

INTEROFFICE COMMUNICATION

TO: Mike Jury, Project Manager, Saginaw Bay District Office
Remediation and Redevelopment Division

FROM: Jeff Pincumbe, Geologist, Geological Services Unit
Program Support Section, Remediation and Redevelopment Division

DATE: June 20, 2017

SUBJECT: F-41 PFC Contamination, Iosco County, Site ID #35000153
Site Investigation-Phase 2

This report is for Phase 2 Site Investigation work requested by the Department of Environmental Quality (DEQ), Remediation and Redevelopment Division's (RRD's), Saginaw Bay District office for the subject site (Fig 1). The F-41 site is one of 3 sites associated with Wurtsmith Air Force Base that have been or have the potential to be impacted with Perfluorinated Hydrocarbons (PFCs). The other two sites associated with Wurtsmith are the River Road site and the Loud Drive site. Both of these sites are included on Figure 1. The initial phase of work was completed in October 2016 and consisted of the completion of 2 soil borings and the installation of 4 monitor wells with vertical aquifer sampling at all locations. The results of the initial investigation were summarized in a January 18, 2017, report. Phase 2 consisted of installing 4 monitor wells along Alexander Road and 2 monitor wells along Colbath Road with vertical aquifer sampling at the 4 locations along Alexander Road. In addition, groundwater samples were collected from 5 of the new monitor wells. RRD's Geological Services Unit (GSU) conducted the work on March 21-22, 2017, and May 9, 2017. GSU received the final laboratory results on June 6, 2017.

The site is located north of the air force base on the west side of Van Etten Lake. The area is rural/residential with private residential wells.

The PFCs includes a list of 21 compounds with only 2 being compounds of concern. These include Perfluorooctane Sulfonate (PFOS) and Perfluorooctanoic Acid (PFOA). The action level for the compounds of concern is 70 parts per trillion (ng/l) for each compound individually or for a total of the 2 compounds added together.

This report includes the following:

- Site Location Map (Fig 1)
- Site Map (Fig 2)
- Volatile Organic Compounds (VOCs) Laboratory Table with Comparison to Risk-Based Screening Levels (RBSLs) (Table 1)
- PFC Compounds of Concern Laboratory Table with Comparison to Action Levels (Table 2)
- DEQ Soil Boring and Monitor Well Logs (Appendix A)
- DEQ Laboratory Results (Appendix B)
- Test America Laboratory Results (Appendix C)

On March 21-22, 2017, GSU completed 4 monitor wells with vertical aquifer sampling (VAS) along Alexander Road (AR-MW-2, AR-MW-3, AR-MW-4, and AR-MW-5) (Fig 2) (Appendix A). During this same period, the GSU crew installed 2 monitor wells along Colbath Road (CR-MW-6 and CR-MW-7) (Fig 2) (Appendix A). Staff did not conduct VAS at these 2 locations. The monitor wells were completed using a Geoprobe. Soil samples were collected at each location to the top of saturation ranging between 19 and 25 feet below ground level. The soil samples were for determining lithology only. At AR-MW-4 the 3.25-inch rods were then driven to a depth of 65 feet and a gamma log was run to identify any changes in lithology with depth. The gamma log did indicate that a confining layer may be present at a depth of approximately 50 feet.

The GSU completed the VAS at AR-MW-2, AR-MW-3, AR-MW-4, and AR-MW-5. The VAS was done by driving 1.25-inch Geoprobe rods with a mill slotted lead. Staff collected the groundwater samples from the depth shown on the boring log using a peristaltic pump. The samples were submitted to the DEQ Laboratory and analyzed for VOCs using USEP Method 8260 (Table 1) (Appendix B). Duplicate groundwater samples were submitted to Test America and analyzed for PFCs (Table 2) (Appendix C).

On May 9, 2017, groundwater samples were collected from AR-MW-2, AR-MW-3, AR-MW-4, AR-MW-5, and CR-MW-6. The sampling was conducted using a low-flow method. The samples were submitted to Test America and analyzed for PFCs (Table 2) (Appendix C).

A review of the VOC results indicated that there were very low concentrations (1.1 µg/l and 1.9 µg/l) of Toluene detected in the vertical aquifer samples from AR-MW-2 (40-45 feet) and AR-MW-5 (30-35 feet). There were no other VOCs detected in any of the groundwater samples collected from this site.

The PFC compounds were detected in several of the groundwater samples collected during this phase of the work. There were no PFC concentrations that exceeded the action level of 70 ng/l for PFCs. The highest PFC concentration was in the sample from CR-MW-6 (20-25 feet) with a concentration of 8.4 ng/l.

If you have any questions, contact me at 517-243-3171.

Attachments

cc: Burrell P. Shirey, DEQ

704617 E
441109 N

714736 E
441109 N



F41 / Colbath Road



Loud Drive



River Road

704617 E
433003 N

714736 E
433003 N

LEGEND

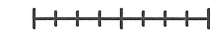
● Soil Boring / Monitor Well

- DATUM - NAD83
- PROJECTION: MICHIGAN GEOREF
- NORTHING AND EASTING COORDINATES (IN METERS) ARE IN CORNERS OF MAP

AERIAL PHOTO SOURCE: MI CENTER FOR SHARED SOLUTIONS
 AERIAL PHOTO DATE: NA
 AERIAL RESOLUTION: USGS Topographic



0 185 370 740 Meters



0 650 1,300 2,600 Feet



1 inch = 2,667 feet

Wurtsmith Air Force Base
 ERNIE ID 53000152, 53000153, 53000154
 OSCODA & AU SABLE TOWNSHIPS, IOSCO COUNTY

SITE LOCATIONS MAP

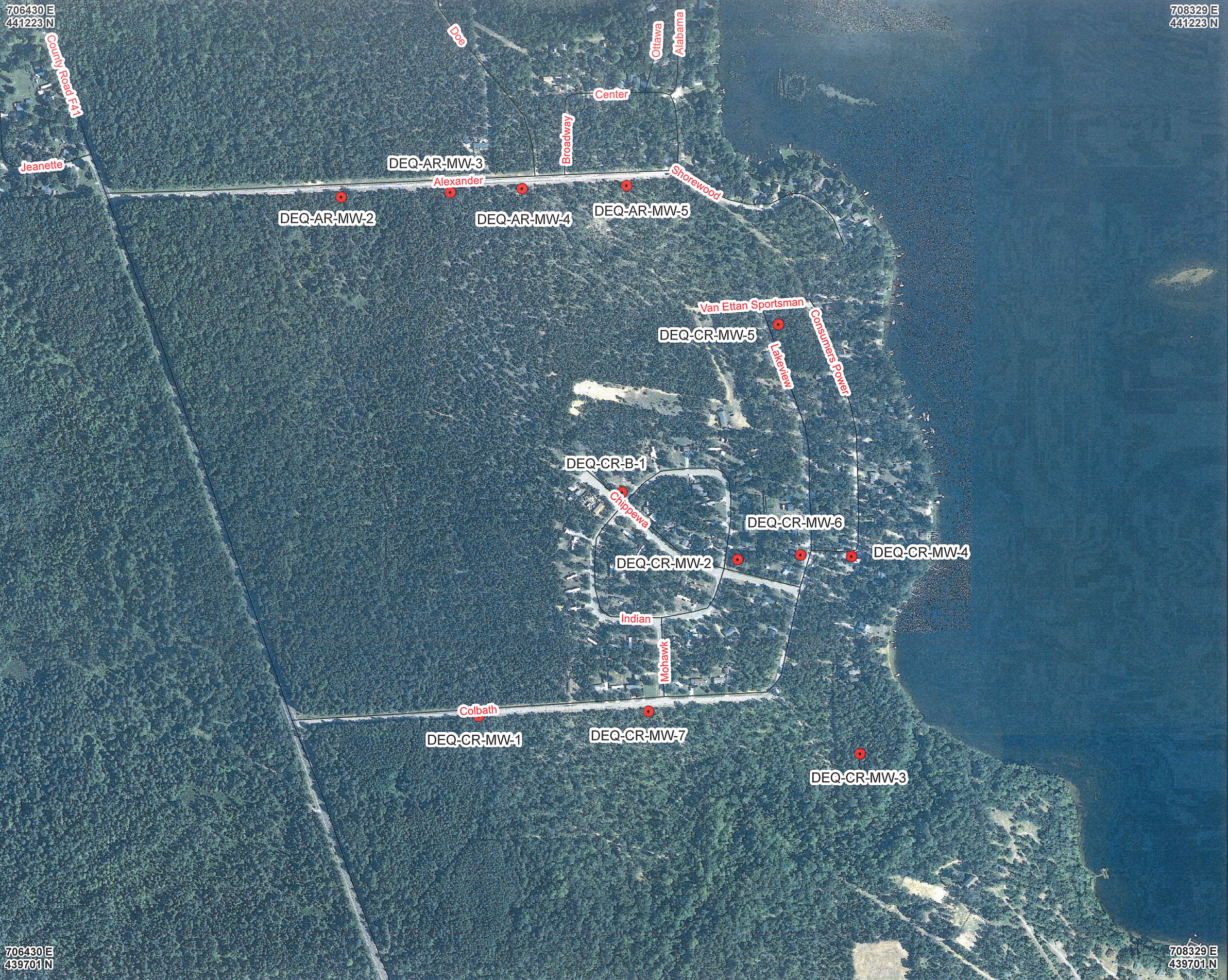
GEOLOGIST
 Jeff Pincumbe
 Geological Services Unit

Remediation and
 Redevelopment
 Division



CREATION DATE
 January 2017

FIGURE 1

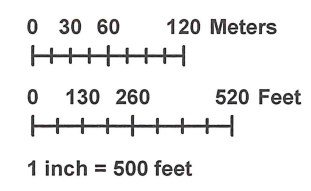


LEGEND

● Monitor Well / Soil Boring

- DATUM - NAD83
- PROJECTION: MICHIGAN GEOREF
- NORTHING AND EASTING COORDINATES (IN METERS) ARE IN CORNERS OF MAP

AERIAL PHOTO SOURCE: MI CENTER FOR SHARED SOLUTIONS
 AERIAL PHOTO DATE: 2010
 AERIAL RESOLUTION: 1 foot Natural Color



Wurtsmith - F41
Colbath Road - Alexander Road
 ERNIE ID 35000153
 OSCODA TOWNSHIP, IOSCO COUNTY
 T24NS R9E SECTIONS 7 & 18

SITE MAP

GEOLOGIST
 Jeff Pincumbe
 Geological Services Unit
 Remediation and
 Redevelopment
 Division



CREATION DATE
 June 2017

FIGURE 2

Michigan Department of Environmental Quality Analytical Testing Report
 Work Order: 1703146
 Report Date: 4/7/2017 10:34
 Client: MDEQ-RRD-SAGINAW BAY
 Attention: Mike Jury
 Project Name: F-41 PFC CONTAMINATION, IOSCO CO.
 Project Number: 35000153

Sample Number	Sample ID	Sample Depth	Date Collected	Date Received	Target Detection Limit (TDL)	Drinking Water Criteria (DWC)	Groundwater Surface Water Interface Criteria (GSIC)	Groundwater Volatilization to Indoor Air Inhalation Criteria (GVIIIC)	Rule 57 Final Acute Value (FAV)	1703146-08	1703146-09	1703146-10	1703146-11	1703146-12	1703146-13
										AR-MW-4	AR-MW-4	AR-MW-4	AR-MW-5	AR-MW-5	AR-MW-5
										15-20 ft.	25-30 ft.	35-40 ft.	20-25 ft.	30-35 ft.	40-45 ft.
										3/21/2017	3/21/2017	3/21/2017	3/22/2017	3/22/2017	3/22/2017
Analyte	Units	Method	Organics-Volatiles												
1,1,1,2-Tetrachloroethane	ug/L	8260	1	77	ID	15,000	ID	<1	<1	<1	<1	<1	<1	<1	
1,1,1-Trichloroethane	ug/L	8260	1	200	89	660,000	1,600	<1	<1	<1	<1	<1	<1	<1	
1,1,2,2-Tetrachloroethane	ug/L	8260	1	9	78	12,000	1,800	<1	<1	<1	<1	<1	<1	<1	
1,1,2-Trichloroethane	ug/L	8260	1	5	330	17,000	6,400	<1	<1	<1	<1	<1	<1	<1	
1,1-Dichloroethane	ug/L	8260	1	880	740	1,000,000	13,000	<1	<1	<1	<1	<1	<1	<1	
1,1-Dichloroethylene	ug/L	8260	1	7	130	200	2,300	<1	<1	<1	<1	<1	<1	<1	
1,2,3-Trichlorobenzene	ug/L	8260	NA	NA	NA	NA	NA	<5	<5	<5	<5	<5	<5	<5	
1,2,3-Trichloropropane	ug/L	8260	1	42	NA	8,300	NA	<1	<1	<1	<1	<1	<1	<1	
1,2,3-Trimethylbenzene	ug/L	8260	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1	<1	<1	
1,2,4-Trichlorobenzene	ug/L	8260	5	70	99	300,000	850	<5	<5	<5	<5	<5	<5	<5	
1,2,4-Trimethylbenzene	ug/L	8260	1	63	17	56,000	310	<1	<1	<1	<1	<1	<1	<1	
1,2-Dibromo-3-chloropropane	ug/L	8260	NA	NA	NA	NA	NA	<5	<5	<5	<5	<5	<5	<5	
1,2-Dibromoethane	ug/L	8260	0	0	6	2,400	280	<1	<1	<1	<1	<1	<1	<1	
1,2-Dichlorobenzene	ug/L	8260	1	600	13	160,000	240	<1	<1	<1	<1	<1	<1	<1	
1,2-Dichloroethane	ug/L	8260	1	5	360	9,600	16,000	<1	<1	<1	<1	<1	<1	<1	
1,2-Dichloropropane	ug/L	8260	1	5	230	16,000	4,000	<1	<1	<1	<1	<1	<1	<1	
1,3,5-Trimethylbenzene	ug/L	8260	1	72	45	61,000	810	<1	<1	<1	<1	<1	<1	<1	
1,3-Dichlorobenzene	ug/L	8260	1	7	28	18,000	200	<1	<1	<1	<1	<1	<1	<1	
1,4-Dichlorobenzene	ug/L	8260	1	75	17	16,000	210	<1	<1	<1	<1	<1	<1	<1	
2-Butanone (MEK)	ug/L	8260	25	13,000	2,200	240,000,000	40,000	<5	<5	<5	<5	<5	<5	<5	
2-Hexanone	ug/L	8260	50	1,000	ID	4,200,000	ID	<5	<5	<5	<5	<5	<5	<5	
2-Methylnaphthalene	ug/L	8260	5	260	19	25,000	340	<5	<5	<5	<5	<5	<5	<5	
2-Propanone (acetone)	ug/L	8260	50	730	1,700	1,000,000,000	30,000	<20	<20	<20	<20	<20	<20	<20	
4-Methyl-2-pentanone (MIBK)	ug/L	8260	50	1,800	ID	20,000,000	ID	<5	<5	<5	<5	<5	<5	<5	
Acrylonitrile	ug/L	8260	2	3	2	34,000	1,200	<5	<5	<5	<5	<5	<5	<5	
Benzene	ug/L	8260	1	5	200	5,600	1,900	<1	<1	<1	<1	<1	<1	<1	
Bromobenzene	ug/L	8260	1	18	NA	180,000	NA	<1	<1	<1	<1	<1	<1	<1	
Bromochloromethane	ug/L	8260	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1	<1	<1	
Bromodichloromethane	ug/L	8260	1	80	ID	4,800	ID	<1	<1	<1	<1	<1	<1	<1	
Bromoform	ug/L	8260	1	80	ID	470,000	ID	<1	<1	<1	<1	<1	<1	<1	
Bromomethane	ug/L	8260	5	10	35	4,000	640	<5	<5	<5	<5	<5	<5	<5	
Carbon disulfide	ug/L	8260	5	800	ID	250,000	ID	<1	<1	<1	<1	<1	<1	<1	
Carbon tetrachloride	ug/L	8260	1	5	45	370	1,400	<1	<1	<1	<1	<1	<1	<1	
Chlorobenzene	ug/L	8260	1	100	25	210,000	450	<1	<1	<1	<1	<1	<1	<1	
Chloroethane	ug/L	8260	5	430	1,100	5,700,000	20,000	<5	<5	<5	<5	<5	<5	<5	
Chloroform	ug/L	8260	1	80	350	28,000	11,000	<1	<1	<1	<1	<1	<1	<1	
Chloromethane	ug/L	8260	5	260	ID	8,600	ID	<5	<5	<5	<5	<5	<5	<5	
cis-1,2-Dichloroethylene	ug/L	8260	1	70	620	93,000	11,000	<1	<1	<1	<1	<1	<1	<1	
cis-1,3-Dichloropropylene	ug/L	8260	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1	<1	<1	
Cyclohexane	ug/L	8260	NA	NA	NA	NA	NA	<5	<5	<5	<5	<5	<5	<5	
Dibromochloromethane	ug/L	8260	5	80	ID	14,000	ID	<1	<1	<1	<1	<1	<1	<1	
Dibromomethane	ug/L	8260	5	80	NA	ID	NA	<1	<1	<1	<1	<1	<1	<1	
Dichlorodifluoromethane	ug/L	8260	5	1,700	ID	220,000	ID	<5	<5	<5	<5	<5	<5	<5	
Diethyl ether	ug/L	8260	10	10	ID	61,000,000	ID	<5	<5	<5	<5	<5	<5	<5	
Diisopropyl Ether	ug/L	8260	5	30	ID	8,000	ID	<5	<5	<5	<5	<5	<5	<5	
Ethylbenzene	ug/L	8260	1	74	18	110,000	320	<1	<1	<1	<1	<1	<1	<1	
Ethyltertiarybutylether	ug/L	8260	5	49	ID	2,900,000	ID	<5	<5	<5	<5	<5	<5	<5	
Hexachloroethane	ug/L	8260	5	7	7	27,000	210	<5	<5	<5	<5	<5	<5	<5	
Isopropylbenzene	ug/L	8260	5	800	28	56,000	500	<1	<1	<1	<1	<1	<1	<1	
m & p - Xylene	ug/L	8260	NA	NA	NA	NA	NA	<2	<2	<2	<2	<2	<2	<2	
Methyl iodide	ug/L	8260	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1	<1	<1	
Methylene chloride	ug/L	8260	5	5	1,500	220,000	17,000	<5	<5	<5	<5	<5	<5	<5	
Methyltertiarybutylether	ug/L	8260	5	40	7,100	47,000,000	420,000	<1	<1	<1	<1	<1	<1	<1	
Naphthalene	ug/L	8260	5	520	11	31,000	200	<5	<5	<5	<5	<5	<5	<5	
n-Butylbenzene	ug/L	8260	1	80	ID	ID	ID	<1	<1	<1	<1	<1	<1	<1	
n-Propylbenzene	ug/L	8260	1	80	ID	ID	ID	<1	<1	<1	<1	<1	<1	<1	
o-Xylene	ug/L	8260	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1	<1	<1	
p-Isopropyl toluene	ug/L	8260	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1	<1	<1	
sec-Butylbenzene	ug/L	8260	1	80	ID	ID	ID	<1	<1	<1	<1	<1	<1	<1	
Styrene	ug/L	8260	1	100	80	170,000	2,900	<1	<1	<1	<1	<1	<1	<1	
tert-Butylbenzene	ug/L	8260	1	80	ID	ID	ID	<1	<1	<1	<1	<1	<1	<1	
tertiary Butyl Alcohol	ug/L	8260	50	3,900	NA	1,000,000,000	NA	<50	<50	<50	<50	<50	<50	<50	
tertiaryAmylmeylether	ug/L	8260	5	190	NA	260,000	NA	<5	<5	<5	<5	<5	<5	<5	
Tetrachloroethylene	ug/L	8260	1	5	60	25,000	2,900	<1	<1	<1	<1	<1	<1	<1	
Tetrahydrofuran	ug/L	8260	90	95	11,000	6,900,000	150,000	<5	<5	<5	<5	<5	<5	<5	
Toluene	ug/L	8260	1	790	270	530,000	2,600	<1	<1	<1	<1	1.9	<1	<1	
trans-1,2-Dichloroethylene	ug/L	8260	1	100	1,500	85,000	28,000	<1	<1	<1	<1	<1	<1	<1	
trans-1,3-Dichloropropylene	ug/L	8260	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1	<1	<1	
trans-1,4-Dichloro-2-butene	ug/L	8260	NA	NA	NA	NA	NA	<5	<5	<5	<5	<5	<5	<5	
Trichloroethylene	ug/L	8260	1	5	200	2,200	3,500	<1	<1	<1	<1	<1	<1	<1	
Trichlorofluoromethane	ug/L	8260	1	2,600	NA	1,100,000	NA	<1	<1	<1	<1	<1	<1	<1	
Vinyl chloride	ug/L	8260	1	2	13	1,100	17,000	<1	<1	<1	<1	<1	<1	<1	

Grey indicates contaminant was detected.
 Yellow indicates contaminant exceeds DWC.
 Blue indicates contaminant exceeds GSIC.
 Green indicates contaminant exceeds both DWC and GSIC.
 Orange indicates contaminant exceeds one or more criteria; GVIIIC and/or FAV.
 "ID" means insufficient data to develop criterion.
 "NA" means a criterion or value is not available or, in the case of background, not applicable.
 "NLV" means hazardous substance is not likely to volatilize under most conditions.
 Letters in criteria columns refer to Footnotes of the Criteria/RBSLs tables.

Testing America Analytical Testing Report

Test America Job IDs 320-26906-1, 240-79501-1
 Report Date: 4/27/2017 6/6/2017
 Client: MDEQ-RRD-SAGINAW BAY
 Attention: Mike Jury
 Project Name: F-41 PFC CONTAMINATION, IOSCO CO.
 Project Number: 35000153

Table #2
 (Page 1 of 1)

Location			AR-MW-2	AR-MW-2	AR-MW-2	AR-MW-3	AR-MW-3	AR-MW-3	AR-MW-3	AR-MW-3	AR-MW-4
Depth			20-25 ft	30-35 ft	40-45 ft	15-20 ft	25-30 ft	35-40 ft	45-50 ft	15-20 ft	
Date			3/21/2017	3/21/2017	3/21/2017	3/21/2017	3/21/2017	3/21/2017	3/21/2017	3/21/2017	
	Action Level										
Perfluorooctanoic Acid (PFOA)	70 ng/l		0.98	1.2	1.8	<2	<2	<1.9	0.91	<1.9	
Perfluorooctane Sulfonate (PFOS)	70ng/l		<2	<2	<1.2	<2	<2	<1.9	<1.9	<1.9	
Total PFOA and PFOS	70 ng/l		0.98	1.2	1.8	ND	ND	ND	0.91	ND	

Location			AR-MW-4	AR-MW-4	AR-MW-5	AR-MW-5	AR-MW-5	3266 Alexander Rd	Trip	AR-MW-2
Depth			25-30 ft	35-40 ft	20-25 ft	30-35 ft	40-45 ft	Outside	Blank	20-25 ft
Date			3/21/2017	3/21/2017	3/22/2017	3/22/2017	3/22/2017	3/21/2017	3/20/2017	5/9/2017
	Action Level									
Perfluorooctanoic Acid (PFOA)	70 ng/l		<1.9	<2	<1.7	0.86	<2	<2	<1.9	<1.9
Perfluorooctane Sulfonate (PFOS)	70ng/l		<1.9	<2	<1.7	<2	<2	<2	<1.9	<1.9
Total PFOA and PFOS	70 ng/l		ND	ND	ND	0.86	ND	ND	ND	ND

Location			AR-MW-3	AR-MW-4	AR-MW-5	CR-MW-6	CR-MW-6 DUP
Depth			17-22 ft	16-21 ft	20-25 ft	20-25 ft	20-25 ft
Date			5/9/2017	5/9/2017	5/9/2017	5/9/2017	5/9/2017
	Action Level						
Perfluorooctanoic Acid (PFOA)	70 ng/l		<1.9	<1.9	<1.9	4.5	4.3
Perfluorooctane Sulfonate (PFOS)	70ng/l		<1.9	<1.9	<1.9	3.9	4.1
Total PFOA and PFOS	70 ng/l		ND	ND	ND	8.4	8.4

Grey indicates contaminant was detected.

APPENDIX A

F-41 PFC Contamination, Iosco County
Site ID #35000153

DEQ Soil Boring and Monitor Well Logs



Remediation and
Redevelopment
Division

GEOPHYSICAL LOG

BORING/WELL: AR-MW-2

SITE: Wurtsmith - Alexander Road

COUNTY: Iosco

LOGGING DATE: 3-21-16

TOWNSHIP: Oscoda

DRILLER: Chris Black

TOWN: T24N

GAMMA LOGGED BY: Jeff Pincumbe

RANGE: R9E

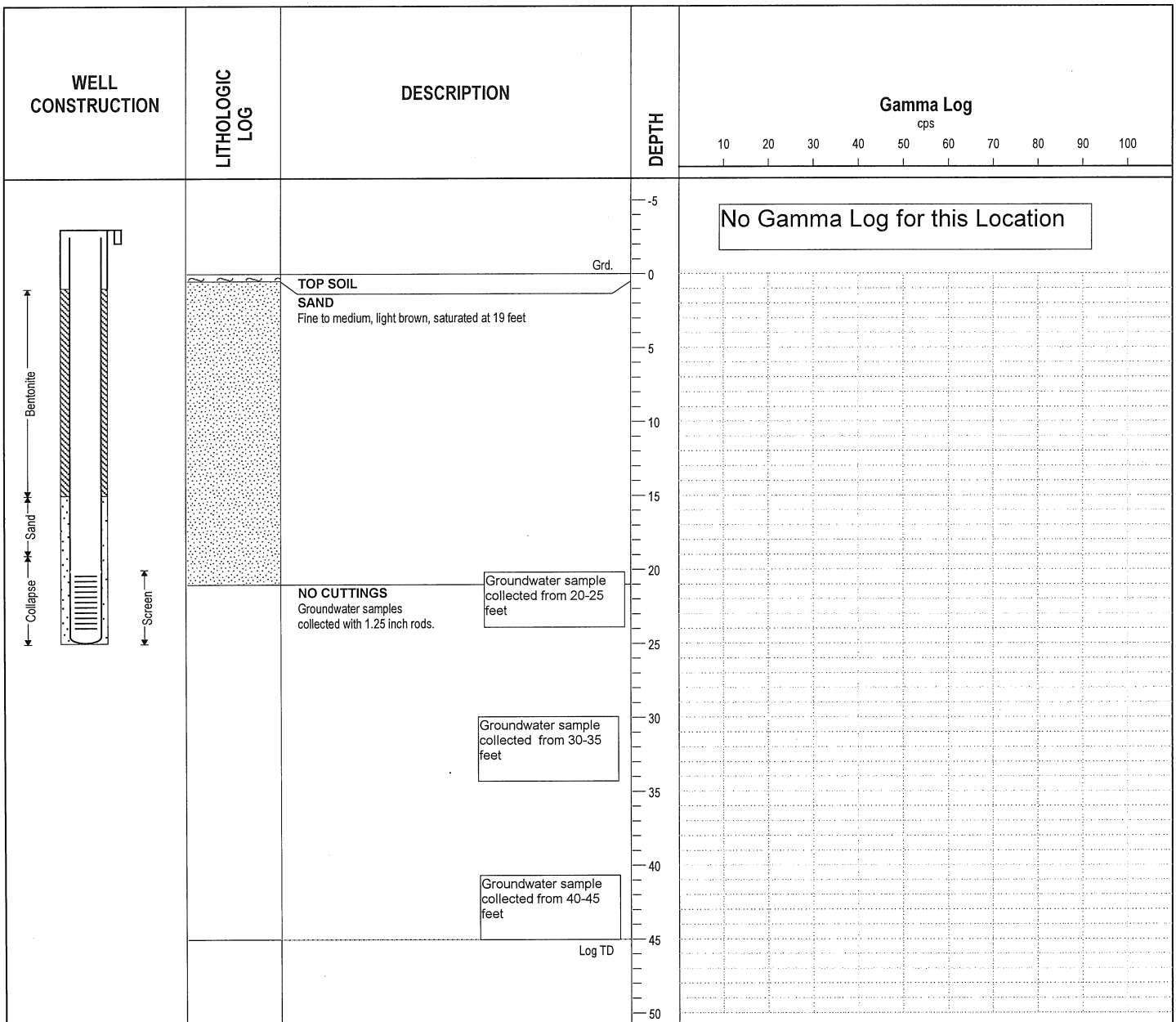
DRILL METHOD: Geoprobe

SECTION: 7

WELL DEPTH: 25 feet

LOCATION DESCRIPTION: Western portion of Alexander Road south side

ERNIE#: 35000153



VERTICAL DATUM: USGS

GRD. ELEVATION: 619.64

T.O.C.: 622.74

S.W.L.: 19 feet

CASING: 2-inch I.D. pvc

PROBE MODEL: Gamma

SERIAL NUMBER:

COMPLETION NOTES: Collapse to 19 feet, sand to 15 feet, bentonite to 1 foot

LATITUDE: 44.490037749

LONGITUDE: -83.394860610

DATUM: MichGeoRef

NORTHING: 440908.751

EASTING: 706961.152



Remediation and
Redevelopment
Division

BORING/WELL: AR-MW-3

GEOPHYSICAL LOG

SITE: Wurtsmith - Alexander Road

COUNTY: Iosco

LOGGING DATE: 3-21-16

TOWNSHIP: Oscoda

DRILLER: Chris Black

TOWN: T24N

GAMMA LOGGED BY: Jeff Pincumbe

RANGE: R9E

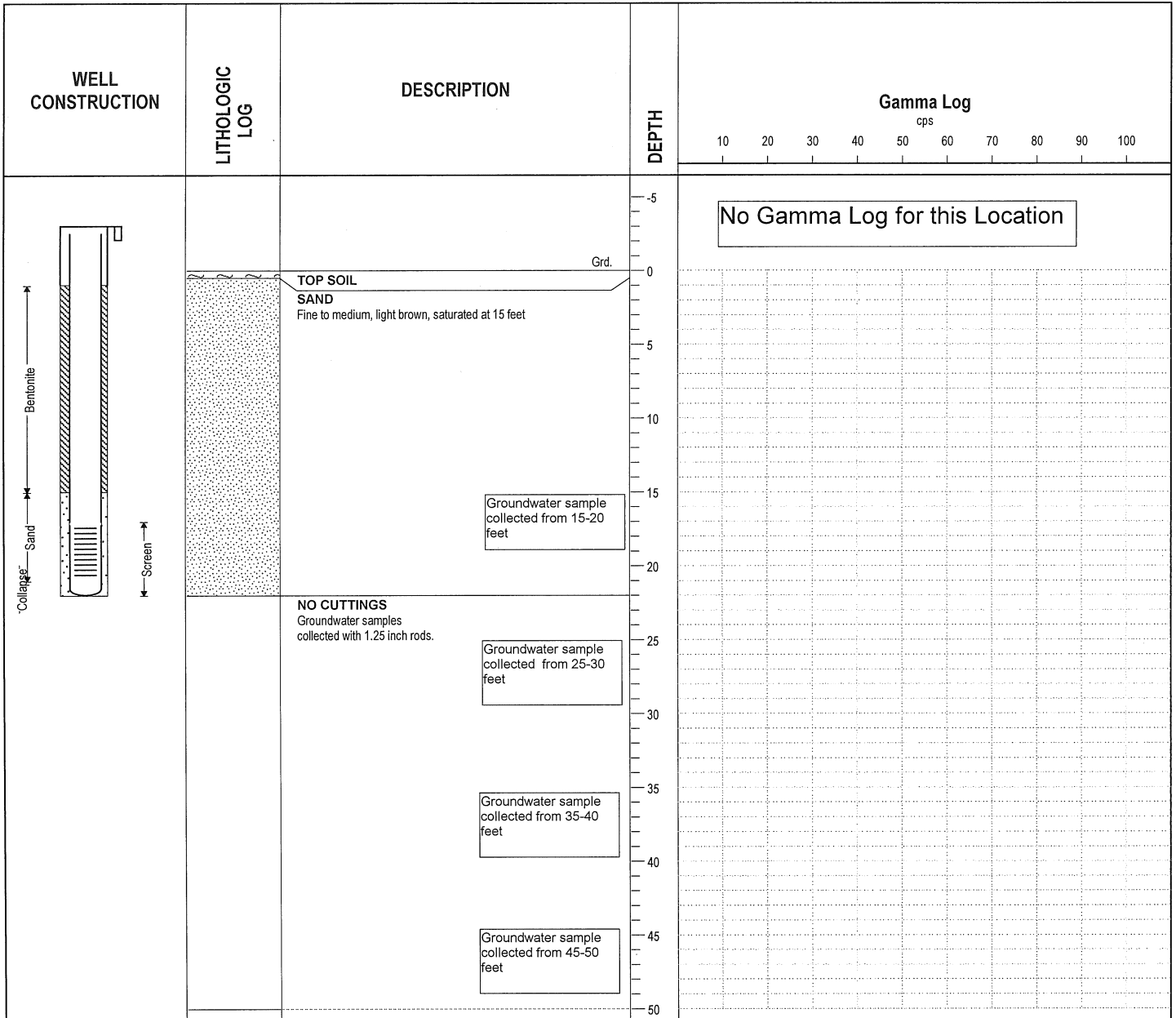
DRILL METHOD: Geoprobe

SECTION: 7

WELL DEPTH: 22 feet

LOCATION DESCRIPTION: Mid section of Alexander Road south side

ERNIE#: 35000153



VERTICAL DATUM: USGS
 GRD. ELEVATION: 614.67
 T.O.C.: 618.54
 S.W.L.: 15 feet
 CASING: 2-inch I.D. pvc
 PROBE MODEL: Gamma
 SERIAL NUMBER:

LATITUDE: 44.490057430
 LONGITUDE: -83.392738124
 DATUM: MichGeoRef
 NORTHING: 440916.304
 EASTING: 707129.810

COMPLETION NOTES: Collapse to 21 feet, sand to 15 feet, bentonite to 1 foot



Remediation and
Redevelopment
Division

BORING/WELL: AR-MW-4

SITE: Wurtsmith - Alexander Road

GEOPHYSICAL LOG

COUNTY: Iosco

LOGGING DATE: 30-20-17

TOWNSHIP: Oscoda

DRILLER: Chris Black

TOWN: T24N

GAMMA LOGGED BY: Jeff Pincumbe

RANGE: R9E

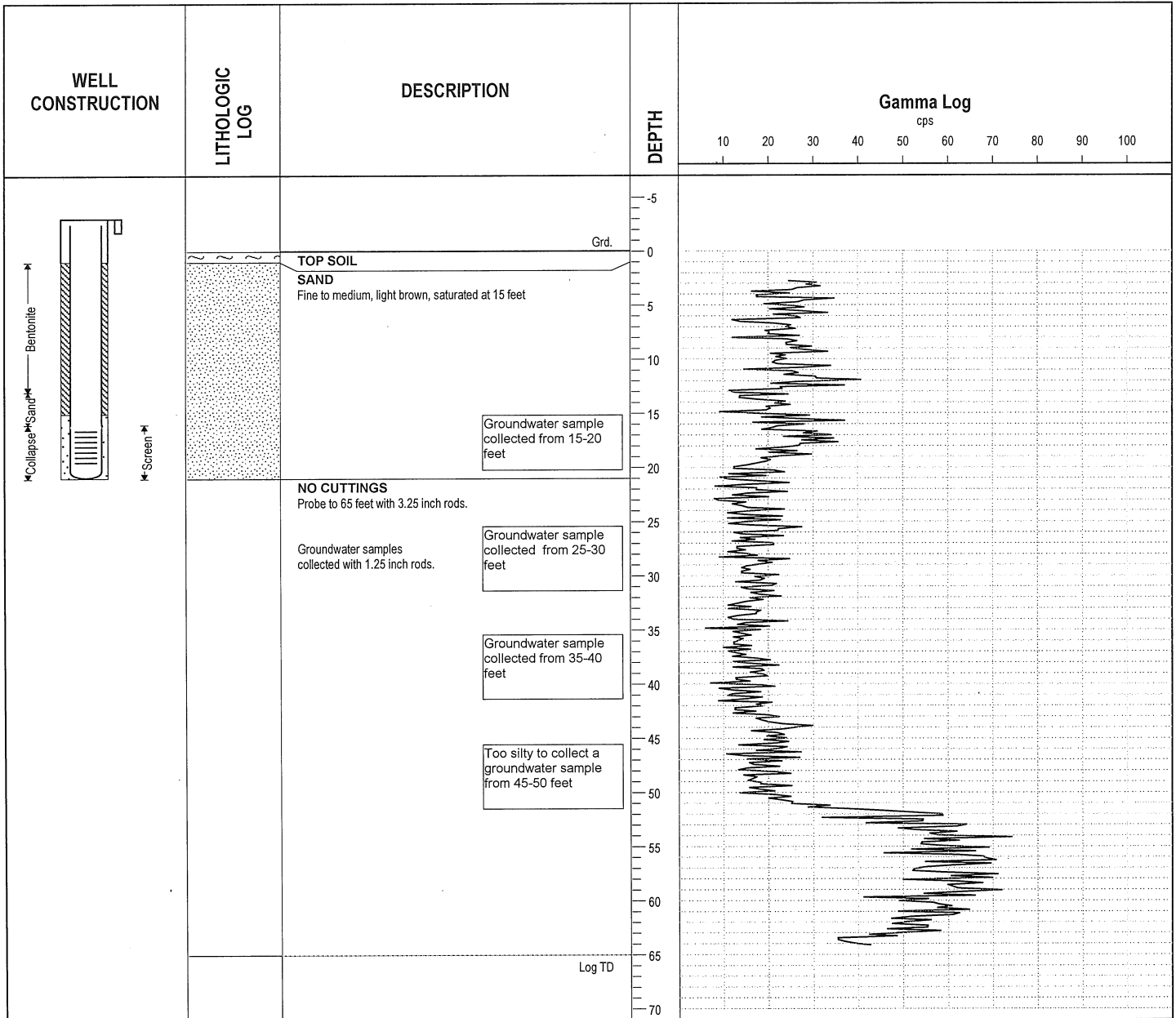
DRILL METHOD: Geoprobe

SECTION: 7

WELL DEPTH: 21 feet

LOCATION DESCRIPTION: Mid section of Alexander Road south side

ERNIE#: 35000153



VERTICAL DATUM: USGS
 GRD. ELEVATION: 614.05
 T.O.C.: 617.29
 S.W.L.: 15 feet
 CASING: 2-inch I.D. pvc
 PROBE MODEL: Gamma
 SERIAL NUMBER:

