSAA	79	9 - 123	10/16/20 15:33	
D5-EtFOSAA	79	12 - 126	10/16/20 15:33	
13C2-6:2 FTS	229	10 - 226	10/16/20 15:33	*
13C2-8:2 FTS	171	10 - 202	10/16/20 15:33	

**ALS Group USA, Corp.**  
dba ALS Environmental

Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** 9-CAT-007-001-05  
**Lab Code:** R2009314-005

**Service Request:** R2009314  
**Date Collected:** 10/06/20 15:00  
**Date Received:** 10/07/20 09:50

**Units:** ng/L  
**Basis:** NA

**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**Analysis Method:** PFC/537M  
**Prep Method:** ALS SOP

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
<b>Perfluoroalkyl Sulfonic Acids (PFASs)</b>							
Perfluorobutane sulfonic acid (PFBS)	<b>1.4 J</b>	4.5	0.28	1	10/16/20 15:44	10/14/20	
Perfluorohexane sulfonic acid (PFHxS)	<b>2.6 J</b>	4.5	1.3	1	10/16/20 15:44	10/14/20	
Perfluoroheptane sulfonic acid (PFHpS)	4.5 U	4.5	0.44	1	10/16/20 15:44	10/14/20	
Perfluorooctane sulfonic acid (PFOS)	<b>12</b>	1.8	0.44	1	10/16/20 15:44	10/14/20	
Perfluorodecane sulfonic acid (PFDS)	4.5 U	4.5	0.30	1	10/16/20 15:44	10/14/20	
<b>Perfluoroalkyl Carboxylic Acids (PFCAs)</b>							
Perfluorobutanoic acid (PFBA)	<b>2.6 J</b>	4.5	0.40	1	10/16/20 15:44	10/14/20	
Perfluoropentanoic acid (PFPeA)	4.5 U	4.5	1.7	1	10/16/20 15:44	10/14/20	
Perfluorohexanoic acid (PFHxA)	9.2 U	9.2	8.8	1	10/16/20 15:44	10/14/20	
Perfluoroheptanoic acid (PFHpA)	<b>2.6 J</b>	4.5	0.63	1	10/16/20 15:44	10/14/20	
Perfluorooctanoic acid (PFOA)	<b>9.2</b>	1.8	0.35	1	10/16/20 15:44	10/14/20	
Perfluorononanoic acid (PFNA)	4.5 U	4.5	1.1	1	10/16/20 15:44	10/14/20	
Perfluorodecanoic acid (PFDA)	4.5 U	4.5	1.2	1	10/16/20 15:44	10/14/20	
Perfluoroundecanoic acid (PFUnDA)	4.5 U	4.5	1.5	1	10/16/20 15:44	10/14/20	
Perfluorododecanoic acid (PFDoDA)	4.5 U	4.5	1.3	1	10/16/20 15:44	10/14/20	
Perfluorotridecanoic acid (PFTTrDA)	4.5 U	4.5	1.3	1	10/16/20 15:44	10/14/20	
Perfluorotetradecanoic acid (PFTeDA)	4.5 U	4.5	2.0	1	10/16/20 15:44	10/14/20	
<b>Perfluoroalkyl Sulfonamido Substances</b>							
Perfluorooctane sulfonamide (FOSA)	4.5 U	4.5	0.52	1	10/16/20 15:44	10/14/20	
N-Methyl perfluorooctane sulfonamidoacetic acid	4.5 U	4.5	1.4	1	10/16/20 15:44	10/14/20	
N-Ethyl perfluorooctane sulfonamidoacetic acid	<b>1.3 J</b>	4.5	0.50	1	10/16/20 15:44	10/14/20	
<b>n:2 Fluorotelomer Sulfonic Acids (n:2 FTSAs)</b>							
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	4.5 U	4.5	0.55	1	10/16/20 15:44	10/14/20	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	4.5 U	4.5	0.15	1	10/16/20 15:44	10/14/20	



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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** 9-CAT-007-001-05  
**Lab Code:** R2009314-005

**Service Request:** R2009314  
**Date Collected:** 10/06/20 15:00  
**Date Received:** 10/07/20 09:50

**Units:** ng/L  
**Basis:** NA

**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**Analysis Method:** PFC/537M  
**Prep Method:** ALS SOP

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
13C3-PFBS	66	20 - 109	10/16/20 15:44	
18O2-PFHxS	80	26 - 122	10/16/20 15:44	
13C4-PFOS	88	25 - 121	10/16/20 15:44	
13C4-PFBA	67	27 - 124	10/16/20 15:44	
13C5-PFPeA	91	27 - 138	10/16/20 15:44	
13C2-PFHxA	80	28 - 132	10/16/20 15:44	
13C4-PFHpA	80	19 - 139	10/16/20 15:44	
13C4-PFOA	92	22 - 130	10/16/20 15:44	
13C5-PFNA	103	20 - 127	10/16/20 15:44	
13C2-PFDA	93	24 - 125	10/16/20 15:44	
13C2-PFUnDA	86	22 - 125	10/16/20 15:44	
13C2-PFDoDA	79	19 - 122	10/16/20 15:44	
13C2-PFTeDA	86	13 - 124	10/16/20 15:44	
13C8-FOSA	88	18 - 109	10/16/20 15:44	
D3-MeFOSAA	62	9 - 123	10/16/20 15:44	
D5-EtFOSAA	65	12 - 126	10/16/20 15:44	
13C2-6:2 FTS	335	10 - 226	10/16/20 15:44	*
13C2-8:2 FTS	190	10 - 202	10/16/20 15:44	



# QC Summary Forms

**ALS Environmental—Kelso Laboratory**  
1317 South 13th Avenue, Kelso, WA 98626  
Phone (360) 577-7222 Fax (360) 425-9096  
[www.alsglobal.com](http://www.alsglobal.com)



## Organic Compounds by HPLC/MS/MS

**ALS Environmental—Kelso Laboratory**  
1317 South 13th Avenue, Kelso, WA 98626  
Phone (360) 577-7222 Fax (360) 425-9096  
[www.alsglobal.com](http://www.alsglobal.com)

**ALS Group USA, Corp.**  
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QA/QC Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water

**Service Request:** R2009314

**SURROGATE RECOVERY SUMMARY**  
**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**Analysis Method:** PFC/537M  
**Extraction Method:** ALS SOP

Surrogate	Control Limits	9-CAT-007-001-01	9-CAT-007-001-02	9-CAT-007-001-03
		R2009314-001	R2009314-002	R2009314-003
13C3-PFBS	20-109	61	65	79
18O2-PFHxS	26-122	84	98	105
13C4-PFOS	25-121	88	94	99
13C4-PFBA	27-124	66	73	79
13C5-PFPeA	27-138	85	89	99
13C2-PFHxA	28-132	83	95	97
13C4-PFHpA	19-139	71	75	89
13C4-PFOA	22-130	107	115	112
13C5-PFNA	20-127	116	127	121
13C2-PFDA	24-125	91	104	106
13C2-PFUnDA	22-125	85	92	97
13C2-PFDoDA	19-122	79	88	96
13C2-PFTeDA	13-124	79	91	90
13C8-FOSA	18-109	86	96	100
D3-MeFOSAA	9-123	56	66	85
D5-EtFOSAA	12-126	64	74	89
13C2-6:2 FTS	10-226	273*	309*	220
13C2-8:2 FTS	10-202	160	176	177

**Results flagged with an asterisk (\*) indicate values outside control criteria.**

**Results flagged with a pound (#) indicate the control criteria is not acceptable.**

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QA/QC Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water

**Service Request:** R2009314

**SURROGATE RECOVERY SUMMARY**  
**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**Analysis Method:** PFC/537M  
**Extraction Method:** ALS SOP

Surrogate	Control Limits	9-CAT-007-001-04	9-CAT-007-001-05	Method Blank
		R2009314-004	R2009314-005	KQ2015481-06
13C3-PFBS	20-109	73	66	73
18O2-PFHxS	26-122	96	80	100
13C4-PFOS	25-121	94	88	93
13C4-PFBA	27-124	74	67	75
13C5-PFPeA	27-138	94	91	96
13C2-PFHxA	28-132	92	80	98
13C4-PFHpA	19-139	82	80	85
13C4-PFOA	22-130	108	92	112
13C5-PFNA	20-127	109	103	113
13C2-PFDA	24-125	101	93	98
13C2-PFUnDA	22-125	88	86	96
13C2-PFDoDA	19-122	88	79	92
13C2-PFTeDA	13-124	103	86	94
13C8-FOSA	18-109	86	88	98
D3-MeFOSAA	9-123	79	62	72
D5-EtFOSAA	12-126	79	65	74
13C2-6:2 FTS	10-226	229*	335*	248*
13C2-8:2 FTS	10-202	171	190	184

**Results flagged with an asterisk (\*) indicate values outside control criteria.**

**Results flagged with a pound (#) indicate the control criteria is not acceptable.**

**ALS Group USA, Corp.**  
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QA/QC Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water

**Service Request:** R2009314

**SURROGATE RECOVERY SUMMARY**  
**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**Analysis Method:** PFC/537M  
**Extraction Method:** ALS SOP

Surrogate	Control Limits	Lab Control Sample	9-CAT-007-001-05	9-CAT-007-001-05
		KQ2015481-05	KQ2015481-03	KQ2015481-04
13C3-PFBS	20-109	75	84	92
18O2-PFHxS	26-122	123*	131*	108
13C4-PFOS	25-121	104	116	120
13C4-PFBA	27-124	81	87	93
13C5-PFPeA	27-138	100	109	113
13C2-PFHxA	28-132	108	122	101
13C4-PFHpA	19-139	107	111	96
13C4-PFOA	22-130	116	108	112
13C5-PFNA	20-127	111	127	133*
13C2-PFDA	24-125	104	111	103
13C2-PFUnDA	22-125	102	94	94
13C2-PFDoDA	19-122	99	94	93
13C2-PFTeDA	13-124	103	102	110
13C8-FOSA	18-109	98	92	97
D3-MeFOSAA	9-123	80	72	70
D5-EtFOSAA	12-126	83	81	75
13C2-6:2 FTS	10-226	254*	339*	242*
13C2-8:2 FTS	10-202	180	189	163

**Results flagged with an asterisk (\*) indicate values outside control criteria.**

**Results flagged with a pound (#) indicate the control criteria is not acceptable.**

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water

**Service Request:** R2009314  
**Date Collected:** 10/06/20  
**Date Received:** 10/07/20  
**Date Analyzed:** 10/16/20  
**Date Extracted:** 10/14/20

**Duplicate Matrix Spike Summary**  
**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**Sample Name:** 9-CAT-007-001-05 **Units:** ng/L  
**Lab Code:** R2009314-005 **Basis:** NA  
**Analysis Method:** PFC/537M  
**Prep Method:** ALS SOP

Analyte Name	Sample Result	Matrix Spike KQ2015481-03			Duplicate Matrix Spike KQ2015481-04			% Rec Limits	RPD	RPD Limit
		Result	Spike Amount	% Rec	Result	Spike Amount	% Rec			
Perfluorobutane sulfonic acid (PFBS)	1.4 J	27.9	26.3	101	29.3	25.8	108	61-140	5	30
Perfluorohexane sulfonic acid (PFHxS)	2.6 J	33.2	27.1	113	33.6	26.6	117	69-144	1	30
Perfluoroheptane sulfonic acid (PFHpS)	4.6 U	31.4	28.3	111	42.2	27.7	152	62-178	29	30
Perfluorooctane sulfonic acid (PFOS)	12	43.9	27.5	116	47.8	27.0	132	71-139	8	30
Perfluorodecane sulfonic acid (PFDS)	4.6 U	28.5	28.6	100	27.6	28.1	98	69-146	3	30
Perfluorobutanoic acid (PFBA)	2.6 J	37.8	29.6	119	40.8	29.1	132	51-157	8	30
Perfluoropentanoic acid (PFPeA)	4.6 U	32.5	29.6	110	34.6	29.1	119	67-127	6	30
Perfluorohexanoic acid (PFHxA)	9.3 U	32.5	29.6	110	38.4	29.1	132	71-138	17	30
Perfluoroheptanoic acid (PFHpA)	2.6 J	35.0	29.6	109	31.2	29.1	98	72-133	11	30
Perfluorooctanoic acid (PFOA)	9.2	44.2	29.6	118	45.6	29.1	125	74-146	3	30
Perfluorononanoic acid (PFNA)	4.6 U	30.8	29.6	104	34.6	29.1	119	69-148	12	30
Perfluorodecanoic acid (PFDA)	4.6 U	33.0	29.6	111	36.9	29.1	127	73-136	11	30
Perfluoroundecanoic acid (PFUnDA)	4.6 U	39.4	29.6	133	42.1	29.1	145 *	76-134	7	30
Perfluorododecanoic acid (PFDoDA)	4.6 U	37.3	29.6	126	34.5	29.1	119	71-138	8	30
Perfluorotridecanoic acid (PFTrDA)	4.6 U	31.1	29.6	105	31.2	29.1	107	65-140	<1	30
Perfluorotetradecanoic acid (PFTeDA)	4.6 U	30.3	29.6	102	31.9	29.1	110	63-139	5	30
Perfluorooctane sulfonamide (FOSA)	4.6 U	28.6	29.6	96	29.6	29.1	102	64-135	4	30
N-Methyl perfluorooctane sulfonamidoacetic acid	4.6 U	31.1	29.6	105	38.6	29.1	133	69-151	22	30
N-Ethyl perfluorooctane sulfonamidoacetic acid	1.3 J	33.3	29.6	108	37.2	29.1	123	58-155	11	30
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	4.6 U	28.9	28.2	102	30.2	27.7	109	71-142	4	30
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	4.6 U	33.8	28.4	119	36.1	27.9	129	69-137	7	30

Results flagged with an asterisk (\*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Matrix Spike and Matrix Spike Duplicate Data is presented for information purposes only. The matrix may or may not be relevant to samples reported in this report. The laboratory evaluates system performance based on the LCS and LCSD control limits.

**ALS Group USA, Corp.**  
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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** Method Blank  
**Lab Code:** KQ2015481-06

**Service Request:** R2009314  
**Date Collected:** NA  
**Date Received:** NA  
**Units:** ng/L  
**Basis:** NA

**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**Analysis Method:** PFC/537M  
**Prep Method:** ALS SOP

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
<b>Perfluoroalkyl Sulfonic Acids (PFSAs)</b>							
Perfluorobutane sulfonic acid (PFBS)	5.0 U	5.0	0.28	1	10/16/20 13:14	10/14/20	
Perfluorohexane sulfonic acid (PFHxS)	5.0 U	5.0	1.3	1	10/16/20 13:14	10/14/20	
Perfluoroheptane sulfonic acid (PFHpS)	5.0 U	5.0	0.44	1	10/16/20 13:14	10/14/20	
Perfluorooctane sulfonic acid (PFOS)	2.0 U	2.0	0.44	1	10/16/20 13:14	10/14/20	
Perfluorodecane sulfonic acid (PFDS)	5.0 U	5.0	0.30	1	10/16/20 13:14	10/14/20	
<b>Perfluoroalkyl Carboxylic Acids (PFCAs)</b>							
Perfluorobutanoic acid (PFBA)	5.0 U	5.0	0.40	1	10/16/20 13:14	10/14/20	
Perfluoropentanoic acid (PFPeA)	5.0 U	5.0	1.7	1	10/16/20 13:14	10/14/20	
Perfluorohexanoic acid (PFHxA)	10 U	10	8.8	1	10/16/20 13:14	10/14/20	
Perfluoroheptanoic acid (PFHpA)	5.0 U	5.0	0.63	1	10/16/20 13:14	10/14/20	
Perfluorooctanoic acid (PFOA)	2.0 U	2.0	0.35	1	10/16/20 13:14	10/14/20	
Perfluorononanoic acid (PFNA)	5.0 U	5.0	1.1	1	10/16/20 13:14	10/14/20	
Perfluorodecanoic acid (PFDA)	5.0 U	5.0	1.2	1	10/16/20 13:14	10/14/20	
Perfluoroundecanoic acid (PFUnDA)	5.0 U	5.0	1.5	1	10/16/20 13:14	10/14/20	
Perfluorododecanoic acid (PFDoDA)	5.0 U	5.0	1.3	1	10/16/20 13:14	10/14/20	
Perfluorotridecanoic acid (PFTTrDA)	5.0 U	5.0	1.3	1	10/16/20 13:14	10/14/20	
Perfluorotetradecanoic acid (PFTeDA)	5.0 U	5.0	2.0	1	10/16/20 13:14	10/14/20	
<b>Perfluoroalkyl Sulfonamido Substances</b>							
Perfluorooctane sulfonamide (FOSA)	5.0 U	5.0	0.52	1	10/16/20 13:14	10/14/20	
N-Methyl perfluorooctane sulfonamidoacetic acid	5.0 U	5.0	1.4	1	10/16/20 13:14	10/14/20	
N-Ethyl perfluorooctane sulfonamidoacetic acid	5.0 U	5.0	0.50	1	10/16/20 13:14	10/14/20	
<b>n:2 Fluorotelomer Sulfonic Acids (n:2 FTSAs)</b>							
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	5.0 U	5.0	0.55	1	10/16/20 13:14	10/14/20	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	5.0 U	5.0	0.15	1	10/16/20 13:14	10/14/20	



**ALS Group USA, Corp.**  
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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** Method Blank  
**Lab Code:** KQ2015481-06

**Service Request:** R2009314  
**Date Collected:** NA  
**Date Received:** NA  
**Units:** ng/L  
**Basis:** NA

**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**Analysis Method:** PFC/537M  
**Prep Method:** ALS SOP

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
13C3-PFBS	73	20 - 109	10/16/20 13:14	
18O2-PFHxS	100	26 - 122	10/16/20 13:14	
13C4-PFOS	93	25 - 121	10/16/20 13:14	
13C4-PFBA	75	27 - 124	10/16/20 13:14	
13C5-PFPeA	96	27 - 138	10/16/20 13:14	
13C2-PFHxA	98	28 - 132	10/16/20 13:14	
13C4-PFHpA	85	19 - 139	10/16/20 13:14	
13C4-PFOA	112	22 - 130	10/16/20 13:14	
13C5-PFNA	113	20 - 127	10/16/20 13:14	
13C2-PFDA	98	24 - 125	10/16/20 13:14	
13C2-PFUnDA	96	22 - 125	10/16/20 13:14	
13C2-PFDoDA	92	19 - 122	10/16/20 13:14	
13C2-PFTeDA	94	13 - 124	10/16/20 13:14	
13C8-FOSA	98	18 - 109	10/16/20 13:14	
D3-MeFOSAA	72	9 - 123	10/16/20 13:14	
D5-EtFOSAA	74	12 - 126	10/16/20 13:14	
13C2-6:2 FTS	248	10 - 226	10/16/20 13:14	*
13C2-8:2 FTS	184	10 - 202	10/16/20 13:14	

ALS Group USA, Corp.  
dba ALS Environmental

QA/QC Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water

**Service Request:** R2009314  
**Date Analyzed:** 10/16/20  
**Date Extracted:** 10/14/20

**Lab Control Sample Summary**  
**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**Analysis Method:** PFC/537M  
**Prep Method:** ALS SOP

**Units:** ng/L  
**Basis:** NA  
**Analysis Lot:** 699614

**Lab Control Sample**  
**KQ2015481-05**

Analyte Name	Result	Spike Amount	% Rec	% Rec Limits
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	32.2	30.4	106	71-142
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	34.5	30.7	112	69-137
N-Ethyl perfluorooctane sulfonamidoacetic acid	34.9	32.0	109	58-155
N-Methyl perfluorooctane sulfonamidoacetic acid	39.6	32.0	124	69-151
Perfluorobutane sulfonic acid (PFBS)	30.9	28.4	109	61-140
Perfluorobutanoic acid (PFBA)	38.2	32.0	120	51-157
Perfluorodecane sulfonic acid (PFDS)	31.0	30.9	100	69-146
Perfluorodecanoic acid (PFDA)	37.5	32.0	117	73-136
Perfluorododecanoic acid (PFDoDA)	33.4	32.0	104	71-138
Perfluoroheptane sulfonic acid (PFHpS)	28.7	30.5	94	62-178
Perfluoroheptanoic acid (PFHpA)	29.3	32.0	92	72-133
Perfluoroheptane sulfonic acid (PFHxS)	28.5	29.2	97	69-144
Perfluoroheptanoic acid (PFHxA)	34.8	32.0	109	71-138
Perfluorononanoic acid (PFNA)	34.5	32.0	108	69-148
Perfluorooctane sulfonamide (FOSA)	32.1	32.0	100	64-135
Perfluorooctane sulfonic acid (PFOS)	31.0	29.7	104	71-139
Perfluorooctanoic acid (PFOA)	32.0	32.0	100	74-146
Perfluoropentanoic acid (PFPeA)	35.0	32.0	109	67-127
Perfluorotetradecanoic acid (PFTeDA)	30.8	32.0	96	63-139
Perfluorotridecanoic acid (PFTrDA)	33.0	32.0	103	65-140
Perfluoroundecanoic acid (PFUnDA)	35.8	32.0	112	76-134



October 30, 2020

Service Request No:R2009437

Mr. George Moreau  
Parsons Engineering Science  
301 Plainfield Road  
Suite 350  
Syracuse, NY 13212

**Laboratory Results for: ILI - Region 9 Olean Ischua LF**

Dear Mr.Moreau,

Enclosed are the results of the sample(s) submitted to our laboratory October 08, 2020  
For your reference, these analyses have been assigned our service request number **R2009437**.

All testing was performed according to our laboratory's quality assurance program and met the requirements of the TNI standards except as noted in the case narrative report. Any testing not included in the lab's accreditation is identified on a Non-Certified Analytes report. All results are intended to be considered in their entirety. ALS Environmental is not responsible for use of less than the complete report. Results apply only to the individual samples submitted to the lab for analysis, as listed in the report. The measurement uncertainty of the results included in this report is within that expected when using the prescribed method(s), and represented by Laboratory Control Sample control limits. Any events, such as QC failures or Holding Time exceedances, which may add to the uncertainty are explained in the report narrative or are flagged with qualifiers. The flags are explained in the Report Qualifiers and Definitions page of this report.

Please contact me if you have any questions. My extension is 7472. You may also contact me via email at [Janice.Jaeger@alsglobal.com](mailto:Janice.Jaeger@alsglobal.com).

Respectfully submitted,

**ALS Group USA, Corp. dba ALS Environmental**

Janice Jaeger  
Project Manager

CC: Maryanne  
Kosciewicz

**ADDRESS**

1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623

**PHONE** +1 585 288 5380 | **FAX** +1 585 288 8475

ALS Group USA, Corp.  
dba ALS Environmental



# Narrative Documents

**ALS Environmental—Rochester Laboratory**  
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623  
Phone (585) 288-5380 Fax (585) 288-8475  
[www.alsglobal.com](http://www.alsglobal.com)



**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF  
**Sample Matrix:** Water

**Service Request:** R2009437  
**Date Received:** 10/08/2020

**CASE NARRATIVE**

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier level IV requested by the client.

**Sample Receipt:**

Six water samples were received for analysis at ALS Environmental on 10/08/2020. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

One or more samples were subcontracted to another laboratory for testing. The certified analytical report from the subcontractor has been included in its entirety at the end of this report and includes the name and address of the subcontracted laboratory.

**Semivolatiles by GC/MS:**

No significant anomalies were noted with this analysis.

**Metals:**

No significant anomalies were noted with this analysis.

**General Chemistry:**

No significant anomalies were noted with this analysis.

**Subcontracted Analytical Parameters:**

No significant anomalies were noted with this analysis.

**Volatiles by GC/MS:**

Method 8260C, 10/19/2020: The lower control limit was exceeded for one or more analytes in the Continuing Calibration Verification (CCV). Since there were no detections of the analyte(s) above the MRL in the associated field samples, the quantitation is not affected. The data quality was not significantly affected and no further corrective action was taken.

A handwritten signature in black ink, appearing to read 'Samantha', is written over a horizontal line.

Approved by \_\_\_\_\_

Date 10/30/2020



## Sample Receipt Information

**ALS Environmental—Rochester Laboratory**  
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623  
Phone (585) 288-5380 Fax (585) 288-8475  
[www.alsglobal.com](http://www.alsglobal.com)

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03

**Service Request:**R2009437

**SAMPLE CROSS-REFERENCE**

<u>SAMPLE #</u>	<u>CLIENT SAMPLE ID</u>	<u>DATE</u>	<u>TIME</u>
R2009437-001	9-CAT-007-002-01	10/7/2020	0850
R2009437-002	9-CAT-007-002-02	10/7/2020	1050
R2009437-003	9-CAT-007-002-03	10/7/2020	1315
R2009437-004	9-CAT-007-002-04	10/7/2020	1420
R2009437-005	9-CAT-007-002-05	10/7/2020	1425
R2009437-006	9-CAT-007-002-06	10/7/2020	







# Cooler Receipt and Preservation Check Form

R2009437

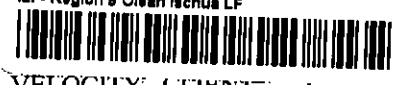
5

Parsons Engineering Science  
LLI - Region 8 Clean Ischia LF

Project/Client Parsons Folder Number \_\_\_\_\_

Cooler received on 10/8/2020 by: @

COURIER: ALS UPS FEDEX VELOCITY CLIENT



1	Were Custody seals on outside of cooler?	<input checked="" type="radio"/> Y <input checked="" type="radio"/> N
2	Custody papers properly completed (ink, signed)?	<input checked="" type="radio"/> Y <input type="radio"/> N
3	Did all bottles arrive in good condition (unbroken)?	<input checked="" type="radio"/> Y <input type="radio"/> N
4	Circle: <u>Wet Ice</u> Dry Ice Gel packs present?	<input checked="" type="radio"/> Y <input type="radio"/> N

5a	Perchlorate samples have required headspace?	Y N <input checked="" type="radio"/> NA
5b	Did VOA vials, <u>Alk</u> or Sulfide have sig* bubbles?	<input checked="" type="radio"/> Y <input type="radio"/> N NA
6	Where did the bottles originate?	<u>ALS/ROC</u> CLIENT
7	Soil VOA received as: Bulk Encore 5035set	<input checked="" type="radio"/> NA

3. Temperature Readings Date: 10/8/2020 Time: 1950 ID: IR#7  IR#10 From: Temp Blank Sample Bottle

Observed Temp (°C)	<u>2.3</u>	<u>2.7</u>	<u>2.7</u>	<u>8.4</u>	<u>2.3</u>		
Within 0-6°C?	<input checked="" type="radio"/> Y <input type="radio"/> N	<input checked="" type="radio"/> Y <input type="radio"/> N	<input checked="" type="radio"/> Y <input type="radio"/> N	<input type="radio"/> Y <input checked="" type="radio"/> N	<input checked="" type="radio"/> Y <input type="radio"/> N	Y N	Y N
If <0°C, were samples frozen?	Y N	Y N	Y N	Y N	Y N	Y N	Y N

If out of Temperature, note packing/ice condition: Ice melted Poorly Packed (described below) Same Day Rule  
& Client Approval to Run Samples: \_\_\_\_\_ Standing Approval Client aware at drop-off Client notified by: \_\_\_\_\_

All samples held in storage location: R-002 by @ on 10/8/2020 at 1005  
5035 samples placed in storage location: \_\_\_\_\_ by \_\_\_\_\_ on \_\_\_\_\_ at \_\_\_\_\_ within 48 hours of sampling? Y N

Cooler Breakdown/Preservation Check\*\*: Date: 10/9/2020 Time: 1555 by: AW

- 9. Were all bottle labels complete (i.e. analysis, preservation, etc.)?  YES  NO
- 10. Did all bottle labels and tags agree with custody papers?  YES  NO
- 11. Were correct containers used for the tests indicated?  YES  NO
- 12. Were 5035 vials acceptable (no extra labels, not leaking)?  YES  NO
- 13. Air Samples: Cassettes / Tubes Intact with MS?  YES  NO N/A  
Canisters Pressurized  YES  NO N/A  
Tedlar® Bags Inflated  YES  NO N/A

pH	Lot of test paper	Reagent	Preserved?		Lot Received	Exp	Sample ID Adjusted	Vol. Added	Lot Added	Final pH
			Yes	No						
≥12		NaOH								
≤2	<u>223419</u>	HNO <sub>3</sub>	<input checked="" type="checkbox"/>		<u>1120021</u>					
≤2	<u>1</u>	H <sub>2</sub> SO <sub>4</sub>	<input checked="" type="checkbox"/>		<u>2066-11</u>					
<4		NaHSO <sub>4</sub>								
5-9		For 608pest			No=Notify for 3day					
Residual Chlorine (-)		For CN, Phenol, 625, 608pest, 522			If +, contact PM to add Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> (625, 608, CN), ascorbic (phenol).					
		Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>								
		ZnAcetate	-	-						
		HCl	**	**						

\*\*VOAs and 1664 Not to be tested before analysis. Otherwise, all bottles of all samples with chemical preservatives are checked (not just representatives).

Bottle lot numbers: 2521-3, 200707, 20-07-09, 081070-13MC, 08032010K

Explain all Discrepancies/ Other Comments:

*all alk. 8.4° cooler was "Wes" sampled only 2 bags 4 bags of ice on cups*

HPROD	BULK
HTR	FLDT
<u>SUB</u>	HGFB
ALS	LL3541

Labels secondary reviewed by: AW  
PC Secondary Review: AW 10/12/20

\*significant air bubbles: VOA > 5-6 mm : WC > 1 in. diameter  
7 of 101



# Miscellaneous Forms

**ALS Environmental—Rochester Laboratory**  
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[www.alsglobal.com](http://www.alsglobal.com)

## REPORT QUALIFIERS AND DEFINITIONS

<p>U Analyte was analyzed for but not detected. The sample quantitation limit has been corrected for dilution and for percent moisture, unless otherwise noted in the case narrative.</p> <p>J Estimated value due to either being a Tentatively Identified Compound (TIC) or that the concentration is between the MRL and the MDL. Concentrations are not verified within the linear range of the calibration. For DoD: concentration &gt;40% difference between two GC columns (pesticides/Aroclors).</p> <p>B Analyte was also detected in the associated method blank at a concentration that may have contributed to the sample result.</p> <p>E Inorganics- Concentration is estimated due to the serial dilution was outside control limits.</p> <p>E Organics- Concentration has exceeded the calibration range for that specific analysis.</p> <p>D Concentration is a result of a dilution, typically a secondary analysis of the sample due to exceeding the calibration range or that a surrogate has been diluted out of the sample and cannot be assessed.</p> <p>* Indicates that a quality control parameter has exceeded laboratory limits. Under the "Notes" column of the Form I, this qualifier denotes analysis was performed out of Holding Time.</p> <p>H Analysis was performed out of hold time for tests that have an "immediate" hold time criteria.</p> <p># Spike was diluted out.</p>	<p>+ Correlation coefficient for MSA is &lt;0.995.</p> <p>N Inorganics- Matrix spike recovery was outside laboratory limits.</p> <p>N Organics- Presumptive evidence of a compound (reported as a TIC) based on the MS library search.</p> <p>S Concentration has been determined using Method of Standard Additions (MSA).</p> <p>W Post-Digestion Spike recovery is outside control limits and the sample absorbance is &lt;50% of the spike absorbance.</p> <p>P Concentration &gt;40% difference between the two GC columns.</p> <p>C Confirmed by GC/MS</p> <p>Q DoD reports: indicates a pesticide/Aroclor is not confirmed (<math>\times 100\%</math> Difference between two GC columns).</p> <p>X See Case Narrative for discussion.</p> <p>MRL Method Reporting Limit. Also known as: LOQ Limit of Quantitation (LOQ) The lowest concentration at which the method analyte may be reliably quantified under the method conditions.</p> <p>MDL Method Detection Limit. A statistical value derived from a study designed to provide the lowest concentration that will be detected 99% of the time. Values between the MDL and MRL are estimated (see J qualifier).</p> <p>LOD Limit of Detection. A value at or above the MDL which has been verified to be detectable.</p> <p>ND Non-Detect. Analyte was not detected at the concentration listed. Same as U qualifier.</p>
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### Rochester Lab ID # for State Certifications<sup>1</sup>

Connecticut ID # PH0556	Maine ID #NY0032	Pennsylvania ID# 68-786
Delaware Approved	New Hampshire ID # 2941	Rhode Island ID # 158
DoD ELAP #65817	New York ID # 10145	Virginia #460167
Florida ID # E87674	North Carolina #676	

<sup>1</sup> Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state or agency requirements. The test results meet requirements of the current NELAP/TNI standards or state or agency requirements, where applicable, except as noted in the case narrative. Since not all analyte/method/matrix combinations are offered for state/NELAC accreditation, this report may contain results which are not accredited. For a specific list of accredited analytes, contact the laboratory or go to <https://www.alsglobal.com/locations/americas/north-america/usa/new-york/rochester-environmental>

# ALS Laboratory Group

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## Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

ALS Group USA, Corp.  
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Analyst Summary report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03

**Service Request:** R2009437

**Sample Name:** 9-CAT-007-002-01  
**Lab Code:** R2009437-001  
**Sample Matrix:** Water

**Date Collected:** 10/7/20  
**Date Received:** 10/8/20

Analysis Method	Extracted/Digested By	Analyzed By
300.0		KWONG
350.1		SMEDBURY
410.4		SMEDBURY
6010C	AKONZEL	KMCLAEN
7470A	AKONZEL	KMCLAEN
8260C		KRUEST
8270D	KSERCU	JMISIUREWICZ
8270D SIM	AFELSER	AFELSER
PFC/537M	MSESSIONS	CCONOVER
SM 2340 C-1997(2011)		KMENGs
SM 2540 C-1997(2011)		KAWONG
SM 5310 C-2000(2011)		SMEDBURY

**Sample Name:** 9-CAT-007-002-02  
**Lab Code:** R2009437-002  
**Sample Matrix:** Water

**Date Collected:** 10/7/20  
**Date Received:** 10/8/20

Analysis Method	Extracted/Digested By	Analyzed By
300.0		KWONG
350.1		SMEDBURY
410.4		SMEDBURY
6010C	AKONZEL	KMCLAEN
7470A	AKONZEL	KMCLAEN
8260C		KRUEST
8270D	KSERCU	JMISIUREWICZ
8270D SIM	AFELSER	AFELSER
PFC/537M	MSESSIONS	CCONOVER
SM 2320 B-1997(2011)		STALARICO
SM 2340 C-1997(2011)		KMENGs
SM 2540 C-1997(2011)		KAWONG
SM 5310 C-2000(2011)		SMEDBURY

ALS Group USA, Corp.  
dba ALS Environmental

Analyst Summary report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03

**Service Request:** R2009437

**Sample Name:** 9-CAT-007-002-03  
**Lab Code:** R2009437-003  
**Sample Matrix:** Water

**Date Collected:** 10/7/20  
**Date Received:** 10/8/20

Analysis Method	Extracted/Digested By	Analyzed By
300.0		KWONG
350.1		SMEDBURY
410.4		SMEDBURY
6010C	AKONZEL	KMCLAEN
7470A	AKONZEL	KMCLAEN
8260C		KRUEST
8270D	KSERCU	JMISIUREWICZ
8270D SIM	AFELSER	AFELSER
PFC/537M	MSESSIONS	CCONOVER
SM 2320 B-1997(2011)		STALARICO
SM 2340 C-1997(2011)		KMENGs
SM 2540 C-1997(2011)		KAWONG
SM 5310 C-2000(2011)		SMEDBURY

**Sample Name:** 9-CAT-007-002-04  
**Lab Code:** R2009437-004  
**Sample Matrix:** Water

**Date Collected:** 10/7/20  
**Date Received:** 10/8/20

Analysis Method	Extracted/Digested By	Analyzed By
PFC/537M	MSESSIONS	CCONOVER

**Sample Name:** 9-CAT-007-002-05  
**Lab Code:** R2009437-005  
**Sample Matrix:** Water

**Date Collected:** 10/7/20  
**Date Received:** 10/8/20

Analysis Method	Extracted/Digested By	Analyzed By
PFC/537M	MSESSIONS	CCONOVER

**ALS Group USA, Corp.**

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Analyst Summary report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03

**Service Request:** R2009437

**Sample Name:** 9-CAT-007-002-06  
**Lab Code:** R2009437-006  
**Sample Matrix:** Water

**Date Collected:** 10/7/20  
**Date Received:** 10/8/20

**Analysis Method**  
8260C

**Extracted/Digested By**

**Analyzed By**  
KRUEST



## INORGANIC PREPARATION METHODS

The preparation methods associated with this report are found in these tables unless discussed in the case narrative.

