Protecting, maintaining and improving the health of all Minnesotans

Report Date: 4/26/19
Client Name: QW - MPCA - Closed Landfill Assessment
Project Code: QW
Project Name: Closed Landfill Assessment

Work Order Number: 19C1235

Report To: QW - MPCA - Closed Landfill Assessment
Mark Umholtz
520 Lafayette Rd.
Saint Paul, MN 55155

The MDH Public Health Laboratory performs chemical, bacteriological and radiological analyses of environmental samples including water, waste water, sediment, air, soil and hazardous material. The laboratory provides testing services in accordance with standard operating procedures referencing approved methodology as defined in Standard Methods for the Examination of Water and Wastewater, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods: EPA SW-846, and 40 Code of Federal Regulation (CFR) parts 136, 141, and 261. In cases where analytes of interest do not have corresponding EPA approved methodology, the MDH Public Health Laboratory uses in-house methods that have undergone rigorous validation and documentation.

The results within this report are in compliance with the terms and conditions stated in the standard operating procedures, reference methodologies, and quality assurance project plan; unless otherwise narrated in the attached report.

Release of the data contained in this report has been authorized by laboratory management and is verified with the following signature affirmation. Thank you for using the MDH Public Health Laboratory.

Sincerely,

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Summary of Samples Received

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelosi
Collector ID: None
Project ID: PRJ07786
Facility Name: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 04/26/19 9:19

Work Order Comment: Program code is QW per B. Scruton. -CNN 3/29/19

Field ID	MDH Sample Number	Matrix	Date & Time Collected	Date & Time Received	Receipt °C
Trip Blank 1	19C1235-01	QC-BLANK	03/26/19 7:00	03/28/19 10:50	2.1
Field Blank 1	19C1235-02	QC-BLANK	03/26/19 10:10	03/28/19 10:50	2.1
603281	19C1235-03	Wtr-Ground	03/26/19 11:30	03/28/19 10:50	2.1
603287	19C1235-04	Wtr-Ground	03/26/19 13:50	03/28/19 10:50	2.1
603288	19C1235-05	Wtr-Ground	03/26/19 15:30	03/28/19 10:50	2.1
603289	19C1235-06	Wtr-Ground	03/26/19 16:30	03/28/19 10:50	2.1
813766	19C1235-07	Wtr-Ground	03/27/19 10:40	03/28/19 10:50	2.1
813741	19C1235-08	Wtr-Ground	03/27/19 11:40	03/28/19 10:50	2.1
M-1	19C1235-09	Wtr-Ground	03/27/19 11:42	03/28/19 10:50	2.1
813768	19C1235-10	Wtr-Ground	03/27/19 12:40	03/28/19 10:50	2.1
813767	19C1235-11	Wtr-Ground	03/27/19 13:40	03/28/19 10:50	2.1
813765	19C1235-12	Wtr-Ground	03/27/19 15:40	03/28/19 10:50	2.1

FINAL REPORT

Report ID: 04262019 91928

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Minnesota Pollution Control Agency

Chain-of-Custody Form rev.Jun 2013.0909

Work Order Number: 19C1235 | COC Type: Standard | Page 1 of 2

Turnaround Time: Standard | COC ID:

PROJECT/CLIENT INFO

Facility Code: MN SW-057 | Program Code (MDH Lab Only):

Project Name: 19-01567 MPCA Freeway Landfill 2019 MDH | Project Task Code: PRJ07786

Project Manager: Mark Umholtz | 651-757-2308

Potential Hazard? If yes, add information to Sampler Comments Section

LABORATORY

Lab Name: Minnesota Department of Health

Address: 601 Robert Street N.

St. Paul | MN | 55155

Phone No: 651-201-5058

SAMPLE DETAILS

SAMPLE TYPE CODES
Sample=Routine Sample
S-IVP=Integrated Vertical Profile Sample
S-CWOP=Composite Sample
QC-FB=Field Blank Sample
QC-FR=Field Replicate Sample
QC-TB=Trip Blank Sample

LAB MATRIX CODES
DW=Drinking Water
NW=Non-potable Water
SD=Soil/Solid
WP=Wipe
AR=Air
BL=Biological Material
OT=Other
TS=Tissue

FIELD MATRIX CODES
Wtr-Ground=Groundwater
Wtr-Surf=Surface Water
QC-BLANK=Artificial Blank Water
Leachate=Leachate Sample

ANALYSIS REQUESTED

Location Identifier	Sample Type	Date	Time	Start Depth, in meters	End Depth, in meters	Grab (G) or Composite (C) Sample	Lab Matrix Code	Field Matrix Code	AIS	Sampler Comments (filter volume, special handling, etc.)	# of Cont	PRESERV.							Lab Sample No.	#
												ANALYSIS	VOCs EPA 8260D	PFAS by MDH555	1,4 Dioxane					
												HCl	None	None						
Trip Blank 1	QC-TB	3/26/19	0700			G	NW	QC-BLANK	N		3		X						-01	1
Field Blank 1	QC-FB	3/26/19	1010			G	NW	QC-BLANK	N		5		X	X	X				-02	2
603281	Sample	3/26/19	1130			G	NW	Wtr-Ground	N		5		X	X	X				-03	3
603287	Sample	3/26/19	1350			G	NW	Wtr-Ground	N		5		X	X	X				-04	4
603288	Sample	3/26/19	1530			G	NW	Wtr-Ground	N		5		X	X	X				-05	5
603289	Sample	3/26/19	1630			G	NW	Wtr-Ground	N		5		X	X	X				-06	6
813766	Sample	3/27/19	1040			G	NW	Wtr-Ground	N		5		X	X	X				-07	7
813741	Sample	3/27/19	1140			G	NW	Wtr-Ground	N		5		X	X	X				-08	8
M-1	QC-FR Sample	3/27/19	1142			G	NW	Wtr-Ground	N		5		X	X	X				-09	9
813768	Sample	3/27/19	1240			G	NW	Wtr-Ground	N		5		X	X	X				-10	10

Sampled By: David Anderson / Chris Pelosi

Sampler's Signature: David Anderson / Cliff Olson

Phone #:

Receiving Comments:

Relinquished By/Affiliation	Date/Time	Accepted By/ Affiliation	Date/Time
(Sampler) David Anderson / Pace Analytical	3/28/19 0740		3/26/19 900 AM
	3/28/19 1015		3/28/19 1050

Minnesota Pollution Control Agency

Chain-of-Custody Form revision 2013.0909

Work Order Number: 19C1235 COC Type: Standard Page:

Turnaround Time: Standard COC ID:

PROJECT/CLIENT INFO				LABORATORY			
Facility Code:	MN SW-057	Program Code (MDH Lab Only):		Lab Name:	Minnesota Department of Health		
Project Name:	19-01567 MPCA Freeway Landfill 2019 MDH	Project Task Code:	PRJ07786	Address:	601 Robert Street N.		
Project Manager:	Mark Umholtz	651-757-2308			St. Paul	MN	55155
Potential Hazard?	If yes, add information to Sampler Comments Section			Phone No:	651-201-5058		

SAMPLE TYPE CODES
Sample=Routine Sample; S-IVP=Integrated Vertical Profile Sample; S-CWOP=Composite Sample; QC-FB=Field Blank Sample; QC-FR=Field Replicate Sample; QC-TB=Trip Blank Sample

LAB MATRIX CODES
DW=Drinking Water; NW=Non-potable Water; SD=Soil/Solid; WP=Wipe; AR=Air; BL=Biological Material; OT=Other; TS=Tissue

FIELD MATRIX CODES
Wtr-Ground=Groundwater; Wtr-Surf=Surface Water; QC-BLANK=Artificial Blank Water; Leachate=Leachate Sample

SAMPLE DETAILS / ANALYSIS REQUESTED

												PRESERV.	HCl	None	None					
Location Identifier	Sample Type	Date	Time	Start Depth, in meters	End Depth, in meters	Grab (G) or Composite (C) Sample	Lab Matrix Code	Field Matrix Code	AIS	Sampler Comments (filter volume, special handling, etc.)	# of Cont	ANALYSIS	VOCs EPA 8260D	PFAS by MDH555	1,4 Dioxane				Lab Sample No.	#
813767	Sample	3/27/19	1340			G	NW	Wtr-Ground	N		5		X	X	X				-11	1
813765	Sample	3/27/19	1540			G	NW	Wtr-Ground	N		5		X	X	X				-12	2
									N											3
									N											4
									N											5
									N											6
									N											7
									N											8
									N											9
									N											10

DW 3/27/19

Sampled By: David Anderson / Chris Pelasi

Sampler's Signature: David Anderson / CJP

Phone #:

Receiving Comments:

Relinquished By/Affiliation	Date/Time	Accepted By/Affiliation	Date/Time
(Sampler) David Anderson / Pace Analytical	3/28/19 0740		3/28/19 9am
	3/28/19		3/28/19 0500

DEPARTMENT OF HEALTH

Sample Condition Upon Receipt

Minnesota Department of Health Public Health Laboratory

Data Entry Worksheet

19C1235

Parcel Information

Date & time of receipt: MAR 28 '19 10:50

Courier: ☒ Walk-in ☐ FedEx ☐ Spee-Dee ☐ UPS ☐ USPS ☐ Other courier _____

Tracking # _____

After hours drop-off: ☐ Refrigerator (207) (186) ( ) ☐ Freezer (185) ( ) ☐ Unrefrigerated

Parcel: ☒ Plastic cooler ☐ Styrofoam/cardboard cooler ☐ Cardboard box ☐ Envelope ☐ Plastic can ☐ None ☐ Other _____

Custody seals present: ☒ No; ☐ Yes, If "Yes" Custody seals intact: ☐ Yes; ☐ No _____

Custody seal # _____ **Evidentiary samples identified:** ☒ No ☐ Yes

Packaging, Temperature & Radiochemical Information

Packing material: ☒ Bubble wrap ☐ Styrofoam ☐ Paper ☐ None ☐ Other _____

Cooling material: ☐ Wet ice (loose) ☒ Wet ice pack #(3) ☐ Gel pack #( ) ☐ Dry ice ☐ None ☐ Other _____

Condition of cooling material: ☐ Solid ☐ Partially frozen ☐ Liquid; Liquid temperature: _____ °C ☐ N/A

Representative sample temperature: 2.1 °C **IR thermometer instrument used:** BIO

Samples received with evidence of freezing: ☒ No; ☐ Yes _____

Rad Chem. request received: ☒ No; ☐ Yes, If "Yes" sample survey results: ☐ < 0.5 mrem/hr ☐ ≥ 0.5 mrem/hr

Initials of person receiving parcel: CB

Chain of Custody, Sample Container & Analysis Information

Chain of custody received with sample containers: ☒ Yes ☐ No

Chain of custody type: ☒ Standard ☐ Civil ☐ Criminal ☐ Priority/Emergency ☐ Unknown

All sample containers are unique to a sample point listed on the chain of custody: ☒ Yes; ☐ No

All sample containers have been collected prior to the expiration date listed on container label: ☒ Yes; ☐ No ☐ Unknown _____

All sample containers received intact: ☒ Yes; ☐ No _____

All sample containers are appropriate for requested analysis: ☒ Yes; ☐ No ☐ Unknown _____

All analysis have been received within the specified holding time for analysis: ☒ Yes; ☐ No ☐ Unknown _____

Sample submission details are entered in the Environmental Laboratory LIMS.

Initials of person logging in the work order request into LIMS: B

DOC-84
Revision: 4

Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Case Narrative

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name: MN SW-057
Collected by: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/2019 9:19

Except where noted in this report, no additional comments are needed for this Work Order.

Authorized by:

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelosi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 04/26/19 9:19

MDH Sample Number: 19C1235-01

Location ID: Trip Blank 1
Field Name: None
Sampling Point: None
QA Type: Trip Blank

Collect Date: 03/26/19
Collect Time: 7:00
Matrix: QC-BLANK

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Surrogate: 1,2-Dichlorobenzene-d4		*102*	*70-130*	%	*1*	*B9C0458*	*03/29/19 15:41*	*03/29/19 15:41*	*EPA 8260D*
Surrogate: 4-Bromofluorobenzene		*98*	*70-130*	%	*1*	*B9C0458*	*03/29/19 15:41*	*03/29/19 15:41*	*EPA 8260D*
Surrogate: Methyl tertiary butyl ether-d3		*100*	*70-130*	%	*1*	*B9C0458*	*03/29/19 15:41*	*03/29/19 15:41*	*EPA 8260D*
1,1,1,2-Tetrachloroethane		<	1.0	ug/L	1	B9C0458	03/29/19 15:41	03/29/19 15:41	EPA 8260D
1,1,1-Trichloroethane		<	1.0	ug/L	1	B9C0458	03/29/19 15:41	03/29/19 15:41	EPA 8260D
1,1,2,2-Tetrachloroethane		<	0.50	ug/L	1	B9C0458	03/29/19 15:41	03/29/19 15:41	EPA 8260D
1,1,2-Trichloroethane		<	0.50	ug/L	1	B9C0458	03/29/19 15:41	03/29/19 15:41	EPA 8260D
1,1,2-Trichlorotrifluoroethane		<	1.0	ug/L	1	B9C0458	03/29/19 15:41	03/29/19 15:41	EPA 8260D
1,1-Dichloroethane		<	1.0	ug/L	1	B9C0458	03/29/19 15:41	03/29/19 15:41	EPA 8260D
1,1-Dichloroethene		<	1.0	ug/L	1	B9C0458	03/29/19 15:41	03/29/19 15:41	EPA 8260D
1,1-Dichloropropene		<	1.0	ug/L	1	B9C0458	03/29/19 15:41	03/29/19 15:41	EPA 8260D
1,2,3-Trichlorobenzene		<	1.0	ug/L	1	B9C0458	03/29/19 15:41	03/29/19 15:41	EPA 8260D
1,2,3-Trichloropropane		<	0.20	ug/L	1	B9C0458	03/29/19 15:41	03/29/19 15:41	EPA 8260D
1,2,4-Trichlorobenzene		<	1.0	ug/L	1	B9C0458	03/29/19 15:41	03/29/19 15:41	EPA 8260D
1,2,4-Trimethylbenzene		<	1.0	ug/L	1	B9C0458	03/29/19 15:41	03/29/19 15:41	EPA 8260D
1,2-Dibromo-3-chloropropane (DBCP)		<	1.0	ug/L	1	B9C0458	03/29/19 15:41	03/29/19 15:41	EPA 8260D
1,2-Dibromoethane (EDB)		<	0.50	ug/L	1	B9C0458	03/29/19 15:41	03/29/19 15:41	EPA 8260D
1,2-Dichlorobenzene		<	1.0	ug/L	1	B9C0458	03/29/19 15:41	03/29/19 15:41	EPA 8260D
1,2-Dichloroethane		<	0.20	ug/L	1	B9C0458	03/29/19 15:41	03/29/19 15:41	EPA 8260D
1,2-Dichloropropane		<	1.0	ug/L	1	B9C0458	03/29/19 15:41	03/29/19 15:41	EPA 8260D
1,3,5-Trimethylbenzene		<	1.0	ug/L	1	B9C0458	03/29/19 15:41	03/29/19 15:41	EPA 8260D
1,3-Dichlorobenzene		<	1.0	ug/L	1	B9C0458	03/29/19 15:41	03/29/19 15:41	EPA 8260D
1,3-Dichloropropane		<	1.0	ug/L	1	B9C0458	03/29/19 15:41	03/29/19 15:41	EPA 8260D
1,4-Dichlorobenzene		<	1.0	ug/L	1	B9C0458	03/29/19 15:41	03/29/19 15:41	EPA 8260D
2,2-Dichloropropane		<	1.0	ug/L	1	B9C0458	03/29/19 15:41	03/29/19 15:41	EPA 8260D

Authorized by:

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelosi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 04/26/19 9:19

MDH Sample Number: 19C1235-01

Location ID: Trip Blank 1
Field Name: None
Sampling Point: None
QA Type: Trip Blank

Collect Date: 03/26/19
Collect Time: 7:00
Matrix: QC-BLANK

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
2-Chlorotoluene		<	1.0	ug/L	1	B9C0458	03/29/19 15:41	03/29/19 15:41	EPA 8260D
4-Chlorotoluene		<	1.0	ug/L	1	B9C0458	03/29/19 15:41	03/29/19 15:41	EPA 8260D
Acetone		<	20	ug/L	1	B9C0458	03/29/19 15:41	03/29/19 15:41	EPA 8260D
Allyl chloride		<	1.0	ug/L	1	B9C0458	03/29/19 15:41	03/29/19 15:41	EPA 8260D
Benzene		<	0.50	ug/L	1	B9C0458	03/29/19 15:41	03/29/19 15:41	EPA 8260D
Bromobenzene		<	1.0	ug/L	1	B9C0458	03/29/19 15:41	03/29/19 15:41	EPA 8260D
Bromochloromethane		<	1.0	ug/L	1	B9C0458	03/29/19 15:41	03/29/19 15:41	EPA 8260D
Bromodichloromethane		<	1.0	ug/L	1	B9C0458	03/29/19 15:41	03/29/19 15:41	EPA 8260D
Bromoform		<	1.0	ug/L	1	B9C0458	03/29/19 15:41	03/29/19 15:41	EPA 8260D
Bromomethane	L3, V4, Z-01	<	2.0	ug/L	1	B9C0458	03/29/19 15:41	03/29/19 15:41	EPA 8260D
Carbon tetrachloride		<	0.20	ug/L	1	B9C0458	03/29/19 15:41	03/29/19 15:41	EPA 8260D
Chlorobenzene		<	1.0	ug/L	1	B9C0458	03/29/19 15:41	03/29/19 15:41	EPA 8260D
Chlorodibromomethane		<	0.50	ug/L	1	B9C0458	03/29/19 15:41	03/29/19 15:41	EPA 8260D
Chloroethane		<	1.0	ug/L	1	B9C0458	03/29/19 15:41	03/29/19 15:41	EPA 8260D
Chloroform		<	1.0	ug/L	1	B9C0458	03/29/19 15:41	03/29/19 15:41	EPA 8260D
Chloromethane		<	1.0	ug/L	1	B9C0458	03/29/19 15:41	03/29/19 15:41	EPA 8260D
cis-1,2-Dichloroethene		<	1.0	ug/L	1	B9C0458	03/29/19 15:41	03/29/19 15:41	EPA 8260D
cis-1,3-Dichloropropene		<	0.50	ug/L	1	B9C0458	03/29/19 15:41	03/29/19 15:41	EPA 8260D
Dibromomethane		<	1.0	ug/L	1	B9C0458	03/29/19 15:41	03/29/19 15:41	EPA 8260D
Dichlorodifluoromethane		<	1.0	ug/L	1	B9C0458	03/29/19 15:41	03/29/19 15:41	EPA 8260D
Dichlorofluoromethane		<	1.0	ug/L	1	B9C0458	03/29/19 15:41	03/29/19 15:41	EPA 8260D
Ethyl ether		<	1.0	ug/L	1	B9C0458	03/29/19 15:41	03/29/19 15:41	EPA 8260D
Ethylbenzene		<	1.0	ug/L	1	B9C0458	03/29/19 15:41	03/29/19 15:41	EPA 8260D
Hexachlorobutadiene		<	0.50	ug/L	1	B9C0458	03/29/19 15:41	03/29/19 15:41	EPA 8260D
Isopropylbenzene		<	1.0	ug/L	1	B9C0458	03/29/19 15:41	03/29/19 15:41	EPA 8260D
Methyl ethyl ketone (MEK)		<	10	ug/L	1	B9C0458	03/29/19 15:41	03/29/19 15:41	EPA 8260D
Methyl isobutyl ketone (MIBK)		<	5.0	ug/L	1	B9C0458	03/29/19 15:41	03/29/19 15:41	EPA 8260D

FINAL REPORT

Report ID: 04262019 91928

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelosi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 04/26/19 9:19

MDH Sample Number: 19C1235-01

Location ID: Trip Blank 1
Field Name: None
Sampling Point: None
QA Type: Trip Blank