LATITUDE: 44.490076473
 LONGITUDE: -83.391344161
 DATUM: MichGeoRef
 NORTHING: 440921.947
 EASTING: 707240.556

COMPLETION NOTES: Collapse to 21 feet, sand to 15 feet, bentonite to 1 foot



Remediation and
Redevelopment
Division

BORING/WELL: AR-MW-5

GEOPHYSICAL LOG

SITE: Wurtsmith - Alexander Road

COUNTY: Iosco

LOGGING DATE: 3-21-16

TOWNSHIP: Oscoda

DRILLER: Chris Black

TOWN: T24N

GAMMA LOGGED BY: Jeff Pincumbe

RANGE: R9E

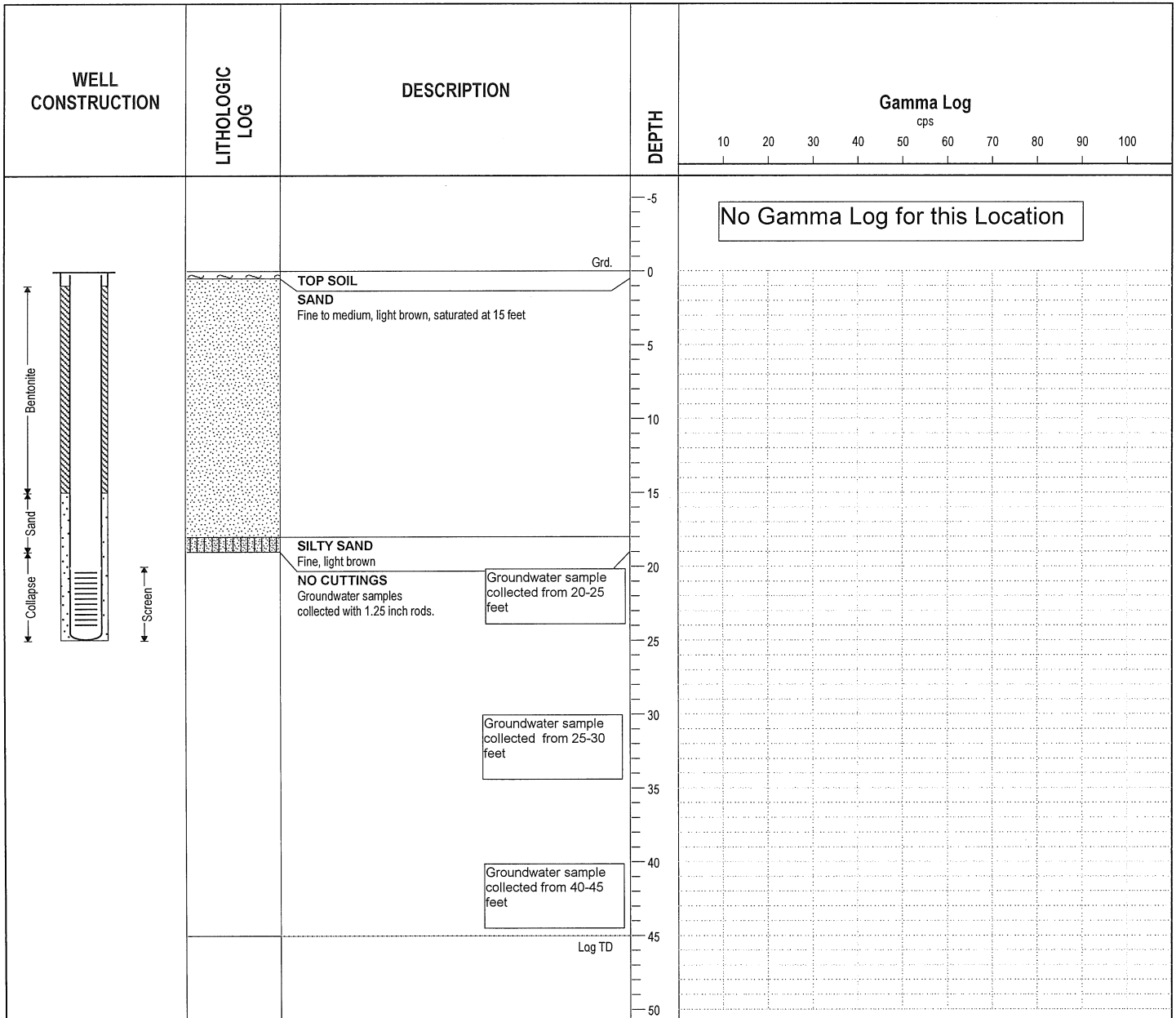
DRILL METHOD: Geoprobe

SECTION: 7

WELL DEPTH: 25 feet

LOCATION DESCRIPTION: Eastern portion of Alexander Road south side

ERNIE#: 35000153



VERTICAL DATUM: USGS

GRD. ELEVATION: 614.92

T.O.C.: 614.53

S.W.L.: 18 feet

CASING: 2-inch I.D. pvc

PROBE MODEL: Gamma

SERIAL NUMBER:

COMPLETION NOTES: Collapse to 19 feet, sand to 15 feet, bentonite to 1 foot

LATITUDE: 44.490069470

LONGITUDE: -83.389309342

DATUM: MichGeoRef

NORTHING: 440926.321

EASTING: 707402.339



Remediation and
Redevelopment
Division

GEOPHYSICAL LOG

BORING/WELL: CR-MW-6

SITE: Wurtsmith - Colbath Road

COUNTY: Iosco

LOGGING DATE: 3-22-17

TOWNSHIP: Oscoda

DRILLER: Brian Lower

TOWN: T24N

GAMMA LOGGED BY: Jeff Pincumbe

RANGE: R9E

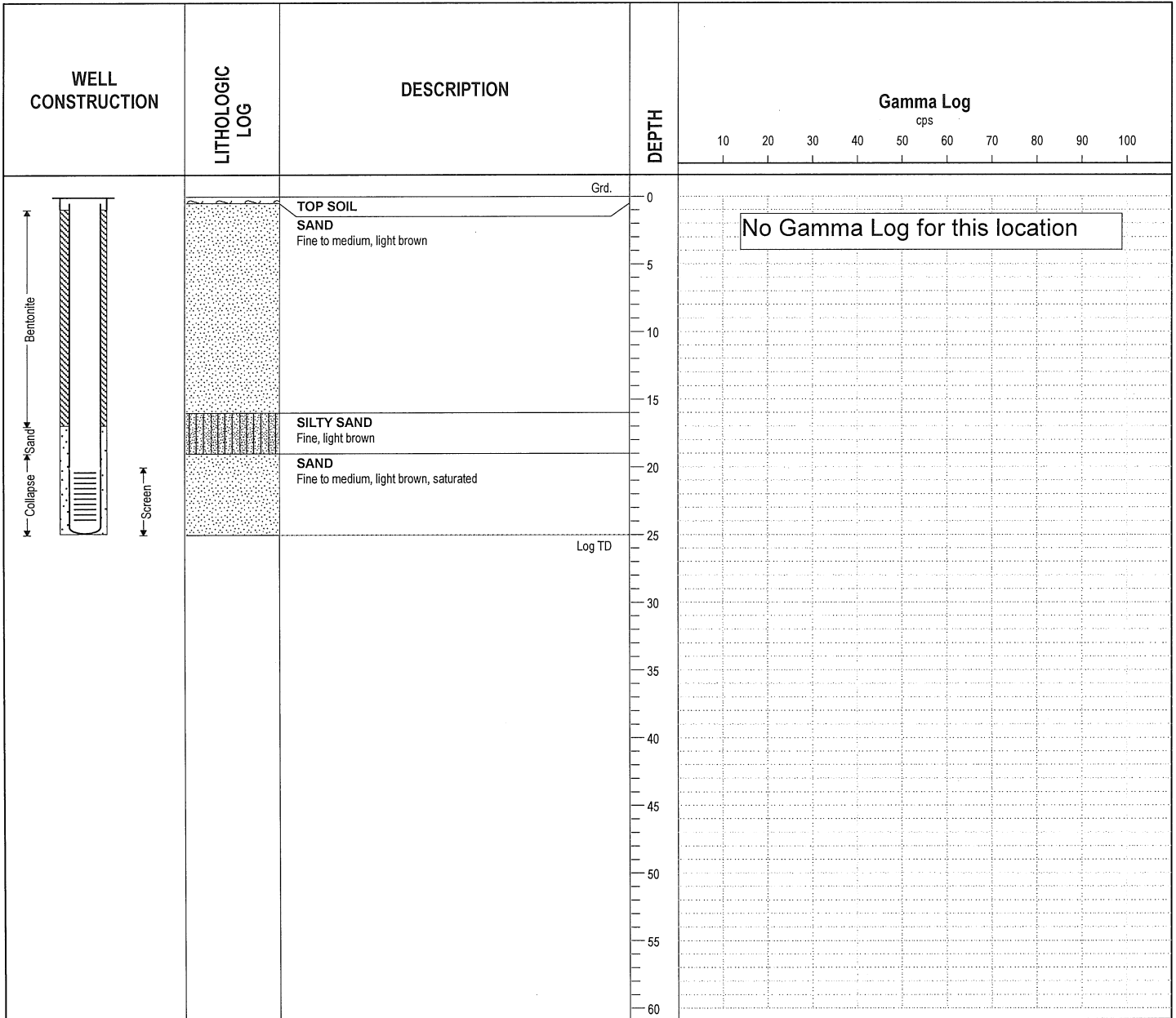
DRILL METHOD: Geoprobe

SECTION: 7

WELL DEPTH: 25 feet

LOCATION DESCRIPTION: Front yard at 7063 Colbath Road

ERNIE#: 35000153



VERTICAL DATUM: USGS
 GRD. ELEVATION: 613.47
 T.O.C.: 613.04
 S.W.L.: 25 feet
 CASING: 2-inch I.D. pvc
 PROBE MODEL: Gamma
 SERIAL NUMBER:

LATITUDE: 44.484871138
 LONGITUDE: -83.386159643
 DATUM: MichGeoRef
 NORTHING: 440357.005
 EASTING: 707671.142

COMPLETION NOTES: Collapse to 19 feet, sand to 17 feet, bentonite to 1 foot



Remediation and
Redevelopment
Division

BORING/WELL: CR-MW-7

SITE: Wurtsmith - Colbath Road

GEOPHYSICAL LOG

COUNTY: Iosco

LOGGING DATE: 3-22-17

TOWNSHIP: Oscoda

DRILLER: Brian Lower

TOWN: T24N

GAMMA LOGGED BY: Jeff Pincumbe

RANGE: R9E

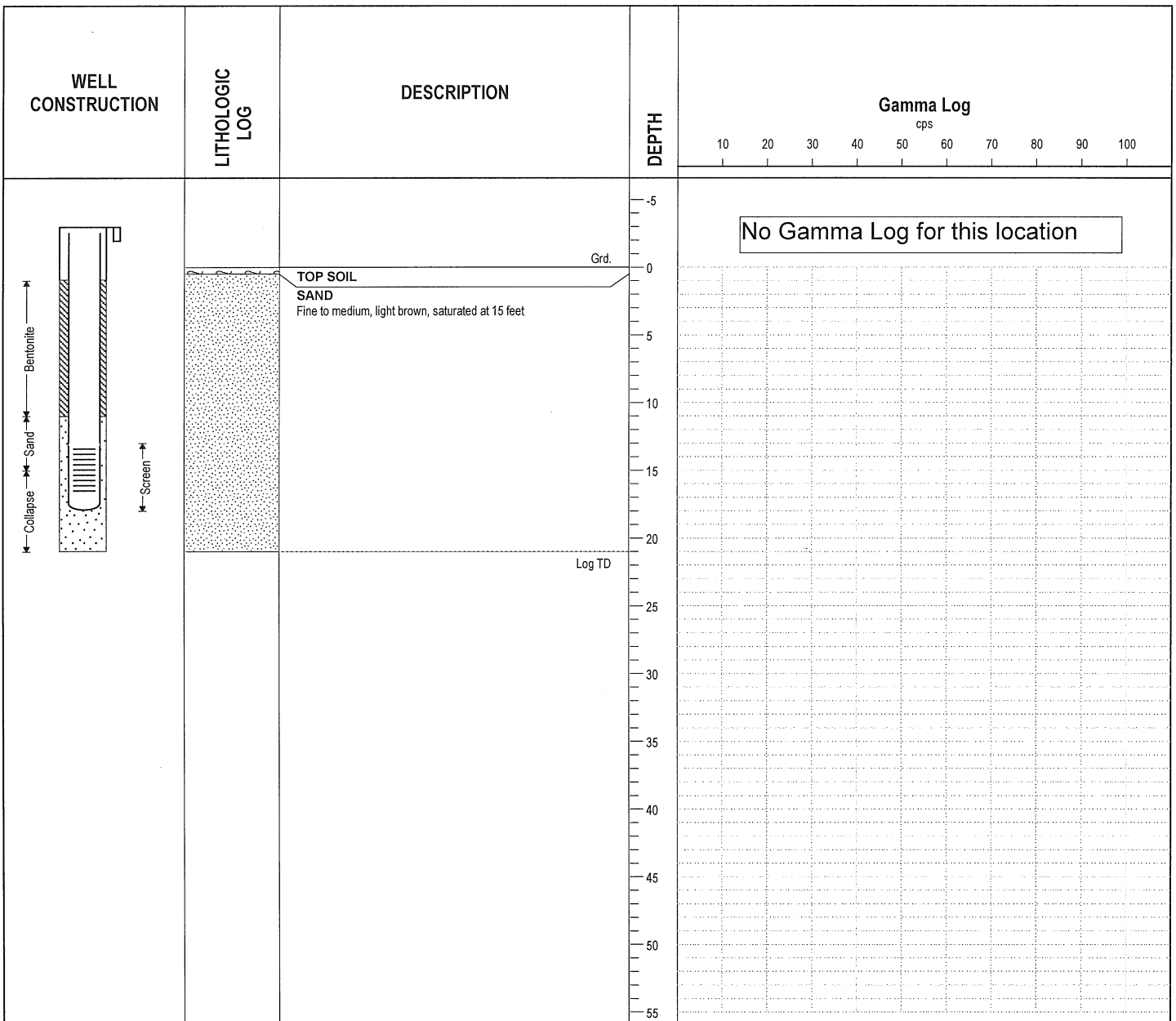
DRILL METHOD: Geoprobe

SECTION: 7

WELL DEPTH: 18 feet

LOCATION DESCRIPTION: South side of Colbath Road west of Mohawk Drive

ERNIE#: 35000153



VERTICAL DATUM: USGS

GRD. ELEVATION: 613.47

T.O.C.: 613.04

S.W.L.: 18 feet

CASING: 2-inch I.D. pvc

PROBE MODEL: Gamma

SERIAL NUMBER:

COMPLETION NOTES: Collapse to 13 feet, sand to 11 feet, bentonite to 1 foot

LATITUDE: 44.481770564

LONGITUDE: -83.389193519

DATUM: MichGeoRef

NORTHING: 440916.304

EASTING: 707437.376

APPENDIX B

F-41 PFC Contamination, Iosco County
Site ID #35000153

DEQ Laboratory Results



MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
ENVIRONMENTAL LABORATORY

P.O. Box 30270
Lansing, MI 48909
TEL: (517) 335-9800
FAX: (517) 335-9600

07 April 2017

Work Order: 1703146

Price: \$1,495.00

Mike Jury

MDEQ-RRD-SAGINAW BAY

401 Ketchum St., Suite B

Bay City, MI 48708

RE: F-41 PFC CONTAMINATION

I certify that the analyses performed by the MDEQ Environmental Laboratory were conducted by methods approved by the U.S. Environmental Protection Agency and other appropriate regulatory agencies .

Sincerely,

Kirby Shane
Laboratory Director



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 Lansing, MI 48909
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MDEQ-RRD-SAGINAW BAY
 401 Ketchum St., Suite B
 Bay City MI, 48708

Project: F-41 PFC CONTAMINATION
 Site Code: 35000153
 Project Manager: Mike Jury

Reported:
 04/07/2017

Analytical Report for Samples

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received	Qualifier
AR-MW-2 20-25	1703146-01	Water	03/21/2017	03/24/2017	
AR-MW-2 30-35	1703146-02	Water	03/21/2017	03/24/2017	
AR-MW-2 40-45	1703146-03	Water	03/21/2017	03/24/2017	
AR-MW-3 15-20	1703146-04	Water	03/21/2017	03/24/2017	
AR-MW-3 25-30	1703146-05	Water	03/21/2017	03/24/2017	
AR-MW-3 35-40	1703146-06	Water	03/21/2017	03/24/2017	
AR-MW-3 45-50	1703146-07	Water	03/21/2017	03/24/2017	
AR-MW-4 15-20	1703146-08	Water	03/21/2017	03/24/2017	
AR-MW-4 25-30	1703146-09	Water	03/21/2017	03/24/2017	
AR-MW-4 35-40	1703146-10	Water	03/21/2017	03/24/2017	
AR-MW-5 20-25	1703146-11	Water	03/22/2017	03/24/2017	
AR-MW-5 30-35	1703146-12	Water	03/22/2017	03/24/2017	
AR-MW-5 40-45	1703146-13	Water	03/22/2017	03/24/2017	

Notes and Definitions

- Y19 Sample received with headspace in vial. Data is estimated.
- Y11 Unidentified peaks present in sample.
- X Methods 8260 & 624 are used to analyze volatile organics that have boiling points below 200 °C. 2-Methylnaphthalene & naphthalene have boiling points above 200 °C and are better suited to analysis by methods 8270 & 625 as semivolatile organics.
- A09 Result is estimated due to high recovery of batch quality control.
- A07 Result(s) and reporting limit(s) are estimated due to poor precision.
- A06 Result is estimated due to high continuing calibration standard criteria failure.
- A04 Result is estimated due to high matrix spike recovery.
- ND Indicates compound analyzed for but not detected
- RL Reporting Limit
- NA Not Applicable



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Client ID: AR-MW-2 20-25

Lab ID: 1703146-01

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
96-18-4	1,2,3-Trichloropropane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
526-73-8	1,2,3-Trimethylbenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
106-93-4	1,2-Dibromoethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
591-78-6	2-Hexanone	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
91-57-6	2-Methylnaphthalene	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	X
67-64-1	2-Propanone (acetone)	ND	20	ug/L	1	03/28/17	B7C2802	8260	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
107-13-1	Acrylonitrile	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
71-43-2	Benzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
108-86-1	Bromobenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
74-97-5	Bromochloromethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
75-27-4	Bromodichloromethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
75-25-2	Bromoform	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
74-83-9	Bromomethane	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
75-15-0	Carbon disulfide	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
56-23-5	Carbon tetrachloride	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
108-90-7	Chlorobenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
75-00-3	Chloroethane	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
67-66-3	Chloroform	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
74-87-3	Chloromethane	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
10061-01-5	cis-1,3-Dichloropropylene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
110-82-7	Cyclohexane	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	



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Client ID: AR-MW-2 20-25

Lab ID: 1703146-01

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
124-48-1	Dibromochloromethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
74-95-3	Dibromomethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
75-71-8	Dichlorodifluoromethane	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
60-29-7	Diethyl ether	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
108-20-3	Diisopropyl Ether	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
100-41-4	Ethylbenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
637-92-3	Ethyltertiarybutylether	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
67-72-1	Hexachloroethane	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
98-82-8	Isopropylbenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
1330-20-7	m & p - Xylene	ND	2.0	ug/L	1	03/28/17	B7C2802	8260	
74-88-4	Methyl iodide	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
75-09-2	Methylene chloride	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
1634-04-4	Methyltertiarybutylether	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
91-20-3	Naphthalene	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	X
104-51-8	n-Butylbenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
103-65-1	n-Propylbenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
95-47-6	o-Xylene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
99-87-6	p-Isopropyl toluene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
135-98-8	sec-Butylbenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
100-42-5	Styrene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
98-06-6	tert-Butylbenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
75-65-0	tertiary Butyl Alcohol	ND	50	ug/L	1	03/28/17	B7C2802	8260	
994-05-8	tertiaryAmylmethylether	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
127-18-4	Tetrachloroethylene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
109-99-9	Tetrahydrofuran	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
108-88-3	Toluene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
10061-02-6	trans-1,3-Dichloropropylene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
79-01-6	Trichloroethylene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
75-01-4	Vinyl chloride	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
<i>Surrogate: Bromofluorobenzene</i>			99.8 %	85-115		03/28/17	B7C2802	8260	
<i>Surrogate: Dibromofluoromethane</i>			107 %	82.7-115		03/28/17	B7C2802	8260	
<i>Surrogate: Toluene-d8</i>			98.6 %	85-115		03/28/17	B7C2802	8260	



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P.O. Box 30270
Lansing, MI 48909
TEL: (517) 335-9800
FAX: (517) 335-9600

Client ID: AR-MW-2 30-35

Lab ID: 1703146-02

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
96-18-4	1,2,3-Trichloropropane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
526-73-8	1,2,3-Trimethylbenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
106-93-4	1,2-Dibromoethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
591-78-6	2-Hexanone	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
91-57-6	2-Methylnaphthalene	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	X
67-64-1	2-Propanone (acetone)	ND	20	ug/L	1	03/28/17	B7C2802	8260	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
107-13-1	Acrylonitrile	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
71-43-2	Benzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
108-86-1	Bromobenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
74-97-5	Bromochloromethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
75-27-4	Bromodichloromethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
75-25-2	Bromoform	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
74-83-9	Bromomethane	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
75-15-0	Carbon disulfide	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
56-23-5	Carbon tetrachloride	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
108-90-7	Chlorobenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
75-00-3	Chloroethane	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
67-66-3	Chloroform	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
74-87-3	Chloromethane	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
10061-01-5	cis-1,3-Dichloropropylene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
110-82-7	Cyclohexane	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	



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Client ID: AR-MW-2 30-35

Lab ID: 1703146-02

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
124-48-1	Dibromochloromethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
74-95-3	Dibromomethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
75-71-8	Dichlorodifluoromethane	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
60-29-7	Diethyl ether	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
108-20-3	Diisopropyl Ether	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
100-41-4	Ethylbenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
637-92-3	Ethyltertiarybutylether	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
67-72-1	Hexachloroethane	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
98-82-8	Isopropylbenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
1330-20-7	m & p - Xylene	ND	2.0	ug/L	1	03/28/17	B7C2802	8260	
74-88-4	Methyl iodide	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
75-09-2	Methylene chloride	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
1634-04-4	Methyltertiarybutylether	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
91-20-3	Naphthalene	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	X
104-51-8	n-Butylbenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
103-65-1	n-Propylbenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
95-47-6	o-Xylene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
99-87-6	p-Isopropyl toluene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
135-98-8	sec-Butylbenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
100-42-5	Styrene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
98-06-6	tert-Butylbenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
75-65-0	tertiary Butyl Alcohol	ND	50	ug/L	1	03/28/17	B7C2802	8260	
994-05-8	tertiaryAmylmethylether	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
127-18-4	Tetrachloroethylene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
109-99-9	Tetrahydrofuran	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
108-88-3	Toluene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
10061-02-6	trans-1,3-Dichloropropylene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
79-01-6	Trichloroethylene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
75-01-4	Vinyl chloride	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
<i>Surrogate: Bromofluorobenzene</i>			99.0 %	85-115		03/28/17	B7C2802	8260	
<i>Surrogate: Dibromofluoromethane</i>			105 %	82.7-115		03/28/17	B7C2802	8260	
<i>Surrogate: Toluene-d8</i>			99.7 %	85-115		03/28/17	B7C2802	8260	



**MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
ENVIRONMENTAL LABORATORY**

P.O. Box 30270
Lansing, MI 48909
TEL: (517) 335-9800
FAX: (517) 335-9600

Client ID: AR-MW-2 40-45

Lab ID: 1703146-03

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									See note Y19
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
96-18-4	1,2,3-Trichloropropane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
526-73-8	1,2,3-Trimethylbenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
106-93-4	1,2-Dibromoethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
591-78-6	2-Hexanone	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
91-57-6	2-Methylnaphthalene	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	X
67-64-1	2-Propanone (acetone)	ND	20	ug/L	1	03/28/17	B7C2802	8260	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
107-13-1	Acrylonitrile	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
71-43-2	Benzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
108-86-1	Bromobenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
74-97-5	Bromochloromethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
75-27-4	Bromodichloromethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
75-25-2	Bromoform	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
74-83-9	Bromomethane	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
75-15-0	Carbon disulfide	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
56-23-5	Carbon tetrachloride	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
108-90-7	Chlorobenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
75-00-3	Chloroethane	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
67-66-3	Chloroform	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
74-87-3	Chloromethane	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
10061-01-5	cis-1,3-Dichloropropylene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
110-82-7	Cyclohexane	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	



MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
ENVIRONMENTAL LABORATORY

P.O. Box 30270
Lansing, MI 48909
TEL: (517) 335-9800
FAX: (517) 335-9600

Client ID: AR-MW-2 40-45

Lab ID: 1703146-03

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
									See note Y19
124-48-1	Dibromochloromethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
74-95-3	Dibromomethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
75-71-8	Dichlorodifluoromethane	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
60-29-7	Diethyl ether	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
108-20-3	Diisopropyl Ether	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
100-41-4	Ethylbenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
637-92-3	Ethyltertiarybutylether	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
67-72-1	Hexachloroethane	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
98-82-8	Isopropylbenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
1330-20-7	m & p - Xylene	ND	2.0	ug/L	1	03/28/17	B7C2802	8260	
74-88-4	Methyl iodide	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
75-09-2	Methylene chloride	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
1634-04-4	Methyltertiarybutylether	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
91-20-3	Naphthalene	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	X
104-51-8	n-Butylbenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
103-65-1	n-Propylbenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
95-47-6	o-Xylene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
99-87-6	p-Isopropyl toluene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
135-98-8	sec-Butylbenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
100-42-5	Styrene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
98-06-6	tert-Butylbenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
75-65-0	tertiary Butyl Alcohol	ND	50	ug/L	1	03/28/17	B7C2802	8260	
994-05-8	tertiaryAmylmethylether	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
127-18-4	Tetrachloroethylene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
109-99-9	Tetrahydrofuran	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
108-88-3	Toluene	1.1	1.0	ug/L	1	03/28/17	B7C2802	8260	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
10061-02-6	trans-1,3-Dichloropropylene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
79-01-6	Trichloroethylene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
75-01-4	Vinyl chloride	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
Surrogate: Bromofluorobenzene			97.3 %	85-115		03/28/17	B7C2802	8260	
Surrogate: Dibromofluoromethane			104 %	82.7-115		03/28/17	B7C2802	8260	
Surrogate: Toluene-d8			99.5 %	85-115		03/28/17	B7C2802	8260	



**MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
 ENVIRONMENTAL LABORATORY**

P.O. Box 30270
 Lansing, MI 48909
 TEL: (517) 335-9800
 FAX: (517) 335-9600

Client ID: AR-MW-3 15-20

Lab ID: 1703146-04

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
96-18-4	1,2,3-Trichloropropane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
526-73-8	1,2,3-Trimethylbenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
106-93-4	1,2-Dibromoethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
591-78-6	2-Hexanone	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
91-57-6	2-Methylnaphthalene	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	X
67-64-1	2-Propanone (acetone)	ND	20	ug/L	1	03/28/17	B7C2802	8260	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
107-13-1	Acrylonitrile	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
71-43-2	Benzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
108-86-1	Bromobenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
74-97-5	Bromochloromethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
75-27-4	Bromodichloromethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
75-25-2	Bromoform	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
74-83-9	Bromomethane	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
75-15-0	Carbon disulfide	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
56-23-5	Carbon tetrachloride	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
108-90-7	Chlorobenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
75-00-3	Chloroethane	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
67-66-3	Chloroform	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
74-87-3	Chloromethane	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
10061-01-5	cis-1,3-Dichloropropylene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
110-82-7	Cyclohexane	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	



**MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
ENVIRONMENTAL LABORATORY**

P.O. Box 30270
Lansing, MI 48909
TEL: (517) 335-9800
FAX: (517) 335-9600

Client ID: AR-MW-3 15-20

Lab ID: 1703146-04

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
124-48-1	Dibromochloromethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
74-95-3	Dibromomethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
75-71-8	Dichlorodifluoromethane	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
60-29-7	Diethyl ether	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
108-20-3	Diisopropyl Ether	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
100-41-4	Ethylbenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
637-92-3	Ethyltertiarybutylether	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
67-72-1	Hexachloroethane	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
98-82-8	Isopropylbenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
1330-20-7	m & p - Xylene	ND	2.0	ug/L	1	03/28/17	B7C2802	8260	
74-88-4	Methyl iodide	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
75-09-2	Methylene chloride	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
1634-04-4	Methyltertiarybutylether	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
91-20-3	Naphthalene	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	X
104-51-8	n-Butylbenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
103-65-1	n-Propylbenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
95-47-6	o-Xylene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
99-87-6	p-Isopropyl toluene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
135-98-8	sec-Butylbenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
100-42-5	Styrene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
98-06-6	tert-Butylbenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
75-65-0	tertiary Butyl Alcohol	ND	50	ug/L	1	03/28/17	B7C2802	8260	
994-05-8	tertiaryAmylmethylether	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
127-18-4	Tetrachloroethylene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
109-99-9	Tetrahydrofuran	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
108-88-3	Toluene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
10061-02-6	trans-1,3-Dichloropropylene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
79-01-6	Trichloroethylene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
75-01-4	Vinyl chloride	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
<i>Surrogate: Bromofluorobenzene</i>			98.6 %	85-115		03/28/17	B7C2802	8260	
<i>Surrogate: Dibromofluoromethane</i>			104 %	82.7-115		03/28/17	B7C2802	8260	
<i>Surrogate: Toluene-d8</i>			100 %	85-115		03/28/17	B7C2802	8260	



**MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
 ENVIRONMENTAL LABORATORY**

P.O. Box 30270
 Lansing, MI 48909
 TEL: (517) 335-9800
 FAX: (517) 335-9600

Client ID: AR-MW-3 25-30

Lab ID: 1703146-05

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
96-18-4	1,2,3-Trichloropropane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
526-73-8	1,2,3-Trimethylbenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
106-93-4	1,2-Dibromoethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
591-78-6	2-Hexanone	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
91-57-6	2-Methylnaphthalene	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	X
67-64-1	2-Propanone (acetone)	ND	20	ug/L	1	03/28/17	B7C2802	8260	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
107-13-1	Acrylonitrile	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
71-43-2	Benzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
108-86-1	Bromobenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
74-97-5	Bromochloromethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
75-27-4	Bromodichloromethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
75-25-2	Bromoform	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
74-83-9	Bromomethane	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
75-15-0	Carbon disulfide	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
56-23-5	Carbon tetrachloride	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
108-90-7	Chlorobenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
75-00-3	Chloroethane	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
67-66-3	Chloroform	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
74-87-3	Chloromethane	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
10061-01-5	cis-1,3-Dichloropropylene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
110-82-7	Cyclohexane	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	



**MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
 ENVIRONMENTAL LABORATORY**

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 Lansing, MI 48909
 TEL: (517) 335-9800
 FAX: (517) 335-9600

Client ID: AR-MW-3 25-30

Lab ID: 1703146-05

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
124-48-1	Dibromochloromethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
74-95-3	Dibromomethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
75-71-8	Dichlorodifluoromethane	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
60-29-7	Diethyl ether	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
108-20-3	Diisopropyl Ether	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
100-41-4	Ethylbenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
637-92-3	Ethyltertiarybutylether	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
67-72-1	Hexachloroethane	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
98-82-8	Isopropylbenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
1330-20-7	m & p - Xylene	ND	2.0	ug/L	1	03/28/17	B7C2802	8260	
74-88-4	Methyl iodide	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
75-09-2	Methylene chloride	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
1634-04-4	Methyltertiarybutylether	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
91-20-3	Naphthalene	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	X
104-51-8	n-Butylbenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
103-65-1	n-Propylbenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
95-47-6	o-Xylene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
99-87-6	p-Isopropyl toluene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
135-98-8	sec-Butylbenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
100-42-5	Styrene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
98-06-6	tert-Butylbenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
75-65-0	tertiary Butyl Alcohol	ND	50	ug/L	1	03/28/17	B7C2802	8260	
994-05-8	tertiaryAmylmethylether	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
127-18-4	Tetrachloroethylene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
109-99-9	Tetrahydrofuran	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
108-88-3	Toluene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
10061-02-6	trans-1,3-Dichloropropylene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
79-01-6	Trichloroethylene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
75-01-4	Vinyl chloride	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
Surrogate: Bromofluorobenzene			96.6 %	85-115		03/28/17	B7C2802	8260	
Surrogate: Dibromofluoromethane			104 %	82.7-115		03/28/17	B7C2802	8260	
Surrogate: Toluene-d8			98.4 %	85-115		03/28/17	B7C2802	8260	



MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
 ENVIRONMENTAL LABORATORY

P.O. Box 30270
 Lansing, MI 48909
 TEL: (517) 335-9800
 FAX: (517) 335-9600

Client ID: AR-MW-3 35-40

Lab ID: 1703146-06

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
96-18-4	1,2,3-Trichloropropane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
526-73-8	1,2,3-Trimethylbenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
106-93-4	1,2-Dibromoethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
591-78-6	2-Hexanone	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
91-57-6	2-Methylnaphthalene	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	X
67-64-1	2-Propanone (acetone)	ND	20	ug/L	1	03/28/17	B7C2802	8260	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
107-13-1	Acrylonitrile	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
71-43-2	Benzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
108-86-1	Bromobenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
74-97-5	Bromochloromethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
75-27-4	Bromodichloromethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
75-25-2	Bromoform	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
74-83-9	Bromomethane	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
75-15-0	Carbon disulfide	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
56-23-5	Carbon tetrachloride	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
108-90-7	Chlorobenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
75-00-3	Chloroethane	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
67-66-3	Chloroform	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
74-87-3	Chloromethane	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
10061-01-5	cis-1,3-Dichloropropylene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
110-82-7	Cyclohexane	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	



**MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
ENVIRONMENTAL LABORATORY**

P.O. Box 30270
Lansing, MI 48909
TEL: (517) 335-9800
FAX: (517) 335-9600

Client ID: AR-MW-3 35-40

Lab ID: 1703146-06

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
124-48-1	Dibromochloromethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
74-95-3	Dibromomethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
75-71-8	Dichlorodifluoromethane	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
60-29-7	Diethyl ether	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
108-20-3	Diisopropyl Ether	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
100-41-4	Ethylbenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
637-92-3	Ethyltertiarybutylether	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
67-72-1	Hexachloroethane	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
98-82-8	Isopropylbenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
1330-20-7	m & p - Xylene	ND	2.0	ug/L	1	03/28/17	B7C2802	8260	
74-88-4	Methyl iodide	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
75-09-2	Methylene chloride	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
1634-04-4	Methyltertiarybutylether	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
91-20-3	Naphthalene	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	X
104-51-8	n-Butylbenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
103-65-1	n-Propylbenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
95-47-6	o-Xylene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
99-87-6	p-Isopropyl toluene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
135-98-8	sec-Butylbenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
100-42-5	Styrene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
98-06-6	tert-Butylbenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
75-65-0	tertiary Butyl Alcohol	ND	50	ug/L	1	03/28/17	B7C2802	8260	
994-05-8	tertiaryAmylmethylether	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
127-18-4	Tetrachloroethylene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
109-99-9	Tetrahydrofuran	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
108-88-3	Toluene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
10061-02-6	trans-1,3-Dichloropropylene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
79-01-6	Trichloroethylene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
75-01-4	Vinyl chloride	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
<i>Surrogate: Bromofluorobenzene</i>			98.9 %	85-115		03/28/17	B7C2802	8260	
<i>Surrogate: Dibromofluoromethane</i>			106 %	82.7-115		03/28/17	B7C2802	8260	
<i>Surrogate: Toluene-d8</i>			100 %	85-115		03/28/17	B7C2802	8260	



**MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
 ENVIRONMENTAL LABORATORY**

P.O. Box 30270
 Lansing, MI 48909
 TEL: (517) 335-9800
 FAX: (517) 335-9600

Client ID: AR-MW-3 45-50

Lab ID: 1703146-07

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
96-18-4	1,2,3-Trichloropropane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
526-73-8	1,2,3-Trimethylbenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
106-93-4	1,2-Dibromoethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
591-78-6	2-Hexanone	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
91-57-6	2-Methylnaphthalene	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	X
67-64-1	2-Propanone (acetone)	ND	20	ug/L	1	03/28/17	B7C2802	8260	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
107-13-1	Acrylonitrile	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
71-43-2	Benzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
108-86-1	Bromobenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
74-97-5	Bromochloromethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
75-27-4	Bromodichloromethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
75-25-2	Bromoform	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
74-83-9	Bromomethane	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
75-15-0	Carbon disulfide	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
56-23-5	Carbon tetrachloride	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
108-90-7	Chlorobenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
75-00-3	Chloroethane	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
67-66-3	Chloroform	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
74-87-3	Chloromethane	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
10061-01-5	cis-1,3-Dichloropropylene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
110-82-7	Cyclohexane	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	



MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
 ENVIRONMENTAL LABORATORY

P.O. Box 30270
 Lansing, MI 48909
 TEL: (517) 335-9800
 FAX: (517) 335-9600

Client ID: AR-MW-3 45-50

Lab ID: 1703146-07

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
124-48-1	Dibromochloromethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
74-95-3	Dibromomethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
75-71-8	Dichlorodifluoromethane	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
60-29-7	Diethyl ether	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
108-20-3	Diisopropyl Ether	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
100-41-4	Ethylbenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
637-92-3	Ethyltertiarybutylether	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
67-72-1	Hexachloroethane	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
98-82-8	Isopropylbenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
1330-20-7	m & p - Xylene	ND	2.0	ug/L	1	03/28/17	B7C2802	8260	
74-88-4	Methyl iodide	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
75-09-2	Methylene chloride	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
1634-04-4	Methyltertiarybutylether	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
91-20-3	Naphthalene	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	X
104-51-8	n-Butylbenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
103-65-1	n-Propylbenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
95-47-6	o-Xylene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
99-87-6	p-Isopropyl toluene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
135-98-8	sec-Butylbenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
100-42-5	Styrene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
98-06-6	tert-Butylbenzene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
75-65-0	tertiary Butyl Alcohol	ND	50	ug/L	1	03/28/17	B7C2802	8260	
994-05-8	tertiaryAmylmethylether	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
127-18-4	Tetrachloroethylene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
109-99-9	Tetrahydrofuran	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
108-88-3	Toluene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
10061-02-6	trans-1,3-Dichloropropylene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0	ug/L	1	03/28/17	B7C2802	8260	
79-01-6	Trichloroethylene	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
75-01-4	Vinyl chloride	ND	1.0	ug/L	1	03/28/17	B7C2802	8260	
Surrogate: Bromofluorobenzene			99.3 %	85-115		03/28/17	B7C2802	8260	
Surrogate: Dibromofluoromethane			107 %	82.7-115		03/28/17	B7C2802	8260	
Surrogate: Toluene-d8			98.8 %	85-115		03/28/17	B7C2802	8260	



**MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
ENVIRONMENTAL LABORATORY**

P.O. Box 30270
Lansing, MI 48909
TEL: (517) 335-9800
FAX: (517) 335-9600

Client ID: AR-MW-4 15-20

Lab ID: 1703146-08

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
96-18-4	1,2,3-Trichloropropane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
526-73-8	1,2,3-Trimethylbenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
106-93-4	1,2-Dibromoethane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
591-78-6	2-Hexanone	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
91-57-6	2-Methylnaphthalene	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	X
67-64-1	2-Propanone (acetone)	ND	20	ug/L	1	03/29/17	B7C2902	8260	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
107-13-1	Acrylonitrile	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
71-43-2	Benzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
108-86-1	Bromobenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
74-97-5	Bromochloromethane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
75-27-4	Bromodichloromethane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
75-25-2	Bromoform	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
74-83-9	Bromomethane	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
75-15-0	Carbon disulfide	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
56-23-5	Carbon tetrachloride	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
108-90-7	Chlorobenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
75-00-3	Chloroethane	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	A07
67-66-3	Chloroform	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
74-87-3	Chloromethane	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
10061-01-5	cis-1,3-Dichloropropylene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
110-82-7	Cyclohexane	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	



MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
 ENVIRONMENTAL LABORATORY

P.O. Box 30270
 Lansing, MI 48909
 TEL: (517) 335-9800
 FAX: (517) 335-9600

Client ID: AR-MW-4 15-20

Lab ID: 1703146-08

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
124-48-1	Dibromochloromethane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
74-95-3	Dibromomethane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
75-71-8	Dichlorodifluoromethane	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
60-29-7	Diethyl ether	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
108-20-3	Diisopropyl Ether	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
100-41-4	Ethylbenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
637-92-3	Ethyltertiarybutylether	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
67-72-1	Hexachloroethane	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
98-82-8	Isopropylbenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
1330-20-7	m & p - Xylene	ND	2.0	ug/L	1	03/29/17	B7C2902	8260	
74-88-4	Methyl iodide	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
75-09-2	Methylene chloride	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
1634-04-4	Methyltertiarybutylether	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
91-20-3	Naphthalene	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	X
104-51-8	n-Butylbenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
103-65-1	n-Propylbenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
95-47-6	o-Xylene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
99-87-6	p-Isopropyl toluene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
135-98-8	sec-Butylbenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
100-42-5	Styrene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
98-06-6	tert-Butylbenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
75-65-0	tertiary Butyl Alcohol	ND	50	ug/L	1	03/29/17	B7C2902	8260	
994-05-8	tertiaryAmylmethylether	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
127-18-4	Tetrachloroethylene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
109-99-9	Tetrahydrofuran	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
108-88-3	Toluene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
10061-02-6	trans-1,3-Dichloropropylene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
79-01-6	Trichloroethylene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
75-01-4	Vinyl chloride	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
<i>Surrogate: Bromofluorobenzene</i>			103 %	85-115		03/29/17	B7C2902	8260	
<i>Surrogate: Dibromofluoromethane</i>			106 %	82.7-115		03/29/17	B7C2902	8260	
<i>Surrogate: Toluene-d8</i>			104 %	85-115		03/29/17	B7C2902	8260	



**MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
ENVIRONMENTAL LABORATORY**

P.O. Box 30270
Lansing, MI 48909
TEL: (517) 335-9800
FAX: (517) 335-9600

Client ID: AR-MW-4 25-30

Lab ID: 1703146-09

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
96-18-4	1,2,3-Trichloropropane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
526-73-8	1,2,3-Trimethylbenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
106-93-4	1,2-Dibromoethane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
591-78-6	2-Hexanone	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
91-57-6	2-Methylnaphthalene	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	X
67-64-1	2-Propanone (acetone)	ND	20	ug/L	1	03/29/17	B7C2902	8260	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
107-13-1	Acrylonitrile	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
71-43-2	Benzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
108-86-1	Bromobenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
74-97-5	Bromochloromethane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
75-27-4	Bromodichloromethane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
75-25-2	Bromoform	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
74-83-9	Bromomethane	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
75-15-0	Carbon disulfide	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
56-23-5	Carbon tetrachloride	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
108-90-7	Chlorobenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
75-00-3	Chloroethane	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	A07
67-66-3	Chloroform	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
74-87-3	Chloromethane	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
10061-01-5	cis-1,3-Dichloropropylene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
110-82-7	Cyclohexane	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	



**MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
ENVIRONMENTAL LABORATORY**

P.O. Box 30270
Lansing, MI 48909
TEL: (517) 335-9800
FAX: (517) 335-9600

Client ID: AR-MW-4 25-30

Lab ID: 1703146-09

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
124-48-1	Dibromochloromethane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
74-95-3	Dibromomethane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
75-71-8	Dichlorodifluoromethane	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
60-29-7	Diethyl ether	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
108-20-3	Diisopropyl Ether	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
100-41-4	Ethylbenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
637-92-3	Ethyltertiarybutylether	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
67-72-1	Hexachloroethane	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
98-82-8	Isopropylbenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
1330-20-7	m & p - Xylene	ND	2.0	ug/L	1	03/29/17	B7C2902	8260	
74-88-4	Methyl iodide	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
75-09-2	Methylene chloride	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
1634-04-4	Methyltertiarybutylether	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
91-20-3	Naphthalene	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	X
104-51-8	n-Butylbenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
103-65-1	n-Propylbenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
95-47-6	o-Xylene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
99-87-6	p-Isopropyl toluene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
135-98-8	sec-Butylbenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
100-42-5	Styrene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
98-06-6	tert-Butylbenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
75-65-0	tertiary Butyl Alcohol	ND	50	ug/L	1	03/29/17	B7C2902	8260	
994-05-8	tertiaryAmylmethylether	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
127-18-4	Tetrachloroethylene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
109-99-9	Tetrahydrofuran	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
108-88-3	Toluene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
10061-02-6	trans-1,3-Dichloropropylene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
79-01-6	Trichloroethylene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
75-01-4	Vinyl chloride	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
<i>Surrogate: Bromofluorobenzene</i>			102 %	85-115		03/29/17	B7C2902	8260	
<i>Surrogate: Dibromofluoromethane</i>			106 %	82.7-115		03/29/17	B7C2902	8260	
<i>Surrogate: Toluene-d8</i>			104 %	85-115		03/29/17	B7C2902	8260	



**MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
ENVIRONMENTAL LABORATORY**

P.O. Box 30270
Lansing, MI 48909
TEL: (517) 335-9800
FAX: (517) 335-9600

Client ID: AR-MW-4 35-40

Lab ID: 1703146-10

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
96-18-4	1,2,3-Trichloropropane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
526-73-8	1,2,3-Trimethylbenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
106-93-4	1,2-Dibromoethane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
591-78-6	2-Hexanone	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
91-57-6	2-Methylnaphthalene	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	X
67-64-1	2-Propanone (acetone)	ND	20	ug/L	1	03/29/17	B7C2902	8260	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
107-13-1	Acrylonitrile	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
71-43-2	Benzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
108-86-1	Bromobenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
74-97-5	Bromochloromethane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
75-27-4	Bromodichloromethane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
75-25-2	Bromoform	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
74-83-9	Bromomethane	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
75-15-0	Carbon disulfide	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
56-23-5	Carbon tetrachloride	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
108-90-7	Chlorobenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
75-00-3	Chloroethane	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	A07
67-66-3	Chloroform	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
74-87-3	Chloromethane	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
10061-01-5	cis-1,3-Dichloropropylene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
110-82-7	Cyclohexane	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	



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ENVIRONMENTAL LABORATORY**

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Client ID: AR-MW-4 35-40

Lab ID: 1703146-10

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
124-48-1	Dibromochloromethane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
74-95-3	Dibromomethane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
75-71-8	Dichlorodifluoromethane	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
60-29-7	Diethyl ether	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
108-20-3	Diisopropyl Ether	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
100-41-4	Ethylbenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
637-92-3	Ethyltertiarybutylether	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
67-72-1	Hexachloroethane	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
98-82-8	Isopropylbenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
1330-20-7	m & p - Xylene	ND	2.0	ug/L	1	03/29/17	B7C2902	8260	
74-88-4	Methyl iodide	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
75-09-2	Methylene chloride	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
1634-04-4	Methyltertiarybutylether	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
91-20-3	Naphthalene	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	X
104-51-8	n-Butylbenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
103-65-1	n-Propylbenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
95-47-6	o-Xylene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
99-87-6	p-Isopropyl toluene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
135-98-8	sec-Butylbenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
100-42-5	Styrene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
98-06-6	tert-Butylbenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
75-65-0	tertiary Butyl Alcohol	ND	50	ug/L	1	03/29/17	B7C2902	8260	
994-05-8	tertiaryAmylmethylether	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
127-18-4	Tetrachloroethylene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
109-99-9	Tetrahydrofuran	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
108-88-3	Toluene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
10061-02-6	trans-1,3-Dichloropropylene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
79-01-6	Trichloroethylene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
75-01-4	Vinyl chloride	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
<i>Surrogate: Bromofluorobenzene</i>			103 %	85-115		03/29/17	B7C2902	8260	
<i>Surrogate: Dibromofluoromethane</i>			108 %	82.7-115		03/29/17	B7C2902	8260	
<i>Surrogate: Toluene-d8</i>			105 %	85-115		03/29/17	B7C2902	8260	



**MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
ENVIRONMENTAL LABORATORY**

P.O. Box 30270
Lansing, MI 48909
TEL: (517) 335-9800
FAX: (517) 335-9600

Client ID: AR-MW-5 20-25

Lab ID: 1703146-11

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
96-18-4	1,2,3-Trichloropropane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
526-73-8	1,2,3-Trimethylbenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
106-93-4	1,2-Dibromoethane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
591-78-6	2-Hexanone	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
91-57-6	2-Methylnaphthalene	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	X
67-64-1	2-Propanone (acetone)	ND	20	ug/L	1	03/29/17	B7C2902	8260	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
107-13-1	Acrylonitrile	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
71-43-2	Benzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
108-86-1	Bromobenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
74-97-5	Bromochloromethane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
75-27-4	Bromodichloromethane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
75-25-2	Bromoform	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
74-83-9	Bromomethane	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
75-15-0	Carbon disulfide	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
56-23-5	Carbon tetrachloride	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
108-90-7	Chlorobenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
75-00-3	Chloroethane	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	A07
67-66-3	Chloroform	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
74-87-3	Chloromethane	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
10061-01-5	cis-1,3-Dichloropropylene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
110-82-7	Cyclohexane	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	



**MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
 ENVIRONMENTAL LABORATORY**

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Client ID: AR-MW-5 20-25

Lab ID: 1703146-11

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
124-48-1	Dibromochloromethane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
74-95-3	Dibromomethane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
75-71-8	Dichlorodifluoromethane	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
60-29-7	Diethyl ether	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
108-20-3	Diisopropyl Ether	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
100-41-4	Ethylbenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
637-92-3	Ethyltertiarybutylether	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
67-72-1	Hexachloroethane	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
98-82-8	Isopropylbenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
1330-20-7	m & p - Xylene	ND	2.0	ug/L	1	03/29/17	B7C2902	8260	
74-88-4	Methyl iodide	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
75-09-2	Methylene chloride	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
1634-04-4	Methyltertiarybutylether	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
91-20-3	Naphthalene	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	X
104-51-8	n-Butylbenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
103-65-1	n-Propylbenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
95-47-6	o-Xylene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
99-87-6	p-Isopropyl toluene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
135-98-8	sec-Butylbenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
100-42-5	Styrene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
98-06-6	tert-Butylbenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
75-65-0	tertiary Butyl Alcohol	ND	50	ug/L	1	03/29/17	B7C2902	8260	
994-05-8	tertiaryAmylmethylether	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
127-18-4	Tetrachloroethylene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
109-99-9	Tetrahydrofuran	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
108-88-3	Toluene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
10061-02-6	trans-1,3-Dichloropropylene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
79-01-6	Trichloroethylene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
75-01-4	Vinyl chloride	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
Surrogate: Bromofluorobenzene			104 %	85-115		03/29/17	B7C2902	8260	
Surrogate: Dibromofluoromethane			105 %	82.7-115		03/29/17	B7C2902	8260	
Surrogate: Toluene-d8			104 %	85-115		03/29/17	B7C2902	8260	



**MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
 ENVIRONMENTAL LABORATORY**

P.O. Box 30270
 Lansing, MI 48909
 TEL: (517) 335-9800
 FAX: (517) 335-9600

Client ID: AR-MW-5 30-35

Lab ID: 1703146-12

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									See note Y11
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
96-18-4	1,2,3-Trichloropropane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
526-73-8	1,2,3-Trimethylbenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
106-93-4	1,2-Dibromoethane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
591-78-6	2-Hexanone	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
91-57-6	2-Methylnaphthalene	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	X
67-64-1	2-Propanone (acetone)	ND	20	ug/L	1	03/29/17	B7C2902	8260	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
107-13-1	Acrylonitrile	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
71-43-2	Benzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
108-86-1	Bromobenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
74-97-5	Bromochloromethane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
75-27-4	Bromodichloromethane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
75-25-2	Bromoform	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
74-83-9	Bromomethane	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
75-15-0	Carbon disulfide	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
56-23-5	Carbon tetrachloride	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
108-90-7	Chlorobenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
75-00-3	Chloroethane	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	A07
67-66-3	Chloroform	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
74-87-3	Chloromethane	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
10061-01-5	cis-1,3-Dichloropropylene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
110-82-7	Cyclohexane	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	



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ENVIRONMENTAL LABORATORY

P.O. Box 30270
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TEL: (517) 335-9800
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Client ID: AR-MW-5 30-35

Lab ID: 1703146-12

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
									See note Y11
124-48-1	Dibromochloromethane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
74-95-3	Dibromomethane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
75-71-8	Dichlorodifluoromethane	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
60-29-7	Diethyl ether	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
108-20-3	Diisopropyl Ether	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
100-41-4	Ethylbenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
637-92-3	Ethyltertiarybutylether	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
67-72-1	Hexachloroethane	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
98-82-8	Isopropylbenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
1330-20-7	m & p - Xylene	ND	2.0	ug/L	1	03/29/17	B7C2902	8260	
74-88-4	Methyl iodide	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
75-09-2	Methylene chloride	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
1634-04-4	Methyltertiarybutylether	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
91-20-3	Naphthalene	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	X
104-51-8	n-Butylbenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
103-65-1	n-Propylbenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
95-47-6	o-Xylene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
99-87-6	p-Isopropyl toluene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
135-98-8	sec-Butylbenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
100-42-5	Styrene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
98-06-6	tert-Butylbenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
75-65-0	tertiary Butyl Alcohol	ND	50	ug/L	1	03/29/17	B7C2902	8260	
994-05-8	tertiaryAmylmeylether	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
127-18-4	Tetrachloroethylene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
109-99-9	Tetrahydrofuran	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
108-88-3	Toluene	1.9	1.0	ug/L	1	03/29/17	B7C2902	8260	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
10061-02-6	trans-1,3-Dichloropropylene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
79-01-6	Trichloroethylene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
75-01-4	Vinyl chloride	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
<i>Surrogate: Bromofluorobenzene</i>			102 %	85-115		03/29/17	B7C2902	8260	
<i>Surrogate: Dibromofluoromethane</i>			105 %	82.7-115		03/29/17	B7C2902	8260	
<i>Surrogate: Toluene-d8</i>			104 %	85-115		03/29/17	B7C2902	8260	



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ENVIRONMENTAL LABORATORY**

P.O. Box 30270
Lansing, MI 48909
TEL: (517) 335-9800
FAX: (517) 335-9600

Client ID: AR-MW-5 40-45

Lab ID: 1703146-13

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									See note Y11
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
96-18-4	1,2,3-Trichloropropane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
526-73-8	1,2,3-Trimethylbenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
106-93-4	1,2-Dibromoethane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
591-78-6	2-Hexanone	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
91-57-6	2-Methylnaphthalene	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	X
67-64-1	2-Propanone (acetone)	ND	20	ug/L	1	03/29/17	B7C2902	8260	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
107-13-1	Acrylonitrile	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
71-43-2	Benzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
108-86-1	Bromobenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
74-97-5	Bromochloromethane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
75-27-4	Bromodichloromethane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
75-25-2	Bromoform	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
74-83-9	Bromomethane	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
75-15-0	Carbon disulfide	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
56-23-5	Carbon tetrachloride	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
108-90-7	Chlorobenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
75-00-3	Chloroethane	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	A07
67-66-3	Chloroform	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
74-87-3	Chloromethane	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
10061-01-5	cis-1,3-Dichloropropylene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
110-82-7	Cyclohexane	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	



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TEL: (517) 335-9800
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Client ID: AR-MW-5 40-45

Lab ID: 1703146-13

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
									See note Y11
124-48-1	Dibromochloromethane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
74-95-3	Dibromomethane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
75-71-8	Dichlorodifluoromethane	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
60-29-7	Diethyl ether	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
108-20-3	Diisopropyl Ether	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
100-41-4	Ethylbenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
637-92-3	Ethyltertiarybutylether	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
67-72-1	Hexachloroethane	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
98-82-8	Isopropylbenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
1330-20-7	m & p - Xylene	ND	2.0	ug/L	1	03/29/17	B7C2902	8260	
74-88-4	Methyl iodide	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
75-09-2	Methylene chloride	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
1634-04-4	Methyltertiarybutylether	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
91-20-3	Naphthalene	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	X
104-51-8	n-Butylbenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
103-65-1	n-Propylbenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
95-47-6	o-Xylene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
99-87-6	p-Isopropyl toluene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
135-98-8	sec-Butylbenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
100-42-5	Styrene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
98-06-6	tert-Butylbenzene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
75-65-0	tertiary Butyl Alcohol	ND	50	ug/L	1	03/29/17	B7C2902	8260	
994-05-8	tertiaryAmylmethylether	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
127-18-4	Tetrachloroethylene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
109-99-9	Tetrahydrofuran	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
108-88-3	Toluene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
10061-02-6	trans-1,3-Dichloropropylene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0	ug/L	1	03/29/17	B7C2902	8260	
79-01-6	Trichloroethylene	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
75-01-4	Vinyl chloride	ND	1.0	ug/L	1	03/29/17	B7C2902	8260	
<i>Surrogate: Bromofluorobenzene</i>			101 %	85-115		03/29/17	B7C2902	8260	
<i>Surrogate: Dibromofluoromethane</i>			105 %	82.7-115		03/29/17	B7C2902	8260	
<i>Surrogate: Toluene-d8</i>			102 %	85-115		03/29/17	B7C2902	8260	



Analysis Request Sheet

Lab Work Order Number 1703146	Project Name F-41 PFC Contamination	Matrix WATER
Site Code/Project Number 35000153	AY 17	CC Email 1 pincumbej
Dept-Division-District DEQ-RRD-Saginaw/Bay	Index 44031	CC Email 2 shireyb
State Project Manager Mike Jury	PCA 30740	CC Email 3
State Project Manager Email jurym1	Project 457189	Overflow Lab Choice 1
State Project Manager Phone 989-894-6255	Phase 00	Overflow Lab Choice 2
		Project TAT Days
		Sample Collector Jeff Pincumbe
		Project Due Date
		Sample Collector Phone 517-335-6418
		Accept Analysis hold time codes
		Contract Firm
		Contract Firm Primary Contact
		Primary Contact Phone

Lab Use Only	Field Sample Identification	Collection Date	Collection Time	Container Count	Comments
1	01 AR-MW-2 20-25	3-21-17			
2	02 AR-MW-2 30-35	3-21-17			
3	03 AR-MW-2 40-45	3-21-17			
4	04 AR-MW-3 15-20	3-21-17			
5	05 AR-MW-3 25-30	3-21-17			
6	06 AR-MW-3 35-40	3-21-17			
7	07 AR-MW-3 45-50	3-21-17			
8	08 AR-MW-4 15-20	3-21-17			
9	09 AR-MW-4 25-30	3-21-17			
10	10 AR-MW-4 35-40	3-21-17			

ORGANIC CHEMISTRY	MAD - DISSOLVED METALS	MA - TOTAL METALS	GENERAL CHEMISTRY
VOA - Volatile Organic Acidic Volatiles - Full List 1 2 3 4 5 6 7 8 9 10 BTEX/MTBE/TMB only 1 2 3 4 5 6 7 8 9 10 Chlorinated only 1 2 3 4 5 6 7 8 9 10 GRO 1 2 3 4 5 6 7 8 9 10 1,4 Dioxane 1 2 3 4 5 6 7 8 9 10 METH - Methane, Ethane, Ethene Methane, Ethane, Ethene 1 2 3 4 5 6 7 8 9 10 ON - Pesticides, PCBs Pesticides & PCBs 1 2 3 4 5 6 7 8 9 10 Pesticides only 1 2 3 4 5 6 7 8 9 10 PCBs only 1 2 3 4 5 6 7 8 9 10 Toxaphene 1 2 3 4 5 6 7 8 9 10 Chlordane 1 2 3 4 5 6 7 8 9 10 BNA - Base Neutral Acids BNAs 1 2 3 4 5 6 7 8 9 10 Benzidines 1 2 3 4 5 6 7 8 9 10 PNAs only 1 2 3 4 5 6 7 8 9 10 BNs only 1 2 3 4 5 6 7 8 9 10 Acids only 1 2 3 4 5 6 7 8 9 10 Organic Specialty Requests Library search - Volatiles 1 2 3 4 5 6 7 8 9 10 Library search - SemiVols 1 2 3 4 5 6 7 8 9 10 Finger Print 1 2 3 4 5 6 7 8 9 10 DRO / ORO 1 2 3 4 5 6 7 8 9 10	Diss - Silver - Ag 1 2 3 4 5 6 7 8 9 10 Diss - Aluminum - Al 1 2 3 4 5 6 7 8 9 10 Diss - Arsenic - As 1 2 3 4 5 6 7 8 9 10 Diss - Boron - B 1 2 3 4 5 6 7 8 9 10 Diss - Barium - Ba 1 2 3 4 5 6 7 8 9 10 Diss - Beryllium - Be 1 2 3 4 5 6 7 8 9 10 Diss - Cadmium - Cd 1 2 3 4 5 6 7 8 9 10 Diss - Cobalt - Co 1 2 3 4 5 6 7 8 9 10 Diss - Chromium - Cr 1 2 3 4 5 6 7 8 9 10 Diss - Copper - Cu 1 2 3 4 5 6 7 8 9 10 Diss - Iron - Fe 1 2 3 4 5 6 7 8 9 10 Diss - Mercury - Hg 1 2 3 4 5 6 7 8 9 10 Diss - Lithium - Li 1 2 3 4 5 6 7 8 9 10 Diss - Manganese - Mn 1 2 3 4 5 6 7 8 9 10 Diss - Molybdenum - Mo 1 2 3 4 5 6 7 8 9 10 Diss - Nickel - Ni 1 2 3 4 5 6 7 8 9 10 Diss - Lead - Pb 1 2 3 4 5 6 7 8 9 10 Diss - Antimony - Sb 1 2 3 4 5 6 7 8 9 10 Diss - Selenium - Se 1 2 3 4 5 6 7 8 9 10 Diss - Strontium - Sr 1 2 3 4 5 6 7 8 9 10 Diss - Titanium - Ti 1 2 3 4 5 6 7 8 9 10 Diss - Thallium - Tl 1 2 3 4 5 6 7 8 9 10 Diss - Uranium - U 1 2 3 4 5 6 7 8 9 10 Diss - Vanadium - V 1 2 3 4 5 6 7 8 9 10 Diss - Zinc - Zn 1 2 3 4 5 6 7 8 9 10 Diss - Calcium - Ca 1 2 3 4 5 6 7 8 9 10 Diss - Potassium - K 1 2 3 4 5 6 7 8 9 10 Diss - Magnesium - Mg 1 2 3 4 5 6 7 8 9 10 Diss - Sodium - Na 1 2 3 4 5 6 7 8 9 10 Diss - Hardness - Ca, Mg 1 2 3 4 5 6 7 8 9 10 MD - Metals Dissolved Lab Filtration 1 2 3 4 5 6 7 8 9 10	Silver - Ag 1 2 3 4 5 6 7 8 9 10 Aluminum - Al 1 2 3 4 5 6 7 8 9 10 Arsenic - As 1 2 3 4 5 6 7 8 9 10 Boron - B 1 2 3 4 5 6 7 8 9 10 Barium - Ba 1 2 3 4 5 6 7 8 9 10 Beryllium - Be 1 2 3 4 5 6 7 8 9 10 Cadmium - Cd 1 2 3 4 5 6 7 8 9 10 Cobalt - Co 1 2 3 4 5 6 7 8 9 10 Chromium - Cr 1 2 3 4 5 6 7 8 9 10 Copper - Cu 1 2 3 4 5 6 7 8 9 10 Iron - Fe 1 2 3 4 5 6 7 8 9 10 Mercury - Hg 1 2 3 4 5 6 7 8 9 10 Lithium - Li 1 2 3 4 5 6 7 8 9 10 Manganese - Mn 1 2 3 4 5 6 7 8 9 10 Molybdenum - Mo 1 2 3 4 5 6 7 8 9 10 Nickel - Ni 1 2 3 4 5 6 7 8 9 10 Lead - Pb 1 2 3 4 5 6 7 8 9 10 Antimony - Sb 1 2 3 4 5 6 7 8 9 10 Selenium - Se 1 2 3 4 5 6 7 8 9 10 Strontium - Sr 1 2 3 4 5 6 7 8 9 10 Titanium - Ti 1 2 3 4 5 6 7 8 9 10 Thallium - Tl 1 2 3 4 5 6 7 8 9 10 Uranium - U 1 2 3 4 5 6 7 8 9 10 Vanadium - V 1 2 3 4 5 6 7 8 9 10 Zinc - Zn 1 2 3 4 5 6 7 8 9 10 Calcium - Ca 1 2 3 4 5 6 7 8 9 10 Potassium - K 1 2 3 4 5 6 7 8 9 10 Magnesium - Mg 1 2 3 4 5 6 7 8 9 10 Sodium - Na 1 2 3 4 5 6 7 8 9 10 Hardness - Ca, Mg 1 2 3 4 5 6 7 8 9 10 LHG - Low Level Mercury Mercury Low Level - Hg 1 2 3 4 5 6 7 8 9 10	GB Total Cyanide - CN 1 2 3 4 5 6 7 8 9 10 GB Amenable Cyanide - CN 1 2 3 4 5 6 7 8 9 10 GCN Available Cyanide - CN 1 2 3 4 5 6 7 8 9 10 CA Chlorophyll 1 2 3 4 5 6 7 8 9 10 GN Ortho Phosphate - OP 1 2 3 4 5 6 7 8 9 10 GN Nitrite - NO ₂ 1 2 3 4 5 6 7 8 9 10 GN Nitrate - NO ₃ (Calc.) 1 2 3 4 5 6 7 8 9 10 GN Suspended Solids - SS 1 2 3 4 5 6 7 8 9 10 GN Dissolved Solids - TDS 1 2 3 4 5 6 7 8 9 10 MN Diss Solids - TDS (Calc.) 1 2 3 4 5 6 7 8 9 10 GN Turbidity 1 2 3 4 5 6 7 8 9 10 MN Total Alkalinity 1 2 3 4 5 6 7 8 9 10 MN Bicarb/Carb Alkalinity 1 2 3 4 5 6 7 8 9 10 (Includes Total Alkalinity) MN Chloride - Cl 1 2 3 4 5 6 7 8 9 10 MN Fluoride - F 1 2 3 4 5 6 7 8 9 10 MN Sulfate - SO ₄ 1 2 3 4 5 6 7 8 9 10 MN Chromium 6 - Cr+6 1 2 3 4 5 6 7 8 9 10 MN Conductivity 1 2 3 4 5 6 7 8 9 10 MN pH 1 2 3 4 5 6 7 8 9 10 GA Chem Oxyg Dem - COD 1 2 3 4 5 6 7 8 9 10 GA Diss Org Carbon - DOC (FF) 1 2 3 4 5 6 7 8 9 10 (Field - Filtered & Preserved) GN Diss Org Carbon - DOC (LF) 1 2 3 4 5 6 7 8 9 10 (Lab - Filtered & Preserved) GA Total Org Carbon - TOC 1 2 3 4 5 6 7 8 9 10 GA Ammonia - NH ₃ 1 2 3 4 5 6 7 8 9 10 GA Nitrate+Nitrite - NO ₃ +NO ₂ 1 2 3 4 5 6 7 8 9 10 GA Kjeldahl Nitrogen - KN 1 2 3 4 5 6 7 8 9 10 GA Total Phosphorus - TP 1 2 3 4 5 6 7 8 9 10

Chain of Custody	Relinquished by	Received By	Date / Time
	Print Name & Org. Jeff Pincumbe - MDEQ	<i>Joshua Pany MDEQ</i>	1428
	Signature: <i>Jeff Pincumbe</i>	<i>Joshua R Pany</i>	3/24/17
	Print Name & Org. Signature:		
Print Name & Org. Signature:			



Analysis Request Sheet

Lab Work Order Number 1703146	Project Name F-41 PFC Contamination	Matrix WATER
Site Code/Project Number 35000153	AY 17	CC Email 1 pincumbej
Dept-Division-District DEQ-RRD-Saginaw/Bay	Index 44031	CC Email 2 shireyb
State Project Manager Mike Jury	PCA 30740	CC Email 3
State Project Manager Email jurym1	Project 457189	Overflow Lab Choice 1
State Project Manager Phone 989-894-6255	Phase 00	Overflow Lab Choice 2
		Project TAT Days
		Sample Collector Jeff Pincumbe
		Project Due Date
		Sample Collector Phone 517-335-6418
		Contract Firm
		Contract Firm Primary Contact
		Primary Contact Phone
		Accept Analysis hold time codes

Lab Use Only	Field Sample Identification	Collection Date	Collection Time	Container Count	Comments
1	11 AR-MW-5 20-25	3-22-17			
2	12 AR-MW-5 30-35	3-22-17			
3	13 AR-MW-5 40-45	3-22-17			
4					
5					
6					
7					
8					
9					
10					

ORGANIC CHEMISTRY	MAD - DISSOLVED METALS	MA - TOTAL METALS	GENERAL CHEMISTRY
VOA - Volatile Organic Acidic Volatiles - Full List 1 2 3 4 5 6 7 8 9 10 BTEX/MTBE/TMB only 1 2 3 4 5 6 7 8 9 10 Chlorinated only 1 2 3 4 5 6 7 8 9 10 GRO 1 2 3 4 5 6 7 8 9 10 1,4 Dioxane 1 2 3 4 5 6 7 8 9 10 METH - Methane, Ethane, Ethene Methane, Ethane, Ethene 1 2 3 4 5 6 7 8 9 10 ON - Pesticides, PCBs Pesticides & PCBs 1 2 3 4 5 6 7 8 9 10 Pesticides only 1 2 3 4 5 6 7 8 9 10 PCBs only 1 2 3 4 5 6 7 8 9 10 Toxaphene 1 2 3 4 5 6 7 8 9 10 Chlordane 1 2 3 4 5 6 7 8 9 10 BNA - Base Neutral Acids BNAs 1 2 3 4 5 6 7 8 9 10 Benzidines 1 2 3 4 5 6 7 8 9 10 PNAs only 1 2 3 4 5 6 7 8 9 10 BNs only 1 2 3 4 5 6 7 8 9 10 Acids only 1 2 3 4 5 6 7 8 9 10 Organic Specialty Requests Library search - Volatiles 1 2 3 4 5 6 7 8 9 10 Library search - SemiVols 1 2 3 4 5 6 7 8 9 10 Finger Print 1 2 3 4 5 6 7 8 9 10 DRO / ORO 1 2 3 4 5 6 7 8 9 10	Diss - Silver - Ag 1 2 3 4 5 6 7 8 9 10 Diss - Aluminum - Al 1 2 3 4 5 6 7 8 9 10 Diss - Arsenic - As 1 2 3 4 5 6 7 8 9 10 Diss - Boron - B 1 2 3 4 5 6 7 8 9 10 Diss - Barium - Ba 1 2 3 4 5 6 7 8 9 10 Diss - Beryllium - Be 1 2 3 4 5 6 7 8 9 10 Diss - Cadmium - Cd 1 2 3 4 5 6 7 8 9 10 Diss - Cobalt - Co 1 2 3 4 5 6 7 8 9 10 Diss - Chromium - Cr 1 2 3 4 5 6 7 8 9 10 Diss - Copper - Cu 1 2 3 4 5 6 7 8 9 10 Diss - Iron - Fe 1 2 3 4 5 6 7 8 9 10 Diss - Mercury - Hg 1 2 3 4 5 6 7 8 9 10 Diss - Lithium - Li 1 2 3 4 5 6 7 8 9 10 Diss - Manganese - Mn 1 2 3 4 5 6 7 8 9 10 Diss - Molybdenum - Mo 1 2 3 4 5 6 7 8 9 10 Diss - Nickel - Ni 1 2 3 4 5 6 7 8 9 10 Diss - Lead - Pb 1 2 3 4 5 6 7 8 9 10 Diss - Antimony - Sb 1 2 3 4 5 6 7 8 9 10 Diss - Selenium - Se 1 2 3 4 5 6 7 8 9 10 Diss - Strontium - Sr 1 2 3 4 5 6 7 8 9 10 Diss - Titanium - Ti 1 2 3 4 5 6 7 8 9 10 Diss - Thallium - Tl 1 2 3 4 5 6 7 8 9 10 Diss - Uranium - U 1 2 3 4 5 6 7 8 9 10 Diss - Vanadium - V 1 2 3 4 5 6 7 8 9 10 Diss - Zinc - Zn 1 2 3 4 5 6 7 8 9 10 Diss - Calcium - Ca 1 2 3 4 5 6 7 8 9 10 Diss - Potassium - K 1 2 3 4 5 6 7 8 9 10 Diss - Magnesium - Mg 1 2 3 4 5 6 7 8 9 10 Diss - Sodium - Na 1 2 3 4 5 6 7 8 9 10 Diss - Hardness - Ca, Mg 1 2 3 4 5 6 7 8 9 10 MD - Metals Dissolved Lab Filtration 1 2 3 4 5 6 7 8 9 10	Silver - Ag 1 2 3 4 5 6 7 8 9 10 Aluminum - Al 1 2 3 4 5 6 7 8 9 10 Arsenic - As 1 2 3 4 5 6 7 8 9 10 Boron - B 1 2 3 4 5 6 7 8 9 10 Barium - Ba 1 2 3 4 5 6 7 8 9 10 Beryllium - Be 1 2 3 4 5 6 7 8 9 10 Cadmium - Cd 1 2 3 4 5 6 7 8 9 10 Cobalt - Co 1 2 3 4 5 6 7 8 9 10 Chromium - Cr 1 2 3 4 5 6 7 8 9 10 Copper - Cu 1 2 3 4 5 6 7 8 9 10 Iron - Fe 1 2 3 4 5 6 7 8 9 10 Mercury - Hg 1 2 3 4 5 6 7 8 9 10 Lithium - Li 1 2 3 4 5 6 7 8 9 10 Manganese - Mn 1 2 3 4 5 6 7 8 9 10 Molybdenum - Mo 1 2 3 4 5 6 7 8 9 10 Nickel - Ni 1 2 3 4 5 6 7 8 9 10 Lead - Pb 1 2 3 4 5 6 7 8 9 10 Antimony - Sb 1 2 3 4 5 6 7 8 9 10 Selenium - Se 1 2 3 4 5 6 7 8 9 10 Strontium - Sr 1 2 3 4 5 6 7 8 9 10 Titanium - Ti 1 2 3 4 5 6 7 8 9 10 Thallium - Tl 1 2 3 4 5 6 7 8 9 10 Uranium - U 1 2 3 4 5 6 7 8 9 10 Vanadium - V 1 2 3 4 5 6 7 8 9 10 Zinc - Zn 1 2 3 4 5 6 7 8 9 10 Calcium - Ca 1 2 3 4 5 6 7 8 9 10 Potassium - K 1 2 3 4 5 6 7 8 9 10 Magnesium - Mg 1 2 3 4 5 6 7 8 9 10 Sodium - Na 1 2 3 4 5 6 7 8 9 10 Hardness - Ca, Mg 1 2 3 4 5 6 7 8 9 10 LHG - Low Level Mercury Mercury Low Level - Hg 1 2 3 4 5 6 7 8 9 10	GB Total Cyanide - CN 1 2 3 4 5 6 7 8 9 10 GB Amenable Cyanide - CN 1 2 3 4 5 6 7 8 9 10 GCN Available Cyanide - CN 1 2 3 4 5 6 7 8 9 10 CA Chlorophyll 1 2 3 4 5 6 7 8 9 10 GN Ortho Phosphate - OP 1 2 3 4 5 6 7 8 9 10 GN Nitrite - NO ₂ 1 2 3 4 5 6 7 8 9 10 GN Nitrate - NO ₃ (Calc.) 1 2 3 4 5 6 7 8 9 10 GN Suspended Solids - SS 1 2 3 4 5 6 7 8 9 10 GN Dissolved Solids - TDS 1 2 3 4 5 6 7 8 9 10 MN Diss Solids - TDS (Calc.) 1 2 3 4 5 6 7 8 9 10 GN Turbidity 1 2 3 4 5 6 7 8 9 10 MN Total Alkalinity 1 2 3 4 5 6 7 8 9 10 MN Bicarb/Carb Alkalinity 1 2 3 4 5 6 7 8 9 10 (Includes Total Alkalinity) MN Chloride - Cl 1 2 3 4 5 6 7 8 9 10 MN Fluoride - F 1 2 3 4 5 6 7 8 9 10 MN Sulfate - SO ₄ 1 2 3 4 5 6 7 8 9 10 MN Chromium 6 - Cr+6 1 2 3 4 5 6 7 8 9 10 MN Conductivity 1 2 3 4 5 6 7 8 9 10 MN pH 1 2 3 4 5 6 7 8 9 10 GA Chem Oxyg Dem - COD 1 2 3 4 5 6 7 8 9 10 GA Diss Org Carbon - DOC (FF) 1 2 3 4 5 6 7 8 9 10 (Field - Filtered & Preserved) GN Diss Org Carbon - DOC (LF) 1 2 3 4 5 6 7 8 9 10 (Lab - Filtered & Preserved) GA Total Org Carbon - TOC 1 2 3 4 5 6 7 8 9 10 GA Ammonia - NH ₃ 1 2 3 4 5 6 7 8 9 10 GA Nitrate+Nitrite - NO ₃ +NO ₂ 1 2 3 4 5 6 7 8 9 10 GA Kjeldahl Nitrogen - KN 1 2 3 4 5 6 7 8 9 10 GA Total Phosphorus - TP 1 2 3 4 5 6 7 8 9 10

Chain of Custody	Relinquished by	Received By	Date / Time
	Print Name & Org. Jeff Pincumbe - MDEQ	<i>Joshua Pung MDEQ</i>	1928
	Signature: <i>Jeff Pincumbe</i>	<i>Joshua Pung</i>	3/24/17
	Print Name & Org. Signature:		
Print Name & Org. Signature:			

APPENDIX C

F-41 PFC Contamination, Iosco County
Site ID #35000153

Test America Laboratory Results

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

TestAmerica Job ID: 320-26906-1
Client Project/Site: Wurtsmith - 3500058

For:
Michigan Dept. of Environmental Quality
Constitution Hall 3rd floor SW
525 W. Allegan Street
Lansing, Michigan 48909

Attn: Bob Delaney

Kris Brooks

Authorized for release by:
4/27/2017 7:13:22 PM

Kris Brooks, Project Manager II
(330)966-9790
kris.brooks@testamericainc.com

LINKS

Review your project
results through
TotalAccess

Have a Question?