### Water/Liquid Matrix

Analytical Method	Preparation Method
200.7	200.2
200.8	200.2
6010C	3005A/3010A
6020A	ILM05.3
9034 Sulfide Acid Soluble	9030B
SM 4500-CN-E Residual Cyanide	SM 4500-CN-G
SM 4500-CN-E WAD Cyanide	SM 4500-CN-I

### Solid/Soil/Non-Aqueous Matrix

Analytical Method	Preparation Method
6010C	3050B
6020A	3050B
6010C TCLP (1311) extract	3005A/3010A
6010 SPLP (1312) extract	3005A/3010A
7199	3060A
300.0 Anions/ 350.1/ 353.2/ SM 2320B/ SM 5210B/ 9056A Anions	DI extraction
For analytical methods not listed, the preparation method is the same as the analytical method reference.	





# Sample Results

**ALS Environmental—Rochester Laboratory**  
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Phone (585) 288-5380 Fax (585) 288-8475  
[www.alsglobal.com](http://www.alsglobal.com)



## Volatile Organic Compounds by GC/MS

**ALS Environmental—Rochester Laboratory**  
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**ALS Group USA, Corp.**  
dba ALS Environmental

Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** 9-CAT-007-002-01  
**Lab Code:** R2009437-001

**Service Request:** R2009437  
**Date Collected:** 10/07/20 08:50  
**Date Received:** 10/08/20 09:20

**Units:** ug/L  
**Basis:** NA

**Volatile Organic Compounds by GC/MS**

**Analysis Method:** 8260C  
**Prep Method:** EPA 5030C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Q
1,1,1,2-Tetrachloroethane	1.0 U	1.0	0.20	1	10/19/20 11:37	
1,1,1-Trichloroethane (TCA)	1.0 U	1.0	0.20	1	10/19/20 11:37	
1,1,2,2-Tetrachloroethane	1.0 U	1.0	0.20	1	10/19/20 11:37	
1,1,2-Trichloroethane	1.0 U	1.0	0.20	1	10/19/20 11:37	
1,1-Dichloroethane (1,1-DCA)	1.0 U	1.0	0.20	1	10/19/20 11:37	
1,1-Dichloroethene (1,1-DCE)	1.0 U	1.0	0.20	1	10/19/20 11:37	
1,2,3-Trichloropropane	1.0 U	1.0	0.26	1	10/19/20 11:37	
1,2-Dibromo-3-chloropropane (DBCP)	2.0 U	2.0	0.45	1	10/19/20 11:37	
1,2-Dibromoethane	1.0 U	1.0	0.20	1	10/19/20 11:37	
1,2-Dichlorobenzene	1.0 U	1.0	0.20	1	10/19/20 11:37	
1,2-Dichloroethane	1.0 U	1.0	0.20	1	10/19/20 11:37	
1,2-Dichloropropane	1.0 U	1.0	0.20	1	10/19/20 11:37	
1,4-Dichlorobenzene	1.0 U	1.0	0.20	1	10/19/20 11:37	
2-Butanone (MEK)	5.0 U	5.0	0.78	1	10/19/20 11:37	
2-Hexanone	5.0 U	5.0	0.20	1	10/19/20 11:37	
4-Methyl-2-pentanone	5.0 U	5.0	0.20	1	10/19/20 11:37	
Acetone	5.0 U	5.0	5.0	1	10/19/20 11:37	
Acrylonitrile	10 U	10	0.90	1	10/19/20 11:37	
Benzene	1.0 U	1.0	0.20	1	10/19/20 11:37	
Bromochloromethane	1.0 U	1.0	0.20	1	10/19/20 11:37	
Bromodichloromethane	1.0 U	1.0	0.20	1	10/19/20 11:37	
Bromoform	1.0 U	1.0	0.25	1	10/19/20 11:37	
Bromomethane	1.0 U	1.0	0.70	1	10/19/20 11:37	
Carbon Disulfide	1.0 U	1.0	0.42	1	10/19/20 11:37	
Carbon Tetrachloride	1.0 U	1.0	0.34	1	10/19/20 11:37	
Chlorobenzene	1.0 U	1.0	0.20	1	10/19/20 11:37	
Chloroethane	1.0 U	1.0	0.23	1	10/19/20 11:37	
Chloroform	1.0 U	1.0	0.24	1	10/19/20 11:37	
Chloromethane	1.0 U	1.0	0.28	1	10/19/20 11:37	
Dibromochloromethane	1.0 U	1.0	0.20	1	10/19/20 11:37	
Dibromomethane	1.0 U	1.0	0.20	1	10/19/20 11:37	
Methylene Chloride	1.0 U	1.0	0.65	1	10/19/20 11:37	
Ethylbenzene	1.0 U	1.0	0.20	1	10/19/20 11:37	
Iodomethane	5.0 U	5.0	4.3	1	10/19/20 11:37	
Styrene	1.0 U	1.0	0.20	1	10/19/20 11:37	
Tetrachloroethene (PCE)	1.0 U	1.0	0.21	1	10/19/20 11:37	
Toluene	1.0 U	1.0	0.20	1	10/19/20 11:37	
Trichloroethene (TCE)	1.0 U	1.0	0.20	1	10/19/20 11:37	
Trichlorofluoromethane (CFC 11)	1.0 U	1.0	0.24	1	10/19/20 11:37	
Vinyl Acetate	2.0 U	2.0	1.1	1	10/19/20 11:37	
Vinyl Chloride	1.0 U	1.0	0.20	1	10/19/20 11:37	
Xylenes, Total	3.0 U	3.0	0.23	1	10/19/20 11:37	
cis-1,2-Dichloroethene	1.0 U	1.0	0.23	1	10/19/20 11:37	

**ALS Group USA, Corp.**  
dba ALS Environmental

Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** 9-CAT-007-002-01  
**Lab Code:** R2009437-001

**Service Request:** R2009437  
**Date Collected:** 10/07/20 08:50  
**Date Received:** 10/08/20 09:20

**Units:** ug/L  
**Basis:** NA

**Volatile Organic Compounds by GC/MS**

**Analysis Method:** 8260C  
**Prep Method:** EPA 5030C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Q
cis-1,3-Dichloropropene	1.0 U	1.0	0.20	1	10/19/20 11:37	
m,p-Xylenes	2.0 U	2.0	0.20	1	10/19/20 11:37	
o-Xylene	1.0 U	1.0	0.20	1	10/19/20 11:37	
trans-1,2-Dichloroethene	1.0 U	1.0	0.20	1	10/19/20 11:37	
trans-1,3-Dichloropropene	1.0 U	1.0	0.23	1	10/19/20 11:37	
trans-1,4-Dichloro-2-butene	1.0 U	1.0	0.78	1	10/19/20 11:37	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	93	85 - 122	10/19/20 11:37	
Dibromofluoromethane	94	89 - 119	10/19/20 11:37	
Toluene-d8	97	87 - 121	10/19/20 11:37	

ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water

**Service Request:** R2009437  
**Date Collected:** 10/07/20 10:50  
**Date Received:** 10/08/20 09:20

**Sample Name:** 9-CAT-007-002-02  
**Lab Code:** R2009437-002

**Units:** ug/L  
**Basis:** NA

Volatile Organic Compounds by GC/MS

**Analysis Method:** 8260C  
**Prep Method:** EPA 5030C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Q
1,1,1,2-Tetrachloroethane	1.0 U	1.0	0.20	1	10/19/20 11:59	
1,1,1-Trichloroethane (TCA)	1.0 U	1.0	0.20	1	10/19/20 11:59	
1,1,2,2-Tetrachloroethane	1.0 U	1.0	0.20	1	10/19/20 11:59	
1,1,2-Trichloroethane	1.0 U	1.0	0.20	1	10/19/20 11:59	
1,1-Dichloroethane (1,1-DCA)	<b>0.86 J</b>	1.0	0.20	1	10/19/20 11:59	
1,1-Dichloroethene (1,1-DCE)	1.0 U	1.0	0.20	1	10/19/20 11:59	
1,2,3-Trichloropropane	1.0 U	1.0	0.26	1	10/19/20 11:59	
1,2-Dibromo-3-chloropropane (DBCP)	2.0 U	2.0	0.45	1	10/19/20 11:59	
1,2-Dibromoethane	1.0 U	1.0	0.20	1	10/19/20 11:59	
1,2-Dichlorobenzene	1.0 U	1.0	0.20	1	10/19/20 11:59	
1,2-Dichloroethane	1.0 U	1.0	0.20	1	10/19/20 11:59	
1,2-Dichloropropane	1.0 U	1.0	0.20	1	10/19/20 11:59	
1,4-Dichlorobenzene	1.0 U	1.0	0.20	1	10/19/20 11:59	
2-Butanone (MEK)	5.0 U	5.0	0.78	1	10/19/20 11:59	
2-Hexanone	5.0 U	5.0	0.20	1	10/19/20 11:59	
4-Methyl-2-pentanone	5.0 U	5.0	0.20	1	10/19/20 11:59	
Acetone	5.0 U	5.0	5.0	1	10/19/20 11:59	
Acrylonitrile	10 U	10	0.90	1	10/19/20 11:59	
Benzene	1.0 U	1.0	0.20	1	10/19/20 11:59	
Bromochloromethane	1.0 U	1.0	0.20	1	10/19/20 11:59	
Bromodichloromethane	1.0 U	1.0	0.20	1	10/19/20 11:59	
Bromoform	1.0 U	1.0	0.25	1	10/19/20 11:59	
Bromomethane	1.0 U	1.0	0.70	1	10/19/20 11:59	
Carbon Disulfide	1.0 U	1.0	0.42	1	10/19/20 11:59	
Carbon Tetrachloride	1.0 U	1.0	0.34	1	10/19/20 11:59	
Chlorobenzene	1.0 U	1.0	0.20	1	10/19/20 11:59	
Chloroethane	1.0 U	1.0	0.23	1	10/19/20 11:59	
Chloroform	1.0 U	1.0	0.24	1	10/19/20 11:59	
Chloromethane	1.0 U	1.0	0.28	1	10/19/20 11:59	
Dibromochloromethane	1.0 U	1.0	0.20	1	10/19/20 11:59	
Dibromomethane	1.0 U	1.0	0.20	1	10/19/20 11:59	
Methylene Chloride	1.0 U	1.0	0.65	1	10/19/20 11:59	
Ethylbenzene	1.0 U	1.0	0.20	1	10/19/20 11:59	
Iodomethane	5.0 U	5.0	4.3	1	10/19/20 11:59	
Styrene	1.0 U	1.0	0.20	1	10/19/20 11:59	
Tetrachloroethene (PCE)	1.0 U	1.0	0.21	1	10/19/20 11:59	
Toluene	1.0 U	1.0	0.20	1	10/19/20 11:59	
Trichloroethene (TCE)	1.0 U	1.0	0.20	1	10/19/20 11:59	
Trichlorofluoromethane (CFC 11)	1.0 U	1.0	0.24	1	10/19/20 11:59	
Vinyl Acetate	2.0 U	2.0	1.1	1	10/19/20 11:59	
Vinyl Chloride	1.0 U	1.0	0.20	1	10/19/20 11:59	
Xylenes, Total	3.0 U	3.0	0.23	1	10/19/20 11:59	
cis-1,2-Dichloroethene	<b>0.54 J</b>	1.0	0.23	1	10/19/20 11:59	

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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** 9-CAT-007-002-02  
**Lab Code:** R2009437-002

**Service Request:** R2009437  
**Date Collected:** 10/07/20 10:50  
**Date Received:** 10/08/20 09:20

**Units:** ug/L  
**Basis:** NA

**Volatile Organic Compounds by GC/MS**

**Analysis Method:** 8260C  
**Prep Method:** EPA 5030C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Q
cis-1,3-Dichloropropene	1.0 U	1.0	0.20	1	10/19/20 11:59	
m,p-Xylenes	2.0 U	2.0	0.20	1	10/19/20 11:59	
o-Xylene	1.0 U	1.0	0.20	1	10/19/20 11:59	
trans-1,2-Dichloroethene	1.0 U	1.0	0.20	1	10/19/20 11:59	
trans-1,3-Dichloropropene	1.0 U	1.0	0.23	1	10/19/20 11:59	
trans-1,4-Dichloro-2-butene	1.0 U	1.0	0.78	1	10/19/20 11:59	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	94	85 - 122	10/19/20 11:59	
Dibromofluoromethane	95	89 - 119	10/19/20 11:59	
Toluene-d8	97	87 - 121	10/19/20 11:59	

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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** 9-CAT-007-002-03  
**Lab Code:** R2009437-003

**Service Request:** R2009437  
**Date Collected:** 10/07/20 13:15  
**Date Received:** 10/08/20 09:20

**Units:** ug/L  
**Basis:** NA

**Volatile Organic Compounds by GC/MS**

**Analysis Method:** 8260C  
**Prep Method:** EPA 5030C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Q
1,1,1,2-Tetrachloroethane	1.0 U	1.0	0.20	1	10/19/20 12:21	
1,1,1-Trichloroethane (TCA)	1.0 U	1.0	0.20	1	10/19/20 12:21	
1,1,2,2-Tetrachloroethane	1.0 U	1.0	0.20	1	10/19/20 12:21	
1,1,2-Trichloroethane	1.0 U	1.0	0.20	1	10/19/20 12:21	
1,1-Dichloroethane (1,1-DCA)	<b>5.8</b>	1.0	0.20	1	10/19/20 12:21	
1,1-Dichloroethene (1,1-DCE)	1.0 U	1.0	0.20	1	10/19/20 12:21	
1,2,3-Trichloropropane	1.0 U	1.0	0.26	1	10/19/20 12:21	
1,2-Dibromo-3-chloropropane (DBCP)	2.0 U	2.0	0.45	1	10/19/20 12:21	
1,2-Dibromoethane	1.0 U	1.0	0.20	1	10/19/20 12:21	
1,2-Dichlorobenzene	<b>0.29 J</b>	1.0	0.20	1	10/19/20 12:21	
1,2-Dichloroethane	<b>0.32 J</b>	1.0	0.20	1	10/19/20 12:21	
1,2-Dichloropropane	1.0 U	1.0	0.20	1	10/19/20 12:21	
1,4-Dichlorobenzene	<b>1.8</b>	1.0	0.20	1	10/19/20 12:21	
2-Butanone (MEK)	5.0 U	5.0	0.78	1	10/19/20 12:21	
2-Hexanone	5.0 U	5.0	0.20	1	10/19/20 12:21	
4-Methyl-2-pentanone	5.0 U	5.0	0.20	1	10/19/20 12:21	
Acetone	5.0 U	5.0	5.0	1	10/19/20 12:21	
Acrylonitrile	10 U	10	0.90	1	10/19/20 12:21	
Benzene	<b>4.5</b>	1.0	0.20	1	10/19/20 12:21	
Bromochloromethane	1.0 U	1.0	0.20	1	10/19/20 12:21	
Bromodichloromethane	1.0 U	1.0	0.20	1	10/19/20 12:21	
Bromoform	1.0 U	1.0	0.25	1	10/19/20 12:21	
Bromomethane	1.0 U	1.0	0.70	1	10/19/20 12:21	
Carbon Disulfide	1.0 U	1.0	0.42	1	10/19/20 12:21	
Carbon Tetrachloride	1.0 U	1.0	0.34	1	10/19/20 12:21	
Chlorobenzene	<b>6.4</b>	1.0	0.20	1	10/19/20 12:21	
Chloroethane	<b>0.71 J</b>	1.0	0.23	1	10/19/20 12:21	
Chloroform	1.0 U	1.0	0.24	1	10/19/20 12:21	
Chloromethane	<b>0.38 J</b>	1.0	0.28	1	10/19/20 12:21	
Dibromochloromethane	1.0 U	1.0	0.20	1	10/19/20 12:21	
Dibromomethane	1.0 U	1.0	0.20	1	10/19/20 12:21	
Methylene Chloride	1.0 U	1.0	0.65	1	10/19/20 12:21	
Ethylbenzene	1.0 U	1.0	0.20	1	10/19/20 12:21	
Iodomethane	5.0 U	5.0	4.3	1	10/19/20 12:21	
Styrene	1.0 U	1.0	0.20	1	10/19/20 12:21	
Tetrachloroethene (PCE)	1.0 U	1.0	0.21	1	10/19/20 12:21	
Toluene	<b>0.21 J</b>	1.0	0.20	1	10/19/20 12:21	
Trichloroethene (TCE)	1.0 U	1.0	0.20	1	10/19/20 12:21	
Trichlorofluoromethane (CFC 11)	1.0 U	1.0	0.24	1	10/19/20 12:21	
Vinyl Acetate	2.0 U	2.0	1.1	1	10/19/20 12:21	
Vinyl Chloride	<b>0.64 J</b>	1.0	0.20	1	10/19/20 12:21	
Xylenes, Total	3.0 U	3.0	0.23	1	10/19/20 12:21	
cis-1,2-Dichloroethene	<b>1.2</b>	1.0	0.23	1	10/19/20 12:21	

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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** 9-CAT-007-002-03  
**Lab Code:** R2009437-003

**Service Request:** R2009437  
**Date Collected:** 10/07/20 13:15  
**Date Received:** 10/08/20 09:20

**Units:** ug/L  
**Basis:** NA

**Volatile Organic Compounds by GC/MS**

**Analysis Method:** 8260C  
**Prep Method:** EPA 5030C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Q
cis-1,3-Dichloropropene	1.0 U	1.0	0.20	1	10/19/20 12:21	
m,p-Xylenes	2.0 U	2.0	0.20	1	10/19/20 12:21	
o-Xylene	1.0 U	1.0	0.20	1	10/19/20 12:21	
trans-1,2-Dichloroethene	<b>0.31 J</b>	1.0	0.20	1	10/19/20 12:21	
trans-1,3-Dichloropropene	1.0 U	1.0	0.23	1	10/19/20 12:21	
trans-1,4-Dichloro-2-butene	1.0 U	1.0	0.78	1	10/19/20 12:21	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	95	85 - 122	10/19/20 12:21	
Dibromofluoromethane	96	89 - 119	10/19/20 12:21	
Toluene-d8	98	87 - 121	10/19/20 12:21	



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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** 9-CAT-007-002-06  
**Lab Code:** R2009437-006

**Service Request:** R2009437  
**Date Collected:** 10/07/20  
**Date Received:** 10/08/20 09:20

**Units:** ug/L  
**Basis:** NA

**Volatile Organic Compounds by GC/MS**

**Analysis Method:** 8260C  
**Prep Method:** EPA 5030C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Q
1,1,1,2-Tetrachloroethane	1.0 U	1.0	0.20	1	10/19/20 12:43	
1,1,1-Trichloroethane (TCA)	1.0 U	1.0	0.20	1	10/19/20 12:43	
1,1,2,2-Tetrachloroethane	1.0 U	1.0	0.20	1	10/19/20 12:43	
1,1,2-Trichloroethane	1.0 U	1.0	0.20	1	10/19/20 12:43	
1,1-Dichloroethane (1,1-DCA)	1.0 U	1.0	0.20	1	10/19/20 12:43	
1,1-Dichloroethene (1,1-DCE)	1.0 U	1.0	0.20	1	10/19/20 12:43	
1,2,3-Trichloropropane	1.0 U	1.0	0.26	1	10/19/20 12:43	
1,2-Dibromo-3-chloropropane (DBCP)	2.0 U	2.0	0.45	1	10/19/20 12:43	
1,2-Dibromoethane	1.0 U	1.0	0.20	1	10/19/20 12:43	
1,2-Dichlorobenzene	1.0 U	1.0	0.20	1	10/19/20 12:43	
1,2-Dichloroethane	1.0 U	1.0	0.20	1	10/19/20 12:43	
1,2-Dichloropropane	1.0 U	1.0	0.20	1	10/19/20 12:43	
1,4-Dichlorobenzene	1.0 U	1.0	0.20	1	10/19/20 12:43	
2-Butanone (MEK)	5.0 U	5.0	0.78	1	10/19/20 12:43	
2-Hexanone	5.0 U	5.0	0.20	1	10/19/20 12:43	
4-Methyl-2-pentanone	5.0 U	5.0	0.20	1	10/19/20 12:43	
Acetone	5.0 U	5.0	5.0	1	10/19/20 12:43	
Acrylonitrile	10 U	10	0.90	1	10/19/20 12:43	
Benzene	1.0 U	1.0	0.20	1	10/19/20 12:43	
Bromochloromethane	1.0 U	1.0	0.20	1	10/19/20 12:43	
Bromodichloromethane	1.0 U	1.0	0.20	1	10/19/20 12:43	
Bromoform	1.0 U	1.0	0.25	1	10/19/20 12:43	
Bromomethane	1.0 U	1.0	0.70	1	10/19/20 12:43	
Carbon Disulfide	1.0 U	1.0	0.42	1	10/19/20 12:43	
Carbon Tetrachloride	1.0 U	1.0	0.34	1	10/19/20 12:43	
Chlorobenzene	1.0 U	1.0	0.20	1	10/19/20 12:43	
Chloroethane	1.0 U	1.0	0.23	1	10/19/20 12:43	
Chloroform	1.0 U	1.0	0.24	1	10/19/20 12:43	
Chloromethane	1.0 U	1.0	0.28	1	10/19/20 12:43	
Dibromochloromethane	1.0 U	1.0	0.20	1	10/19/20 12:43	
Dibromomethane	1.0 U	1.0	0.20	1	10/19/20 12:43	
Methylene Chloride	1.0 U	1.0	0.65	1	10/19/20 12:43	
Ethylbenzene	1.0 U	1.0	0.20	1	10/19/20 12:43	
Iodomethane	5.0 U	5.0	4.3	1	10/19/20 12:43	
Styrene	1.0 U	1.0	0.20	1	10/19/20 12:43	
Tetrachloroethene (PCE)	1.0 U	1.0	0.21	1	10/19/20 12:43	
Toluene	1.0 U	1.0	0.20	1	10/19/20 12:43	
Trichloroethene (TCE)	1.0 U	1.0	0.20	1	10/19/20 12:43	
Trichlorofluoromethane (CFC 11)	1.0 U	1.0	0.24	1	10/19/20 12:43	
Vinyl Acetate	2.0 U	2.0	1.1	1	10/19/20 12:43	
Vinyl Chloride	1.0 U	1.0	0.20	1	10/19/20 12:43	
Xylenes, Total	3.0 U	3.0	0.23	1	10/19/20 12:43	
cis-1,2-Dichloroethene	1.0 U	1.0	0.23	1	10/19/20 12:43	

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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** 9-CAT-007-002-06  
**Lab Code:** R2009437-006

**Service Request:** R2009437  
**Date Collected:** 10/07/20  
**Date Received:** 10/08/20 09:20

**Units:** ug/L  
**Basis:** NA

**Volatile Organic Compounds by GC/MS**

**Analysis Method:** 8260C  
**Prep Method:** EPA 5030C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Q
cis-1,3-Dichloropropene	1.0 U	1.0	0.20	1	10/19/20 12:43	
m,p-Xylenes	2.0 U	2.0	0.20	1	10/19/20 12:43	
o-Xylene	1.0 U	1.0	0.20	1	10/19/20 12:43	
trans-1,2-Dichloroethene	1.0 U	1.0	0.20	1	10/19/20 12:43	
trans-1,3-Dichloropropene	1.0 U	1.0	0.23	1	10/19/20 12:43	
trans-1,4-Dichloro-2-butene	1.0 U	1.0	0.78	1	10/19/20 12:43	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	94	85 - 122	10/19/20 12:43	
Dibromofluoromethane	93	89 - 119	10/19/20 12:43	
Toluene-d8	97	87 - 121	10/19/20 12:43	



## Semivolatile Organic Compounds by GC/MS

**ALS Environmental—Rochester Laboratory**  
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623  
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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** 9-CAT-007-002-01  
**Lab Code:** R2009437-001

**Service Request:** R2009437  
**Date Collected:** 10/07/20 08:50  
**Date Received:** 10/08/20 09:20

**Units:** ug/L  
**Basis:** NA

**Low Level Semivolatile Organic Compounds by GC/MS**

**Analysis Method:** 8270D  
**Prep Method:** EPA 3510C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Acenaphthene	0.20 U	0.20	0.055	1	10/15/20 14:50	10/14/20	
Acenaphthylene	0.20 U	0.20	0.053	1	10/15/20 14:50	10/14/20	
Anthracene	0.20 U	0.20	0.071	1	10/15/20 14:50	10/14/20	
Benz(a)anthracene	0.20 U	0.20	0.13	1	10/15/20 14:50	10/14/20	
Benzo(b)fluoranthene	0.20 U	0.20	0.13	1	10/15/20 14:50	10/14/20	
Benzo(k)fluoranthene	0.20 U	0.20	0.11	1	10/15/20 14:50	10/14/20	
Benzo(g,h,i)perylene	0.20 U	0.20	0.15	1	10/15/20 14:50	10/14/20	
Benzo(a)pyrene	0.20 U	0.20	0.12	1	10/15/20 14:50	10/14/20	
Chrysene	0.20 U	0.20	0.089	1	10/15/20 14:50	10/14/20	
Dibenz(a,h)anthracene	0.20 U	0.20	0.14	1	10/15/20 14:50	10/14/20	
Fluoranthene	0.20 U	0.20	0.14	1	10/15/20 14:50	10/14/20	
Fluorene	0.20 U	0.20	0.065	1	10/15/20 14:50	10/14/20	
Indeno(1,2,3-cd)pyrene	0.20 U	0.20	0.11	1	10/15/20 14:50	10/14/20	
Naphthalene	0.20 U	0.20	0.058	1	10/15/20 14:50	10/14/20	
Phenanthrene	0.20 U	0.20	0.10	1	10/15/20 14:50	10/14/20	
Pyrene	0.20 U	0.20	0.11	1	10/15/20 14:50	10/14/20	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	67	27 - 133	10/15/20 14:50	
Nitrobenzene-d5	72	31 - 167	10/15/20 14:50	
p-Terphenyl-d14	73	25 - 151	10/15/20 14:50	

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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** 9-CAT-007-002-02  
**Lab Code:** R2009437-002

**Service Request:** R2009437  
**Date Collected:** 10/07/20 10:50  
**Date Received:** 10/08/20 09:20

**Units:** ug/L  
**Basis:** NA

**Low Level Semivolatile Organic Compounds by GC/MS**

**Analysis Method:** 8270D  
**Prep Method:** EPA 3510C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Acenaphthene	0.20 U	0.20	0.055	1	10/15/20 15:19	10/14/20	
Acenaphthylene	0.20 U	0.20	0.053	1	10/15/20 15:19	10/14/20	
Anthracene	0.20 U	0.20	0.071	1	10/15/20 15:19	10/14/20	
Benz(a)anthracene	0.20 U	0.20	0.13	1	10/15/20 15:19	10/14/20	
Benzo(b)fluoranthene	0.20 U	0.20	0.13	1	10/15/20 15:19	10/14/20	
Benzo(k)fluoranthene	0.20 U	0.20	0.11	1	10/15/20 15:19	10/14/20	
Benzo(g,h,i)perylene	0.20 U	0.20	0.15	1	10/15/20 15:19	10/14/20	
Benzo(a)pyrene	0.20 U	0.20	0.12	1	10/15/20 15:19	10/14/20	
Chrysene	0.20 U	0.20	0.089	1	10/15/20 15:19	10/14/20	
Dibenz(a,h)anthracene	0.20 U	0.20	0.14	1	10/15/20 15:19	10/14/20	
Fluoranthene	0.20 U	0.20	0.14	1	10/15/20 15:19	10/14/20	
Fluorene	0.20 U	0.20	0.065	1	10/15/20 15:19	10/14/20	
Indeno(1,2,3-cd)pyrene	0.20 U	0.20	0.11	1	10/15/20 15:19	10/14/20	
Naphthalene	0.20 U	0.20	0.058	1	10/15/20 15:19	10/14/20	
Phenanthrene	0.20 U	0.20	0.10	1	10/15/20 15:19	10/14/20	
Pyrene	0.20 U	0.20	0.11	1	10/15/20 15:19	10/14/20	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	70	27 - 133	10/15/20 15:19	
Nitrobenzene-d5	69	31 - 167	10/15/20 15:19	
p-Terphenyl-d14	94	25 - 151	10/15/20 15:19	

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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** 9-CAT-007-002-03  
**Lab Code:** R2009437-003

**Service Request:** R2009437  
**Date Collected:** 10/07/20 13:15  
**Date Received:** 10/08/20 09:20

**Units:** ug/L  
**Basis:** NA

**Low Level Semivolatile Organic Compounds by GC/MS**

**Analysis Method:** 8270D  
**Prep Method:** EPA 3510C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Acenaphthene	0.20 U	0.20	0.055	1	10/15/20 15:48	10/14/20	
Acenaphthylene	0.20 U	0.20	0.053	1	10/15/20 15:48	10/14/20	
Anthracene	0.20 U	0.20	0.071	1	10/15/20 15:48	10/14/20	
Benz(a)anthracene	0.20 U	0.20	0.13	1	10/15/20 15:48	10/14/20	
Benzo(b)fluoranthene	0.20 U	0.20	0.13	1	10/15/20 15:48	10/14/20	
Benzo(k)fluoranthene	0.20 U	0.20	0.11	1	10/15/20 15:48	10/14/20	
Benzo(g,h,i)perylene	0.20 U	0.20	0.15	1	10/15/20 15:48	10/14/20	
Benzo(a)pyrene	0.20 U	0.20	0.12	1	10/15/20 15:48	10/14/20	
Chrysene	0.20 U	0.20	0.089	1	10/15/20 15:48	10/14/20	
Dibenz(a,h)anthracene	0.20 U	0.20	0.14	1	10/15/20 15:48	10/14/20	
Fluoranthene	0.20 U	0.20	0.14	1	10/15/20 15:48	10/14/20	
Fluorene	0.20 U	0.20	0.065	1	10/15/20 15:48	10/14/20	
Indeno(1,2,3-cd)pyrene	0.20 U	0.20	0.11	1	10/15/20 15:48	10/14/20	
Naphthalene	<b>0.35</b>	0.20	0.058	1	10/15/20 15:48	10/14/20	
Phenanthrene	0.20 U	0.20	0.10	1	10/15/20 15:48	10/14/20	
Pyrene	0.20 U	0.20	0.11	1	10/15/20 15:48	10/14/20	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	68	27 - 133	10/15/20 15:48	
Nitrobenzene-d5	70	31 - 167	10/15/20 15:48	
p-Terphenyl-d14	88	25 - 151	10/15/20 15:48	

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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** 9-CAT-007-002-01  
**Lab Code:** R2009437-001

**Service Request:** R2009437  
**Date Collected:** 10/07/20 08:50  
**Date Received:** 10/08/20 09:20

**Units:** ug/L  
**Basis:** NA

1,4-Dioxane by GC/MS

**Analysis Method:** 8270D SIM  
**Prep Method:** EPA 3535A

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
1,4-Dioxane	1.1	0.040	0.027	1	10/16/20 02:22	10/13/20	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
1,4-Dioxane-d8	97	64 - 124	10/16/20 02:22	

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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** 9-CAT-007-002-02  
**Lab Code:** R2009437-002

**Service Request:** R2009437  
**Date Collected:** 10/07/20 10:50  
**Date Received:** 10/08/20 09:20

**Units:** ug/L  
**Basis:** NA

1,4-Dioxane by GC/MS

**Analysis Method:** 8270D SIM  
**Prep Method:** EPA 3535A

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
1,4-Dioxane	13	0.040	0.027	1	10/16/20 02:40	10/13/20	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
1,4-Dioxane-d8	97	64 - 124	10/16/20 02:40	



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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** 9-CAT-007-002-03  
**Lab Code:** R2009437-003

**Service Request:** R2009437  
**Date Collected:** 10/07/20 13:15  
**Date Received:** 10/08/20 09:20

**Units:** ug/L  
**Basis:** NA

1,4-Dioxane by GC/MS

**Analysis Method:** 8270D SIM  
**Prep Method:** EPA 3535A

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
1,4-Dioxane	57	0.040	0.027	1	10/16/20 02:57	10/13/20	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
1,4-Dioxane-d8	103	64 - 124	10/16/20 02:57	