Collect Date: 03/26/19
Collect Time: 7:00
Matrix: QC-BLANK

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Methyl tertiary butyl ether (MTBE)		<	2.0	ug/L	1	B9C0458	03/29/19 15:41	03/29/19 15:41	EPA 8260D
Methylene chloride		<	1.0	ug/L	1	B9C0458	03/29/19 15:41	03/29/19 15:41	EPA 8260D
Naphthalene		<	1.0	ug/L	1	B9C0458	03/29/19 15:41	03/29/19 15:41	EPA 8260D
n-Butylbenzene		<	1.0	ug/L	1	B9C0458	03/29/19 15:41	03/29/19 15:41	EPA 8260D
n-Propylbenzene		<	1.0	ug/L	1	B9C0458	03/29/19 15:41	03/29/19 15:41	EPA 8260D
o-Xylene		<	1.0	ug/L	1	B9C0458	03/29/19 15:41	03/29/19 15:41	EPA 8260D
p&m-Xylene		<	1.0	ug/L	1	B9C0458	03/29/19 15:41	03/29/19 15:41	EPA 8260D
p-Isopropyltoluene		<	1.0	ug/L	1	B9C0458	03/29/19 15:41	03/29/19 15:41	EPA 8260D
sec-Butylbenzene		<	1.0	ug/L	1	B9C0458	03/29/19 15:41	03/29/19 15:41	EPA 8260D
Styrene		<	1.0	ug/L	1	B9C0458	03/29/19 15:41	03/29/19 15:41	EPA 8260D
tert-Butylbenzene		<	1.0	ug/L	1	B9C0458	03/29/19 15:41	03/29/19 15:41	EPA 8260D
Tetrachloroethene		<	1.0	ug/L	1	B9C0458	03/29/19 15:41	03/29/19 15:41	EPA 8260D
Tetrahydrofuran (THF)		<	10	ug/L	1	B9C0458	03/29/19 15:41	03/29/19 15:41	EPA 8260D
Toluene		<	1.0	ug/L	1	B9C0458	03/29/19 15:41	03/29/19 15:41	EPA 8260D
trans-1,2-Dichloroethene		<	1.0	ug/L	1	B9C0458	03/29/19 15:41	03/29/19 15:41	EPA 8260D
trans-1,3-Dichloropropene		<	0.50	ug/L	1	B9C0458	03/29/19 15:41	03/29/19 15:41	EPA 8260D
Trichloroethene (TCE)		<	0.10	ug/L	1	B9C0458	03/29/19 15:41	03/29/19 15:41	EPA 8260D
Trichlorofluoromethane		<	1.0	ug/L	1	B9C0458	03/29/19 15:41	03/29/19 15:41	EPA 8260D
Vinyl chloride		<	0.050	ug/L	1	B9C0458	03/29/19 15:41	03/29/19 15:41	EPA 8260D

Authorized by:

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelosi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 04/26/19 9:19

MDH Sample Number: 19C1235-02

Location ID: Field Blank 1
Field Name: None
Sampling Point: None
QA Type: Field Blank

Collect Date: 03/26/19
Collect Time: 10:10
Matrix: QC-BLANK

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Surrogate: 1,2-Dichlorobenzene-d4		*100*	*70-130*	%	*1*	*B9C0458*	*03/29/19 16:36*	*03/29/19 16:36*	*EPA 8260D*
Surrogate: 4-Bromofluorobenzene		*96*	*70-130*	%	*1*	*B9C0458*	*03/29/19 16:36*	*03/29/19 16:36*	*EPA 8260D*
Surrogate: Methyl tertiary butyl ether-d3		*100*	*70-130*	%	*1*	*B9C0458*	*03/29/19 16:36*	*03/29/19 16:36*	*EPA 8260D*
1,1,1,2-Tetrachloroethane		<	1.0	ug/L	1	B9C0458	03/29/19 16:36	03/29/19 16:36	EPA 8260D
1,1,1-Trichloroethane		<	1.0	ug/L	1	B9C0458	03/29/19 16:36	03/29/19 16:36	EPA 8260D
1,1,2,2-Tetrachloroethane		<	0.50	ug/L	1	B9C0458	03/29/19 16:36	03/29/19 16:36	EPA 8260D
1,1,2-Trichloroethane		<	0.50	ug/L	1	B9C0458	03/29/19 16:36	03/29/19 16:36	EPA 8260D
1,1,2-Trichlorotrifluoroethane		<	1.0	ug/L	1	B9C0458	03/29/19 16:36	03/29/19 16:36	EPA 8260D
1,1-Dichloroethane		<	1.0	ug/L	1	B9C0458	03/29/19 16:36	03/29/19 16:36	EPA 8260D
1,1-Dichloroethene		<	1.0	ug/L	1	B9C0458	03/29/19 16:36	03/29/19 16:36	EPA 8260D
1,1-Dichloropropene		<	1.0	ug/L	1	B9C0458	03/29/19 16:36	03/29/19 16:36	EPA 8260D
1,2,3-Trichlorobenzene		<	1.0	ug/L	1	B9C0458	03/29/19 16:36	03/29/19 16:36	EPA 8260D
1,2,3-Trichloropropane		<	0.20	ug/L	1	B9C0458	03/29/19 16:36	03/29/19 16:36	EPA 8260D
1,2,4-Trichlorobenzene		<	1.0	ug/L	1	B9C0458	03/29/19 16:36	03/29/19 16:36	EPA 8260D
1,2,4-Trimethylbenzene		<	1.0	ug/L	1	B9C0458	03/29/19 16:36	03/29/19 16:36	EPA 8260D
1,2-Dibromo-3-chloropropane (DBCP)		<	1.0	ug/L	1	B9C0458	03/29/19 16:36	03/29/19 16:36	EPA 8260D
1,2-Dibromoethane (EDB)		<	0.50	ug/L	1	B9C0458	03/29/19 16:36	03/29/19 16:36	EPA 8260D
1,2-Dichlorobenzene		<	1.0	ug/L	1	B9C0458	03/29/19 16:36	03/29/19 16:36	EPA 8260D
1,2-Dichloroethane		<	0.20	ug/L	1	B9C0458	03/29/19 16:36	03/29/19 16:36	EPA 8260D
1,2-Dichloropropane		<	1.0	ug/L	1	B9C0458	03/29/19 16:36	03/29/19 16:36	EPA 8260D
1,3,5-Trimethylbenzene		<	1.0	ug/L	1	B9C0458	03/29/19 16:36	03/29/19 16:36	EPA 8260D
1,3-Dichlorobenzene		<	1.0	ug/L	1	B9C0458	03/29/19 16:36	03/29/19 16:36	EPA 8260D
1,3-Dichloropropane		<	1.0	ug/L	1	B9C0458	03/29/19 16:36	03/29/19 16:36	EPA 8260D
1,4-Dichlorobenzene		<	1.0	ug/L	1	B9C0458	03/29/19 16:36	03/29/19 16:36	EPA 8260D
2,2-Dichloropropane		<	1.0	ug/L	1	B9C0458	03/29/19 16:36	03/29/19 16:36	EPA 8260D
2-Chlorotoluene		<	1.0	ug/L	1	B9C0458	03/29/19 16:36	03/29/19 16:36	EPA 8260D

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Environmental Laboratory Section
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St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelosi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 04/26/19 9:19

MDH Sample Number: 19C1235-02

Location ID: Field Blank 1
Field Name: None
Sampling Point: None
QA Type: Field Blank

Collect Date: 03/26/19
Collect Time: 10:10
Matrix: QC-BLANK

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
4-Chlorotoluene		<	1.0	ug/L	1	B9C0458	03/29/19 16:36	03/29/19 16:36	EPA 8260D
Acetone		<	20	ug/L	1	B9C0458	03/29/19 16:36	03/29/19 16:36	EPA 8260D
Allyl chloride		<	1.0	ug/L	1	B9C0458	03/29/19 16:36	03/29/19 16:36	EPA 8260D
Benzene		<	0.50	ug/L	1	B9C0458	03/29/19 16:36	03/29/19 16:36	EPA 8260D
Bromobenzene		<	1.0	ug/L	1	B9C0458	03/29/19 16:36	03/29/19 16:36	EPA 8260D
Bromochloromethane		<	1.0	ug/L	1	B9C0458	03/29/19 16:36	03/29/19 16:36	EPA 8260D
Bromodichloromethane		<	1.0	ug/L	1	B9C0458	03/29/19 16:36	03/29/19 16:36	EPA 8260D
Bromoform		<	1.0	ug/L	1	B9C0458	03/29/19 16:36	03/29/19 16:36	EPA 8260D
Bromomethane	L3, V4, Z-01	<	2.0	ug/L	1	B9C0458	03/29/19 16:36	03/29/19 16:36	EPA 8260D
Carbon tetrachloride		<	0.20	ug/L	1	B9C0458	03/29/19 16:36	03/29/19 16:36	EPA 8260D
Chlorobenzene		<	1.0	ug/L	1	B9C0458	03/29/19 16:36	03/29/19 16:36	EPA 8260D
Chlorodibromomethane		<	0.50	ug/L	1	B9C0458	03/29/19 16:36	03/29/19 16:36	EPA 8260D
Chloroethane		<	1.0	ug/L	1	B9C0458	03/29/19 16:36	03/29/19 16:36	EPA 8260D
Chloroform		<	1.0	ug/L	1	B9C0458	03/29/19 16:36	03/29/19 16:36	EPA 8260D
Chloromethane		<	1.0	ug/L	1	B9C0458	03/29/19 16:36	03/29/19 16:36	EPA 8260D
cis-1,2-Dichloroethene		<	1.0	ug/L	1	B9C0458	03/29/19 16:36	03/29/19 16:36	EPA 8260D
cis-1,3-Dichloropropene		<	0.50	ug/L	1	B9C0458	03/29/19 16:36	03/29/19 16:36	EPA 8260D
Dibromomethane		<	1.0	ug/L	1	B9C0458	03/29/19 16:36	03/29/19 16:36	EPA 8260D
Dichlorodifluoromethane		<	1.0	ug/L	1	B9C0458	03/29/19 16:36	03/29/19 16:36	EPA 8260D
Dichlorofluoromethane		<	1.0	ug/L	1	B9C0458	03/29/19 16:36	03/29/19 16:36	EPA 8260D
Ethyl ether		<	1.0	ug/L	1	B9C0458	03/29/19 16:36	03/29/19 16:36	EPA 8260D
Ethylbenzene		<	1.0	ug/L	1	B9C0458	03/29/19 16:36	03/29/19 16:36	EPA 8260D
Hexachlorobutadiene		<	0.50	ug/L	1	B9C0458	03/29/19 16:36	03/29/19 16:36	EPA 8260D
Isopropylbenzene		<	1.0	ug/L	1	B9C0458	03/29/19 16:36	03/29/19 16:36	EPA 8260D
Methyl ethyl ketone (MEK)		<	10	ug/L	1	B9C0458	03/29/19 16:36	03/29/19 16:36	EPA 8260D
Methyl isobutyl ketone (MIBK)		<	5.0	ug/L	1	B9C0458	03/29/19 16:36	03/29/19 16:36	EPA 8260D
Methyl tertiary butyl ether (MTBE)		<	2.0	ug/L	1	B9C0458	03/29/19 16:36	03/29/19 16:36	EPA 8260D

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Public Health Laboratory
Environmental Laboratory Section
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St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelosi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 04/26/19 9:19

MDH Sample Number: 19C1235-02

Location ID: Field Blank 1
Field Name: None
Sampling Point: None
QA Type: Field Blank

Collect Date: 03/26/19
Collect Time: 10:10
Matrix: QC-BLANK

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Methylene chloride		**11**	1.0	ug/L	1	B9C0458	03/29/19 16:36	03/29/19 16:36	EPA 8260D
Naphthalene		<	1.0	ug/L	1	B9C0458	03/29/19 16:36	03/29/19 16:36	EPA 8260D
n-Butylbenzene		<	1.0	ug/L	1	B9C0458	03/29/19 16:36	03/29/19 16:36	EPA 8260D
n-Propylbenzene		<	1.0	ug/L	1	B9C0458	03/29/19 16:36	03/29/19 16:36	EPA 8260D
o-Xylene		<	1.0	ug/L	1	B9C0458	03/29/19 16:36	03/29/19 16:36	EPA 8260D
p&m-Xylene		<	1.0	ug/L	1	B9C0458	03/29/19 16:36	03/29/19 16:36	EPA 8260D
p-Isopropyltoluene		<	1.0	ug/L	1	B9C0458	03/29/19 16:36	03/29/19 16:36	EPA 8260D
sec-Butylbenzene		<	1.0	ug/L	1	B9C0458	03/29/19 16:36	03/29/19 16:36	EPA 8260D
Styrene		<	1.0	ug/L	1	B9C0458	03/29/19 16:36	03/29/19 16:36	EPA 8260D
tert-Butylbenzene		<	1.0	ug/L	1	B9C0458	03/29/19 16:36	03/29/19 16:36	EPA 8260D
Tetrachloroethene		<	1.0	ug/L	1	B9C0458	03/29/19 16:36	03/29/19 16:36	EPA 8260D
Tetrahydrofuran (THF)		<	10	ug/L	1	B9C0458	03/29/19 16:36	03/29/19 16:36	EPA 8260D
Toluene		<	1.0	ug/L	1	B9C0458	03/29/19 16:36	03/29/19 16:36	EPA 8260D
trans-1,2-Dichloroethene		<	1.0	ug/L	1	B9C0458	03/29/19 16:36	03/29/19 16:36	EPA 8260D
trans-1,3-Dichloropropene		<	0.50	ug/L	1	B9C0458	03/29/19 16:36	03/29/19 16:36	EPA 8260D
Trichloroethene (TCE)		<	0.10	ug/L	1	B9C0458	03/29/19 16:36	03/29/19 16:36	EPA 8260D
Trichlorofluoromethane		<	1.0	ug/L	1	B9C0458	03/29/19 16:36	03/29/19 16:36	EPA 8260D
Vinyl chloride		<	0.050	ug/L	1	B9C0458	03/29/19 16:36	03/29/19 16:36	EPA 8260D

1,4-Dioxane

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
1,4-Dioxane		<	0.052	ug/L	1	B9D0172	04/11/19 09:00	04/15/19 15:03	EPA 522 Modified

PFC Expanded List

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorobutanesulfonate (PFBS)		<	0.050	ug/L	1	B9D0105	04/05/19 17:21	04/05/19 17:21	MDH 555
Perfluorobutanoic acid (PFBA)		<	0.050	ug/L	1	B9D0105	04/05/19 17:21	04/05/19 17:21	MDH 555

FINAL REPORT

Report ID: 04262019 91928

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelosi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 04/26/19 9:19

MDH Sample Number: 19C1235-02

Location ID: Field Blank 1
Field Name: None
Sampling Point: None
QA Type: Field Blank

Collect Date: 03/26/19
Collect Time: 10:10
Matrix: QC-BLANK

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

PFC Expanded List - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorohexanesulfonate (PFHxS)		<	0.025	ug/L	1	B9D0105	04/05/19 17:21	04/05/19 17:21	MDH 555
Perfluorohexanoic acid (PFHxA)		<	0.050	ug/L	1	B9D0105	04/05/19 17:21	04/05/19 17:21	MDH 555
Perfluorooctanesulfonate (PFOS)		<	0.025	ug/L	1	B9D0105	04/05/19 17:21	04/05/19 17:21	MDH 555
Perfluorooctanoic acid (PFOA)		<	0.035	ug/L	1	B9D0105	04/05/19 17:21	04/05/19 17:21	MDH 555
Perfluoropentanoic acid (PFPeA)	J	**0.009**	0.050	ug/L	1	B9D0105	04/05/19 17:21	04/05/19 17:21	MDH 555

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Public Health Laboratory, Minnesota Department of Health

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St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelosi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 04/26/19 9:19

MDH Sample Number: 19C1235-03

Location ID: 603281
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 03/26/19
Collect Time: 11:30
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Surrogate: 1,2-Dichlorobenzene-d4		*102*	*70-130*	%	*1*	*B9C0458*	*03/29/19 18:27*	*03/29/19 18:27*	*EPA 8260D*
Surrogate: 4-Bromofluorobenzene		*98*	*70-130*	%	*1*	*B9C0458*	*03/29/19 18:27*	*03/29/19 18:27*	*EPA 8260D*
Surrogate: Methyl tertiary butyl ether-d3		*98*	*70-130*	%	*1*	*B9C0458*	*03/29/19 18:27*	*03/29/19 18:27*	*EPA 8260D*
1,1,1,2-Tetrachloroethane		<	1.0	ug/L	1	B9C0458	03/29/19 18:27	03/29/19 18:27	EPA 8260D
1,1,1-Trichloroethane		<	1.0	ug/L	1	B9C0458	03/29/19 18:27	03/29/19 18:27	EPA 8260D
1,1,2,2-Tetrachloroethane		<	0.50	ug/L	1	B9C0458	03/29/19 18:27	03/29/19 18:27	EPA 8260D
1,1,2-Trichloroethane		<	0.50	ug/L	1	B9C0458	03/29/19 18:27	03/29/19 18:27	EPA 8260D
1,1,2-Trichlorotrifluoroethane		<	1.0	ug/L	1	B9C0458	03/29/19 18:27	03/29/19 18:27	EPA 8260D
1,1-Dichloroethane		<	1.0	ug/L	1	B9C0458	03/29/19 18:27	03/29/19 18:27	EPA 8260D
1,1-Dichloroethene		<	1.0	ug/L	1	B9C0458	03/29/19 18:27	03/29/19 18:27	EPA 8260D
1,1-Dichloropropene		<	1.0	ug/L	1	B9C0458	03/29/19 18:27	03/29/19 18:27	EPA 8260D
1,2,3-Trichlorobenzene		<	1.0	ug/L	1	B9C0458	03/29/19 18:27	03/29/19 18:27	EPA 8260D
1,2,3-Trichloropropane		<	0.20	ug/L	1	B9C0458	03/29/19 18:27	03/29/19 18:27	EPA 8260D
1,2,4-Trichlorobenzene		<	1.0	ug/L	1	B9C0458	03/29/19 18:27	03/29/19 18:27	EPA 8260D
1,2,4-Trimethylbenzene		<	1.0	ug/L	1	B9C0458	03/29/19 18:27	03/29/19 18:27	EPA 8260D
1,2-Dibromo-3-chloropropane (DBCP)		<	1.0	ug/L	1	B9C0458	03/29/19 18:27	03/29/19 18:27	EPA 8260D
1,2-Dibromoethane (EDB)		<	0.50	ug/L	1	B9C0458	03/29/19 18:27	03/29/19 18:27	EPA 8260D
1,2-Dichlorobenzene		<	1.0	ug/L	1	B9C0458	03/29/19 18:27	03/29/19 18:27	EPA 8260D
1,2-Dichloroethane		<	0.20	ug/L	1	B9C0458	03/29/19 18:27	03/29/19 18:27	EPA 8260D
1,2-Dichloropropane		<	1.0	ug/L	1	B9C0458	03/29/19 18:27	03/29/19 18:27	EPA 8260D
1,3,5-Trimethylbenzene		<	1.0	ug/L	1	B9C0458	03/29/19 18:27	03/29/19 18:27	EPA 8260D
1,3-Dichlorobenzene		<	1.0	ug/L	1	B9C0458	03/29/19 18:27	03/29/19 18:27	EPA 8260D
1,3-Dichloropropane		<	1.0	ug/L	1	B9C0458	03/29/19 18:27	03/29/19 18:27	EPA 8260D
1,4-Dichlorobenzene		<	1.0	ug/L	1	B9C0458	03/29/19 18:27	03/29/19 18:27	EPA 8260D
2,2-Dichloropropane		<	1.0	ug/L	1	B9C0458	03/29/19 18:27	03/29/19 18:27	EPA 8260D
2-Chlorotoluene		<	1.0	ug/L	1	B9C0458	03/29/19 18:27	03/29/19 18:27	EPA 8260D

FINAL REPORT

Report ID: 04262019 91928

Authorized by:

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelosi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 04/26/19 9:19

MDH Sample Number: 19C1235-03

Location ID: 603281
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 03/26/19
Collect Time: 11:30
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
4-Chlorotoluene		<	1.0	ug/L	1	B9C0458	03/29/19 18:27	03/29/19 18:27	EPA 8260D
Acetone		<	20	ug/L	1	B9C0458	03/29/19 18:27	03/29/19 18:27	EPA 8260D
Allyl chloride		<	1.0	ug/L	1	B9C0458	03/29/19 18:27	03/29/19 18:27	EPA 8260D
Benzene		<	0.50	ug/L	1	B9C0458	03/29/19 18:27	03/29/19 18:27	EPA 8260D
Bromobenzene		<	1.0	ug/L	1	B9C0458	03/29/19 18:27	03/29/19 18:27	EPA 8260D
Bromochloromethane		<	1.0	ug/L	1	B9C0458	03/29/19 18:27	03/29/19 18:27	EPA 8260D
Bromodichloromethane		<	1.0	ug/L	1	B9C0458	03/29/19 18:27	03/29/19 18:27	EPA 8260D
Bromoform		<	1.0	ug/L	1	B9C0458	03/29/19 18:27	03/29/19 18:27	EPA 8260D
Bromomethane	L3, V4, Z-01	<	2.0	ug/L	1	B9C0458	03/29/19 18:27	03/29/19 18:27	EPA 8260D
Carbon tetrachloride		<	0.20	ug/L	1	B9C0458	03/29/19 18:27	03/29/19 18:27	EPA 8260D
Chlorobenzene		<	1.0	ug/L	1	B9C0458	03/29/19 18:27	03/29/19 18:27	EPA 8260D
Chlorodibromomethane		<	0.50	ug/L	1	B9C0458	03/29/19 18:27	03/29/19 18:27	EPA 8260D
Chloroethane		<	1.0	ug/L	1	B9C0458	03/29/19 18:27	03/29/19 18:27	EPA 8260D
Chloroform		<	1.0	ug/L	1	B9C0458	03/29/19 18:27	03/29/19 18:27	EPA 8260D
Chloromethane		<	1.0	ug/L	1	B9C0458	03/29/19 18:27	03/29/19 18:27	EPA 8260D
cis-1,2-Dichloroethene		<	1.0	ug/L	1	B9C0458	03/29/19 18:27	03/29/19 18:27	EPA 8260D
cis-1,3-Dichloropropene		<	0.50	ug/L	1	B9C0458	03/29/19 18:27	03/29/19 18:27	EPA 8260D
Dibromomethane		<	1.0	ug/L	1	B9C0458	03/29/19 18:27	03/29/19 18:27	EPA 8260D
Dichlorodifluoromethane		<	1.0	ug/L	1	B9C0458	03/29/19 18:27	03/29/19 18:27	EPA 8260D
Dichlorofluoromethane		<	1.0	ug/L	1	B9C0458	03/29/19 18:27	03/29/19 18:27	EPA 8260D
Ethyl ether		<	1.0	ug/L	1	B9C0458	03/29/19 18:27	03/29/19 18:27	EPA 8260D
Ethylbenzene		<	1.0	ug/L	1	B9C0458	03/29/19 18:27	03/29/19 18:27	EPA 8260D
Hexachlorobutadiene		<	0.50	ug/L	1	B9C0458	03/29/19 18:27	03/29/19 18:27	EPA 8260D
Isopropylbenzene		<	1.0	ug/L	1	B9C0458	03/29/19 18:27	03/29/19 18:27	EPA 8260D
Methyl ethyl ketone (MEK)		<	10	ug/L	1	B9C0458	03/29/19 18:27	03/29/19 18:27	EPA 8260D
Methyl isobutyl ketone (MIBK)		<	5.0	ug/L	1	B9C0458	03/29/19 18:27	03/29/19 18:27	EPA 8260D
Methyl tertiary butyl ether (MTBE)		<	2.0	ug/L	1	B9C0458	03/29/19 18:27	03/29/19 18:27	EPA 8260D