Visit us at:
www.testamericainc.com

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

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

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

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Table of Contents

Cover Page	1
Table of Contents	2
Definitions/Glossary	3
Case Narrative	4
Detection Summary	7
Method Summary	9
Sample Summary	10
Client Sample Results	11
Isotope Dilution Summary	26
QC Sample Results	28
QC Association Summary	34
Lab Chronicle	35
Certification Summary	38
Chain of Custody	40
Field Data Sheets	44
Receipt Checklists	45

Definitions/Glossary

Client: Michigan Dept. of Environmental Quality
Project/Site: Wurtsmith - 3500058

TestAmerica Job ID: 320-26906-1

Qualifiers

LCMS

Qualifier	Qualifier Description
*	Isotope Dilution analyte is outside acceptance limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
B	Compound was found in the blank and sample.
*	LCS or LCSD is outside acceptance limits.
*	RPD of the LCS and LCSD exceeds the control limits

Glossary

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

Case Narrative

Client: Michigan Dept. of Environmental Quality
Project/Site: Wurtsmith - 3500058

TestAmerica Job ID: 320-26906-1

Job ID: 320-26906-1

Laboratory: TestAmerica Sacramento

Narrative

CASE NARRATIVE

Client: Michigan Dept. of Environmental Quality

Project: Wurtsmith - 3500058

Report Number: 320-26906-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

TestAmerica Sacramento attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

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

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header.

This laboratory report is confidential and is intended for the sole use of TestAmerica and its client.

RECEIPT

The samples were received on 3/25/2017 9:40 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.3° C.

Receipt Exceptions

The following samples were received at the laboratory without a sample collection time documented on the chain of custody: AR-MW-2 20-25' (320-26906-1), AR-MW-2 30-35' (320-26906-2), AR-MW-2 40-45' (320-26906-3), AR-MW-3 15-20 (320-26906-4), AR-MW-3 25-30 (320-26906-5), AR-MW-3 35-40 (320-26906-6), AR-MW-3 45-50 (320-26906-7), AR-MW-4 15-20 (320-26906-8), AR-MW-4 25-30 (320-26906-9), AR-MW-4 35-40 (320-26906-10), AR-MW-5 20-25 (320-26906-11), AR-MW-5 30-35 (320-26906-12), AR-MW-5 40-45 (320-26906-13), 3266 ALEXANDER - OUTSIDE (320-26906-14) and TRIP BLANK (320-26906-15). The client has not yet been contacted.

The container label for the following sample did not match the information listed on the Chain-of-Custody (COC): TRIP BLANK (320-26906-15). The container labels state Field Blank, while the COC lists TRIP BLANK; logged in per the COC. The client has not yet been contacted.

PERFLUORINATED HYDROCARBONS

Samples AR-MW-2 20-25' (320-26906-1), AR-MW-2 30-35' (320-26906-2), AR-MW-2 40-45' (320-26906-3), AR-MW-3 15-20 (320-26906-4), AR-MW-3 25-30 (320-26906-5), AR-MW-3 35-40 (320-26906-6), AR-MW-3 45-50 (320-26906-7), AR-MW-4 15-20 (320-26906-8), AR-MW-4

Case Narrative

Client: Michigan Dept. of Environmental Quality
Project/Site: Wurtsmith - 3500058

TestAmerica Job ID: 320-26906-1

Job ID: 320-26906-1 (Continued)

Laboratory: TestAmerica Sacramento (Continued)

25-30 (320-26906-9), AR-MW-4 35-40 (320-26906-10), AR-MW-5 20-25 (320-26906-11), AR-MW-5 30-35 (320-26906-12), AR-MW-5 40-45 (320-26906-13), 3266 ALEXANDER - OUTSIDE (320-26906-14) and TRIP BLANK (320-26906-15) were analyzed for Perfluorinated Hydrocarbons in accordance with SOP WS-OC-0025. The samples were prepared on 03/31/2017 and 04/03/2017 and analyzed on 04/03/2017 and 04/18/2017.

Perfluorotetradecanoic acid (PFTeA) was detected in method blank MB 320-157617/1-A at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Perfluorotetradecanoic acid (PFTeA) was detected in method blank MB 320-157881/1-A at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

Perfluorotetradecanoic acid (PFTeA) failed the recovery criteria high for LCSD 320-157617/3-A. Perfluoroundecanoic acid (PFUnA) exceeded the RPD limit. Refer to the QC report for details.

The laboratory control sample duplicate (LCSD) for preparation batch 320-157617 and analytical batch 320-157831 recovered outside control limits for the following analyte: Perfluorotetradecanoic acid (PFTeA). This analyte was biased high in the LCSD and was detected below the reporting limit in the associated sample; therefore, the data have been reported.

The RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 320-157617 recovered outside control limits for the following analyte: Perfluoroundecanoic acid (PFUnA).

The Isotope Dilution Analyte (IDA) recovery associated with the following sample is below the method recommended limit for 13C8 FOSA: (LCSD 320-157617/3-A). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the sample.

Isotope Dilution Analyte (IDA) recovery is above the method recommended limit for the following sample: (MB 320-157593/1-A) and (320-25706-A-93-B MDL). Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.

The Isotope Dilution Analyte (IDA) recovery associated with the following samples is below the method recommended limit: (MB 320-157054/1-A), (MB 320-157366/1-A), (320-25706-A-77-A MDL), (320-25706-A-78-A MDL), (320-25706-A-79-A MDL), (320-25706-A-83-A MDL), (320-25706-A-85-A MDL), (320-25706-A-86-A MDL), (320-25706-A-89-A MDL) and (320-25706-A-90-A MDL). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the sample(s). All detection limits are below the lower calibration.

The Isotope Dilution Analyte (IDA) recovery associated with the following sample is below the method recommended limit for 13C4 PFBA: AR-MW-3 35-40 (320-26906-6). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the samples.

The Isotope Dilution Analyte (IDA) recovery associated with the following samples is below the method recommended limit for 13C8 FOSA: AR-MW-2 20-25' (320-26906-1), AR-MW-2 30-35' (320-26906-2), AR-MW-2 40-45' (320-26906-3), AR-MW-3 15-20 (320-26906-4), AR-MW-3 25-30 (320-26906-5), AR-MW-3 35-40 (320-26906-6), AR-MW-3 45-50 (320-26906-7), AR-MW-4 15-20 (320-26906-8), AR-MW-4 25-30 (320-26906-9), AR-MW-4 35-40 (320-26906-10), AR-MW-5 20-25 (320-26906-11), AR-MW-5 30-35 (320-26906-12), AR-MW-5 40-45 (320-26906-13) and 3266 ALEXANDER - OUTSIDE (320-26906-14). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the samples.

Isotope Dilution Analyte (IDA) recoveries are above the method recommended limit for several analytes in the following samples: AR-MW-5 30-35 (320-26906-12) and (MB 320-157881/1-A). Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.

Due to excessive sediment in sample bottles the aqueous portion of samples were decanted to a new bottle prior to spiking and extraction. AR-MW-2 20-25' (320-26906-1), AR-MW-2 30-35' (320-26906-2), AR-MW-2 40-45' (320-26906-3), AR-MW-3 15-20 (320-26906-4), AR-MW-3 25-30 (320-26906-5), AR-MW-3 35-40 (320-26906-6), AR-MW-3 45-50 (320-26906-7), AR-MW-4 25-30 (320-26906-9), AR-MW-4 35-40 (320-26906-10), AR-MW-5 30-35 (320-26906-12) and AR-MW-5 40-45 (320-26906-13)

Case Narrative

Client: Michigan Dept. of Environmental Quality
Project/Site: Wurtsmith - 3500058

TestAmerica Job ID: 320-26906-1

Job ID: 320-26906-1 (Continued)

Laboratory: TestAmerica Sacramento (Continued)

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

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Detection Summary

Client: Michigan Dept. of Environmental Quality
Project/Site: Wurtsmith - 3500058

TestAmerica Job ID: 320-26906-1

Client Sample ID: AR-MW-2 20-25'

Lab Sample ID: 320-26906-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	1.3	J	1.9	0.43	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	0.98	J	1.9	0.70	ng/L	1		537 (modified)	Total/NA
Perfluorodecanoic acid (PFDA)	0.57	J	1.9	0.41	ng/L	1		537 (modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	0.77	J B	1.9	0.19	ng/L	1		537 (modified)	Total/NA
Perfluoro-n-hexadecanoic acid (PFHxDA)	0.58	J	1.9	0.11	ng/L	1		537 (modified)	Total/NA

Client Sample ID: AR-MW-2 30-35'

Lab Sample ID: 320-26906-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	1.3	J	2.2	0.49	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	1.2	J	2.2	0.81	ng/L	1		537 (modified)	Total/NA
Perfluorodecanoic acid (PFDA)	0.96	J	2.2	0.47	ng/L	1		537 (modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	0.57	J B	2.2	0.21	ng/L	1		537 (modified)	Total/NA

Client Sample ID: AR-MW-2 40-45'

Lab Sample ID: 320-26906-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	1.6	J	2.0	0.47	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	1.8	J	2.0	0.76	ng/L	1		537 (modified)	Total/NA
Perfluorodecanoic acid (PFDA)	0.92	J	2.0	0.45	ng/L	1		537 (modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	0.59	J B	2.0	0.20	ng/L	1		537 (modified)	Total/NA

Client Sample ID: AR-MW-3 15-20

Lab Sample ID: 320-26906-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorotetradecanoic acid (PFTeA)	0.58	J B	2.0	0.20	ng/L	1		537 (modified)	Total/NA

Client Sample ID: AR-MW-3 25-30

Lab Sample ID: 320-26906-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorotetradecanoic acid (PFTeA)	0.65	J B	2.0	0.20	ng/L	1		537 (modified)	Total/NA
Perfluoro-n-hexadecanoic acid (PFHxDA)	0.14	J	2.0	0.12	ng/L	1		537 (modified)	Total/NA

Client Sample ID: AR-MW-3 35-40

Lab Sample ID: 320-26906-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.78	J	1.9	0.44	ng/L	1		537 (modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	0.95	J B	1.9	0.19	ng/L	1		537 (modified)	Total/NA

Client Sample ID: AR-MW-3 45-50

Lab Sample ID: 320-26906-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	1.1	J	1.9	0.44	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	0.91	J	1.9	0.72	ng/L	1		537 (modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	0.68	J B	1.9	0.19	ng/L	1		537 (modified)	Total/NA

Client Sample ID: AR-MW-4 15-20

Lab Sample ID: 320-26906-8

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

Detection Summary

Client: Michigan Dept. of Environmental Quality
 Project/Site: Wurtsmith - 3500058

TestAmerica Job ID: 320-26906-1

Client Sample ID: AR-MW-4 15-20 (Continued)

Lab Sample ID: 320-26906-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.51	J	1.9	0.43	ng/L	1		537 (modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	0.67	J B	1.9	0.19	ng/L	1		537 (modified)	Total/NA

Client Sample ID: AR-MW-4 25-30

Lab Sample ID: 320-26906-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorotetradecanoic acid (PFTeA)	0.77	J B	1.9	0.18	ng/L	1		537 (modified)	Total/NA
Perfluoro-n-hexadecanoic acid (PFHxDA)	0.18	J	1.9	0.11	ng/L	1		537 (modified)	Total/NA

Client Sample ID: AR-MW-4 35-40

Lab Sample ID: 320-26906-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.76	J	2.0	0.45	ng/L	1		537 (modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	0.58	J B	2.0	0.19	ng/L	1		537 (modified)	Total/NA

Client Sample ID: AR-MW-5 20-25

Lab Sample ID: 320-26906-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorotetradecanoic acid (PFTeA)	0.66	J B	1.7	0.16	ng/L	1		537 (modified)	Total/NA

Client Sample ID: AR-MW-5 30-35

Lab Sample ID: 320-26906-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.70	J	2.0	0.45	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	0.86	J	2.0	0.73	ng/L	1		537 (modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	0.57	J B	2.0	0.19	ng/L	1		537 (modified)	Total/NA

Client Sample ID: AR-MW-5 40-45

Lab Sample ID: 320-26906-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	1.0	J	2.0	0.46	ng/L	1		537 (modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	0.76	J B	2.0	0.20	ng/L	1		537 (modified)	Total/NA

Client Sample ID: 3266 ALEXANDER - OUTSIDE

Lab Sample ID: 320-26906-14

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	2.9	J	2.0	0.46	ng/L	1		537 (modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	0.41	J B	2.0	0.20	ng/L	1		537 (modified)	Total/NA

Client Sample ID: TRIP BLANK

Lab Sample ID: 320-26906-15

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.58	J	1.9	0.44	ng/L	1		537 (modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	0.50	J B *	1.9	0.19	ng/L	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

Method Summary

Client: Michigan Dept. of Environmental Quality
Project/Site: Wurtsmith - 3500058

TestAmerica Job ID: 320-26906-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Perfluorinated Hydrocarbons	EPA	TAL SAC

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600



Sample Summary

Client: Michigan Dept. of Environmental Quality
Project/Site: Wurtsmith - 3500058

TestAmerica Job ID: 320-26906-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-26906-1	AR-MW-2 20-25'	Water	03/21/17 00:00	03/25/17 09:40
320-26906-2	AR-MW-2 30-35'	Water	03/21/17 00:00	03/25/17 09:40
320-26906-3	AR-MW-2 40-45'	Water	03/21/17 00:00	03/25/17 09:40
320-26906-4	AR-MW-3 15-20	Water	03/21/17 00:00	03/25/17 09:40
320-26906-5	AR-MW-3 25-30	Water	03/21/17 00:00	03/25/17 09:40
320-26906-6	AR-MW-3 35-40	Water	03/21/17 00:00	03/25/17 09:40
320-26906-7	AR-MW-3 45-50	Water	03/21/17 00:00	03/25/17 09:40
320-26906-8	AR-MW-4 15-20	Water	03/21/17 00:00	03/25/17 09:40
320-26906-9	AR-MW-4 25-30	Water	03/21/17 00:00	03/25/17 09:40
320-26906-10	AR-MW-4 35-40	Water	03/21/17 00:00	03/25/17 09:40
320-26906-11	AR-MW-5 20-25	Water	03/22/17 00:00	03/25/17 09:40
320-26906-12	AR-MW-5 30-35	Water	03/22/17 00:00	03/25/17 09:40
320-26906-13	AR-MW-5 40-45	Water	03/22/17 00:00	03/25/17 09:40
320-26906-14	3266 ALEXANDER - OUTSIDE	Water	03/21/17 00:00	03/25/17 09:40
320-26906-15	TRIP BLANK	Water	03/20/17 00:00	03/25/17 09:40

Client Sample Results

Client: Michigan Dept. of Environmental Quality
 Project/Site: Wurtsmith - 3500058

TestAmerica Job ID: 320-26906-1

Client Sample ID: AR-MW-2 20-25'

Lab Sample ID: 320-26906-1

Date Collected: 03/21/17 00:00

Matrix: Water

Date Received: 03/25/17 09:40

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	1.3	J	1.9	0.43	ng/L		04/03/17 16:41	04/18/17 00:19	1
Perfluoropentanoic acid (PFPeA)	ND		1.9	0.92	ng/L		04/03/17 16:41	04/18/17 00:19	1
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.73	ng/L		04/03/17 16:41	04/18/17 00:19	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.75	ng/L		04/03/17 16:41	04/18/17 00:19	1
Perfluorooctanoic acid (PFOA)	0.98	J	1.9	0.70	ng/L		04/03/17 16:41	04/18/17 00:19	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.61	ng/L		04/03/17 16:41	04/18/17 00:19	1
Perfluorodecanoic acid (PFDA)	0.57	J	1.9	0.41	ng/L		04/03/17 16:41	04/18/17 00:19	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.70	ng/L		04/03/17 16:41	04/18/17 00:19	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.54	ng/L		04/03/17 16:41	04/18/17 00:19	1
Perfluorotridecanoic Acid (PFTriA)	ND		1.9	0.51	ng/L		04/03/17 16:41	04/18/17 00:19	1
Perfluorotetradecanoic acid (PFTeA)	0.77	J B	1.9	0.19	ng/L		04/03/17 16:41	04/18/17 00:19	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	0.58	J	1.9	0.11	ng/L		04/03/17 16:41	04/18/17 00:19	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		1.9	0.63	ng/L		04/03/17 16:41	04/18/17 00:19	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.86	ng/L		04/03/17 16:41	04/18/17 00:19	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.81	ng/L		04/03/17 16:41	04/18/17 00:19	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.9	0.66	ng/L		04/03/17 16:41	04/18/17 00:19	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.9	1.1	ng/L		04/03/17 16:41	04/18/17 00:19	1
Perfluorooctane Sulfonate (PFOS)	ND		1.9	1.2	ng/L		04/03/17 16:41	04/18/17 00:19	1
Perfluorooctane Sulfonamide (FOSA)	ND		1.9	0.59	ng/L		04/03/17 16:41	04/18/17 00:19	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 FOSA	2	*	25 - 150				04/03/17 16:41	04/18/17 00:19	1
13C4 PFBA	55		25 - 150				04/03/17 16:41	04/18/17 00:19	1
13C2 PFHxA	109		25 - 150				04/03/17 16:41	04/18/17 00:19	1
13C4 PFOA	124		25 - 150				04/03/17 16:41	04/18/17 00:19	1
13C5 PFNA	105		25 - 150				04/03/17 16:41	04/18/17 00:19	1
13C2 PFDA	97		25 - 150				04/03/17 16:41	04/18/17 00:19	1
13C2 PFUnA	100		25 - 150				04/03/17 16:41	04/18/17 00:19	1
13C2 PFDoA	94		25 - 150				04/03/17 16:41	04/18/17 00:19	1
18O2 PFHxS	137		25 - 150				04/03/17 16:41	04/18/17 00:19	1
13C4 PFOS	131		25 - 150				04/03/17 16:41	04/18/17 00:19	1
13C4-PFHpA	120		25 - 150				04/03/17 16:41	04/18/17 00:19	1
13C5-PFPeA	90		25 - 150				04/03/17 16:41	04/18/17 00:19	1

Client Sample Results

Client: Michigan Dept. of Environmental Quality
 Project/Site: Wurtsmith - 3500058

TestAmerica Job ID: 320-26906-1

Client Sample ID: AR-MW-2 30-35'

Lab Sample ID: 320-26906-2

Date Collected: 03/21/17 00:00

Matrix: Water

Date Received: 03/25/17 09:40

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	1.3	J	2.2	0.49	ng/L		04/03/17 16:41	04/18/17 00:26	1
Perfluoropentanoic acid (PFPeA)	ND		2.2	1.1	ng/L		04/03/17 16:41	04/18/17 00:26	1
Perfluorohexanoic acid (PFHxA)	ND		2.2	0.85	ng/L		04/03/17 16:41	04/18/17 00:26	1
Perfluoroheptanoic acid (PFHpA)	ND		2.2	0.87	ng/L		04/03/17 16:41	04/18/17 00:26	1
Perfluorooctanoic acid (PFOA)	1.2	J	2.2	0.81	ng/L		04/03/17 16:41	04/18/17 00:26	1
Perfluorononanoic acid (PFNA)	ND		2.2	0.71	ng/L		04/03/17 16:41	04/18/17 00:26	1
Perfluorodecanoic acid (PFDA)	0.96	J	2.2	0.47	ng/L		04/03/17 16:41	04/18/17 00:26	1
Perfluoroundecanoic acid (PFUnA)	ND		2.2	0.81	ng/L		04/03/17 16:41	04/18/17 00:26	1
Perfluorododecanoic acid (PFDoA)	ND		2.2	0.63	ng/L		04/03/17 16:41	04/18/17 00:26	1
Perfluorotridecanoic Acid (PFTriA)	ND		2.2	0.59	ng/L		04/03/17 16:41	04/18/17 00:26	1
Perfluorotetradecanoic acid (PFTeA)	0.57	J B	2.2	0.21	ng/L		04/03/17 16:41	04/18/17 00:26	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	ND		2.2	0.13	ng/L		04/03/17 16:41	04/18/17 00:26	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		2.2	0.73	ng/L		04/03/17 16:41	04/18/17 00:26	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.2	0.99	ng/L		04/03/17 16:41	04/18/17 00:26	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.2	0.94	ng/L		04/03/17 16:41	04/18/17 00:26	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		2.2	0.77	ng/L		04/03/17 16:41	04/18/17 00:26	1
Perfluorodecanesulfonic acid (PFDS)	ND		2.2	1.3	ng/L		04/03/17 16:41	04/18/17 00:26	1
Perfluorooctane Sulfonate (PFOS)	ND		2.2	1.4	ng/L		04/03/17 16:41	04/18/17 00:26	1
Perfluorooctane Sulfonamide (FOSA)	ND		2.2	0.69	ng/L		04/03/17 16:41	04/18/17 00:26	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 FOSA	4	*	25 - 150				04/03/17 16:41	04/18/17 00:26	1
13C4 PFBA	36		25 - 150				04/03/17 16:41	04/18/17 00:26	1
13C2 PFHxA	111		25 - 150				04/03/17 16:41	04/18/17 00:26	1
13C4 PFOA	144		25 - 150				04/03/17 16:41	04/18/17 00:26	1
13C5 PFNA	125		25 - 150				04/03/17 16:41	04/18/17 00:26	1
13C2 PFDA	132		25 - 150				04/03/17 16:41	04/18/17 00:26	1
13C2 PFUnA	134		25 - 150				04/03/17 16:41	04/18/17 00:26	1
13C2 PFDoA	121		25 - 150				04/03/17 16:41	04/18/17 00:26	1
18O2 PFHxS	132		25 - 150				04/03/17 16:41	04/18/17 00:26	1
13C4 PFOS	133		25 - 150				04/03/17 16:41	04/18/17 00:26	1
13C4-PFHpA	132		25 - 150				04/03/17 16:41	04/18/17 00:26	1
13C5-PFPeA	87		25 - 150				04/03/17 16:41	04/18/17 00:26	1

Client Sample Results

Client: Michigan Dept. of Environmental Quality
 Project/Site: Wurtsmith - 3500058

TestAmerica Job ID: 320-26906-1

Client Sample ID: AR-MW-2 40-45'

Lab Sample ID: 320-26906-3

Date Collected: 03/21/17 00:00

Matrix: Water

Date Received: 03/25/17 09:40

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	1.6	J	2.0	0.47	ng/L		04/03/17 16:41	04/18/17 00:34	1
Perfluoropentanoic acid (PFPeA)	ND		2.0	1.0	ng/L		04/03/17 16:41	04/18/17 00:34	1
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.80	ng/L		04/03/17 16:41	04/18/17 00:34	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.81	ng/L		04/03/17 16:41	04/18/17 00:34	1
Perfluorooctanoic acid (PFOA)	1.8	J	2.0	0.76	ng/L		04/03/17 16:41	04/18/17 00:34	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.66	ng/L		04/03/17 16:41	04/18/17 00:34	1
Perfluorodecanoic acid (PFDA)	0.92	J	2.0	0.45	ng/L		04/03/17 16:41	04/18/17 00:34	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	0.76	ng/L		04/03/17 16:41	04/18/17 00:34	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.59	ng/L		04/03/17 16:41	04/18/17 00:34	1
Perfluorotridecanoic Acid (PFTriA)	ND		2.0	0.56	ng/L		04/03/17 16:41	04/18/17 00:34	1
Perfluorotetradecanoic acid (PFTeA)	0.59	J B	2.0	0.20	ng/L		04/03/17 16:41	04/18/17 00:34	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	ND		2.0	0.12	ng/L		04/03/17 16:41	04/18/17 00:34	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		2.0	0.68	ng/L		04/03/17 16:41	04/18/17 00:34	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.93	ng/L		04/03/17 16:41	04/18/17 00:34	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.88	ng/L		04/03/17 16:41	04/18/17 00:34	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		2.0	0.72	ng/L		04/03/17 16:41	04/18/17 00:34	1
Perfluorodecanesulfonic acid (PFDS)	ND		2.0	1.2	ng/L		04/03/17 16:41	04/18/17 00:34	1
Perfluorooctane Sulfonate (PFOS)	ND		2.0	1.3	ng/L		04/03/17 16:41	04/18/17 00:34	1
Perfluorooctane Sulfonamide (FOSA)	ND		2.0	0.65	ng/L		04/03/17 16:41	04/18/17 00:34	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 FOSA	4	*	25 - 150				04/03/17 16:41	04/18/17 00:34	1
13C4 PFBA	36		25 - 150				04/03/17 16:41	04/18/17 00:34	1
13C2 PFHxA	93		25 - 150				04/03/17 16:41	04/18/17 00:34	1
13C4 PFOA	115		25 - 150				04/03/17 16:41	04/18/17 00:34	1
13C5 PFNA	107		25 - 150				04/03/17 16:41	04/18/17 00:34	1
13C2 PFDA	105		25 - 150				04/03/17 16:41	04/18/17 00:34	1
13C2 PFUnA	117		25 - 150				04/03/17 16:41	04/18/17 00:34	1
13C2 PFDoA	100		25 - 150				04/03/17 16:41	04/18/17 00:34	1
18O2 PFHxS	106		25 - 150				04/03/17 16:41	04/18/17 00:34	1
13C4 PFOS	107		25 - 150				04/03/17 16:41	04/18/17 00:34	1
13C4-PFHpA	110		25 - 150				04/03/17 16:41	04/18/17 00:34	1
13C5-PFPeA	79		25 - 150				04/03/17 16:41	04/18/17 00:34	1

Client Sample Results

Client: Michigan Dept. of Environmental Quality
 Project/Site: Wurtsmith - 3500058

TestAmerica Job ID: 320-26906-1

Client Sample ID: AR-MW-3 15-20

Lab Sample ID: 320-26906-4

Date Collected: 03/21/17 00:00

Matrix: Water

Date Received: 03/25/17 09:40

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		2.0	0.46	ng/L		04/03/17 16:41	04/18/17 00:41	1
Perfluoropentanoic acid (PFPeA)	ND		2.0	1.0	ng/L		04/03/17 16:41	04/18/17 00:41	1
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.80	ng/L		04/03/17 16:41	04/18/17 00:41	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.81	ng/L		04/03/17 16:41	04/18/17 00:41	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.76	ng/L		04/03/17 16:41	04/18/17 00:41	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.66	ng/L		04/03/17 16:41	04/18/17 00:41	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.45	ng/L		04/03/17 16:41	04/18/17 00:41	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	0.76	ng/L		04/03/17 16:41	04/18/17 00:41	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.59	ng/L		04/03/17 16:41	04/18/17 00:41	1
Perfluorotridecanoic Acid (PFTriA)	ND		2.0	0.56	ng/L		04/03/17 16:41	04/18/17 00:41	1
Perfluorotetradecanoic acid (PFTeA)	0.58	J B	2.0	0.20	ng/L		04/03/17 16:41	04/18/17 00:41	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	ND		2.0	0.12	ng/L		04/03/17 16:41	04/18/17 00:41	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		2.0	0.68	ng/L		04/03/17 16:41	04/18/17 00:41	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.93	ng/L		04/03/17 16:41	04/18/17 00:41	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.88	ng/L		04/03/17 16:41	04/18/17 00:41	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		2.0	0.72	ng/L		04/03/17 16:41	04/18/17 00:41	1
Perfluorodecanesulfonic acid (PFDS)	ND		2.0	1.2	ng/L		04/03/17 16:41	04/18/17 00:41	1
Perfluorooctane Sulfonate (PFOS)	ND		2.0	1.3	ng/L		04/03/17 16:41	04/18/17 00:41	1
Perfluorooctane Sulfonamide (FOSA)	ND		2.0	0.65	ng/L		04/03/17 16:41	04/18/17 00:41	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C8 FOSA	2	*	25 - 150				04/03/17 16:41	04/18/17 00:41	1
13C4 PFBA	52		25 - 150				04/03/17 16:41	04/18/17 00:41	1
13C2 PFHxA	107		25 - 150				04/03/17 16:41	04/18/17 00:41	1
13C4 PFOA	127		25 - 150				04/03/17 16:41	04/18/17 00:41	1
13C5 PFNA	114		25 - 150				04/03/17 16:41	04/18/17 00:41	1
13C2 PFDA	122		25 - 150				04/03/17 16:41	04/18/17 00:41	1
13C2 PFUnA	141		25 - 150				04/03/17 16:41	04/18/17 00:41	1
13C2 PFDoA	124		25 - 150				04/03/17 16:41	04/18/17 00:41	1
18O2 PFHxS	132		25 - 150				04/03/17 16:41	04/18/17 00:41	1
13C4 PFOS	129		25 - 150				04/03/17 16:41	04/18/17 00:41	1
13C4-PFHpA	122		25 - 150				04/03/17 16:41	04/18/17 00:41	1
13C5-PFPeA	86		25 - 150				04/03/17 16:41	04/18/17 00:41	1

Client Sample Results

Client: Michigan Dept. of Environmental Quality
 Project/Site: Wurtsmith - 3500058

TestAmerica Job ID: 320-26906-1

Client Sample ID: AR-MW-3 25-30

Lab Sample ID: 320-26906-5

Date Collected: 03/21/17 00:00

Matrix: Water

Date Received: 03/25/17 09:40

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		2.0	0.45	ng/L		04/03/17 16:41	04/18/17 00:49	1
Perfluoropentanoic acid (PFPeA)	ND		2.0	0.98	ng/L		04/03/17 16:41	04/18/17 00:49	1
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.78	ng/L		04/03/17 16:41	04/18/17 00:49	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.79	ng/L		04/03/17 16:41	04/18/17 00:49	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.74	ng/L		04/03/17 16:41	04/18/17 00:49	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.65	ng/L		04/03/17 16:41	04/18/17 00:49	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.44	ng/L		04/03/17 16:41	04/18/17 00:49	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	0.74	ng/L		04/03/17 16:41	04/18/17 00:49	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.58	ng/L		04/03/17 16:41	04/18/17 00:49	1
Perfluorotridecanoic Acid (PFTriA)	ND		2.0	0.55	ng/L		04/03/17 16:41	04/18/17 00:49	1
Perfluorotetradecanoic acid (PFTeA)	0.65	J B	2.0	0.20	ng/L		04/03/17 16:41	04/18/17 00:49	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	0.14	J	2.0	0.12	ng/L		04/03/17 16:41	04/18/17 00:49	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		2.0	0.67	ng/L		04/03/17 16:41	04/18/17 00:49	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.91	ng/L		04/03/17 16:41	04/18/17 00:49	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.86	ng/L		04/03/17 16:41	04/18/17 00:49	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		2.0	0.71	ng/L		04/03/17 16:41	04/18/17 00:49	1
Perfluorodecanesulfonic acid (PFDS)	ND		2.0	1.2	ng/L		04/03/17 16:41	04/18/17 00:49	1
Perfluorooctane Sulfonate (PFOS)	ND		2.0	1.3	ng/L		04/03/17 16:41	04/18/17 00:49	1
Perfluorooctane Sulfonamide (FOSA)	ND		2.0	0.63	ng/L		04/03/17 16:41	04/18/17 00:49	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C8 FOSA	3	*	25 - 150				04/03/17 16:41	04/18/17 00:49	1
13C4 PFBA	48		25 - 150				04/03/17 16:41	04/18/17 00:49	1
13C2 PFHxA	114		25 - 150				04/03/17 16:41	04/18/17 00:49	1
13C4 PFOA	129		25 - 150				04/03/17 16:41	04/18/17 00:49	1
13C5 PFNA	109		25 - 150				04/03/17 16:41	04/18/17 00:49	1
13C2 PFDA	107		25 - 150				04/03/17 16:41	04/18/17 00:49	1
13C2 PFUnA	123		25 - 150				04/03/17 16:41	04/18/17 00:49	1
13C2 PFDoA	103		25 - 150				04/03/17 16:41	04/18/17 00:49	1
18O2 PFHxS	136		25 - 150				04/03/17 16:41	04/18/17 00:49	1
13C4 PFOS	133		25 - 150				04/03/17 16:41	04/18/17 00:49	1
13C4-PFHpA	131		25 - 150				04/03/17 16:41	04/18/17 00:49	1
13C5-PFPeA	91		25 - 150				04/03/17 16:41	04/18/17 00:49	1

Client Sample Results

Client: Michigan Dept. of Environmental Quality
 Project/Site: Wurtsmith - 3500058

TestAmerica Job ID: 320-26906-1

Client Sample ID: AR-MW-3 35-40

Lab Sample ID: 320-26906-6

Date Collected: 03/21/17 00:00

Matrix: Water

Date Received: 03/25/17 09:40

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	0.78	J	1.9	0.44	ng/L		04/03/17 16:41	04/18/17 00:56	1
Perfluoropentanoic acid (PFPeA)	ND		1.9	0.96	ng/L		04/03/17 16:41	04/18/17 00:56	1
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.76	ng/L		04/03/17 16:41	04/18/17 00:56	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.78	ng/L		04/03/17 16:41	04/18/17 00:56	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.73	ng/L		04/03/17 16:41	04/18/17 00:56	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.63	ng/L		04/03/17 16:41	04/18/17 00:56	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.43	ng/L		04/03/17 16:41	04/18/17 00:56	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.73	ng/L		04/03/17 16:41	04/18/17 00:56	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.57	ng/L		04/03/17 16:41	04/18/17 00:56	1
Perfluorotridecanoic Acid (PFTriA)	ND		1.9	0.53	ng/L		04/03/17 16:41	04/18/17 00:56	1
Perfluorotetradecanoic acid (PFTeA)	0.95	J B	1.9	0.19	ng/L		04/03/17 16:41	04/18/17 00:56	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	ND		1.9	0.12	ng/L		04/03/17 16:41	04/18/17 00:56	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		1.9	0.65	ng/L		04/03/17 16:41	04/18/17 00:56	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.89	ng/L		04/03/17 16:41	04/18/17 00:56	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.84	ng/L		04/03/17 16:41	04/18/17 00:56	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.9	0.69	ng/L		04/03/17 16:41	04/18/17 00:56	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.9	1.2	ng/L		04/03/17 16:41	04/18/17 00:56	1
Perfluorooctane Sulfonate (PFOS)	ND		1.9	1.2	ng/L		04/03/17 16:41	04/18/17 00:56	1
Perfluorooctane Sulfonamide (FOSA)	ND		1.9	0.62	ng/L		04/03/17 16:41	04/18/17 00:56	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 FOSA	1	*	25 - 150				04/03/17 16:41	04/18/17 00:56	1
13C4 PFBA	23	*	25 - 150				04/03/17 16:41	04/18/17 00:56	1
13C2 PFHxA	68		25 - 150				04/03/17 16:41	04/18/17 00:56	1
13C4 PFOA	85		25 - 150				04/03/17 16:41	04/18/17 00:56	1
13C5 PFNA	75		25 - 150				04/03/17 16:41	04/18/17 00:56	1
13C2 PFDA	73		25 - 150				04/03/17 16:41	04/18/17 00:56	1
13C2 PFUnA	77		25 - 150				04/03/17 16:41	04/18/17 00:56	1
13C2 PFDoA	67		25 - 150				04/03/17 16:41	04/18/17 00:56	1
18O2 PFHxS	81		25 - 150				04/03/17 16:41	04/18/17 00:56	1
13C4 PFOS	79		25 - 150				04/03/17 16:41	04/18/17 00:56	1
13C4-PFHpA	87		25 - 150				04/03/17 16:41	04/18/17 00:56	1
13C5-PFPeA	54		25 - 150				04/03/17 16:41	04/18/17 00:56	1