# Metals

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METALS  
- 1 -  
INORGANIC ANALYSIS DATA PACKAGE

Client: Parsons Engineering Science      Service Request: 9-CAT-007-002-01  
Project No.: R2009437      Date Collected: 10/7/2020  
Project Name:      Date Received: 10/8/2020  
Matrix: WATER      Units: ug/L  
Basis:

Sample Name: 9-CAT-007-002-01      Lab Code: R2009437-001

Analyte	Analysis Method	PQL	MDL	Dil. Factor	Result	C	Q
Aluminum	6010C	100	23.0	1.0	100	U	
Antimony	6010C	60.0	4.7	1.0	60.0	U	
Arsenic	6010C	10.0	5.5	1.0	10.0	U	
Barium	6010C	20.0	3.0	1.0	33.6		
Beryllium	6010C	3.0	0.130	1.0	3.0	U	
Boron	6010C	200	12.0	1.0	21.9	J	
Cadmium	6010C	5.0	0.350	1.0	5.0	U	
Mercury	7470A	0.200	0.077	1.0	0.200	U	
Calcium	6010C	1000	220	1.0	57900		
Chromium	6010C	10.0	0.590	1.0	10.0	U	
Cobalt	6010C	50.0	0.890	1.0	50.0	U	
Copper	6010C	20.0	3.9	1.0	5.1	J	
Iron	6010C	100	61.0	1.0	100	U	
Lead	6010C	50.0	2.1	1.0	50.0	U	
Magnesium	6010C	1000	29.0	1.0	14100		
Manganese	6010C	10.0	3.7	1.0	171		
Nickel	6010C	40.0	2.6	1.0	40.0	U	
Potassium	6010C	2000	200	1.0	2180		
Selenium	6010C	10.0	6.4	1.0	10.0	U	
Silver	6010C	10.0	0.570	1.0	10.0	U	
Sodium	6010C	1000	130	1.0	9420		
Thallium	6010C	10.0	6.6	1.0	10.0	U	
Vanadium	6010C	50.0	0.670	1.0	50.0	U	
Zinc	6010C	20.0	9.4	1.0	20.0	U	

% Solids: 0.0

Comments:

METALS  
- 1 -  
INORGANIC ANALYSIS DATA PACKAGE

Client: Parsons Engineering Science Service Request: 9-CAT-007-002-01  
Project No.: R2009437 Date Collected: 10/7/2020  
Project Name: Date Received: 10/8/2020  
Matrix: WATER Units: ug/L  
Basis:

Sample Name: 9-CAT-007-002-02 Lab Code: R2009437-002

Analyte	Analysis Method	PQL	MDL	Dil. Factor	Result	C	Q
Aluminum	6010C	100	23.0	1.0	24.2	J	
Antimony	6010C	60.0	4.7	1.0	60.0	U	
Arsenic	6010C	10.0	5.5	1.0	10.0	U	
Barium	6010C	20.0	3.0	1.0	17.6	J	
Beryllium	6010C	3.0	0.130	1.0	3.0	U	
Boron	6010C	200	12.0	1.0	56.6	J	
Cadmium	6010C	5.0	0.350	1.0	5.0	U	
Mercury	7470A	0.200	0.077	1.0	0.200	U	
Calcium	6010C	1000	220	1.0	55500		
Chromium	6010C	10.0	0.590	1.0	10.0	U	
Cobalt	6010C	50.0	0.890	1.0	50.0	U	
Copper	6010C	20.0	3.9	1.0	20.0	U	
Iron	6010C	100	61.0	1.0	133		
Lead	6010C	50.0	2.1	1.0	50.0	U	
Magnesium	6010C	1000	29.0	1.0	12700		
Manganese	6010C	10.0	3.7	1.0	102		
Nickel	6010C	40.0	2.6	1.0	40.0	U	
Potassium	6010C	2000	200	1.0	1280	J	
Selenium	6010C	10.0	6.4	1.0	10.0	U	
Silver	6010C	10.0	0.570	1.0	10.0	U	
Sodium	6010C	1000	130	1.0	7870		
Thallium	6010C	10.0	6.6	1.0	10.0	U	
Vanadium	6010C	50.0	0.670	1.0	50.0	U	
Zinc	6010C	20.0	9.4	1.0	20.0	U	

% Solids: 0.0

Comments:

**METALS**  
- 1 -  
**INORGANIC ANALYSIS DATA PACKAGE**

Client: Parsons Engineering Science	Service Request: 9-CAT-007-002-01
Project No.: R2009437	Date Collected: 10/7/2020
Project Name:	Date Received: 10/8/2020
Matrix: WATER	Units: ug/L
	Basis:

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Sample Name: 9-CAT-007-002-03	Lab Code: R2009437-003
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Analyte	Analysis Method	PQL	MDL	Dil. Factor	Result	C	Q
Aluminum	6010C	100	23.0	1.0	100	U	
Antimony	6010C	60.0	4.7	1.0	60.0	U	
Arsenic	6010C	10.0	5.5	1.0	12.2		
Barium	6010C	20.0	3.0	1.0	435		
Beryllium	6010C	3.0	0.130	1.0	3.0	U	
Boron	6010C	200	12.0	1.0	111	J	
Cadmium	6010C	5.0	0.350	1.0	5.0	U	
Mercury	7470A	0.200	0.077	1.0	0.200	U	
Calcium	6010C	1000	220	1.0	128000		
Chromium	6010C	10.0	0.590	1.0	10.0	U	
Cobalt	6010C	50.0	0.890	1.0	3.9	J	
Copper	6010C	20.0	3.9	1.0	20.0	U	
Iron	6010C	100	61.0	1.0	18700		
Lead	6010C	50.0	2.1	1.0	50.0	U	
Magnesium	6010C	1000	29.0	1.0	27200		
Manganese	6010C	100	37.0	10.0	10500		
Nickel	6010C	40.0	2.6	1.0	3.5	J	
Potassium	6010C	2000	200	1.0	5360		
Selenium	6010C	10.0	6.4	1.0	10.0	U	
Silver	6010C	10.0	0.570	1.0	10.0	U	
Sodium	6010C	1000	130	1.0	15500		
Thallium	6010C	10.0	6.6	1.0	10.0	U	
Vanadium	6010C	50.0	0.670	1.0	50.0	U	
Zinc	6010C	20.0	9.4	1.0	20.0	U	

% Solids: 0.0

Comments:



## General Chemistry

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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** 9-CAT-007-002-01  
**Lab Code:** R2009437-001

**Service Request:** R2009437  
**Date Collected:** 10/07/20 08:50  
**Date Received:** 10/08/20 09:20

**Basis:** NA

Inorganic Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Ammonia as Nitrogen, undistilled	350.1	0.050 U	mg/L	0.050	0.026	1	10/17/20 12:10	
Bromide	300.0	<b>0.5 J</b>	mg/L	1.0	0.4	10	10/15/20 19:41	
Carbon, Total Organic (TOC)	SM 5310 C-2000(2011)	<b>5.1</b>	mg/L	1.0	0.5	1	10/17/20 01:33	
Chemical Oxygen Demand, Total	410.4	5.0 U	mg/L	5.0	3.8	1	10/17/20 07:30	
Chloride	300.0	<b>2.6</b>	mg/L	2.0	0.5	10	10/15/20 19:41	
Hardness, Total as CaCO3	SM 2340 C-1997(2011)	<b>235</b>	mg/L	20	7	1	10/18/20 07:33	
Solids, Total Dissolved (TDS)	SM 2540 C-1997(2011)	<b>241</b>	mg/L	10	9	1	10/14/20 17:15	
Sulfate	300.0	<b>11.9</b>	mg/L	2.0	0.4	10	10/15/20 19:41	

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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** 9-CAT-007-002-02  
**Lab Code:** R2009437-002

**Service Request:** R2009437  
**Date Collected:** 10/07/20 10:50  
**Date Received:** 10/08/20 09:20

**Basis:** NA

**Inorganic Parameters**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Q</b>
Alkalinity, Total as CaCO3	SM 2320 B-1997(2011)	<b>182</b>	mg/L	2.0	1.8	1	10/16/20 19:55	
Ammonia as Nitrogen, undistilled	350.1	0.050 U	mg/L	0.050	0.026	1	10/17/20 12:11	
Bromide	300.0	1.0 U	mg/L	1.0	0.4	10	10/15/20 19:47	
Carbon, Total Organic (TOC)	SM 5310 C-2000(2011)	<b>2.3</b>	mg/L	1.0	0.5	1	10/17/20 01:54	
Chemical Oxygen Demand, Total	410.4	5.0 U	mg/L	5.0	3.8	1	10/17/20 07:30	
Chloride	300.0	<b>3.5</b>	mg/L	2.0	0.5	10	10/15/20 19:47	
Hardness, Total as CaCO3	SM 2340 C-1997(2011)	<b>200</b>	mg/L	20	7	1	10/18/20 07:33	
Solids, Total Dissolved (TDS)	SM 2540 C-1997(2011)	<b>211</b>	mg/L	10	9	1	10/14/20 17:15	
Sulfate	300.0	<b>3.9</b>	mg/L	2.0	0.4	10	10/15/20 19:47	



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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** 9-CAT-007-002-03  
**Lab Code:** R2009437-003

**Service Request:** R2009437  
**Date Collected:** 10/07/20 13:15  
**Date Received:** 10/08/20 09:20

**Basis:** NA

**Inorganic Parameters**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Q</b>
Alkalinity, Total as CaCO3	SM 2320 B-1997(2011)	<b>458</b>	mg/L	2.0	1.8	1	10/16/20 20:02	
Ammonia as Nitrogen, undistilled	350.1	<b>6.98</b>	mg/L	0.25	0.13	5	10/17/20 12:38	
Bromide	300.0	1.0 U	mg/L	1.0	0.4	10	10/15/20 19:54	
Carbon, Total Organic (TOC)	SM 5310 C-2000(2011)	<b>10.7</b>	mg/L	2.0	0.9	2	10/20/20 20:48	
Chemical Oxygen Demand, Total	410.4	<b>13.3</b>	mg/L	5.0	3.8	1	10/17/20 07:30	
Chloride	300.0	<b>11.3</b>	mg/L	2.0	0.5	10	10/15/20 19:54	
Hardness, Total as CaCO3	SM 2340 C-1997(2011)	<b>520</b>	mg/L	20	7	1	10/18/20 07:33	
Solids, Total Dissolved (TDS)	SM 2540 C-1997(2011)	<b>494</b>	mg/L	10	9	1	10/14/20 17:15	
Sulfate	300.0	<b>1.6 J</b>	mg/L	2.0	0.4	10	10/15/20 19:54	



## QC Summary Forms

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## Volatile Organic Compounds by GC/MS

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QA/QC Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water

**Service Request:** R2009437

**SURROGATE RECOVERY SUMMARY**  
**Volatile Organic Compounds by GC/MS**

**Analysis Method:** 8260C  
**Extraction Method:** EPA 5030C

Sample Name	Lab Code	4-Bromofluorobenzene	Dibromofluoromethane	Toluene-d8
		85-122	89-119	87-121
9-CAT-007-002-01	R2009437-001	93	94	97
9-CAT-007-002-02	R2009437-002	94	95	97
9-CAT-007-002-03	R2009437-003	95	96	98
9-CAT-007-002-06	R2009437-006	94	93	97
Method Blank	RQ2012591-04	90	93	96
Lab Control Sample	RQ2012591-03	95	94	98

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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** Method Blank  
**Lab Code:** RQ2012591-04

**Service Request:** R2009437  
**Date Collected:** NA  
**Date Received:** NA  
**Units:** ug/L  
**Basis:** NA

**Volatile Organic Compounds by GC/MS**

**Analysis Method:** 8260C  
**Prep Method:** EPA 5030C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Q
1,1,1,2-Tetrachloroethane	1.0 U	1.0	0.20	1	10/19/20 11:07	
1,1,1-Trichloroethane (TCA)	1.0 U	1.0	0.20	1	10/19/20 11:07	
1,1,2,2-Tetrachloroethane	1.0 U	1.0	0.20	1	10/19/20 11:07	
1,1,2-Trichloroethane	1.0 U	1.0	0.20	1	10/19/20 11:07	
1,1-Dichloroethane (1,1-DCA)	1.0 U	1.0	0.20	1	10/19/20 11:07	
1,1-Dichloroethene (1,1-DCE)	1.0 U	1.0	0.20	1	10/19/20 11:07	
1,2,3-Trichloropropane	1.0 U	1.0	0.26	1	10/19/20 11:07	
1,2-Dibromo-3-chloropropane (DBCP)	2.0 U	2.0	0.45	1	10/19/20 11:07	
1,2-Dibromoethane	1.0 U	1.0	0.20	1	10/19/20 11:07	
1,2-Dichlorobenzene	1.0 U	1.0	0.20	1	10/19/20 11:07	
1,2-Dichloroethane	1.0 U	1.0	0.20	1	10/19/20 11:07	
1,2-Dichloropropane	1.0 U	1.0	0.20	1	10/19/20 11:07	
1,4-Dichlorobenzene	1.0 U	1.0	0.20	1	10/19/20 11:07	
2-Butanone (MEK)	5.0 U	5.0	0.78	1	10/19/20 11:07	
2-Hexanone	5.0 U	5.0	0.20	1	10/19/20 11:07	
4-Methyl-2-pentanone	5.0 U	5.0	0.20	1	10/19/20 11:07	
Acetone	5.0 U	5.0	5.0	1	10/19/20 11:07	
Acrylonitrile	10 U	10	0.90	1	10/19/20 11:07	
Benzene	1.0 U	1.0	0.20	1	10/19/20 11:07	
Bromochloromethane	1.0 U	1.0	0.20	1	10/19/20 11:07	
Bromodichloromethane	1.0 U	1.0	0.20	1	10/19/20 11:07	
Bromoform	1.0 U	1.0	0.25	1	10/19/20 11:07	
Bromomethane	1.0 U	1.0	0.70	1	10/19/20 11:07	
Carbon Disulfide	1.0 U	1.0	0.42	1	10/19/20 11:07	
Carbon Tetrachloride	1.0 U	1.0	0.34	1	10/19/20 11:07	
Chlorobenzene	1.0 U	1.0	0.20	1	10/19/20 11:07	
Chloroethane	1.0 U	1.0	0.23	1	10/19/20 11:07	
Chloroform	1.0 U	1.0	0.24	1	10/19/20 11:07	
Chloromethane	1.0 U	1.0	0.28	1	10/19/20 11:07	
Dibromochloromethane	1.0 U	1.0	0.20	1	10/19/20 11:07	
Dibromomethane	1.0 U	1.0	0.20	1	10/19/20 11:07	
Methylene Chloride	1.0 U	1.0	0.65	1	10/19/20 11:07	
Ethylbenzene	1.0 U	1.0	0.20	1	10/19/20 11:07	
Iodomethane	5.0 U	5.0	4.3	1	10/19/20 11:07	
Styrene	1.0 U	1.0	0.20	1	10/19/20 11:07	
Tetrachloroethene (PCE)	1.0 U	1.0	0.21	1	10/19/20 11:07	
Toluene	1.0 U	1.0	0.20	1	10/19/20 11:07	
Trichloroethene (TCE)	1.0 U	1.0	0.20	1	10/19/20 11:07	
Trichlorofluoromethane (CFC 11)	1.0 U	1.0	0.24	1	10/19/20 11:07	
Vinyl Acetate	2.0 U	2.0	1.1	1	10/19/20 11:07	
Vinyl Chloride	1.0 U	1.0	0.20	1	10/19/20 11:07	
Xylenes, Total	3.0 U	3.0	0.23	1	10/19/20 11:07	
cis-1,2-Dichloroethene	1.0 U	1.0	0.23	1	10/19/20 11:07	

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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** Method Blank  
**Lab Code:** RQ2012591-04

**Service Request:** R2009437  
**Date Collected:** NA  
**Date Received:** NA  
**Units:** ug/L  
**Basis:** NA

**Volatile Organic Compounds by GC/MS**

**Analysis Method:** 8260C  
**Prep Method:** EPA 5030C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Q
cis-1,3-Dichloropropene	1.0 U	1.0	0.20	1	10/19/20 11:07	
m,p-Xylenes	2.0 U	2.0	0.20	1	10/19/20 11:07	
o-Xylene	1.0 U	1.0	0.20	1	10/19/20 11:07	
trans-1,2-Dichloroethene	1.0 U	1.0	0.20	1	10/19/20 11:07	
trans-1,3-Dichloropropene	1.0 U	1.0	0.23	1	10/19/20 11:07	
trans-1,4-Dichloro-2-butene	1.0 U	1.0	0.78	1	10/19/20 11:07	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	90	85 - 122	10/19/20 11:07	
Dibromofluoromethane	93	89 - 119	10/19/20 11:07	
Toluene-d8	96	87 - 121	10/19/20 11:07	

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QA/QC Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water

**Service Request:** R2009437  
**Date Analyzed:** 10/19/20

**Lab Control Sample Summary**  
**Volatile Organic Compounds by GC/MS**

**Units:**ug/L  
**Basis:**NA

**Lab Control Sample**  
RQ2012591-03

Analyte Name	Analytical Method	Result	Spike Amount	% Rec	% Rec Limits
1,1,1,2-Tetrachloroethane	8260C	21.6	20.0	108	76-129
1,1,1-Trichloroethane (TCA)	8260C	19.0	20.0	95	75-125
1,1,2,2-Tetrachloroethane	8260C	22.4	20.0	112	78-126
1,1,2-Trichloroethane	8260C	19.9	20.0	99	82-121
1,1-Dichloroethane (1,1-DCA)	8260C	18.9	20.0	95	80-124
1,1-Dichloroethene (1,1-DCE)	8260C	22.2	20.0	111	71-118
1,2,3-Trichloropropane	8260C	16.9	20.0	84	75-118
1,2-Dibromo-3-chloropropane (DBCP)	8260C	21.7	20.0	109	55-136
1,2-Dibromoethane	8260C	20.0	20.0	100	82-127
1,2-Dichlorobenzene	8260C	19.8	20.0	99	80-119
1,2-Dichloroethane	8260C	17.6	20.0	88	71-127
1,2-Dichloropropane	8260C	20.2	20.0	101	80-119
1,4-Dichlorobenzene	8260C	19.3	20.0	96	79-119
2-Butanone (MEK)	8260C	17.8	20.0	89	61-137
2-Hexanone	8260C	18.4	20.0	92	63-124
4-Methyl-2-pentanone	8260C	18.6	20.0	93	66-124
Acetone	8260C	16.0	20.0	80	40-161
Acrylonitrile	8260C	97.7	100	98	71-130
Benzene	8260C	20.0	20.0	100	79-119
Bromochloromethane	8260C	17.8	20.0	89	81-126
Bromodichloromethane	8260C	18.5	20.0	93	81-123
Bromoform	8260C	22.6	20.0	113	65-146
Bromomethane	8260C	15.5	20.0	78	42-166
Carbon Disulfide	8260C	19.6	20.0	98	66-128
Carbon Tetrachloride	8260C	19.7	20.0	99	70-127
Chlorobenzene	8260C	19.6	20.0	98	80-121
Chloroethane	8260C	14.6	20.0	73	62-131
Chloroform	8260C	19.4	20.0	97	79-120
Chloromethane	8260C	19.8	20.0	99	65-135
Dibromochloromethane	8260C	22.6	20.0	113	72-128
Dibromomethane	8260C	19.4	20.0	97	80-118
Methylene Chloride	8260C	18.4	20.0	92	73-122
Ethylbenzene	8260C	19.7	20.0	99	76-120

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QA/QC Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water

**Service Request:** R2009437  
**Date Analyzed:** 10/19/20

**Lab Control Sample Summary**  
**Volatile Organic Compounds by GC/MS**

**Units:**ug/L  
**Basis:**NA

**Lab Control Sample**  
RQ2012591-03

<b>Analyte Name</b>	<b>Analytical Method</b>	<b>Result</b>	<b>Spike Amount</b>	<b>% Rec</b>	<b>% Rec Limits</b>
Iodomethane	8260C	15.1	20.0	75	18-160
Styrene	8260C	20.0	20.0	100	80-124
Tetrachloroethene (PCE)	8260C	20.2	20.0	101	72-125
Toluene	8260C	20.4	20.0	102	79-119
Trichloroethene (TCE)	8260C	17.6	20.0	88	74-122
Trichlorofluoromethane (CFC 11)	8260C	18.9	20.0	95	71-136
Vinyl Acetate	8260C	23.5	20.0	117	52-174
Vinyl Chloride	8260C	16.8	20.0	84	74-159
cis-1,2-Dichloroethene	8260C	20.6	20.0	103	80-121
cis-1,3-Dichloropropene	8260C	19.7	20.0	99	77-122
m,p-Xylenes	8260C	41.8	40.0	105	80-126
o-Xylene	8260C	20.6	20.0	103	79-123
trans-1,2-Dichloroethene	8260C	22.9	20.0	115	73-118
trans-1,3-Dichloropropene	8260C	20.0	20.0	100	71-133
trans-1,4-Dichloro-2-butene	8260C	19.1	20.0	96	39-137





## Semivolatile Organic Compounds by GC/MS

**ALS Environmental—Rochester Laboratory**  
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623  
Phone (585) 288-5380 Fax (585) 288-8475  
[www.alsglobal.com](http://www.alsglobal.com)

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water

**Service Request:** R2009437

**SURROGATE RECOVERY SUMMARY**  
**Low Level Semivolatile Organic Compounds by GC/MS**

**Analysis Method:** 8270D  
**Extraction Method:** EPA 3510C

Sample Name	Lab Code	2-Fluorobiphenyl	Nitrobenzene-d5	p-Terphenyl-d14
		27-133	31-167	25-151
9-CAT-007-002-01	R2009437-001	67	72	73
9-CAT-007-002-02	R2009437-002	70	69	94
9-CAT-007-002-03	R2009437-003	68	70	88
Method Blank	RQ2012328-03	60	68	100
Lab Control Sample	RQ2012328-04	70	70	103
Duplicate Lab Control Sample	RQ2012328-05	76	72	104

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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** Method Blank  
**Lab Code:** RQ2012328-03

**Service Request:** R2009437  
**Date Collected:** NA  
**Date Received:** NA  
**Units:** ug/L  
**Basis:** NA

**Low Level Semivolatile Organic Compounds by GC/MS**

**Analysis Method:** 8270D  
**Prep Method:** EPA 3510C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Acenaphthene	0.20 U	0.20	0.055	1	10/15/20 13:23	10/14/20	
Acenaphthylene	0.20 U	0.20	0.053	1	10/15/20 13:23	10/14/20	
Anthracene	0.20 U	0.20	0.071	1	10/15/20 13:23	10/14/20	
Benz(a)anthracene	0.20 U	0.20	0.13	1	10/15/20 13:23	10/14/20	
Benzo(b)fluoranthene	0.20 U	0.20	0.13	1	10/15/20 13:23	10/14/20	
Benzo(k)fluoranthene	0.20 U	0.20	0.11	1	10/15/20 13:23	10/14/20	
Benzo(g,h,i)perylene	0.20 U	0.20	0.15	1	10/15/20 13:23	10/14/20	
Benzo(a)pyrene	0.20 U	0.20	0.12	1	10/15/20 13:23	10/14/20	
Chrysene	0.20 U	0.20	0.089	1	10/15/20 13:23	10/14/20	
Dibenz(a,h)anthracene	0.20 U	0.20	0.14	1	10/15/20 13:23	10/14/20	
Fluoranthene	0.20 U	0.20	0.14	1	10/15/20 13:23	10/14/20	
Fluorene	0.20 U	0.20	0.065	1	10/15/20 13:23	10/14/20	
Indeno(1,2,3-cd)pyrene	0.20 U	0.20	0.11	1	10/15/20 13:23	10/14/20	
Naphthalene	0.20 U	0.20	0.058	1	10/15/20 13:23	10/14/20	
Phenanthrene	0.20 U	0.20	0.10	1	10/15/20 13:23	10/14/20	
Pyrene	0.20 U	0.20	0.11	1	10/15/20 13:23	10/14/20	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	60	27 - 133	10/15/20 13:23	
Nitrobenzene-d5	68	31 - 167	10/15/20 13:23	
p-Terphenyl-d14	100	25 - 151	10/15/20 13:23	

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QA/QC Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water

**Service Request:** R2009437  
**Date Analyzed:** 10/15/20

**Duplicate Lab Control Sample Summary**  
**Low Level Semivolatile Organic Compounds by GC/MS**

**Units:**ug/L  
**Basis:**NA

Analyte Name	Lab Control Sample RQ2012328-04				Duplicate Lab Control Sample RQ2012328-05				RPD	RPD Limit
	Analytical Method	Result	Spike Amount	% Rec	Result	Spike Amount	% Rec	% Rec Limits		
Acenaphthene	8270D	4.07	6.00	68	4.29	6.00	71	48-118	5	30
Acenaphthylene	8270D	4.33	6.00	72	4.50	6.00	75	48-121	4	30
Anthracene	8270D	5.05	6.00	84	5.14	6.00	86	52-124	2	30
Benz(a)anthracene	8270D	4.57	6.00	76	4.51	6.00	75	54-120	1	30
Benzo(b)fluoranthene	8270D	4.64	6.00	77	4.24	6.00	71	57-117	9	30
Benzo(k)fluoranthene	8270D	4.86	6.00	81	4.52	6.00	75	59-123	7	30
Benzo(g,h,i)perylene	8270D	4.43	6.00	74	3.97	6.00	66	47-154	11	30
Benzo(a)pyrene	8270D	5.69	6.00	95	5.11	6.00	85	57-124	11	30
Chrysene	8270D	4.95	6.00	82	4.98	6.00	83	58-124	<1	30
Dibenz(a,h)anthracene	8270D	3.44	6.00	57	2.99	6.00	50	43-147	14	30
Fluoranthene	8270D	5.31	6.00	88	5.28	6.00	88	50-117	<1	30
Fluorene	8270D	4.47	6.00	75	4.68	6.00	78	47-107	4	30
Indeno(1,2,3-cd)pyrene	8270D	4.03	6.00	67	3.56	6.00	59	55-129	12	30
Naphthalene	8270D	3.59	6.00	60	3.81	6.00	64	37-114	6	30
Phenanthrene	8270D	4.68	6.00	78	4.87	6.00	81	54-116	4	30
Pyrene	8270D	5.52	6.00	92	5.72	6.00	95	56-123	4	30

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water

**Service Request:** R2009437

**SURROGATE RECOVERY SUMMARY**  
**1,4-Dioxane by GC/MS**

**Analysis Method:** 8270D SIM  
**Extraction Method:** EPA 3535A

Sample Name	Lab Code	1,4-Dioxane-d8
		64-124
9-CAT-007-002-01	R2009437-001	97
9-CAT-007-002-02	R2009437-002	97
9-CAT-007-002-03	R2009437-003	103
Method Blank	RQ2012317-01	87
Lab Control Sample	RQ2012317-02	96
Duplicate Lab Control Sample	RQ2012317-03	92

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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** Method Blank  
**Lab Code:** RQ2012317-01

**Service Request:** R2009437  
**Date Collected:** NA  
**Date Received:** NA  
**Units:** ug/L  
**Basis:** NA

1,4-Dioxane by GC/MS

**Analysis Method:** 8270D SIM  
**Prep Method:** EPA 3535A

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
1,4-Dioxane	0.040 U	0.040	0.027	1	10/15/20 23:27	10/13/20	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
1,4-Dioxane-d8	87	64 - 124	10/15/20 23:27	

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QA/QC Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water

**Service Request:** R2009437  
**Date Analyzed:** 10/15/20

**Duplicate Lab Control Sample Summary**  
**1,4-Dioxane by GC/MS**

**Units:**ug/L  
**Basis:**NA

Analyte Name	Analytical Method	Result	Lab Control Sample		Duplicate Lab Control Sample		% Rec Limits	RPD	RPD Limit	
			Spike Amount	% Rec	Result	Spike Amount				% Rec
1,4-Dioxane	8270D SIM	10.0	10.0	100	10.2	10.0	102	58-124	1	30



# Metals

**ALS Environmental—Rochester Laboratory**  
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METALS

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BLANKS

Contract: R2009437

Lab Code: \_\_\_\_\_ Case No.: \_\_\_\_\_ SAS No.: \_\_\_\_\_ SDG NO.: 9-CAT-007-00

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L, ppt, or mg/kg): UG/L

Analyte	Initial Calib. Blank ug/L	Continuing Calibration Blank ug/L						Preparation Blank		M
		1	C	2	C	3	C	C		
Aluminum	23.00 U	23.00	U	23.00	U	23.00	U	23.00	U	P
Antimony	4.70 U	4.70	U	4.70	U	4.70	U	4.700	U	P
Arsenic	5.50 U	5.50	U	5.50	U	5.50	U	5.500	U	P
Barium	3.00 U	3.00	U	3.00	U	3.00	U	3.000	U	P
Beryllium	0.13 U	0.13	U	0.13	U	0.13	U	0.130	U	P
Boron	27.50 J	29.70	J	29.50	J	27.70	J	12.000	U	P
Cadmium	0.35 U	0.35	U	0.35	U	0.35	U	0.350	U	P
Mercury	0.077 U	0.077	U	0.077	U	0.077	U	0.077	U	CV
Calcium	220.00 U	220.00	U	220.00	U	220.00	U	220.000	U	P
Chromium	0.59 U	0.59	U	0.59	U	0.59	U	0.590	U	P
Cobalt	0.89 U	0.89	U	0.89	U	0.89	U	0.890	U	P
Copper	3.90 U	3.90	U	3.90	U	3.90	U	3.900	U	P
Iron	61.00 U	61.00	U	61.00	U	61.00	U	61.000	U	P
Lead	2.10 U	2.10	U	2.10	U	2.10	U	2.100	U	P
Magnesium	29.00 U	29.00	U	29.00	U	29.00	U	29.000	U	P
Manganese	3.70 U	3.70	U	3.70	U	3.70	U	3.700	U	P
Nickel	2.60 U	2.60	U	2.60	U	2.60	U	2.600	U	P
Potassium	200.00 U	405.60	J	200.00	U	200.00	U	200.000	U	P
Selenium	6.40 U	6.40	U	6.40	U	6.40	U	6.400	U	P
Silver	0.57 U	-0.60	J	-0.60	J	-0.60	J	0.570	U	P
Thallium	6.60 U	6.60	U	6.60	U	6.60	U	6.600	U	P
Vanadium	0.67 U	0.67	U	0.67	U	0.67	U	0.670	U	P
Zinc	9.40 U	9.40	U	9.40	U	9.40	U	9.400	U	P

Comments:

**METALS**

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**BLANKS**

Contract: R2009437

Lab Code: \_\_\_\_\_ Case No.: \_\_\_\_\_ SAS No.: \_\_\_\_\_ SDG NO.: 9-CAT-007-00

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L, ppt, or mg/kg): UG/L

Analyte	Initial Calib. Blank ug/L	Continuing Calibration Blank ug/L						Preparation Blank	C	M
		1	C	2	C	3	C			
Aluminum		23.00	U	23.00	U	23.00	U			P
Antimony		4.70	U	4.70	U	4.70	U			P
Arsenic		5.50	U	5.50	U	5.50	U			P
Barium		3.00	U	3.00	U	3.00	U			P
Beryllium		0.13	U	0.13	U	0.13	U			P
Boron		30.40	J	26.90	J	27.60	J			P
Cadmium		0.35	U	0.35	U	0.35	U			P
Mercury		0.077	U							CV
Calcium		220.00	U	220.00	U	220.00	U			P
Chromium		0.59	U	0.59	U	0.59	U			P
Cobalt		0.89	U	0.89	U	0.89	U			P
Copper		3.90	U	3.90	U	3.90	U			P
Iron		61.00	U	61.00	U	61.00	U			P
Lead		2.10	U	2.10	U	2.10	U			P
Magnesium		29.00	U	29.00	U	29.00	U			P
Manganese		3.70	U	3.70	U	3.70	U			P
Nickel		2.60	U	2.60	U	2.60	U			P
Potassium		200.00	U	200.00	U	200.00	U			P
Selenium		7.20	J	6.40	U	6.40	U			P
Silver		-0.70	J	-0.60	J	-0.60	J			P
Thallium		6.60	U	6.60	U	6.60	U			P
Vanadium		0.67	U	0.67	U	0.67	U			P
Zinc		9.40	U	9.40	U	9.40	U			P

Comments:

**METALS**

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**BLANKS**

Contract: R2009437

Lab Code: \_\_\_\_\_ Case No.: \_\_\_\_\_ SAS No.: \_\_\_\_\_ SDG NO.: 9-CAT-007-00

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L, ppt, or mg/kg): UG/L

Analyte	Initial Calib. Blank ug/L	Continuing Calibration Blank ug/L						Preparation Blank		M
		1	C	2	C	3	C	C		
Aluminum		23.00	U	23.00	U					P
Antimony		4.70	U	4.70	U					P
Arsenic		5.50	U	5.50	U					P
Barium		3.00	U	3.00	U					P
Beryllium		0.13	U	0.13	U					P
Boron		30.30	J	30.60	J					P
Cadmium		0.35	U	0.35	U					P
Calcium		220.00	U	220.00	U					P
Chromium		0.59	U	0.59	U					P
Cobalt		0.89	U	0.89	U					P
Copper		3.90	U	3.90	U					P
Iron		61.00	U	61.00	U					P
Lead		2.10	U	2.10	U					P
Magnesium		29.00	U	29.00	U					P
Manganese		3.70	U	3.70	U					P
Nickel		2.60	U	2.60	U					P
Potassium		200.00	U	200.00	U					P
Selenium		6.40	U	6.40	U					P
Silver		-0.80	J	-0.70	J					P
Thallium		6.60	U	6.60	U					P
Vanadium		0.67	U	0.67	U					P
Zinc		9.40	U	9.40	U					P

Comments:

**METALS**

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**BLANKS**

Contract: R2009437

Lab Code: \_\_\_\_\_ Case No.: \_\_\_\_\_ SAS No.: \_\_\_\_\_ SDG NO.: 9-CAT-007-00

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L, ppt, or mg/kg): UG/L

Analyte	Initial Calib. Blank ug/L	Continuing Calibration Blank ug/L						Preparation Blank	C	M
		1	C	2	C	3	C			
Arsenic	5.50 U	5.50	U	5.50	U	5.50	U			P
Manganese	3.70 U	3.70	U	3.70	U	3.70	U			P
Sodium	130.00 U	130.00	U	130.00	U	130.00	U	130.000	U	P

Comments:

**METALS**

-3-

**BLANKS**

Contract: R2009437

Lab Code: \_\_\_\_\_ Case No.: \_\_\_\_\_ SAS No.: \_\_\_\_\_ SDG NO.: 9-CAT-007-00

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L, ppt, or mg/kg): UG/L

Analyte	Initial Calib. Blank ug/L	Continuing Calibration Blank ug/L						Preparation Blank	C	M
		1	C	2	C	3	C			
Arsenic		5.50	U	5.50	U	5.50	U			P
Manganese		3.70	U	3.70	U	3.70	U			P
Sodium		130.00	U	130.00	U	130.00	U			P

Comments:

**METALS**

-3-

**BLANKS**

Contract: R2009437

Lab Code: \_\_\_\_\_ Case No.: \_\_\_\_\_ SAS No.: \_\_\_\_\_ SDG NO.: 9-CAT-007-00

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L, ppt, or mg/kg): UG/L

Analyte	Initial Calib. Blank ug/L	Continuing Calibration Blank ug/L						Preparation Blank	C	M
		1	C	2	C	3	C			
Arsenic		5.50	U							P
Manganese		3.70	U							P
Sodium		130.00	U							P

Comments:

**METALS**

-5A-

**SPIKE SAMPLE RECOVERY**

SAMPLE NO.