FINAL REPORT

Report ID: 04262019 91928

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Public Health Laboratory, Minnesota Department of Health

Minnesota Department of Health
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Environmental Laboratory Section
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St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelosi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 04/26/19 9:19

MDH Sample Number: 19C1235-03

Location ID: 603281
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 03/26/19
Collect Time: 11:30
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Methylene chloride		<	1.0	ug/L	1	B9C0458	03/29/19 18:27	03/29/19 18:27	EPA 8260D
Naphthalene		<	1.0	ug/L	1	B9C0458	03/29/19 18:27	03/29/19 18:27	EPA 8260D
n-Butylbenzene		<	1.0	ug/L	1	B9C0458	03/29/19 18:27	03/29/19 18:27	EPA 8260D
n-Propylbenzene		<	1.0	ug/L	1	B9C0458	03/29/19 18:27	03/29/19 18:27	EPA 8260D
o-Xylene		<	1.0	ug/L	1	B9C0458	03/29/19 18:27	03/29/19 18:27	EPA 8260D
p&m-Xylene		<	1.0	ug/L	1	B9C0458	03/29/19 18:27	03/29/19 18:27	EPA 8260D
p-Isopropyltoluene		<	1.0	ug/L	1	B9C0458	03/29/19 18:27	03/29/19 18:27	EPA 8260D
sec-Butylbenzene		<	1.0	ug/L	1	B9C0458	03/29/19 18:27	03/29/19 18:27	EPA 8260D
Styrene		<	1.0	ug/L	1	B9C0458	03/29/19 18:27	03/29/19 18:27	EPA 8260D
tert-Butylbenzene		<	1.0	ug/L	1	B9C0458	03/29/19 18:27	03/29/19 18:27	EPA 8260D
Tetrachloroethene		<	1.0	ug/L	1	B9C0458	03/29/19 18:27	03/29/19 18:27	EPA 8260D
Tetrahydrofuran (THF)		<	10	ug/L	1	B9C0458	03/29/19 18:27	03/29/19 18:27	EPA 8260D
Toluene		<	1.0	ug/L	1	B9C0458	03/29/19 18:27	03/29/19 18:27	EPA 8260D
trans-1,2-Dichloroethene		<	1.0	ug/L	1	B9C0458	03/29/19 18:27	03/29/19 18:27	EPA 8260D
trans-1,3-Dichloropropene		<	0.50	ug/L	1	B9C0458	03/29/19 18:27	03/29/19 18:27	EPA 8260D
Trichloroethene (TCE)		<	0.10	ug/L	1	B9C0458	03/29/19 18:27	03/29/19 18:27	EPA 8260D
Trichlorofluoromethane		<	1.0	ug/L	1	B9C0458	03/29/19 18:27	03/29/19 18:27	EPA 8260D
Vinyl chloride		<	0.050	ug/L	1	B9C0458	03/29/19 18:27	03/29/19 18:27	EPA 8260D

1,4-Dioxane

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
1,4-Dioxane		<	0.051	ug/L	1	B9D0172	04/11/19 09:00	04/15/19 15:19	EPA 522 Modified

PFC Expanded List

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorobutanesulfonate (PFBS)		<	0.050	ug/L	1	B9D0105	04/05/19 17:37	04/05/19 17:37	MDH 555
Perfluorobutanoic acid (PFBA)	J	**0.017**	0.050	ug/L	1	B9D0105	04/05/19 17:37	04/05/19 17:37	MDH 555

FINAL REPORT

Report ID: 04262019 91928

Authorized by:

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Public Health Laboratory, Minnesota Department of Health

Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
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St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelosi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 04/26/19 9:19

MDH Sample Number: 19C1235-03

Location ID: 603281
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 03/26/19
Collect Time: 11:30
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

PFC Expanded List - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorohexanesulfonate (PFHxS)		<	0.025	ug/L	1	B9D0105	04/05/19 17:37	04/05/19 17:37	MDH 555
Perfluorohexanoic acid (PFHxA)		<	0.050	ug/L	1	B9D0105	04/05/19 17:37	04/05/19 17:37	MDH 555
Perfluorooctanesulfonate (PFOS)	J	**0.015**	0.025	ug/L	1	B9D0105	04/05/19 17:37	04/05/19 17:37	MDH 555
Perfluorooctanoic acid (PFOA)	J	**0.026**	0.035	ug/L	1	B9D0105	04/05/19 17:37	04/05/19 17:37	MDH 555
Perfluoropentanoic acid (PFPeA)	J	**0.008**	0.050	ug/L	1	B9D0105	04/05/19 17:37	04/05/19 17:37	MDH 555

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Public Health Laboratory, Minnesota Department of Health

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St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelosi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 04/26/19 9:19

MDH Sample Number: 19C1235-04

Location ID: 603287
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 03/26/19
Collect Time: 13:50
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

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VOCs by GCMS

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Surrogate: 1,2-Dichlorobenzene-d4		*99*	*70-130*	%	*1*	*B9C0458*	*03/29/19 18:55*	*03/29/19 18:55*	*EPA 8260D*
Surrogate: 4-Bromofluorobenzene		*97*	*70-130*	%	*1*	*B9C0458*	*03/29/19 18:55*	*03/29/19 18:55*	*EPA 8260D*
Surrogate: Methyl tertiary butyl ether-d3		*101*	*70-130*	%	*1*	*B9C0458*	*03/29/19 18:55*	*03/29/19 18:55*	*EPA 8260D*
1,1,1,2-Tetrachloroethane		<	1.0	ug/L	1	B9C0458	03/29/19 18:55	03/29/19 18:55	EPA 8260D
1,1,1-Trichloroethane		<	1.0	ug/L	1	B9C0458	03/29/19 18:55	03/29/19 18:55	EPA 8260D
1,1,2,2-Tetrachloroethane		<	0.50	ug/L	1	B9C0458	03/29/19 18:55	03/29/19 18:55	EPA 8260D
1,1,2-Trichloroethane		<	0.50	ug/L	1	B9C0458	03/29/19 18:55	03/29/19 18:55	EPA 8260D
1,1,2-Trichlorotrifluoroethane		<	1.0	ug/L	1	B9C0458	03/29/19 18:55	03/29/19 18:55	EPA 8260D
1,1-Dichloroethane		<	1.0	ug/L	1	B9C0458	03/29/19 18:55	03/29/19 18:55	EPA 8260D
1,1-Dichloroethene		<	1.0	ug/L	1	B9C0458	03/29/19 18:55	03/29/19 18:55	EPA 8260D
1,1-Dichloropropene		<	1.0	ug/L	1	B9C0458	03/29/19 18:55	03/29/19 18:55	EPA 8260D
1,2,3-Trichlorobenzene		<	1.0	ug/L	1	B9C0458	03/29/19 18:55	03/29/19 18:55	EPA 8260D
1,2,3-Trichloropropane		<	0.20	ug/L	1	B9C0458	03/29/19 18:55	03/29/19 18:55	EPA 8260D
1,2,4-Trichlorobenzene		<	1.0	ug/L	1	B9C0458	03/29/19 18:55	03/29/19 18:55	EPA 8260D
1,2,4-Trimethylbenzene		<	1.0	ug/L	1	B9C0458	03/29/19 18:55	03/29/19 18:55	EPA 8260D
1,2-Dibromo-3-chloropropane (DBCP)		<	1.0	ug/L	1	B9C0458	03/29/19 18:55	03/29/19 18:55	EPA 8260D
1,2-Dibromoethane (EDB)		<	0.50	ug/L	1	B9C0458	03/29/19 18:55	03/29/19 18:55	EPA 8260D
1,2-Dichlorobenzene		<	1.0	ug/L	1	B9C0458	03/29/19 18:55	03/29/19 18:55	EPA 8260D
1,2-Dichloroethane		<	0.20	ug/L	1	B9C0458	03/29/19 18:55	03/29/19 18:55	EPA 8260D
1,2-Dichloropropane		<	1.0	ug/L	1	B9C0458	03/29/19 18:55	03/29/19 18:55	EPA 8260D
1,3,5-Trimethylbenzene		<	1.0	ug/L	1	B9C0458	03/29/19 18:55	03/29/19 18:55	EPA 8260D
1,3-Dichlorobenzene		<	1.0	ug/L	1	B9C0458	03/29/19 18:55	03/29/19 18:55	EPA 8260D
1,3-Dichloropropane		<	1.0	ug/L	1	B9C0458	03/29/19 18:55	03/29/19 18:55	EPA 8260D
1,4-Dichlorobenzene		<	1.0	ug/L	1	B9C0458	03/29/19 18:55	03/29/19 18:55	EPA 8260D
2,2-Dichloropropane		<	1.0	ug/L	1	B9C0458	03/29/19 18:55	03/29/19 18:55	EPA 8260D
2-Chlorotoluene		<	1.0	ug/L	1	B9C0458	03/29/19 18:55	03/29/19 18:55	EPA 8260D

FINAL REPORT

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Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelosi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 04/26/19 9:19

MDH Sample Number: 19C1235-04

Location ID: 603287
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 03/26/19
Collect Time: 13:50
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
4-Chlorotoluene		<	1.0	ug/L	1	B9C0458	03/29/19 18:55	03/29/19 18:55	EPA 8260D
Acetone		<	20	ug/L	1	B9C0458	03/29/19 18:55	03/29/19 18:55	EPA 8260D
Allyl chloride		<	1.0	ug/L	1	B9C0458	03/29/19 18:55	03/29/19 18:55	EPA 8260D
Benzene		<	0.50	ug/L	1	B9C0458	03/29/19 18:55	03/29/19 18:55	EPA 8260D
Bromobenzene		<	1.0	ug/L	1	B9C0458	03/29/19 18:55	03/29/19 18:55	EPA 8260D
Bromochloromethane		<	1.0	ug/L	1	B9C0458	03/29/19 18:55	03/29/19 18:55	EPA 8260D
Bromodichloromethane		<	1.0	ug/L	1	B9C0458	03/29/19 18:55	03/29/19 18:55	EPA 8260D
Bromoform		<	1.0	ug/L	1	B9C0458	03/29/19 18:55	03/29/19 18:55	EPA 8260D
Bromomethane	L3, V4, Z-01	<	2.0	ug/L	1	B9C0458	03/29/19 18:55	03/29/19 18:55	EPA 8260D
Carbon tetrachloride		<	0.20	ug/L	1	B9C0458	03/29/19 18:55	03/29/19 18:55	EPA 8260D
Chlorobenzene		<	1.0	ug/L	1	B9C0458	03/29/19 18:55	03/29/19 18:55	EPA 8260D
Chlorodibromomethane		<	0.50	ug/L	1	B9C0458	03/29/19 18:55	03/29/19 18:55	EPA 8260D
Chloroethane		<	1.0	ug/L	1	B9C0458	03/29/19 18:55	03/29/19 18:55	EPA 8260D
Chloroform		<	1.0	ug/L	1	B9C0458	03/29/19 18:55	03/29/19 18:55	EPA 8260D
Chloromethane		<	1.0	ug/L	1	B9C0458	03/29/19 18:55	03/29/19 18:55	EPA 8260D
cis-1,2-Dichloroethene		<	1.0	ug/L	1	B9C0458	03/29/19 18:55	03/29/19 18:55	EPA 8260D
cis-1,3-Dichloropropene		<	0.50	ug/L	1	B9C0458	03/29/19 18:55	03/29/19 18:55	EPA 8260D
Dibromomethane		<	1.0	ug/L	1	B9C0458	03/29/19 18:55	03/29/19 18:55	EPA 8260D
Dichlorodifluoromethane		<	1.0	ug/L	1	B9C0458	03/29/19 18:55	03/29/19 18:55	EPA 8260D
Dichlorofluoromethane		<	1.0	ug/L	1	B9C0458	03/29/19 18:55	03/29/19 18:55	EPA 8260D
Ethyl ether		<	1.0	ug/L	1	B9C0458	03/29/19 18:55	03/29/19 18:55	EPA 8260D
Ethylbenzene		<	1.0	ug/L	1	B9C0458	03/29/19 18:55	03/29/19 18:55	EPA 8260D
Hexachlorobutadiene		<	0.50	ug/L	1	B9C0458	03/29/19 18:55	03/29/19 18:55	EPA 8260D
Isopropylbenzene		<	1.0	ug/L	1	B9C0458	03/29/19 18:55	03/29/19 18:55	EPA 8260D
Methyl ethyl ketone (MEK)		<	10	ug/L	1	B9C0458	03/29/19 18:55	03/29/19 18:55	EPA 8260D
Methyl isobutyl ketone (MIBK)		<	5.0	ug/L	1	B9C0458	03/29/19 18:55	03/29/19 18:55	EPA 8260D
Methyl tertiary butyl ether (MTBE)		<	2.0	ug/L	1	B9C0458	03/29/19 18:55	03/29/19 18:55	EPA 8260D

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Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelosi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 04/26/19 9:19

MDH Sample Number: 19C1235-04

Location ID: 603287
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 03/26/19
Collect Time: 13:50
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Methylene chloride		<	1.0	ug/L	1	B9C0458	03/29/19 18:55	03/29/19 18:55	EPA 8260D
Naphthalene		<	1.0	ug/L	1	B9C0458	03/29/19 18:55	03/29/19 18:55	EPA 8260D
n-Butylbenzene		<	1.0	ug/L	1	B9C0458	03/29/19 18:55	03/29/19 18:55	EPA 8260D
n-Propylbenzene		<	1.0	ug/L	1	B9C0458	03/29/19 18:55	03/29/19 18:55	EPA 8260D
o-Xylene		<	1.0	ug/L	1	B9C0458	03/29/19 18:55	03/29/19 18:55	EPA 8260D
p&m-Xylene		<	1.0	ug/L	1	B9C0458	03/29/19 18:55	03/29/19 18:55	EPA 8260D
p-Isopropyltoluene		<	1.0	ug/L	1	B9C0458	03/29/19 18:55	03/29/19 18:55	EPA 8260D
sec-Butylbenzene		<	1.0	ug/L	1	B9C0458	03/29/19 18:55	03/29/19 18:55	EPA 8260D
Styrene		<	1.0	ug/L	1	B9C0458	03/29/19 18:55	03/29/19 18:55	EPA 8260D
tert-Butylbenzene		<	1.0	ug/L	1	B9C0458	03/29/19 18:55	03/29/19 18:55	EPA 8260D
Tetrachloroethene		<	1.0	ug/L	1	B9C0458	03/29/19 18:55	03/29/19 18:55	EPA 8260D
Tetrahydrofuran (THF)		<	10	ug/L	1	B9C0458	03/29/19 18:55	03/29/19 18:55	EPA 8260D
Toluene		<	1.0	ug/L	1	B9C0458	03/29/19 18:55	03/29/19 18:55	EPA 8260D
trans-1,2-Dichloroethene		<	1.0	ug/L	1	B9C0458	03/29/19 18:55	03/29/19 18:55	EPA 8260D
trans-1,3-Dichloropropene		<	0.50	ug/L	1	B9C0458	03/29/19 18:55	03/29/19 18:55	EPA 8260D
Trichloroethene (TCE)		<	0.10	ug/L	1	B9C0458	03/29/19 18:55	03/29/19 18:55	EPA 8260D
Trichlorofluoromethane		<	1.0	ug/L	1	B9C0458	03/29/19 18:55	03/29/19 18:55	EPA 8260D
Vinyl chloride		<	0.050	ug/L	1	B9C0458	03/29/19 18:55	03/29/19 18:55	EPA 8260D

1,4-Dioxane

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
1,4-Dioxane		<	0.050	ug/L	1	B9D0172	04/11/19 09:00	04/15/19 15:35	EPA 522 Modified

PFC Expanded List

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorobutanesulfonate (PFBS)		<	0.050	ug/L	1	B9D0111	04/05/19 18:17	04/05/19 18:17	MDH 555
Perfluorobutanoic acid (PFBA)	J	**0.021**	0.050	ug/L	1	B9D0111	04/05/19 18:17	04/05/19 18:17	MDH 555

FINAL REPORT

Report ID: 04262019 91928

Authorized by:

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Public Health Laboratory, Minnesota Department of Health

Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelosi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 04/26/19 9:19

MDH Sample Number: 19C1235-04

Location ID: 603287
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 03/26/19
Collect Time: 13:50
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

PFC Expanded List - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorohexanesulfonate (PFHxS)		<	0.025	ug/L	1	B9D0111	04/05/19 18:17	04/05/19 18:17	MDH 555
Perfluorohexanoic acid (PFHxA)		<	0.050	ug/L	1	B9D0111	04/05/19 18:17	04/05/19 18:17	MDH 555
Perfluorooctanesulfonate (PFOS)	J	**0.013**	0.025	ug/L	1	B9D0111	04/05/19 18:17	04/05/19 18:17	MDH 555
Perfluorooctanoic acid (PFOA)	J	**0.021**	0.035	ug/L	1	B9D0111	04/05/19 18:17	04/05/19 18:17	MDH 555
Perfluoropentanoic acid (PFPeA)		<	0.050	ug/L	1	B9D0111	04/05/19 18:17	04/05/19 18:17	MDH 555

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Environmental Laboratory Section
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St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelosi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 04/26/19 9:19

MDH Sample Number: 19C1235-05

Location ID: 603288
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 03/26/19
Collect Time: 15:30
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Surrogate: 1,2-Dichlorobenzene-d4		*102*	*70-130*	%	*1*	*B9C0458*	*03/29/19 19:23*	*03/29/19 19:23*	*EPA 8260D*
Surrogate: 4-Bromofluorobenzene		*98*	*70-130*	%	*1*	*B9C0458*	*03/29/19 19:23*	*03/29/19 19:23*	*EPA 8260D*
Surrogate: Methyl tertiary butyl ether-d3		*102*	*70-130*	%	*1*	*B9C0458*	*03/29/19 19:23*	*03/29/19 19:23*	*EPA 8260D*
1,1,1,2-Tetrachloroethane		<	1.0	ug/L	1	B9C0458	03/29/19 19:23	03/29/19 19:23	EPA 8260D
1,1,1-Trichloroethane		<	1.0	ug/L	1	B9C0458	03/29/19 19:23	03/29/19 19:23	EPA 8260D
1,1,2,2-Tetrachloroethane		<	0.50	ug/L	1	B9C0458	03/29/19 19:23	03/29/19 19:23	EPA 8260D
1,1,2-Trichloroethane		<	0.50	ug/L	1	B9C0458	03/29/19 19:23	03/29/19 19:23	EPA 8260D
1,1,2-Trichlorotrifluoroethane		<	1.0	ug/L	1	B9C0458	03/29/19 19:23	03/29/19 19:23	EPA 8260D
1,1-Dichloroethane		<	1.0	ug/L	1	B9C0458	03/29/19 19:23	03/29/19 19:23	EPA 8260D
1,1-Dichloroethene		<	1.0	ug/L	1	B9C0458	03/29/19 19:23	03/29/19 19:23	EPA 8260D
1,1-Dichloropropene		<	1.0	ug/L	1	B9C0458	03/29/19 19:23	03/29/19 19:23	EPA 8260D
1,2,3-Trichlorobenzene		<	1.0	ug/L	1	B9C0458	03/29/19 19:23	03/29/19 19:23	EPA 8260D
1,2,3-Trichloropropane		<	0.20	ug/L	1	B9C0458	03/29/19 19:23	03/29/19 19:23	EPA 8260D
1,2,4-Trichlorobenzene		<	1.0	ug/L	1	B9C0458	03/29/19 19:23	03/29/19 19:23	EPA 8260D
1,2,4-Trimethylbenzene		<	1.0	ug/L	1	B9C0458	03/29/19 19:23	03/29/19 19:23	EPA 8260D
1,2-Dibromo-3-chloropropane (DBCP)		<	1.0	ug/L	1	B9C0458	03/29/19 19:23	03/29/19 19:23	EPA 8260D
1,2-Dibromoethane (EDB)		<	0.50	ug/L	1	B9C0458	03/29/19 19:23	03/29/19 19:23	EPA 8260D
1,2-Dichlorobenzene		<	1.0	ug/L	1	B9C0458	03/29/19 19:23	03/29/19 19:23	EPA 8260D
1,2-Dichloroethane		<	0.20	ug/L	1	B9C0458	03/29/19 19:23	03/29/19 19:23	EPA 8260D
1,2-Dichloropropane		<	1.0	ug/L	1	B9C0458	03/29/19 19:23	03/29/19 19:23	EPA 8260D
1,3,5-Trimethylbenzene		<	1.0	ug/L	1	B9C0458	03/29/19 19:23	03/29/19 19:23	EPA 8260D
1,3-Dichlorobenzene		<	1.0	ug/L	1	B9C0458	03/29/19 19:23	03/29/19 19:23	EPA 8260D
1,3-Dichloropropane		<	1.0	ug/L	1	B9C0458	03/29/19 19:23	03/29/19 19:23	EPA 8260D
1,4-Dichlorobenzene		<	1.0	ug/L	1	B9C0458	03/29/19 19:23	03/29/19 19:23	EPA 8260D
2,2-Dichloropropane		<	1.0	ug/L	1	B9C0458	03/29/19 19:23	03/29/19 19:23	EPA 8260D
2-Chlorotoluene		<	1.0	ug/L	1	B9C0458	03/29/19 19:23	03/29/19 19:23	EPA 8260D