Client Sample Results

Client: Michigan Dept. of Environmental Quality
 Project/Site: Wurtsmith - 3500058

TestAmerica Job ID: 320-26906-1

Client Sample ID: AR-MW-3 45-50

Lab Sample ID: 320-26906-7

Date Collected: 03/21/17 00:00

Matrix: Water

Date Received: 03/25/17 09:40

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	1.1	J	1.9	0.44	ng/L		04/03/17 16:41	04/18/17 01:04	1
Perfluoropentanoic acid (PFPeA)	ND		1.9	0.95	ng/L		04/03/17 16:41	04/18/17 01:04	1
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.75	ng/L		04/03/17 16:41	04/18/17 01:04	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.77	ng/L		04/03/17 16:41	04/18/17 01:04	1
Perfluorooctanoic acid (PFOA)	0.91	J	1.9	0.72	ng/L		04/03/17 16:41	04/18/17 01:04	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.63	ng/L		04/03/17 16:41	04/18/17 01:04	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.42	ng/L		04/03/17 16:41	04/18/17 01:04	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.72	ng/L		04/03/17 16:41	04/18/17 01:04	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.56	ng/L		04/03/17 16:41	04/18/17 01:04	1
Perfluorotridecanoic Acid (PFTriA)	ND		1.9	0.53	ng/L		04/03/17 16:41	04/18/17 01:04	1
Perfluorotetradecanoic acid (PFTeA)	0.68	J B	1.9	0.19	ng/L		04/03/17 16:41	04/18/17 01:04	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	ND		1.9	0.12	ng/L		04/03/17 16:41	04/18/17 01:04	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		1.9	0.64	ng/L		04/03/17 16:41	04/18/17 01:04	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.88	ng/L		04/03/17 16:41	04/18/17 01:04	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.83	ng/L		04/03/17 16:41	04/18/17 01:04	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.9	0.68	ng/L		04/03/17 16:41	04/18/17 01:04	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.9	1.2	ng/L		04/03/17 16:41	04/18/17 01:04	1
Perfluorooctane Sulfonate (PFOS)	ND		1.9	1.2	ng/L		04/03/17 16:41	04/18/17 01:04	1
Perfluorooctane Sulfonamide (FOSA)	ND		1.9	0.61	ng/L		04/03/17 16:41	04/18/17 01:04	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 FOSA	3	*	25 - 150				04/03/17 16:41	04/18/17 01:04	1
13C4 PFBA	35		25 - 150				04/03/17 16:41	04/18/17 01:04	1
13C2 PFHxA	97		25 - 150				04/03/17 16:41	04/18/17 01:04	1
13C4 PFOA	117		25 - 150				04/03/17 16:41	04/18/17 01:04	1
13C5 PFNA	106		25 - 150				04/03/17 16:41	04/18/17 01:04	1
13C2 PFDA	107		25 - 150				04/03/17 16:41	04/18/17 01:04	1
13C2 PFUnA	120		25 - 150				04/03/17 16:41	04/18/17 01:04	1
13C2 PFDoA	103		25 - 150				04/03/17 16:41	04/18/17 01:04	1
18O2 PFHxS	108		25 - 150				04/03/17 16:41	04/18/17 01:04	1
13C4 PFOS	111		25 - 150				04/03/17 16:41	04/18/17 01:04	1
13C4-PFHpA	114		25 - 150				04/03/17 16:41	04/18/17 01:04	1
13C5-PFPeA	76		25 - 150				04/03/17 16:41	04/18/17 01:04	1

Client Sample Results

Client: Michigan Dept. of Environmental Quality
 Project/Site: Wurtsmith - 3500058

TestAmerica Job ID: 320-26906-1

Client Sample ID: AR-MW-4 15-20

Lab Sample ID: 320-26906-8

Date Collected: 03/21/17 00:00

Matrix: Water

Date Received: 03/25/17 09:40

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	0.51	J	1.9	0.43	ng/L		04/03/17 16:41	04/18/17 01:11	1
Perfluoropentanoic acid (PFPeA)	ND		1.9	0.94	ng/L		04/03/17 16:41	04/18/17 01:11	1
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.74	ng/L		04/03/17 16:41	04/18/17 01:11	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.76	ng/L		04/03/17 16:41	04/18/17 01:11	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.71	ng/L		04/03/17 16:41	04/18/17 01:11	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.62	ng/L		04/03/17 16:41	04/18/17 01:11	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.42	ng/L		04/03/17 16:41	04/18/17 01:11	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.71	ng/L		04/03/17 16:41	04/18/17 01:11	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.55	ng/L		04/03/17 16:41	04/18/17 01:11	1
Perfluorotridecanoic Acid (PFTriA)	ND		1.9	0.52	ng/L		04/03/17 16:41	04/18/17 01:11	1
Perfluorotetradecanoic acid (PFTeA)	0.67	J B	1.9	0.19	ng/L		04/03/17 16:41	04/18/17 01:11	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	ND		1.9	0.12	ng/L		04/03/17 16:41	04/18/17 01:11	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		1.9	0.64	ng/L		04/03/17 16:41	04/18/17 01:11	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.87	ng/L		04/03/17 16:41	04/18/17 01:11	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.82	ng/L		04/03/17 16:41	04/18/17 01:11	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.9	0.67	ng/L		04/03/17 16:41	04/18/17 01:11	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.9	1.1	ng/L		04/03/17 16:41	04/18/17 01:11	1
Perfluorooctane Sulfonate (PFOS)	ND		1.9	1.2	ng/L		04/03/17 16:41	04/18/17 01:11	1
Perfluorooctane Sulfonamide (FOSA)	ND		1.9	0.60	ng/L		04/03/17 16:41	04/18/17 01:11	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 FOSA	2	*	25 - 150				04/03/17 16:41	04/18/17 01:11	1
13C4 PFBA	49		25 - 150				04/03/17 16:41	04/18/17 01:11	1
13C2 PFHxA	105		25 - 150				04/03/17 16:41	04/18/17 01:11	1
13C4 PFOA	125		25 - 150				04/03/17 16:41	04/18/17 01:11	1
13C5 PFNA	111		25 - 150				04/03/17 16:41	04/18/17 01:11	1
13C2 PFDA	114		25 - 150				04/03/17 16:41	04/18/17 01:11	1
13C2 PFUnA	123		25 - 150				04/03/17 16:41	04/18/17 01:11	1
13C2 PFDoA	109		25 - 150				04/03/17 16:41	04/18/17 01:11	1
18O2 PFHxS	139		25 - 150				04/03/17 16:41	04/18/17 01:11	1
13C4 PFOS	131		25 - 150				04/03/17 16:41	04/18/17 01:11	1
13C4-PFHpA	118		25 - 150				04/03/17 16:41	04/18/17 01:11	1
13C5-PFPeA	87		25 - 150				04/03/17 16:41	04/18/17 01:11	1

Client Sample Results

Client: Michigan Dept. of Environmental Quality
 Project/Site: Wurtsmith - 3500058

TestAmerica Job ID: 320-26906-1

Client Sample ID: AR-MW-4 25-30

Lab Sample ID: 320-26906-9

Date Collected: 03/21/17 00:00

Matrix: Water

Date Received: 03/25/17 09:40

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		1.9	0.43	ng/L		04/03/17 16:41	04/18/17 01:26	1
Perfluoropentanoic acid (PFPeA)	ND		1.9	0.92	ng/L		04/03/17 16:41	04/18/17 01:26	1
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.73	ng/L		04/03/17 16:41	04/18/17 01:26	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.74	ng/L		04/03/17 16:41	04/18/17 01:26	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.69	ng/L		04/03/17 16:41	04/18/17 01:26	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.61	ng/L		04/03/17 16:41	04/18/17 01:26	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.41	ng/L		04/03/17 16:41	04/18/17 01:26	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.69	ng/L		04/03/17 16:41	04/18/17 01:26	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.54	ng/L		04/03/17 16:41	04/18/17 01:26	1
Perfluorotridecanoic Acid (PFTriA)	ND		1.9	0.51	ng/L		04/03/17 16:41	04/18/17 01:26	1
Perfluorotetradecanoic acid (PFTeA)	0.77	J B	1.9	0.18	ng/L		04/03/17 16:41	04/18/17 01:26	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	0.18	J	1.9	0.11	ng/L		04/03/17 16:41	04/18/17 01:26	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		1.9	0.62	ng/L		04/03/17 16:41	04/18/17 01:26	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.85	ng/L		04/03/17 16:41	04/18/17 01:26	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.81	ng/L		04/03/17 16:41	04/18/17 01:26	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.9	0.66	ng/L		04/03/17 16:41	04/18/17 01:26	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.9	1.1	ng/L		04/03/17 16:41	04/18/17 01:26	1
Perfluorooctane Sulfonate (PFOS)	ND		1.9	1.2	ng/L		04/03/17 16:41	04/18/17 01:26	1
Perfluorooctane Sulfonamide (FOSA)	ND		1.9	0.59	ng/L		04/03/17 16:41	04/18/17 01:26	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C8 FOSA	2	*	25 - 150				04/03/17 16:41	04/18/17 01:26	1
13C4 PFBA	56		25 - 150				04/03/17 16:41	04/18/17 01:26	1
13C2 PFHxA	111		25 - 150				04/03/17 16:41	04/18/17 01:26	1
13C4 PFOA	126		25 - 150				04/03/17 16:41	04/18/17 01:26	1
13C5 PFNA	108		25 - 150				04/03/17 16:41	04/18/17 01:26	1
13C2 PFDA	102		25 - 150				04/03/17 16:41	04/18/17 01:26	1
13C2 PFUnA	115		25 - 150				04/03/17 16:41	04/18/17 01:26	1
13C2 PFDoA	100		25 - 150				04/03/17 16:41	04/18/17 01:26	1
18O2 PFHxS	137		25 - 150				04/03/17 16:41	04/18/17 01:26	1
13C4 PFOS	133		25 - 150				04/03/17 16:41	04/18/17 01:26	1
13C4-PFHpA	121		25 - 150				04/03/17 16:41	04/18/17 01:26	1
13C5-PFPeA	93		25 - 150				04/03/17 16:41	04/18/17 01:26	1

Client Sample Results

Client: Michigan Dept. of Environmental Quality
 Project/Site: Wurtsmith - 3500058

TestAmerica Job ID: 320-26906-1

Client Sample ID: AR-MW-4 35-40

Lab Sample ID: 320-26906-10

Date Collected: 03/21/17 00:00

Matrix: Water

Date Received: 03/25/17 09:40

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	0.76	J	2.0	0.45	ng/L		04/03/17 16:41	04/18/17 01:34	1
Perfluoropentanoic acid (PFPeA)	ND		2.0	0.97	ng/L		04/03/17 16:41	04/18/17 01:34	1
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.77	ng/L		04/03/17 16:41	04/18/17 01:34	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.78	ng/L		04/03/17 16:41	04/18/17 01:34	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.73	ng/L		04/03/17 16:41	04/18/17 01:34	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.64	ng/L		04/03/17 16:41	04/18/17 01:34	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.43	ng/L		04/03/17 16:41	04/18/17 01:34	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	0.73	ng/L		04/03/17 16:41	04/18/17 01:34	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.57	ng/L		04/03/17 16:41	04/18/17 01:34	1
Perfluorotridecanoic Acid (PFTriA)	ND		2.0	0.54	ng/L		04/03/17 16:41	04/18/17 01:34	1
Perfluorotetradecanoic acid (PFTeA)	0.58	J B	2.0	0.19	ng/L		04/03/17 16:41	04/18/17 01:34	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	ND		2.0	0.12	ng/L		04/03/17 16:41	04/18/17 01:34	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		2.0	0.66	ng/L		04/03/17 16:41	04/18/17 01:34	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.90	ng/L		04/03/17 16:41	04/18/17 01:34	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.85	ng/L		04/03/17 16:41	04/18/17 01:34	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		2.0	0.70	ng/L		04/03/17 16:41	04/18/17 01:34	1
Perfluorodecanesulfonic acid (PFDS)	ND		2.0	1.2	ng/L		04/03/17 16:41	04/18/17 01:34	1
Perfluorooctane Sulfonate (PFOS)	ND		2.0	1.2	ng/L		04/03/17 16:41	04/18/17 01:34	1
Perfluorooctane Sulfonamide (FOSA)	ND		2.0	0.62	ng/L		04/03/17 16:41	04/18/17 01:34	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 FOSA	3	*	25 - 150				04/03/17 16:41	04/18/17 01:34	1
13C4 PFBA	34		25 - 150				04/03/17 16:41	04/18/17 01:34	1
13C2 PFHxA	102		25 - 150				04/03/17 16:41	04/18/17 01:34	1
13C4 PFOA	129		25 - 150				04/03/17 16:41	04/18/17 01:34	1
13C5 PFNA	114		25 - 150				04/03/17 16:41	04/18/17 01:34	1
13C2 PFDA	118		25 - 150				04/03/17 16:41	04/18/17 01:34	1
13C2 PFUnA	128		25 - 150				04/03/17 16:41	04/18/17 01:34	1
13C2 PFDoA	114		25 - 150				04/03/17 16:41	04/18/17 01:34	1
18O2 PFHxS	120		25 - 150				04/03/17 16:41	04/18/17 01:34	1
13C4 PFOS	124		25 - 150				04/03/17 16:41	04/18/17 01:34	1
13C4-PFHpA	121		25 - 150				04/03/17 16:41	04/18/17 01:34	1
13C5-PFPeA	77		25 - 150				04/03/17 16:41	04/18/17 01:34	1

Client Sample Results

Client: Michigan Dept. of Environmental Quality
 Project/Site: Wurtsmith - 3500058

TestAmerica Job ID: 320-26906-1

Client Sample ID: AR-MW-5 20-25

Lab Sample ID: 320-26906-11

Date Collected: 03/22/17 00:00

Matrix: Water

Date Received: 03/25/17 09:40

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		1.7	0.38	ng/L		04/03/17 16:41	04/18/17 01:41	1
Perfluoropentanoic acid (PFPeA)	ND		1.7	0.82	ng/L		04/03/17 16:41	04/18/17 01:41	1
Perfluorohexanoic acid (PFHxA)	ND		1.7	0.65	ng/L		04/03/17 16:41	04/18/17 01:41	1
Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.66	ng/L		04/03/17 16:41	04/18/17 01:41	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.62	ng/L		04/03/17 16:41	04/18/17 01:41	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.54	ng/L		04/03/17 16:41	04/18/17 01:41	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.36	ng/L		04/03/17 16:41	04/18/17 01:41	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.62	ng/L		04/03/17 16:41	04/18/17 01:41	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.48	ng/L		04/03/17 16:41	04/18/17 01:41	1
Perfluorotridecanoic Acid (PFTriA)	ND		1.7	0.46	ng/L		04/03/17 16:41	04/18/17 01:41	1
Perfluorotetradecanoic acid (PFTeA)	0.66	J B	1.7	0.16	ng/L		04/03/17 16:41	04/18/17 01:41	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	ND		1.7	0.10	ng/L		04/03/17 16:41	04/18/17 01:41	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		1.7	0.56	ng/L		04/03/17 16:41	04/18/17 01:41	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.7	0.76	ng/L		04/03/17 16:41	04/18/17 01:41	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.7	0.72	ng/L		04/03/17 16:41	04/18/17 01:41	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.7	0.59	ng/L		04/03/17 16:41	04/18/17 01:41	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.7	1.0	ng/L		04/03/17 16:41	04/18/17 01:41	1
Perfluorooctane Sulfonate (PFOS)	ND		1.7	1.1	ng/L		04/03/17 16:41	04/18/17 01:41	1
Perfluorooctane Sulfonamide (FOSA)	ND		1.7	0.53	ng/L		04/03/17 16:41	04/18/17 01:41	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C8 FOSA	1	*	25 - 150				04/03/17 16:41	04/18/17 01:41	1
13C4 PFBA	51		25 - 150				04/03/17 16:41	04/18/17 01:41	1
13C2 PFHxA	96		25 - 150				04/03/17 16:41	04/18/17 01:41	1
13C4 PFOA	112		25 - 150				04/03/17 16:41	04/18/17 01:41	1
13C5 PFNA	101		25 - 150				04/03/17 16:41	04/18/17 01:41	1
13C2 PFDA	101		25 - 150				04/03/17 16:41	04/18/17 01:41	1
13C2 PFUnA	118		25 - 150				04/03/17 16:41	04/18/17 01:41	1
13C2 PFDoA	101		25 - 150				04/03/17 16:41	04/18/17 01:41	1
18O2 PFHxS	138		25 - 150				04/03/17 16:41	04/18/17 01:41	1
13C4 PFOS	140		25 - 150				04/03/17 16:41	04/18/17 01:41	1
13C4-PFHpA	107		25 - 150				04/03/17 16:41	04/18/17 01:41	1
13C5-PFPeA	79		25 - 150				04/03/17 16:41	04/18/17 01:41	1

Client Sample Results

Client: Michigan Dept. of Environmental Quality
 Project/Site: Wurtsmith - 3500058

TestAmerica Job ID: 320-26906-1

Client Sample ID: AR-MW-5 30-35

Lab Sample ID: 320-26906-12

Date Collected: 03/22/17 00:00

Matrix: Water

Date Received: 03/25/17 09:40

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	0.70	J	2.0	0.45	ng/L		04/03/17 16:41	04/18/17 01:49	1
Perfluoropentanoic acid (PFPeA)	ND		2.0	0.97	ng/L		04/03/17 16:41	04/18/17 01:49	1
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.77	ng/L		04/03/17 16:41	04/18/17 01:49	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.78	ng/L		04/03/17 16:41	04/18/17 01:49	1
Perfluorooctanoic acid (PFOA)	0.86	J	2.0	0.73	ng/L		04/03/17 16:41	04/18/17 01:49	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.64	ng/L		04/03/17 16:41	04/18/17 01:49	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.43	ng/L		04/03/17 16:41	04/18/17 01:49	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	0.73	ng/L		04/03/17 16:41	04/18/17 01:49	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.57	ng/L		04/03/17 16:41	04/18/17 01:49	1
Perfluorotridecanoic Acid (PFTriA)	ND		2.0	0.54	ng/L		04/03/17 16:41	04/18/17 01:49	1
Perfluorotetradecanoic acid (PFTeA)	0.57	J B	2.0	0.19	ng/L		04/03/17 16:41	04/18/17 01:49	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	ND		2.0	0.12	ng/L		04/03/17 16:41	04/18/17 01:49	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		2.0	0.66	ng/L		04/03/17 16:41	04/18/17 01:49	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.90	ng/L		04/03/17 16:41	04/18/17 01:49	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.85	ng/L		04/03/17 16:41	04/18/17 01:49	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		2.0	0.70	ng/L		04/03/17 16:41	04/18/17 01:49	1
Perfluorodecanesulfonic acid (PFDS)	ND		2.0	1.2	ng/L		04/03/17 16:41	04/18/17 01:49	1
Perfluorooctane Sulfonate (PFOS)	ND		2.0	1.2	ng/L		04/03/17 16:41	04/18/17 01:49	1
Perfluorooctane Sulfonamide (FOSA)	ND		2.0	0.62	ng/L		04/03/17 16:41	04/18/17 01:49	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 FOSA	7	*	25 - 150				04/03/17 16:41	04/18/17 01:49	1
13C4 PFBA	67		25 - 150				04/03/17 16:41	04/18/17 01:49	1
13C2 PFHxA	127		25 - 150				04/03/17 16:41	04/18/17 01:49	1
13C4 PFOA	155	*	25 - 150				04/03/17 16:41	04/18/17 01:49	1
13C5 PFNA	133		25 - 150				04/03/17 16:41	04/18/17 01:49	1
13C2 PFDA	137		25 - 150				04/03/17 16:41	04/18/17 01:49	1
13C2 PFUnA	161	*	25 - 150				04/03/17 16:41	04/18/17 01:49	1
13C2 PFDoA	135		25 - 150				04/03/17 16:41	04/18/17 01:49	1
18O2 PFHxS	144		25 - 150				04/03/17 16:41	04/18/17 01:49	1
13C4 PFOS	147		25 - 150				04/03/17 16:41	04/18/17 01:49	1
13C4-PFHpA	147		25 - 150				04/03/17 16:41	04/18/17 01:49	1
13C5-PFPeA	109		25 - 150				04/03/17 16:41	04/18/17 01:49	1

Client Sample Results

Client: Michigan Dept. of Environmental Quality
 Project/Site: Wurtsmith - 3500058

TestAmerica Job ID: 320-26906-1

Client Sample ID: AR-MW-5 40-45

Lab Sample ID: 320-26906-13

Date Collected: 03/22/17 00:00

Matrix: Water

Date Received: 03/25/17 09:40

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	1.0	J	2.0	0.46	ng/L		04/03/17 16:41	04/18/17 01:56	1
Perfluoropentanoic acid (PFPeA)	ND		2.0	0.99	ng/L		04/03/17 16:41	04/18/17 01:56	1
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.79	ng/L		04/03/17 16:41	04/18/17 01:56	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.81	ng/L		04/03/17 16:41	04/18/17 01:56	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.75	ng/L		04/03/17 16:41	04/18/17 01:56	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.66	ng/L		04/03/17 16:41	04/18/17 01:56	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.44	ng/L		04/03/17 16:41	04/18/17 01:56	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	0.75	ng/L		04/03/17 16:41	04/18/17 01:56	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.59	ng/L		04/03/17 16:41	04/18/17 01:56	1
Perfluorotridecanoic Acid (PFTriA)	ND		2.0	0.55	ng/L		04/03/17 16:41	04/18/17 01:56	1
Perfluorotetradecanoic acid (PFTeA)	0.76	J B	2.0	0.20	ng/L		04/03/17 16:41	04/18/17 01:56	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	ND		2.0	0.12	ng/L		04/03/17 16:41	04/18/17 01:56	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		2.0	0.68	ng/L		04/03/17 16:41	04/18/17 01:56	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.92	ng/L		04/03/17 16:41	04/18/17 01:56	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.87	ng/L		04/03/17 16:41	04/18/17 01:56	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		2.0	0.72	ng/L		04/03/17 16:41	04/18/17 01:56	1
Perfluorodecanesulfonic acid (PFDS)	ND		2.0	1.2	ng/L		04/03/17 16:41	04/18/17 01:56	1
Perfluorooctane Sulfonate (PFOS)	ND		2.0	1.3	ng/L		04/03/17 16:41	04/18/17 01:56	1
Perfluorooctane Sulfonamide (FOSA)	ND		2.0	0.64	ng/L		04/03/17 16:41	04/18/17 01:56	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 FOSA	3	*	25 - 150				04/03/17 16:41	04/18/17 01:56	1
13C4 PFBA	37		25 - 150				04/03/17 16:41	04/18/17 01:56	1
13C2 PFHxA	92		25 - 150				04/03/17 16:41	04/18/17 01:56	1
13C4 PFOA	107		25 - 150				04/03/17 16:41	04/18/17 01:56	1
13C5 PFNA	96		25 - 150				04/03/17 16:41	04/18/17 01:56	1
13C2 PFDA	96		25 - 150				04/03/17 16:41	04/18/17 01:56	1
13C2 PFUnA	105		25 - 150				04/03/17 16:41	04/18/17 01:56	1
13C2 PFDoA	90		25 - 150				04/03/17 16:41	04/18/17 01:56	1
18O2 PFHxS	104		25 - 150				04/03/17 16:41	04/18/17 01:56	1
13C4 PFOS	100		25 - 150				04/03/17 16:41	04/18/17 01:56	1
13C4-PFHpA	104		25 - 150				04/03/17 16:41	04/18/17 01:56	1
13C5-PFPeA	71		25 - 150				04/03/17 16:41	04/18/17 01:56	1

Client Sample Results

Client: Michigan Dept. of Environmental Quality
 Project/Site: Wurtsmith - 3500058

TestAmerica Job ID: 320-26906-1

Client Sample ID: 3266 ALEXANDER - OUTSIDE

Lab Sample ID: 320-26906-14

Date Collected: 03/21/17 00:00

Matrix: Water

Date Received: 03/25/17 09:40

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	2.9		2.0	0.46	ng/L		04/03/17 16:41	04/18/17 02:04	1
Perfluoropentanoic acid (PFPeA)	ND		2.0	0.99	ng/L		04/03/17 16:41	04/18/17 02:04	1
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.79	ng/L		04/03/17 16:41	04/18/17 02:04	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.80	ng/L		04/03/17 16:41	04/18/17 02:04	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.75	ng/L		04/03/17 16:41	04/18/17 02:04	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.66	ng/L		04/03/17 16:41	04/18/17 02:04	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.44	ng/L		04/03/17 16:41	04/18/17 02:04	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	0.75	ng/L		04/03/17 16:41	04/18/17 02:04	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.59	ng/L		04/03/17 16:41	04/18/17 02:04	1
Perfluorotridecanoic Acid (PFTriA)	ND		2.0	0.55	ng/L		04/03/17 16:41	04/18/17 02:04	1
Perfluorotetradecanoic acid (PFTeA)	0.41	J B	2.0	0.20	ng/L		04/03/17 16:41	04/18/17 02:04	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	ND		2.0	0.12	ng/L		04/03/17 16:41	04/18/17 02:04	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		2.0	0.67	ng/L		04/03/17 16:41	04/18/17 02:04	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.92	ng/L		04/03/17 16:41	04/18/17 02:04	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.87	ng/L		04/03/17 16:41	04/18/17 02:04	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		2.0	0.71	ng/L		04/03/17 16:41	04/18/17 02:04	1
Perfluorodecanesulfonic acid (PFDS)	ND		2.0	1.2	ng/L		04/03/17 16:41	04/18/17 02:04	1
Perfluorooctane Sulfonate (PFOS)	ND		2.0	1.3	ng/L		04/03/17 16:41	04/18/17 02:04	1
Perfluorooctane Sulfonamide (FOSA)	ND		2.0	0.64	ng/L		04/03/17 16:41	04/18/17 02:04	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 FOSA	5	*	25 - 150				04/03/17 16:41	04/18/17 02:04	1
13C4 PFBA	26		25 - 150				04/03/17 16:41	04/18/17 02:04	1
13C2 PFHxA	86		25 - 150				04/03/17 16:41	04/18/17 02:04	1
13C4 PFOA	123		25 - 150				04/03/17 16:41	04/18/17 02:04	1
13C5 PFNA	117		25 - 150				04/03/17 16:41	04/18/17 02:04	1
13C2 PFDA	116		25 - 150				04/03/17 16:41	04/18/17 02:04	1
13C2 PFUnA	128		25 - 150				04/03/17 16:41	04/18/17 02:04	1
13C2 PFDoA	99		25 - 150				04/03/17 16:41	04/18/17 02:04	1
18O2 PFHxS	135		25 - 150				04/03/17 16:41	04/18/17 02:04	1
13C4 PFOS	129		25 - 150				04/03/17 16:41	04/18/17 02:04	1
13C4-PFHpA	145		25 - 150				04/03/17 16:41	04/18/17 02:04	1
13C5-PFPeA	65		25 - 150				04/03/17 16:41	04/18/17 02:04	1

Client Sample Results

Client: Michigan Dept. of Environmental Quality
 Project/Site: Wurtsmith - 3500058

TestAmerica Job ID: 320-26906-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 320-26906-15

Date Collected: 03/20/17 00:00

Matrix: Water

Date Received: 03/25/17 09:40

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	0.58	J	1.9	0.44	ng/L		03/31/17 18:14	04/03/17 19:29	1
Perfluoropentanoic acid (PFPeA)	ND		1.9	0.95	ng/L		03/31/17 18:14	04/03/17 19:29	1
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.75	ng/L		03/31/17 18:14	04/03/17 19:29	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.77	ng/L		03/31/17 18:14	04/03/17 19:29	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.72	ng/L		03/31/17 18:14	04/03/17 19:29	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.63	ng/L		03/31/17 18:14	04/03/17 19:29	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.42	ng/L		03/31/17 18:14	04/03/17 19:29	1
Perfluoroundecanoic acid (PFUnA)	ND *		1.9	0.72	ng/L		03/31/17 18:14	04/03/17 19:29	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.56	ng/L		03/31/17 18:14	04/03/17 19:29	1
Perfluorotridecanoic Acid (PFTriA)	ND		1.9	0.53	ng/L		03/31/17 18:14	04/03/17 19:29	1
Perfluorotetradecanoic acid (PFTeA)	0.50	J B *	1.9	0.19	ng/L		03/31/17 18:14	04/03/17 19:29	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	ND		1.9	0.12	ng/L		03/31/17 18:14	04/03/17 19:29	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		1.9	0.64	ng/L		03/31/17 18:14	04/03/17 19:29	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.88	ng/L		03/31/17 18:14	04/03/17 19:29	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.83	ng/L		03/31/17 18:14	04/03/17 19:29	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.9	0.68	ng/L		03/31/17 18:14	04/03/17 19:29	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.9	1.2	ng/L		03/31/17 18:14	04/03/17 19:29	1
Perfluorooctane Sulfonate (PFOS)	ND		1.9	1.2	ng/L		03/31/17 18:14	04/03/17 19:29	1
Perfluorooctane Sulfonamide (FOSA)	ND		1.9	0.61	ng/L		03/31/17 18:14	04/03/17 19:29	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 FOSA	54		25 - 150				03/31/17 18:14	04/03/17 19:29	1
13C4 PFBA	109		25 - 150				03/31/17 18:14	04/03/17 19:29	1
13C2 PFHxA	105		25 - 150				03/31/17 18:14	04/03/17 19:29	1
13C4 PFOA	117		25 - 150				03/31/17 18:14	04/03/17 19:29	1
13C5 PFNA	111		25 - 150				03/31/17 18:14	04/03/17 19:29	1
13C2 PFDA	114		25 - 150				03/31/17 18:14	04/03/17 19:29	1
13C2 PFUnA	121		25 - 150				03/31/17 18:14	04/03/17 19:29	1
13C2 PFDoA	103		25 - 150				03/31/17 18:14	04/03/17 19:29	1
18O2 PFHxS	103		25 - 150				03/31/17 18:14	04/03/17 19:29	1
13C4 PFOS	97		25 - 150				03/31/17 18:14	04/03/17 19:29	1
13C4-PFHpA	112		25 - 150				03/31/17 18:14	04/03/17 19:29	1
13C5-PFPeA	110		25 - 150				03/31/17 18:14	04/03/17 19:29	1

Isotope Dilution Summary

Client: Michigan Dept. of Environmental Quality
 Project/Site: Wurtsmith - 3500058

TestAmerica Job ID: 320-26906-1

Method: 537 (modified) - Perfluorinated Hydrocarbons

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	3C8 FOS/	3C4 PFB/	3C2 PFHx	3C4 PFO/	3C5 PFN/	3C2 PFD/	3C2 PFUn	3C2 PFDo
		(25-150)	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)
320-26906-1	AR-MW-2 20-25'	2 *	55	109	124	105	97	100	94
320-26906-2	AR-MW-2 30-35'	4 *	36	111	144	125	132	134	121
320-26906-3	AR-MW-2 40-45'	4 *	36	93	115	107	105	117	100
320-26906-4	AR-MW-3 15-20	2 *	52	107	127	114	122	141	124
320-26906-5	AR-MW-3 25-30	3 *	48	114	129	109	107	123	103
320-26906-6	AR-MW-3 35-40	1 *	23 *	68	85	75	73	77	67
320-26906-7	AR-MW-3 45-50	3 *	35	97	117	106	107	120	103
320-26906-8	AR-MW-4 15-20	2 *	49	105	125	111	114	123	109
320-26906-9	AR-MW-4 25-30	2 *	56	111	126	108	102	115	100
320-26906-10	AR-MW-4 35-40	3 *	34	102	129	114	118	128	114
320-26906-11	AR-MW-5 20-25	1 *	51	96	112	101	101	118	101
320-26906-12	AR-MW-5 30-35	7 *	67	127	155 *	133	137	161 *	135
320-26906-13	AR-MW-5 40-45	3 *	37	92	107	96	96	105	90
320-26906-14	3266 ALEXANDER - OUTSIDE	5 *	26	86	123	117	116	128	99
320-26906-15	TRIP BLANK	54	109	105	117	111	114	121	103
LCS 320-157617/2-A	Lab Control Sample	58	119	117	131	123	133	141	122
LCS 320-157881/2-A	Lab Control Sample	27	81	83	87	81	80	85	69
LCSD 320-157617/3-A	Lab Control Sample Dup	21 *	88	85	93	89	93	98	90
LCSD 320-157881/3-A	Lab Control Sample Dup	46	132	134	136	132	128	142	119
MB 320-157617/1-A	Method Blank	37	112	108	124	114	115	125	107
MB 320-157881/1-A	Method Blank	67	147	154 *	165 *	146	155 *	177 *	147

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	3O2 PFHx	3C4 PFO/	3C4-PFHp	3C5-PFPe
		(25-150)	(25-150)	(25-150)	(25-150)
320-26906-1	AR-MW-2 20-25'	137	131	120	90
320-26906-2	AR-MW-2 30-35'	132	133	132	87
320-26906-3	AR-MW-2 40-45'	106	107	110	79
320-26906-4	AR-MW-3 15-20	132	129	122	86
320-26906-5	AR-MW-3 25-30	136	133	131	91
320-26906-6	AR-MW-3 35-40	81	79	87	54
320-26906-7	AR-MW-3 45-50	108	111	114	76
320-26906-8	AR-MW-4 15-20	139	131	118	87
320-26906-9	AR-MW-4 25-30	137	133	121	93
320-26906-10	AR-MW-4 35-40	120	124	121	77
320-26906-11	AR-MW-5 20-25	138	140	107	79
320-26906-12	AR-MW-5 30-35	144	147	147	109
320-26906-13	AR-MW-5 40-45	104	100	104	71
320-26906-14	3266 ALEXANDER - OUTSIDE	135	129	145	65
320-26906-15	TRIP BLANK	103	97	112	110
LCS 320-157617/2-A	Lab Control Sample	112	111	124	132
LCS 320-157881/2-A	Lab Control Sample	81	74	92	81
LCSD 320-157617/3-A	Lab Control Sample Dup	84	82	91	91
LCSD 320-157881/3-A	Lab Control Sample Dup	125	120	146	135
MB 320-157617/1-A	Method Blank	100	101	115	118
MB 320-157881/1-A	Method Blank	139	135	171 *	143

Surrogate Legend

13C8 FOSA = 13C8 FOSA
 13C4 PFBA = 13C4 PFBA

Isotope Dilution Summary

Client: Michigan Dept. of Environmental Quality
Project/Site: Wurtsmith - 3500058

TestAmerica Job ID: 320-26906-1

13C2 PFHxA = 13C2 PFHxA
13C4 PFOA = 13C4 PFOA
13C5 PFNA = 13C5 PFNA
13C2 PFDA = 13C2 PFDA
13C2 PFUnA = 13C2 PFUnA
13C2 PFDoA = 13C2 PFDoA
18O2 PFHxS = 18O2 PFHxS
13C4 PFOS = 13C4 PFOS
13C4-PFHpA = 13C4-PFHpA
13C5-PFPeA = 13C5-PFPeA

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16

QC Sample Results

Client: Michigan Dept. of Environmental Quality
Project/Site: Wurtsmith - 3500058

TestAmerica Job ID: 320-26906-1

Method: 537 (modified) - Perfluorinated Hydrocarbons

Lab Sample ID: MB 320-157617/1-A

Matrix: Water

Analysis Batch: 157831

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 157617

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		2.0	0.46	ng/L		03/31/17 18:14	04/03/17 19:07	1
Perfluoropentanoic acid (PFPeA)	ND		2.0	0.99	ng/L		03/31/17 18:14	04/03/17 19:07	1
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.79	ng/L		03/31/17 18:14	04/03/17 19:07	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.80	ng/L		03/31/17 18:14	04/03/17 19:07	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.75	ng/L		03/31/17 18:14	04/03/17 19:07	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.65	ng/L		03/31/17 18:14	04/03/17 19:07	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.44	ng/L		03/31/17 18:14	04/03/17 19:07	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	0.75	ng/L		03/31/17 18:14	04/03/17 19:07	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.58	ng/L		03/31/17 18:14	04/03/17 19:07	1
Perfluorotridecanoic Acid (PFTriA)	ND		2.0	0.55	ng/L		03/31/17 18:14	04/03/17 19:07	1
Perfluorotetradecanoic acid (PFTeA)	0.330	J	2.0	0.20	ng/L		03/31/17 18:14	04/03/17 19:07	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	ND		2.0	0.12	ng/L		03/31/17 18:14	04/03/17 19:07	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		2.0	0.67	ng/L		03/31/17 18:14	04/03/17 19:07	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.92	ng/L		03/31/17 18:14	04/03/17 19:07	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.87	ng/L		03/31/17 18:14	04/03/17 19:07	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		2.0	0.71	ng/L		03/31/17 18:14	04/03/17 19:07	1
Perfluorodecanesulfonic acid (PFDS)	ND		2.0	1.2	ng/L		03/31/17 18:14	04/03/17 19:07	1
Perfluorooctane Sulfonate (PFOS)	ND		2.0	1.3	ng/L		03/31/17 18:14	04/03/17 19:07	1
Perfluorooctane Sulfonamide (FOSA)	ND		2.0	0.64	ng/L		03/31/17 18:14	04/03/17 19:07	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	37		25 - 150	03/31/17 18:14	04/03/17 19:07	1
13C4 PFBA	112		25 - 150	03/31/17 18:14	04/03/17 19:07	1
13C2 PFHxA	108		25 - 150	03/31/17 18:14	04/03/17 19:07	1
13C4 PFOA	124		25 - 150	03/31/17 18:14	04/03/17 19:07	1
13C5 PFNA	114		25 - 150	03/31/17 18:14	04/03/17 19:07	1
13C2 PFDA	115		25 - 150	03/31/17 18:14	04/03/17 19:07	1
13C2 PFUnA	125		25 - 150	03/31/17 18:14	04/03/17 19:07	1
13C2 PFDoA	107		25 - 150	03/31/17 18:14	04/03/17 19:07	1
18O2 PFHxS	100		25 - 150	03/31/17 18:14	04/03/17 19:07	1
13C4 PFOS	101		25 - 150	03/31/17 18:14	04/03/17 19:07	1
13C4-PFHpA	115		25 - 150	03/31/17 18:14	04/03/17 19:07	1
13C5-PFPeA	118		25 - 150	03/31/17 18:14	04/03/17 19:07	1