9-CAT-007-002-01S

Contract: R2009437

Lab Code: \_\_\_\_\_ Case No.: \_\_\_\_\_ SAS No.: \_\_\_\_\_ SDG NO.: 9-CAT-007-00

Matrix (soil/water): WATER Level (low/med): LOW

% Solids for Sample: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit %R	Spiked Sample Result (SSR) C	Sample Result (SR) C	Spike Added (SA)	%R	Q	M
Mercury	75 - 125	0.953	0.077 U	1.00	95		CV

Comments:

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**METALS**

-5A-

**SPIKE SAMPLE RECOVERY**

SAMPLE NO.

9-CAT-007-002-01SD

Contract: R2009437

Lab Code: \_\_\_\_\_ Case No.: \_\_\_\_\_ SAS No.: \_\_\_\_\_ SDG NO.: 9-CAT-007-00

Matrix (soil/water): WATER Level (low/med): LOW

% Solids for Sample: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit %R	Spiked Sample Result (SSR) C	Sample Result (SR) C	Spike Added (SA)	%R	Q	M
Mercury	75 - 125	0.953	0.077 U	1.00	95		CV

Comments:

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_



**METALS  
-6-  
DUPLICATES**

SAMPLE NO.

9-CAT-007-002-01SD

Contract: R2009437

Lab Code: \_\_\_\_\_ Case No.: \_\_\_\_\_ SAS No.: \_\_\_\_\_ SDG NO.: 9-CAT-007-00

Matrix (soil/water): WATER Level (low/med): LOW

% Solids for Sample: 0.0 % Solids for Duplicate: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit	Sample (S) C	Duplicate (D) C	RPD	Q	M
Mercury		0.953	0.953	0		CV

Comments: \_\_\_\_\_

METALS

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LABORATORY CONTROL SAMPLE

Contract: R2009437

Lab Code: \_\_\_\_\_ Case No.: \_\_\_\_\_ SAS No.: \_\_\_\_\_ SDG NO.: 9-CAT-007-00

Solid LCS Source: \_\_\_\_\_

Aqueous LCS Source: CPI

Analyte	Aqueous (ug/L)			Solid (mg/K)				
	True	Found	%R	True	Found	C	Limits	%R
Aluminum	2000	1980	99					
Antimony	500	479	96					
Arsenic	40	43	108					
Barium	2000	2050	102					
Beryllium	50	49	98					
Boron	1000	935	94					
Cadmium	50	51	102					
Mercury	1.000	1.010	101					
Calcium	2000	2060	103					
Chromium	200	199	100					
Cobalt	500	506	101					
Copper	250	236	94					
Iron	1000	990	99					
Lead	500	510	102					
Magnesium	2000	1990	100					
Manganese	500	504	101					
Nickel	500	519	104					
Potassium	20000	18900	94					
Selenium	1010	970	96					
Silver	50	48	96					
Sodium	20000	19800	99					
Thallium	2000	1860	93					
Vanadium	500	506	101					
Zinc	500	496	99					

Comments: \_\_\_\_\_



## General Chemistry

**ALS Environmental—Rochester Laboratory**  
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**ALS Group USA, Corp.**  
dba ALS Environmental

Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** Method Blank  
**Lab Code:** R2009437-MB1

**Service Request:** R2009437  
**Date Collected:** NA  
**Date Received:** NA  
**Basis:** NA

**Inorganic Parameters**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Q</b>
Alkalinity, Total as CaCO3	SM 2320 B-1997(2011)	2.0 U	mg/L	2.0	1.8	1	10/16/20 17:59	
Ammonia as Nitrogen, undistilled	350.1	0.050 U	mg/L	0.050	0.026	1	10/17/20 10:42	
Bromide	300.0	0.10 U	mg/L	0.10	0.04	1	10/15/20 16:40	
Carbon, Total Organic (TOC)	SM 5310 C-2000(2011)	1.0 U	mg/L	1.0	0.5	1	10/16/20 23:07	
Chemical Oxygen Demand, Total	410.4	5.0 U	mg/L	5.0	3.8	1	10/17/20 07:30	
Chloride	300.0	0.20 U	mg/L	0.20	0.05	1	10/15/20 16:40	
Hardness, Total as CaCO3	SM 2340 C-1997(2011)	2.0 U	mg/L	2.0	0.7	1	10/18/20 07:33	
Solids, Total Dissolved (TDS)	SM 2540 C-1997(2011)	10 U	mg/L	10	9	1	10/14/20 17:15	
Sulfate	300.0	0.20 U	mg/L	0.20	0.04	1	10/15/20 16:40	

ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** Method Blank  
**Lab Code:** R2009437-MB2

**Service Request:** R2009437  
**Date Collected:** NA  
**Date Received:** NA  
**Basis:** NA

Inorganic Parameters

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>Result</u>	<u>Units</u>	<u>MRL</u>	<u>MDL</u>	<u>Dil.</u>	<u>Date Analyzed</u>	<u>Q</u>
Ammonia as Nitrogen, undistilled	350.1	0.050 U	mg/L	0.050	0.026	1	10/17/20 12:15	
Carbon, Total Organic (TOC)	SM 5310 C-2000(2011)	1.0 U	mg/L	1.0	0.5	1	10/20/20 16:03	

ALS Group USA, Corp.  
dba ALS Environmental

QA/QC Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water

**Service Request:** R2009437  
**Date Analyzed:** 10/14/20 - 10/18/20

**Lab Control Sample Summary**  
**General Chemistry Parameters**

**Units:**mg/L  
**Basis:**NA

**Lab Control Sample**  
R2009437-LCS1

<b>Analyte Name</b>	<b>Analytical Method</b>	<b>Result</b>	<b>Spike Amount</b>	<b>% Rec</b>	<b>% Rec Limits</b>
Alkalinity, Total as CaCO3	SM 2320 B-1997(2011)	18.0	20.0	90	80-120
Ammonia as Nitrogen, undistilled	350.1	0.517	0.500	103	90-110
Bromide	300.0	1.01	1.00	101	90-110
Carbon, Total Organic (TOC)	SM 5310 C-2000(2011)	9.83	10.0	98	80-121
Chemical Oxygen Demand, Total	410.4	45.9	50.0	92	90-110
Chloride	300.0	1.97	2.00	98	90-110
Hardness, Total as CaCO3	SM 2340 C-1997(2011)	20.5	20.0	103	85-112
Solids, Total Dissolved (TDS)	SM 2540 C-1997(2011)	906	914	99	90-110
Sulfate	300.0	1.84	2.00	92	90-110

ALS Group USA, Corp.  
dba ALS Environmental

QA/QC Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water

**Service Request:** R2009437  
**Date Analyzed:** 10/17/20 - 10/20/20

**Lab Control Sample Summary**  
**General Chemistry Parameters**

**Units:**mg/L  
**Basis:**NA

**Lab Control Sample**  
R2009437-LCS2

<b>Analyte Name</b>	<b>Analytical Method</b>	<b>Result</b>	<b>Spike Amount</b>	<b>% Rec</b>	<b>% Rec Limits</b>
Ammonia as Nitrogen, undistilled	350.1	0.509	0.500	102	90-110
Carbon, Total Organic (TOC)	SM 5310 C-2000(2011)	9.78	10.0	98	80-121



## Subcontracted Analytical Parameters

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October 30, 2020

**Analytical Report for Service Request No: R2009437**

Janice Jaeger  
ALS Environmental  
1565 Jefferson Rd, Building 300  
Suite 360  
Rochester, NY 14623

**RE: ILI - Region 9 Olean Ischua LF / 452148.60007.03**

Dear Janice Jaeger,

Enclosed are the results of the sample(s) submitted to our laboratory October 08, 2020  
For your reference, these analyses have been assigned our service request number **R2009437**.

All testing was performed according to our laboratory's quality assurance program and met the requirements of the TNI standards except as noted in the case narrative report. Any testing not included in the lab's accreditation is identified on a Non-Certified Analytes report. All results are intended to be considered in their entirety. ALS Environmental is not responsible for use of less than the complete report. Results apply only to the individual samples submitted to the lab for analysis, as listed in the report. The measurement uncertainty of the results included in this report is within that expected when using the prescribed method(s), and represented by Laboratory Control Sample control limits. Any events, such as QC failures or Holding Time exceedances, which may add to the uncertainty are explained in the report narrative or are flagged with qualifiers. The flags are explained in the Report Qualifiers and Definitions page of this report.

Please contact me if you have any questions. My extension is 3376. You may also contact me via email at [Mark.Harris@alsglobal.com](mailto:Mark.Harris@alsglobal.com).

Respectfully submitted,

**ALS Group USA, Corp. dba ALS Environmental**

Mark Harris  
Project Manager



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Chain of Custody

PFAS by HPLCMSMS

## Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

### **Inorganic Data Qualifiers**

- \* The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.  
*DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.
- H The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

### **Metals Data Qualifiers**

- # The control limit criteria is not applicable. See case narrative.
- J The result is an estimated value.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.  
*DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.  
  - i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.
- Q See case narrative. One or more quality control criteria was outside the limits.

### **Organic Data Qualifiers**

- \* The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimated value.
- J The result is an estimated value.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.  
*DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

### **Additional Petroleum Hydrocarbon Specific Qualifiers**

- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

**ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso  
State Certifications, Accreditations, and Licenses**

<b>Agency</b>	<b>Web Site</b>	<b>Number</b>
Alaska DEH	<a href="http://dec.alaska.gov/eh/lab/cs/csapproval.htm">http://dec.alaska.gov/eh/lab/cs/csapproval.htm</a>	UST-040
Arizona DHS	<a href="http://www.azdhs.gov/lab/license/env.htm">http://www.azdhs.gov/lab/license/env.htm</a>	AZ0339
Arkansas - DEQ	<a href="http://www.adeq.state.ar.us/techsvs/labcert.htm">http://www.adeq.state.ar.us/techsvs/labcert.htm</a>	88-0637
California DHS (ELAP)	<a href="http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx">http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx</a>	2795
DOD ELAP	<a href="http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm">http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm</a>	L16-58-R4
Florida DOH	<a href="http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm">http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm</a>	E87412
Hawaii DOH	<a href="http://health.hawaii.gov/">http://health.hawaii.gov/</a>	-
ISO 17025	<a href="http://www.pjllabs.com/">http://www.pjllabs.com/</a>	L16-57
Louisiana DEQ	<a href="http://www.deq.louisiana.gov/page/la-lab-accreditation">http://www.deq.louisiana.gov/page/la-lab-accreditation</a>	03016
Maine DHS	<a href="http://www.maine.gov/dhhs/">http://www.maine.gov/dhhs/</a>	WA01276
Minnesota DOH	<a href="http://www.health.state.mn.us/accreditation">http://www.health.state.mn.us/accreditation</a>	053-999-457
Nevada DEP	<a href="http://ndep.nv.gov/bsdw/labservice.htm">http://ndep.nv.gov/bsdw/labservice.htm</a>	WA01276
New Jersey DEP	<a href="http://www.nj.gov/dep/enforcement/oqa.html">http://www.nj.gov/dep/enforcement/oqa.html</a>	WA005
New York - DOH	<a href="https://www.wadsworth.org/regulatory/elap">https://www.wadsworth.org/regulatory/elap</a>	12060
North Carolina DEQ	<a href="https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification">https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification</a>	605
Oklahoma DEQ	<a href="http://www.deq.state.ok.us/CSDnew/labcert.htm">http://www.deq.state.ok.us/CSDnew/labcert.htm</a>	9801
Oregon – DEQ (NELAP)	<a href="http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx">http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx</a>	WA100010
South Carolina DHEC	<a href="http://www.scdhec.gov/environment/EnvironmentalLabCertification/">http://www.scdhec.gov/environment/EnvironmentalLabCertification/</a>	61002
Texas CEQ	<a href="http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html">http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html</a>	T104704427
Washington DOE	<a href="http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html">http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html</a>	C544
Wyoming (EPA Region 8)	<a href="https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water">https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water</a>	-
Kelso Laboratory Website	<a href="http://www.alsglobal.com">www.alsglobal.com</a>	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at [www.ALSGlobal.com](http://www.ALSGlobal.com) or at the accreditation bodies web site.

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/analyte is offered by that state.



## Case Narrative

**ALS Environmental—Kelso Laboratory**  
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**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF  
**Sample Matrix:** Water

**Service Request:** R2009437  
**Date Received:** 10/08/2020

**CASE NARRATIVE**

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier level II requested by the client.

**Sample Receipt:**

Five water samples were received for analysis at ALS Environmental on 10/08/2020. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

**Organic LC:**

Method PFC/537M, 10/24/2020:The upper control criterion was exceeded for 18O2-PFHxS in sample 9-CAT-007-002-02 and for 13C2-8:2 FTS in sample 9-CAT-007-002-03. The associated native analytes were not detected above the Method Reporting Limit (MRL) in these samples. Assuming the native analytes performed similar to the labeled analogs, the effect on the reported results was minimal. The quality of the sample data was not significantly affected. No further corrective action was appropriate.

Method PFC/537M, 10/24/2020:The control criteria were exceeded for 13C2-6:2 FTS in Continuing Calibration Verification (CCV) 201022\_227. The recovery of the associated native analyte was within control criteria, which indicated the analysis was in control. No further corrective action was appropriate.

Method PFC/537M, 10/24/2020:The upper control criterion was exceeded for Perfluorotetradecanoic acid (PFTeDA) in Continuing Calibration Verification (CCV) 201022\_227. The analyte in question was not detected above the Method Reporting Limit (MRL) in the associated field samples. Since the apparent problem indicated a potential high bias, the data quality was not affected. No further corrective action was required.

Method PFC/537M, 10/27/2020:The control criteria were exceeded for 13C4-PFBA in Continuing Calibration Verification (CCV) 201026\_115. The recovery of the associated native analyte was within control criteria, which indicated the analysis was in control. No further corrective action was appropriate.

Method PFC/537M, 10/27/2020:The upper control criterion was exceeded for N-Methyl perfluorooctane sulfonamidoacetic acid in Continuing Calibration Verification (CCV) 201026\_115. The analyte in question was not detected above the Method Reporting Limit (MRL) in the associated field samples. Since the apparent problem indicated a potential high bias, the data quality was not affected. No further corrective action was required.

*Noel D. O'Neil*

Approved by \_\_\_\_\_

Date 10/30/2020



## Chain of Custody

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# Intra-Network Chain of Custody

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ALS Contact: Janice Jaeger
----------------------------

**Project Name:** ILI - Region 9 Olean Ischua LF  
**Project Number:** 452148.60007.03  
**Project Manager:** Maryanne Kosciwicz  
**Company:** Parsons Engineering Science  
**QAP:** LAB QAP

PFAS  
PFC/537M

Lab Code	Client Sample ID	# of Cont.	Matrix	Sample		Date Received	Send To	
				Date	Time			
R2009437-001	9-CAT-007-002-01	2	Water	10/7/20	0850	10/8/20	KELSO	IV
R2009437-002	9-CAT-007-002-02	↓	Water	10/7/20	1050	10/8/20	KELSO	IV
R2009437-003	9-CAT-007-002-03	↓	Water	10/7/20	1315	10/8/20	KELSO	IV
R2009437-004	9-CAT-007-002-04	↓	Water	10/7/20	1420	10/8/20	KELSO	IV
R2009437-005	9-CAT-007-002-05	1	Water	10/7/20	1425	10/8/20	KELSO	IV

**Folder Comments:**  
need Tier 2 and Tier 4

C

<b>Special Instructions/Comments</b>   NPDES  pH Checked _____	<b>Turnaround Requirements</b> _____ RUSH (Surcharges Apply) <b>PLEASE CIRCLE WORK DAYS</b> 1 2 3 4 5 <input checked="" type="checkbox"/> STANDARD Requested FAX Date: _____ Requested Report Date: <u>10/23/20</u>	<b>Report Requirements</b> _____ I. Results Only <input checked="" type="checkbox"/> II. Results + QC Summaries _____ III. Results + QC and Calibration Summaries <input checked="" type="checkbox"/> IV. Data Validation Report with Raw Data PQL/MDL/J <u>Y</u> EDD <u>Y</u>	<b>Invoice Information</b> <hr/> PO# 58R2009437 <hr/> Bill to
-------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------

Relinquished By: *[Signature]* 10/12/2020 1445     
 Received By: *[Signature]* 10/13/20     
 Airbill Number: \_\_\_\_\_

PM MH

### Cooler Receipt and Preservation Form

Client AIR-Rock Service Request K20-27609437  
Received: 10/13/20 Opened: 10/13/20 By: BR Unloaded: 10/13/20 By: BR

- 1. Samples were received via?  USPS  Fed Ex  UPS  DHL  PDX  Courier  Hand Delivered
- 2. Samples were received in: (circle)  Cooler  Box  Envelope  Other  NA
- 3. Were custody seals on coolers?  NA  Y  N If yes, how many and where? Front  Y  N  
If present, were custody seals intact?  Y  N If present, were they signed and dated?  NA  Y  N
- 4. Was a Temperature Blank present in cooler?  NA  Y  N If yes, notate the temperature in the appropriate column below:  
If no, take the temperature of a representative sample bottle contained within the cooler; notate in the column "Sample Temp":
- 5. Were samples received within the method specified temperature ranges?  NA  Y  N  
If no, were they received on ice and same day as collected? If not, notate the cooler # below and notify the PM.  NA  Y  N

Temp Blank	Sample Temp	IR Gun	Cooler #/COC ID / NA	Out of temp indicate with "X"	PM Notified If out of temp	Tracking Number NA	Filed
<u>MH</u>	<u>4.4</u>	<u>1200</u>	<u>3/3</u>	<u>---</u>	<u>---</u>	<u>173024376380</u>	
<u>MH</u>	<u>3.6</u>	<u> </u>	<u>2/3</u>	<u>---</u>	<u>---</u>	<u>" " " 6379</u>	
<u>MH</u>	<u>3.0</u>	<u> </u>	<u>1/3</u>	<u>---</u>	<u>---</u>	<u>" " " 6318</u>	

- 6. Packing material: Inserts  Baggies  Bubble Wrap  Gel Packs  Wet Ice  Dry Ice  Sleeves paper
- 7. Were custody papers properly filled out (ink, signed, etc.)?  NA  Y  N
- 8. Were samples received in good condition (unbroken)  NA  Y  N
- 9. Were all sample labels complete (ie, analysis, preservation, etc.)?  NA  Y  N
- 10. Did all sample labels and tags agree with custody papers?  NA  Y  N
- 11. Were appropriate bottles/containers and volumes received for the tests indicated?  NA  Y  N
- 12. Were the pH-preserved bottles (see SMO GEN SOP) received at the appropriate pH? Indicate in the table below  NA  Y  N
- 13. Were VOA vials received without headspace? Indicate in the table below.  NA  Y  N
- 14. Was C12/Res negative?  NA  Y  N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count	Bottle Type	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, Resolutions: \_\_\_\_\_



## PFAS by HPLC/MS/MS

**ALS Environmental—Kelso Laboratory**  
1317 South 13th Avenue, Kelso, WA 98626  
Phone (360)577-7222 Fax (360)636-1068  
[www.alsglobal.com](http://www.alsglobal.com)



# Sample Results

**ALS Environmental—Kelso Laboratory**  
1317 South 13th Avenue, Kelso, WA 98626  
Phone (360) 577-7222 Fax (360) 425-9096  
[www.alsglobal.com](http://www.alsglobal.com)



# Organic Compounds by HPLC/MS/MS

**ALS Environmental—Kelso Laboratory**  
1317 South 13th Avenue, Kelso, WA 98626  
Phone (360) 577-7222 Fax (360) 425-9096  
[www.alsglobal.com](http://www.alsglobal.com)

ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** 9-CAT-007-002-01  
**Lab Code:** R2009437-001

**Service Request:** R2009437  
**Date Collected:** 10/07/20 08:50  
**Date Received:** 10/08/20 09:20

**Units:** ng/L  
**Basis:** NA

Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS

**Analysis Method:** PFC/537M  
**Prep Method:** ALS SOP

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
<b>Perfluoroalkyl Sulfonic Acids (PFASs)</b>							
Perfluorobutane sulfonic acid (PFBS)	4.5 U	4.5	0.28	1	10/24/20 05:05	10/15/20	
Perfluorohexane sulfonic acid (PFHxS)	4.5 U	4.5	1.3	1	10/24/20 05:05	10/15/20	
Perfluoroheptane sulfonic acid (PFHpS)	4.5 U	4.5	0.44	1	10/24/20 05:05	10/15/20	
Perfluorooctane sulfonic acid (PFOS)	1.8 U	1.8	0.44	1	10/24/20 05:05	10/15/20	
Perfluorodecane sulfonic acid (PFDS)	4.5 U	4.5	0.30	1	10/24/20 05:05	10/15/20	
<b>Perfluoroalkyl Carboxylic Acids (PFCAs)</b>							
Perfluorobutanoic acid (PFBA)	<b>0.83 J</b>	4.5	0.40	1	10/24/20 05:05	10/15/20	
Perfluoropentanoic acid (PFPeA)	4.5 U	4.5	1.7	1	10/24/20 05:05	10/15/20	
Perfluorohexanoic acid (PFHxA)	9.2 U	9.2	8.8	1	10/24/20 05:05	10/15/20	
Perfluoroheptanoic acid (PFHpA)	4.5 U	4.5	0.63	1	10/24/20 05:05	10/15/20	
Perfluorooctanoic acid (PFOA)	<b>1.4 J</b>	1.8	0.35	1	10/24/20 05:05	10/15/20	
Perfluorononanoic acid (PFNA)	4.5 U	4.5	1.1	1	10/24/20 05:05	10/15/20	
Perfluorodecanoic acid (PFDA)	4.5 U	4.5	1.2	1	10/24/20 05:05	10/15/20	
Perfluoroundecanoic acid (PFUnDA)	4.5 U	4.5	1.5	1	10/24/20 05:05	10/15/20	
Perfluorododecanoic acid (PFDoDA)	4.5 U	4.5	1.3	1	10/24/20 05:05	10/15/20	
Perfluorotridecanoic acid (PFTrDA)	4.5 U	4.5	1.3	1	10/24/20 05:05	10/15/20	
Perfluorotetradecanoic acid (PFTeDA)	4.5 U	4.5	2.0	1	10/24/20 05:05	10/15/20	*
<b>Perfluoroalkyl Sulfonamido Substances</b>							
Perfluorooctane sulfonamide (FOSA)	4.5 U	4.5	0.52	1	10/24/20 05:05	10/15/20	
N-Methyl perfluorooctane sulfonamidoacetic acid	4.5 U	4.5	1.4	1	10/24/20 05:05	10/15/20	
N-Ethyl perfluorooctane sulfonamidoacetic acid	4.5 U	4.5	0.50	1	10/24/20 05:05	10/15/20	
<b>n:2 Fluorotelomer Sulfonic Acids (n:2 FTSAs)</b>							
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	4.5 U	4.5	0.55	1	10/24/20 05:05	10/15/20	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	4.5 U	4.5	0.15	1	10/24/20 05:05	10/15/20	

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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water

**Service Request:** R2009437  
**Date Collected:** 10/07/20 08:50  
**Date Received:** 10/08/20 09:20

**Sample Name:** 9-CAT-007-002-01  
**Lab Code:** R2009437-001

**Units:** ng/L  
**Basis:** NA

**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**Analysis Method:** PFC/537M  
**Prep Method:** ALS SOP

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
13C3-PFBS	92	20 - 109	10/24/20 05:05	
18O2-PFHxS	88	26 - 122	10/24/20 05:05	
13C4-PFOS	97	25 - 121	10/24/20 05:05	
13C4-PFBA	105	27 - 124	10/24/20 05:05	
13C5-PFPeA	99	27 - 138	10/24/20 05:05	
13C2-PFHxA	77	28 - 132	10/24/20 05:05	
13C4-PFHpA	84	19 - 139	10/24/20 05:05	
13C4-PFOA	77	22 - 130	10/24/20 05:05	
13C5-PFNA	111	20 - 127	10/24/20 05:05	
13C2-PFDA	98	24 - 125	10/24/20 05:05	
13C2-PFUnDA	97	22 - 125	10/24/20 05:05	
13C2-PFDoDA	95	19 - 122	10/24/20 05:05	
13C2-PFTeDA	49	13 - 124	10/24/20 05:05	
13C8-FOSA	80	18 - 109	10/24/20 05:05	
D3-MeFOSAA	63	9 - 123	10/24/20 05:05	
D5-EtFOSAA	82	12 - 126	10/24/20 05:05	
13C2-6:2 FTS	128	10 - 226	10/24/20 05:05	
13C2-8:2 FTS	96	10 - 202	10/24/20 05:05	

Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water

**Service Request:** R2009437  
**Date Collected:** 10/07/20 10:50  
**Date Received:** 10/08/20 09:20

**Sample Name:** 9-CAT-007-002-02  
**Lab Code:** R2009437-002

**Units:** ng/L  
**Basis:** NA

**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**Analysis Method:** PFC/537M  
**Prep Method:** ALS SOP

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
<b>Perfluoroalkyl Sulfonic Acids (PFASs)</b>							
Perfluorobutane sulfonic acid (PFBS)	1.1 J	4.4	0.28	1	10/24/20 05:16	10/15/20	
Perfluorohexane sulfonic acid (PFHxS)	2.7 J	4.4	1.3	1	10/24/20 05:16	10/15/20	
Perfluoroheptane sulfonic acid (PFHpS)	4.4 U	4.4	0.44	1	10/24/20 05:16	10/15/20	
Perfluorooctane sulfonic acid (PFOS)	8.1	1.8	0.44	1	10/24/20 05:16	10/15/20	
Perfluorodecane sulfonic acid (PFDS)	4.4 U	4.4	0.30	1	10/24/20 05:16	10/15/20	
<b>Perfluoroalkyl Carboxylic Acids (PFCAs)</b>							
Perfluorobutanoic acid (PFBA)	2.5 J	4.4	0.40	1	10/24/20 05:16	10/15/20	
Perfluoropentanoic acid (PFPeA)	4.4 U	4.4	1.7	1	10/24/20 05:16	10/15/20	
Perfluorohexanoic acid (PFHxA)	9.2 U	9.2	8.8	1	10/24/20 05:16	10/15/20	
Perfluoroheptanoic acid (PFHpA)	2.3 J	4.4	0.63	1	10/24/20 05:16	10/15/20	
Perfluorooctanoic acid (PFOA)	7.5	1.8	0.35	1	10/24/20 05:16	10/15/20	
Perfluorononanoic acid (PFNA)	4.4 U	4.4	1.1	1	10/24/20 05:16	10/15/20	
Perfluorodecanoic acid (PFDA)	4.4 U	4.4	1.2	1	10/24/20 05:16	10/15/20	
Perfluoroundecanoic acid (PFUnDA)	4.4 U	4.4	1.5	1	10/24/20 05:16	10/15/20	
Perfluorododecanoic acid (PFDoDA)	4.4 U	4.4	1.3	1	10/24/20 05:16	10/15/20	
Perfluorotridecanoic acid (PFTTrDA)	4.4 U	4.4	1.3	1	10/24/20 05:16	10/15/20	
Perfluorotetradecanoic acid (PFTeDA)	4.4 U	4.4	2.0	1	10/24/20 05:16	10/15/20	*
<b>Perfluoroalkyl Sulfonamido Substances</b>							
Perfluorooctane sulfonamide (FOSA)	4.4 U	4.4	0.52	1	10/24/20 05:16	10/15/20	
N-Methyl perfluorooctane sulfonamidoacetic acid	4.4 U	4.4	1.4	1	10/24/20 05:16	10/15/20	
N-Ethyl perfluorooctane sulfonamidoacetic acid	4.4 U	4.4	0.50	1	10/24/20 05:16	10/15/20	
<b>n:2 Fluorotelomer Sulfonic Acids (n:2 FTSAs)</b>							
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	4.4 U	4.4	0.55	1	10/24/20 05:16	10/15/20	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	4.4 U	4.4	0.15	1	10/24/20 05:16	10/15/20	



**ALS Group USA, Corp.**  
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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** 9-CAT-007-002-02  
**Lab Code:** R2009437-002

**Service Request:** R2009437  
**Date Collected:** 10/07/20 10:50  
**Date Received:** 10/08/20 09:20

**Units:** ng/L  
**Basis:** NA

**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**Analysis Method:** PFC/537M  
**Prep Method:** ALS SOP

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
13C3-PFBS	93	20 - 109	10/24/20 05:16	
18O2-PFHxS	123	26 - 122	10/24/20 05:16	*
13C4-PFOS	113	25 - 121	10/24/20 05:16	
13C4-PFBA	108	27 - 124	10/24/20 05:16	
13C5-PFPeA	105	27 - 138	10/24/20 05:16	
13C2-PFHxA	70	28 - 132	10/24/20 05:16	
13C4-PFHpA	117	19 - 139	10/24/20 05:16	
13C4-PFOA	76	22 - 130	10/24/20 05:16	
13C5-PFNA	115	20 - 127	10/24/20 05:16	
13C2-PFDA	106	24 - 125	10/24/20 05:16	
13C2-PFUnDA	94	22 - 125	10/24/20 05:16	
13C2-PFDoDA	98	19 - 122	10/24/20 05:16	
13C2-PFTeDA	60	13 - 124	10/24/20 05:16	
13C8-FOSA	96	18 - 109	10/24/20 05:16	
D3-MeFOSAA	54	9 - 123	10/24/20 05:16	
D5-EtFOSAA	88	12 - 126	10/24/20 05:16	
13C2-6:2 FTS	144	10 - 226	10/24/20 05:16	
13C2-8:2 FTS	104	10 - 202	10/24/20 05:16	

**ALS Group USA, Corp.**  
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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water

**Service Request:** R2009437  
**Date Collected:** 10/07/20 13:15  
**Date Received:** 10/08/20 09:20

**Sample Name:** 9-CAT-007-002-03  
**Lab Code:** R2009437-003

**Units:** ng/L  
**Basis:** NA

**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**Analysis Method:** PFC/537M  
**Prep Method:** ALS SOP

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
<b>Perfluoroalkyl Sulfonic Acids (PFASs)</b>							
Perfluorobutane sulfonic acid (PFBS)	1.7 J	4.2	0.28	1	10/24/20 05:27	10/15/20	
Perfluorohexane sulfonic acid (PFHxS)	9.3	4.2	1.3	1	10/24/20 05:27	10/15/20	
Perfluoroheptane sulfonic acid (PFHpS)	1.8 J	4.2	0.44	1	10/24/20 05:27	10/15/20	
Perfluorooctane sulfonic acid (PFOS)	30	1.7	0.44	1	10/24/20 05:27	10/15/20	
Perfluorodecane sulfonic acid (PFDS)	4.2 U	4.2	0.30	1	10/24/20 05:27	10/15/20	
<b>Perfluoroalkyl Carboxylic Acids (PFCAs)</b>							
Perfluorobutanoic acid (PFBA)	5.7	4.2	0.40	1	10/24/20 05:27	10/15/20	
Perfluoropentanoic acid (PFPeA)	1.8 J	4.2	1.7	1	10/24/20 05:27	10/15/20	
Perfluorohexanoic acid (PFHxA)	9.1 J	9.2	8.8	1	10/24/20 05:27	10/15/20	
Perfluoroheptanoic acid (PFHpA)	9.4	4.2	0.63	1	10/24/20 05:27	10/15/20	
Perfluorooctanoic acid (PFOA)	32	1.7	0.35	1	10/24/20 05:27	10/15/20	
Perfluorononanoic acid (PFNA)	4.2 U	4.2	1.1	1	10/24/20 05:27	10/15/20	
Perfluorodecanoic acid (PFDA)	4.2 U	4.2	1.2	1	10/24/20 05:27	10/15/20	
Perfluoroundecanoic acid (PFUnDA)	4.2 U	4.2	1.5	1	10/24/20 05:27	10/15/20	
Perfluorododecanoic acid (PFDoDA)	4.2 U	4.2	1.3	1	10/24/20 05:27	10/15/20	
Perfluorotridecanoic acid (PFTTrDA)	4.2 U	4.2	1.3	1	10/24/20 05:27	10/15/20	
Perfluorotetradecanoic acid (PFTeDA)	4.2 U	4.2	2.0	1	10/24/20 05:27	10/15/20	*
<b>Perfluoroalkyl Sulfonamido Substances</b>							
Perfluorooctane sulfonamide (FOSA)	4.2 U	4.2	0.52	1	10/24/20 05:27	10/15/20	
N-Methyl perfluorooctane sulfonamidoacetic acid	4.2 U	4.2	1.4	1	10/24/20 05:27	10/15/20	
N-Ethyl perfluorooctane sulfonamidoacetic acid	3.5 J	4.2	0.50	1	10/24/20 05:27	10/15/20	
<b>n:2 Fluorotelomer Sulfonic Acids (n:2 FTSAs)</b>							
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	4.2 U	4.2	0.55	1	10/24/20 05:27	10/15/20	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	4.2 U	4.2	0.15	1	10/24/20 05:27	10/15/20	

**ALS Group USA, Corp.**  
dba ALS Environmental

Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** 9-CAT-007-002-03  
**Lab Code:** R2009437-003