FINAL REPORT

Report ID: 04262019 91928

Authorized by:

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelosi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 04/26/19 9:19

MDH Sample Number: 19C1235-05

Location ID: 603288
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 03/26/19
Collect Time: 15:30
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
4-Chlorotoluene		<	1.0	ug/L	1	B9C0458	03/29/19 19:23	03/29/19 19:23	EPA 8260D
Acetone		<	20	ug/L	1	B9C0458	03/29/19 19:23	03/29/19 19:23	EPA 8260D
Allyl chloride		<	1.0	ug/L	1	B9C0458	03/29/19 19:23	03/29/19 19:23	EPA 8260D
Benzene		<	0.50	ug/L	1	B9C0458	03/29/19 19:23	03/29/19 19:23	EPA 8260D
Bromobenzene		<	1.0	ug/L	1	B9C0458	03/29/19 19:23	03/29/19 19:23	EPA 8260D
Bromochloromethane		<	1.0	ug/L	1	B9C0458	03/29/19 19:23	03/29/19 19:23	EPA 8260D
Bromodichloromethane		<	1.0	ug/L	1	B9C0458	03/29/19 19:23	03/29/19 19:23	EPA 8260D
Bromoform		<	1.0	ug/L	1	B9C0458	03/29/19 19:23	03/29/19 19:23	EPA 8260D
Bromomethane	L3, V4, Z-01	<	2.0	ug/L	1	B9C0458	03/29/19 19:23	03/29/19 19:23	EPA 8260D
Carbon tetrachloride		<	0.20	ug/L	1	B9C0458	03/29/19 19:23	03/29/19 19:23	EPA 8260D
Chlorobenzene		<	1.0	ug/L	1	B9C0458	03/29/19 19:23	03/29/19 19:23	EPA 8260D
Chlorodibromomethane		<	0.50	ug/L	1	B9C0458	03/29/19 19:23	03/29/19 19:23	EPA 8260D
Chloroethane		<	1.0	ug/L	1	B9C0458	03/29/19 19:23	03/29/19 19:23	EPA 8260D
Chloroform		<	1.0	ug/L	1	B9C0458	03/29/19 19:23	03/29/19 19:23	EPA 8260D
Chloromethane		<	1.0	ug/L	1	B9C0458	03/29/19 19:23	03/29/19 19:23	EPA 8260D
cis-1,2-Dichloroethene		<	1.0	ug/L	1	B9C0458	03/29/19 19:23	03/29/19 19:23	EPA 8260D
cis-1,3-Dichloropropene		<	0.50	ug/L	1	B9C0458	03/29/19 19:23	03/29/19 19:23	EPA 8260D
Dibromomethane		<	1.0	ug/L	1	B9C0458	03/29/19 19:23	03/29/19 19:23	EPA 8260D
Dichlorodifluoromethane		<	1.0	ug/L	1	B9C0458	03/29/19 19:23	03/29/19 19:23	EPA 8260D
Dichlorofluoromethane		<	1.0	ug/L	1	B9C0458	03/29/19 19:23	03/29/19 19:23	EPA 8260D
Ethyl ether		<	1.0	ug/L	1	B9C0458	03/29/19 19:23	03/29/19 19:23	EPA 8260D
Ethylbenzene		<	1.0	ug/L	1	B9C0458	03/29/19 19:23	03/29/19 19:23	EPA 8260D
Hexachlorobutadiene		<	0.50	ug/L	1	B9C0458	03/29/19 19:23	03/29/19 19:23	EPA 8260D
Isopropylbenzene		<	1.0	ug/L	1	B9C0458	03/29/19 19:23	03/29/19 19:23	EPA 8260D
Methyl ethyl ketone (MEK)		<	10	ug/L	1	B9C0458	03/29/19 19:23	03/29/19 19:23	EPA 8260D
Methyl isobutyl ketone (MIBK)		<	5.0	ug/L	1	B9C0458	03/29/19 19:23	03/29/19 19:23	EPA 8260D
Methyl tertiary butyl ether (MTBE)		<	2.0	ug/L	1	B9C0458	03/29/19 19:23	03/29/19 19:23	EPA 8260D

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelosi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 04/26/19 9:19

MDH Sample Number: 19C1235-05

Location ID: 603288
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 03/26/19
Collect Time: 15:30
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Methylene chloride		<	1.0	ug/L	1	B9C0458	03/29/19 19:23	03/29/19 19:23	EPA 8260D
Naphthalene		<	1.0	ug/L	1	B9C0458	03/29/19 19:23	03/29/19 19:23	EPA 8260D
n-Butylbenzene		<	1.0	ug/L	1	B9C0458	03/29/19 19:23	03/29/19 19:23	EPA 8260D
n-Propylbenzene		<	1.0	ug/L	1	B9C0458	03/29/19 19:23	03/29/19 19:23	EPA 8260D
o-Xylene		<	1.0	ug/L	1	B9C0458	03/29/19 19:23	03/29/19 19:23	EPA 8260D
p&m-Xylene		<	1.0	ug/L	1	B9C0458	03/29/19 19:23	03/29/19 19:23	EPA 8260D
p-Isopropyltoluene		<	1.0	ug/L	1	B9C0458	03/29/19 19:23	03/29/19 19:23	EPA 8260D
sec-Butylbenzene		<	1.0	ug/L	1	B9C0458	03/29/19 19:23	03/29/19 19:23	EPA 8260D
Styrene		<	1.0	ug/L	1	B9C0458	03/29/19 19:23	03/29/19 19:23	EPA 8260D
tert-Butylbenzene		<	1.0	ug/L	1	B9C0458	03/29/19 19:23	03/29/19 19:23	EPA 8260D
Tetrachloroethene		<	1.0	ug/L	1	B9C0458	03/29/19 19:23	03/29/19 19:23	EPA 8260D
Tetrahydrofuran (THF)		<	10	ug/L	1	B9C0458	03/29/19 19:23	03/29/19 19:23	EPA 8260D
Toluene		<	1.0	ug/L	1	B9C0458	03/29/19 19:23	03/29/19 19:23	EPA 8260D
trans-1,2-Dichloroethene		<	1.0	ug/L	1	B9C0458	03/29/19 19:23	03/29/19 19:23	EPA 8260D
trans-1,3-Dichloropropene		<	0.50	ug/L	1	B9C0458	03/29/19 19:23	03/29/19 19:23	EPA 8260D
Trichloroethene (TCE)		<	0.10	ug/L	1	B9C0458	03/29/19 19:23	03/29/19 19:23	EPA 8260D
Trichlorofluoromethane		<	1.0	ug/L	1	B9C0458	03/29/19 19:23	03/29/19 19:23	EPA 8260D
Vinyl chloride		<	0.050	ug/L	1	B9C0458	03/29/19 19:23	03/29/19 19:23	EPA 8260D

1,4-Dioxane

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
1,4-Dioxane		<	0.051	ug/L	1	B9D0172	04/11/19 09:00	04/15/19 15:51	EPA 522 Modified

PFC Expanded List

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorobutanesulfonate (PFBS)		<	0.050	ug/L	1	B9D0111	04/05/19 18:50	04/05/19 18:50	MDH 555
Perfluorobutanoic acid (PFBA)	J	**0.014**	0.050	ug/L	1	B9D0111	04/05/19 18:50	04/05/19 18:50	MDH 555

FINAL REPORT

Report ID: 04262019 91928

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651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelosi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 04/26/19 9:19

MDH Sample Number: 19C1235-05

Location ID: 603288
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 03/26/19
Collect Time: 15:30
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

PFC Expanded List - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorohexanesulfonate (PFHxS)		<	0.025	ug/L	1	B9D0111	04/05/19 18:50	04/05/19 18:50	MDH 555
Perfluorohexanoic acid (PFHxA)		<	0.050	ug/L	1	B9D0111	04/05/19 18:50	04/05/19 18:50	MDH 555
Perfluorooctanesulfonate (PFOS)	J	**0.019**	0.025	ug/L	1	B9D0111	04/05/19 18:50	04/05/19 18:50	MDH 555
Perfluorooctanoic acid (PFOA)		<	0.035	ug/L	1	B9D0111	04/05/19 18:50	04/05/19 18:50	MDH 555
Perfluoropentanoic acid (PFPeA)	J	**0.010**	0.050	ug/L	1	B9D0111	04/05/19 18:50	04/05/19 18:50	MDH 555

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651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelosi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 04/26/19 9:19

MDH Sample Number: 19C1235-06

Location ID: 603289
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 03/26/19
Collect Time: 16:30
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Surrogate: 1,2-Dichlorobenzene-d4		*100*	*70-130*	%	*1*	*B9C0458*	*03/29/19 19:51*	*03/29/19 19:51*	*EPA 8260D*
Surrogate: 4-Bromofluorobenzene		*96*	*70-130*	%	*1*	*B9C0458*	*03/29/19 19:51*	*03/29/19 19:51*	*EPA 8260D*
Surrogate: Methyl tertiary butyl ether-d3		*101*	*70-130*	%	*1*	*B9C0458*	*03/29/19 19:51*	*03/29/19 19:51*	*EPA 8260D*
1,1,1,2-Tetrachloroethane		<	1.0	ug/L	1	B9C0458	03/29/19 19:51	03/29/19 19:51	EPA 8260D
1,1,1-Trichloroethane		<	1.0	ug/L	1	B9C0458	03/29/19 19:51	03/29/19 19:51	EPA 8260D
1,1,2,2-Tetrachloroethane		<	0.50	ug/L	1	B9C0458	03/29/19 19:51	03/29/19 19:51	EPA 8260D
1,1,2-Trichloroethane		<	0.50	ug/L	1	B9C0458	03/29/19 19:51	03/29/19 19:51	EPA 8260D
1,1,2-Trichlorotrifluoroethane		<	1.0	ug/L	1	B9C0458	03/29/19 19:51	03/29/19 19:51	EPA 8260D
1,1-Dichloroethane		<	1.0	ug/L	1	B9C0458	03/29/19 19:51	03/29/19 19:51	EPA 8260D
1,1-Dichloroethene		<	1.0	ug/L	1	B9C0458	03/29/19 19:51	03/29/19 19:51	EPA 8260D
1,1-Dichloropropene		<	1.0	ug/L	1	B9C0458	03/29/19 19:51	03/29/19 19:51	EPA 8260D
1,2,3-Trichlorobenzene		<	1.0	ug/L	1	B9C0458	03/29/19 19:51	03/29/19 19:51	EPA 8260D
1,2,3-Trichloropropane		<	0.20	ug/L	1	B9C0458	03/29/19 19:51	03/29/19 19:51	EPA 8260D
1,2,4-Trichlorobenzene		<	1.0	ug/L	1	B9C0458	03/29/19 19:51	03/29/19 19:51	EPA 8260D
1,2,4-Trimethylbenzene		<	1.0	ug/L	1	B9C0458	03/29/19 19:51	03/29/19 19:51	EPA 8260D
1,2-Dibromo-3-chloropropane (DBCP)		<	1.0	ug/L	1	B9C0458	03/29/19 19:51	03/29/19 19:51	EPA 8260D
1,2-Dibromoethane (EDB)		<	0.50	ug/L	1	B9C0458	03/29/19 19:51	03/29/19 19:51	EPA 8260D
1,2-Dichlorobenzene		<	1.0	ug/L	1	B9C0458	03/29/19 19:51	03/29/19 19:51	EPA 8260D
1,2-Dichloroethane		<	0.20	ug/L	1	B9C0458	03/29/19 19:51	03/29/19 19:51	EPA 8260D
1,2-Dichloropropane		<	1.0	ug/L	1	B9C0458	03/29/19 19:51	03/29/19 19:51	EPA 8260D
1,3,5-Trimethylbenzene		<	1.0	ug/L	1	B9C0458	03/29/19 19:51	03/29/19 19:51	EPA 8260D
1,3-Dichlorobenzene		<	1.0	ug/L	1	B9C0458	03/29/19 19:51	03/29/19 19:51	EPA 8260D
1,3-Dichloropropane		<	1.0	ug/L	1	B9C0458	03/29/19 19:51	03/29/19 19:51	EPA 8260D
1,4-Dichlorobenzene		<	1.0	ug/L	1	B9C0458	03/29/19 19:51	03/29/19 19:51	EPA 8260D
2,2-Dichloropropane		<	1.0	ug/L	1	B9C0458	03/29/19 19:51	03/29/19 19:51	EPA 8260D
2-Chlorotoluene		<	1.0	ug/L	1	B9C0458	03/29/19 19:51	03/29/19 19:51	EPA 8260D

Authorized by:

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Public Health Laboratory, Minnesota Department of Health

Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelosi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 04/26/19 9:19

MDH Sample Number: 19C1235-06

Location ID: 603289
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 03/26/19
Collect Time: 16:30
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
4-Chlorotoluene		<	1.0	ug/L	1	B9C0458	03/29/19 19:51	03/29/19 19:51	EPA 8260D
Acetone		<	20	ug/L	1	B9C0458	03/29/19 19:51	03/29/19 19:51	EPA 8260D
Allyl chloride		<	1.0	ug/L	1	B9C0458	03/29/19 19:51	03/29/19 19:51	EPA 8260D
Benzene		<	0.50	ug/L	1	B9C0458	03/29/19 19:51	03/29/19 19:51	EPA 8260D
Bromobenzene		<	1.0	ug/L	1	B9C0458	03/29/19 19:51	03/29/19 19:51	EPA 8260D
Bromochloromethane		<	1.0	ug/L	1	B9C0458	03/29/19 19:51	03/29/19 19:51	EPA 8260D
Bromodichloromethane		<	1.0	ug/L	1	B9C0458	03/29/19 19:51	03/29/19 19:51	EPA 8260D
Bromoform		<	1.0	ug/L	1	B9C0458	03/29/19 19:51	03/29/19 19:51	EPA 8260D
Bromomethane	L3, V4, Z-01	<	2.0	ug/L	1	B9C0458	03/29/19 19:51	03/29/19 19:51	EPA 8260D
Carbon tetrachloride		<	0.20	ug/L	1	B9C0458	03/29/19 19:51	03/29/19 19:51	EPA 8260D
Chlorobenzene		<	1.0	ug/L	1	B9C0458	03/29/19 19:51	03/29/19 19:51	EPA 8260D
Chlorodibromomethane		<	0.50	ug/L	1	B9C0458	03/29/19 19:51	03/29/19 19:51	EPA 8260D
Chloroethane		<	1.0	ug/L	1	B9C0458	03/29/19 19:51	03/29/19 19:51	EPA 8260D
Chloroform		<	1.0	ug/L	1	B9C0458	03/29/19 19:51	03/29/19 19:51	EPA 8260D
Chloromethane		<	1.0	ug/L	1	B9C0458	03/29/19 19:51	03/29/19 19:51	EPA 8260D
cis-1,2-Dichloroethene		<	1.0	ug/L	1	B9C0458	03/29/19 19:51	03/29/19 19:51	EPA 8260D
cis-1,3-Dichloropropene		<	0.50	ug/L	1	B9C0458	03/29/19 19:51	03/29/19 19:51	EPA 8260D
Dibromomethane		<	1.0	ug/L	1	B9C0458	03/29/19 19:51	03/29/19 19:51	EPA 8260D
Dichlorodifluoromethane		<	1.0	ug/L	1	B9C0458	03/29/19 19:51	03/29/19 19:51	EPA 8260D
Dichlorofluoromethane		<	1.0	ug/L	1	B9C0458	03/29/19 19:51	03/29/19 19:51	EPA 8260D
Ethyl ether		<	1.0	ug/L	1	B9C0458	03/29/19 19:51	03/29/19 19:51	EPA 8260D
Ethylbenzene		<	1.0	ug/L	1	B9C0458	03/29/19 19:51	03/29/19 19:51	EPA 8260D
Hexachlorobutadiene		<	0.50	ug/L	1	B9C0458	03/29/19 19:51	03/29/19 19:51	EPA 8260D
Isopropylbenzene		<	1.0	ug/L	1	B9C0458	03/29/19 19:51	03/29/19 19:51	EPA 8260D
Methyl ethyl ketone (MEK)		<	10	ug/L	1	B9C0458	03/29/19 19:51	03/29/19 19:51	EPA 8260D
Methyl isobutyl ketone (MIBK)		<	5.0	ug/L	1	B9C0458	03/29/19 19:51	03/29/19 19:51	EPA 8260D
Methyl tertiary butyl ether (MTBE)		<	2.0	ug/L	1	B9C0458	03/29/19 19:51	03/29/19 19:51	EPA 8260D

FINAL REPORT

Report ID: 04262019 91928

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelosi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 04/26/19 9:19

MDH Sample Number: 19C1235-06

Location ID: 603289
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 03/26/19
Collect Time: 16:30
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Methylene chloride		<	1.0	ug/L	1	B9C0458	03/29/19 19:51	03/29/19 19:51	EPA 8260D
Naphthalene		<	1.0	ug/L	1	B9C0458	03/29/19 19:51	03/29/19 19:51	EPA 8260D
n-Butylbenzene		<	1.0	ug/L	1	B9C0458	03/29/19 19:51	03/29/19 19:51	EPA 8260D
n-Propylbenzene		<	1.0	ug/L	1	B9C0458	03/29/19 19:51	03/29/19 19:51	EPA 8260D
o-Xylene		<	1.0	ug/L	1	B9C0458	03/29/19 19:51	03/29/19 19:51	EPA 8260D
p&m-Xylene		<	1.0	ug/L	1	B9C0458	03/29/19 19:51	03/29/19 19:51	EPA 8260D
p-Isopropyltoluene		<	1.0	ug/L	1	B9C0458	03/29/19 19:51	03/29/19 19:51	EPA 8260D
sec-Butylbenzene		<	1.0	ug/L	1	B9C0458	03/29/19 19:51	03/29/19 19:51	EPA 8260D
Styrene		<	1.0	ug/L	1	B9C0458	03/29/19 19:51	03/29/19 19:51	EPA 8260D
tert-Butylbenzene		<	1.0	ug/L	1	B9C0458	03/29/19 19:51	03/29/19 19:51	EPA 8260D
Tetrachloroethene		<	1.0	ug/L	1	B9C0458	03/29/19 19:51	03/29/19 19:51	EPA 8260D
Tetrahydrofuran (THF)		<	10	ug/L	1	B9C0458	03/29/19 19:51	03/29/19 19:51	EPA 8260D
Toluene		<	1.0	ug/L	1	B9C0458	03/29/19 19:51	03/29/19 19:51	EPA 8260D
trans-1,2-Dichloroethene		<	1.0	ug/L	1	B9C0458	03/29/19 19:51	03/29/19 19:51	EPA 8260D
trans-1,3-Dichloropropene		<	0.50	ug/L	1	B9C0458	03/29/19 19:51	03/29/19 19:51	EPA 8260D
Trichloroethene (TCE)		<	0.10	ug/L	1	B9C0458	03/29/19 19:51	03/29/19 19:51	EPA 8260D
Trichlorofluoromethane		<	1.0	ug/L	1	B9C0458	03/29/19 19:51	03/29/19 19:51	EPA 8260D
Vinyl chloride		**0.090**	0.050	ug/L	1	B9C0458	03/29/19 19:51	03/29/19 19:51	EPA 8260D

1,4-Dioxane

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
1,4-Dioxane		**0.83**	0.049	ug/L	1	B9D0172	04/11/19 09:00	04/15/19 16:07	EPA 522 Modified

PFC Expanded List

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorobutanesulfonate (PFBS)		<	0.050	ug/L	1	B9D0111	04/05/19 19:06	04/05/19 19:06	MDH 555
Perfluorobutanoic acid (PFBA)	J	**0.035**	0.050	ug/L	1	B9D0111	04/05/19 19:06	04/05/19 19:06	MDH 555

FINAL REPORT

Report ID: 04262019 91928

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelosi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 04/26/19 9:19

MDH Sample Number: 19C1235-06

Location ID: 603289
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 03/26/19
Collect Time: 16:30
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