Lab Sample ID: LCS 320-157617/2-A

Matrix: Water

Analysis Batch: 157831

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 157617

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Perfluorobutanoic acid (PFBA)	40.0	39.6		ng/L		99	74 - 138
Perfluoropentanoic acid (PFPeA)	40.0	33.2		ng/L		83	69 - 134
Perfluorohexanoic acid (PFHxA)	40.0	36.3		ng/L		91	70 - 136
Perfluoroheptanoic acid (PFHpA)	40.0	36.3		ng/L		91	63 - 135
Perfluorooctanoic acid (PFOA)	40.0	34.3		ng/L		86	63 - 141
Perfluorononanoic acid (PFNA)	40.0	36.9		ng/L		92	71 - 140
Perfluorodecanoic acid (PFDA)	40.0	34.4		ng/L		86	66 - 141

TestAmerica Sacramento

QC Sample Results

Client: Michigan Dept. of Environmental Quality
 Project/Site: Wurtsmith - 3500058

TestAmerica Job ID: 320-26906-1

Method: 537 (modified) - Perfluorinated Hydrocarbons (Continued)

Lab Sample ID: LCS 320-157617/2-A
Matrix: Water
Analysis Batch: 157831

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 157617

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Perfluoroundecanoic acid (PFUnA)	40.0	31.0		ng/L		77	68 - 139
Perfluorododecanoic acid (PFDoA)	40.0	35.3		ng/L		88	71 - 139
Perfluorotridecanoic Acid (PFTriA)	40.0	36.9		ng/L		92	51 - 139
Perfluorotetradecanoic acid (PFTeA)	40.0	41.9		ng/L		105	47 - 130
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	34.7		ng/L		87	50 - 150
Perfluoro-n-octadecanoic acid (PFODA)	40.0	39.6		ng/L		99	50 - 150
Perfluorobutanesulfonic acid (PFBS)	35.4	36.8		ng/L		104	55 - 147
Perfluorohexanesulfonic acid (PFHxS)	36.4	33.8		ng/L		93	58 - 138
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	39.1		ng/L		103	32 - 170
Perfluorodecanesulfonic acid (PFDS)	38.6	35.4		ng/L		92	35 - 157
Perfluorooctane Sulfonate (PFOS)	37.1	34.9		ng/L		94	47 - 162
Perfluorooctane Sulfonamide (FOSA)	40.0	36.6		ng/L		91	59 - 163

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C8 FOSA	58		25 - 150
13C4 PFBA	119		25 - 150
13C2 PFHxA	117		25 - 150
13C4 PFOA	131		25 - 150
13C5 PFNA	123		25 - 150
13C2 PFDA	133		25 - 150
13C2 PFUnA	141		25 - 150
13C2 PFDoA	122		25 - 150
18O2 PFHxS	112		25 - 150
13C4 PFOS	111		25 - 150
13C4-PFHpA	124		25 - 150
13C5-PFPeA	132		25 - 150

Lab Sample ID: LCSD 320-157617/3-A
Matrix: Water
Analysis Batch: 157831

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 157617

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)	40.0	49.4		ng/L		124	74 - 138	22	30
Perfluoropentanoic acid (PFPeA)	40.0	43.4		ng/L		109	69 - 134	27	30
Perfluorohexanoic acid (PFHxA)	40.0	46.2		ng/L		115	70 - 136	24	30
Perfluoroheptanoic acid (PFHpA)	40.0	46.0		ng/L		115	63 - 135	24	30
Perfluorooctanoic acid (PFOA)	40.0	43.9		ng/L		110	63 - 141	25	30
Perfluorononanoic acid (PFNA)	40.0	47.1		ng/L		118	71 - 140	24	30
Perfluorodecanoic acid (PFDA)	40.0	45.0		ng/L		112	66 - 141	27	30

TestAmerica Sacramento

QC Sample Results

Client: Michigan Dept. of Environmental Quality
 Project/Site: Wurtsmith - 3500058

TestAmerica Job ID: 320-26906-1

Method: 537 (modified) - Perfluorinated Hydrocarbons (Continued)

Lab Sample ID: LCSD 320-157617/3-A

Matrix: Water

Analysis Batch: 157831

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 157617

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluoroundecanoic acid (PFUnA)	40.0	42.7	*	ng/L		107	68 - 139	32	30
Perfluorododecanoic acid (PFDoA)	40.0	44.9		ng/L		112	71 - 139	24	30
Perfluorotridecanoic Acid (PFTriA)	40.0	49.6		ng/L		124	51 - 139	29	30
Perfluorotetradecanoic acid (PFTeA)	40.0	55.2	*	ng/L		138	47 - 130	27	30
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	45.8		ng/L		114	50 - 150	28	30
Perfluoro-n-octadecanoic acid (PFODA)	40.0	49.4		ng/L		124	50 - 150	22	30
Perfluorobutanesulfonic acid (PFBS)	35.4	43.9		ng/L		124	55 - 147	18	30
Perfluorohexanesulfonic acid (PFHxS)	36.4	40.1		ng/L		110	58 - 138	17	30
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	45.5		ng/L		120	32 - 170	15	30
Perfluorodecanesulfonic acid (PFDS)	38.6	41.9		ng/L		109	35 - 157	17	30
Perfluorooctane Sulfonate (PFOS)	37.1	41.7		ng/L		112	47 - 162	18	30
Perfluorooctane Sulfonamide (FOSA)	40.0	49.1		ng/L		123	59 - 163	29	30

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C8 FOSA	21	*	25 - 150
13C4 PFBA	88		25 - 150
13C2 PFHxA	85		25 - 150
13C4 PFOA	93		25 - 150
13C5 PFNA	89		25 - 150
13C2 PFDA	93		25 - 150
13C2 PFUnA	98		25 - 150
13C2 PFDoA	90		25 - 150
18O2 PFHxS	84		25 - 150
13C4 PFOS	82		25 - 150
13C4-PFHpA	91		25 - 150
13C5-PFPeA	91		25 - 150

Lab Sample ID: MB 320-157881/1-A

Matrix: Water

Analysis Batch: 160096

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 157881

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		2.0	0.46	ng/L		04/03/17 16:41	04/17/17 23:49	1
Perfluoropentanoic acid (PFPeA)	ND		2.0	0.99	ng/L		04/03/17 16:41	04/17/17 23:49	1
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.79	ng/L		04/03/17 16:41	04/17/17 23:49	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.80	ng/L		04/03/17 16:41	04/17/17 23:49	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.75	ng/L		04/03/17 16:41	04/17/17 23:49	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.65	ng/L		04/03/17 16:41	04/17/17 23:49	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.44	ng/L		04/03/17 16:41	04/17/17 23:49	1

TestAmerica Sacramento

QC Sample Results

Client: Michigan Dept. of Environmental Quality
Project/Site: Wurtsmith - 3500058

TestAmerica Job ID: 320-26906-1

Method: 537 (modified) - Perfluorinated Hydrocarbons (Continued)

Lab Sample ID: MB 320-157881/1-A

Matrix: Water

Analysis Batch: 160096

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 157881

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroundecanoic acid (PFUnA)	ND		2.0	0.75	ng/L		04/03/17 16:41	04/17/17 23:49	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.58	ng/L		04/03/17 16:41	04/17/17 23:49	1
Perfluorotridecanoic Acid (PFTriA)	ND		2.0	0.55	ng/L		04/03/17 16:41	04/17/17 23:49	1
Perfluorotetradecanoic acid (PFTeA)	0.236	J	2.0	0.20	ng/L		04/03/17 16:41	04/17/17 23:49	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	ND		2.0	0.12	ng/L		04/03/17 16:41	04/17/17 23:49	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		2.0	0.67	ng/L		04/03/17 16:41	04/17/17 23:49	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.92	ng/L		04/03/17 16:41	04/17/17 23:49	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.87	ng/L		04/03/17 16:41	04/17/17 23:49	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		2.0	0.71	ng/L		04/03/17 16:41	04/17/17 23:49	1
Perfluorodecanesulfonic acid (PFDS)	ND		2.0	1.2	ng/L		04/03/17 16:41	04/17/17 23:49	1
Perfluorooctane Sulfonate (PFOS)	ND		2.0	1.3	ng/L		04/03/17 16:41	04/17/17 23:49	1
Perfluorooctane Sulfonamide (FOSA)	ND		2.0	0.64	ng/L		04/03/17 16:41	04/17/17 23:49	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	67		25 - 150	04/03/17 16:41	04/17/17 23:49	1
13C4 PFBA	147		25 - 150	04/03/17 16:41	04/17/17 23:49	1
13C2 PFHxA	154 *		25 - 150	04/03/17 16:41	04/17/17 23:49	1
13C4 PFOA	165 *		25 - 150	04/03/17 16:41	04/17/17 23:49	1
13C5 PFNA	146		25 - 150	04/03/17 16:41	04/17/17 23:49	1
13C2 PFDA	155 *		25 - 150	04/03/17 16:41	04/17/17 23:49	1
13C2 PFUnA	177 *		25 - 150	04/03/17 16:41	04/17/17 23:49	1
13C2 PFDoA	147		25 - 150	04/03/17 16:41	04/17/17 23:49	1
18O2 PFHxS	139		25 - 150	04/03/17 16:41	04/17/17 23:49	1
13C4 PFOS	135		25 - 150	04/03/17 16:41	04/17/17 23:49	1
13C4-PFHpA	171 *		25 - 150	04/03/17 16:41	04/17/17 23:49	1
13C5-PFPeA	143		25 - 150	04/03/17 16:41	04/17/17 23:49	1

Lab Sample ID: LCS 320-157881/2-A

Matrix: Water

Analysis Batch: 160096

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 157881

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Perfluorobutanoic acid (PFBA)	40.0	37.0		ng/L		93	74 - 138
Perfluoropentanoic acid (PFPeA)	40.0	33.7		ng/L		84	69 - 134
Perfluorohexanoic acid (PFHxA)	40.0	35.3		ng/L		88	70 - 136
Perfluoroheptanoic acid (PFHpA)	40.0	34.5		ng/L		86	63 - 135
Perfluorooctanoic acid (PFOA)	40.0	32.1		ng/L		80	63 - 141
Perfluorononanoic acid (PFNA)	40.0	29.5		ng/L		74	71 - 140
Perfluorodecanoic acid (PFDA)	40.0	35.5		ng/L		89	66 - 141
Perfluoroundecanoic acid (PFUnA)	40.0	30.4		ng/L		76	68 - 139
Perfluorododecanoic acid (PFDoA)	40.0	35.1		ng/L		88	71 - 139
Perfluorotridecanoic Acid (PFTriA)	40.0	34.8		ng/L		87	51 - 139
Perfluorotetradecanoic acid (PFTeA)	40.0	36.0		ng/L		90	47 - 130

TestAmerica Sacramento

QC Sample Results

Client: Michigan Dept. of Environmental Quality
 Project/Site: Wurtsmith - 3500058

TestAmerica Job ID: 320-26906-1

Method: 537 (modified) - Perfluorinated Hydrocarbons (Continued)

Lab Sample ID: LCS 320-157881/2-A
Matrix: Water
Analysis Batch: 160096

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 157881

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	35.6		ng/L		89	50 - 150
Perfluoro-n-octadecanoic acid (PFODA)	40.0	33.8		ng/L		84	50 - 150
Perfluorobutanesulfonic acid (PFBS)	35.4	32.7		ng/L		92	55 - 147
Perfluorohexanesulfonic acid (PFHxS)	36.4	29.1		ng/L		80	58 - 138
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	36.3		ng/L		95	32 - 170
Perfluorodecanesulfonic acid (PFDS)	38.6	31.2		ng/L		81	35 - 157
Perfluorooctane Sulfonate (PFOS)	37.1	31.3		ng/L		84	47 - 162
Perfluorooctane Sulfonamide (FOSA)	40.0	32.0		ng/L		80	59 - 163

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C8 FOSA	27		25 - 150
13C4 PFBA	81		25 - 150
13C2 PFHxA	83		25 - 150
13C4 PFOA	87		25 - 150
13C5 PFNA	81		25 - 150
13C2 PFDA	80		25 - 150
13C2 PFUnA	85		25 - 150
13C2 PFDoA	69		25 - 150
18O2 PFHxS	81		25 - 150
13C4 PFOS	74		25 - 150
13C4-PFHpA	92		25 - 150
13C5-PFPeA	81		25 - 150

Lab Sample ID: LCSD 320-157881/3-A
Matrix: Water
Analysis Batch: 160096

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 157881

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)	40.0	38.8		ng/L		97	74 - 138	5	30
Perfluoropentanoic acid (PFPeA)	40.0	35.6		ng/L		89	69 - 134	5	30
Perfluorohexanoic acid (PFHxA)	40.0	36.3		ng/L		91	70 - 136	3	30
Perfluoroheptanoic acid (PFHpA)	40.0	37.2		ng/L		93	63 - 135	8	30
Perfluorooctanoic acid (PFOA)	40.0	33.8		ng/L		84	63 - 141	5	30
Perfluorononanoic acid (PFNA)	40.0	31.2		ng/L		78	71 - 140	6	30
Perfluorodecanoic acid (PFDA)	40.0	38.4		ng/L		96	66 - 141	8	30
Perfluoroundecanoic acid (PFUnA)	40.0	32.3		ng/L		81	68 - 139	6	30
Perfluorododecanoic acid (PFDoA)	40.0	35.8		ng/L		90	71 - 139	2	30
Perfluorotridecanoic Acid (PFTriA)	40.0	36.7		ng/L		92	51 - 139	5	30
Perfluorotetradecanoic acid (PFTeA)	40.0	38.6		ng/L		97	47 - 130	7	30

TestAmerica Sacramento

QC Sample Results

Client: Michigan Dept. of Environmental Quality
 Project/Site: Wurtsmith - 3500058

TestAmerica Job ID: 320-26906-1

Method: 537 (modified) - Perfluorinated Hydrocarbons (Continued)

Lab Sample ID: LCSD 320-157881/3-A

Matrix: Water

Analysis Batch: 160096

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 157881

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	33.0		ng/L		83	50 - 150	8	30
Perfluoro-n-octadecanoic acid (PFODA)	40.0	31.8		ng/L		80	50 - 150	6	30
Perfluorobutanesulfonic acid (PFBS)	35.4	35.1		ng/L		99	55 - 147	7	30
Perfluorohexanesulfonic acid (PFHxS)	36.4	32.0		ng/L		88	58 - 138	10	30
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	35.6		ng/L		94	32 - 170	2	30
Perfluorodecanesulfonic acid (PFDS)	38.6	36.0		ng/L		93	35 - 157	14	30
Perfluorooctane Sulfonate (PFOS)	37.1	34.2		ng/L		92	47 - 162	9	30
Perfluorooctane Sulfonamide (FOSA)	40.0	33.7		ng/L		84	59 - 163	5	30

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C8 FOSA	46		25 - 150
13C4 PFBA	132		25 - 150
13C2 PFHxA	134		25 - 150
13C4 PFOA	136		25 - 150
13C5 PFNA	132		25 - 150
13C2 PFDA	128		25 - 150
13C2 PFUnA	142		25 - 150
13C2 PFDoA	119		25 - 150
18O2 PFHxS	125		25 - 150
13C4 PFOS	120		25 - 150
13C4-PFHpA	146		25 - 150
13C5-PFPeA	135		25 - 150

QC Association Summary

Client: Michigan Dept. of Environmental Quality
 Project/Site: Wurtsmith - 3500058

TestAmerica Job ID: 320-26906-1

LCMS

Prep Batch: 157617

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-26906-15	TRIP BLANK	Total/NA	Water	3535	
MB 320-157617/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-157617/2-A	Lab Control Sample	Total/NA	Water	3535	
LCS 320-157617/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 157831

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-26906-15	TRIP BLANK	Total/NA	Water	537 (modified)	157617
MB 320-157617/1-A	Method Blank	Total/NA	Water	537 (modified)	157617
LCS 320-157617/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	157617
LCS 320-157617/3-A	Lab Control Sample Dup	Total/NA	Water	537 (modified)	157617

Prep Batch: 157881

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-26906-1	AR-MW-2 20-25'	Total/NA	Water	3535	
320-26906-2	AR-MW-2 30-35'	Total/NA	Water	3535	
320-26906-3	AR-MW-2 40-45'	Total/NA	Water	3535	
320-26906-4	AR-MW-3 15-20	Total/NA	Water	3535	
320-26906-5	AR-MW-3 25-30	Total/NA	Water	3535	
320-26906-6	AR-MW-3 35-40	Total/NA	Water	3535	
320-26906-7	AR-MW-3 45-50	Total/NA	Water	3535	
320-26906-8	AR-MW-4 15-20	Total/NA	Water	3535	
320-26906-9	AR-MW-4 25-30	Total/NA	Water	3535	
320-26906-10	AR-MW-4 35-40	Total/NA	Water	3535	
320-26906-11	AR-MW-5 20-25	Total/NA	Water	3535	
320-26906-12	AR-MW-5 30-35	Total/NA	Water	3535	
320-26906-13	AR-MW-5 40-45	Total/NA	Water	3535	
320-26906-14	3266 ALEXANDER - OUTSIDE	Total/NA	Water	3535	
MB 320-157881/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-157881/2-A	Lab Control Sample	Total/NA	Water	3535	
LCS 320-157881/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 160096

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-26906-1	AR-MW-2 20-25'	Total/NA	Water	537 (modified)	157881
320-26906-2	AR-MW-2 30-35'	Total/NA	Water	537 (modified)	157881
320-26906-3	AR-MW-2 40-45'	Total/NA	Water	537 (modified)	157881
320-26906-4	AR-MW-3 15-20	Total/NA	Water	537 (modified)	157881
320-26906-5	AR-MW-3 25-30	Total/NA	Water	537 (modified)	157881
320-26906-6	AR-MW-3 35-40	Total/NA	Water	537 (modified)	157881
320-26906-7	AR-MW-3 45-50	Total/NA	Water	537 (modified)	157881
320-26906-8	AR-MW-4 15-20	Total/NA	Water	537 (modified)	157881
320-26906-9	AR-MW-4 25-30	Total/NA	Water	537 (modified)	157881
320-26906-10	AR-MW-4 35-40	Total/NA	Water	537 (modified)	157881
320-26906-11	AR-MW-5 20-25	Total/NA	Water	537 (modified)	157881
320-26906-12	AR-MW-5 30-35	Total/NA	Water	537 (modified)	157881
320-26906-13	AR-MW-5 40-45	Total/NA	Water	537 (modified)	157881
320-26906-14	3266 ALEXANDER - OUTSIDE	Total/NA	Water	537 (modified)	157881
MB 320-157881/1-A	Method Blank	Total/NA	Water	537 (modified)	157881
LCS 320-157881/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	157881
LCS 320-157881/3-A	Lab Control Sample Dup	Total/NA	Water	537 (modified)	157881

TestAmerica Sacramento

Lab Chronicle

Client: Michigan Dept. of Environmental Quality
Project/Site: Wurtsmith - 3500058

TestAmerica Job ID: 320-26906-1

Client Sample ID: AR-MW-2 20-25'

Date Collected: 03/21/17 00:00

Date Received: 03/25/17 09:40

Lab Sample ID: 320-26906-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			268.4 mL	0.50 mL	157881	04/03/17 16:41	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1			160096	04/18/17 00:19	SBC	TAL SAC

Client Sample ID: AR-MW-2 30-35'

Date Collected: 03/21/17 00:00

Date Received: 03/25/17 09:40

Lab Sample ID: 320-26906-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			231.7 mL	0.50 mL	157881	04/03/17 16:41	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1			160096	04/18/17 00:26	SBC	TAL SAC

Client Sample ID: AR-MW-2 40-45'

Date Collected: 03/21/17 00:00

Date Received: 03/25/17 09:40

Lab Sample ID: 320-26906-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			246.2 mL	0.50 mL	157881	04/03/17 16:41	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1			160096	04/18/17 00:34	SBC	TAL SAC

Client Sample ID: AR-MW-3 15-20

Date Collected: 03/21/17 00:00

Date Received: 03/25/17 09:40

Lab Sample ID: 320-26906-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			246.3 mL	0.50 mL	157881	04/03/17 16:41	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1			160096	04/18/17 00:41	SBC	TAL SAC

Client Sample ID: AR-MW-3 25-30

Date Collected: 03/21/17 00:00

Date Received: 03/25/17 09:40

Lab Sample ID: 320-26906-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			252.5 mL	0.50 mL	157881	04/03/17 16:41	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1			160096	04/18/17 00:49	SBC	TAL SAC

Client Sample ID: AR-MW-3 35-40

Date Collected: 03/21/17 00:00

Date Received: 03/25/17 09:40

Lab Sample ID: 320-26906-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			257.5 mL	0.50 mL	157881	04/03/17 16:41	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1			160096	04/18/17 00:56	SBC	TAL SAC

TestAmerica Sacramento

Lab Chronicle

Client: Michigan Dept. of Environmental Quality
Project/Site: Wurtsmith - 3500058

TestAmerica Job ID: 320-26906-1

Client Sample ID: AR-MW-3 45-50

Lab Sample ID: 320-26906-7

Date Collected: 03/21/17 00:00

Matrix: Water

Date Received: 03/25/17 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			260.9 mL	0.50 mL	157881	04/03/17 16:41	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1			160096	04/18/17 01:04	SBC	TAL SAC

Client Sample ID: AR-MW-4 15-20

Lab Sample ID: 320-26906-8

Date Collected: 03/21/17 00:00

Matrix: Water

Date Received: 03/25/17 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			264.2 mL	0.50 mL	157881	04/03/17 16:41	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1			160096	04/18/17 01:11	SBC	TAL SAC

Client Sample ID: AR-MW-4 25-30

Lab Sample ID: 320-26906-9

Date Collected: 03/21/17 00:00

Matrix: Water

Date Received: 03/25/17 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			269.2 mL	0.50 mL	157881	04/03/17 16:41	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1			160096	04/18/17 01:26	SBC	TAL SAC

Client Sample ID: AR-MW-4 35-40

Lab Sample ID: 320-26906-10

Date Collected: 03/21/17 00:00

Matrix: Water

Date Received: 03/25/17 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			255.9 mL	0.50 mL	157881	04/03/17 16:41	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1			160096	04/18/17 01:34	SBC	TAL SAC

Client Sample ID: AR-MW-5 20-25

Lab Sample ID: 320-26906-11

Date Collected: 03/22/17 00:00

Matrix: Water

Date Received: 03/25/17 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			302.1 mL	0.50 mL	157881	04/03/17 16:41	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1			160096	04/18/17 01:41	SBC	TAL SAC

Client Sample ID: AR-MW-5 30-35

Lab Sample ID: 320-26906-12

Date Collected: 03/22/17 00:00

Matrix: Water

Date Received: 03/25/17 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			255.6 mL	0.50 mL	157881	04/03/17 16:41	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1			160096	04/18/17 01:49	SBC	TAL SAC

TestAmerica Sacramento

Lab Chronicle

Client: Michigan Dept. of Environmental Quality
 Project/Site: WurtSmith - 3500058

TestAmerica Job ID: 320-26906-1

Client Sample ID: AR-MW-5 40-45

Lab Sample ID: 320-26906-13

Date Collected: 03/22/17 00:00

Matrix: Water

Date Received: 03/25/17 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			248.7 mL	0.50 mL	157881	04/03/17 16:41	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1			160096	04/18/17 01:56	SBC	TAL SAC

Client Sample ID: 3266 ALEXANDER - OUTSIDE

Lab Sample ID: 320-26906-14

Date Collected: 03/21/17 00:00

Matrix: Water

Date Received: 03/25/17 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			249.5 mL	0.50 mL	157881	04/03/17 16:41	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1			160096	04/18/17 02:04	SBC	TAL SAC

Client Sample ID: TRIP BLANK

Lab Sample ID: 320-26906-15

Date Collected: 03/20/17 00:00

Matrix: Water

Date Received: 03/25/17 09:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			261.4 mL	0.5 mL	157617	03/31/17 18:14	VPM	TAL SAC
Total/NA	Analysis	537 (modified)		1			157831	04/03/17 19:29	SBC	TAL SAC

Laboratory References:

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Accreditation/Certification Summary

Client: Michigan Dept. of Environmental Quality
 Project/Site: Wurtsmith - 3500058

TestAmerica Job ID: 320-26906-1

Laboratory: TestAmerica Sacramento

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

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska (UST)	State Program	10	UST-055	12-18-17
Arizona	State Program	9	AZ0708	08-11-17
Arkansas DEQ	State Program	6	88-0691	06-17-17
California	State Program	9	2897	01-31-18
Colorado	State Program	8	CA00044	08-31-17
Connecticut	State Program	1	PH-0691	06-30-17
Florida	NELAP	4	E87570	06-30-17
Hawaii	State Program	9	N/A	01-29-18
Illinois	NELAP	5	200060	03-17-18
Kansas	NELAP	7	E-10375	10-31-17
L-A-B	DoD ELAP		L2468	01-20-18
Louisiana	NELAP	6	30612	06-30-17
Maine	State Program	1	CA0004	04-18-18
Michigan	State Program	5	9947	01-31-18
Nevada	State Program	9	CA00044	07-31-17
New Hampshire	NELAP	1	2997	04-18-18
New Jersey	NELAP	2	CA005	06-30-17
New York	NELAP	2	11666	04-01-18
Oregon	NELAP	10	4040	01-28-18
Pennsylvania	NELAP	3	68-01272	03-31-18
Texas	NELAP	6	T104704399	07-31-17
US Fish & Wildlife	Federal		LE148388-0	10-31-17
USDA	Federal		P330-11-00436	12-30-17
USEPA UCMR	Federal	1	CA00044	11-06-18
Utah	NELAP	8	CA00044	02-28-18
Virginia	NELAP	3	460278	03-14-18
Washington	State Program	10	C581	05-05-17
West Virginia (DW)	State Program	3	9930C	12-31-17
Wyoming	State Program	8	8TMS-L	01-29-17 *

Laboratory: TestAmerica Canton

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

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	2927	04-30-17 *
Connecticut	State Program	1	PH-0590	12-31-17
Florida	NELAP	4	E87225	06-30-17 *
Illinois	NELAP	5	200004	07-31-17 *
Kansas	NELAP	7	E-10336	01-31-18
Kentucky (UST)	State Program	4	58	02-23-18
Kentucky (WW)	State Program	4	98016	12-31-17
Minnesota	NELAP	5	039-999-348	12-31-17
Minnesota (Petrofund)	State Program	1	3506	07-31-17 *
Nevada	State Program	9	OH-000482008A	07-31-17 *
New Jersey	NELAP	2	OH001	06-30-17 *
New York	NELAP	2	10975	03-31-18
Ohio VAP	State Program	5	CL0024	09-14-17
Oregon	NELAP	10	4062	02-23-18
Pennsylvania	NELAP	3	68-00340	08-31-17
Texas	NELAP	6	T104704517-15-5	08-31-17

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

TestAmerica Sacramento

Accreditation/Certification Summary

Client: Michigan Dept. of Environmental Quality
Project/Site: Wurtsmith - 3500058

TestAmerica Job ID: 320-26906-1

Laboratory: TestAmerica Canton (Continued)

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

Authority	Program	EPA Region	Identification Number	Expiration Date
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-17
Washington	State Program	10	C971	01-12-18
West Virginia DEP	State Program	3	210	12-31-16 *
Wisconsin	State Program	5	999518190	08-31-17

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






Analysis Request Sheet

Lab Work Order Number:
 Project Name: **F-41 PFC Contamination**
 Matrix: **WATER**

Site Code/Project Number: **35000153**
 AY: **17**
 CC Email 1: **pincumbej**
 Project TAT Days:
 Sample Collector: **Jeff Pincumbe**

Dept-Division-District: **DEQ-RRD-Saginaw/Bay**
 Index: **44031**
 CC Email 2: **shireyb**
 Project Due Date:
 Sample Collector Phone: **517-335-6418**

State Project Manager: **Mike Jury**
 PCA: **30740**
 CC Email 3:
 Contract Firm:
 Contract Firm Primary Contact:
 State Project Manager Email: **jury1**
 Project: **457189**
 Overflow Lab Choice 1:
 Accept Analysis hold time codes:
 Primary Contact Phone:
 State Project Manager Phone: **989-894-6255**
 Phase: **00**
 Overflow Lab Choice 2:
 Primary Contact Phone:

Lab Use Only	Field Sample Identification	Collection Date	Collection Time	Container Count	Comments
1	AR-MW-2 20-25'	3-21-17		2	 320-26906 Chain of Custody <i>pic</i>
2	AR-MW-2 30-35'	3-21-17			
3	AR-MW-2 40-45'	3-21-17			
4	AR-MW-3 15-20	3-21-17			
5	AR-MW-3 25-30	3-21-17			
6	AR-MW-3 35-40	3-21-17			
7	AR-MW-3 45-50	3-21-17			
8	AR-MW-4 15-20	3-21-17			
9	AR-MW-4 25-30	3-21-17			
10	AR-MW-4 35-40	3-21-17			

ORGANIC CHEMISTRY	MAD - DISSOLVED METALS	MA - TOTAL METALS	GENERAL CHEMISTRY
VOA - Volatile Organic Acidic Volatiles - Full List 1 2 3 4 5 6 7 8 9 10 BTEX/MTBE/TMB only 1 2 3 4 5 6 7 8 9 10 Chlorinated only 1 2 3 4 5 6 7 8 9 10 GRO 1 2 3 4 5 6 7 8 9 10 1,4 Dioxane 1 2 3 4 5 6 7 8 9 10 METH - Methane, Ethane, Ethene Methane, Ethane, Ethene 1 2 3 4 5 6 7 8 9 10 ON - Pesticides, PCBs Pesticides & PCBs 1 2 3 4 5 6 7 8 9 10 Pesticides only 1 2 3 4 5 6 7 8 9 10 PCBs only 1 2 3 4 5 6 7 8 9 10 Toxaphene 1 2 3 4 5 6 7 8 9 10 Chlordane 1 2 3 4 5 6 7 8 9 10 BNA - Base Neutral Acids BNAs 1 2 3 4 5 6 7 8 9 10 Benzidines 1 2 3 4 5 6 7 8 9 10 PNAs only 1 2 3 4 5 6 7 8 9 10 BNs only 1 2 3 4 5 6 7 8 9 10 Acids only 1 2 3 4 5 6 7 8 9 10 Organic Specialty Requests Library search - Volatiles 1 2 3 4 5 6 7 8 9 10 Library search - SemiVols 1 2 3 4 5 6 7 8 9 10 Finger Print 1 2 3 4 5 6 7 8 9 10 DRO / ORO 1 2 3 4 5 6 7 8 9 10 METALS CHEMISTRY PACKAGES OpMemo2 - Total 1 2 3 4 5 6 7 8 9 10 OpMemo2 - Dissolved 1 2 3 4 5 6 7 8 9 10 (Sb,As,Ba,Be,Cd,Cr,Cu,Co,Fe,Pb,Mn,Hg,Mo,Ni,Se,Ag,Tl,V,Zn) Michigan10 - Total 1 2 3 4 5 6 7 8 9 10 Michigan10 - Dissolved 1 2 3 4 5 6 7 8 9 10 (As,Ba,Cd,Cr,Cu,Pb,Hg,Se,Ag,Zn)	Diss - Silver - Ag 1 2 3 4 5 6 7 8 9 10 Diss - Aluminum - Al 1 2 3 4 5 6 7 8 9 10 Diss - Arsenic - As 1 2 3 4 5 6 7 8 9 10 Diss - Boron - B 1 2 3 4 5 6 7 8 9 10 Diss - Barium - Ba 1 2 3 4 5 6 7 8 9 10 Diss - Beryllium - Be 1 2 3 4 5 6 7 8 9 10 Diss - Cadmium - Cd 1 2 3 4 5 6 7 8 9 10 Diss - Cobalt - Co 1 2 3 4 5 6 7 8 9 10 Diss - Chromium - Cr 1 2 3 4 5 6 7 8 9 10 Diss - Copper - Cu 1 2 3 4 5 6 7 8 9 10 Diss - Iron - Fe 1 2 3 4 5 6 7 8 9 10 Diss - Mercury - Hg 1 2 3 4 5 6 7 8 9 10 Diss - Lithium - Li 1 2 3 4 5 6 7 8 9 10 Diss - Manganese - Mn 1 2 3 4 5 6 7 8 9 10 Diss - Molybdenum - Mo 1 2 3 4 5 6 7 8 9 10 Diss - Nickel - Ni 1 2 3 4 5 6 7 8 9 10 Diss - Lead - Pb 1 2 3 4 5 6 7 8 9 10 Diss - Antimony - Sb 1 2 3 4 5 6 7 8 9 10 Diss - Selenium - Se 1 2 3 4 5 6 7 8 9 10 Diss - Strontium - Sr 1 2 3 4 5 6 7 8 9 10 Diss - Titanium - Ti 1 2 3 4 5 6 7 8 9 10 Diss - Thallium - Tl 1 2 3 4 5 6 7 8 9 10 Diss - Uranium - U 1 2 3 4 5 6 7 8 9 10 Diss - Vanadium - V 1 2 3 4 5 6 7 8 9 10 Diss - Zinc - Zn 1 2 3 4 5 6 7 8 9 10 Diss - Calcium - Ca 1 2 3 4 5 6 7 8 9 10 Diss - Potassium - K 1 2 3 4 5 6 7 8 9 10 Diss - Magnesium - Mg 1 2 3 4 5 6 7 8 9 10 Diss - Sodium - Na 1 2 3 4 5 6 7 8 9 10 Diss - Hardness - Ca, Mg 1 2 3 4 5 6 7 8 9 10 MD - Metals Dissolved Lab Filtration 1 2 3 4 5 6 7 8 9 10	Silver - Ag 1 2 3 4 5 6 7 8 9 10 Aluminum - Al 1 2 3 4 5 6 7 8 9 10 Arsenic - As 1 2 3 4 5 6 7 8 9 10 Boron - B 1 2 3 4 5 6 7 8 9 10 Barium - Ba 1 2 3 4 5 6 7 8 9 10 Beryllium - Be 1 2 3 4 5 6 7 8 9 10 Cadmium - Cd 1 2 3 4 5 6 7 8 9 10 Cobalt - Co 1 2 3 4 5 6 7 8 9 10 Chromium - Cr 1 2 3 4 5 6 7 8 9 10 Copper - Cu 1 2 3 4 5 6 7 8 9 10 Iron - Fe 1 2 3 4 5 6 7 8 9 10 Mercury - Hg 1 2 3 4 5 6 7 8 9 10 Lithium - Li 1 2 3 4 5 6 7 8 9 10 Manganese - Mn 1 2 3 4 5 6 7 8 9 10 Molybdenum - Mo 1 2 3 4 5 6 7 8 9 10 Nickel - Ni 1 2 3 4 5 6 7 8 9 10 Lead - Pb 1 2 3 4 5 6 7 8 9 10 Antimony - Sb 1 2 3 4 5 6 7 8 9 10 Selenium - Se 1 2 3 4 5 6 7 8 9 10 Strontium - Sr 1 2 3 4 5 6 7 8 9 10 Titanium - Ti 1 2 3 4 5 6 7 8 9 10 Thallium - Tl 1 2 3 4 5 6 7 8 9 10 Uranium - U 1 2 3 4 5 6 7 8 9 10 Vanadium - V 1 2 3 4 5 6 7 8 9 10 Zinc - Zn 1 2 3 4 5 6 7 8 9 10 Calcium - Ca 1 2 3 4 5 6 7 8 9 10 Potassium - K 1 2 3 4 5 6 7 8 9 10 Magnesium - Mg 1 2 3 4 5 6 7 8 9 10 Sodium - Na 1 2 3 4 5 6 7 8 9 10 Hardness - Ca, Mg 1 2 3 4 5 6 7 8 9 10 LHG - Low Level Mercury Mercury Low Level - Hg 1 2 3 4 5 6 7 8 9 10	GB Total Cyanide - CN 1 2 3 4 5 6 7 8 9 10 GB Amenable Cyanide - CN 1 2 3 4 5 6 7 8 9 10 GCN Available Cyanide - CN 1 2 3 4 5 6 7 8 9 10 CA Chlorophyll 1 2 3 4 5 6 7 8 9 10 GN Ortho Phosphate - OP 1 2 3 4 5 6 7 8 9 10 GN Nitrite - NO ₂ 1 2 3 4 5 6 7 8 9 10 GN Nitrate - NO ₃ (Calc.) 1 2 3 4 5 6 7 8 9 10 GN Suspended Solids - SS 1 2 3 4 5 6 7 8 9 10 GN Dissolved Solids - TDS 1 2 3 4 5 6 7 8 9 10 MN Diss Solids - TDS (Calc.) 1 2 3 4 5 6 7 8 9 10 GN Turbidity 1 2 3 4 5 6 7 8 9 10 MN Total Alkalinity 1 2 3 4 5 6 7 8 9 10 MN Bicarb/Carb Alkalinity (includes Total Alkalinity) 1 2 3 4 5 6 7 8 9 10 MN Chloride - Cl 1 2 3 4 5 6 7 8 9 10 MN Fluoride - F 1 2 3 4 5 6 7 8 9 10 MN Sulfate - SO ₄ 1 2 3 4 5 6 7 8 9 10 MN Chromium 6 - Cr+6 1 2 3 4 5 6 7 8 9 10 MN Conductivity 1 2 3 4 5 6 7 8 9 10 MN pH 1 2 3 4 5 6 7 8 9 10 GA Chem Oxyg Dem - COD 1 2 3 4 5 6 7 8 9 10 GA Diss Org Carbon - DOC (FF) 1 2 3 4 5 6 7 8 9 10 (Field - Filtered & Preserved) GN Diss Org Carbon - DOC (LF) 1 2 3 4 5 6 7 8 9 10 (Lab - Filtered & Preserved) GA Total Org Carbon - TOC 1 2 3 4 5 6 7 8 9 10 GA Ammonia - NH ₃ 1 2 3 4 5 6 7 8 9 10 GA Nitrate+Nitrite - NO ₃ +NO ₂ 1 2 3 4 5 6 7 8 9 10 GA Kjeldahl Nitrogen - KN 1 2 3 4 5 6 7 8 9 10 GA Total Phosphorus - TP 1 2 3 4 5 6 7 8 9 10