**Service Request:** R2009437  
**Date Collected:** 10/07/20 13:15  
**Date Received:** 10/08/20 09:20

**Units:** ng/L  
**Basis:** NA

**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**Analysis Method:** PFC/537M  
**Prep Method:** ALS SOP

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
13C3-PFBS	59	20 - 109	10/24/20 05:27	
18O2-PFHxS	47	26 - 122	10/24/20 05:27	
13C4-PFOS	84	25 - 121	10/24/20 05:27	
13C4-PFBA	71	27 - 124	10/24/20 05:27	
13C5-PFPeA	70	27 - 138	10/24/20 05:27	
13C2-PFHxA	76	28 - 132	10/24/20 05:27	
13C4-PFHpA	46	19 - 139	10/24/20 05:27	
13C4-PFOA	80	22 - 130	10/24/20 05:27	
13C5-PFNA	108	20 - 127	10/24/20 05:27	
13C2-PFDA	86	24 - 125	10/24/20 05:27	
13C2-PFUnDA	96	22 - 125	10/24/20 05:27	
13C2-PFDoDA	78	19 - 122	10/24/20 05:27	
13C2-PFTeDA	40	13 - 124	10/24/20 05:27	
13C8-FOSA	73	18 - 109	10/24/20 05:27	
D3-MeFOSAA	45	9 - 123	10/24/20 05:27	
D5-EtFOSAA	75	12 - 126	10/24/20 05:27	
13C2-6:2 FTS	175	10 - 226	10/24/20 05:27	
13C2-8:2 FTS	224	10 - 202	10/24/20 05:27	*

ALS Group USA, Corp.  
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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water

**Service Request:** R2009437  
**Date Collected:** 10/07/20 14:20  
**Date Received:** 10/08/20 09:20

**Sample Name:** 9-CAT-007-002-04  
**Lab Code:** R2009437-004

**Units:** ng/L  
**Basis:** NA

Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS

**Analysis Method:** PFC/537M  
**Prep Method:** ALS SOP

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
<b>Perfluoroalkyl Sulfonic Acids (PFASs)</b>							
Perfluorobutane sulfonic acid (PFBS)	4.5 U	4.5	0.28	1	10/24/20 05:37	10/15/20	
Perfluorohexane sulfonic acid (PFHxS)	4.5 U	4.5	1.3	1	10/24/20 05:37	10/15/20	
Perfluoroheptane sulfonic acid (PFHpS)	4.5 U	4.5	0.44	1	10/24/20 05:37	10/15/20	
Perfluorooctane sulfonic acid (PFOS)	1.8 U	1.8	0.44	1	10/24/20 05:37	10/15/20	
Perfluorodecane sulfonic acid (PFDS)	4.5 U	4.5	0.30	1	10/24/20 05:37	10/15/20	
<b>Perfluoroalkyl Carboxylic Acids (PFCAs)</b>							
Perfluorobutanoic acid (PFBA)	4.5 U	4.5	0.40	1	10/24/20 05:37	10/15/20	
Perfluoropentanoic acid (PFPeA)	4.5 U	4.5	1.7	1	10/24/20 05:37	10/15/20	
Perfluorohexanoic acid (PFHxA)	9.2 U	9.2	8.8	1	10/24/20 05:37	10/15/20	
Perfluoroheptanoic acid (PFHpA)	4.5 U	4.5	0.63	1	10/24/20 05:37	10/15/20	
Perfluorooctanoic acid (PFOA)	<b>0.47 J</b>	1.8	0.35	1	10/24/20 05:37	10/15/20	
Perfluorononanoic acid (PFNA)	4.5 U	4.5	1.1	1	10/24/20 05:37	10/15/20	
Perfluorodecanoic acid (PFDA)	4.5 U	4.5	1.2	1	10/24/20 05:37	10/15/20	
Perfluoroundecanoic acid (PFUnDA)	4.5 U	4.5	1.5	1	10/24/20 05:37	10/15/20	
Perfluorododecanoic acid (PFDoDA)	4.5 U	4.5	1.3	1	10/24/20 05:37	10/15/20	
Perfluorotridecanoic acid (PFTTrDA)	4.5 U	4.5	1.3	1	10/24/20 05:37	10/15/20	
Perfluorotetradecanoic acid (PFTeDA)	4.5 U	4.5	2.0	1	10/24/20 05:37	10/15/20	*
<b>Perfluoroalkyl Sulfonamido Substances</b>							
Perfluorooctane sulfonamide (FOSA)	4.5 U	4.5	0.52	1	10/24/20 05:37	10/15/20	
N-Methyl perfluorooctane sulfonamidoacetic acid	4.5 U	4.5	1.4	1	10/24/20 05:37	10/15/20	
N-Ethyl perfluorooctane sulfonamidoacetic acid	4.5 U	4.5	0.50	1	10/24/20 05:37	10/15/20	
<b>n:2 Fluorotelomer Sulfonic Acids (n:2 FTSAs)</b>							
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	4.5 U	4.5	0.55	1	10/24/20 05:37	10/15/20	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	4.5 U	4.5	0.15	1	10/24/20 05:37	10/15/20	

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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water

**Service Request:** R2009437  
**Date Collected:** 10/07/20 14:20  
**Date Received:** 10/08/20 09:20

**Sample Name:** 9-CAT-007-002-04  
**Lab Code:** R2009437-004

**Units:** ng/L  
**Basis:** NA

Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS

**Analysis Method:** PFC/537M  
**Prep Method:** ALS SOP

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
13C3-PFBS	73	20 - 109	10/24/20 05:37	
18O2-PFHxS	56	26 - 122	10/24/20 05:37	
13C4-PFOS	88	25 - 121	10/24/20 05:37	
13C4-PFBA	83	27 - 124	10/24/20 05:37	
13C5-PFPeA	83	27 - 138	10/24/20 05:37	
13C2-PFHxA	74	28 - 132	10/24/20 05:37	
13C4-PFHpA	60	19 - 139	10/24/20 05:37	
13C4-PFOA	82	22 - 130	10/24/20 05:37	
13C5-PFNA	95	20 - 127	10/24/20 05:37	
13C2-PFDA	90	24 - 125	10/24/20 05:37	
13C2-PFUnDA	86	22 - 125	10/24/20 05:37	
13C2-PFDoDA	82	19 - 122	10/24/20 05:37	
13C2-PFTeDA	67	13 - 124	10/24/20 05:37	
13C8-FOSA	93	18 - 109	10/24/20 05:37	
D3-MeFOSAA	65	9 - 123	10/24/20 05:37	
D5-EtFOSAA	69	12 - 126	10/24/20 05:37	
13C2-6:2 FTS	62	10 - 226	10/24/20 05:37	
13C2-8:2 FTS	92	10 - 202	10/24/20 05:37	

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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water

**Service Request:** R2009437  
**Date Collected:** 10/07/20 14:25  
**Date Received:** 10/08/20 09:20

**Sample Name:** 9-CAT-007-002-05  
**Lab Code:** R2009437-005

**Units:** ng/L  
**Basis:** NA

**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**Analysis Method:** PFC/537M  
**Prep Method:** ALS SOP

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
<b>Perfluoroalkyl Sulfonic Acids (PFASs)</b>							
Perfluorobutane sulfonic acid (PFBS)	4.2 U	4.2	0.28	1	10/24/20 05:48	10/15/20	
Perfluorohexane sulfonic acid (PFHxS)	4.2 U	4.2	1.3	1	10/24/20 05:48	10/15/20	
Perfluoroheptane sulfonic acid (PFHpS)	4.2 U	4.2	0.44	1	10/24/20 05:48	10/15/20	
Perfluorooctane sulfonic acid (PFOS)	1.7 U	1.7	0.44	1	10/24/20 05:48	10/15/20	
Perfluorodecane sulfonic acid (PFDS)	4.2 U	4.2	0.30	1	10/24/20 05:48	10/15/20	
<b>Perfluoroalkyl Carboxylic Acids (PFCAs)</b>							
Perfluorobutanoic acid (PFBA)	4.2 U	4.2	0.40	1	10/24/20 05:48	10/15/20	
Perfluoropentanoic acid (PFPeA)	4.2 U	4.2	1.7	1	10/24/20 05:48	10/15/20	
Perfluorohexanoic acid (PFHxA)	9.2 U	9.2	8.8	1	10/24/20 05:48	10/15/20	
Perfluoroheptanoic acid (PFHpA)	4.2 U	4.2	0.63	1	10/24/20 05:48	10/15/20	
Perfluorooctanoic acid (PFOA)	1.7 U	1.7	0.35	1	10/24/20 05:48	10/15/20	
Perfluorononanoic acid (PFNA)	4.2 U	4.2	1.1	1	10/24/20 05:48	10/15/20	
Perfluorodecanoic acid (PFDA)	4.2 U	4.2	1.2	1	10/24/20 05:48	10/15/20	
Perfluoroundecanoic acid (PFUnDA)	4.2 U	4.2	1.5	1	10/24/20 05:48	10/15/20	
Perfluorododecanoic acid (PFDoDA)	4.2 U	4.2	1.3	1	10/24/20 05:48	10/15/20	
Perfluorotridecanoic acid (PFTTrDA)	4.2 U	4.2	1.3	1	10/24/20 05:48	10/15/20	
Perfluorotetradecanoic acid (PFTeDA)	4.2 U	4.2	2.0	1	10/24/20 05:48	10/15/20	*
<b>Perfluoroalkyl Sulfonamido Substances</b>							
Perfluorooctane sulfonamide (FOSA)	4.2 U	4.2	0.52	1	10/24/20 05:48	10/15/20	
N-Methyl perfluorooctane sulfonamidoacetic acid	4.2 U	4.2	1.4	1	10/24/20 05:48	10/15/20	
N-Ethyl perfluorooctane sulfonamidoacetic acid	4.2 U	4.2	0.50	1	10/24/20 05:48	10/15/20	
<b>n:2 Fluorotelomer Sulfonic Acids (n:2 FTSAs)</b>							
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	4.2 U	4.2	0.55	1	10/24/20 05:48	10/15/20	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	4.2 U	4.2	0.15	1	10/24/20 05:48	10/15/20	

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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** 9-CAT-007-002-05  
**Lab Code:** R2009437-005

**Service Request:** R2009437  
**Date Collected:** 10/07/20 14:25  
**Date Received:** 10/08/20 09:20

**Units:** ng/L  
**Basis:** NA

Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS

**Analysis Method:** PFC/537M  
**Prep Method:** ALS SOP

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
13C3-PFBS	88	20 - 109	10/24/20 05:48	
18O2-PFHxS	100	26 - 122	10/24/20 05:48	
13C4-PFOS	104	25 - 121	10/24/20 05:48	
13C4-PFBA	94	27 - 124	10/24/20 05:48	
13C5-PFPeA	100	27 - 138	10/24/20 05:48	
13C2-PFHxA	62	28 - 132	10/24/20 05:48	
13C4-PFHpA	107	19 - 139	10/24/20 05:48	
13C4-PFOA	68	22 - 130	10/24/20 05:48	
13C5-PFNA	114	20 - 127	10/24/20 05:48	
13C2-PFDA	107	24 - 125	10/24/20 05:48	
13C2-PFUnDA	93	22 - 125	10/24/20 05:48	
13C2-PFDoDA	102	19 - 122	10/24/20 05:48	
13C2-PFTeDA	85	13 - 124	10/24/20 05:48	
13C8-FOSA	94	18 - 109	10/24/20 05:48	
D3-MeFOSAA	76	9 - 123	10/24/20 05:48	
D5-EtFOSAA	85	12 - 126	10/24/20 05:48	
13C2-6:2 FTS	100	10 - 226	10/24/20 05:48	
13C2-8:2 FTS	101	10 - 202	10/24/20 05:48	



# QC Summary Forms

**ALS Environmental—Kelso Laboratory**  
1317 South 13th Avenue, Kelso, WA 98626  
Phone (360) 577-7222 Fax (360) 425-9096  
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# Organic Compounds by HPLC/MS/MS

**ALS Environmental—Kelso Laboratory**  
1317 South 13th Avenue, Kelso, WA 98626  
Phone (360) 577-7222 Fax (360) 425-9096  
[www.alsglobal.com](http://www.alsglobal.com)

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water

**Service Request:** R2009437

**SURROGATE RECOVERY SUMMARY**  
**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**Analysis Method:** PFC/537M  
**Extraction Method:** ALS SOP

Surrogate	Control Limits	9-CAT-007-002-01	9-CAT-007-002-02	9-CAT-007-002-03
		R2009437-001	R2009437-002	R2009437-003
13C3-PFBS	20-109	92	93	59
18O2-PFHxS	26-122	88	123*	47
13C4-PFOS	25-121	97	113	84
13C4-PFBA	27-124	105	108	71
13C5-PFPeA	27-138	99	105	70
13C2-PFHxA	28-132	77	70	76
13C4-PFHpA	19-139	84	117	46
13C4-PFOA	22-130	77	76	80
13C5-PFNA	20-127	111	115	108
13C2-PFDA	24-125	98	106	86
13C2-PFUnDA	22-125	97	94	96
13C2-PFDoDA	19-122	95	98	78
13C2-PFTeDA	13-124	49	60	40
13C8-FOSA	18-109	80	96	73
D3-MeFOSAA	9-123	63	54	45
D5-EtFOSAA	12-126	82	88	75
13C2-6:2 FTS	10-226	128	144	175
13C2-8:2 FTS	10-202	96	104	224*

**Results flagged with an asterisk (\*) indicate values outside control criteria.**

**Results flagged with an pound (#) indicate the control criteria is not acceptable.**

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water

**Service Request:** R2009437

**SURROGATE RECOVERY SUMMARY**  
**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**Analysis Method:** PFC/537M  
**Extraction Method:** ALS SOP

Surrogate	Control Limits	9-CAT-007-002-04	9-CAT-007-002-05	Method Blank
		R2009437-004	R2009437-005	KQ2015586-06
13C3-PFBS	20-109	73	88	86
18O2-PFHxS	26-122	56	100	103
13C4-PFOS	25-121	88	104	97
13C4-PFBA	27-124	83	94	91
13C5-PFPeA	27-138	83	100	97
13C2-PFHxA	28-132	74	62	80
13C4-PFHpA	19-139	60	107	94
13C4-PFOA	22-130	82	68	99
13C5-PFNA	20-127	95	114	107
13C2-PFDA	24-125	90	107	89
13C2-PFUnDA	22-125	86	93	86
13C2-PFDoDA	19-122	82	102	86
13C2-PFTeDA	13-124	67	85	97
13C8-FOSA	18-109	93	94	86
D3-MeFOSAA	9-123	65	76	67
D5-EtFOSAA	12-126	69	85	82
13C2-6:2 FTS	10-226	62	100	80
13C2-8:2 FTS	10-202	92	101	103

Results flagged with an asterisk (\*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not acceptable.

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water

**Service Request:** R2009437

**SURROGATE RECOVERY SUMMARY**  
**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**Analysis Method:** PFC/537M  
**Extraction Method:** ALS SOP

Surrogate	Control Limits	Lab Control Sample
		KQ2015586-05
13C3-PFBS	20-109	86
18O2-PFHxS	26-122	88
13C4-PFOS	25-121	94
13C4-PFBA	27-124	90
13C5-PFPeA	27-138	97
13C2-PFHxA	28-132	72
13C4-PFHpA	19-139	75
13C4-PFOA	22-130	94
13C5-PFNA	20-127	111
13C2-PFDA	24-125	87
13C2-PFUnDA	22-125	96
13C2-PFDoDA	19-122	93
13C2-PFTeDA	13-124	88
13C8-FOSA	18-109	76
D3-MeFOSAA	9-123	67
D5-EtFOSAA	12-126	76
13C2-6:2 FTS	10-226	86
13C2-8:2 FTS	10-202	93

**Results flagged with an asterisk (\*) indicate values outside control criteria.**

**Results flagged with a pound (#) indicate the control criteria is not acceptable.**

Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** Method Blank  
**Lab Code:** KQ2015586-06

**Service Request:** R2009437  
**Date Collected:** NA  
**Date Received:** NA  
**Units:** ng/L  
**Basis:** NA

Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS

**Analysis Method:** PFC/537M  
**Prep Method:** ALS SOP

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
<b>Perfluoroalkyl Sulfonic Acids (PFASs)</b>							
Perfluorobutane sulfonic acid (PFBS)	5.0 U	5.0	0.28	1	10/27/20 00:17	10/15/20	
Perfluorohexane sulfonic acid (PFHxS)	5.0 U	5.0	1.3	1	10/27/20 00:17	10/15/20	
Perfluoroheptane sulfonic acid (PFHpS)	5.0 U	5.0	0.44	1	10/27/20 00:17	10/15/20	
Perfluorooctane sulfonic acid (PFOS)	2.0 U	2.0	0.44	1	10/27/20 00:17	10/15/20	
Perfluorodecane sulfonic acid (PFDS)	5.0 U	5.0	0.30	1	10/27/20 00:17	10/15/20	
<b>Perfluoroalkyl Carboxylic Acids (PFCAs)</b>							
Perfluorobutanoic acid (PFBA)	5.0 U	5.0	0.40	1	10/27/20 00:17	10/15/20	
Perfluoropentanoic acid (PFPeA)	5.0 U	5.0	1.7	1	10/27/20 00:17	10/15/20	
Perfluorohexanoic acid (PFHxA)	10 U	10	8.8	1	10/27/20 00:17	10/15/20	
Perfluoroheptanoic acid (PFHpA)	5.0 U	5.0	0.63	1	10/27/20 00:17	10/15/20	
Perfluorooctanoic acid (PFOA)	<b>0.54 J</b>	2.0	0.35	1	10/27/20 00:17	10/15/20	
Perfluorononanoic acid (PFNA)	5.0 U	5.0	1.1	1	10/27/20 00:17	10/15/20	
Perfluorodecanoic acid (PFDA)	5.0 U	5.0	1.2	1	10/27/20 00:17	10/15/20	
Perfluoroundecanoic acid (PFUnDA)	5.0 U	5.0	1.5	1	10/27/20 00:17	10/15/20	
Perfluorododecanoic acid (PFDoDA)	5.0 U	5.0	1.3	1	10/27/20 00:17	10/15/20	
Perfluorotridecanoic acid (PFTrDA)	5.0 U	5.0	1.3	1	10/27/20 00:17	10/15/20	
Perfluorotetradecanoic acid (PFTeDA)	5.0 U	5.0	2.0	1	10/27/20 00:17	10/15/20	
<b>Perfluoroalkyl Sulfonamido Substances</b>							
Perfluorooctane sulfonamide (FOSA)	5.0 U	5.0	0.52	1	10/27/20 00:17	10/15/20	
N-Methyl perfluorooctane sulfonamidoacetic acid	5.0 U	5.0	1.4	1	10/27/20 00:17	10/15/20	
N-Ethyl perfluorooctane sulfonamidoacetic acid	5.0 U	5.0	0.50	1	10/27/20 00:17	10/15/20	
<b>n:2 Fluorotelomer Sulfonic Acids (n:2 FTSAs)</b>							
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	5.0 U	5.0	0.55	1	10/27/20 00:17	10/15/20	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	5.0 U	5.0	0.15	1	10/27/20 00:17	10/15/20	

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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** Method Blank  
**Lab Code:** KQ2015586-06

**Service Request:** R2009437  
**Date Collected:** NA  
**Date Received:** NA  
**Units:** ng/L  
**Basis:** NA

Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS

**Analysis Method:** PFC/537M  
**Prep Method:** ALS SOP

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
13C3-PFBS	86	20 - 109	10/27/20 00:17	
18O2-PFHxS	103	26 - 122	10/27/20 00:17	
13C4-PFOS	97	25 - 121	10/27/20 00:17	
13C4-PFBA	91	27 - 124	10/27/20 00:17	
13C5-PFPeA	97	27 - 138	10/27/20 00:17	
13C2-PFHxA	80	28 - 132	10/27/20 00:17	
13C4-PFHpA	94	19 - 139	10/27/20 00:17	
13C4-PFOA	99	22 - 130	10/27/20 00:17	
13C5-PFNA	107	20 - 127	10/27/20 00:17	
13C2-PFDA	89	24 - 125	10/27/20 00:17	
13C2-PFUnDA	86	22 - 125	10/27/20 00:17	
13C2-PFDoDA	86	19 - 122	10/27/20 00:17	
13C2-PFTeDA	97	13 - 124	10/27/20 00:17	
13C8-FOSA	86	18 - 109	10/27/20 00:17	
D3-MeFOSAA	67	9 - 123	10/27/20 00:17	
D5-EtFOSAA	82	12 - 126	10/27/20 00:17	
13C2-6:2 FTS	80	10 - 226	10/27/20 00:17	
13C2-8:2 FTS	103	10 - 202	10/27/20 00:17	

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water

**Service Request:** R2009437  
**Date Analyzed:** 10/27/20  
**Date Extracted:** 10/15/20

**Lab Control Sample Summary**  
**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**Analysis Method:** PFC/537M  
**Prep Method:** ALS SOP

**Units:** ng/L  
**Basis:** NA  
**Analysis Lot:** 700940

**Lab Control Sample**  
**KQ2015586-05**

Analyte Name	Result	Spike Amount	% Rec	% Rec Limits
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	40.0	30.4	132	71-142
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	40.4	30.7	132	69-137
N-Ethyl perfluorooctane sulfonamidoacetic acid	35.8	32.0	112	58-155
N-Methyl perfluorooctane sulfonamidoacetic acid	41.6	32.0	130	69-151
Perfluorobutane sulfonic acid (PFBS)	32.2	28.4	113	61-140
Perfluorobutanoic acid (PFBA)	36.8	32.0	115	51-157
Perfluorodecane sulfonic acid (PFDS)	39.4	30.9	128	69-146
Perfluorodecanoic acid (PFDA)	35.8	32.0	112	73-136
Perfluorododecanoic acid (PFDoDA)	32.7	32.0	102	71-138
Perfluoroheptane sulfonic acid (PFHpS)	31.3	30.5	103	62-178
Perfluoroheptanoic acid (PFHpA)	35.5	32.0	111	72-133
Perfluorohexane sulfonic acid (PFHxS)	32.6	29.2	112	69-144
Perfluorohexanoic acid (PFHxA)	34.0	32.0	106	71-138
Perfluorononanoic acid (PFNA)	34.1	32.0	107	69-148
Perfluorooctane sulfonamide (FOSA)	36.4	32.0	114	64-135
Perfluorooctane sulfonic acid (PFOS)	32.4	29.7	109	71-139
Perfluorooctanoic acid (PFOA)	30.6	32.0	96	74-146
Perfluoropentanoic acid (PFPeA)	36.4	32.0	114	67-127
Perfluorotetradecanoic acid (PFTeDA)	39.1	32.0	122	63-139
Perfluorotridecanoic acid (PFTrDA)	35.2	32.0	110	65-140
Perfluoroundecanoic acid (PFUnDA)	33.7	32.0	105	76-134



November 02, 2020

Service Request No:R2009456

Mr. George Moreau  
Parsons Engineering Science  
301 Plainfield Road  
Suite 350  
Syracuse, NY 13212

**Laboratory Results for: ILI - Region 9 Olean Ischua LF**

Dear Mr.Moreau,

Enclosed are the results of the sample(s) submitted to our laboratory October 08, 2020  
For your reference, these analyses have been assigned our service request number **R2009456**.

All testing was performed according to our laboratory's quality assurance program and met the requirements of the TNI standards except as noted in the case narrative report. Any testing not included in the lab's accreditation is identified on a Non-Certified Analytes report. All results are intended to be considered in their entirety. ALS Environmental is not responsible for use of less than the complete report. Results apply only to the individual samples submitted to the lab for analysis, as listed in the report. The measurement uncertainty of the results included in this report is within that expected when using the prescribed method(s), and represented by Laboratory Control Sample control limits. Any events, such as QC failures or Holding Time exceedances, which may add to the uncertainty are explained in the report narrative or are flagged with qualifiers. The flags are explained in the Report Qualifiers and Definitions page of this report.

Please contact me if you have any questions. My extension is 7472. You may also contact me via email at [Janice.Jaeger@alsglobal.com](mailto:Janice.Jaeger@alsglobal.com).

Respectfully submitted,

**ALS Group USA, Corp. dba ALS Environmental**

Janice Jaeger  
Project Manager

CC: Maryanne  
Kosciewicz

**ADDRESS**

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ALS Group USA, Corp.  
dba ALS Environmental





# Narrative Documents

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



**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF  
**Sample Matrix:** Water

**Service Request:** R2009456  
**Date Received:** 10/08/2020

**CASE NARRATIVE**

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier level IV requested by the client.

**Sample Receipt:**

Five water samples were received for analysis at ALS Environmental on 10/08/2020. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

One or more samples were subcontracted to another laboratory for testing. The certified analytical report from the subcontractor has been included in its entirety at the end of this report and includes the name and address of the subcontracted laboratory.

**Semivolatiles by GC/MS:**

No significant anomalies were noted with this analysis.

**Metals:**

No significant anomalies were noted with this analysis.

**General Chemistry:**

No significant anomalies were noted with this analysis.

**Subcontracted Analytical Parameters:**

No significant anomalies were noted with this analysis.

**Volatiles by GC/MS:**

Method 8260C, 10/19/2020: The lower control limit was exceeded for one or more analytes in the Continuing Calibration Verification (CCV). Since there were no detections of the analyte(s) above the MRL in the associated field samples, the quantitation is not affected. The data quality was not significantly affected and no further corrective action was taken.

Approved by \_\_\_\_\_

Date 11/02/2020



## Sample Receipt Information

**ALS Environmental—Rochester Laboratory**  
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623  
Phone (585) 288-5380 Fax (585) 288-8475  
[www.alsglobal.com](http://www.alsglobal.com)

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03

**Service Request:**R2009456

**SAMPLE CROSS-REFERENCE**

<u>SAMPLE #</u>	<u>CLIENT SAMPLE ID</u>	<u>DATE</u>	<u>TIME</u>
R2009456-001	9-CAT-007-003-01	10/8/2020	0830
R2009456-002	9-CAT-007-003-02	10/8/2020	0930
R2009456-003	9-CAT-007-003-03	10/8/2020	0935
R2009456-004	9-CAT-007-003-04	10/8/2020	0940
R2009456-005	9-CAT-007-003-05	10/8/2020	

## CHAIN-OF-CUSTODY / Analytical Request Document

<b>Section A Laboratory Information</b>		<b>Section B Client Information</b>		<b>COC #:</b>	9-CAT-007-003
Lab Name: ALS		Company: Parsons		<b>Project Name:</b>	ILI - Region 9
Attention: Janice Jaeger		Attention: George Moreau		<b>Project Site:</b>	Clean Ischia LF
Address: 1565 Jefferson Road, Bldg 300, Suite 360 Rochester, NY 14623		Address: 301 Plainfield Road, Suite 350 Syracuse, NY 13212		<b>Project Number:</b>	452148.09040
Phone: 585-288-5380		Phone: 315-552-9715			
Email: janice.jaeger@alsglobal.com		Email: George.H.Moreau@parsons.com			

**Section C Deliverable Requirements**

Report To: George.H.Moreau@parsons.com

Copy To: Lorraine.Weber@parsons.com; Laura.Drachenberg@parsons.com  
Maryanne.Kosciewicz@parsons.com; Heather.Fettig@parsons.com

Deliverables: Level 2, CAT B Report, NYSDEC EQUIS EDD

Purchase Order No:

TAT - 10 Day

**Section D Additional Information**

Preservative codes (for water only):												
0	1	0	0	2	2	3	3	0	0	0		
MS/MSD	Composite (Y/N)	Modified Baseline VOCs 8260	PAHs 8275SH	1,4-Dioxane 8275SH	Hex Bish Me/Trg 6010/7470	Hard-Sp-20 2240C	Ammonia/COD 350,1410,4	TCC 9060A	SO <sub>4</sub> /CH <sub>3</sub> /BOD 300,0	TDS 942540D	Ammonia Sp-20 2220B	** Dissolved Hg 6010/7470
# Bottles		2	3	2	2	1	1	3	1	1	1	1

#	Location ID	Start Depth (ft)	End Depth (ft)	Field Sample ID MUST BE UNIQUE	Sample Date	Sample Time	Sample Matrix	Sample Type	# of Cont.	Preservative Codes														
										MS/MSD	Composite (Y/N)	Modified Baseline VOCs 8260	PAHs 8275SH	1,4-Dioxane 8275SH	Hex Bish Me/Trg 6010/7470	Hard-Sp-20 2240C	Ammonia/COD 350,1410,4	TCC 9060A	SO <sub>4</sub> /CH <sub>3</sub> /BOD 300,0	TDS 942540D	Ammonia Sp-20 2220B	** Dissolved Hg 6010/7470		
1	9-CAT-007-MW-7C	36.73	44.62	9-CAT-007-003-01	10/8/20	0830	WG	N	15			X	X	X	X	X	X	X	X	X	X	X	X	X
2	9-CAT-007-FIELDQC	-	-	9-CAT-007-003-02	10/8/20	0930	WQ	EB	16			X	X	X	X	X	X	X	X	X	X	X	X	X
3	9-CAT-007-FIELDQC	-	-	9-CAT-007-003-03	10/8/20	0935	WQ	EB	2			X												
4	9-CAT-007-FIELDQC	-	-	9-CAT-007-003-04	10/8/20	0940	WQ	FB	1			X												
5	9-CAT-007-FIELDQC	-	-	9-CAT-007-003-05	10/8/20	-	WQ	TB	3			X												
6																								
7																								
8																								
9																								
10																								

**Special Instructions:**

\*\* --Dissolved Metals/Hg collected when Turbidity is greater than 50 NTU.

Samplers Name: Faith McDonald	Company: Parsons	Relinquished By: Faith McDonald	Company: ALS	Cooler Temp.:	Custody Seals Intact: Yes <input type="checkbox"/> No <input type="checkbox"/>
Shipment Method:	Date/Time: 10/8/20 1255	Accepted By: [Signature]	Date/Time: 10/8/20/1255	Rec'd on Ice: Yes <input type="checkbox"/> No <input type="checkbox"/>	Samples Intact: Yes <input type="checkbox"/> No <input type="checkbox"/>

Preservatives: 0 = None; [1 = HCL]; [2 = HNO3]; [3 = H2SO4]; [4 = NaOH]; [5 = Zn Acetate]; [6 = MeOH]; [7 = NaHSO4]; 8 = Other (H3PO4):



# Cooler Receipt and Preservation Check Form

**R2009456****5**Parsons Engineering Science  
ILI - Region 9 Clean techua LFProject/Client Parsons

Folder Number \_\_\_\_\_

Cooler received on 10/8/2020 by slw

COURIER: ALS UPS FEDEX VELOCITY CLIENT

1	Were Custody seals on outside of cooler?	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
2	Custody papers properly completed (ink, signed)?	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N
3	Did all bottles arrive in good condition (unbroken)?	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N
4	Circle: <del>Wet</del> Ice Dry Ice Gel packs present?	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N

5a	Perchlorate samples have required headspace?	Y N <input checked="" type="checkbox"/> NA
5b	Did VOA vials, Alk, or Sulfide have sig* bubbles?	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> NA #
6	Where did the bottles originate?	ALS/ROC CLIENT
7	Soil VOA received as:	Bulk Encore 5035set <input checked="" type="checkbox"/> NA

3. Temperature Readings Date: 10/8/2020 Time: 1305 ID: IR#7 IR#10 From: Temp Blank Sample Bottle

Observed Temp (°C)	<u>4.70</u>	<u>5.13</u>					
Within 0-6°C?	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	Y N	Y N	Y N	Y N	Y N
If <0°C, were samples frozen?	Y N	Y N	Y N	Y N	Y N	Y N	Y N

If out of Temperature, note packing/ice condition: \_\_\_\_\_ Ice melted Poorly Packed (described below) Same Day Rule  
 & Client Approval to Run Samples: \_\_\_\_\_ Standing Approval Client aware at drop-off Client notified by: \_\_\_\_\_

All samples held in storage location: Room by slw on 10/8/2020 at 1305  
 5035 samples placed in storage location: \_\_\_\_\_ by \_\_\_\_\_ on \_\_\_\_\_ at \_\_\_\_\_ within 48 hours of sampling? Y N

Cooler Breakdown/Preservation Check\*\*: Date: 10/9/2020 Time: 1635 by: slw

9. Were all bottle labels complete (i.e. analysis, preservation, etc.)? YES NO  
 10. Did all bottle labels and tags agree with custody papers? YES NO  
 11. Were correct containers used for the tests indicated? YES NO  
 12. Were 5035 vials acceptable (no extra labels, not leaking)? YES NO  
 13. Air Samples: Cassettes / Tubes Intact with MS? Canisters Pressurized Tedlar® Bags Inflated N/A  
N/A

pH	Lot of test paper	Reagent	Preserved?		Lot Received	Exp	Sample ID Adjusted	Vol. Added	Lot Added	Final pH
			Yes	No						
≥12		NaOH								
≤2	<u>223419</u>	HNO <sub>3</sub>	<input checked="" type="checkbox"/>		<u>1120021</u>					
≤2	<u>↓</u>	H <sub>2</sub> SO <sub>4</sub>	<input checked="" type="checkbox"/>		<u>2066-11</u>					
<4		NaHSO <sub>4</sub>								
5-9		For 608pest			No=Notify for 3day					
Residual Chlorine (-)		For CN, Phenol, 625, 608pest, 522			If +, contact PM to add Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> (625, 608, CN), ascorbic (phenol).					
		Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>								
		ZnAcetate	-	-						
		HCl	**	**						

\*\*VOAs and 1664 Not to be tested before analysis.  
 Otherwise, all bottles of all samples with chemical preservatives are checked (not just representatives).