PFC Expanded List - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorohexanesulfonate (PFHxS)	J	**0.019**	0.025	ug/L	1	B9D0111	04/05/19 19:06	04/05/19 19:06	MDH 555
Perfluorohexanoic acid (PFHxA)		**0.11**	0.050	ug/L	1	B9D0111	04/05/19 19:06	04/05/19 19:06	MDH 555
Perfluorooctanesulfonate (PFOS)		**0.20**	0.025	ug/L	1	B9D0111	04/05/19 19:06	04/05/19 19:06	MDH 555
Perfluorooctanoic acid (PFOA)		**1.0**	0.035	ug/L	1	B9D0111	04/05/19 19:06	04/05/19 19:06	MDH 555
Perfluoropentanoic acid (PFPeA)		**0.062**	0.050	ug/L	1	B9D0111	04/05/19 19:06	04/05/19 19:06	MDH 555

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Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelosi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 04/26/19 9:19

MDH Sample Number: 19C1235-07

Location ID: 813766
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 03/27/19
Collect Time: 10:40
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Surrogate: 1,2-Dichlorobenzene-d4		*101*	*70-130*	%	*1*	*B9D0001*	*04/01/19 16:54*	*04/01/19 16:54*	*EPA 8260D*
Surrogate: 4-Bromofluorobenzene		*95*	*70-130*	%	*1*	*B9D0001*	*04/01/19 16:54*	*04/01/19 16:54*	*EPA 8260D*
Surrogate: Methyl tertiary butyl ether-d3		*101*	*70-130*	%	*1*	*B9D0001*	*04/01/19 16:54*	*04/01/19 16:54*	*EPA 8260D*
1,1,1,2-Tetrachloroethane		<	1.0	ug/L	1	B9D0001	04/01/19 16:54	04/01/19 16:54	EPA 8260D
1,1,1-Trichloroethane		<	1.0	ug/L	1	B9D0001	04/01/19 16:54	04/01/19 16:54	EPA 8260D
1,1,2,2-Tetrachloroethane		<	0.50	ug/L	1	B9D0001	04/01/19 16:54	04/01/19 16:54	EPA 8260D
1,1,2-Trichloroethane		<	0.50	ug/L	1	B9D0001	04/01/19 16:54	04/01/19 16:54	EPA 8260D
1,1,2-Trichlorotrifluoroethane		<	1.0	ug/L	1	B9D0001	04/01/19 16:54	04/01/19 16:54	EPA 8260D
1,1-Dichloroethane		<	1.0	ug/L	1	B9D0001	04/01/19 16:54	04/01/19 16:54	EPA 8260D
1,1-Dichloroethene		<	1.0	ug/L	1	B9D0001	04/01/19 16:54	04/01/19 16:54	EPA 8260D
1,1-Dichloropropene		<	1.0	ug/L	1	B9D0001	04/01/19 16:54	04/01/19 16:54	EPA 8260D
1,2,3-Trichlorobenzene		<	1.0	ug/L	1	B9D0001	04/01/19 16:54	04/01/19 16:54	EPA 8260D
1,2,3-Trichloropropane		<	0.20	ug/L	1	B9D0001	04/01/19 16:54	04/01/19 16:54	EPA 8260D
1,2,4-Trichlorobenzene		<	1.0	ug/L	1	B9D0001	04/01/19 16:54	04/01/19 16:54	EPA 8260D
1,2,4-Trimethylbenzene		<	1.0	ug/L	1	B9D0001	04/01/19 16:54	04/01/19 16:54	EPA 8260D
1,2-Dibromo-3-chloropropane (DBCP)		<	1.0	ug/L	1	B9D0001	04/01/19 16:54	04/01/19 16:54	EPA 8260D
1,2-Dibromoethane (EDB)		<	0.50	ug/L	1	B9D0001	04/01/19 16:54	04/01/19 16:54	EPA 8260D
1,2-Dichlorobenzene		<	1.0	ug/L	1	B9D0001	04/01/19 16:54	04/01/19 16:54	EPA 8260D
1,2-Dichloroethane		<	0.20	ug/L	1	B9D0001	04/01/19 16:54	04/01/19 16:54	EPA 8260D
1,2-Dichloropropane		<	1.0	ug/L	1	B9D0001	04/01/19 16:54	04/01/19 16:54	EPA 8260D
1,3,5-Trimethylbenzene		<	1.0	ug/L	1	B9D0001	04/01/19 16:54	04/01/19 16:54	EPA 8260D
1,3-Dichlorobenzene		<	1.0	ug/L	1	B9D0001	04/01/19 16:54	04/01/19 16:54	EPA 8260D
1,3-Dichloropropane		<	1.0	ug/L	1	B9D0001	04/01/19 16:54	04/01/19 16:54	EPA 8260D
1,4-Dichlorobenzene		<	1.0	ug/L	1	B9D0001	04/01/19 16:54	04/01/19 16:54	EPA 8260D
2,2-Dichloropropane		<	1.0	ug/L	1	B9D0001	04/01/19 16:54	04/01/19 16:54	EPA 8260D
2-Chlorotoluene		<	1.0	ug/L	1	B9D0001	04/01/19 16:54	04/01/19 16:54	EPA 8260D

FINAL REPORT

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Collected By: David Anderson/Chris Pelosi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 04/26/19 9:19

MDH Sample Number: 19C1235-07

Location ID: 813766
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 03/27/19
Collect Time: 10:40
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
4-Chlorotoluene		<	1.0	ug/L	1	B9D0001	04/01/19 16:54	04/01/19 16:54	EPA 8260D
Acetone		<	20	ug/L	1	B9D0001	04/01/19 16:54	04/01/19 16:54	EPA 8260D
Allyl chloride		<	1.0	ug/L	1	B9D0001	04/01/19 16:54	04/01/19 16:54	EPA 8260D
Benzene		**0.81**	0.50	ug/L	1	B9D0001	04/01/19 16:54	04/01/19 16:54	EPA 8260D
Bromobenzene		<	1.0	ug/L	1	B9D0001	04/01/19 16:54	04/01/19 16:54	EPA 8260D
Bromochloromethane		<	1.0	ug/L	1	B9D0001	04/01/19 16:54	04/01/19 16:54	EPA 8260D
Bromodichloromethane		<	1.0	ug/L	1	B9D0001	04/01/19 16:54	04/01/19 16:54	EPA 8260D
Bromoform		<	1.0	ug/L	1	B9D0001	04/01/19 16:54	04/01/19 16:54	EPA 8260D
Bromomethane	L3, V4, Z-01	<	2.0	ug/L	1	B9D0001	04/01/19 16:54	04/01/19 16:54	EPA 8260D
Carbon tetrachloride		<	0.20	ug/L	1	B9D0001	04/01/19 16:54	04/01/19 16:54	EPA 8260D
Chlorobenzene		<	1.0	ug/L	1	B9D0001	04/01/19 16:54	04/01/19 16:54	EPA 8260D
Chlorodibromomethane		<	0.50	ug/L	1	B9D0001	04/01/19 16:54	04/01/19 16:54	EPA 8260D
Chloroethane		<	1.0	ug/L	1	B9D0001	04/01/19 16:54	04/01/19 16:54	EPA 8260D
Chloroform		<	1.0	ug/L	1	B9D0001	04/01/19 16:54	04/01/19 16:54	EPA 8260D
Chloromethane		<	1.0	ug/L	1	B9D0001	04/01/19 16:54	04/01/19 16:54	EPA 8260D
cis-1,2-Dichloroethene		<	1.0	ug/L	1	B9D0001	04/01/19 16:54	04/01/19 16:54	EPA 8260D
cis-1,3-Dichloropropene		<	0.50	ug/L	1	B9D0001	04/01/19 16:54	04/01/19 16:54	EPA 8260D
Dibromomethane		<	1.0	ug/L	1	B9D0001	04/01/19 16:54	04/01/19 16:54	EPA 8260D
Dichlorodifluoromethane		<	1.0	ug/L	1	B9D0001	04/01/19 16:54	04/01/19 16:54	EPA 8260D
Dichlorofluoromethane		<	1.0	ug/L	1	B9D0001	04/01/19 16:54	04/01/19 16:54	EPA 8260D
Ethyl ether		**13**	1.0	ug/L	1	B9D0001	04/01/19 16:54	04/01/19 16:54	EPA 8260D
Ethylbenzene		<	1.0	ug/L	1	B9D0001	04/01/19 16:54	04/01/19 16:54	EPA 8260D
Hexachlorobutadiene		<	0.50	ug/L	1	B9D0001	04/01/19 16:54	04/01/19 16:54	EPA 8260D
Isopropylbenzene		<	1.0	ug/L	1	B9D0001	04/01/19 16:54	04/01/19 16:54	EPA 8260D
Methyl ethyl ketone (MEK)		<	10	ug/L	1	B9D0001	04/01/19 16:54	04/01/19 16:54	EPA 8260D
Methyl isobutyl ketone (MIBK)		<	5.0	ug/L	1	B9D0001	04/01/19 16:54	04/01/19 16:54	EPA 8260D
Methyl tertiary butyl ether (MTBE)		<	2.0	ug/L	1	B9D0001	04/01/19 16:54	04/01/19 16:54	EPA 8260D

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelosi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 04/26/19 9:19

MDH Sample Number: 19C1235-07

Location ID: 813766
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 03/27/19
Collect Time: 10:40
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Methylene chloride		<	1.0	ug/L	1	B9D0001	04/01/19 16:54	04/01/19 16:54	EPA 8260D
Naphthalene		<	1.0	ug/L	1	B9D0001	04/01/19 16:54	04/01/19 16:54	EPA 8260D
n-Butylbenzene		<	1.0	ug/L	1	B9D0001	04/01/19 16:54	04/01/19 16:54	EPA 8260D
n-Propylbenzene		<	1.0	ug/L	1	B9D0001	04/01/19 16:54	04/01/19 16:54	EPA 8260D
o-Xylene		<	1.0	ug/L	1	B9D0001	04/01/19 16:54	04/01/19 16:54	EPA 8260D
p&m-Xylene		<	1.0	ug/L	1	B9D0001	04/01/19 16:54	04/01/19 16:54	EPA 8260D
p-Isopropyltoluene		<	1.0	ug/L	1	B9D0001	04/01/19 16:54	04/01/19 16:54	EPA 8260D
sec-Butylbenzene		<	1.0	ug/L	1	B9D0001	04/01/19 16:54	04/01/19 16:54	EPA 8260D
Styrene		<	1.0	ug/L	1	B9D0001	04/01/19 16:54	04/01/19 16:54	EPA 8260D
tert-Butylbenzene		<	1.0	ug/L	1	B9D0001	04/01/19 16:54	04/01/19 16:54	EPA 8260D
Tetrachloroethene		<	1.0	ug/L	1	B9D0001	04/01/19 16:54	04/01/19 16:54	EPA 8260D
Tetrahydrofuran (THF)		<	10	ug/L	1	B9D0001	04/01/19 16:54	04/01/19 16:54	EPA 8260D
Toluene		<	1.0	ug/L	1	B9D0001	04/01/19 16:54	04/01/19 16:54	EPA 8260D
trans-1,2-Dichloroethene		<	1.0	ug/L	1	B9D0001	04/01/19 16:54	04/01/19 16:54	EPA 8260D
trans-1,3-Dichloropropene		<	0.50	ug/L	1	B9D0001	04/01/19 16:54	04/01/19 16:54	EPA 8260D
Trichloroethene (TCE)		<	0.10	ug/L	1	B9D0001	04/01/19 16:54	04/01/19 16:54	EPA 8260D
Trichlorofluoromethane		<	1.0	ug/L	1	B9D0001	04/01/19 16:54	04/01/19 16:54	EPA 8260D
Vinyl chloride		<	0.050	ug/L	1	B9D0001	04/01/19 16:54	04/01/19 16:54	EPA 8260D

1,4-Dioxane

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
1,4-Dioxane		**8.3**	0.050	ug/L	1	B9D0172	04/11/19 09:00	04/15/19 16:23	EPA 522 Modified

PFC Expanded List

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorobutanesulfonate (PFBS)		<	0.050	ug/L	1	B9D0111	04/05/19 19:22	04/05/19 19:22	MDH 555
Perfluorobutanoic acid (PFBA)	J	**0.049**	0.050	ug/L	1	B9D0111	04/05/19 19:22	04/05/19 19:22	MDH 555

FINAL REPORT

Report ID: 04262019 91928

Authorized by:

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Paul Moyer, Environmental Laboratory Manager
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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelosi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 04/26/19 9:19

MDH Sample Number: 19C1235-07

Location ID: 813766
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 03/27/19
Collect Time: 10:40
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

PFC Expanded List - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorohexanesulfonate (PFHxS)	J	**0.012**	0.025	ug/L	1	B9D0111	04/05/19 19:22	04/05/19 19:22	MDH 555
Perfluorohexanoic acid (PFHxA)	J	**0.023**	0.050	ug/L	1	B9D0111	04/05/19 19:22	04/05/19 19:22	MDH 555
Perfluorooctanesulfonate (PFOS)		**0.045**	0.025	ug/L	1	B9D0111	04/05/19 19:22	04/05/19 19:22	MDH 555
Perfluorooctanoic acid (PFOA)		**0.19**	0.035	ug/L	1	B9D0111	04/05/19 19:22	04/05/19 19:22	MDH 555
Perfluoropentanoic acid (PFPeA)	J	**0.017**	0.050	ug/L	1	B9D0111	04/05/19 19:22	04/05/19 19:22	MDH 555

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St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelosi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 04/26/19 9:19

MDH Sample Number: 19C1235-08

Location ID: 813741
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 03/27/19
Collect Time: 11:40
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

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VOCs by GCMS

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Surrogate: 1,2-Dichlorobenzene-d4		*100*	*70-130*	%	*1*	*B9D0001*	*04/01/19 17:21*	*04/01/19 17:21*	*EPA 8260D*
Surrogate: 4-Bromofluorobenzene		*96*	*70-130*	%	*1*	*B9D0001*	*04/01/19 17:21*	*04/01/19 17:21*	*EPA 8260D*
Surrogate: Methyl tertiary butyl ether-d3		*101*	*70-130*	%	*1*	*B9D0001*	*04/01/19 17:21*	*04/01/19 17:21*	*EPA 8260D*
1,1,1,2-Tetrachloroethane		<	1.0	ug/L	1	B9D0001	04/01/19 17:21	04/01/19 17:21	EPA 8260D
1,1,1-Trichloroethane		<	1.0	ug/L	1	B9D0001	04/01/19 17:21	04/01/19 17:21	EPA 8260D
1,1,2,2-Tetrachloroethane		<	0.50	ug/L	1	B9D0001	04/01/19 17:21	04/01/19 17:21	EPA 8260D
1,1,2-Trichloroethane		<	0.50	ug/L	1	B9D0001	04/01/19 17:21	04/01/19 17:21	EPA 8260D
1,1,2-Trichlorotrifluoroethane		<	1.0	ug/L	1	B9D0001	04/01/19 17:21	04/01/19 17:21	EPA 8260D
1,1-Dichloroethane		<	1.0	ug/L	1	B9D0001	04/01/19 17:21	04/01/19 17:21	EPA 8260D
1,1-Dichloroethene		<	1.0	ug/L	1	B9D0001	04/01/19 17:21	04/01/19 17:21	EPA 8260D
1,1-Dichloropropene		<	1.0	ug/L	1	B9D0001	04/01/19 17:21	04/01/19 17:21	EPA 8260D
1,2,3-Trichlorobenzene		<	1.0	ug/L	1	B9D0001	04/01/19 17:21	04/01/19 17:21	EPA 8260D
1,2,3-Trichloropropane		<	0.20	ug/L	1	B9D0001	04/01/19 17:21	04/01/19 17:21	EPA 8260D
1,2,4-Trichlorobenzene		<	1.0	ug/L	1	B9D0001	04/01/19 17:21	04/01/19 17:21	EPA 8260D
1,2,4-Trimethylbenzene		<	1.0	ug/L	1	B9D0001	04/01/19 17:21	04/01/19 17:21	EPA 8260D
1,2-Dibromo-3-chloropropane (DBCP)		<	1.0	ug/L	1	B9D0001	04/01/19 17:21	04/01/19 17:21	EPA 8260D
1,2-Dibromoethane (EDB)		<	0.50	ug/L	1	B9D0001	04/01/19 17:21	04/01/19 17:21	EPA 8260D
1,2-Dichlorobenzene		<	1.0	ug/L	1	B9D0001	04/01/19 17:21	04/01/19 17:21	EPA 8260D
1,2-Dichloroethane		<	0.20	ug/L	1	B9D0001	04/01/19 17:21	04/01/19 17:21	EPA 8260D
1,2-Dichloropropane		<	1.0	ug/L	1	B9D0001	04/01/19 17:21	04/01/19 17:21	EPA 8260D
1,3,5-Trimethylbenzene		<	1.0	ug/L	1	B9D0001	04/01/19 17:21	04/01/19 17:21	EPA 8260D
1,3-Dichlorobenzene		<	1.0	ug/L	1	B9D0001	04/01/19 17:21	04/01/19 17:21	EPA 8260D
1,3-Dichloropropane		<	1.0	ug/L	1	B9D0001	04/01/19 17:21	04/01/19 17:21	EPA 8260D
1,4-Dichlorobenzene		<	1.0	ug/L	1	B9D0001	04/01/19 17:21	04/01/19 17:21	EPA 8260D
2,2-Dichloropropane		<	1.0	ug/L	1	B9D0001	04/01/19 17:21	04/01/19 17:21	EPA 8260D
2-Chlorotoluene		<	1.0	ug/L	1	B9D0001	04/01/19 17:21	04/01/19 17:21	EPA 8260D

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Public Health Laboratory, Minnesota Department of Health

Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
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St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelosi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 04/26/19 9:19

MDH Sample Number: 19C1235-08

Location ID: 813741
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 03/27/19
Collect Time: 11:40
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
4-Chlorotoluene		<	1.0	ug/L	1	B9D0001	04/01/19 17:21	04/01/19 17:21	EPA 8260D
Acetone		<	20	ug/L	1	B9D0001	04/01/19 17:21	04/01/19 17:21	EPA 8260D
Allyl chloride		<	1.0	ug/L	1	B9D0001	04/01/19 17:21	04/01/19 17:21	EPA 8260D
Benzene		<	0.50	ug/L	1	B9D0001	04/01/19 17:21	04/01/19 17:21	EPA 8260D
Bromobenzene		<	1.0	ug/L	1	B9D0001	04/01/19 17:21	04/01/19 17:21	EPA 8260D
Bromochloromethane		<	1.0	ug/L	1	B9D0001	04/01/19 17:21	04/01/19 17:21	EPA 8260D
Bromodichloromethane		<	1.0	ug/L	1	B9D0001	04/01/19 17:21	04/01/19 17:21	EPA 8260D
Bromoform		<	1.0	ug/L	1	B9D0001	04/01/19 17:21	04/01/19 17:21	EPA 8260D
Bromomethane	L3, V4, Z-01	<	2.0	ug/L	1	B9D0001	04/01/19 17:21	04/01/19 17:21	EPA 8260D
Carbon tetrachloride		<	0.20	ug/L	1	B9D0001	04/01/19 17:21	04/01/19 17:21	EPA 8260D
Chlorobenzene		<	1.0	ug/L	1	B9D0001	04/01/19 17:21	04/01/19 17:21	EPA 8260D
Chlorodibromomethane		<	0.50	ug/L	1	B9D0001	04/01/19 17:21	04/01/19 17:21	EPA 8260D
Chloroethane		<	1.0	ug/L	1	B9D0001	04/01/19 17:21	04/01/19 17:21	EPA 8260D
Chloroform		<	1.0	ug/L	1	B9D0001	04/01/19 17:21	04/01/19 17:21	EPA 8260D
Chloromethane		<	1.0	ug/L	1	B9D0001	04/01/19 17:21	04/01/19 17:21	EPA 8260D
cis-1,2-Dichloroethene		<	1.0	ug/L	1	B9D0001	04/01/19 17:21	04/01/19 17:21	EPA 8260D
cis-1,3-Dichloropropene		<	0.50	ug/L	1	B9D0001	04/01/19 17:21	04/01/19 17:21	EPA 8260D
Dibromomethane		<	1.0	ug/L	1	B9D0001	04/01/19 17:21	04/01/19 17:21	EPA 8260D
Dichlorodifluoromethane		<	1.0	ug/L	1	B9D0001	04/01/19 17:21	04/01/19 17:21	EPA 8260D
Dichlorofluoromethane		<	1.0	ug/L	1	B9D0001	04/01/19 17:21	04/01/19 17:21	EPA 8260D
Ethyl ether		**7.3**	1.0	ug/L	1	B9D0001	04/01/19 17:21	04/01/19 17:21	EPA 8260D
Ethylbenzene		<	1.0	ug/L	1	B9D0001	04/01/19 17:21	04/01/19 17:21	EPA 8260D
Hexachlorobutadiene		<	0.50	ug/L	1	B9D0001	04/01/19 17:21	04/01/19 17:21	EPA 8260D
Isopropylbenzene		<	1.0	ug/L	1	B9D0001	04/01/19 17:21	04/01/19 17:21	EPA 8260D
Methyl ethyl ketone (MEK)		<	10	ug/L	1	B9D0001	04/01/19 17:21	04/01/19 17:21	EPA 8260D
Methyl isobutyl ketone (MIBK)		<	5.0	ug/L	1	B9D0001	04/01/19 17:21	04/01/19 17:21	EPA 8260D
Methyl tertiary butyl ether (MTBE)		<	2.0	ug/L	1	B9D0001	04/01/19 17:21	04/01/19 17:21	EPA 8260D