Chain of Custody	Relinquished by	Received By	Date / Time
	Print Name & Org: Jeff Pincumbe - MDEQ Signature: <i>Jeff Pincumbe</i>	DALE CORSI - DLZ <i>Dale Corsi</i>	3/24/17 1021
	Print Name & Org: DALE CORSI - DLZ Signature: <i>Dale Corsi</i>	MARK JORDAN <i>Mark Jordan</i>	3/24/17 1504
	Print Name & Org: MARK JORDAN 3/24/17 1515 Signature: <i>Mark Jordan</i>	Cathy Free <i>Cathy Free</i>	3-25-17 940 1.30



Analysis Request Sheet

SAFETY INFORMATION

(MUST BE COMPLETED PRIOR TO SAMPLE SUBMITTAL)

- Are samples expected to contain cyanide (CN)..... YES NO
- Are samples expected to be flammable..... YES NO
- Are samples acidic prior to preservation (pH < 2)..... YES NO
- Are samples caustic prior to preservation (pH > 12)..... YES NO
- Are samples expected to be Biohazardous..... YES NO
- Are samples expected to be reactive with water or acid..... YES NO
- Are samples expected to be radioactive..... YES NO
- Are samples expected to contain dioxin..... YES NO
- Are samples expected to be explosive..... YES NO
- Were samples pre-preserved..... YES NO

List additional suspected sample hazard information below

MDEQ PRESERVATIVE TRACKING NUMBERS

VOA - HCL	<input type="text"/>	CA - MgCO3	<input type="text"/>
VOA - MeOH	<input type="text"/>	MA/MAD - HNO3	<input type="text"/>
GA - H2SO4	<input type="text"/>	GCN - NaOH	<input type="text"/>
GB - NaOH	<input type="text"/>	GCN - PbCO3	<input type="text"/>





Analysis Request Sheet

Lab Work Order Number

Project Name

Matrix

F-41 PFC Contamination

WATER

Site Code/Project Number

AY

CC Email 1

Project TAT Days

Sample Collector

35000153

17

pincumbej

Jeff Pincumbe

Dept-Division-District

Index

CC Email 2

Project Due Date

Sample Collector Phone

DEQ-RRD-Saginaw/Bay

44031

shireyb

517-335-6418

State Project Manager

PCA

CC Email 3

Contract Firm

Mike Jury

30740

Accept Analysis hold time codes

Contract Firm Primary Contact

State Project Manager Email

Project

Overflow Lab Choice 1

Primary Contact Phone

jurym1

457189

Accept Analysis hold time codes

Primary Contact Phone

State Project Manager Phone

Phase

Overflow Lab Choice 2

989-894-6255

00

Lab Use Only	Field Sample Identification	Collection Date	Collection Time	Container Count	Comments
1	AR-MW-5 20-25	3-22-17		2	pfc
2	AR-MW-5 30-35	3-22-17			
3	AR-MW-5 40-45	3-22-17			
4	3266 ALEXA-DEW - 0075,IDE	3-21-17			
5	TRIP BLANK	3-20-17			
6					
7					
8					
9					
10					

ORGANIC CHEMISTRY	MAD - DISSOLVED METALS	MA - TOTAL METALS	GENERAL CHEMISTRY
VOA - Volatile Organic Acidic	Diss - Silver - Ag	Silver - Ag	GB Total Cyanide - CN
Volatiles - Full List	Diss - Aluminum - Al	Aluminum - Al	GB Amenable Cyanide - CN
BTEX/MTBE/TMB only	Diss - Arsenic - As	Arsenic - As	GCN Available Cyanide - CN
Chlorinated only	Diss - Boron - B	Boron - B	CA Chlorophyll
GRO	Diss - Barium - Ba	Barium - Ba	GN Ortho Phosphate - OP
1,4 Dioxane	Diss - Beryllium - Be	Beryllium - Be	GN Nitrite - NO ₂
METH - Methane, Ethane, Ethene	Diss - Cadmium - Cd	Cadmium - Cd	GN Nitrate - NO ₃ (Calc.)
Methane, Ethane, Ethene	Diss - Cobalt - Co	Cobalt - Co	GN Suspended Solids - SS
ON - Pesticides, PCBs	Diss - Chromium - Cr	Chromium - Cr	GN Dissolved Solids - TDS
Pesticides & PCBs	Diss - Copper - Cu	Copper - Cu	MN Diss Solids - TDS (Calc.)
Pesticides only	Diss - Iron - Fe	Iron - Fe	GN Turbidity
PCBs only	Diss - Mercury - Hg	Mercury - Hg	MN Total Alkalinity
Toxaphene	Diss - Lithium - Li	Lithium - Li	MN Bicarb/Carb Alkalinity
Chlordane	Diss - Manganese - Mn	Manganese - Mn	(includes Total Alkalinity)
BNA - Base Neutral Acids	Diss - Molybdenum - Mo	Molybdenum - Mo	MN Chloride - Cl
BNAs	Diss - Nickel - Ni	Nickel - Ni	MN Fluoride - F
Benzenidines	Diss - Lead - Pb	Lead - Pb	MN Sulfate - SO ₄
PNAs only	Diss - Antimony - Sb	Antimony - Sb	MN Chromium 6+ - Cr+6
BNs only	Diss - Selenium - Se	Selenium - Se	MN Conductivity
Acids only	Diss - Strontium - Sr	Strontium - Sr	MN pH
Organic Specialty Requests	Diss - Titanium - Ti	Titanium - Ti	GA Chem Oxyg Dem - COD
Library search - Volatiles	Diss - Thallium - Tl	Thallium - Tl	GA Diss Org Carbon - DOC (FF)
Library search - Sem/Vols	Diss - Uranium - U	Uranium - U	(Lab - Filtered & Preserved)
Finger Print	Diss - Vanadium - V	Vanadium - V	GN Diss Org Carbon - DOC (LF)
DRO / ORO	Diss - Zinc - Zn	Zinc - Zn	(Lab - Filtered & Preserved)
METALS CHEMISTRY PACKAGES	Diss - Calcium - Ca	Calcium - Ca	GA Total Org Carbon - TOC
OpMemo2 - Total	Diss - Potassium - K	Potassium - K	GA Ammonia - NH ₃
OpMemo2 - Dissolved	Diss - Magnesium - Mg	Magnesium - Mg	GA Nitrate+Nitrite - NO ₃ +NO ₂
(Sb,As,Ba,Be,Cd,Cr,Cu,Co,Fe,Pb,Mn,Hg,Mo,Ni,Se,Ag,Tl,V,Zn)	Diss - Sodium - Na	Sodium - Na	GA Kjeldahl Nitrogen - KN
Michigan10 - Total	Diss - Hardness - Ca, Mg	Hardness - Ca, Mg	GA Total Phosphorus - TP
Michigan10 - Dissolved	MD - Metals Dissolved	LHG - Low Level Mercury	
(As,Ba,Cd,Cr,Cu,Ph,Hg,Se,Ag,Zn)	Lab Filtration	Mercury Low Level - Hg	

Chain of Custody	Relinquished by	Received By	Date / Time
	Print Name & Org: Jeff Pincumbe - MDEQ Signature: <i>[Signature]</i>	DALE CORSI - DLE <i>[Signature]</i>	3/24/17 1025
	Print Name & Org: DALE CORSI - DLE Signature: <i>[Signature]</i>	MARK JORDAN <i>[Signature]</i>	3/24/17 1504
Print Name & Org: MARK JORDAN Signature: <i>[Signature]</i>	<i>[Signature]</i>	3-25-17 940	



Analysis Request Sheet

SAFETY INFORMATION

(MUST BE COMPLETED PRIOR TO SAMPLE SUBMITTAL)

- Are samples expected to contain cyanide (CN)..... YES NO
- Are samples expected to be flammable..... YES NO
- Are samples acidic prior to preservation (pH < 2)..... YES NO
- Are samples caustic prior to preservation (pH > 12)..... YES NO
- Are samples expected to be Biohazardous..... YES NO
- Are samples expected to be reactive with water or acid..... YES NO
- Are samples expected to be radioactive..... YES NO
- Are samples expected to contain dioxin..... YES NO
- Are samples expected to be explosive..... YES NO
- Were samples pre-preserved..... YES NO

List additional suspected sample hazard information below

MDEQ PRESERVATIVE TRACKING NUMBERS

VOA - HCL <input type="text"/>	CA - MgCO3 <input type="text"/>
VOA - MeOH <input type="text"/>	MA/MAD - HNO3 <input type="text"/>
GA - H2SO4 <input type="text"/>	GCN - NaOH <input type="text"/>
GB - NaOH <input type="text"/>	GCN - PbCO3 <input type="text"/>



TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING



Samp

320-26906 Field Sheet

Job: _____

Tracking # 628907694604

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

<p>Notes: _____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>	<p>Therm. ID: <u>AK-1</u> / AK-2 / HACCP / Other _____</p> <p>Ice <input checked="" type="checkbox"/> Wet <input checked="" type="checkbox"/> Dry _____ Other _____</p> <p>Cooler Custody Seal: <u>836012</u></p> <p>Sample Custody Seal: _____</p> <p>Cooler ID: <u>1082</u></p> <p>Temp: Observed <u>1.0</u></p> <p>Corrected: <u>1.3</u></p> <p>From: Temp Blank <input type="checkbox"/> Sample <input checked="" type="checkbox"/></p> <p>NCM Filed: Yes <input type="checkbox"/> No <input type="checkbox"/></p> <table border="0"> <thead> <tr> <th></th> <th>Yes</th> <th>No</th> <th>NA</th> </tr> </thead> <tbody> <tr><td>Perchlorate has headspace?</td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td></tr> <tr><td>CoC is complete w/o discrepancies?</td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td></tr> <tr><td>Samples received within holding time?</td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td></tr> <tr><td>Sample preservatives verified?</td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td></tr> <tr><td>Cooler compromised/tampered with?</td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td></tr> <tr><td>Samples compromised/tampered with?</td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td></tr> <tr><td>COC and Samples w/o discrepancies?</td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td></tr> <tr><td>Sample containers have legible labels?</td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td></tr> <tr><td>Containers are not broken or leaking?</td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td></tr> <tr><td>Sample date/times are provided.</td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td></tr> <tr><td>Appropriate containers are used?</td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td></tr> <tr><td>Sample bottles are completely filled?</td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td></tr> <tr><td>Zero headspace?*</td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td></tr> <tr><td>Multiphasic samples are not present?</td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td></tr> </tbody> </table> <p>Initials: <u>AV</u> Date: <u>3-25-17</u></p> <p><small>*Containers requiring zero headspace have no headspace, or bubble < 6 mm (1/4")</small></p>		Yes	No	NA	Perchlorate has headspace?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	CoC is complete w/o discrepancies?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Samples received within holding time?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample preservatives verified?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Cooler compromised/tampered with?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Samples compromised/tampered with?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	COC and Samples w/o discrepancies?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample containers have legible labels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Containers are not broken or leaking?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample date/times are provided.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Appropriate containers are used?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample bottles are completely filled?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Zero headspace?*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Multiphasic samples are not present?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		Yes	No	NA																																																									
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	Multiphasic samples are not present?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																																																									

Login Sample Receipt Checklist

Client: Michigan Dept. of Environmental Quality

Job Number: 320-26906-1

Login Number: 26906

List Source: TestAmerica Sacramento

List Number: 1

Creator: Turpen, Troy

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	836012
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	False	IDs on containers do not match the COC. Logged in per COC.
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Canton

4101 Shuffel Street NW

North Canton, OH 44720

Tel: (330)497-9396

TestAmerica Job ID: 240-79501-1

Client Project/Site: F-41 PFC Contamination - 3500058

For:

Michigan Dept. of Environmental Quality

Constitution Hall 3rd floor SW

525 W. Allegan Street

Lansing, Michigan 48909

Attn: Bob Delaney



Authorized for release by:

6/6/2017 4:44:40 PM

Kris Brooks, Project Manager II

(330)966-9790

kris.brooks@testamericainc.com

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www.testamericainc.com

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

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

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15



Table of Contents

Cover Page	1
Table of Contents	2
Definitions/Glossary	3
Case Narrative	4
Method Summary	6
Sample Summary	7
Detection Summary	8
Client Sample Results	10
QC Sample Results	16
QC Association Summary	20
Lab Chronicle	21
Certification Summary	23
Chain of Custody	25
Receipt Checklists	28
Isotope Dilution Summary	29

Definitions/Glossary

Client: Michigan Dept. of Environmental Quality
Project/Site: F-41 PFC Contamination - 3500058

TestAmerica Job ID: 240-79501-1

Qualifiers

LCMS

Qualifier	Qualifier Description
*	Isotope Dilution analyte is outside acceptance limits.
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
H	Sample was prepped or analyzed beyond the specified holding time

Glossary

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

Case Narrative

Client: Michigan Dept. of Environmental Quality
Project/Site: F-41 PFC Contamination - 3500058

TestAmerica Job ID: 240-79501-1

Job ID: 240-79501-1

Laboratory: TestAmerica Canton

Narrative

CASE NARRATIVE

Client: Michigan Dept. of Environmental Quality

Project: F-41 PFC Contamination - 3500058

Report Number: 240-79501-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

The PFC IDA Perfluorinated Hydrocarbons analysis was performed at the TestAmerica Sacramento Laboratory.

TestAmerica Canton attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

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

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header.

This laboratory report is confidential and is intended for the sole use of TestAmerica and its client.

RECEIPT

The samples were received on 5/12/2017 9:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.1° C.

PERFLUORINATED HYDROCARBONS

Samples AR-MW-2 (240-79501-1), AR-MW-3 (240-79501-2), AR-MW-4 (240-79501-3), AR-MW-5 (240-79501-4), CR-MW-6 (240-79501-5) and CR-MW-6 DUP (240-79501-6) were analyzed for Perfluorinated Hydrocarbons in accordance with SOP WS-OC-0025. The samples were prepared on 05/23/2017 and 05/31/2017 and analyzed on 05/25/2017, 05/26/2017 and 06/02/2017.

Perfluorooctane Sulfonamide (FOSA) was detected in method blank MB 320-165656/1-A at a level exceeding the reporting limit. If the associated sample reported a result above the MDL and/or RL, the result has been flagged.

Perfluorobutanoic acid (PFBA), Perfluoro-n-hexadecanoic acid (PFHxDA) and Perfluorotetradecanoic acid (PFTeA) were detected in method blank MB 320-165656/1-A at levels that were above the method detection limit but below the reporting limit. The values should be considered estimates, and have been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

Case Narrative

Client: Michigan Dept. of Environmental Quality
Project/Site: F-41 PFC Contamination - 3500058

TestAmerica Job ID: 240-79501-1

Job ID: 240-79501-1 (Continued)

Laboratory: TestAmerica Canton (Continued)

The following sample was re-prepared outside of preparation holding time due to low IDA: CR-MW-6 (240-79501-5).

The following samples were decanted prior to preparation due to having sediment in the samples: AR-MW-4 (240-79501-3), AR-MW-5 (240-79501-4), CR-MW-6 (240-79501-5) and CR-MW-6 DUP (240-79501-6).

The method blank for preparation batch 320-165656 and analytical batch 320-166362 contained Perfluorooctane Sulfonamide (FOSA) above the reporting limit (RL). This target analyte was not detected in the associated samples; therefore, re-extraction and/or re-analysis of samples was not performed: AR-MW-2 (240-79501-1), AR-MW-3 (240-79501-2), AR-MW-4 (240-79501-3), AR-MW-5 (240-79501-4), CR-MW-6 DUP (240-79501-6) and (MB 320-165656/1-A).

The method blank for preparation batch 320-165656 and analytical batch 320-166362 contained Perfluorooctane Sulfonamide (FOSA) above the reporting limit (RL); however, re-extraction of the affected sample was performed outside of holding time. Both sets of data have been reported.

The matrix spike/sample duplicate (MS/DUP) precision for preparation batch 320-166807 and analytical batch 320-167333 was outside control limits for Perfluorooctanesulfonic acid (PFOS). Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample / laboratory control sample duplicate (LCS/LCSD) precision was within acceptance limits.

The matrix spike (MS) recoveries for preparation batch 320-166807 and analytical batch 320-167333 were outside control limits for several analytes. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

The following sample CR-MW-6 (240-79501-5) was re-extracted outside of preparation holding time due to extremely low Isotope Dilution Analyte (IDA) recovery of 13C8 FOSA. Both sets of data have been reported.

The Isotope Dilution Analyte (IDA) recovery associated with the following samples is below the method recommended limit for 13C8 FOSA: AR-MW-2 (240-79501-1), AR-MW-3 (240-79501-2), 13C8 FOSA: AR-MW-4 (240-79501-3), AR-MW-5 (240-79501-4), 13C8 FOSA: CR-MW-6 (240-79501-5), CR-MW-6 DUP (240-79501-6), (LCS 320-165656/2-A), (LCSD 320-165656/3-A), (MB 320-165656/1-A), (LCS 320-166807/2-A), (LCSD 320-166807/3-A), (320-28451-A-3-D), (320-28451-A-3-E DU) and (320-28451-A-3-F MS). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the samples. All detection limits are below the lower calibration.

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

Method Summary

Client: Michigan Dept. of Environmental Quality
Project/Site: F-41 PFC Contamination - 3500058

TestAmerica Job ID: 240-79501-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Perfluorinated Hydrocarbons	EPA	TAL SAC

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600



Sample Summary

Client: Michigan Dept. of Environmental Quality
Project/Site: F-41 PFC Contamination - 3500058

TestAmerica Job ID: 240-79501-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-79501-1	AR-MW-2	Water	05/09/17 00:00	05/12/17 09:30
240-79501-2	AR-MW-3	Water	05/09/17 00:00	05/12/17 09:30
240-79501-3	AR-MW-4	Water	05/09/17 00:00	05/12/17 09:30
240-79501-4	AR-MW-5	Water	05/09/17 00:00	05/12/17 09:30
240-79501-5	CR-MW-6	Water	05/09/17 00:00	05/12/17 09:30
240-79501-6	CR-MW-6 DUP	Water	05/09/17 00:00	05/12/17 09:30

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Detection Summary

Client: Michigan Dept. of Environmental Quality
Project/Site: F-41 PFC Contamination - 3500058

TestAmerica Job ID: 240-79501-1

Client Sample ID: AR-MW-2

Lab Sample ID: 240-79501-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.62	J B	1.9	0.45	ng/L	1		537 (modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	0.65	J B	1.9	0.19	ng/L	1		537 (modified)	Total/NA
Perfluoro-n-hexadecanoic acid (PFHxDA)	0.19	J B	1.9	0.12	ng/L	1		537 (modified)	Total/NA

Client Sample ID: AR-MW-3

Lab Sample ID: 240-79501-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorotetradecanoic acid (PFTeA)	0.63	J B	1.9	0.19	ng/L	1		537 (modified)	Total/NA
Perfluoro-n-hexadecanoic acid (PFHxDA)	0.19	J B	1.9	0.12	ng/L	1		537 (modified)	Total/NA

Client Sample ID: AR-MW-4

Lab Sample ID: 240-79501-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.48	J	1.9	0.43	ng/L	1		537 (modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	0.49	J	1.9	0.19	ng/L	1		537 (modified)	Total/NA

Client Sample ID: AR-MW-5

Lab Sample ID: 240-79501-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	8.6	B	1.9	0.43	ng/L	1		537 (modified)	Total/NA
Perfluoroundecanoic acid (PFUnA)	2.1		1.9	0.71	ng/L	1		537 (modified)	Total/NA
Perfluorotridecanoic Acid (PFTriA)	0.80	J	1.9	0.52	ng/L	1		537 (modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	0.55	J B	1.9	0.19	ng/L	1		537 (modified)	Total/NA

Client Sample ID: CR-MW-6

Lab Sample ID: 240-79501-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	2.1	H B	1.9	0.43	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	1.3	J H	1.9	0.92	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	2.8	H	1.9	0.73	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.98	J H	1.9	0.75	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	4.5	H	1.9	0.70	ng/L	1		537 (modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	1.2	J H B	1.9	0.19	ng/L	1		537 (modified)	Total/NA
Perfluoro-n-hexadecanoic acid (PFHxDA)	1.3	J H B	1.9	0.11	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	2.3	H	1.9	0.85	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	7.3	H	1.9	0.81	ng/L	1		537 (modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	3.9	H	1.9	1.2	ng/L	1		537 (modified)	Total/NA

Client Sample ID: CR-MW-6 DUP

Lab Sample ID: 240-79501-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	2.1	B	1.9	0.43	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	1.4	J	1.9	0.93	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	2.8		1.9	0.74	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.97	J	1.9	0.75	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	4.3		1.9	0.70	ng/L	1		537 (modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	0.55	J B	1.9	0.19	ng/L	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Canton

Detection Summary

Client: Michigan Dept. of Environmental Quality
Project/Site: F-41 PFC Contamination - 3500058

TestAmerica Job ID: 240-79501-1

Client Sample ID: CR-MW-6 DUP (Continued)

Lab Sample ID: 240-79501-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluoro-n-hexadecanoic acid (PFHxDA)	0.19	J B	1.9	0.12	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	2.1		1.9	0.86	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	7.7		1.9	0.81	ng/L	1		537 (modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	4.1		1.9	1.2	ng/L	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Canton



Client Sample Results

Client: Michigan Dept. of Environmental Quality
 Project/Site: F-41 PFC Contamination - 3500058

TestAmerica Job ID: 240-79501-1

Client Sample ID: AR-MW-2

Date Collected: 05/09/17 00:00

Date Received: 05/12/17 09:30

Lab Sample ID: 240-79501-1

Matrix: Water

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	0.62	J B	1.9	0.45	ng/L		05/23/17 08:00	05/25/17 20:46	1
Perfluoropentanoic acid (PFPeA)	ND		1.9	0.96	ng/L		05/23/17 08:00	05/25/17 20:46	1
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.76	ng/L		05/23/17 08:00	05/25/17 20:46	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.78	ng/L		05/23/17 08:00	05/25/17 20:46	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.73	ng/L		05/23/17 08:00	05/25/17 20:46	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.64	ng/L		05/23/17 08:00	05/25/17 20:46	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.43	ng/L		05/23/17 08:00	05/25/17 20:46	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.73	ng/L		05/23/17 08:00	05/25/17 20:46	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.57	ng/L		05/23/17 08:00	05/25/17 20:46	1
Perfluorotridecanoic Acid (PFTriA)	ND		1.9	0.54	ng/L		05/23/17 08:00	05/25/17 20:46	1
Perfluorotetradecanoic acid (PFTeA)	0.65	J B	1.9	0.19	ng/L		05/23/17 08:00	05/25/17 20:46	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	0.19	J B	1.9	0.12	ng/L		05/23/17 08:00	05/25/17 20:46	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		1.9	0.65	ng/L		05/23/17 08:00	05/25/17 20:46	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.89	ng/L		05/23/17 08:00	05/25/17 20:46	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.85	ng/L		05/23/17 08:00	05/25/17 20:46	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.9	0.69	ng/L		05/23/17 08:00	05/25/17 20:46	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.9	1.2	ng/L		05/23/17 08:00	05/25/17 20:46	1
Perfluorooctane Sulfonate (PFOS)	ND		1.9	1.2	ng/L		05/23/17 08:00	05/25/17 20:46	1
Perfluorooctane Sulfonamide (FOSA)	ND		1.9	0.62	ng/L		05/23/17 08:00	05/25/17 20:46	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 FOSA	5	*	25 - 150				05/23/17 08:00	05/25/17 20:46	1
13C4 PFBA	40		25 - 150				05/23/17 08:00	05/25/17 20:46	1
13C2 PFHxA	79		25 - 150				05/23/17 08:00	05/25/17 20:46	1
13C4 PFOA	93		25 - 150				05/23/17 08:00	05/25/17 20:46	1
13C5 PFNA	98		25 - 150				05/23/17 08:00	05/25/17 20:46	1
13C2 PFDA	109		25 - 150				05/23/17 08:00	05/25/17 20:46	1
13C2 PFUnA	113		25 - 150				05/23/17 08:00	05/25/17 20:46	1
13C2 PFDoA	105		25 - 150				05/23/17 08:00	05/25/17 20:46	1
18O2 PFHxS	90		25 - 150				05/23/17 08:00	05/25/17 20:46	1
13C4 PFOS	95		25 - 150				05/23/17 08:00	05/25/17 20:46	1
13C4-PFHpA	94		25 - 150				05/23/17 08:00	05/25/17 20:46	1
13C5-PFPeA	79		25 - 150				05/23/17 08:00	05/25/17 20:46	1

Client Sample Results

Client: Michigan Dept. of Environmental Quality
 Project/Site: F-41 PFC Contamination - 3500058

TestAmerica Job ID: 240-79501-1

Client Sample ID: AR-MW-3

Lab Sample ID: 240-79501-2

Date Collected: 05/09/17 00:00

Matrix: Water

Date Received: 05/12/17 09:30

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		1.9	0.44	ng/L		05/23/17 08:00	05/25/17 20:53	1
Perfluoropentanoic acid (PFPeA)	ND		1.9	0.94	ng/L		05/23/17 08:00	05/25/17 20:53	1
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.75	ng/L		05/23/17 08:00	05/25/17 20:53	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.77	ng/L		05/23/17 08:00	05/25/17 20:53	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.71	ng/L		05/23/17 08:00	05/25/17 20:53	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.62	ng/L		05/23/17 08:00	05/25/17 20:53	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.42	ng/L		05/23/17 08:00	05/25/17 20:53	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.71	ng/L		05/23/17 08:00	05/25/17 20:53	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.56	ng/L		05/23/17 08:00	05/25/17 20:53	1
Perfluorotridecanoic Acid (PFTriA)	ND		1.9	0.53	ng/L		05/23/17 08:00	05/25/17 20:53	1
Perfluorotetradecanoic acid (PFTeA)	0.63	J B	1.9	0.19	ng/L		05/23/17 08:00	05/25/17 20:53	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	0.19	J B	1.9	0.12	ng/L		05/23/17 08:00	05/25/17 20:53	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		1.9	0.64	ng/L		05/23/17 08:00	05/25/17 20:53	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.88	ng/L		05/23/17 08:00	05/25/17 20:53	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.83	ng/L		05/23/17 08:00	05/25/17 20:53	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.9	0.68	ng/L		05/23/17 08:00	05/25/17 20:53	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.9	1.2	ng/L		05/23/17 08:00	05/25/17 20:53	1
Perfluorooctane Sulfonate (PFOS)	ND		1.9	1.2	ng/L		05/23/17 08:00	05/25/17 20:53	1
Perfluorooctane Sulfonamide (FOSA)	ND		1.9	0.61	ng/L		05/23/17 08:00	05/25/17 20:53	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C8 FOSA	4	*	25 - 150				05/23/17 08:00	05/25/17 20:53	1
13C4 PFBA	41		25 - 150				05/23/17 08:00	05/25/17 20:53	1
13C2 PFHxA	78		25 - 150				05/23/17 08:00	05/25/17 20:53	1
13C4 PFOA	94		25 - 150				05/23/17 08:00	05/25/17 20:53	1
13C5 PFNA	97		25 - 150				05/23/17 08:00	05/25/17 20:53	1
13C2 PFDA	108		25 - 150				05/23/17 08:00	05/25/17 20:53	1
13C2 PFUnA	108		25 - 150				05/23/17 08:00	05/25/17 20:53	1
13C2 PFDoA	107		25 - 150				05/23/17 08:00	05/25/17 20:53	1
18O2 PFHxS	90		25 - 150				05/23/17 08:00	05/25/17 20:53	1
13C4 PFOS	96		25 - 150				05/23/17 08:00	05/25/17 20:53	1
13C4-PFHpA	93		25 - 150				05/23/17 08:00	05/25/17 20:53	1
13C5-PFPeA	81		25 - 150				05/23/17 08:00	05/25/17 20:53	1

Client Sample Results

Client: Michigan Dept. of Environmental Quality
 Project/Site: F-41 PFC Contamination - 3500058

TestAmerica Job ID: 240-79501-1

Client Sample ID: AR-MW-4

Lab Sample ID: 240-79501-3

Date Collected: 05/09/17 00:00

Matrix: Water

Date Received: 05/12/17 09:30

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	0.48	J	1.9	0.43	ng/L		05/23/17 08:00	05/26/17 18:30	1
Perfluoropentanoic acid (PFPeA)	ND		1.9	0.94	ng/L		05/23/17 08:00	05/26/17 18:30	1
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.75	ng/L		05/23/17 08:00	05/26/17 18:30	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.76	ng/L		05/23/17 08:00	05/26/17 18:30	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.71	ng/L		05/23/17 08:00	05/26/17 18:30	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.62	ng/L		05/23/17 08:00	05/26/17 18:30	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.42	ng/L		05/23/17 08:00	05/26/17 18:30	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.71	ng/L		05/23/17 08:00	05/26/17 18:30	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.55	ng/L		05/23/17 08:00	05/26/17 18:30	1
Perfluorotridecanoic Acid (PFTriA)	ND		1.9	0.52	ng/L		05/23/17 08:00	05/26/17 18:30	1
Perfluorotetradecanoic acid (PFTeA)	0.49	J	1.9	0.19	ng/L		05/23/17 08:00	05/26/17 18:30	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	ND		1.9	0.12	ng/L		05/23/17 08:00	05/26/17 18:30	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		1.9	0.64	ng/L		05/23/17 08:00	05/26/17 18:30	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.87	ng/L		05/23/17 08:00	05/26/17 18:30	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.83	ng/L		05/23/17 08:00	05/26/17 18:30	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.9	0.68	ng/L		05/23/17 08:00	05/26/17 18:30	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.9	1.1	ng/L		05/23/17 08:00	05/26/17 18:30	1
Perfluorooctane Sulfonate (PFOS)	ND		1.9	1.2	ng/L		05/23/17 08:00	05/26/17 18:30	1
Perfluorooctane Sulfonamide (FOSA)	ND		1.9	0.61	ng/L		05/23/17 08:00	05/26/17 18:30	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 FOSA	2	*	25 - 150				05/23/17 08:00	05/26/17 18:30	1
13C4 PFBA	51		25 - 150				05/23/17 08:00	05/26/17 18:30	1
13C2 PFHxA	87		25 - 150				05/23/17 08:00	05/26/17 18:30	1
13C4 PFOA	97		25 - 150				05/23/17 08:00	05/26/17 18:30	1
13C5 PFNA	97		25 - 150				05/23/17 08:00	05/26/17 18:30	1
13C2 PFDA	109		25 - 150				05/23/17 08:00	05/26/17 18:30	1
13C2 PFUnA	120		25 - 150				05/23/17 08:00	05/26/17 18:30	1
13C2 PFDoA	131		25 - 150				05/23/17 08:00	05/26/17 18:30	1
18O2 PFHxS	103		25 - 150				05/23/17 08:00	05/26/17 18:30	1
13C4 PFOS	111		25 - 150				05/23/17 08:00	05/26/17 18:30	1
13C4-PFHpA	98		25 - 150				05/23/17 08:00	05/26/17 18:30	1
13C5-PFPeA	90		25 - 150				05/23/17 08:00	05/26/17 18:30	1

Client Sample Results

Client: Michigan Dept. of Environmental Quality
 Project/Site: F-41 PFC Contamination - 3500058

TestAmerica Job ID: 240-79501-1

Client Sample ID: AR-MW-5

Lab Sample ID: 240-79501-4

Date Collected: 05/09/17 00:00

Matrix: Water

Date Received: 05/12/17 09:30

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	8.6	B	1.9	0.43	ng/L		05/23/17 08:00	05/25/17 21:16	1
Perfluoropentanoic acid (PFPeA)	ND		1.9	0.94	ng/L		05/23/17 08:00	05/25/17 21:16	1
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.75	ng/L		05/23/17 08:00	05/25/17 21:16	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.76	ng/L		05/23/17 08:00	05/25/17 21:16	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.71	ng/L		05/23/17 08:00	05/25/17 21:16	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.62	ng/L		05/23/17 08:00	05/25/17 21:16	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.42	ng/L		05/23/17 08:00	05/25/17 21:16	1
Perfluoroundecanoic acid (PFUnA)	2.1		1.9	0.71	ng/L		05/23/17 08:00	05/25/17 21:16	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.55	ng/L		05/23/17 08:00	05/25/17 21:16	1
Perfluorotridecanoic Acid (PFTriA)	0.80	J	1.9	0.52	ng/L		05/23/17 08:00	05/25/17 21:16	1
Perfluorotetradecanoic acid (PFTeA)	0.55	J B	1.9	0.19	ng/L		05/23/17 08:00	05/25/17 21:16	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	ND		1.9	0.12	ng/L		05/23/17 08:00	05/25/17 21:16	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		1.9	0.64	ng/L		05/23/17 08:00	05/25/17 21:16	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.87	ng/L		05/23/17 08:00	05/25/17 21:16	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.82	ng/L		05/23/17 08:00	05/25/17 21:16	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.9	0.68	ng/L		05/23/17 08:00	05/25/17 21:16	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.9	1.1	ng/L		05/23/17 08:00	05/25/17 21:16	1
Perfluorooctane Sulfonate (PFOS)	ND		1.9	1.2	ng/L		05/23/17 08:00	05/25/17 21:16	1
Perfluorooctane Sulfonamide (FOSA)	ND		1.9	0.60	ng/L		05/23/17 08:00	05/25/17 21:16	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>13C8 FOSA</i>	4	*	25 - 150	05/23/17 08:00	05/25/17 21:16	1
<i>13C4 PFBA</i>	45		25 - 150	05/23/17 08:00	05/25/17 21:16	1
<i>13C2 PFHxA</i>	79		25 - 150	05/23/17 08:00	05/25/17 21:16	1
<i>13C4 PFOA</i>	87		25 - 150	05/23/17 08:00	05/25/17 21:16	1
<i>13C5 PFNA</i>	89		25 - 150	05/23/17 08:00	05/25/17 21:16	1
<i>13C2 PFDA</i>	97		25 - 150	05/23/17 08:00	05/25/17 21:16	1
<i>13C2 PFUnA</i>	104		25 - 150	05/23/17 08:00	05/25/17 21:16	1
<i>13C2 PFDoA</i>	116		25 - 150	05/23/17 08:00	05/25/17 21:16	1
<i>18O2 PFHxS</i>	92		25 - 150	05/23/17 08:00	05/25/17 21:16	1
<i>13C4 PFOS</i>	97		25 - 150	05/23/17 08:00	05/25/17 21:16	1
<i>13C4-PFHpA</i>	89		25 - 150	05/23/17 08:00	05/25/17 21:16	1
<i>13C5-PFPeA</i>	81		25 - 150	05/23/17 08:00	05/25/17 21:16	1

TestAmerica Canton

Client Sample Results

Client: Michigan Dept. of Environmental Quality
 Project/Site: F-41 PFC Contamination - 3500058

TestAmerica Job ID: 240-79501-1

Client Sample ID: CR-MW-6

Lab Sample ID: 240-79501-5

Date Collected: 05/09/17 00:00

Matrix: Water

Date Received: 05/12/17 09:30

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	2.1	H B	1.9	0.43	ng/L		05/23/17 08:00	05/25/17 21:23	1
Perfluoropentanoic acid (PFPeA)	1.3	J H	1.9	0.92	ng/L		05/23/17 08:00	05/25/17 21:23	1
Perfluorohexanoic acid (PFHxA)	2.8	H	1.9	0.73	ng/L		05/23/17 08:00	05/25/17 21:23	1
Perfluoroheptanoic acid (PFHpA)	0.98	J H	1.9	0.75	ng/L		05/23/17 08:00	05/25/17 21:23	1
Perfluorooctanoic acid (PFOA)	4.5	H	1.9	0.70	ng/L		05/23/17 08:00	05/25/17 21:23	1
Perfluorononanoic acid (PFNA)	ND	H	1.9	0.61	ng/L		05/23/17 08:00	05/25/17 21:23	1
Perfluorodecanoic acid (PFDA)	ND	H	1.9	0.41	ng/L		05/23/17 08:00	05/25/17 21:23	1
Perfluoroundecanoic acid (PFUnA)	ND	H	1.9	0.70	ng/L		05/23/17 08:00	05/25/17 21:23	1
Perfluorododecanoic acid (PFDoA)	ND	H	1.9	0.54	ng/L		05/23/17 08:00	05/25/17 21:23	1
Perfluorotridecanoic Acid (PFTriA)	ND	H	1.9	0.51	ng/L		05/23/17 08:00	05/25/17 21:23	1
Perfluorotetradecanoic acid (PFTeA)	1.2	J H B	1.9	0.19	ng/L		05/23/17 08:00	05/25/17 21:23	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	1.3	J H B	1.9	0.11	ng/L		05/23/17 08:00	05/25/17 21:23	1
Perfluoro-n-octadecanoic acid (PFODA)	ND	H	1.9	0.63	ng/L		05/23/17 08:00	05/25/17 21:23	1
Perfluorobutanesulfonic acid (PFBS)	2.3	H	1.9	0.85	ng/L		05/23/17 08:00	05/25/17 21:23	1
Perfluorohexanesulfonic acid (PFHxS)	7.3	H	1.9	0.81	ng/L		05/23/17 08:00	05/25/17 21:23	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H	1.9	0.66	ng/L		05/23/17 08:00	05/25/17 21:23	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	1.9	1.1	ng/L		05/23/17 08:00	05/25/17 21:23	1
Perfluorooctane Sulfonate (PFOS)	3.9	H	1.9	1.2	ng/L		05/23/17 08:00	05/25/17 21:23	1
Perfluorooctane Sulfonamide (FOSA)	ND	H	1.9	0.59	ng/L		05/23/17 08:00	05/25/17 21:23	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	0.3	*	25 - 150	05/23/17 08:00	05/25/17 21:23	1
13C4 PFBA	29		25 - 150	05/23/17 08:00	05/25/17 21:23	1
13C2 PFHxA	61		25 - 150	05/23/17 08:00	05/25/17 21:23	1
13C4 PFOA	62		25 - 150	05/23/17 08:00	05/25/17 21:23	1
13C5 PFNA	49		25 - 150	05/23/17 08:00	05/25/17 21:23	1
13C2 PFDA	42		25 - 150	05/23/17 08:00	05/25/17 21:23	1
13C2 PFUnA	39		25 - 150	05/23/17 08:00	05/25/17 21:23	1
13C2 PFDoA	49		25 - 150	05/23/17 08:00	05/25/17 21:23	1
18O2 PFHxS	88		25 - 150	05/23/17 08:00	05/25/17 21:23	1
13C4 PFOS	87		25 - 150	05/23/17 08:00	05/25/17 21:23	1
13C4-PFHpA	72		25 - 150	05/23/17 08:00	05/25/17 21:23	1
13C5-PFPeA	63		25 - 150	05/23/17 08:00	05/25/17 21:23	1