Bottle lot numbers: 20-07-07, 20-07-09, 080320-1DK, 082420-1BMC

Explain all Discrepancies/ Other Comments:

2 Vials: 01-CAT-007-003-05

HPROD	BULK
HTR	FLDT
<u>SUB</u>	HGFB
ALS	LL3541

Labels secondary reviewed by: slwPC Secondary Review: slw 10/10/20\*significant air bubbles: VOA > 5-6 mm : WC > 1 in. diameter  
7 of 83



## Miscellaneous Forms

**ALS Environmental—Rochester Laboratory**  
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623  
Phone (585) 288-5380 Fax (585) 288-8475  
[www.alsglobal.com](http://www.alsglobal.com)

## REPORT QUALIFIERS AND DEFINITIONS

- |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>U</b> Analyte was analyzed for but not detected. The sample quantitation limit has been corrected for dilution and for percent moisture, unless otherwise noted in the case narrative.</p> <p><b>J</b> Estimated value due to either being a Tentatively Identified Compound (TIC) or that the concentration is between the MRL and the MDL. Concentrations are not verified within the linear range of the calibration. For DoD: concentration &gt;40% difference between two GC columns (pesticides/Aroclors).</p> <p><b>B</b> Analyte was also detected in the associated method blank at a concentration that may have contributed to the sample result.</p> <p><b>E</b> Inorganics- Concentration is estimated due to the serial dilution was outside control limits.</p> <p><b>E</b> Organics- Concentration has exceeded the calibration range for that specific analysis.</p> <p><b>D</b> Concentration is a result of a dilution, typically a secondary analysis of the sample due to exceeding the calibration range or that a surrogate has been diluted out of the sample and cannot be assessed.</p> <p><b>*</b> Indicates that a quality control parameter has exceeded laboratory limits. Under the "Notes" column of the Form I, this qualifier denotes analysis was performed out of Holding Time.</p> <p><b>H</b> Analysis was performed out of hold time for tests that have an "immediate" hold time criteria.</p> <p><b>#</b> Spike was diluted out.</p> | <p><b>+</b> Correlation coefficient for MSA is &lt;0.995.</p> <p><b>N</b> Inorganics- Matrix spike recovery was outside laboratory limits.</p> <p><b>N</b> Organics- Presumptive evidence of a compound (reported as a TIC) based on the MS library search.</p> <p><b>S</b> Concentration has been determined using Method of Standard Additions (MSA).</p> <p><b>W</b> Post-Digestion Spike recovery is outside control limits and the sample absorbance is &lt;50% of the spike absorbance.</p> <p><b>P</b> Concentration &gt;40% difference between the two GC columns.</p> <p><b>C</b> Confirmed by GC/MS</p> <p><b>Q</b> DoD reports: indicates a pesticide/Aroclor is not confirmed (<math>\times 100\%</math> Difference between two GC columns).</p> <p><b>X</b> See Case Narrative for discussion.</p> <p><b>MRL</b> Method Reporting Limit. Also known as:</p> <p><b>LOQ</b> Limit of Quantitation (LOQ)<br/>The lowest concentration at which the method analyte may be reliably quantified under the method conditions.</p> <p><b>MDL</b> Method Detection Limit. A statistical value derived from a study designed to provide the lowest concentration that will be detected 99% of the time. Values between the MDL and MRL are estimated (see J qualifier).</p> <p><b>LOD</b> Limit of Detection. A value at or above the MDL which has been verified to be detectable.</p> <p><b>ND</b> Non-Detect. Analyte was not detected at the concentration listed. Same as U qualifier.</p> |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|



### Rochester Lab ID # for State Certifications<sup>1</sup>

Connecticut ID # PH0556	Maine ID #NY0032	Pennsylvania ID# 68-786
Delaware Approved	New Hampshire ID # 2941	Rhode Island ID # 158
DoD ELAP #65817	New York ID # 10145	Virginia #460167
Florida ID # E87674	North Carolina #676	

<sup>1</sup> Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state or agency requirements. The test results meet requirements of the current NELAP/TNI standards or state or agency requirements, where applicable, except as noted in the case narrative. Since not all analyte/method/matrix combinations are offered for state/NELAC accreditation, this report may contain results which are not accredited. For a specific list of accredited analytes, contact the laboratory or go to <https://www.alsglobal.com/locations/americas/north-america/usa/new-york/rochester-environmental>



# ALS Laboratory Group

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## Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

ALS Group USA, Corp.  
dba ALS Environmental

Analyst Summary report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03

**Service Request:** R2009456

**Sample Name:** 9-CAT-007-003-01  
**Lab Code:** R2009456-001  
**Sample Matrix:** Water

**Date Collected:** 10/8/20  
**Date Received:** 10/8/20

Analysis Method	Extracted/Digested By	Analyzed By
300.0		KWONG
350.1		SMEDBURY
410.4		SMEDBURY
6010C	AKONZEL	KMCLAEN
7470A	AKONZEL	KMCLAEN
8260C		KRUEST
8270D	KSERCU	JMISIUREWICZ
8270D SIM	AFELSER	AFELSER
PFC/537M	KLMILLER	CCONOVER
SM 2320 B-1997(2011)		STALARICO
SM 2340 C-1997(2011)		KMENGs
SM 2540 C-1997(2011)		KAWONG
SM 5310 C-2000(2011)		SMEDBURY

**Sample Name:** 9-CAT-007-003-02  
**Lab Code:** R2009456-002  
**Sample Matrix:** Water

**Date Collected:** 10/8/20  
**Date Received:** 10/8/20

Analysis Method	Extracted/Digested By	Analyzed By
300.0		KWONG
350.1		SMEDBURY
410.4		SMEDBURY
6010C	AKONZEL	KMCLAEN
7470A	AKONZEL	KMCLAEN
8260C		KRUEST
8270D	KSERCU	JMISIUREWICZ
8270D SIM	AFELSER	AFELSER
SM 2320 B-1997(2011)		KWONG
SM 2340 C-1997(2011)		KMENGs
SM 2540 C-1997(2011)		KAWONG
SM 5310 C-2000(2011)		SMEDBURY

ALS Group USA, Corp.  
dba ALS Environmental

Analyst Summary report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03

**Service Request:** R2009456

**Sample Name:** 9-CAT-007-003-03  
**Lab Code:** R2009456-003  
**Sample Matrix:** Water

**Date Collected:** 10/8/20  
**Date Received:** 10/8/20

**Analysis Method**  
PFC/537M

**Extracted/Digested By**  
KLMILLER

**Analyzed By**  
CCONOVER

**Sample Name:** 9-CAT-007-003-04  
**Lab Code:** R2009456-004  
**Sample Matrix:** Water

**Date Collected:** 10/8/20  
**Date Received:** 10/8/20

**Analysis Method**  
PFC/537M

**Extracted/Digested By**  
KLMILLER

**Analyzed By**  
CCONOVER

**Sample Name:** 9-CAT-007-003-05  
**Lab Code:** R2009456-005  
**Sample Matrix:** Water

**Date Collected:** 10/8/20  
**Date Received:** 10/8/20

**Analysis Method**  
8260C

**Extracted/Digested By**

**Analyzed By**  
KRUEST



## INORGANIC PREPARATION METHODS

The preparation methods associated with this report are found in these tables unless discussed in the case narrative.

### Water/Liquid Matrix

Analytical Method	Preparation Method
200.7	200.2
200.8	200.2
6010C	3005A/3010A
6020A	ILM05.3
9034 Sulfide Acid Soluble	9030B
SM 4500-CN-E Residual Cyanide	SM 4500-CN-G
SM 4500-CN-E WAD Cyanide	SM 4500-CN-I

### Solid/Soil/Non-Aqueous Matrix

Analytical Method	Preparation Method
6010C	3050B
6020A	3050B
6010C TCLP (1311) extract	3005A/3010A
6010 SPLP (1312) extract	3005A/3010A
7199	3060A
300.0 Anions/ 350.1/ 353.2/ SM 2320B/ SM 5210B/ 9056A Anions	DI extraction
For analytical methods not listed, the preparation method is the same as the analytical method reference.	



# Sample Results

**ALS Environmental—Rochester Laboratory**  
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623  
Phone (585) 288-5380 Fax (585) 288-8475  
[www.alsglobal.com](http://www.alsglobal.com)



## Volatile Organic Compounds by GC/MS

**ALS Environmental—Rochester Laboratory**

1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623

Phone (585) 288-5380 Fax (585) 288-8475

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

**ALS Group USA, Corp.**  
dba ALS Environmental

Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** 9-CAT-007-003-01  
**Lab Code:** R2009456-001

**Service Request:** R2009456  
**Date Collected:** 10/08/20 08:30  
**Date Received:** 10/08/20 12:55

**Units:** ug/L  
**Basis:** NA

**Volatile Organic Compounds by GC/MS**

**Analysis Method:** 8260C  
**Prep Method:** EPA 5030C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Q
1,1,1,2-Tetrachloroethane	1.0 U	1.0	0.20	1	10/19/20 13:05	
1,1,1-Trichloroethane (TCA)	1.0 U	1.0	0.20	1	10/19/20 13:05	
1,1,2,2-Tetrachloroethane	1.0 U	1.0	0.20	1	10/19/20 13:05	
1,1,2-Trichloroethane	1.0 U	1.0	0.20	1	10/19/20 13:05	
1,1-Dichloroethane (1,1-DCA)	<b>0.62 J</b>	1.0	0.20	1	10/19/20 13:05	
1,1-Dichloroethene (1,1-DCE)	1.0 U	1.0	0.20	1	10/19/20 13:05	
1,2,3-Trichloropropane	1.0 U	1.0	0.26	1	10/19/20 13:05	
1,2-Dibromo-3-chloropropane (DBCP)	2.0 U	2.0	0.45	1	10/19/20 13:05	
1,2-Dibromoethane	1.0 U	1.0	0.20	1	10/19/20 13:05	
1,2-Dichlorobenzene	1.0 U	1.0	0.20	1	10/19/20 13:05	
1,2-Dichloroethane	1.0 U	1.0	0.20	1	10/19/20 13:05	
1,2-Dichloropropane	1.0 U	1.0	0.20	1	10/19/20 13:05	
1,4-Dichlorobenzene	1.0 U	1.0	0.20	1	10/19/20 13:05	
2-Butanone (MEK)	5.0 U	5.0	0.78	1	10/19/20 13:05	
2-Hexanone	5.0 U	5.0	0.20	1	10/19/20 13:05	
4-Methyl-2-pentanone	5.0 U	5.0	0.20	1	10/19/20 13:05	
Acetone	5.0 U	5.0	5.0	1	10/19/20 13:05	
Acrylonitrile	10 U	10	0.90	1	10/19/20 13:05	
Benzene	1.0 U	1.0	0.20	1	10/19/20 13:05	
Bromochloromethane	1.0 U	1.0	0.20	1	10/19/20 13:05	
Bromodichloromethane	1.0 U	1.0	0.20	1	10/19/20 13:05	
Bromoform	1.0 U	1.0	0.25	1	10/19/20 13:05	
Bromomethane	1.0 U	1.0	0.70	1	10/19/20 13:05	
Carbon Disulfide	1.0 U	1.0	0.42	1	10/19/20 13:05	
Carbon Tetrachloride	1.0 U	1.0	0.34	1	10/19/20 13:05	
Chlorobenzene	1.0 U	1.0	0.20	1	10/19/20 13:05	
Chloroethane	1.0 U	1.0	0.23	1	10/19/20 13:05	
Chloroform	1.0 U	1.0	0.24	1	10/19/20 13:05	
Chloromethane	1.0 U	1.0	0.28	1	10/19/20 13:05	
Dibromochloromethane	1.0 U	1.0	0.20	1	10/19/20 13:05	
Dibromomethane	1.0 U	1.0	0.20	1	10/19/20 13:05	
Methylene Chloride	1.0 U	1.0	0.65	1	10/19/20 13:05	
Ethylbenzene	1.0 U	1.0	0.20	1	10/19/20 13:05	
Iodomethane	5.0 U	5.0	4.3	1	10/19/20 13:05	
Styrene	1.0 U	1.0	0.20	1	10/19/20 13:05	
Tetrachloroethene (PCE)	1.0 U	1.0	0.21	1	10/19/20 13:05	
Toluene	1.0 U	1.0	0.20	1	10/19/20 13:05	
Trichloroethene (TCE)	1.0 U	1.0	0.20	1	10/19/20 13:05	
Trichlorofluoromethane (CFC 11)	1.0 U	1.0	0.24	1	10/19/20 13:05	
Vinyl Acetate	2.0 U	2.0	1.1	1	10/19/20 13:05	
Vinyl Chloride	1.0 U	1.0	0.20	1	10/19/20 13:05	
Xylenes, Total	3.0 U	3.0	0.23	1	10/19/20 13:05	
cis-1,2-Dichloroethene	1.0 U	1.0	0.23	1	10/19/20 13:05	

ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** 9-CAT-007-003-01  
**Lab Code:** R2009456-001

**Service Request:** R2009456  
**Date Collected:** 10/08/20 08:30  
**Date Received:** 10/08/20 12:55

**Units:** ug/L  
**Basis:** NA

**Volatile Organic Compounds by GC/MS**

**Analysis Method:** 8260C  
**Prep Method:** EPA 5030C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Q
cis-1,3-Dichloropropene	1.0 U	1.0	0.20	1	10/19/20 13:05	
m,p-Xylenes	2.0 U	2.0	0.20	1	10/19/20 13:05	
o-Xylene	1.0 U	1.0	0.20	1	10/19/20 13:05	
trans-1,2-Dichloroethene	1.0 U	1.0	0.20	1	10/19/20 13:05	
trans-1,3-Dichloropropene	1.0 U	1.0	0.23	1	10/19/20 13:05	
trans-1,4-Dichloro-2-butene	1.0 U	1.0	0.78	1	10/19/20 13:05	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	94	85 - 122	10/19/20 13:05	
Dibromofluoromethane	95	89 - 119	10/19/20 13:05	
Toluene-d8	98	87 - 121	10/19/20 13:05	



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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** 9-CAT-007-003-02  
**Lab Code:** R2009456-002

**Service Request:** R2009456  
**Date Collected:** 10/08/20 09:30  
**Date Received:** 10/08/20 12:55

**Units:** ug/L  
**Basis:** NA

**Volatile Organic Compounds by GC/MS**

**Analysis Method:** 8260C  
**Prep Method:** EPA 5030C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Q
1,1,1,2-Tetrachloroethane	1.0 U	1.0	0.20	1	10/19/20 13:27	
1,1,1-Trichloroethane (TCA)	1.0 U	1.0	0.20	1	10/19/20 13:27	
1,1,2,2-Tetrachloroethane	1.0 U	1.0	0.20	1	10/19/20 13:27	
1,1,2-Trichloroethane	1.0 U	1.0	0.20	1	10/19/20 13:27	
1,1-Dichloroethane (1,1-DCA)	1.0 U	1.0	0.20	1	10/19/20 13:27	
1,1-Dichloroethene (1,1-DCE)	1.0 U	1.0	0.20	1	10/19/20 13:27	
1,2,3-Trichloropropane	1.0 U	1.0	0.26	1	10/19/20 13:27	
1,2-Dibromo-3-chloropropane (DBCP)	2.0 U	2.0	0.45	1	10/19/20 13:27	
1,2-Dibromoethane	1.0 U	1.0	0.20	1	10/19/20 13:27	
1,2-Dichlorobenzene	1.0 U	1.0	0.20	1	10/19/20 13:27	
1,2-Dichloroethane	1.0 U	1.0	0.20	1	10/19/20 13:27	
1,2-Dichloropropane	1.0 U	1.0	0.20	1	10/19/20 13:27	
1,4-Dichlorobenzene	1.0 U	1.0	0.20	1	10/19/20 13:27	
2-Butanone (MEK)	5.0 U	5.0	0.78	1	10/19/20 13:27	
2-Hexanone	5.0 U	5.0	0.20	1	10/19/20 13:27	
4-Methyl-2-pentanone	5.0 U	5.0	0.20	1	10/19/20 13:27	
Acetone	5.0 U	5.0	5.0	1	10/19/20 13:27	
Acrylonitrile	10 U	10	0.90	1	10/19/20 13:27	
Benzene	1.0 U	1.0	0.20	1	10/19/20 13:27	
Bromochloromethane	1.0 U	1.0	0.20	1	10/19/20 13:27	
Bromodichloromethane	1.0 U	1.0	0.20	1	10/19/20 13:27	
Bromoform	1.0 U	1.0	0.25	1	10/19/20 13:27	
Bromomethane	1.0 U	1.0	0.70	1	10/19/20 13:27	
Carbon Disulfide	1.0 U	1.0	0.42	1	10/19/20 13:27	
Carbon Tetrachloride	1.0 U	1.0	0.34	1	10/19/20 13:27	
Chlorobenzene	1.0 U	1.0	0.20	1	10/19/20 13:27	
Chloroethane	1.0 U	1.0	0.23	1	10/19/20 13:27	
Chloroform	1.0 U	1.0	0.24	1	10/19/20 13:27	
Chloromethane	1.0 U	1.0	0.28	1	10/19/20 13:27	
Dibromochloromethane	1.0 U	1.0	0.20	1	10/19/20 13:27	
Dibromomethane	1.0 U	1.0	0.20	1	10/19/20 13:27	
Methylene Chloride	1.0 U	1.0	0.65	1	10/19/20 13:27	
Ethylbenzene	1.0 U	1.0	0.20	1	10/19/20 13:27	
Iodomethane	5.0 U	5.0	4.3	1	10/19/20 13:27	
Styrene	1.0 U	1.0	0.20	1	10/19/20 13:27	
Tetrachloroethene (PCE)	1.0 U	1.0	0.21	1	10/19/20 13:27	
Toluene	<b>0.22 J</b>	1.0	0.20	1	10/19/20 13:27	
Trichloroethene (TCE)	1.0 U	1.0	0.20	1	10/19/20 13:27	
Trichlorofluoromethane (CFC 11)	1.0 U	1.0	0.24	1	10/19/20 13:27	
Vinyl Acetate	2.0 U	2.0	1.1	1	10/19/20 13:27	
Vinyl Chloride	1.0 U	1.0	0.20	1	10/19/20 13:27	
Xylenes, Total	3.0 U	3.0	0.23	1	10/19/20 13:27	
cis-1,2-Dichloroethene	1.0 U	1.0	0.23	1	10/19/20 13:27	

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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** 9-CAT-007-003-02  
**Lab Code:** R2009456-002

**Service Request:** R2009456  
**Date Collected:** 10/08/20 09:30  
**Date Received:** 10/08/20 12:55

**Units:** ug/L  
**Basis:** NA

**Volatile Organic Compounds by GC/MS**

**Analysis Method:** 8260C  
**Prep Method:** EPA 5030C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Q
cis-1,3-Dichloropropene	1.0 U	1.0	0.20	1	10/19/20 13:27	
m,p-Xylenes	2.0 U	2.0	0.20	1	10/19/20 13:27	
o-Xylene	1.0 U	1.0	0.20	1	10/19/20 13:27	
trans-1,2-Dichloroethene	1.0 U	1.0	0.20	1	10/19/20 13:27	
trans-1,3-Dichloropropene	1.0 U	1.0	0.23	1	10/19/20 13:27	
trans-1,4-Dichloro-2-butene	1.0 U	1.0	0.78	1	10/19/20 13:27	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	91	85 - 122	10/19/20 13:27	
Dibromofluoromethane	93	89 - 119	10/19/20 13:27	
Toluene-d8	98	87 - 121	10/19/20 13:27	

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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** 9-CAT-007-003-05  
**Lab Code:** R2009456-005

**Service Request:** R2009456  
**Date Collected:** 10/08/20  
**Date Received:** 10/08/20 12:55

**Units:** ug/L  
**Basis:** NA

**Volatile Organic Compounds by GC/MS**

**Analysis Method:** 8260C  
**Prep Method:** EPA 5030C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Q
1,1,1,2-Tetrachloroethane	1.0 U	1.0	0.20	1	10/19/20 13:49	
1,1,1-Trichloroethane (TCA)	1.0 U	1.0	0.20	1	10/19/20 13:49	
1,1,2,2-Tetrachloroethane	1.0 U	1.0	0.20	1	10/19/20 13:49	
1,1,2-Trichloroethane	1.0 U	1.0	0.20	1	10/19/20 13:49	
1,1-Dichloroethane (1,1-DCA)	1.0 U	1.0	0.20	1	10/19/20 13:49	
1,1-Dichloroethene (1,1-DCE)	1.0 U	1.0	0.20	1	10/19/20 13:49	
1,2,3-Trichloropropane	1.0 U	1.0	0.26	1	10/19/20 13:49	
1,2-Dibromo-3-chloropropane (DBCP)	2.0 U	2.0	0.45	1	10/19/20 13:49	
1,2-Dibromoethane	1.0 U	1.0	0.20	1	10/19/20 13:49	
1,2-Dichlorobenzene	1.0 U	1.0	0.20	1	10/19/20 13:49	
1,2-Dichloroethane	1.0 U	1.0	0.20	1	10/19/20 13:49	
1,2-Dichloropropane	1.0 U	1.0	0.20	1	10/19/20 13:49	
1,4-Dichlorobenzene	1.0 U	1.0	0.20	1	10/19/20 13:49	
2-Butanone (MEK)	5.0 U	5.0	0.78	1	10/19/20 13:49	
2-Hexanone	5.0 U	5.0	0.20	1	10/19/20 13:49	
4-Methyl-2-pentanone	5.0 U	5.0	0.20	1	10/19/20 13:49	
Acetone	5.0 U	5.0	5.0	1	10/19/20 13:49	
Acrylonitrile	10 U	10	0.90	1	10/19/20 13:49	
Benzene	1.0 U	1.0	0.20	1	10/19/20 13:49	
Bromochloromethane	1.0 U	1.0	0.20	1	10/19/20 13:49	
Bromodichloromethane	1.0 U	1.0	0.20	1	10/19/20 13:49	
Bromoform	1.0 U	1.0	0.25	1	10/19/20 13:49	
Bromomethane	1.0 U	1.0	0.70	1	10/19/20 13:49	
Carbon Disulfide	1.0 U	1.0	0.42	1	10/19/20 13:49	
Carbon Tetrachloride	1.0 U	1.0	0.34	1	10/19/20 13:49	
Chlorobenzene	1.0 U	1.0	0.20	1	10/19/20 13:49	
Chloroethane	1.0 U	1.0	0.23	1	10/19/20 13:49	
Chloroform	1.0 U	1.0	0.24	1	10/19/20 13:49	
Chloromethane	1.0 U	1.0	0.28	1	10/19/20 13:49	
Dibromochloromethane	1.0 U	1.0	0.20	1	10/19/20 13:49	
Dibromomethane	1.0 U	1.0	0.20	1	10/19/20 13:49	
Methylene Chloride	1.0 U	1.0	0.65	1	10/19/20 13:49	
Ethylbenzene	1.0 U	1.0	0.20	1	10/19/20 13:49	
Iodomethane	5.0 U	5.0	4.3	1	10/19/20 13:49	
Styrene	1.0 U	1.0	0.20	1	10/19/20 13:49	
Tetrachloroethene (PCE)	1.0 U	1.0	0.21	1	10/19/20 13:49	
Toluene	1.0 U	1.0	0.20	1	10/19/20 13:49	
Trichloroethene (TCE)	1.0 U	1.0	0.20	1	10/19/20 13:49	
Trichlorofluoromethane (CFC 11)	1.0 U	1.0	0.24	1	10/19/20 13:49	
Vinyl Acetate	2.0 U	2.0	1.1	1	10/19/20 13:49	
Vinyl Chloride	1.0 U	1.0	0.20	1	10/19/20 13:49	
Xylenes, Total	3.0 U	3.0	0.23	1	10/19/20 13:49	
cis-1,2-Dichloroethene	1.0 U	1.0	0.23	1	10/19/20 13:49	

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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** 9-CAT-007-003-05  
**Lab Code:** R2009456-005

**Service Request:** R2009456  
**Date Collected:** 10/08/20  
**Date Received:** 10/08/20 12:55

**Units:** ug/L  
**Basis:** NA

**Volatile Organic Compounds by GC/MS**

**Analysis Method:** 8260C  
**Prep Method:** EPA 5030C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Q
cis-1,3-Dichloropropene	1.0 U	1.0	0.20	1	10/19/20 13:49	
m,p-Xylenes	2.0 U	2.0	0.20	1	10/19/20 13:49	
o-Xylene	1.0 U	1.0	0.20	1	10/19/20 13:49	
trans-1,2-Dichloroethene	1.0 U	1.0	0.20	1	10/19/20 13:49	
trans-1,3-Dichloropropene	1.0 U	1.0	0.23	1	10/19/20 13:49	
trans-1,4-Dichloro-2-butene	1.0 U	1.0	0.78	1	10/19/20 13:49	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	93	85 - 122	10/19/20 13:49	
Dibromofluoromethane	95	89 - 119	10/19/20 13:49	
Toluene-d8	99	87 - 121	10/19/20 13:49	



## Semivolatile Organic Compounds by GC/MS

**ALS Environmental—Rochester Laboratory**

1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623

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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** 9-CAT-007-003-01  
**Lab Code:** R2009456-001

**Service Request:** R2009456  
**Date Collected:** 10/08/20 08:30  
**Date Received:** 10/08/20 12:55

**Units:** ug/L  
**Basis:** NA

**Low Level Semivolatile Organic Compounds by GC/MS**

**Analysis Method:** 8270D  
**Prep Method:** EPA 3510C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Acenaphthene	0.19 U	0.19	0.055	1	10/15/20 16:17	10/14/20	
Acenaphthylene	0.19 U	0.19	0.053	1	10/15/20 16:17	10/14/20	
Anthracene	0.19 U	0.19	0.071	1	10/15/20 16:17	10/14/20	
Benz(a)anthracene	0.19 U	0.19	0.13	1	10/15/20 16:17	10/14/20	
Benzo(b)fluoranthene	0.19 U	0.19	0.13	1	10/15/20 16:17	10/14/20	
Benzo(k)fluoranthene	0.19 U	0.19	0.11	1	10/15/20 16:17	10/14/20	
Benzo(g,h,i)perylene	0.19 U	0.19	0.15	1	10/15/20 16:17	10/14/20	
Benzo(a)pyrene	0.19 U	0.19	0.12	1	10/15/20 16:17	10/14/20	
Chrysene	0.19 U	0.19	0.089	1	10/15/20 16:17	10/14/20	
Dibenz(a,h)anthracene	0.19 U	0.19	0.14	1	10/15/20 16:17	10/14/20	
Fluoranthene	0.19 U	0.19	0.14	1	10/15/20 16:17	10/14/20	
Fluorene	0.19 U	0.19	0.065	1	10/15/20 16:17	10/14/20	
Indeno(1,2,3-cd)pyrene	0.19 U	0.19	0.11	1	10/15/20 16:17	10/14/20	
Naphthalene	0.19 U	0.19	0.058	1	10/15/20 16:17	10/14/20	
Phenanthrene	0.19 U	0.19	0.10	1	10/15/20 16:17	10/14/20	
Pyrene	0.19 U	0.19	0.11	1	10/15/20 16:17	10/14/20	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	64	27 - 133	10/15/20 16:17	
Nitrobenzene-d5	67	31 - 167	10/15/20 16:17	
p-Terphenyl-d14	78	25 - 151	10/15/20 16:17	

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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** 9-CAT-007-003-02  
**Lab Code:** R2009456-002

**Service Request:** R2009456  
**Date Collected:** 10/08/20 09:30  
**Date Received:** 10/08/20 12:55

**Units:** ug/L  
**Basis:** NA

**Low Level Semivolatile Organic Compounds by GC/MS**

**Analysis Method:** 8270D  
**Prep Method:** EPA 3510C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Acenaphthene	0.20 U	0.20	0.055	1	10/15/20 16:46	10/14/20	
Acenaphthylene	0.20 U	0.20	0.053	1	10/15/20 16:46	10/14/20	
Anthracene	0.20 U	0.20	0.071	1	10/15/20 16:46	10/14/20	
Benz(a)anthracene	0.20 U	0.20	0.13	1	10/15/20 16:46	10/14/20	
Benzo(b)fluoranthene	0.20 U	0.20	0.13	1	10/15/20 16:46	10/14/20	
Benzo(k)fluoranthene	0.20 U	0.20	0.11	1	10/15/20 16:46	10/14/20	
Benzo(g,h,i)perylene	0.20 U	0.20	0.15	1	10/15/20 16:46	10/14/20	
Benzo(a)pyrene	0.20 U	0.20	0.12	1	10/15/20 16:46	10/14/20	
Chrysene	0.20 U	0.20	0.089	1	10/15/20 16:46	10/14/20	
Dibenz(a,h)anthracene	0.20 U	0.20	0.14	1	10/15/20 16:46	10/14/20	
Fluoranthene	0.20 U	0.20	0.14	1	10/15/20 16:46	10/14/20	
Fluorene	0.20 U	0.20	0.065	1	10/15/20 16:46	10/14/20	
Indeno(1,2,3-cd)pyrene	0.20 U	0.20	0.11	1	10/15/20 16:46	10/14/20	
Naphthalene	0.20 U	0.20	0.058	1	10/15/20 16:46	10/14/20	
Phenanthrene	0.20 U	0.20	0.10	1	10/15/20 16:46	10/14/20	
Pyrene	0.20 U	0.20	0.11	1	10/15/20 16:46	10/14/20	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	61	27 - 133	10/15/20 16:46	
Nitrobenzene-d5	64	31 - 167	10/15/20 16:46	
p-Terphenyl-d14	98	25 - 151	10/15/20 16:46	

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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** 9-CAT-007-003-01  
**Lab Code:** R2009456-001

**Service Request:** R2009456  
**Date Collected:** 10/08/20 08:30  
**Date Received:** 10/08/20 12:55

**Units:** ug/L  
**Basis:** NA

1,4-Dioxane by GC/MS

**Analysis Method:** 8270D SIM  
**Prep Method:** EPA 3535A

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
1,4-Dioxane	24	0.040	0.027	1	10/16/20 03:14	10/13/20	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
1,4-Dioxane-d8	97	64 - 124	10/16/20 03:14	



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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** 9-CAT-007-003-02  
**Lab Code:** R2009456-002

**Service Request:** R2009456  
**Date Collected:** 10/08/20 09:30  
**Date Received:** 10/08/20 12:55

**Units:** ug/L  
**Basis:** NA

1,4-Dioxane by GC/MS

**Analysis Method:** 8270D SIM  
**Prep Method:** EPA 3535A

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
1,4-Dioxane	0.040 U	0.040	0.027	1	10/16/20 03:32	10/13/20	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
1,4-Dioxane-d8	95	64 - 124	10/16/20 03:32	



# Metals

**ALS Environmental—Rochester Laboratory**  
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Phone (585) 288-5380 Fax (585) 288-8475  
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**METALS**  
- 1 -  
**INORGANIC ANALYSIS DATA PACKAGE**

Client:	Parsons Engineering Science	Service Request:	9-CAT-007-003-01
Project No.:	R2009456	Date Collected:	10/8/2020
Project Name:		Date Received:	10/8/2020
Matrix:	WATER	Units:	ug/L
		Basis:	

Sample Name: 9-CAT-007-003-02	Lab Code: R2009456-002
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Analyte	Analysis Method	PQL	MDL	Dil. Factor	Result	C	Q
Aluminum	6010C	100	23.0	1.0	100	U	
Antimony	6010C	60.0	4.7	1.0	60.0	U	
Arsenic	6010C	10.0	5.5	1.0	10.0	U	
Barium	6010C	20.0	3.0	1.0	20.0	U	
Beryllium	6010C	3.0	0.130	1.0	3.0	U	
Boron	6010C	200	12.0	1.0	200	U	
Cadmium	6010C	5.0	0.350	1.0	5.0	U	
Mercury	7470A	0.200	0.077	1.0	0.200	U	
Calcium	6010C	1000	220	1.0	1000	U	
Chromium	6010C	10.0	0.590	1.0	10.0	U	
Cobalt	6010C	50.0	0.890	1.0	50.0	U	
Copper	6010C	20.0	3.9	1.0	20.0	U	
Iron	6010C	100	61.0	1.0	100	U	
Lead	6010C	50.0	2.1	1.0	50.0	U	
Magnesium	6010C	1000	29.0	1.0	1000	U	
Manganese	6010C	10.0	3.7	1.0	10.1		
Nickel	6010C	40.0	2.6	1.0	40.0	U	
Potassium	6010C	2000	200	1.0	2000	U	
Selenium	6010C	10.0	6.4	1.0	10.0	U	
Silver	6010C	10.0	0.570	1.0	10.0	U	
Sodium	6010C	1000	130	1.0	1000	U	
Thallium	6010C	10.0	6.6	1.0	10.0	U	
Vanadium	6010C	50.0	0.670	1.0	50.0	U	
Zinc	6010C	20.0	9.4	1.0	20.0	U	

% Solids: 0.0

Comments:



## General Chemistry

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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** 9-CAT-007-003-01  
**Lab Code:** R2009456-001

**Service Request:** R2009456  
**Date Collected:** 10/08/20 08:30  
**Date Received:** 10/08/20 12:55

**Basis:** NA

**Inorganic Parameters**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Q</b>
Alkalinity, Total as CaCO3	SM 2320 B-1997(2011)	<b>293</b>	mg/L	2.0	1.8	1	10/16/20 20:07	
Ammonia as Nitrogen, undistilled	350.1	0.050 U	mg/L	0.050	0.026	1	10/17/20 12:17	
Bromide	300.0	1.0 U	mg/L	1.0	0.4	10	10/17/20 17:07	
Carbon, Total Organic (TOC)	SM 5310 C-2000(2011)	<b>2.6</b>	mg/L	1.0	0.5	1	10/17/20 02:36	
Chemical Oxygen Demand, Total	410.4	<b>5.3</b>	mg/L	5.0	3.8	1	10/17/20 07:30	
Chloride	300.0	<b>4.8</b>	mg/L	2.0	0.5	10	10/17/20 17:07	
Hardness, Total as CaCO3	SM 2340 C-1997(2011)	<b>399</b>	mg/L	20	7	1	10/18/20 07:33	
Solids, Total Dissolved (TDS)	SM 2540 C-1997(2011)	<b>346</b>	mg/L	10	9	1	10/15/20 15:20	
Sulfate	300.0	<b>6.9</b>	mg/L	2.0	0.4	10	10/17/20 17:07	

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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** 9-CAT-007-003-02  
**Lab Code:** R2009456-002