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Public Health Laboratory, Minnesota Department of Health

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Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelosi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 04/26/19 9:19

MDH Sample Number: 19C1235-08

Location ID: 813741
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 03/27/19
Collect Time: 11:40
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Methylene chloride		<	1.0	ug/L	1	B9D0001	04/01/19 17:21	04/01/19 17:21	EPA 8260D
Naphthalene		<	1.0	ug/L	1	B9D0001	04/01/19 17:21	04/01/19 17:21	EPA 8260D
n-Butylbenzene		<	1.0	ug/L	1	B9D0001	04/01/19 17:21	04/01/19 17:21	EPA 8260D
n-Propylbenzene		<	1.0	ug/L	1	B9D0001	04/01/19 17:21	04/01/19 17:21	EPA 8260D
o-Xylene		<	1.0	ug/L	1	B9D0001	04/01/19 17:21	04/01/19 17:21	EPA 8260D
p&m-Xylene		<	1.0	ug/L	1	B9D0001	04/01/19 17:21	04/01/19 17:21	EPA 8260D
p-Isopropyltoluene		<	1.0	ug/L	1	B9D0001	04/01/19 17:21	04/01/19 17:21	EPA 8260D
sec-Butylbenzene		<	1.0	ug/L	1	B9D0001	04/01/19 17:21	04/01/19 17:21	EPA 8260D
Styrene		<	1.0	ug/L	1	B9D0001	04/01/19 17:21	04/01/19 17:21	EPA 8260D
tert-Butylbenzene		<	1.0	ug/L	1	B9D0001	04/01/19 17:21	04/01/19 17:21	EPA 8260D
Tetrachloroethene		<	1.0	ug/L	1	B9D0001	04/01/19 17:21	04/01/19 17:21	EPA 8260D
Tetrahydrofuran (THF)		**13**	10	ug/L	1	B9D0001	04/01/19 17:21	04/01/19 17:21	EPA 8260D
Toluene		<	1.0	ug/L	1	B9D0001	04/01/19 17:21	04/01/19 17:21	EPA 8260D
trans-1,2-Dichloroethene		<	1.0	ug/L	1	B9D0001	04/01/19 17:21	04/01/19 17:21	EPA 8260D
trans-1,3-Dichloropropene		<	0.50	ug/L	1	B9D0001	04/01/19 17:21	04/01/19 17:21	EPA 8260D
Trichloroethene (TCE)		<	0.10	ug/L	1	B9D0001	04/01/19 17:21	04/01/19 17:21	EPA 8260D
Trichlorofluoromethane		<	1.0	ug/L	1	B9D0001	04/01/19 17:21	04/01/19 17:21	EPA 8260D
Vinyl chloride		**5.1**	0.050	ug/L	1	B9D0001	04/01/19 17:21	04/01/19 17:21	EPA 8260D

PFC Expanded List

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorobutanesulfonate (PFBS)		<	0.050	ug/L	1	B9D0111	04/05/19 19:38	04/05/19 19:38	MDH 555
Perfluorobutanoic acid (PFBA)		**0.10**	0.050	ug/L	1	B9D0111	04/05/19 19:38	04/05/19 19:38	MDH 555
Perfluorohexanesulfonate (PFHxS)	J	**0.015**	0.025	ug/L	1	B9D0111	04/05/19 19:38	04/05/19 19:38	MDH 555
Perfluorohexanoic acid (PFHxA)		**0.084**	0.050	ug/L	1	B9D0111	04/05/19 19:38	04/05/19 19:38	MDH 555
Perfluorooctanesulfonate (PFOS)		**0.082**	0.025	ug/L	1	B9D0111	04/05/19 19:38	04/05/19 19:38	MDH 555
Perfluorooctanoic acid (PFOA)		**0.39**	0.035	ug/L	1	B9D0111	04/05/19 19:38	04/05/19 19:38	MDH 555

FINAL REPORT

Report ID: 04262019 91928

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelosi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 04/26/19 9:19

MDH Sample Number: 19C1235-08

Location ID: 813741
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 03/27/19
Collect Time: 11:40
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

PFC Expanded List - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluoropentanoic acid (PFPeA)	J	**0.025**	0.050	ug/L	1	B9D0111	04/05/19 19:38	04/05/19 19:38	MDH 555

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Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelosi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 04/26/19 9:19

MDH Sample Number: 19C1235-08RE1

Location ID: 813741
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 03/27/19
Collect Time: 11:40
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

1,4-Dioxane

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
1,4-Dioxane	D2	**26**	0.21	ug/L	4	B9D0228	04/12/19 09:22	04/25/19 11:38	EPA 522 Modified

FINAL REPORT

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St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelosi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 04/26/19 9:19

MDH Sample Number: 19C1235-09

Location ID: M-1
Field Name: None
Sampling Point: None
QA Type: Field Dup/Rep

Collect Date: 03/27/19
Collect Time: 11:42
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Surrogate: 1,2-Dichlorobenzene-d4		*100*	*70-130*	%	*1*	*B9D0001*	*04/01/19 17:49*	*04/01/19 17:49*	*EPA 8260D*
Surrogate: 4-Bromofluorobenzene		*96*	*70-130*	%	*1*	*B9D0001*	*04/01/19 17:49*	*04/01/19 17:49*	*EPA 8260D*
Surrogate: Methyl tertiary butyl ether-d3		*102*	*70-130*	%	*1*	*B9D0001*	*04/01/19 17:49*	*04/01/19 17:49*	*EPA 8260D*
1,1,1,2-Tetrachloroethane		<	1.0	ug/L	1	B9D0001	04/01/19 17:49	04/01/19 17:49	EPA 8260D
1,1,1-Trichloroethane		<	1.0	ug/L	1	B9D0001	04/01/19 17:49	04/01/19 17:49	EPA 8260D
1,1,2,2-Tetrachloroethane		<	0.50	ug/L	1	B9D0001	04/01/19 17:49	04/01/19 17:49	EPA 8260D
1,1,2-Trichloroethane		<	0.50	ug/L	1	B9D0001	04/01/19 17:49	04/01/19 17:49	EPA 8260D
1,1,2-Trichlorotrifluoroethane		<	1.0	ug/L	1	B9D0001	04/01/19 17:49	04/01/19 17:49	EPA 8260D
1,1-Dichloroethane		<	1.0	ug/L	1	B9D0001	04/01/19 17:49	04/01/19 17:49	EPA 8260D
1,1-Dichloroethene		<	1.0	ug/L	1	B9D0001	04/01/19 17:49	04/01/19 17:49	EPA 8260D
1,1-Dichloropropene		<	1.0	ug/L	1	B9D0001	04/01/19 17:49	04/01/19 17:49	EPA 8260D
1,2,3-Trichlorobenzene		<	1.0	ug/L	1	B9D0001	04/01/19 17:49	04/01/19 17:49	EPA 8260D
1,2,3-Trichloropropane		<	0.20	ug/L	1	B9D0001	04/01/19 17:49	04/01/19 17:49	EPA 8260D
1,2,4-Trichlorobenzene		<	1.0	ug/L	1	B9D0001	04/01/19 17:49	04/01/19 17:49	EPA 8260D
1,2,4-Trimethylbenzene		<	1.0	ug/L	1	B9D0001	04/01/19 17:49	04/01/19 17:49	EPA 8260D
1,2-Dibromo-3-chloropropane (DBCP)		<	1.0	ug/L	1	B9D0001	04/01/19 17:49	04/01/19 17:49	EPA 8260D
1,2-Dibromoethane (EDB)		<	0.50	ug/L	1	B9D0001	04/01/19 17:49	04/01/19 17:49	EPA 8260D
1,2-Dichlorobenzene		<	1.0	ug/L	1	B9D0001	04/01/19 17:49	04/01/19 17:49	EPA 8260D
1,2-Dichloroethane		<	0.20	ug/L	1	B9D0001	04/01/19 17:49	04/01/19 17:49	EPA 8260D
1,2-Dichloropropane		<	1.0	ug/L	1	B9D0001	04/01/19 17:49	04/01/19 17:49	EPA 8260D
1,3,5-Trimethylbenzene		<	1.0	ug/L	1	B9D0001	04/01/19 17:49	04/01/19 17:49	EPA 8260D
1,3-Dichlorobenzene		<	1.0	ug/L	1	B9D0001	04/01/19 17:49	04/01/19 17:49	EPA 8260D
1,3-Dichloropropane		<	1.0	ug/L	1	B9D0001	04/01/19 17:49	04/01/19 17:49	EPA 8260D
1,4-Dichlorobenzene		<	1.0	ug/L	1	B9D0001	04/01/19 17:49	04/01/19 17:49	EPA 8260D
2,2-Dichloropropane		<	1.0	ug/L	1	B9D0001	04/01/19 17:49	04/01/19 17:49	EPA 8260D
2-Chlorotoluene		<	1.0	ug/L	1	B9D0001	04/01/19 17:49	04/01/19 17:49	EPA 8260D

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651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelosi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 04/26/19 9:19

MDH Sample Number: 19C1235-09

Location ID: M-1
Field Name: None
Sampling Point: None
QA Type: Field Dup/Rep

Collect Date: 03/27/19
Collect Time: 11:42
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
4-Chlorotoluene		<	1.0	ug/L	1	B9D0001	04/01/19 17:49	04/01/19 17:49	EPA 8260D
Acetone		<	20	ug/L	1	B9D0001	04/01/19 17:49	04/01/19 17:49	EPA 8260D
Allyl chloride		<	1.0	ug/L	1	B9D0001	04/01/19 17:49	04/01/19 17:49	EPA 8260D
Benzene		<	0.50	ug/L	1	B9D0001	04/01/19 17:49	04/01/19 17:49	EPA 8260D
Bromobenzene		<	1.0	ug/L	1	B9D0001	04/01/19 17:49	04/01/19 17:49	EPA 8260D
Bromochloromethane		<	1.0	ug/L	1	B9D0001	04/01/19 17:49	04/01/19 17:49	EPA 8260D
Bromodichloromethane		<	1.0	ug/L	1	B9D0001	04/01/19 17:49	04/01/19 17:49	EPA 8260D
Bromoform		<	1.0	ug/L	1	B9D0001	04/01/19 17:49	04/01/19 17:49	EPA 8260D
Bromomethane	L3, V4, Z-01	<	2.0	ug/L	1	B9D0001	04/01/19 17:49	04/01/19 17:49	EPA 8260D
Carbon tetrachloride		<	0.20	ug/L	1	B9D0001	04/01/19 17:49	04/01/19 17:49	EPA 8260D
Chlorobenzene		<	1.0	ug/L	1	B9D0001	04/01/19 17:49	04/01/19 17:49	EPA 8260D
Chlorodibromomethane		<	0.50	ug/L	1	B9D0001	04/01/19 17:49	04/01/19 17:49	EPA 8260D
Chloroethane		<	1.0	ug/L	1	B9D0001	04/01/19 17:49	04/01/19 17:49	EPA 8260D
Chloroform		<	1.0	ug/L	1	B9D0001	04/01/19 17:49	04/01/19 17:49	EPA 8260D
Chloromethane		<	1.0	ug/L	1	B9D0001	04/01/19 17:49	04/01/19 17:49	EPA 8260D
cis-1,2-Dichloroethene		<	1.0	ug/L	1	B9D0001	04/01/19 17:49	04/01/19 17:49	EPA 8260D
cis-1,3-Dichloropropene		<	0.50	ug/L	1	B9D0001	04/01/19 17:49	04/01/19 17:49	EPA 8260D
Dibromomethane		<	1.0	ug/L	1	B9D0001	04/01/19 17:49	04/01/19 17:49	EPA 8260D
Dichlorodifluoromethane		<	1.0	ug/L	1	B9D0001	04/01/19 17:49	04/01/19 17:49	EPA 8260D
Dichlorofluoromethane		<	1.0	ug/L	1	B9D0001	04/01/19 17:49	04/01/19 17:49	EPA 8260D
Ethyl ether		**7.4**	1.0	ug/L	1	B9D0001	04/01/19 17:49	04/01/19 17:49	EPA 8260D
Ethylbenzene		<	1.0	ug/L	1	B9D0001	04/01/19 17:49	04/01/19 17:49	EPA 8260D
Hexachlorobutadiene		<	0.50	ug/L	1	B9D0001	04/01/19 17:49	04/01/19 17:49	EPA 8260D
Isopropylbenzene		<	1.0	ug/L	1	B9D0001	04/01/19 17:49	04/01/19 17:49	EPA 8260D
Methyl ethyl ketone (MEK)		<	10	ug/L	1	B9D0001	04/01/19 17:49	04/01/19 17:49	EPA 8260D
Methyl isobutyl ketone (MIBK)		<	5.0	ug/L	1	B9D0001	04/01/19 17:49	04/01/19 17:49	EPA 8260D
Methyl tertiary butyl ether (MTBE)		<	2.0	ug/L	1	B9D0001	04/01/19 17:49	04/01/19 17:49	EPA 8260D

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651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelosi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 04/26/19 9:19

MDH Sample Number: 19C1235-09

Location ID: M-1
Field Name: None
Sampling Point: None
QA Type: Field Dup/Rep

Collect Date: 03/27/19
Collect Time: 11:42
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Methylene chloride		<	1.0	ug/L	1	B9D0001	04/01/19 17:49	04/01/19 17:49	EPA 8260D
Naphthalene		<	1.0	ug/L	1	B9D0001	04/01/19 17:49	04/01/19 17:49	EPA 8260D
n-Butylbenzene		<	1.0	ug/L	1	B9D0001	04/01/19 17:49	04/01/19 17:49	EPA 8260D
n-Propylbenzene		<	1.0	ug/L	1	B9D0001	04/01/19 17:49	04/01/19 17:49	EPA 8260D
o-Xylene		<	1.0	ug/L	1	B9D0001	04/01/19 17:49	04/01/19 17:49	EPA 8260D
p&m-Xylene		<	1.0	ug/L	1	B9D0001	04/01/19 17:49	04/01/19 17:49	EPA 8260D
p-Isopropyltoluene		<	1.0	ug/L	1	B9D0001	04/01/19 17:49	04/01/19 17:49	EPA 8260D
sec-Butylbenzene		<	1.0	ug/L	1	B9D0001	04/01/19 17:49	04/01/19 17:49	EPA 8260D
Styrene		<	1.0	ug/L	1	B9D0001	04/01/19 17:49	04/01/19 17:49	EPA 8260D
tert-Butylbenzene		<	1.0	ug/L	1	B9D0001	04/01/19 17:49	04/01/19 17:49	EPA 8260D
Tetrachloroethene		<	1.0	ug/L	1	B9D0001	04/01/19 17:49	04/01/19 17:49	EPA 8260D
Tetrahydrofuran (THF)		**14**	10	ug/L	1	B9D0001	04/01/19 17:49	04/01/19 17:49	EPA 8260D
Toluene		<	1.0	ug/L	1	B9D0001	04/01/19 17:49	04/01/19 17:49	EPA 8260D
trans-1,2-Dichloroethene		<	1.0	ug/L	1	B9D0001	04/01/19 17:49	04/01/19 17:49	EPA 8260D
trans-1,3-Dichloropropene		<	0.50	ug/L	1	B9D0001	04/01/19 17:49	04/01/19 17:49	EPA 8260D
Trichloroethene (TCE)		<	0.10	ug/L	1	B9D0001	04/01/19 17:49	04/01/19 17:49	EPA 8260D
Trichlorofluoromethane		<	1.0	ug/L	1	B9D0001	04/01/19 17:49	04/01/19 17:49	EPA 8260D
Vinyl chloride		**5.2**	0.050	ug/L	1	B9D0001	04/01/19 17:49	04/01/19 17:49	EPA 8260D

PFC Expanded List

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorobutanesulfonate (PFBS)	J	**0.008**	0.050	ug/L	1	B9D0111	04/05/19 19:55	04/05/19 19:55	MDH 555
Perfluorobutanoic acid (PFBA)		**0.11**	0.050	ug/L	1	B9D0111	04/05/19 19:55	04/05/19 19:55	MDH 555
Perfluorohexanesulfonate (PFHxS)	J	**0.014**	0.025	ug/L	1	B9D0111	04/05/19 19:55	04/05/19 19:55	MDH 555
Perfluorohexanoic acid (PFHxA)		**0.061**	0.050	ug/L	1	B9D0111	04/05/19 19:55	04/05/19 19:55	MDH 555
Perfluorooctanesulfonate (PFOS)		**0.083**	0.025	ug/L	1	B9D0111	04/05/19 19:55	04/05/19 19:55	MDH 555
Perfluorooctanoic acid (PFOA)		**0.36**	0.035	ug/L	1	B9D0111	04/05/19 19:55	04/05/19 19:55	MDH 555

FINAL REPORT

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651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelosi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 04/26/19 9:19

MDH Sample Number: 19C1235-09

Location ID: M-1
Field Name: None
Sampling Point: None
QA Type: Field Dup/Rep

Collect Date: 03/27/19
Collect Time: 11:42
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

PFC Expanded List - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluoropentanoic acid (PFPeA)	J	**0.025**	0.050	ug/L	1	B9D0111	04/05/19 19:55	04/05/19 19:55	MDH 555

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Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelosi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 04/26/19 9:19

MDH Sample Number: 19C1235-09RE1

Location ID: M-1
Field Name: None
Sampling Point: None
QA Type: Field Dup/Rep

Collect Date: 03/27/19
Collect Time: 11:42
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

1,4-Dioxane

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
1,4-Dioxane	D2	**24**	0.20	ug/L	4	B9D0228	04/12/19 09:22	04/25/19 11:53	EPA 522 Modified

FINAL REPORT

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651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelosi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 04/26/19 9:19

MDH Sample Number: 19C1235-10

Location ID: 813768
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 03/27/19
Collect Time: 12:40
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Surrogate: 1,2-Dichlorobenzene-d4		*102*	*70-130*	%	*1*	*B9D0001*	*04/01/19 18:17*	*04/01/19 18:17*	*EPA 8260D*
Surrogate: 4-Bromofluorobenzene		*97*	*70-130*	%	*1*	*B9D0001*	*04/01/19 18:17*	*04/01/19 18:17*	*EPA 8260D*
Surrogate: Methyl tertiary butyl ether-d3		*100*	*70-130*	%	*1*	*B9D0001*	*04/01/19 18:17*	*04/01/19 18:17*	*EPA 8260D*
1,1,1,2-Tetrachloroethane		<	1.0	ug/L	1	B9D0001	04/01/19 18:17	04/01/19 18:17	EPA 8260D
1,1,1-Trichloroethane		<	1.0	ug/L	1	B9D0001	04/01/19 18:17	04/01/19 18:17	EPA 8260D
1,1,2,2-Tetrachloroethane		<	0.50	ug/L	1	B9D0001	04/01/19 18:17	04/01/19 18:17	EPA 8260D
1,1,2-Trichloroethane		<	0.50	ug/L	1	B9D0001	04/01/19 18:17	04/01/19 18:17	EPA 8260D
1,1,2-Trichlorotrifluoroethane		<	1.0	ug/L	1	B9D0001	04/01/19 18:17	04/01/19 18:17	EPA 8260D
1,1-Dichloroethane		<	1.0	ug/L	1	B9D0001	04/01/19 18:17	04/01/19 18:17	EPA 8260D
1,1-Dichloroethene		<	1.0	ug/L	1	B9D0001	04/01/19 18:17	04/01/19 18:17	EPA 8260D
1,1-Dichloropropene		<	1.0	ug/L	1	B9D0001	04/01/19 18:17	04/01/19 18:17	EPA 8260D
1,2,3-Trichlorobenzene		<	1.0	ug/L	1	B9D0001	04/01/19 18:17	04/01/19 18:17	EPA 8260D
1,2,3-Trichloropropane		<	0.20	ug/L	1	B9D0001	04/01/19 18:17	04/01/19 18:17	EPA 8260D
1,2,4-Trichlorobenzene		<	1.0	ug/L	1	B9D0001	04/01/19 18:17	04/01/19 18:17	EPA 8260D
1,2,4-Trimethylbenzene		<	1.0	ug/L	1	B9D0001	04/01/19 18:17	04/01/19 18:17	EPA 8260D
1,2-Dibromo-3-chloropropane (DBCP)		<	1.0	ug/L	1	B9D0001	04/01/19 18:17	04/01/19 18:17	EPA 8260D
1,2-Dibromoethane (EDB)		<	0.50	ug/L	1	B9D0001	04/01/19 18:17	04/01/19 18:17	EPA 8260D
1,2-Dichlorobenzene		<	1.0	ug/L	1	B9D0001	04/01/19 18:17	04/01/19 18:17	EPA 8260D
1,2-Dichloroethane		<	0.20	ug/L	1	B9D0001	04/01/19 18:17	04/01/19 18:17	EPA 8260D
1,2-Dichloropropane		<	1.0	ug/L	1	B9D0001	04/01/19 18:17	04/01/19 18:17	EPA 8260D
1,3,5-Trimethylbenzene		<	1.0	ug/L	1	B9D0001	04/01/19 18:17	04/01/19 18:17	EPA 8260D
1,3-Dichlorobenzene		<	1.0	ug/L	1	B9D0001	04/01/19 18:17	04/01/19 18:17	EPA 8260D
1,3-Dichloropropane		<	1.0	ug/L	1	B9D0001	04/01/19 18:17	04/01/19 18:17	EPA 8260D
1,4-Dichlorobenzene		**1.6**	1.0	ug/L	1	B9D0001	04/01/19 18:17	04/01/19 18:17	EPA 8260D
2,2-Dichloropropane		<	1.0	ug/L	1	B9D0001	04/01/19 18:17	04/01/19 18:17	EPA 8260D
2-Chlorotoluene		<	1.0	ug/L	1	B9D0001	04/01/19 18:17	04/01/19 18:17	EPA 8260D