Method: 537 (modified) - Perfluorinated Hydrocarbons - RE

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctane Sulfonamide (FOSA)	ND	H	1.8	0.58	ng/L		05/31/17 11:23	06/02/17 16:22	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	7	*	25 - 150	05/31/17 11:23	06/02/17 16:22	1

TestAmerica Canton

Client Sample Results

Client: Michigan Dept. of Environmental Quality
 Project/Site: F-41 PFC Contamination - 3500058

TestAmerica Job ID: 240-79501-1

Client Sample ID: CR-MW-6 DUP

Lab Sample ID: 240-79501-6

Date Collected: 05/09/17 00:00

Matrix: Water

Date Received: 05/12/17 09:30

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	2.1	B	1.9	0.43	ng/L		05/23/17 08:00	05/25/17 21:31	1
Perfluoropentanoic acid (PFPeA)	1.4	J	1.9	0.93	ng/L		05/23/17 08:00	05/25/17 21:31	1
Perfluorohexanoic acid (PFHxA)	2.8		1.9	0.74	ng/L		05/23/17 08:00	05/25/17 21:31	1
Perfluoroheptanoic acid (PFHpA)	0.97	J	1.9	0.75	ng/L		05/23/17 08:00	05/25/17 21:31	1
Perfluorooctanoic acid (PFOA)	4.3		1.9	0.70	ng/L		05/23/17 08:00	05/25/17 21:31	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.61	ng/L		05/23/17 08:00	05/25/17 21:31	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.41	ng/L		05/23/17 08:00	05/25/17 21:31	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.70	ng/L		05/23/17 08:00	05/25/17 21:31	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.55	ng/L		05/23/17 08:00	05/25/17 21:31	1
Perfluorotridecanoic Acid (PFTriA)	ND		1.9	0.52	ng/L		05/23/17 08:00	05/25/17 21:31	1
Perfluorotetradecanoic acid (PFTeA)	0.55	J B	1.9	0.19	ng/L		05/23/17 08:00	05/25/17 21:31	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	0.19	J B	1.9	0.12	ng/L		05/23/17 08:00	05/25/17 21:31	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		1.9	0.63	ng/L		05/23/17 08:00	05/25/17 21:31	1
Perfluorobutanesulfonic acid (PFBS)	2.1		1.9	0.86	ng/L		05/23/17 08:00	05/25/17 21:31	1
Perfluorohexanesulfonic acid (PFHxS)	7.7		1.9	0.81	ng/L		05/23/17 08:00	05/25/17 21:31	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.9	0.67	ng/L		05/23/17 08:00	05/25/17 21:31	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.9	1.1	ng/L		05/23/17 08:00	05/25/17 21:31	1
Perfluorooctane Sulfonate (PFOS)	4.1		1.9	1.2	ng/L		05/23/17 08:00	05/25/17 21:31	1
Perfluorooctane Sulfonamide (FOSA)	ND		1.9	0.60	ng/L		05/23/17 08:00	05/25/17 21:31	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
¹³ C8 FOSA	4	*	25 - 150	05/23/17 08:00	05/25/17 21:31	1
¹³ C4 PFBA	31		25 - 150	05/23/17 08:00	05/25/17 21:31	1
¹³ C2 PFHxA	76		25 - 150	05/23/17 08:00	05/25/17 21:31	1
¹³ C4 PFOA	90		25 - 150	05/23/17 08:00	05/25/17 21:31	1
¹³ C5 PFNA	88		25 - 150	05/23/17 08:00	05/25/17 21:31	1
¹³ C2 PFDA	85		25 - 150	05/23/17 08:00	05/25/17 21:31	1
¹³ C2 PFUnA	79		25 - 150	05/23/17 08:00	05/25/17 21:31	1
¹³ C2 PFDoA	91		25 - 150	05/23/17 08:00	05/25/17 21:31	1
¹⁸ O2 PFHxS	93		25 - 150	05/23/17 08:00	05/25/17 21:31	1
¹³ C4 PFOS	98		25 - 150	05/23/17 08:00	05/25/17 21:31	1
¹³ C4-PFHpA	91		25 - 150	05/23/17 08:00	05/25/17 21:31	1
¹³ C5-PFPeA	71		25 - 150	05/23/17 08:00	05/25/17 21:31	1

TestAmerica Canton

QC Sample Results

Client: Michigan Dept. of Environmental Quality
 Project/Site: F-41 PFC Contamination - 3500058

TestAmerica Job ID: 240-79501-1

Method: 537 (modified) - Perfluorinated Hydrocarbons

Lab Sample ID: MB 320-165656/1-A

Matrix: Water

Analysis Batch: 166362

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 165656

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	0.478	J	2.0	0.46	ng/L		05/23/17 08:00	05/25/17 18:24	1
Perfluoropentanoic acid (PFPeA)	ND		2.0	0.99	ng/L		05/23/17 08:00	05/25/17 18:24	1
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.79	ng/L		05/23/17 08:00	05/25/17 18:24	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.80	ng/L		05/23/17 08:00	05/25/17 18:24	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.75	ng/L		05/23/17 08:00	05/25/17 18:24	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.65	ng/L		05/23/17 08:00	05/25/17 18:24	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.44	ng/L		05/23/17 08:00	05/25/17 18:24	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	0.75	ng/L		05/23/17 08:00	05/25/17 18:24	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.58	ng/L		05/23/17 08:00	05/25/17 18:24	1
Perfluorotridecanoic Acid (PFTriA)	ND		2.0	0.55	ng/L		05/23/17 08:00	05/25/17 18:24	1
Perfluorotetradecanoic acid (PFTeA)	0.948	J	2.0	0.20	ng/L		05/23/17 08:00	05/25/17 18:24	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	0.324	J	2.0	0.12	ng/L		05/23/17 08:00	05/25/17 18:24	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		2.0	0.67	ng/L		05/23/17 08:00	05/25/17 18:24	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.92	ng/L		05/23/17 08:00	05/25/17 18:24	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.87	ng/L		05/23/17 08:00	05/25/17 18:24	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		2.0	0.71	ng/L		05/23/17 08:00	05/25/17 18:24	1
Perfluorodecanesulfonic acid (PFDS)	ND		2.0	1.2	ng/L		05/23/17 08:00	05/25/17 18:24	1
Perfluorooctane Sulfonate (PFOS)	ND		2.0	1.3	ng/L		05/23/17 08:00	05/25/17 18:24	1
Perfluorooctane Sulfonamide (FOSA)	2.53		2.0	0.64	ng/L		05/23/17 08:00	05/25/17 18:24	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	24	*	25 - 150	05/23/17 08:00	05/25/17 18:24	1
13C4 PFBA	104		25 - 150	05/23/17 08:00	05/25/17 18:24	1
13C2 PFHxA	104		25 - 150	05/23/17 08:00	05/25/17 18:24	1
13C4 PFOA	117		25 - 150	05/23/17 08:00	05/25/17 18:24	1
13C5 PFNA	120		25 - 150	05/23/17 08:00	05/25/17 18:24	1
13C2 PFDA	128		25 - 150	05/23/17 08:00	05/25/17 18:24	1
13C2 PFUnA	130		25 - 150	05/23/17 08:00	05/25/17 18:24	1
13C2 PFDoA	124		25 - 150	05/23/17 08:00	05/25/17 18:24	1
18O2 PFHxS	100		25 - 150	05/23/17 08:00	05/25/17 18:24	1
13C4 PFOS	99		25 - 150	05/23/17 08:00	05/25/17 18:24	1
13C4-PFHpA	116		25 - 150	05/23/17 08:00	05/25/17 18:24	1
13C5-PFPeA	117		25 - 150	05/23/17 08:00	05/25/17 18:24	1

Lab Sample ID: LCS 320-165656/2-A

Matrix: Water

Analysis Batch: 166362

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 165656

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Perfluorobutanoic acid (PFBA)	40.0	39.7		ng/L		99	74 - 138
Perfluoropentanoic acid (PFPeA)	40.0	39.6		ng/L		99	69 - 134
Perfluorohexanoic acid (PFHxA)	40.0	38.9		ng/L		97	70 - 136
Perfluoroheptanoic acid (PFHpA)	40.0	40.0		ng/L		100	63 - 135
Perfluorooctanoic acid (PFOA)	40.0	38.4		ng/L		96	63 - 141
Perfluorononanoic acid (PFNA)	40.0	39.2		ng/L		98	71 - 140
Perfluorodecanoic acid (PFDA)	40.0	39.4		ng/L		99	66 - 141

TestAmerica Canton

QC Sample Results

Client: Michigan Dept. of Environmental Quality
 Project/Site: F-41 PFC Contamination - 3500058

TestAmerica Job ID: 240-79501-1

Method: 537 (modified) - Perfluorinated Hydrocarbons (Continued)

Lab Sample ID: LCS 320-165656/2-A

Matrix: Water

Analysis Batch: 166362

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 165656

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluoroundecanoic acid (PFUnA)	40.0	37.4		ng/L		93	68 - 139
Perfluorododecanoic acid (PFDoA)	40.0	39.3		ng/L		98	71 - 139
Perfluorotridecanoic Acid (PFTriA)	40.0	44.1		ng/L		110	51 - 139
Perfluorotetradecanoic acid (PFTeA)	40.0	49.9		ng/L		125	47 - 130
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	39.8		ng/L		99	50 - 150
Perfluoro-n-octadecanoic acid (PFODA)	40.0	47.3		ng/L		118	50 - 150
Perfluorobutanesulfonic acid (PFBS)	35.4	38.2		ng/L		108	55 - 147
Perfluorohexanesulfonic acid (PFHxS)	36.4	33.7		ng/L		93	58 - 138
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	37.9		ng/L		100	32 - 170
Perfluorodecanesulfonic acid (PFDS)	38.6	37.6		ng/L		98	35 - 157
Perfluorooctane Sulfonate (PFOS)	37.1	34.4		ng/L		93	47 - 162
Perfluorooctane Sulfonamide (FOSA)	40.0	39.7		ng/L		99	59 - 163

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C8 FOSA	6	*	25 - 150
13C4 PFBA	95		25 - 150
13C2 PFHxA	93		25 - 150
13C4 PFOA	104		25 - 150
13C5 PFNA	105		25 - 150
13C2 PFDA	117		25 - 150
13C2 PFUnA	116		25 - 150
13C2 PFDoA	116		25 - 150
18O2 PFHxS	91		25 - 150
13C4 PFOS	94		25 - 150
13C4-PFHpA	109		25 - 150
13C5-PFPeA	105		25 - 150

Lab Sample ID: LCSD 320-165656/3-A

Matrix: Water

Analysis Batch: 166362

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 165656

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)	40.0	41.6		ng/L		104	74 - 138	5	30
Perfluoropentanoic acid (PFPeA)	40.0	38.6		ng/L		97	69 - 134	2	30
Perfluorohexanoic acid (PFHxA)	40.0	39.7		ng/L		99	70 - 136	2	30
Perfluoroheptanoic acid (PFHpA)	40.0	39.2		ng/L		98	63 - 135	2	30
Perfluorooctanoic acid (PFOA)	40.0	39.8		ng/L		99	63 - 141	4	30
Perfluorononanoic acid (PFNA)	40.0	40.0		ng/L		100	71 - 140	2	30
Perfluorodecanoic acid (PFDA)	40.0	40.0		ng/L		100	66 - 141	1	30

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QC Sample Results

Client: Michigan Dept. of Environmental Quality
 Project/Site: F-41 PFC Contamination - 3500058

TestAmerica Job ID: 240-79501-1

Method: 537 (modified) - Perfluorinated Hydrocarbons (Continued)

Lab Sample ID: LCSD 320-165656/3-A
Matrix: Water
Analysis Batch: 166362

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 165656

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluoroundecanoic acid (PFUnA)	40.0	37.3		ng/L		93	68 - 139	0	30
Perfluorododecanoic acid (PFDoA)	40.0	40.4		ng/L		101	71 - 139	3	30
Perfluorotridecanoic Acid (PFTriA)	40.0	45.3		ng/L		113	51 - 139	3	30
Perfluorotetradecanoic acid (PFTeA)	40.0	50.5		ng/L		126	47 - 130	1	30
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	41.9		ng/L		105	50 - 150	5	30
Perfluoro-n-octadecanoic acid (PFODA)	40.0	44.7		ng/L		112	50 - 150	6	30
Perfluorobutanesulfonic acid (PFBS)	35.4	40.2		ng/L		114	55 - 147	5	30
Perfluorohexanesulfonic acid (PFHxS)	36.4	35.4		ng/L		97	58 - 138	5	30
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	38.4		ng/L		101	32 - 170	1	30
Perfluorodecanesulfonic acid (PFDS)	38.6	40.5		ng/L		105	35 - 157	7	30
Perfluorooctane Sulfonate (PFOS)	37.1	35.4		ng/L		95	47 - 162	3	30
Perfluorooctane Sulfonamide (FOSA)	40.0	40.0		ng/L		100	59 - 163	1	30

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C8 FOSA	21	*	25 - 150
13C4 PFBA	98		25 - 150
13C2 PFHxA	99		25 - 150
13C4 PFOA	107		25 - 150
13C5 PFNA	108		25 - 150
13C2 PFDA	121		25 - 150
13C2 PFUnA	118		25 - 150
13C2 PFDoA	117		25 - 150
18O2 PFHxS	91		25 - 150
13C4 PFOS	97		25 - 150
13C4-PFHpA	112		25 - 150
13C5-PFPeA	113		25 - 150

Lab Sample ID: MB 320-166807/1-A
Matrix: Water
Analysis Batch: 167333

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 166807

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctane Sulfonamide (FOSA)	ND		2.0	0.64	ng/L		05/31/17 11:23	06/02/17 13:25	1

Isotope Dilution	MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C8 FOSA	25		25 - 150	05/31/17 11:23	06/02/17 13:25	1

TestAmerica Canton

QC Sample Results

Client: Michigan Dept. of Environmental Quality
 Project/Site: F-41 PFC Contamination - 3500058

TestAmerica Job ID: 240-79501-1

Method: 537 (modified) - Perfluorinated Hydrocarbons (Continued)

Lab Sample ID: LCS 320-166807/2-A
Matrix: Water
Analysis Batch: 167333

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 166807

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Perfluorooctane Sulfonamide (FOSA)	40.0	39.5		ng/L		99	59 - 163
Isotope Dilution							
		LCS	LCS			%Rec.	Limits
<i>13C8 FOSA</i>		<i>7</i>	<i>*</i>				<i>25 - 150</i>

Lab Sample ID: LCSD 320-166807/3-A
Matrix: Water
Analysis Batch: 167333

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 166807

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Perfluorooctane Sulfonamide (FOSA)	40.0	41.2		ng/L		103	59 - 163	4	30
Isotope Dilution									
		LCSD	LCSD			%Rec.	Limits	RPD	Limit
<i>13C8 FOSA</i>		<i>9</i>	<i>*</i>				<i>25 - 150</i>		

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QC Association Summary

Client: Michigan Dept. of Environmental Quality
 Project/Site: F-41 PFC Contamination - 3500058

TestAmerica Job ID: 240-79501-1

LCMS

Prep Batch: 165656

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-79501-1	AR-MW-2	Total/NA	Water	3535	
240-79501-2	AR-MW-3	Total/NA	Water	3535	
240-79501-3	AR-MW-4	Total/NA	Water	3535	
240-79501-4	AR-MW-5	Total/NA	Water	3535	
240-79501-5	CR-MW-6	Total/NA	Water	3535	
240-79501-6	CR-MW-6 DUP	Total/NA	Water	3535	
MB 320-165656/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-165656/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-165656/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 166362

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-79501-1	AR-MW-2	Total/NA	Water	537 (modified)	165656
240-79501-2	AR-MW-3	Total/NA	Water	537 (modified)	165656
240-79501-4	AR-MW-5	Total/NA	Water	537 (modified)	165656
240-79501-5	CR-MW-6	Total/NA	Water	537 (modified)	165656
240-79501-6	CR-MW-6 DUP	Total/NA	Water	537 (modified)	165656
MB 320-165656/1-A	Method Blank	Total/NA	Water	537 (modified)	165656
LCS 320-165656/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	165656
LCSD 320-165656/3-A	Lab Control Sample Dup	Total/NA	Water	537 (modified)	165656

Analysis Batch: 166540

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-79501-3	AR-MW-4	Total/NA	Water	537 (modified)	165656

Prep Batch: 166807

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-79501-5 - RE	CR-MW-6	Total/NA	Water	3535	
MB 320-166807/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-166807/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-166807/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 167333

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-79501-5 - RE	CR-MW-6	Total/NA	Water	537 (modified)	166807
MB 320-166807/1-A	Method Blank	Total/NA	Water	537 (modified)	166807
LCS 320-166807/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	166807
LCSD 320-166807/3-A	Lab Control Sample Dup	Total/NA	Water	537 (modified)	166807

Lab Chronicle

Client: Michigan Dept. of Environmental Quality
 Project/Site: F-41 PFC Contamination - 3500058

TestAmerica Job ID: 240-79501-1

Client Sample ID: AR-MW-2

Date Collected: 05/09/17 00:00

Date Received: 05/12/17 09:30

Lab Sample ID: 240-79501-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			165656	05/23/17 08:00	J1S	TAL SAC
Total/NA	Analysis	537 (modified)		1	166362	05/25/17 20:46	CBW	TAL SAC

Client Sample ID: AR-MW-3

Date Collected: 05/09/17 00:00

Date Received: 05/12/17 09:30

Lab Sample ID: 240-79501-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			165656	05/23/17 08:00	J1S	TAL SAC
Total/NA	Analysis	537 (modified)		1	166362	05/25/17 20:53	CBW	TAL SAC

Client Sample ID: AR-MW-4

Date Collected: 05/09/17 00:00

Date Received: 05/12/17 09:30

Lab Sample ID: 240-79501-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			165656	05/23/17 08:00	J1S	TAL SAC
Total/NA	Analysis	537 (modified)		1	166540	05/26/17 18:30	CBW	TAL SAC

Client Sample ID: AR-MW-5

Date Collected: 05/09/17 00:00

Date Received: 05/12/17 09:30

Lab Sample ID: 240-79501-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			165656	05/23/17 08:00	J1S	TAL SAC
Total/NA	Analysis	537 (modified)		1	166362	05/25/17 21:16	CBW	TAL SAC

Client Sample ID: CR-MW-6

Date Collected: 05/09/17 00:00

Date Received: 05/12/17 09:30

Lab Sample ID: 240-79501-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			165656	05/23/17 08:00	J1S	TAL SAC
Total/NA	Analysis	537 (modified)		1	166362	05/25/17 21:23	CBW	TAL SAC
Total/NA	Prep	3535	RE		166807	05/31/17 11:23	NS1	TAL SAC
Total/NA	Analysis	537 (modified)	RE	1	167333	06/02/17 16:22	SBC	TAL SAC

Lab Chronicle

Client: Michigan Dept. of Environmental Quality
Project/Site: F-41 PFC Contamination - 3500058

TestAmerica Job ID: 240-79501-1

Client Sample ID: CR-MW-6 DUP

Lab Sample ID: 240-79501-6

Date Collected: 05/09/17 00:00

Matrix: Water

Date Received: 05/12/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			165656	05/23/17 08:00	J1S	TAL SAC
Total/NA	Analysis	537 (modified)		1	166362	05/25/17 21:31	CBW	TAL SAC

Laboratory References:

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

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Accreditation/Certification Summary

Client: Michigan Dept. of Environmental Quality
 Project/Site: F-41 PFC Contamination - 3500058

TestAmerica Job ID: 240-79501-1

Laboratory: TestAmerica Canton

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

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	2927	02-23-18
Connecticut	State Program	1	PH-0590	12-31-17
Florida	NELAP	4	E87225	06-30-17 *
Illinois	NELAP	5	200004	07-31-17 *
Kansas	NELAP	7	E-10336	01-31-18
Kentucky (UST)	State Program	4	58	02-23-18
Kentucky (WW)	State Program	4	98016	12-31-17
Minnesota	NELAP	5	039-999-348	12-31-17
Minnesota (Petrofund)	State Program	1	3506	07-31-17 *
Nevada	State Program	9	OH-000482008A	07-31-17 *
New Jersey	NELAP	2	OH001	06-30-17 *
New York	NELAP	2	10975	03-31-18
Ohio VAP	State Program	5	CL0024	09-14-17
Oregon	NELAP	10	4062	02-23-18
Pennsylvania	NELAP	3	68-00340	08-31-17 *
Texas	NELAP	6	T104704517-15-5	08-31-17 *
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-17
Washington	State Program	10	C971	01-12-18
West Virginia DEP	State Program	3	210	12-31-17
Wisconsin	State Program	5	999518190	08-31-17 *

Laboratory: TestAmerica Sacramento

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

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska (UST)	State Program	10	UST-055	12-18-17
Arizona	State Program	9	AZ0708	08-11-17
Arkansas DEQ	State Program	6	88-0691	06-17-18
California	State Program	9	2897	01-31-18
Colorado	State Program	8	CA00044	08-31-17
Connecticut	State Program	1	PH-0691	06-30-17
Florida	NELAP	4	E87570	06-30-17
Hawaii	State Program	9	N/A	01-29-18
Illinois	NELAP	5	200060	03-17-18
Kansas	NELAP	7	E-10375	10-31-17
L-A-B	DoD ELAP		L2468	01-20-18
Louisiana	NELAP	6	30612	06-30-17
Maine	State Program	1	CA0004	04-18-18
Michigan	State Program	5	9947	01-31-18
Nevada	State Program	9	CA00044	07-31-17
New Hampshire	NELAP	1	2997	04-18-18
New Jersey	NELAP	2	CA005	06-30-17
New York	NELAP	2	11666	04-01-18
Oregon	NELAP	10	4040	01-28-18
Pennsylvania	NELAP	3	68-01272	03-31-18
Texas	NELAP	6	T104704399	05-31-18
US Fish & Wildlife	Federal		LE148388-0	10-31-17
USDA	Federal		P330-11-00436	12-30-17
USEPA UCMR	Federal	1	CA00044	11-06-18

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

TestAmerica Canton

Accreditation/Certification Summary

Client: Michigan Dept. of Environmental Quality
Project/Site: F-41 PFC Contamination - 3500058

TestAmerica Job ID: 240-79501-1

Laboratory: TestAmerica Sacramento (Continued)

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

Authority	Program	EPA Region	Identification Number	Expiration Date
Utah	NELAP	8	CA00044	02-28-18
Virginia	NELAP	3	460278	03-14-18
Washington	State Program	10	C581	05-05-18
West Virginia (DW)	State Program	3	9930C	12-31-17
Wyoming	State Program	8	8TMS-L	01-29-17 *

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

TestAmerica Canton

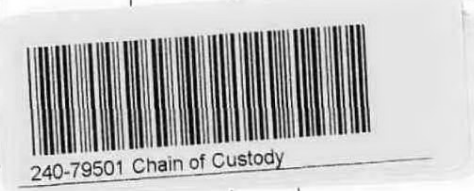


1.4/C1.1

Analysis Request Sheet

Lab Work Order Number	Project Name	Matrix
	F-41 PFC Contamination	WATER
Site Code/Project Number	AY	CC Email 1
35000153	17	pincumbej
Dept-Division-District	Index	CC Email 2
DEQ-RRD-Saginaw bay	44031	shireyb
State Project Manager	PCA	CC Email 3
Mike Jury	30740	
State Project Manager Email	Project	Overflow Lab Choice 1
juerym1	457189	TEST AMERICA
State Project Manager Phone	Phase	Overflow Lab Choice 2
989-894-6255	00	
		Project TAT Days
		Sample Collector
		Jeff Pincumbe
		Project Due Date
		Sample Collector Phone
		517-335-6418
		Contract Firm
		Contract Firm Primary Contact
		Primary Contact Phone
		Accept Analysis hold time codes

Lab Use Only	Field Sample Identification	Collection Date	Collection Time	Container Count	Comments
1	AR-MW-2				
2	AR-MW-3				
3	AR-MW-4				
4	AR-MW-5				
5	CR-MW-6				
6	CR-MW-6 DU				
7					
8					
9					
10					



ORGANIC CHEMISTRY	MAD - DISSOLVED METALS	MA - TOTAL METALS	GENERAL CHEMISTRY
VOA - Volatile Organic Acidic	Diss - Silver - Ag	Silver - Ag	GB Total Cyanide - CN
Volatiles - Full List	Diss - Aluminum - Al	Aluminum - Al	GB Amenable Cyanide - CN
BTEX/MTBE/TMB only	Diss - Arsenic - As	Arsenic - As	GCN Available Cyanide - CN
Chlorinated only	Diss - Boron - B	Boron - B	CA Chlorophyll
GRO	Diss - Barium - Ba	Barium - Ba	GN Ortho Phosphate - OP
1,4 Dioxane	Diss - Beryllium - Be	Beryllium - Be	GN Nitrite - NO ₂
METH - Methane, Ethane, Ethene	Diss - Cadmium - Cd	Cadmium - Cd	GN Nitrate - NO ₃ (Calc.)
Methane, Ethane, Ethene	Diss - Cobalt - Co	Cobalt - Co	GN Suspended Solids - SS
ON - Pesticides, PCBs	Diss - Chromium - Cr	Chromium - Cr	GN Dissolved Solids - TDS
Pesticides & PCBs	Diss - Copper - Cu	Copper - Cu	MN Diss Solids - TDS (Calc.)
Pesticides only	Diss - Iron - Fe	Iron - Fe	GN Turbidity
PCBs only	Diss - Mercury - Hg	Mercury - Hg	MN Total Alkalinity
Toxaphene	Diss - Lithium - Li	Lithium - Li	MN Bicarb/Carb Alkalinity
Chlordane	Diss - Manganese - Mn	Manganese - Mn	(Includes Total Alkalinity)
BNA - Base Neutral Acids	Diss - Molybdenum - Mo	Molybdenum - Mo	MN Chloride - Cl
BNAs	Diss - Nickel - Ni	Nickel - Ni	MN Fluoride - F
Benzidines	Diss - Lead - Pb	Lead - Pb	MN Sulfate - SO ₄
PNAs only	Diss - Antimony - Sb	Antimony - Sb	MN Chromium 6 - Cr+6
BNs only	Diss - Selenium - Se	Selenium - Se	MN Conductivity
Acids only	Diss - Strontium - Sr	Strontium - Sr	MN pH
Organic Specialty Requests	Diss - Titanium - Ti	Titanium - Ti	GA Chem Oxyg Dem - COD
Library search - Volatiles	Diss - Thallium - Tl	Thallium - Tl	GA Diss Org Carbon - DOC (FF)
Library search - SemiVols	Diss - Uranium - U	Uranium - U	(Field - Filtered & Preserved)
Finger Print	Diss - Vanadium - V	Vanadium - V	GN Diss Org Carbon - DOC (LF)
DRO / ORO	Diss - Zinc - Zn	Zinc - Zn	(Lab - Filtered & Preserved)
METALS CHEMISTRY PACKAGES	Diss - Calcium - Ca	Calcium - Ca	GA Total Org Carbon - TOC
OpMemo2 - Total	Diss - Potassium - K	Potassium - K	GA Ammonia - NH ₃
OpMemo2 - Dissolved	Diss - Magnesium - Mg	Magnesium - Mg	GA Nitrate+Nitrite - NO ₃ +NO ₂
(Sb,As,Ba,Be,Cd,Cr,Cu,Co,Fe,Pb,Mn,Hg,Mo,Ni,Se,Ag,Tl,V,Zn)	Diss - Sodium - Na	Sodium - Na	GA Kjeldahl Nitrogen - KN
Michigan10 - Total	Diss - Hardness - Ca, Mg	Hardness - Ca, Mg	GA Total Phosphorus - TP
Michigan10 - Dissolved	MD - Metals Dissolved	LHG - Low Level Mercury	
(As,Ba,Cd,Cr,Cu,Pb,Hg,Se,Ag,Zn)	Lab Filtration	Mercury Low Level - Hg	

Chain of Custody	Relinquished by	Received By	Date / Time
	Print Name & Org. Jeff Pincumbe - MDEQ	Jordan Handley MDEQ	5/10/17 0836
	Signature: <i>[Signature]</i>	<i>[Signature]</i>	
	Print Name & Org. Melissa Sa. H.	<i>[Signature]</i>	5/11/17 1230
Signature: <i>[Signature]</i>	<i>[Signature]</i>		
Print Name & Org. Gary Schafen TIA	<i>[Signature]</i>	5/12-17	
Signature: <i>[Signature]</i>	<i>[Signature]</i>	1000 930	

TestAmerica Canton Sample Receipt Form/Narrative
Canton Facility

Login # : 79501


Client DEQ Site Name _____ Cooler unpacked by: POF

Cooler Received on 5-12-17 Opened on 5-12-17

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # _____ Foam Box Client Cooler Box Other _____
 Packing material used: Bubble Wrap Foam Plastic Bag None Other _____
 COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt See Multiple Cooler Form
 IR GUN# IR-8 (CF -0.3 °C) Observed Cooler Temp. 1.4 °C Corrected Cooler Temp. 1.1 °C
 IR GUN #36 (CF +0.8 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
 2. Were custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No
 -Were custody seals on the outside of the cooler(s) signed & dated? Yes No NA
 -Were custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
 3. Shippers' packing slip attached to the cooler(s)? Yes No
 4. Did custody papers accompany the sample(s)? Yes No
 5. Were the custody papers relinquished & signed in the appropriate place? Yes No
 6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
 7. Did all bottles arrive in good condition (Unbroken)? Yes No
 8. Could all bottle labels be reconciled with the COC? Yes No
 9. Were correct bottle(s) used for the test(s) indicated? Yes No
 10. Sufficient quantity received to perform indicated analyses? Yes No
 11. Are these work share samples? Yes No
 - If yes, Questions 11-15 have been checked at the originating laboratory.
 11. Were sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC697954
 12. Were VOAs on the COC? Yes No
 13. Were air bubbles >6 mm in any VOA vials?  Larger than this. Yes No NA
 14. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____ Yes No
 15. Was a LL Hg or Me Hg trip blank present? Yes No
- Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other _____
- Concerning _____

16. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES Samples processed by: _____

No Sample dates or times on C.O.C will us dates on bottles. 5.19.17

17. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
 Sample(s) _____ were received in a broken container.
 Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

18. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
 Time preserved: _____ Preservative(s) added/Lot number(s): _____

Ref: SOP NC-SC-0005, Sample Receiving
 \\tacorp\corp\QA\QA_Facilities\Canton-QA\Document-Management\Work-Instruction\Word Version Work Instructions\WI-NC-099-042717 Cooler Receipt Form.doc djf

TestAmerica Canton
4101 Shuffel Street NW
North Canton, OH 44720
Phone (330) 497-9396 Fax (330) 497-0772

Chain of Custody Record



TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)		Lab PM: Brooks, Kris M		Carrier Tracking No(s):	
Shipping/Receiving		E-Mail: kris.brooks@testamericainc.com		State of Origin: Michigan	
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note)		Job #: 240-79501-1	
Address: 880 Riverside Parkway, West Sacramento, CA 95605		Due Date Requested: 6/6/2017		Preservation Codes:	
Phone: 916-373-5600(Tel) 916-372-1059(Fax)		TAT Requested (days):		A - HCL M - Hexane N - None O - AsNO2 P - Na2O4S Q - NiHic Acid R - Na2SO3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Z - other (specify)	
Email:		PO #:		Other:	
Project Name: Wurtsmith - 3500058		WO #:		Special Instructions/Note:	
Site:		Project #: 24006344		NCM E flags, NCM any re-analyses & why. Try for MB<1/2 RL	
SOW#:		SSOW#:		NCM E flags, NCM any re-analyses & why. Try for MB<1/2 RL	
Sample Identification - Client ID (Lab ID)		Sample Date		Sample Time	
AR-MW-2 (240-79501-1)		5/9/17		Eastern	
AR-MW-3 (240-79501-2)		5/9/17		Eastern	
AR-MW-4 (240-79501-3)		5/9/17		Eastern	
AR-MW-5 (240-79501-4)		5/9/17		Eastern	
CR-MW-6 (240-79501-5)		5/9/17		Eastern	
CR-MW-6 DUP (240-79501-6)		5/9/17		Eastern	
Matrix (W=water, S=solid, O=wastewater, B=leachate, A=air)		Sample Type (C=Comp, G=grab)		Field Filtered Sample (Yes or No)	
Water		Water		X	
Water		Water		X	
Water		Water		X	
Water		Water		X	
Water		Water		X	
Water		Water		X	
Form M/MSD (Yes or No)		PFC IDA/3535_PFC (MOD) PFC expanded list		Total Number of Containers	
X		X		2	
X		X		2	
X		X		2	
X		X		2	
X		X		2	
X		X		2	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/items/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.

Possible Hazard Identification

Unconfirmed
 Return To Client Disposal By Lab Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify) _____ Primary Deliverable Rank: 2

Empty Kit Relinquished by: _____ Date: _____

Relinquished by: *[Signature]* Date/Time: 5/17/17 1550 Company: _____

Relinquished by: *[Signature]* Date/Time: 5/13/17 1130 Company: *THWS*

Relinquished by: _____ Date/Time: _____ Company: _____

Custody Seals Intact: _____ Custody Seal No.: _____
 A Yes Δ No

Cooler Temperature(s) °C and Other Remarks: 3.9



Login Sample Receipt Checklist

Client: Michigan Dept. of Environmental Quality

Job Number: 240-79501-1

Login Number: 79501
List Number: 2
Creator: Edman, Connor M

List Source: TestAmerica Sacramento
List Creation: 05/15/17 11:27 AM

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

Isotope Dilution Summary

Client: Michigan Dept. of Environmental Quality
 Project/Site: F-41 PFC Contamination - 3500058

TestAmerica Job ID: 240-79501-1

Method: 537 (modified) - Perfluorinated Hydrocarbons

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	3C8 FOS/ (25-150)	3C4 PFB/ (25-150)	3C2 PFHx (25-150)	3C4 PFO/ (25-150)	3C5 PFN/ (25-150)	3C2 PFD/ (25-150)	3C2 PFUn (25-150)	3C2 PFDo (25-150)
240-79501-1	AR-MW-2	5 *	40	79	93	98	109	113	105
240-79501-2	AR-MW-3	4 *	41	78	94	97	108	108	107
240-79501-3	AR-MW-4	2 *	51	87	97	97	109	120	131
240-79501-4	AR-MW-5	4 *	45	79	87	89	97	104	116
240-79501-5	CR-MW-6	0.3 *	29	61	62	49	42	39	49
240-79501-5 - RE	CR-MW-6	7 *							
240-79501-6	CR-MW-6 DUP	4 *	31	76	90	88	85	79	91
LCS 320-165656/2-A	Lab Control Sample	6 *	95	93	104	105	117	116	116
LCS 320-166807/2-A	Lab Control Sample	7 *							
LCSD 320-165656/3-A	Lab Control Sample Dup	21 *	98	99	107	108	121	118	117
LCSD 320-166807/3-A	Lab Control Sample Dup	9 *							
MB 320-165656/1-A	Method Blank	24 *	104	104	117	120	128	130	124
MB 320-166807/1-A	Method Blank	25							

		Percent Isotope Dilution Recovery (Acceptance Limits)			
Lab Sample ID	Client Sample ID	3O2 PFHx (25-150)	3C4 PFO: (25-150)	3C4-PFHp (25-150)	3C5-PFPe (25-150)
240-79501-1	AR-MW-2	90	95	94	79
240-79501-2	AR-MW-3	90	96	93	81
240-79501-3	AR-MW-4	103	111	98	90
240-79501-4	AR-MW-5	92	97	89	81
240-79501-5	CR-MW-6	88	87	72	63
240-79501-5 - RE	CR-MW-6				
240-79501-6	CR-MW-6 DUP	93	98	91	71
LCS 320-165656/2-A	Lab Control Sample	91	94	109	105
LCS 320-166807/2-A	Lab Control Sample				
LCSD 320-165656/3-A	Lab Control Sample Dup	91	97	112	113
LCSD 320-166807/3-A	Lab Control Sample Dup				
MB 320-165656/1-A	Method Blank	100	99	116	117
MB 320-166807/1-A	Method Blank				

Surrogate Legend

- 13C8 FOSA = 13C8 FOSA
- 13C4 PFBA = 13C4 PFBA
- 13C2 PFHxA = 13C2 PFHxA
- 13C4 PFOA = 13C4 PFOA
- 13C5 PFNA = 13C5 PFNA
- 13C2 PFDA = 13C2 PFDA
- 13C2 PFUnA = 13C2 PFUnA
- 13C2 PFDoA = 13C2 PFDoA
- 18O2 PFHxS = 18O2 PFHxS
- 13C4 PFOS = 13C4 PFOS
- 13C4-PFHpA = 13C4-PFHpA
- 13C5-PFPeA = 13C5-PFPeA