**Service Request:** R2009456  
**Date Collected:** 10/08/20 09:30  
**Date Received:** 10/08/20 12:55

**Basis:** NA

**Inorganic Parameters**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Q</b>
Alkalinity, Total as CaCO3	SM 2320 B-1997(2011)	2.0 U	mg/L	2.0	1.8	1	10/17/20 20:07	
Ammonia as Nitrogen, undistilled	350.1	<b>0.045 J</b>	mg/L	0.050	0.026	1	10/17/20 12:18	
Bromide	300.0	1.0 U	mg/L	1.0	0.4	10	10/17/20 17:13	
Carbon, Total Organic (TOC)	SM 5310 C-2000(2011)	1.0 U	mg/L	1.0	0.5	1	10/17/20 03:38	
Chemical Oxygen Demand, Total	410.4	5.0 U	mg/L	5.0	3.8	1	10/17/20 07:30	
Chloride	300.0	2.0 U	mg/L	2.0	0.5	10	10/17/20 17:13	
Hardness, Total as CaCO3	SM 2340 C-1997(2011)	2.0 U	mg/L	2.0	0.7	1	10/18/20 07:33	
Solids, Total Dissolved (TDS)	SM 2540 C-1997(2011)	10 U	mg/L	10	9	1	10/15/20 15:20	
Sulfate	300.0	2.0 U	mg/L	2.0	0.4	10	10/17/20 17:13	



## QC Summary Forms

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## Volatile Organic Compounds by GC/MS

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QA/QC Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water

**Service Request:** R2009456

**SURROGATE RECOVERY SUMMARY**  
**Volatile Organic Compounds by GC/MS**

**Analysis Method:** 8260C  
**Extraction Method:** EPA 5030C

Sample Name	Lab Code	4-Bromofluorobenzene	Dibromofluoromethane	Toluene-d8
		85-122	89-119	87-121
9-CAT-007-003-01	R2009456-001	94	95	98
9-CAT-007-003-02	R2009456-002	91	93	98
9-CAT-007-003-05	R2009456-005	93	95	99
Method Blank	RQ2012591-04	90	93	96
Lab Control Sample	RQ2012591-03	95	94	98

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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** Method Blank  
**Lab Code:** RQ2012591-04

**Service Request:** R2009456  
**Date Collected:** NA  
**Date Received:** NA  
**Units:** ug/L  
**Basis:** NA

**Volatile Organic Compounds by GC/MS**

**Analysis Method:** 8260C  
**Prep Method:** EPA 5030C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Q
1,1,1,2-Tetrachloroethane	1.0 U	1.0	0.20	1	10/19/20 11:07	
1,1,1-Trichloroethane (TCA)	1.0 U	1.0	0.20	1	10/19/20 11:07	
1,1,2,2-Tetrachloroethane	1.0 U	1.0	0.20	1	10/19/20 11:07	
1,1,2-Trichloroethane	1.0 U	1.0	0.20	1	10/19/20 11:07	
1,1-Dichloroethane (1,1-DCA)	1.0 U	1.0	0.20	1	10/19/20 11:07	
1,1-Dichloroethene (1,1-DCE)	1.0 U	1.0	0.20	1	10/19/20 11:07	
1,2,3-Trichloropropane	1.0 U	1.0	0.26	1	10/19/20 11:07	
1,2-Dibromo-3-chloropropane (DBCP)	2.0 U	2.0	0.45	1	10/19/20 11:07	
1,2-Dibromoethane	1.0 U	1.0	0.20	1	10/19/20 11:07	
1,2-Dichlorobenzene	1.0 U	1.0	0.20	1	10/19/20 11:07	
1,2-Dichloroethane	1.0 U	1.0	0.20	1	10/19/20 11:07	
1,2-Dichloropropane	1.0 U	1.0	0.20	1	10/19/20 11:07	
1,4-Dichlorobenzene	1.0 U	1.0	0.20	1	10/19/20 11:07	
2-Butanone (MEK)	5.0 U	5.0	0.78	1	10/19/20 11:07	
2-Hexanone	5.0 U	5.0	0.20	1	10/19/20 11:07	
4-Methyl-2-pentanone	5.0 U	5.0	0.20	1	10/19/20 11:07	
Acetone	5.0 U	5.0	5.0	1	10/19/20 11:07	
Acrylonitrile	10 U	10	0.90	1	10/19/20 11:07	
Benzene	1.0 U	1.0	0.20	1	10/19/20 11:07	
Bromochloromethane	1.0 U	1.0	0.20	1	10/19/20 11:07	
Bromodichloromethane	1.0 U	1.0	0.20	1	10/19/20 11:07	
Bromoform	1.0 U	1.0	0.25	1	10/19/20 11:07	
Bromomethane	1.0 U	1.0	0.70	1	10/19/20 11:07	
Carbon Disulfide	1.0 U	1.0	0.42	1	10/19/20 11:07	
Carbon Tetrachloride	1.0 U	1.0	0.34	1	10/19/20 11:07	
Chlorobenzene	1.0 U	1.0	0.20	1	10/19/20 11:07	
Chloroethane	1.0 U	1.0	0.23	1	10/19/20 11:07	
Chloroform	1.0 U	1.0	0.24	1	10/19/20 11:07	
Chloromethane	1.0 U	1.0	0.28	1	10/19/20 11:07	
Dibromochloromethane	1.0 U	1.0	0.20	1	10/19/20 11:07	
Dibromomethane	1.0 U	1.0	0.20	1	10/19/20 11:07	
Methylene Chloride	1.0 U	1.0	0.65	1	10/19/20 11:07	
Ethylbenzene	1.0 U	1.0	0.20	1	10/19/20 11:07	
Iodomethane	5.0 U	5.0	4.3	1	10/19/20 11:07	
Styrene	1.0 U	1.0	0.20	1	10/19/20 11:07	
Tetrachloroethene (PCE)	1.0 U	1.0	0.21	1	10/19/20 11:07	
Toluene	1.0 U	1.0	0.20	1	10/19/20 11:07	
Trichloroethene (TCE)	1.0 U	1.0	0.20	1	10/19/20 11:07	
Trichlorofluoromethane (CFC 11)	1.0 U	1.0	0.24	1	10/19/20 11:07	
Vinyl Acetate	2.0 U	2.0	1.1	1	10/19/20 11:07	
Vinyl Chloride	1.0 U	1.0	0.20	1	10/19/20 11:07	
Xylenes, Total	3.0 U	3.0	0.23	1	10/19/20 11:07	
cis-1,2-Dichloroethene	1.0 U	1.0	0.23	1	10/19/20 11:07	

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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** Method Blank  
**Lab Code:** RQ2012591-04

**Service Request:** R2009456  
**Date Collected:** NA  
**Date Received:** NA  
**Units:** ug/L  
**Basis:** NA

Volatile Organic Compounds by GC/MS

**Analysis Method:** 8260C  
**Prep Method:** EPA 5030C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Q
cis-1,3-Dichloropropene	1.0 U	1.0	0.20	1	10/19/20 11:07	
m,p-Xylenes	2.0 U	2.0	0.20	1	10/19/20 11:07	
o-Xylene	1.0 U	1.0	0.20	1	10/19/20 11:07	
trans-1,2-Dichloroethene	1.0 U	1.0	0.20	1	10/19/20 11:07	
trans-1,3-Dichloropropene	1.0 U	1.0	0.23	1	10/19/20 11:07	
trans-1,4-Dichloro-2-butene	1.0 U	1.0	0.78	1	10/19/20 11:07	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	90	85 - 122	10/19/20 11:07	
Dibromofluoromethane	93	89 - 119	10/19/20 11:07	
Toluene-d8	96	87 - 121	10/19/20 11:07	

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QA/QC Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water

**Service Request:** R2009456  
**Date Analyzed:** 10/19/20

**Lab Control Sample Summary**  
**Volatile Organic Compounds by GC/MS**

**Units:**ug/L  
**Basis:**NA

**Lab Control Sample**  
RQ2012591-03

Analyte Name	Analytical Method	Result	Spike Amount	% Rec	% Rec Limits
1,1,1,2-Tetrachloroethane	8260C	21.6	20.0	108	76-129
1,1,1-Trichloroethane (TCA)	8260C	19.0	20.0	95	75-125
1,1,2,2-Tetrachloroethane	8260C	22.4	20.0	112	78-126
1,1,2-Trichloroethane	8260C	19.9	20.0	99	82-121
1,1-Dichloroethane (1,1-DCA)	8260C	18.9	20.0	95	80-124
1,1-Dichloroethene (1,1-DCE)	8260C	22.2	20.0	111	71-118
1,2,3-Trichloropropane	8260C	16.9	20.0	84	75-118
1,2-Dibromo-3-chloropropane (DBCP)	8260C	21.7	20.0	109	55-136
1,2-Dibromoethane	8260C	20.0	20.0	100	82-127
1,2-Dichlorobenzene	8260C	19.8	20.0	99	80-119
1,2-Dichloroethane	8260C	17.6	20.0	88	71-127
1,2-Dichloropropane	8260C	20.2	20.0	101	80-119
1,4-Dichlorobenzene	8260C	19.3	20.0	96	79-119
2-Butanone (MEK)	8260C	17.8	20.0	89	61-137
2-Hexanone	8260C	18.4	20.0	92	63-124
4-Methyl-2-pentanone	8260C	18.6	20.0	93	66-124
Acetone	8260C	16.0	20.0	80	40-161
Acrylonitrile	8260C	97.7	100	98	71-130
Benzene	8260C	20.0	20.0	100	79-119
Bromochloromethane	8260C	17.8	20.0	89	81-126
Bromodichloromethane	8260C	18.5	20.0	93	81-123
Bromoform	8260C	22.6	20.0	113	65-146
Bromomethane	8260C	15.5	20.0	78	42-166
Carbon Disulfide	8260C	19.6	20.0	98	66-128
Carbon Tetrachloride	8260C	19.7	20.0	99	70-127
Chlorobenzene	8260C	19.6	20.0	98	80-121
Chloroethane	8260C	14.6	20.0	73	62-131
Chloroform	8260C	19.4	20.0	97	79-120
Chloromethane	8260C	19.8	20.0	99	65-135
Dibromochloromethane	8260C	22.6	20.0	113	72-128
Dibromomethane	8260C	19.4	20.0	97	80-118
Methylene Chloride	8260C	18.4	20.0	92	73-122
Ethylbenzene	8260C	19.7	20.0	99	76-120

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QA/QC Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water

**Service Request:** R2009456  
**Date Analyzed:** 10/19/20

**Lab Control Sample Summary**  
**Volatile Organic Compounds by GC/MS**

**Units:**ug/L  
**Basis:**NA

**Lab Control Sample**  
RQ2012591-03

<b>Analyte Name</b>	<b>Analytical Method</b>	<b>Result</b>	<b>Spike Amount</b>	<b>% Rec</b>	<b>% Rec Limits</b>
Iodomethane	8260C	15.1	20.0	75	18-160
Styrene	8260C	20.0	20.0	100	80-124
Tetrachloroethene (PCE)	8260C	20.2	20.0	101	72-125
Toluene	8260C	20.4	20.0	102	79-119
Trichloroethene (TCE)	8260C	17.6	20.0	88	74-122
Trichlorofluoromethane (CFC 11)	8260C	18.9	20.0	95	71-136
Vinyl Acetate	8260C	23.5	20.0	117	52-174
Vinyl Chloride	8260C	16.8	20.0	84	74-159
cis-1,2-Dichloroethene	8260C	20.6	20.0	103	80-121
cis-1,3-Dichloropropene	8260C	19.7	20.0	99	77-122
m,p-Xylenes	8260C	41.8	40.0	105	80-126
o-Xylene	8260C	20.6	20.0	103	79-123
trans-1,2-Dichloroethene	8260C	22.9	20.0	115	73-118
trans-1,3-Dichloropropene	8260C	20.0	20.0	100	71-133
trans-1,4-Dichloro-2-butene	8260C	19.1	20.0	96	39-137



## Semivolatile Organic Compounds by GC/MS

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**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water

**Service Request:** R2009456

**SURROGATE RECOVERY SUMMARY**  
**Low Level Semivolatile Organic Compounds by GC/MS**

**Analysis Method:** 8270D  
**Extraction Method:** EPA 3510C

Sample Name	Lab Code	2-Fluorobiphenyl	Nitrobenzene-d5	p-Terphenyl-d14
		27-133	31-167	25-151
9-CAT-007-003-01	R2009456-001	64	67	78
9-CAT-007-003-02	R2009456-002	61	64	98
Method Blank	RQ2012328-03	60	68	100
Lab Control Sample	RQ2012328-04	70	70	103
Duplicate Lab Control Sample	RQ2012328-05	76	72	104



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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** Method Blank  
**Lab Code:** RQ2012328-03

**Service Request:** R2009456  
**Date Collected:** NA  
**Date Received:** NA  
**Units:** ug/L  
**Basis:** NA

**Low Level Semivolatile Organic Compounds by GC/MS**

**Analysis Method:** 8270D  
**Prep Method:** EPA 3510C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Acenaphthene	0.20 U	0.20	0.055	1	10/15/20 13:23	10/14/20	
Acenaphthylene	0.20 U	0.20	0.053	1	10/15/20 13:23	10/14/20	
Anthracene	0.20 U	0.20	0.071	1	10/15/20 13:23	10/14/20	
Benz(a)anthracene	0.20 U	0.20	0.13	1	10/15/20 13:23	10/14/20	
Benzo(b)fluoranthene	0.20 U	0.20	0.13	1	10/15/20 13:23	10/14/20	
Benzo(k)fluoranthene	0.20 U	0.20	0.11	1	10/15/20 13:23	10/14/20	
Benzo(g,h,i)perylene	0.20 U	0.20	0.15	1	10/15/20 13:23	10/14/20	
Benzo(a)pyrene	0.20 U	0.20	0.12	1	10/15/20 13:23	10/14/20	
Chrysene	0.20 U	0.20	0.089	1	10/15/20 13:23	10/14/20	
Dibenz(a,h)anthracene	0.20 U	0.20	0.14	1	10/15/20 13:23	10/14/20	
Fluoranthene	0.20 U	0.20	0.14	1	10/15/20 13:23	10/14/20	
Fluorene	0.20 U	0.20	0.065	1	10/15/20 13:23	10/14/20	
Indeno(1,2,3-cd)pyrene	0.20 U	0.20	0.11	1	10/15/20 13:23	10/14/20	
Naphthalene	0.20 U	0.20	0.058	1	10/15/20 13:23	10/14/20	
Phenanthrene	0.20 U	0.20	0.10	1	10/15/20 13:23	10/14/20	
Pyrene	0.20 U	0.20	0.11	1	10/15/20 13:23	10/14/20	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	60	27 - 133	10/15/20 13:23	
Nitrobenzene-d5	68	31 - 167	10/15/20 13:23	
p-Terphenyl-d14	100	25 - 151	10/15/20 13:23	

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QA/QC Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water

**Service Request:** R2009456  
**Date Analyzed:** 10/15/20

**Duplicate Lab Control Sample Summary**  
**Low Level Semivolatile Organic Compounds by GC/MS**

**Units:**ug/L  
**Basis:**NA

Analyte Name	Lab Control Sample RQ2012328-04				Duplicate Lab Control Sample RQ2012328-05				RPD	RPD Limit
	Analytical Method	Result	Spike Amount	% Rec	Result	Spike Amount	% Rec	% Rec Limits		
Acenaphthene	8270D	4.07	6.00	68	4.29	6.00	71	48-118	5	30
Acenaphthylene	8270D	4.33	6.00	72	4.50	6.00	75	48-121	4	30
Anthracene	8270D	5.05	6.00	84	5.14	6.00	86	52-124	2	30
Benz(a)anthracene	8270D	4.57	6.00	76	4.51	6.00	75	54-120	1	30
Benzo(b)fluoranthene	8270D	4.64	6.00	77	4.24	6.00	71	57-117	9	30
Benzo(k)fluoranthene	8270D	4.86	6.00	81	4.52	6.00	75	59-123	7	30
Benzo(g,h,i)perylene	8270D	4.43	6.00	74	3.97	6.00	66	47-154	11	30
Benzo(a)pyrene	8270D	5.69	6.00	95	5.11	6.00	85	57-124	11	30
Chrysene	8270D	4.95	6.00	82	4.98	6.00	83	58-124	<1	30
Dibenz(a,h)anthracene	8270D	3.44	6.00	57	2.99	6.00	50	43-147	14	30
Fluoranthene	8270D	5.31	6.00	88	5.28	6.00	88	50-117	<1	30
Fluorene	8270D	4.47	6.00	75	4.68	6.00	78	47-107	4	30
Indeno(1,2,3-cd)pyrene	8270D	4.03	6.00	67	3.56	6.00	59	55-129	12	30
Naphthalene	8270D	3.59	6.00	60	3.81	6.00	64	37-114	6	30
Phenanthrene	8270D	4.68	6.00	78	4.87	6.00	81	54-116	4	30
Pyrene	8270D	5.52	6.00	92	5.72	6.00	95	56-123	4	30

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water

**Service Request:** R2009456

**SURROGATE RECOVERY SUMMARY**

**1,4-Dioxane by GC/MS**

**Analysis Method:** 8270D SIM

**Extraction Method:** EPA 3535A

Sample Name	Lab Code	1,4-Dioxane-d8
		64-124
9-CAT-007-003-01	R2009456-001	97
9-CAT-007-003-02	R2009456-002	95
Method Blank	RQ2012317-01	87
Lab Control Sample	RQ2012317-02	96
Duplicate Lab Control Sample	RQ2012317-03	92

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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** Method Blank  
**Lab Code:** RQ2012317-01

**Service Request:** R2009456  
**Date Collected:** NA  
**Date Received:** NA  
**Units:** ug/L  
**Basis:** NA

1,4-Dioxane by GC/MS

**Analysis Method:** 8270D SIM  
**Prep Method:** EPA 3535A

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
1,4-Dioxane	0.040 U	0.040	0.027	1	10/15/20 23:27	10/13/20	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
1,4-Dioxane-d8	87	64 - 124	10/15/20 23:27	

ALS Group USA, Corp.  
dba ALS Environmental

QA/QC Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water

**Service Request:** R2009456  
**Date Analyzed:** 10/15/20

**Duplicate Lab Control Sample Summary**  
**1,4-Dioxane by GC/MS**

**Units:**ug/L  
**Basis:**NA

Analyte Name	Analytical Method	Result	Lab Control Sample		Duplicate Lab Control Sample		% Rec Limits	RPD	RPD Limit	
			Spike Amount	% Rec	Result	Spike Amount				% Rec
1,4-Dioxane	8270D SIM	10.0	10.0	100	10.2	10.0	102	58-124	1	30



# Metals

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METALS

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BLANKS

Contract: R2009456

Lab Code: \_\_\_\_\_ Case No.: \_\_\_\_\_ SAS No.: \_\_\_\_\_ SDG NO.: 9-CAT-007-00

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L, ppt, or mg/kg): UG/L

Analyte	Initial Calib. Blank ug/L	Continuing Calibration Blank ug/L						Preparation Blank		M
		1	C	2	C	3	C	C		
Aluminum	23.00 U	23.00	U	23.00	U	23.00	U	23.00	U	P
Antimony	4.70 U	4.70	U	4.70	U	4.70	U	4.700	U	P
Arsenic	5.50 U	5.50	U	5.50	U	5.50	U	5.500	U	P
Barium	3.00 U	3.00	U	3.00	U	3.00	U	3.000	U	P
Beryllium	0.13 U	0.13	U	0.13	U	0.13	U	0.130	U	P
Boron	27.50 J	29.70	J	29.50	J	27.70	J	12.000	U	P
Cadmium	0.35 U	0.35	U	0.35	U	0.35	U	0.350	U	P
Mercury	0.077 U	0.077	U	0.077	U	0.077	U	0.077	U	CV
Calcium	220.00 U	220.00	U	220.00	U	220.00	U	220.000	U	P
Chromium	0.59 U	0.59	U	0.59	U	0.59	U	0.590	U	P
Cobalt	0.89 U	0.89	U	0.89	U	0.89	U	0.890	U	P
Copper	3.90 U	3.90	U	3.90	U	3.90	U	3.900	U	P
Iron	61.00 U	61.00	U	61.00	U	61.00	U	61.000	U	P
Lead	2.10 U	2.10	U	2.10	U	2.10	U	2.100	U	P
Magnesium	29.00 U	29.00	U	29.00	U	29.00	U	29.000	U	P
Manganese	3.70 U	3.70	U	3.70	U	3.70	U	3.700	U	P
Nickel	2.60 U	2.60	U	2.60	U	2.60	U	2.600	U	P
Potassium	200.00 U	405.60	J	200.00	U	200.00	U	200.000	U	P
Selenium	6.40 U	6.40	U	6.40	U	6.40	U	6.400	U	P
Silver	0.57 U	-0.60	J	-0.60	J	-0.60	J	0.570	U	P
Sodium	130.00 U	130.00	U	130.00	U	130.00	U	130.000	U	P
Thallium	6.60 U	6.60	U	6.60	U	6.60	U	6.600	U	P
Vanadium	0.67 U	0.67	U	0.67	U	0.67	U	0.670	U	P
Zinc	9.40 U	9.40	U	9.40	U	9.40	U	9.400	U	P

Comments:

METALS

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BLANKS

Contract: R2009456

Lab Code: \_\_\_\_\_ Case No.: \_\_\_\_\_ SAS No.: \_\_\_\_\_ SDG NO.: 9-CAT-007-00

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L, ppt, or mg/kg): UG/L

Analyte	Initial Calib. Blank ug/L	Continuing Calibration Blank ug/L						Preparation Blank		M
		1	C	2	C	3	C	C		
Aluminum		23.00	U	23.00	U	23.00	U			P
Antimony		4.70	U	4.70	U	4.70	U			P
Arsenic		5.50	U	5.50	U	5.50	U			P
Barium		3.00	U	3.00	U	3.00	U			P
Beryllium		0.13	U	0.13	U	0.13	U			P
Boron		30.40	J	26.90	J	27.60	J			P
Cadmium		0.35	U	0.35	U	0.35	U			P
Mercury		0.077	U							CV
Calcium		220.00	U	220.00	U	220.00	U			P
Chromium		0.59	U	0.59	U	0.59	U			P
Cobalt		0.89	U	0.89	U	0.89	U			P
Copper		3.90	U	3.90	U	3.90	U			P
Iron		61.00	U	61.00	U	61.00	U			P
Lead		2.10	U	2.10	U	2.10	U			P
Magnesium		29.00	U	29.00	U	29.00	U			P
Manganese		3.70	U	3.70	U	3.70	U			P
Nickel		2.60	U	2.60	U	2.60	U			P
Potassium		200.00	U	200.00	U	200.00	U			P
Selenium		7.20	J	6.40	U	6.40	U			P
Silver		-0.70	J	-0.60	J	-0.60	J			P
Sodium		130.00	U	130.00	U	130.00	U			P
Thallium		6.60	U	6.60	U	6.60	U			P
Vanadium		0.67	U	0.67	U	0.67	U			P
Zinc		9.40	U	9.40	U	9.40	U			P

Comments:



**METALS**

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**BLANKS**

Contract: R2009456

Lab Code: \_\_\_\_\_ Case No.: \_\_\_\_\_ SAS No.: \_\_\_\_\_ SDG NO.: 9-CAT-007-00

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L, ppt, or mg/kg): UG/L

Analyte	Initial Calib. Blank ug/L	Continuing Calibration Blank ug/L						Preparation Blank		M
		1	C	2	C	3	C	C		
Aluminum		23.00	U	23.00	U					P
Antimony		4.70	U	4.70	U					P
Arsenic		5.50	U	5.50	U					P
Barium		3.00	U	3.00	U					P
Beryllium		0.13	U	0.13	U					P
Boron		30.30	J	30.60	J					P
Cadmium		0.35	U	0.35	U					P
Calcium		220.00	U	220.00	U					P
Chromium		0.59	U	0.59	U					P
Cobalt		0.89	U	0.89	U					P
Copper		3.90	U	3.90	U					P
Iron		61.00	U	61.00	U					P
Lead		2.10	U	2.10	U					P
Magnesium		29.00	U	29.00	U					P
Manganese		3.70	U	3.70	U					P
Nickel		2.60	U	2.60	U					P
Potassium		200.00	U	200.00	U					P
Selenium		6.40	U	6.40	U					P
Silver		-0.80	J	-0.70	J					P
Sodium		130.00	U							P
Thallium		6.60	U	6.60	U					P
Vanadium		0.67	U	0.67	U					P
Zinc		9.40	U	9.40	U					P

Comments:

METALS

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LABORATORY CONTROL SAMPLE

Contract: R2009456

Lab Code: \_\_\_\_\_ Case No.: \_\_\_\_\_ SAS No.: \_\_\_\_\_ SDG NO.: 9-CAT-007-00

Solid LCS Source: \_\_\_\_\_

Aqueous LCS Source: CPI

Analyte	Aqueous (ug/L)			Solid (mg/K)				
	True	Found	%R	True	Found	C	Limits	%R
Aluminum	2000	1980	99					
Antimony	500	479	96					
Arsenic	40	43	108					
Barium	2000	2050	102					
Beryllium	50	49	98					
Boron	1000	935	94					
Cadmium	50	51	102					
Mercury	1.000	1.010	101					
Calcium	2000	2060	103					
Chromium	200	199	100					
Cobalt	500	506	101					
Copper	250	236	94					
Iron	1000	990	99					
Lead	500	510	102					
Magnesium	2000	1990	100					
Manganese	500	504	101					
Nickel	500	519	104					
Potassium	20000	18900	94					
Selenium	1010	970	96					
Silver	50	48	96					
Sodium	20000	19800	99					
Thallium	2000	1860	93					
Vanadium	500	506	101					
Zinc	500	496	99					

Comments: \_\_\_\_\_



## General Chemistry

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**ALS Group USA, Corp.**  
dba ALS Environmental

Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** Method Blank  
**Lab Code:** R2009456-MB1

**Service Request:** R2009456  
**Date Collected:** NA  
**Date Received:** NA  
**Basis:** NA

**Inorganic Parameters**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Q</b>
Alkalinity, Total as CaCO3	SM 2320 B-1997(2011)	2.0 U	mg/L	2.0	1.8	1	10/16/20 17:59	
Ammonia as Nitrogen, undistilled	350.1	0.050 U	mg/L	0.050	0.026	1	10/17/20 10:42	
Bromide	300.0	0.10 U	mg/L	0.10	0.04	1	10/17/20 16:22	
Carbon, Total Organic (TOC)	SM 5310 C-2000(2011)	1.0 U	mg/L	1.0	0.5	1	10/16/20 23:07	
Chemical Oxygen Demand, Total	410.4	5.0 U	mg/L	5.0	3.8	1	10/17/20 07:30	
Chloride	300.0	0.20 U	mg/L	0.20	0.05	1	10/17/20 16:22	
Hardness, Total as CaCO3	SM 2340 C-1997(2011)	2.0 U	mg/L	2.0	0.7	1	10/18/20 07:33	
Solids, Total Dissolved (TDS)	SM 2540 C-1997(2011)	10 U	mg/L	10	9	1	10/15/20 15:20	
Sulfate	300.0	0.20 U	mg/L	0.20	0.04	1	10/17/20 16:22	

ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** Method Blank  
**Lab Code:** R2009456-MB2

**Service Request:** R2009456  
**Date Collected:** NA  
**Date Received:** NA  
**Basis:** NA

Inorganic Parameters

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>Result</u>	<u>Units</u>	<u>MRL</u>	<u>Dil.</u>	<u>Date Analyzed</u>	<u>Q</u>
Alkalinity, Total as CaCO3	SM 2320 B-1997(2011)	2.0 U	mg/L	2.0	1	10/17/20 18:03	

ALS Group USA, Corp.  
dba ALS Environmental

QA/QC Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water

**Service Request:** R2009456  
**Date Analyzed:** 10/15/20 - 10/18/20

**Lab Control Sample Summary**  
**General Chemistry Parameters**

**Units:**mg/L  
**Basis:**NA

**Lab Control Sample**  
R2009456-LCS1

<b>Analyte Name</b>	<b>Analytical Method</b>	<b>Result</b>	<b>Spike Amount</b>	<b>% Rec</b>	<b>% Rec Limits</b>
Alkalinity, Total as CaCO3	SM 2320 B-1997(2011)	18.0	20.0	90	80-120
Ammonia as Nitrogen, undistilled	350.1	0.517	0.500	103	90-110
Bromide	300.0	0.974	1.00	97	90-110
Carbon, Total Organic (TOC)	SM 5310 C-2000(2011)	9.83	10.0	98	80-121
Chemical Oxygen Demand, Total	410.4	45.9	50.0	92	90-110
Chloride	300.0	1.94	2.00	97	90-110
Hardness, Total as CaCO3	SM 2340 C-1997(2011)	20.5	20.0	103	85-112
Solids, Total Dissolved (TDS)	SM 2540 C-1997(2011)	906	914	99	90-110
Sulfate	300.0	1.84	2.00	92	90-110

ALS Group USA, Corp.  
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QA/QC Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water

**Service Request:** R2009456

**Date Analyzed:** 10/17/20

**Lab Control Sample Summary**  
**General Chemistry Parameters**

**Units:**mg/L

**Basis:**NA

**Lab Control Sample**

R2009456-LCS2

<u>Analyte Name</u>	<u>Analytical Method</u>	<u>Result</u>	<u>Spike Amount</u>	<u>% Rec</u>	<u>% Rec Limits</u>
Alkalinity, Total as CaCO3	SM 2320 B-1997(2011)	16.0	20.0	80	80-120



## Subcontracted Analytical Parameters

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October 30, 2020

**Analytical Report for Service Request No: R2009456**

Janice Jaeger  
ALS Environmental  
1565 Jefferson Rd, Building 300  
Suite 360  
Rochester, NY 14623

**RE: ILI - Region 9 Olean Ischua LF / 452148.60007.03**

Dear Janice Jaeger,

Enclosed are the results of the sample(s) submitted to our laboratory October 08, 2020  
For your reference, these analyses have been assigned our service request number **R2009456**.

All testing was performed according to our laboratory's quality assurance program and met the requirements of the TNI standards except as noted in the case narrative report. Any testing not included in the lab's accreditation is identified on a Non-Certified Analytes report. All results are intended to be considered in their entirety. ALS Environmental is not responsible for use of less than the complete report. Results apply only to the individual samples submitted to the lab for analysis, as listed in the report. The measurement uncertainty of the results included in this report is within that expected when using the prescribed method(s), and represented by Laboratory Control Sample control limits. Any events, such as QC failures or Holding Time exceedances, which may add to the uncertainty are explained in the report narrative or are flagged with qualifiers. The flags are explained in the Report Qualifiers and Definitions page of this report.

Please contact me if you have any questions. My extension is 3376. You may also contact me via email at [Mark.Harris@alsglobal.com](mailto:Mark.Harris@alsglobal.com).

Respectfully submitted,

**ALS Group USA, Corp. dba ALS Environmental**

Mark Harris  
Project Manager



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State Certifications, Accreditations, And Licenses

Case Narrative

Chain of Custody

PFAS by HPLCMSMS

## Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

### **Inorganic Data Qualifiers**

- \* The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.  
*DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.
- H The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

### **Metals Data Qualifiers**

- # The control limit criteria is not applicable. See case narrative.
- J The result is an estimated value.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.  
*DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.  
  - i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.
- Q See case narrative. One or more quality control criteria was outside the limits.

### **Organic Data Qualifiers**

- \* The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimated value.
- J The result is an estimated value.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.  
*DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

### **Additional Petroleum Hydrocarbon Specific Qualifiers**

- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

**ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso  
State Certifications, Accreditations, and Licenses**

<b>Agency</b>	<b>Web Site</b>	<b>Number</b>
Alaska DEH	<a href="http://dec.alaska.gov/eh/lab/cs/csapproval.htm">http://dec.alaska.gov/eh/lab/cs/csapproval.htm</a>	UST-040
Arizona DHS	<a href="http://www.azdhs.gov/lab/license/env.htm">http://www.azdhs.gov/lab/license/env.htm</a>	AZ0339
Arkansas - DEQ	<a href="http://www.adeq.state.ar.us/techsvs/labcert.htm">http://www.adeq.state.ar.us/techsvs/labcert.htm</a>	88-0637
California DHS (ELAP)	<a href="http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx">http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx</a>	2795
DOD ELAP	<a href="http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm">http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm</a>	L16-58-R4
Florida DOH	<a href="http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm">http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm</a>	E87412
Hawaii DOH	<a href="http://health.hawaii.gov/">http://health.hawaii.gov/</a>	-
ISO 17025	<a href="http://www.pjllabs.com/">http://www.pjllabs.com/</a>	L16-57
Louisiana DEQ	<a href="http://www.deq.louisiana.gov/page/la-lab-accreditation">http://www.deq.louisiana.gov/page/la-lab-accreditation</a>	03016
Maine DHS	<a href="http://www.maine.gov/dhhs/">http://www.maine.gov/dhhs/</a>	WA01276
Minnesota DOH	<a href="http://www.health.state.mn.us/accreditation">http://www.health.state.mn.us/accreditation</a>	053-999-457
Nevada DEP	<a href="http://ndep.nv.gov/bsdw/labservice.htm">http://ndep.nv.gov/bsdw/labservice.htm</a>	WA01276
New Jersey DEP	<a href="http://www.nj.gov/dep/enforcement/oqa.html">http://www.nj.gov/dep/enforcement/oqa.html</a>	WA005
New York - DOH	<a href="https://www.wadsworth.org/regulatory/elap">https://www.wadsworth.org/regulatory/elap</a>	12060
North Carolina DEQ	<a href="https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification">https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification</a>	605
Oklahoma DEQ	<a href="http://www.deq.state.ok.us/CSDnew/labcert.htm">http://www.deq.state.ok.us/CSDnew/labcert.htm</a>	9801
Oregon – DEQ (NELAP)	<a href="http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx">http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx</a>	WA100010
South Carolina DHEC	<a href="http://www.scdhec.gov/environment/EnvironmentalLabCertification/">http://www.scdhec.gov/environment/EnvironmentalLabCertification/</a>	61002
Texas CEQ	<a href="http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html">http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html</a>	T104704427
Washington DOE	<a href="http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html">http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html</a>	C544
Wyoming (EPA Region 8)	<a href="https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water">https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water</a>	-
Kelso Laboratory Website	<a href="http://www.alsglobal.com">www.alsglobal.com</a>	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at [www.ALSGlobal.com](http://www.ALSGlobal.com) or at the accreditation bodies web site.

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/analyte is offered by that state.