FINAL REPORT

Report ID: 04262019 91928

Authorized by:

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelosi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 04/26/19 9:19

MDH Sample Number: 19C1235-10

Location ID: 813768
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 03/27/19
Collect Time: 12:40
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
4-Chlorotoluene		<	1.0	ug/L	1	B9D0001	04/01/19 18:17	04/01/19 18:17	EPA 8260D
Acetone		<	20	ug/L	1	B9D0001	04/01/19 18:17	04/01/19 18:17	EPA 8260D
Allyl chloride		<	1.0	ug/L	1	B9D0001	04/01/19 18:17	04/01/19 18:17	EPA 8260D
Benzene		**6.7**	0.50	ug/L	1	B9D0001	04/01/19 18:17	04/01/19 18:17	EPA 8260D
Bromobenzene		<	1.0	ug/L	1	B9D0001	04/01/19 18:17	04/01/19 18:17	EPA 8260D
Bromochloromethane		<	1.0	ug/L	1	B9D0001	04/01/19 18:17	04/01/19 18:17	EPA 8260D
Bromodichloromethane		<	1.0	ug/L	1	B9D0001	04/01/19 18:17	04/01/19 18:17	EPA 8260D
Bromoform		<	1.0	ug/L	1	B9D0001	04/01/19 18:17	04/01/19 18:17	EPA 8260D
Bromomethane	L3, V4, Z-01	<	2.0	ug/L	1	B9D0001	04/01/19 18:17	04/01/19 18:17	EPA 8260D
Carbon tetrachloride		<	0.20	ug/L	1	B9D0001	04/01/19 18:17	04/01/19 18:17	EPA 8260D
Chlorobenzene		**4.7**	1.0	ug/L	1	B9D0001	04/01/19 18:17	04/01/19 18:17	EPA 8260D
Chlorodibromomethane		<	0.50	ug/L	1	B9D0001	04/01/19 18:17	04/01/19 18:17	EPA 8260D
Chloroethane		<	1.0	ug/L	1	B9D0001	04/01/19 18:17	04/01/19 18:17	EPA 8260D
Chloroform		<	1.0	ug/L	1	B9D0001	04/01/19 18:17	04/01/19 18:17	EPA 8260D
Chloromethane		<	1.0	ug/L	1	B9D0001	04/01/19 18:17	04/01/19 18:17	EPA 8260D
cis-1,2-Dichloroethene		<	1.0	ug/L	1	B9D0001	04/01/19 18:17	04/01/19 18:17	EPA 8260D
cis-1,3-Dichloropropene		<	0.50	ug/L	1	B9D0001	04/01/19 18:17	04/01/19 18:17	EPA 8260D
Dibromomethane		<	1.0	ug/L	1	B9D0001	04/01/19 18:17	04/01/19 18:17	EPA 8260D
Dichlorodifluoromethane		<	1.0	ug/L	1	B9D0001	04/01/19 18:17	04/01/19 18:17	EPA 8260D
Dichlorofluoromethane		<	1.0	ug/L	1	B9D0001	04/01/19 18:17	04/01/19 18:17	EPA 8260D
Ethyl ether		**7.8**	1.0	ug/L	1	B9D0001	04/01/19 18:17	04/01/19 18:17	EPA 8260D
Ethylbenzene		<	1.0	ug/L	1	B9D0001	04/01/19 18:17	04/01/19 18:17	EPA 8260D
Hexachlorobutadiene		<	0.50	ug/L	1	B9D0001	04/01/19 18:17	04/01/19 18:17	EPA 8260D
Isopropylbenzene		**5.1**	1.0	ug/L	1	B9D0001	04/01/19 18:17	04/01/19 18:17	EPA 8260D
Methyl ethyl ketone (MEK)		<	10	ug/L	1	B9D0001	04/01/19 18:17	04/01/19 18:17	EPA 8260D
Methyl isobutyl ketone (MIBK)		<	5.0	ug/L	1	B9D0001	04/01/19 18:17	04/01/19 18:17	EPA 8260D
Methyl tertiary butyl ether (MTBE)		<	2.0	ug/L	1	B9D0001	04/01/19 18:17	04/01/19 18:17	EPA 8260D

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelosi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 04/26/19 9:19

MDH Sample Number: 19C1235-10

Location ID: 813768
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 03/27/19
Collect Time: 12:40
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

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VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Methylene chloride		<	1.0	ug/L	1	B9D0001	04/01/19 18:17	04/01/19 18:17	EPA 8260D
Naphthalene		**12**	1.0	ug/L	1	B9D0001	04/01/19 18:17	04/01/19 18:17	EPA 8260D
n-Butylbenzene		**1.2**	1.0	ug/L	1	B9D0001	04/01/19 18:17	04/01/19 18:17	EPA 8260D
n-Propylbenzene		**3.0**	1.0	ug/L	1	B9D0001	04/01/19 18:17	04/01/19 18:17	EPA 8260D
o-Xylene		<	1.0	ug/L	1	B9D0001	04/01/19 18:17	04/01/19 18:17	EPA 8260D
p&m-Xylene		**1.2**	1.0	ug/L	1	B9D0001	04/01/19 18:17	04/01/19 18:17	EPA 8260D
p-Isopropyltoluene		<	1.0	ug/L	1	B9D0001	04/01/19 18:17	04/01/19 18:17	EPA 8260D
sec-Butylbenzene		**1.2**	1.0	ug/L	1	B9D0001	04/01/19 18:17	04/01/19 18:17	EPA 8260D
Styrene		<	1.0	ug/L	1	B9D0001	04/01/19 18:17	04/01/19 18:17	EPA 8260D
tert-Butylbenzene		<	1.0	ug/L	1	B9D0001	04/01/19 18:17	04/01/19 18:17	EPA 8260D
Tetrachloroethene		<	1.0	ug/L	1	B9D0001	04/01/19 18:17	04/01/19 18:17	EPA 8260D
Tetrahydrofuran (THF)		<	10	ug/L	1	B9D0001	04/01/19 18:17	04/01/19 18:17	EPA 8260D
Toluene		<	1.0	ug/L	1	B9D0001	04/01/19 18:17	04/01/19 18:17	EPA 8260D
trans-1,2-Dichloroethene		<	1.0	ug/L	1	B9D0001	04/01/19 18:17	04/01/19 18:17	EPA 8260D
trans-1,3-Dichloropropene		<	0.50	ug/L	1	B9D0001	04/01/19 18:17	04/01/19 18:17	EPA 8260D
Trichloroethene (TCE)		<	0.10	ug/L	1	B9D0001	04/01/19 18:17	04/01/19 18:17	EPA 8260D
Trichlorofluoromethane		<	1.0	ug/L	1	B9D0001	04/01/19 18:17	04/01/19 18:17	EPA 8260D
Vinyl chloride		**0.070**	0.050	ug/L	1	B9D0001	04/01/19 18:17	04/01/19 18:17	EPA 8260D

1,4-Dioxane

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
1,4-Dioxane		**4.2**	0.050	ug/L	1	B9D0228	04/12/19 09:22	04/23/19 11:29	EPA 522 Modified

PFC Expanded List

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorobutanesulfonate (PFBS)		<	0.050	ug/L	1	B9D0111	04/05/19 20:11	04/05/19 20:11	MDH 555
Perfluorobutanoic acid (PFBA)	J	**0.040**	0.050	ug/L	1	B9D0111	04/05/19 20:11	04/05/19 20:11	MDH 555

FINAL REPORT

Report ID: 04262019 91928

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Environmental Laboratory Section
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St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelosi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 04/26/19 9:19

MDH Sample Number: 19C1235-10

Location ID: 813768
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 03/27/19
Collect Time: 12:40
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

PFC Expanded List - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorohexanesulfonate (PFHxS)		**0.031**	0.025	ug/L	1	B9D0111	04/05/19 20:11	04/05/19 20:11	MDH 555
Perfluorohexanoic acid (PFHxA)		**0.057**	0.050	ug/L	1	B9D0111	04/05/19 20:11	04/05/19 20:11	MDH 555
Perfluorooctanesulfonate (PFOS)		**0.17**	0.025	ug/L	1	B9D0111	04/05/19 20:11	04/05/19 20:11	MDH 555
Perfluorooctanoic acid (PFOA)		**2.6**	0.035	ug/L	1	B9D0111	04/05/19 20:11	04/05/19 20:11	MDH 555
Perfluoropentanoic acid (PFPeA)	J	**0.012**	0.050	ug/L	1	B9D0111	04/05/19 20:11	04/05/19 20:11	MDH 555

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Public Health Laboratory, Minnesota Department of Health

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Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelosi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 04/26/19 9:19

MDH Sample Number: 19C1235-11

Location ID: 813767
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 03/27/19
Collect Time: 13:40
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

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VOCs by GCMS

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Surrogate: 1,2-Dichlorobenzene-d4		*101*	*70-130*	%	*1*	*B9D0001*	*04/01/19 18:45*	*04/01/19 18:45*	*EPA 8260D*
Surrogate: 4-Bromofluorobenzene		*101*	*70-130*	%	*1*	*B9D0001*	*04/01/19 18:45*	*04/01/19 18:45*	*EPA 8260D*
Surrogate: Methyl tertiary butyl ether-d3		*102*	*70-130*	%	*1*	*B9D0001*	*04/01/19 18:45*	*04/01/19 18:45*	*EPA 8260D*
1,1,1,2-Tetrachloroethane		<	1.0	ug/L	1	B9D0001	04/01/19 18:45	04/01/19 18:45	EPA 8260D
1,1,1-Trichloroethane		<	1.0	ug/L	1	B9D0001	04/01/19 18:45	04/01/19 18:45	EPA 8260D
1,1,2,2-Tetrachloroethane		<	0.50	ug/L	1	B9D0001	04/01/19 18:45	04/01/19 18:45	EPA 8260D
1,1,2-Trichloroethane		<	0.50	ug/L	1	B9D0001	04/01/19 18:45	04/01/19 18:45	EPA 8260D
1,1,2-Trichlorotrifluoroethane		<	1.0	ug/L	1	B9D0001	04/01/19 18:45	04/01/19 18:45	EPA 8260D
1,1-Dichloroethane		<	1.0	ug/L	1	B9D0001	04/01/19 18:45	04/01/19 18:45	EPA 8260D
1,1-Dichloroethene		<	1.0	ug/L	1	B9D0001	04/01/19 18:45	04/01/19 18:45	EPA 8260D
1,1-Dichloropropene		<	1.0	ug/L	1	B9D0001	04/01/19 18:45	04/01/19 18:45	EPA 8260D
1,2,3-Trichlorobenzene		<	1.0	ug/L	1	B9D0001	04/01/19 18:45	04/01/19 18:45	EPA 8260D
1,2,3-Trichloropropane		<	0.20	ug/L	1	B9D0001	04/01/19 18:45	04/01/19 18:45	EPA 8260D
1,2,4-Trichlorobenzene		<	1.0	ug/L	1	B9D0001	04/01/19 18:45	04/01/19 18:45	EPA 8260D
1,2,4-Trimethylbenzene		<	1.0	ug/L	1	B9D0001	04/01/19 18:45	04/01/19 18:45	EPA 8260D
1,2-Dibromo-3-chloropropane (DBCP)		<	1.0	ug/L	1	B9D0001	04/01/19 18:45	04/01/19 18:45	EPA 8260D
1,2-Dibromoethane (EDB)		<	0.50	ug/L	1	B9D0001	04/01/19 18:45	04/01/19 18:45	EPA 8260D
1,2-Dichlorobenzene		<	1.0	ug/L	1	B9D0001	04/01/19 18:45	04/01/19 18:45	EPA 8260D
1,2-Dichloroethane		<	0.20	ug/L	1	B9D0001	04/01/19 18:45	04/01/19 18:45	EPA 8260D
1,2-Dichloropropane		<	1.0	ug/L	1	B9D0001	04/01/19 18:45	04/01/19 18:45	EPA 8260D
1,3,5-Trimethylbenzene		<	1.0	ug/L	1	B9D0001	04/01/19 18:45	04/01/19 18:45	EPA 8260D
1,3-Dichlorobenzene		<	1.0	ug/L	1	B9D0001	04/01/19 18:45	04/01/19 18:45	EPA 8260D
1,3-Dichloropropane		<	1.0	ug/L	1	B9D0001	04/01/19 18:45	04/01/19 18:45	EPA 8260D
1,4-Dichlorobenzene		<	1.0	ug/L	1	B9D0001	04/01/19 18:45	04/01/19 18:45	EPA 8260D
2,2-Dichloropropane		<	1.0	ug/L	1	B9D0001	04/01/19 18:45	04/01/19 18:45	EPA 8260D
2-Chlorotoluene		<	1.0	ug/L	1	B9D0001	04/01/19 18:45	04/01/19 18:45	EPA 8260D

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 04/26/19 9:19

MDH Sample Number: 19C1235-11

Location ID: 813767
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 03/27/19
Collect Time: 13:40
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
4-Chlorotoluene		<	1.0	ug/L	1	B9D0001	04/01/19 18:45	04/01/19 18:45	EPA 8260D
Acetone		<	20	ug/L	1	B9D0001	04/01/19 18:45	04/01/19 18:45	EPA 8260D
Allyl chloride		<	1.0	ug/L	1	B9D0001	04/01/19 18:45	04/01/19 18:45	EPA 8260D
Benzene		**8.1**	0.50	ug/L	1	B9D0001	04/01/19 18:45	04/01/19 18:45	EPA 8260D
Bromobenzene		<	1.0	ug/L	1	B9D0001	04/01/19 18:45	04/01/19 18:45	EPA 8260D
Bromochloromethane		<	1.0	ug/L	1	B9D0001	04/01/19 18:45	04/01/19 18:45	EPA 8260D
Bromodichloromethane		<	1.0	ug/L	1	B9D0001	04/01/19 18:45	04/01/19 18:45	EPA 8260D
Bromoform		<	1.0	ug/L	1	B9D0001	04/01/19 18:45	04/01/19 18:45	EPA 8260D
Bromomethane	L3, V4, Z-01	<	2.0	ug/L	1	B9D0001	04/01/19 18:45	04/01/19 18:45	EPA 8260D
Carbon tetrachloride		<	0.20	ug/L	1	B9D0001	04/01/19 18:45	04/01/19 18:45	EPA 8260D
Chlorobenzene		**4.9**	1.0	ug/L	1	B9D0001	04/01/19 18:45	04/01/19 18:45	EPA 8260D
Chlorodibromomethane		<	0.50	ug/L	1	B9D0001	04/01/19 18:45	04/01/19 18:45	EPA 8260D
Chloroethane		<	1.0	ug/L	1	B9D0001	04/01/19 18:45	04/01/19 18:45	EPA 8260D
Chloroform		<	1.0	ug/L	1	B9D0001	04/01/19 18:45	04/01/19 18:45	EPA 8260D
Chloromethane		<	1.0	ug/L	1	B9D0001	04/01/19 18:45	04/01/19 18:45	EPA 8260D
cis-1,2-Dichloroethene		<	1.0	ug/L	1	B9D0001	04/01/19 18:45	04/01/19 18:45	EPA 8260D
cis-1,3-Dichloropropene		<	0.50	ug/L	1	B9D0001	04/01/19 18:45	04/01/19 18:45	EPA 8260D
Dibromomethane		<	1.0	ug/L	1	B9D0001	04/01/19 18:45	04/01/19 18:45	EPA 8260D
Dichlorodifluoromethane		<	1.0	ug/L	1	B9D0001	04/01/19 18:45	04/01/19 18:45	EPA 8260D
Dichlorofluoromethane		<	1.0	ug/L	1	B9D0001	04/01/19 18:45	04/01/19 18:45	EPA 8260D
Ethyl ether		**13**	1.0	ug/L	1	B9D0001	04/01/19 18:45	04/01/19 18:45	EPA 8260D
Ethylbenzene		<	1.0	ug/L	1	B9D0001	04/01/19 18:45	04/01/19 18:45	EPA 8260D
Hexachlorobutadiene		<	0.50	ug/L	1	B9D0001	04/01/19 18:45	04/01/19 18:45	EPA 8260D
Isopropylbenzene		**3.0**	1.0	ug/L	1	B9D0001	04/01/19 18:45	04/01/19 18:45	EPA 8260D
Methyl ethyl ketone (MEK)		<	10	ug/L	1	B9D0001	04/01/19 18:45	04/01/19 18:45	EPA 8260D
Methyl isobutyl ketone (MIBK)		<	5.0	ug/L	1	B9D0001	04/01/19 18:45	04/01/19 18:45	EPA 8260D
Methyl tertiary butyl ether (MTBE)		<	2.0	ug/L	1	B9D0001	04/01/19 18:45	04/01/19 18:45	EPA 8260D

FINAL REPORT

Report ID: 04262019 91928

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelosi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 04/26/19 9:19

MDH Sample Number: 19C1235-11

Location ID: 813767
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 03/27/19
Collect Time: 13:40
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Methylene chloride		<	1.0	ug/L	1	B9D0001	04/01/19 18:45	04/01/19 18:45	EPA 8260D
Naphthalene		<	1.0	ug/L	1	B9D0001	04/01/19 18:45	04/01/19 18:45	EPA 8260D
n-Butylbenzene		<	1.0	ug/L	1	B9D0001	04/01/19 18:45	04/01/19 18:45	EPA 8260D
n-Propylbenzene		**1.9**	1.0	ug/L	1	B9D0001	04/01/19 18:45	04/01/19 18:45	EPA 8260D
o-Xylene		<	1.0	ug/L	1	B9D0001	04/01/19 18:45	04/01/19 18:45	EPA 8260D
p&m-Xylene		<	1.0	ug/L	1	B9D0001	04/01/19 18:45	04/01/19 18:45	EPA 8260D
p-Isopropyltoluene		<	1.0	ug/L	1	B9D0001	04/01/19 18:45	04/01/19 18:45	EPA 8260D
sec-Butylbenzene		<	1.0	ug/L	1	B9D0001	04/01/19 18:45	04/01/19 18:45	EPA 8260D
Styrene		<	1.0	ug/L	1	B9D0001	04/01/19 18:45	04/01/19 18:45	EPA 8260D
tert-Butylbenzene		<	1.0	ug/L	1	B9D0001	04/01/19 18:45	04/01/19 18:45	EPA 8260D
Tetrachloroethene		<	1.0	ug/L	1	B9D0001	04/01/19 18:45	04/01/19 18:45	EPA 8260D
Tetrahydrofuran (THF)		**11**	10	ug/L	1	B9D0001	04/01/19 18:45	04/01/19 18:45	EPA 8260D
Toluene		<	1.0	ug/L	1	B9D0001	04/01/19 18:45	04/01/19 18:45	EPA 8260D
trans-1,2-Dichloroethene		<	1.0	ug/L	1	B9D0001	04/01/19 18:45	04/01/19 18:45	EPA 8260D
trans-1,3-Dichloropropene		<	0.50	ug/L	1	B9D0001	04/01/19 18:45	04/01/19 18:45	EPA 8260D
Trichloroethene (TCE)		<	0.10	ug/L	1	B9D0001	04/01/19 18:45	04/01/19 18:45	EPA 8260D
Trichlorofluoromethane		<	1.0	ug/L	1	B9D0001	04/01/19 18:45	04/01/19 18:45	EPA 8260D
Vinyl chloride		<	0.050	ug/L	1	B9D0001	04/01/19 18:45	04/01/19 18:45	EPA 8260D

PFC Expanded List

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorobutanesulfonate (PFBS)	J	**0.011**	0.050	ug/L	1	B9D0111	04/05/19 20:27	04/05/19 20:27	MDH 555
Perfluorobutanoic acid (PFBA)		**0.067**	0.050	ug/L	1	B9D0111	04/05/19 20:27	04/05/19 20:27	MDH 555
Perfluorohexanesulfonate (PFHxS)		**0.030**	0.025	ug/L	1	B9D0111	04/05/19 20:27	04/05/19 20:27	MDH 555
Perfluorohexanoic acid (PFHxA)	J	**0.048**	0.050	ug/L	1	B9D0111	04/05/19 20:27	04/05/19 20:27	MDH 555
Perfluorooctanesulfonate (PFOS)		**0.13**	0.025	ug/L	1	B9D0111	04/05/19 20:27	04/05/19 20:27	MDH 555
Perfluorooctanoic acid (PFOA)		**0.57**	0.035	ug/L	1	B9D0111	04/05/19 20:27	04/05/19 20:27	MDH 555