## Case Narrative

**ALS Environmental—Kelso Laboratory**  
1317 South 13th Avenue, Kelso, WA 98626  
Phone (360)577-7222 Fax (360)636-1068  
[www.alsglobal.com](http://www.alsglobal.com)

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF  
**Sample Matrix:** Water

**Service Request:** R2009456  
**Date Received:** 10/08/2020

### CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier level II requested by the client.

#### Sample Receipt:

Three water samples were received for analysis at ALS Environmental on 10/08/2020. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

#### Organic LC:

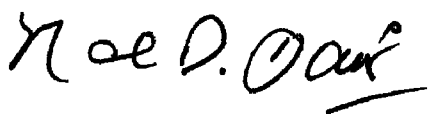
Method PFC/537M, 10/24/2020: The upper control criterion was exceeded for Perfluorotetradecanoic acid (PFTeDA) in Laboratory Control Sample (LCS) KQ2015694-01. The analyte in question was not detected in the associated field samples. The error associated with elevated recovery indicated a high bias. The sample data was not significantly affected. No further corrective action was appropriate.

Method PFC/537M, 10/24/2020: The Relative Percent Difference (RPD) for N-Ethyl perfluorooctane sulfonamidoacetic acid and Perfluorotridecanoic acid (PFTTrDA) in the replicate Lab Control Sample (LCS/DLCS) analyses KQ2015694-01 and KQ2015694-02 was outside control criteria. The associated spike recoveries of target compounds were in control, which indicated the analysis was in control. The high RPD values indicated possible increased variability for the analysis of these compounds in the associated extraction batch. No further corrective action was taken.

Method PFC/537M, 10/24/2020: Insufficient sample volume was received to perform a Matrix Spike/Matrix Spike Duplicate (MS/MSD). A Laboratory Control Sample/Duplicate Laboratory Control Sample (LCS/DLCS) was analyzed and reported in lieu of the MS/MSD for these samples.

Method PFC/537M, 10/24/2020: The control criteria was exceeded for one or more surrogates in Continuing Calibration Verifications (CCV) KQ2015810-01 and KQ2016537-01. The recoveries of the associated native analytes were within control criteria, which indicated the analysis was in control. No further corrective action was appropriate.

Method PFC/537M, 10/24/2020: The upper control criterion was exceeded for multiple analytes in Continuing Calibration Verifications (CCV) KQ2015810-01 and KQ2016537-01. The field samples analyzed in this sequence did not contain the analytes in question. Since the apparent problem indicated a potential high bias, the data quality was not affected. No further corrective action was required.

Approved by 

Date 10/30/2020



# Chain of Custody

**ALS Environmental—Kelso Laboratory**  
1317 South 13th Avenue, Kelso, WA 98626  
Phone (360)577-7222 Fax (360)636-1068  
[www.alsglobal.com](http://www.alsglobal.com)



# Intra-Network Chain of Custody

1565 Jefferson Rd, Building 300 • Rochester, NY 14623 • 585-288-5380 • FAX 585-288-8475

ALS Contact: Janice Jaeger

**Project Name:** ILLI - Region 9 Olean Ischua LF  
**Project Number:** 452148.60007.03  
**Project Manager:** Maryanne Kosciwicz  
**Company:** Parsons Engineering Science  
**QAP:** LAB QAP

PFAS  
PFC/537M

Lab Code	Client Sample ID	# of Cont.	Matrix	Sample		Date Received	Send To	
				Date	Time			
R2009456-001	9-CAT-007-003-01	2	Water	10/8/20	0830	10/8/20	KELSO	IV
R2009456-003	9-CAT-007-003-03	2	Water	10/8/20	0935	10/8/20	KELSO	IV
R2009456-004	9-CAT-007-003-04	1	Water	10/8/20	0940	10/8/20	KELSO	IV

**Folder Comments:**  
need Tier 2 and Tier 4

<p><b>Special Instructions/Comments</b></p>  <p>NPDES</p> <p>pH Checked _____</p>	<p><b>Turnaround Requirements</b></p> <p>_____ RUSH (Surcharges Apply)</p> <p><b>PLEASE CIRCLE WORK DAYS</b></p> <p style="text-align: center;">1 2 3 4 5</p> <p><input checked="" type="checkbox"/> STANDARD</p> <p>Requested FAX Date: _____</p> <p>Requested Report Date: <u>10/22/20</u></p>	<p><b>Report Requirements</b></p> <p>_____ I. Results Only</p> <p><input checked="" type="checkbox"/> II. Results + QC Summaries</p> <p>_____ III. Results + QC and Calibration Summaries</p> <p><input checked="" type="checkbox"/> IV. Data Validation Report with Raw Data</p> <p>PQL/MDL/J <u>Y</u></p> <p>EDD <u>Y</u></p>	<p><b>Invoice Information</b></p> <hr/> <p>PO# 58R2009456</p> <hr/> <p>Bill to</p>
-----------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------

Relinquished By: *[Signature]* 10/12/2020/1445

Received By: *[Signature]* 66 of 83  
Page 9 of 26 10/13/20  
1015

Airbill Number: \_\_\_\_\_

PM MH

### Cooler Receipt and Preservation Form

Client AIX-Rock Service Request R2009456  
Received: 10/13/20 Opened: 10/13/20 By: BR Unloaded: 10/13/20 By: BR

- 1. Samples were received via?  USPS  Fed Ex  UPS  DHL  PDX  Courier  Hand Delivered
  - 2. Samples were received in: (circle)  Cooler  Box  Envelope  Other  NA
  - 3. Were custody seals on coolers?  NA  Y  N If yes, how many and where? Front  
If present, were custody seals intact?  NA  Y  N If present, were they signed and dated?  Y  N
  - 4. Was a Temperature Blank present in cooler?  NA  Y  N If yes, note the temperature in the appropriate column below:  
If no, take the temperature of a representative sample bottle contained within the cooler; notate in the column "Sample Temp":
  - 5. Were samples received within the method specified temperature ranges?  NA  Y  N  
If no, were they received on ice and same day as collected? If not, notate the cooler # below and notify the PM.  NA  Y  N
- If applicable, tissue samples were received: Frozen Partially Thawed Thawed

Temp Blank	Sample Temp	IR Gun	Cooler #/COC ID / NA	Out of temp indicate with "X"	PM Notified If out of temp	Tracking Number NA	Filed
<u>NA</u>	<u>4.4</u>	<u>1208</u>	<u>3/3</u>	<u>---</u>	<u>---</u>	<u>173024326380</u>	
<u>NA</u>	<u>3.6</u>	<u> </u>	<u>2/3</u>	<u>---</u>	<u>---</u>	<u>6379</u>	
<u>MH</u>	<u>3.0</u>	<u> </u>	<u>1/3</u>	<u>---</u>	<u>---</u>	<u>6348</u>	

- 6. Packing material: Inserts  Baggies  Bubble Wrap  Gel Packs  Wet Ice  Dry Ice  Sleeves paper
- 7. Were custody papers properly filled out (ink, signed, etc.)?  NA  Y  N
- 8. Were samples received in good condition (unbroken)  NA  Y  N
- 9. Were all sample labels complete (ie, analysis, preservation, etc.)?  NA  Y  N
- 10. Did all sample labels and tags agree with custody papers?  NA  Y  N
- 11. Were appropriate bottles/containers and volumes received for the tests indicated?  NA  Y  N
- 12. Were the pH-preserved bottles (see SMO GEN SOP) received at the appropriate pH? Indicate in the table below  NA  Y  N
- 13. Were VOA vials received without headspace? Indicate in the table below.  NA  Y  N
- 14. Was C12/Res negative?  NA  Y  N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count	Bottle Type	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, Resolutions: \_\_\_\_\_



## PFAS by HPLC/MS/MS

**ALS Environmental—Kelso Laboratory**  
1317 South 13th Avenue, Kelso, WA 98626  
Phone (360)577-7222 Fax (360)636-1068  
[www.alsglobal.com](http://www.alsglobal.com)



# Sample Results

**ALS Environmental—Kelso Laboratory**  
1317 South 13th Avenue, Kelso, WA 98626  
Phone (360) 577-7222 Fax (360) 425-9096  
[www.alsglobal.com](http://www.alsglobal.com)



## Organic Compounds by HPLC/MS/MS

**ALS Environmental—Kelso Laboratory**  
1317 South 13th Avenue, Kelso, WA 98626  
Phone (360) 577-7222 Fax (360) 425-9096  
[www.alsglobal.com](http://www.alsglobal.com)

Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** 9-CAT-007-003-01  
**Lab Code:** R2009456-001

**Service Request:** R2009456  
**Date Collected:** 10/08/20 08:30  
**Date Received:** 10/08/20 12:55

**Units:** ng/L  
**Basis:** NA

**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**Analysis Method:** PFC/537M  
**Prep Method:** ALS SOP

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
<b>Perfluoroalkyl Sulfonic Acids (PFASs)</b>							
Perfluorobutane sulfonic acid (PFBS)	4.7 U	4.7	0.28	1	10/24/20 08:41	10/16/20	
Perfluorohexane sulfonic acid (PFHxS)	4.7 U	4.7	1.3	1	10/24/20 08:41	10/16/20	*
Perfluoroheptane sulfonic acid (PFHpS)	4.7 U	4.7	0.44	1	10/24/20 08:41	10/16/20	
Perfluorooctane sulfonic acid (PFOS)	<b>0.98 J</b>	1.9	0.44	1	10/24/20 08:41	10/16/20	
Perfluorodecane sulfonic acid (PFDS)	4.7 U	4.7	0.30	1	10/24/20 08:41	10/16/20	
<b>Perfluoroalkyl Carboxylic Acids (PFCAs)</b>							
Perfluorobutanoic acid (PFBA)	<b>0.72 J</b>	4.7	0.40	1	10/24/20 08:41	10/16/20	
Perfluoropentanoic acid (PFPeA)	4.7 U	4.7	1.7	1	10/24/20 08:41	10/16/20	
Perfluorohexanoic acid (PFHxA)	9.4 U	9.4	8.8	1	10/24/20 08:41	10/16/20	
Perfluoroheptanoic acid (PFHpA)	4.7 U	4.7	0.63	1	10/24/20 08:41	10/16/20	
Perfluorooctanoic acid (PFOA)	<b>0.69 J</b>	1.9	0.35	1	10/24/20 08:41	10/16/20	
Perfluorononanoic acid (PFNA)	4.7 U	4.7	1.1	1	10/24/20 08:41	10/16/20	
Perfluorodecanoic acid (PFDA)	4.7 U	4.7	1.2	1	10/24/20 08:41	10/16/20	
Perfluoroundecanoic acid (PFUnDA)	4.7 U	4.7	1.5	1	10/24/20 08:41	10/16/20	
Perfluorododecanoic acid (PFDoDA)	4.7 U	4.7	1.3	1	10/24/20 08:41	10/16/20	
Perfluorotridecanoic acid (PFTTrDA)	4.7 U	4.7	1.3	1	10/24/20 08:41	10/16/20	
Perfluorotetradecanoic acid (PFTeDA)	4.7 U	4.7	2.0	1	10/24/20 08:41	10/16/20	*
<b>Perfluoroalkyl Sulfonamido Substances</b>							
Perfluorooctane sulfonamide (FOSA)	4.7 U	4.7	0.52	1	10/24/20 08:41	10/16/20	
N-Methyl perfluorooctane sulfonamidoacetic acid	4.7 U	4.7	1.4	1	10/24/20 08:41	10/16/20	
N-Ethyl perfluorooctane sulfonamidoacetic acid	4.7 U	4.7	0.50	1	10/24/20 08:41	10/16/20	
<b>n:2 Fluorotelomer Sulfonic Acids (n:2 FTSAs)</b>							
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	4.7 U	4.7	0.55	1	10/24/20 08:41	10/16/20	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	4.7 U	4.7	0.15	1	10/24/20 08:41	10/16/20	

**ALS Group USA, Corp.**  
dba ALS Environmental

Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** 9-CAT-007-003-01  
**Lab Code:** R2009456-001

**Service Request:** R2009456  
**Date Collected:** 10/08/20 08:30  
**Date Received:** 10/08/20 12:55

**Units:** ng/L  
**Basis:** NA

**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**Analysis Method:** PFC/537M  
**Prep Method:** ALS SOP

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
13C3-PFBS	80	20 - 109	10/24/20 08:41	
18O2-PFHxS	63	26 - 122	10/24/20 08:41	
13C4-PFOS	82	25 - 121	10/24/20 08:41	
13C4-PFBA	80	27 - 124	10/24/20 08:41	
13C5-PFPeA	93	27 - 138	10/24/20 08:41	
13C2-PFHxA	60	28 - 132	10/24/20 08:41	
13C4-PFHpA	75	19 - 139	10/24/20 08:41	
13C4-PFOA	66	22 - 130	10/24/20 08:41	
13C5-PFNA	87	20 - 127	10/24/20 08:41	
13C2-PFDA	79	24 - 125	10/24/20 08:41	
13C2-PFUnDA	72	22 - 125	10/24/20 08:41	
13C2-PFDoDA	71	19 - 122	10/24/20 08:41	
13C2-PFTeDA	45	13 - 124	10/24/20 08:41	
13C8-FOSA	98	18 - 109	10/24/20 08:41	
D3-MeFOSAA	67	9 - 123	10/24/20 08:41	
D5-EtFOSAA	82	12 - 126	10/24/20 08:41	
13C2-6:2 FTS	67	10 - 226	10/24/20 08:41	
13C2-8:2 FTS	87	10 - 202	10/24/20 08:41	

ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water

**Service Request:** R2009456  
**Date Collected:** 10/08/20 09:35  
**Date Received:** 10/08/20 12:55

**Sample Name:** 9-CAT-007-003-03  
**Lab Code:** R2009456-003

**Units:** ng/L  
**Basis:** NA

**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**Analysis Method:** PFC/537M  
**Prep Method:** ALS SOP

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
<b>Perfluoroalkyl Sulfonic Acids (PFSAs)</b>							
Perfluorobutane sulfonic acid (PFBS)	4.5 U	4.5	0.28	1	10/24/20 08:52	10/16/20	
Perfluorohexane sulfonic acid (PFHxS)	4.5 U	4.5	1.3	1	10/24/20 08:52	10/16/20	*
Perfluoroheptane sulfonic acid (PFHpS)	4.5 U	4.5	0.44	1	10/24/20 08:52	10/16/20	
Perfluorooctane sulfonic acid (PFOS)	1.8 U	1.8	0.44	1	10/24/20 08:52	10/16/20	
Perfluorodecane sulfonic acid (PFDS)	4.5 U	4.5	0.30	1	10/24/20 08:52	10/16/20	
<b>Perfluoroalkyl Carboxylic Acids (PFCAs)</b>							
Perfluorobutanoic acid (PFBA)	4.5 U	4.5	0.40	1	10/24/20 08:52	10/16/20	
Perfluoropentanoic acid (PFPeA)	4.5 U	4.5	1.7	1	10/24/20 08:52	10/16/20	
Perfluorohexanoic acid (PFHxA)	9.2 U	9.2	8.8	1	10/24/20 08:52	10/16/20	
Perfluoroheptanoic acid (PFHpA)	4.5 U	4.5	0.63	1	10/24/20 08:52	10/16/20	
Perfluorooctanoic acid (PFOA)	<b>0.41 J</b>	1.8	0.35	1	10/24/20 08:52	10/16/20	
Perfluorononanoic acid (PFNA)	4.5 U	4.5	1.1	1	10/24/20 08:52	10/16/20	
Perfluorodecanoic acid (PFDA)	4.5 U	4.5	1.2	1	10/24/20 08:52	10/16/20	
Perfluoroundecanoic acid (PFUnDA)	4.5 U	4.5	1.5	1	10/24/20 08:52	10/16/20	
Perfluorododecanoic acid (PFDoDA)	4.5 U	4.5	1.3	1	10/24/20 08:52	10/16/20	
Perfluorotridecanoic acid (PFTTrDA)	4.5 U	4.5	1.3	1	10/24/20 08:52	10/16/20	
Perfluorotetradecanoic acid (PFTeDA)	4.5 U	4.5	2.0	1	10/24/20 08:52	10/16/20	*
<b>Perfluoroalkyl Sulfonamido Substances</b>							
Perfluorooctane sulfonamide (FOSA)	4.5 U	4.5	0.52	1	10/24/20 08:52	10/16/20	
N-Methyl perfluorooctane sulfonamidoacetic acid	4.5 U	4.5	1.4	1	10/24/20 08:52	10/16/20	
N-Ethyl perfluorooctane sulfonamidoacetic acid	4.5 U	4.5	0.50	1	10/24/20 08:52	10/16/20	
<b>n:2 Fluorotelomer Sulfonic Acids (n:2 FTSAs)</b>							
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	4.5 U	4.5	0.55	1	10/24/20 08:52	10/16/20	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	4.5 U	4.5	0.15	1	10/24/20 08:52	10/16/20	



**ALS Group USA, Corp.**  
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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** 9-CAT-007-003-03  
**Lab Code:** R2009456-003

**Service Request:** R2009456  
**Date Collected:** 10/08/20 09:35  
**Date Received:** 10/08/20 12:55

**Units:** ng/L  
**Basis:** NA

**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**Analysis Method:** PFC/537M  
**Prep Method:** ALS SOP

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
13C3-PFBS	69	20 - 109	10/24/20 08:52	
18O2-PFHxS	50	26 - 122	10/24/20 08:52	
13C4-PFOS	75	25 - 121	10/24/20 08:52	
13C4-PFBA	72	27 - 124	10/24/20 08:52	
13C5-PFPeA	81	27 - 138	10/24/20 08:52	
13C2-PFHxA	66	28 - 132	10/24/20 08:52	
13C4-PFHpA	57	19 - 139	10/24/20 08:52	
13C4-PFOA	70	22 - 130	10/24/20 08:52	
13C5-PFNA	92	20 - 127	10/24/20 08:52	
13C2-PFDA	79	24 - 125	10/24/20 08:52	
13C2-PFUnDA	74	22 - 125	10/24/20 08:52	
13C2-PFDoDA	80	19 - 122	10/24/20 08:52	
13C2-PFTeDA	41	13 - 124	10/24/20 08:52	
13C8-FOSA	90	18 - 109	10/24/20 08:52	
D3-MeFOSAA	67	9 - 123	10/24/20 08:52	
D5-EtFOSAA	80	12 - 126	10/24/20 08:52	
13C2-6:2 FTS	66	10 - 226	10/24/20 08:52	
13C2-8:2 FTS	92	10 - 202	10/24/20 08:52	

**ALS Group USA, Corp.**  
dba ALS Environmental

Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water

**Service Request:** R2009456  
**Date Collected:** 10/08/20 09:40  
**Date Received:** 10/08/20 12:55

**Sample Name:** 9-CAT-007-003-04  
**Lab Code:** R2009456-004

**Units:** ng/L  
**Basis:** NA

**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**Analysis Method:** PFC/537M  
**Prep Method:** ALS SOP

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
<b>Perfluoroalkyl Sulfonic Acids (PFSAs)</b>							
Perfluorobutane sulfonic acid (PFBS)	4.3 U	4.3	0.28	1	10/24/20 09:02	10/16/20	
Perfluorohexane sulfonic acid (PFHxS)	4.3 U	4.3	1.3	1	10/24/20 09:02	10/16/20	*
Perfluoroheptane sulfonic acid (PFHpS)	4.3 U	4.3	0.44	1	10/24/20 09:02	10/16/20	
Perfluorooctane sulfonic acid (PFOS)	1.7 U	1.7	0.44	1	10/24/20 09:02	10/16/20	
Perfluorodecane sulfonic acid (PFDS)	4.3 U	4.3	0.30	1	10/24/20 09:02	10/16/20	
<b>Perfluoroalkyl Carboxylic Acids (PFCAs)</b>							
Perfluorobutanoic acid (PFBA)	4.3 U	4.3	0.40	1	10/24/20 09:02	10/16/20	
Perfluoropentanoic acid (PFPeA)	4.3 U	4.3	1.7	1	10/24/20 09:02	10/16/20	
Perfluorohexanoic acid (PFHxA)	9.2 U	9.2	8.8	1	10/24/20 09:02	10/16/20	
Perfluoroheptanoic acid (PFHpA)	4.3 U	4.3	0.63	1	10/24/20 09:02	10/16/20	
Perfluorooctanoic acid (PFOA)	<b>0.37 J</b>	1.7	0.35	1	10/24/20 09:02	10/16/20	
Perfluorononanoic acid (PFNA)	4.3 U	4.3	1.1	1	10/24/20 09:02	10/16/20	
Perfluorodecanoic acid (PFDA)	4.3 U	4.3	1.2	1	10/24/20 09:02	10/16/20	
Perfluoroundecanoic acid (PFUnDA)	4.3 U	4.3	1.5	1	10/24/20 09:02	10/16/20	
Perfluorododecanoic acid (PFDoDA)	4.3 U	4.3	1.3	1	10/24/20 09:02	10/16/20	
Perfluorotridecanoic acid (PFTrDA)	4.3 U	4.3	1.3	1	10/24/20 09:02	10/16/20	
Perfluorotetradecanoic acid (PFTeDA)	4.3 U	4.3	2.0	1	10/24/20 09:02	10/16/20	*
<b>Perfluoroalkyl Sulfonamido Substances</b>							
Perfluorooctane sulfonamide (FOSA)	4.3 U	4.3	0.52	1	10/24/20 09:02	10/16/20	
N-Methyl perfluorooctane sulfonamidoacetic acid	4.3 U	4.3	1.4	1	10/24/20 09:02	10/16/20	
N-Ethyl perfluorooctane sulfonamidoacetic acid	4.3 U	4.3	0.50	1	10/24/20 09:02	10/16/20	
<b>n:2 Fluorotelomer Sulfonic Acids (n:2 FTSAs)</b>							
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	4.3 U	4.3	0.55	1	10/24/20 09:02	10/16/20	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	4.3 U	4.3	0.15	1	10/24/20 09:02	10/16/20	

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Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** 9-CAT-007-003-04  
**Lab Code:** R2009456-004

**Service Request:** R2009456  
**Date Collected:** 10/08/20 09:40  
**Date Received:** 10/08/20 12:55

**Units:** ng/L  
**Basis:** NA

**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**Analysis Method:** PFC/537M  
**Prep Method:** ALS SOP

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
13C3-PFBS	62	20 - 109	10/24/20 09:02	
18O2-PFHxS	59	26 - 122	10/24/20 09:02	
13C4-PFOS	81	25 - 121	10/24/20 09:02	
13C4-PFBA	71	27 - 124	10/24/20 09:02	
13C5-PFPeA	73	27 - 138	10/24/20 09:02	
13C2-PFHxA	59	28 - 132	10/24/20 09:02	
13C4-PFHpA	60	19 - 139	10/24/20 09:02	
13C4-PFOA	56	22 - 130	10/24/20 09:02	
13C5-PFNA	85	20 - 127	10/24/20 09:02	
13C2-PFDA	83	24 - 125	10/24/20 09:02	
13C2-PFUnDA	69	22 - 125	10/24/20 09:02	
13C2-PFDoDA	74	19 - 122	10/24/20 09:02	
13C2-PFTeDA	58	13 - 124	10/24/20 09:02	
13C8-FOSA	74	18 - 109	10/24/20 09:02	
D3-MeFOSAA	63	9 - 123	10/24/20 09:02	
D5-EtFOSAA	66	12 - 126	10/24/20 09:02	
13C2-6:2 FTS	82	10 - 226	10/24/20 09:02	
13C2-8:2 FTS	76	10 - 202	10/24/20 09:02	



## QC Summary Forms

**ALS Environmental—Kelso Laboratory**  
1317 South 13th Avenue, Kelso, WA 98626  
Phone (360) 577-7222 Fax (360) 425-9096  
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# Organic Compounds by HPLC/MS/MS

**ALS Environmental—Kelso Laboratory**  
1317 South 13th Avenue, Kelso, WA 98626  
Phone (360) 577-7222 Fax (360) 425-9096  
[www.alsglobal.com](http://www.alsglobal.com)

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water

**Service Request:** R2009456

**SURROGATE RECOVERY SUMMARY**  
**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**Analysis Method:** PFC/537M  
**Extraction Method:** ALS SOP

Surrogate	Control Limits	9-CAT-007-003-01	9-CAT-007-003-03	9-CAT-007-003-04
		R2009456-001	R2009456-003	R2009456-004
13C3-PFBS	20-109	80	69	62
18O2-PFHxS	26-122	63	50	59
13C4-PFOS	25-121	82	75	81
13C4-PFBA	27-124	80	72	71
13C5-PFPeA	27-138	93	81	73
13C2-PFHxA	28-132	60	66	59
13C4-PFHpA	19-139	75	57	60
13C4-PFOA	22-130	66	70	56
13C5-PFNA	20-127	87	92	85
13C2-PFDA	24-125	79	79	83
13C2-PFUnDA	22-125	72	74	69
13C2-PFDoDA	19-122	71	80	74
13C2-PFTeDA	13-124	45	41	58
13C8-FOSA	18-109	98	90	74
D3-MeFOSAA	9-123	67	67	63
D5-EtFOSAA	12-126	82	80	66
13C2-6:2 FTS	10-226	67	66	82
13C2-8:2 FTS	10-202	87	92	76

**Results flagged with an asterisk (\*) indicate values outside control criteria.**  
**Results flagged with a pound (#) indicate the control criteria is not acceptable.**

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water

**Service Request:** R2009456

**SURROGATE RECOVERY SUMMARY**  
**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**Analysis Method:** PFC/537M  
**Extraction Method:** ALS SOP

Surrogate	Control Limits	Method Blank	Lab Control Sample	Duplicate Lab Control Sample
		KQ2015694-03	KQ2015694-01	KQ2015694-02
13C3-PFBS	20-109	67	71	102
18O2-PFHxS	26-122	60	57	98
13C4-PFOS	25-121	80	86	101
13C4-PFBA	27-124	72	76	96
13C5-PFPeA	27-138	80	85	118
13C2-PFHxA	28-132	67	67	79
13C4-PFHpA	19-139	65	70	106
13C4-PFOA	22-130	65	68	102
13C5-PFNA	20-127	90	97	121
13C2-PFDA	24-125	77	88	101
13C2-PFUnDA	22-125	71	76	96
13C2-PFDoDA	19-122	74	80	89
13C2-PFTeDA	13-124	57	62	107
13C8-FOSA	18-109	86	89	100
D3-MeFOSAA	9-123	66	72	80
D5-EtFOSAA	12-126	74	78	94
13C2-6:2 FTS	10-226	75	82	110
13C2-8:2 FTS	10-202	87	89	117

**Results flagged with an asterisk (\*) indicate values outside control criteria.**  
**Results flagged with a pound (#) indicate the control criteria is not acceptable.**

Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** Method Blank  
**Lab Code:** KQ2015694-03

**Service Request:** R2009456  
**Date Collected:** NA  
**Date Received:** NA  
**Units:** ng/L  
**Basis:** NA

**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**Analysis Method:** PFC/537M  
**Prep Method:** ALS SOP

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
<b>Perfluoroalkyl Sulfonic Acids (PFSAs)</b>							
Perfluorobutane sulfonic acid (PFBS)	5.0 U	5.0	0.28	1	10/24/20 08:08	10/16/20	
Perfluorohexane sulfonic acid (PFHxS)	5.0 U	5.0	1.3	1	10/24/20 08:08	10/16/20	
Perfluoroheptane sulfonic acid (PFHpS)	5.0 U	5.0	0.44	1	10/24/20 08:08	10/16/20	
Perfluorooctane sulfonic acid (PFOS)	2.0 U	2.0	0.44	1	10/24/20 08:08	10/16/20	
Perfluorodecane sulfonic acid (PFDS)	5.0 U	5.0	0.30	1	10/24/20 08:08	10/16/20	
<b>Perfluoroalkyl Carboxylic Acids (PFCAs)</b>							
Perfluorobutanoic acid (PFBA)	5.0 U	5.0	0.40	1	10/24/20 08:08	10/16/20	
Perfluoropentanoic acid (PFPeA)	5.0 U	5.0	1.7	1	10/24/20 08:08	10/16/20	
Perfluorohexanoic acid (PFHxA)	10 U	10	8.8	1	10/24/20 08:08	10/16/20	
Perfluoroheptanoic acid (PFHpA)	5.0 U	5.0	0.63	1	10/24/20 08:08	10/16/20	
Perfluorooctanoic acid (PFOA)	<b>0.49 J</b>	2.0	0.35	1	10/24/20 08:08	10/16/20	
Perfluorononanoic acid (PFNA)	5.0 U	5.0	1.1	1	10/24/20 08:08	10/16/20	
Perfluorodecanoic acid (PFDA)	5.0 U	5.0	1.2	1	10/24/20 08:08	10/16/20	
Perfluoroundecanoic acid (PFUnDA)	5.0 U	5.0	1.5	1	10/24/20 08:08	10/16/20	
Perfluorododecanoic acid (PFDoDA)	5.0 U	5.0	1.3	1	10/24/20 08:08	10/16/20	
Perfluorotridecanoic acid (PFTTrDA)	5.0 U	5.0	1.3	1	10/24/20 08:08	10/16/20	
Perfluorotetradecanoic acid (PFTeDA)	5.0 U	5.0	2.0	1	10/24/20 08:08	10/16/20	
<b>Perfluoroalkyl Sulfonamido Substances</b>							
Perfluorooctane sulfonamide (FOSA)	5.0 U	5.0	0.52	1	10/24/20 08:08	10/16/20	
N-Methyl perfluorooctane sulfonamidoacetic acid	5.0 U	5.0	1.4	1	10/24/20 08:08	10/16/20	
N-Ethyl perfluorooctane sulfonamidoacetic acid	5.0 U	5.0	0.50	1	10/24/20 08:08	10/16/20	
<b>n:2 Fluorotelomer Sulfonic Acids (n:2 FTSAs)</b>							
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	5.0 U	5.0	0.55	1	10/24/20 08:08	10/16/20	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	5.0 U	5.0	0.15	1	10/24/20 08:08	10/16/20	



**ALS Group USA, Corp.**  
dba ALS Environmental

Analytical Report

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water  
**Sample Name:** Method Blank  
**Lab Code:** KQ2015694-03

**Service Request:** R2009456  
**Date Collected:** NA  
**Date Received:** NA  
**Units:** ng/L  
**Basis:** NA

**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**Analysis Method:** PFC/537M  
**Prep Method:** ALS SOP

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
13C3-PFBS	67	20 - 109	10/24/20 08:08	
18O2-PFHxS	60	26 - 122	10/24/20 08:08	
13C4-PFOS	80	25 - 121	10/24/20 08:08	
13C4-PFBA	72	27 - 124	10/24/20 08:08	
13C5-PFPeA	80	27 - 138	10/24/20 08:08	
13C2-PFHxA	67	28 - 132	10/24/20 08:08	
13C4-PFHpA	65	19 - 139	10/24/20 08:08	
13C4-PFOA	65	22 - 130	10/24/20 08:08	
13C5-PFNA	90	20 - 127	10/24/20 08:08	
13C2-PFDA	77	24 - 125	10/24/20 08:08	
13C2-PFUnDA	71	22 - 125	10/24/20 08:08	
13C2-PFDoDA	74	19 - 122	10/24/20 08:08	
13C2-PFTeDA	57	13 - 124	10/24/20 08:08	
13C8-FOSA	86	18 - 109	10/24/20 08:08	
D3-MeFOSAA	66	9 - 123	10/24/20 08:08	
D5-EtFOSAA	74	12 - 126	10/24/20 08:08	
13C2-6:2 FTS	75	10 - 226	10/24/20 08:08	
13C2-8:2 FTS	87	10 - 202	10/24/20 08:08	

**Client:** Parsons Engineering Science  
**Project:** ILI - Region 9 Olean Ischua LF/452148.60007.03  
**Sample Matrix:** Water

**Service Request:** R2009456  
**Date Analyzed:** 10/24/20 - 10/27/20  
**Date Extracted:** 10/16/20

**Duplicate Lab Control Sample Summary**  
**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**Analysis Method:** PFC/537M  
**Prep Method:** ALS SOP

**Units:** ng/L  
**Basis:** NA  
**Analysis Lot:** 699681

Analyte Name	Lab Control Sample KQ2015694-01			Duplicate Lab Control Sample KQ2015694-02			% Rec Limits	RPD	RPD Limit
	Result	Spike Amount	% Rec	Result	Spike Amount	% Rec			
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	37.2	30.4	122	34.2	30.4	112	71-142	8	30
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	41.6	30.7	135	35.4	30.7	115	69-137	16	30
N-Ethyl perfluorooctane sulfonamidoacetic acid	25.7	32.0	80	38.5	32.0	120	58-155	40 *	30
N-Methyl perfluorooctane sulfonamidoacetic acid	29.3	32.0	92	35.5	32.0	111	69-151	19	30
Perfluorobutane sulfonic acid (PFBS)	27.4	28.4	97	30.4	28.4	107	61-140	10	30
Perfluorobutanoic acid (PFBA)	30.0	32.0	94	38.5	32.0	120	51-157	25	30
Perfluorodecane sulfonic acid (PFDS)	32.0	30.9	104	36.9	30.9	120	69-146	14	30
Perfluorodecanoic acid (PFDA)	36.3	32.0	113	37.8	32.0	118	73-136	4	30
Perfluorododecanoic acid (PFDoDA)	30.8	32.0	96	33.6	32.0	105	71-138	9	30
Perfluoroheptane sulfonic acid (PFHpS)	38.9	30.5	128	34.6	30.5	113	62-178	12	30
Perfluoroheptanoic acid (PFHpA)	27.0	32.0	85	31.4	32.0	98	72-133	15	30
Perfluorohexane sulfonic acid (PFHxS)	40.6	29.2	139	30.3	29.2	104	69-144	29	30
Perfluorohexanoic acid (PFHxA)	34.2	32.0	107	32.8	32.0	103	71-138	4	30
Perfluorononanoic acid (PFNA)	37.4	32.0	117	38.1	32.0	119	69-148	2	30
Perfluorooctane sulfonamide (FOSA)	31.5	32.0	98	34.1	32.0	107	64-135	8	30
Perfluorooctane sulfonic acid (PFOS)	33.9	29.7	114	33.2	29.7	112	71-139	2	30
Perfluorooctanoic acid (PFOA)	32.1	32.0	100	33.4	32.0	104	74-146	4	30
Perfluoropentanoic acid (PFPeA)	32.5	32.0	102	33.6	32.0	105	67-127	3	30
Perfluorotetradecanoic acid (PFTeDA)	45.9	32.0	143 *	34.8	32.0	109	63-139	27	30
Perfluorotridecanoic acid (PFTrDA)	43.0	32.0	134	31.0	32.0	97	65-140	33 *	30
Perfluoroundecanoic acid (PFUnDA)	34.5	32.0	108	34.8	32.0	109	76-134	1	30