FINAL REPORT

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Environmental Laboratory Section
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St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelosi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 04/26/19 9:19

MDH Sample Number: 19C1235-11

Location ID: 813767
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 03/27/19
Collect Time: 13:40
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

PFC Expanded List - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluoropentanoic acid (PFPeA)	J	**0.018**	0.050	ug/L	1	B9D0111	04/05/19 20:27	04/05/19 20:27	MDH 555

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Environmental Laboratory Section
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St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelosi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 04/26/19 9:19

MDH Sample Number: 19C1235-11RE1

Location ID: 813767
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 03/27/19
Collect Time: 13:40
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

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1,4-Dioxane

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
1,4-Dioxane	D2	**15**	0.10	ug/L	2	B9D0228	04/12/19 09:22	04/25/19 12:09	EPA 522 Modified

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Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelosi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 04/26/19 9:19

MDH Sample Number: 19C1235-12

Location ID: 813765
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 03/27/19
Collect Time: 15:40
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

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VOCs by GCMS

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Surrogate: 1,2-Dichlorobenzene-d4	F5	*100*	*70-130*	%	*1*	*B9D0001*	*04/01/19 19:12*	*04/01/19 19:12*	*EPA 8260D*
Surrogate: 4-Bromofluorobenzene	F5	*97*	*70-130*	%	*1*	*B9D0001*	*04/01/19 19:12*	*04/01/19 19:12*	*EPA 8260D*
Surrogate: Methyl tertiary butyl ether-d3	F5	*100*	*70-130*	%	*1*	*B9D0001*	*04/01/19 19:12*	*04/01/19 19:12*	*EPA 8260D*
1,1,1,2-Tetrachloroethane	F5	<	1.0	ug/L	1	B9D0001	04/01/19 19:12	04/01/19 19:12	EPA 8260D
1,1,1-Trichloroethane	F5	<	1.0	ug/L	1	B9D0001	04/01/19 19:12	04/01/19 19:12	EPA 8260D
1,1,2,2-Tetrachloroethane	F5	<	0.50	ug/L	1	B9D0001	04/01/19 19:12	04/01/19 19:12	EPA 8260D
1,1,2-Trichloroethane	F5	<	0.50	ug/L	1	B9D0001	04/01/19 19:12	04/01/19 19:12	EPA 8260D
1,1,2-Trichlorotrifluoroethane	F5	<	1.0	ug/L	1	B9D0001	04/01/19 19:12	04/01/19 19:12	EPA 8260D
1,1-Dichloroethane	F5	<	1.0	ug/L	1	B9D0001	04/01/19 19:12	04/01/19 19:12	EPA 8260D
1,1-Dichloroethene	F5	<	1.0	ug/L	1	B9D0001	04/01/19 19:12	04/01/19 19:12	EPA 8260D
1,1-Dichloropropene	F5	<	1.0	ug/L	1	B9D0001	04/01/19 19:12	04/01/19 19:12	EPA 8260D
1,2,3-Trichlorobenzene	F5	<	1.0	ug/L	1	B9D0001	04/01/19 19:12	04/01/19 19:12	EPA 8260D
1,2,3-Trichloropropane	F5	<	0.20	ug/L	1	B9D0001	04/01/19 19:12	04/01/19 19:12	EPA 8260D
1,2,4-Trichlorobenzene	F5	<	1.0	ug/L	1	B9D0001	04/01/19 19:12	04/01/19 19:12	EPA 8260D
1,2,4-Trimethylbenzene	F5	**6.2**	1.0	ug/L	1	B9D0001	04/01/19 19:12	04/01/19 19:12	EPA 8260D
1,2-Dibromo-3-chloropropane (DBCP)	F5	<	1.0	ug/L	1	B9D0001	04/01/19 19:12	04/01/19 19:12	EPA 8260D
1,2-Dibromoethane (EDB)	F5	<	0.50	ug/L	1	B9D0001	04/01/19 19:12	04/01/19 19:12	EPA 8260D
1,2-Dichlorobenzene	F5	<	1.0	ug/L	1	B9D0001	04/01/19 19:12	04/01/19 19:12	EPA 8260D
1,2-Dichloroethane	F5	<	0.20	ug/L	1	B9D0001	04/01/19 19:12	04/01/19 19:12	EPA 8260D
1,2-Dichloropropane	F5	<	1.0	ug/L	1	B9D0001	04/01/19 19:12	04/01/19 19:12	EPA 8260D
1,3,5-Trimethylbenzene	F5	<	1.0	ug/L	1	B9D0001	04/01/19 19:12	04/01/19 19:12	EPA 8260D
1,3-Dichlorobenzene	F5	<	1.0	ug/L	1	B9D0001	04/01/19 19:12	04/01/19 19:12	EPA 8260D
1,3-Dichloropropane	F5	<	1.0	ug/L	1	B9D0001	04/01/19 19:12	04/01/19 19:12	EPA 8260D
1,4-Dichlorobenzene	F5	**8.6**	1.0	ug/L	1	B9D0001	04/01/19 19:12	04/01/19 19:12	EPA 8260D
2,2-Dichloropropane	F5	<	1.0	ug/L	1	B9D0001	04/01/19 19:12	04/01/19 19:12	EPA 8260D
2-Chlorotoluene	F5	<	1.0	ug/L	1	B9D0001	04/01/19 19:12	04/01/19 19:12	EPA 8260D

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Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelosi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 04/26/19 9:19

MDH Sample Number: 19C1235-12

Location ID: 813765
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 03/27/19
Collect Time: 15:40
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
4-Chlorotoluene	F5	<	1.0	ug/L	1	B9D0001	04/01/19 19:12	04/01/19 19:12	EPA 8260D
Acetone	F5	<	20	ug/L	1	B9D0001	04/01/19 19:12	04/01/19 19:12	EPA 8260D
Allyl chloride	F5	<	1.0	ug/L	1	B9D0001	04/01/19 19:12	04/01/19 19:12	EPA 8260D
Benzene	F5	**4.0**	0.50	ug/L	1	B9D0001	04/01/19 19:12	04/01/19 19:12	EPA 8260D
Bromobenzene	F5	<	1.0	ug/L	1	B9D0001	04/01/19 19:12	04/01/19 19:12	EPA 8260D
Bromochloromethane	F5	<	1.0	ug/L	1	B9D0001	04/01/19 19:12	04/01/19 19:12	EPA 8260D
Bromodichloromethane	F5	<	1.0	ug/L	1	B9D0001	04/01/19 19:12	04/01/19 19:12	EPA 8260D
Bromoform	F5	<	1.0	ug/L	1	B9D0001	04/01/19 19:12	04/01/19 19:12	EPA 8260D
Bromomethane	F5, L3, V4, Z-01	<	2.0	ug/L	1	B9D0001	04/01/19 19:12	04/01/19 19:12	EPA 8260D
Carbon tetrachloride	F5	<	0.20	ug/L	1	B9D0001	04/01/19 19:12	04/01/19 19:12	EPA 8260D
Chlorobenzene	F5	**3.0**	1.0	ug/L	1	B9D0001	04/01/19 19:12	04/01/19 19:12	EPA 8260D
Chlorodibromomethane	F5	<	0.50	ug/L	1	B9D0001	04/01/19 19:12	04/01/19 19:12	EPA 8260D
Chloroethane	F5	<	1.0	ug/L	1	B9D0001	04/01/19 19:12	04/01/19 19:12	EPA 8260D
Chloroform	F5	<	1.0	ug/L	1	B9D0001	04/01/19 19:12	04/01/19 19:12	EPA 8260D
Chloromethane	F5	<	1.0	ug/L	1	B9D0001	04/01/19 19:12	04/01/19 19:12	EPA 8260D
cis-1,2-Dichloroethene	F5	<	1.0	ug/L	1	B9D0001	04/01/19 19:12	04/01/19 19:12	EPA 8260D
cis-1,3-Dichloropropene	F5	<	0.50	ug/L	1	B9D0001	04/01/19 19:12	04/01/19 19:12	EPA 8260D
Dibromomethane	F5	<	1.0	ug/L	1	B9D0001	04/01/19 19:12	04/01/19 19:12	EPA 8260D
Dichlorodifluoromethane	F5	<	1.0	ug/L	1	B9D0001	04/01/19 19:12	04/01/19 19:12	EPA 8260D
Dichlorofluoromethane	F5	<	1.0	ug/L	1	B9D0001	04/01/19 19:12	04/01/19 19:12	EPA 8260D
Ethyl ether	F5	**3.6**	1.0	ug/L	1	B9D0001	04/01/19 19:12	04/01/19 19:12	EPA 8260D
Ethylbenzene	F5	**1.9**	1.0	ug/L	1	B9D0001	04/01/19 19:12	04/01/19 19:12	EPA 8260D
Hexachlorobutadiene	F5	<	0.50	ug/L	1	B9D0001	04/01/19 19:12	04/01/19 19:12	EPA 8260D
Isopropylbenzene	F5	**2.3**	1.0	ug/L	1	B9D0001	04/01/19 19:12	04/01/19 19:12	EPA 8260D
Methyl ethyl ketone (MEK)	F5	<	10	ug/L	1	B9D0001	04/01/19 19:12	04/01/19 19:12	EPA 8260D
Methyl isobutyl ketone (MIBK)	F5	<	5.0	ug/L	1	B9D0001	04/01/19 19:12	04/01/19 19:12	EPA 8260D
Methyl tertiary butyl ether (MTBE)	F5	<	2.0	ug/L	1	B9D0001	04/01/19 19:12	04/01/19 19:12	EPA 8260D

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Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelosi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 04/26/19 9:19

MDH Sample Number: 19C1235-12

Location ID: 813765
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 03/27/19
Collect Time: 15:40
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Methylene chloride	F5	<	1.0	ug/L	1	B9D0001	04/01/19 19:12	04/01/19 19:12	EPA 8260D
n-Butylbenzene	F5	<	1.0	ug/L	1	B9D0001	04/01/19 19:12	04/01/19 19:12	EPA 8260D
n-Propylbenzene	F5	**1.8**	1.0	ug/L	1	B9D0001	04/01/19 19:12	04/01/19 19:12	EPA 8260D
o-Xylene	F5	**2.2**	1.0	ug/L	1	B9D0001	04/01/19 19:12	04/01/19 19:12	EPA 8260D
p&m-Xylene	F5	**12**	1.0	ug/L	1	B9D0001	04/01/19 19:12	04/01/19 19:12	EPA 8260D
p-Isopropyltoluene	F5	<	1.0	ug/L	1	B9D0001	04/01/19 19:12	04/01/19 19:12	EPA 8260D
sec-Butylbenzene	F5	<	1.0	ug/L	1	B9D0001	04/01/19 19:12	04/01/19 19:12	EPA 8260D
Styrene	F5	<	1.0	ug/L	1	B9D0001	04/01/19 19:12	04/01/19 19:12	EPA 8260D
tert-Butylbenzene	F5	<	1.0	ug/L	1	B9D0001	04/01/19 19:12	04/01/19 19:12	EPA 8260D
Tetrachloroethene	F5	<	1.0	ug/L	1	B9D0001	04/01/19 19:12	04/01/19 19:12	EPA 8260D
Tetrahydrofuran (THF)	F5	**220**	10	ug/L	1	B9D0001	04/01/19 19:12	04/01/19 19:12	EPA 8260D
Toluene	F5	<	1.0	ug/L	1	B9D0001	04/01/19 19:12	04/01/19 19:12	EPA 8260D
trans-1,2-Dichloroethene	F5	<	1.0	ug/L	1	B9D0001	04/01/19 19:12	04/01/19 19:12	EPA 8260D
trans-1,3-Dichloropropene	F5	<	0.50	ug/L	1	B9D0001	04/01/19 19:12	04/01/19 19:12	EPA 8260D
Trichloroethene (TCE)	F5	<	0.10	ug/L	1	B9D0001	04/01/19 19:12	04/01/19 19:12	EPA 8260D
Trichlorofluoromethane	F5	<	1.0	ug/L	1	B9D0001	04/01/19 19:12	04/01/19 19:12	EPA 8260D
Vinyl chloride	F5	**0.13**	0.050	ug/L	1	B9D0001	04/01/19 19:12	04/01/19 19:12	EPA 8260D

PFC Expanded List

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorobutanesulfonate (PFBS)	J	**0.027**	0.050	ug/L	1	B9D0111	04/05/19 20:43	04/05/19 20:43	MDH 555
Perfluorohexanesulfonate (PFHxS)		**0.29**	0.025	ug/L	1	B9D0111	04/05/19 20:43	04/05/19 20:43	MDH 555
Perfluorohexanoic acid (PFHxA)		**0.89**	0.050	ug/L	1	B9D0111	04/05/19 20:43	04/05/19 20:43	MDH 555
Perfluorooctanesulfonate (PFOS)		**0.092**	0.025	ug/L	1	B9D0111	04/05/19 20:43	04/05/19 20:43	MDH 555
Perfluorooctanoic acid (PFOA)		**0.41**	0.035	ug/L	1	B9D0111	04/05/19 20:43	04/05/19 20:43	MDH 555
Perfluoropentanoic acid (PFPeA)		**1.0**	0.050	ug/L	1	B9D0111	04/05/19 20:43	04/05/19 20:43	MDH 555

FINAL REPORT

Report ID: 04262019 91928

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelosi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 04/26/19 9:19

MDH Sample Number: 19C1235-12RE1

Location ID: 813765
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 03/27/19
Collect Time: 15:40
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Surrogate: 1,2-Dichlorobenzene-d4	F5	*102*	*70-130*	%	*1*	*B9D0019*	*04/02/19 15:08*	*04/02/19 15:08*	*EPA 8260D*
Surrogate: 4-Bromofluorobenzene	F5	*98*	*70-130*	%	*1*	*B9D0019*	*04/02/19 15:08*	*04/02/19 15:08*	*EPA 8260D*
Surrogate: Methyl tertiary butyl ether-d3	F5	*99*	*70-130*	%	*1*	*B9D0019*	*04/02/19 15:08*	*04/02/19 15:08*	*EPA 8260D*
Naphthalene	D2, F5	**62**	5.0	ug/L	1	B9D0019	04/02/19 15:08	04/02/19 15:08	EPA 8260D

1,4-Dioxane

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
1,4-Dioxane	D2	**110**	2.1	ug/L	40	B9D0228	04/12/19 09:22	04/24/19 18:57	EPA 522 Modified

PFC Expanded List

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorobutanoic acid (PFBA)	D1	**7.4**	0.25	ug/L	5	B9D0150	04/08/19 20:30	04/08/19 20:30	MDH 555

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 9:19

Batch Summary

Samples in Batch: B9C0458 - EPA 5030B Preparation

19C1235-01 19C1235-02 19C1235-03 19C1235-04 19C1235-05 19C1235-06

Samples in Batch: B9D0001 - EPA 5030B Preparation

19C1235-07 19C1235-08 19C1235-09 19C1235-10 19C1235-11 19C1235-12

Samples in Batch: B9D0019 - EPA 5030B Preparation

19C1235-12RE1

Samples in Batch: B9D0105 - PFCs Preparation

19C1235-02 19C1235-03

Samples in Batch: B9D0111 - PFCs Preparation

19C1235-04 19C1235-05 19C1235-06 19C1235-07 19C1235-08 19C1235-09 19C1235-10
19C1235-11 19C1235-12

Samples in Batch: B9D0150 - PFCs Preparation

19C1235-12RE1

Samples in Batch: B9D0172 - 1,4 Dioxane in Water SPE

19C1235-02 19C1235-03 19C1235-04 19C1235-05 19C1235-06 19C1235-07

Samples in Batch: B9D0228 - 1,4 Dioxane in Water SPE

19C1235-08RE1 19C1235-09RE1 19C1235-10 19C1235-11RE1 19C1235-12RE1

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9C0458 - EPA 5030B Preparation

Blank (B9C0458-BLK1) **Prepared: 03/29/19 15:13 Analyzed: 03/29/19 15:13**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: 1,2-Dichlorobenzene-d4		*103*	*70-130*	*%*	*10*					
Surrogate: 4-Bromofluorobenzene		*98*	*70-130*	*%*	*10*					
Surrogate: Methyl tertiary butyl ether-d3		*100*	*70-130*	*%*	*10*					
1,1,1,2-Tetrachloroethane		<	1.0	ug/L						
1,1,1-Trichloroethane		<	1.0	ug/L						
1,1,2,2-Tetrachloroethane		<	0.50	ug/L						
1,1,2-Trichloroethane		<	0.50	ug/L						
1,1,2-Trichlorotrifluoroethane		<	1.0	ug/L						
1,1-Dichloroethane		<	1.0	ug/L						
1,1-Dichloroethene		<	1.0	ug/L						
1,1-Dichloropropene		<	1.0	ug/L						
1,2,3-Trichlorobenzene		<	1.0	ug/L						
1,2,3-Trichloropropane		<	0.20	ug/L						
1,2,4-Trichlorobenzene		<	1.0	ug/L						
1,2,4-Trimethylbenzene		<	1.0	ug/L						
1,2-Dibromo-3-chloropropane (DBCP)		<	1.0	ug/L						
1,2-Dibromoethane (EDB)		<	0.50	ug/L						
1,2-Dichlorobenzene		<	1.0	ug/L						
1,2-Dichloroethane		<	0.20	ug/L						
1,2-Dichloropropane		<	1.0	ug/L						
1,3,5-Trimethylbenzene		<	1.0	ug/L						
1,3-Dichlorobenzene		<	1.0	ug/L						
1,3-Dichloropropane		<	1.0	ug/L						
1,4-Dichlorobenzene		<	1.0	ug/L						
2,2-Dichloropropane		<	1.0	ug/L						
2-Chlorotoluene		<	1.0	ug/L						
4-Chlorotoluene		<	1.0	ug/L						
Acetone		<	20	ug/L						
Allyl chloride		<	1.0	ug/L						
Benzene		<	0.50	ug/L						
Bromobenzene		<	1.0	ug/L						
Bromochloromethane		<	1.0	ug/L						
Bromodichloromethane		<	1.0	ug/L						
Bromoform		<	1.0	ug/L						

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Public Health Laboratory, Minnesota Department of Health

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Environmental Laboratory Section
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651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9C0458 - EPA 5030B Preparation

Blank (B9C0458-BLK1) **Prepared: 03/29/19 15:13 Analyzed: 03/29/19 15:13**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Bromomethane	Z-01, L3, V4	<	2.0	ug/L						
Carbon tetrachloride		<	0.20	ug/L						
Chlorobenzene		<	1.0	ug/L						
Chlorodibromomethane		<	0.50	ug/L						
Chloroethane		<	1.0	ug/L						
Chloroform		<	1.0	ug/L						
Chloromethane		<	1.0	ug/L						
cis-1,2-Dichloroethene		<	1.0	ug/L						
cis-1,3-Dichloropropene		<	0.50	ug/L						
Dibromomethane		<	1.0	ug/L						
Dichlorodifluoromethane		<	1.0	ug/L						
Dichlorofluoromethane		<	1.0	ug/L						
Ethyl ether		<	1.0	ug/L						
Ethylbenzene		<	1.0	ug/L						
Hexachlorobutadiene		<	0.50	ug/L						
Isopropylbenzene		<	1.0	ug/L						
Methyl ethyl ketone (MEK)		<	10	ug/L						
Methyl isobutyl ketone (MIBK)		<	5.0	ug/L						
Methyl tertiary butyl ether (MTBE)		<	2.0	ug/L						
Methylene chloride		<	1.0	ug/L						
Naphthalene		<	1.0	ug/L						
n-Butylbenzene		<	1.0	ug/L						
n-Propylbenzene		<	1.0	ug/L						
o-Xylene		<	1.0	ug/L						
p&m-Xylene		<	1.0	ug/L						
p-Isopropyltoluene		<	1.0	ug/L						
sec-Butylbenzene		<	1.0	ug/L						
Styrene		<	1.0	ug/L						
tert-Butylbenzene		<	1.0	ug/L						
Tetrachloroethene		<	1.0	ug/L						
Tetrahydrofuran (THF)		<	10	ug/L						
Toluene		<	1.0	ug/L						
trans-1,2-Dichloroethene		<	1.0	ug/L						
trans-1,3-Dichloropropene		<	0.50	ug/L						
Trichloroethene (TCE)		<	0.10	ug/L						

FINAL REPORT

Report ID: 04262019 91928

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Environmental Laboratory Section
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651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9C0458 - EPA 5030B Preparation

Blank (B9C0458-BLK1) **Prepared: 03/29/19 15:13 Analyzed: 03/29/19 15:13**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Trichlorofluoromethane		<	1.0	ug/L						
Vinyl chloride		<	0.050	ug/L						

LCS (B9C0458-BS1) **Prepared: 03/29/19 13:22 Analyzed: 03/29/19 13:22**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: 1,2-Dichlorobenzene-d4		*100*	*70-130*	*%*	*10*					
Surrogate: 4-Bromofluorobenzene		*96*	*70-130*	*%*	*10*					
Surrogate: Methyl tertiary butyl ether-d3		*101*	*70-130*	*%*	*10*					
1,1,1,2-Tetrachloroethane		10	1.0	ug/L	10		101	70-130		
1,1,1-Trichloroethane		11	1.0	ug/L	10		107	70-130		
1,1,2,2-Tetrachloroethane		9.5	0.50	ug/L	10		95	70-130		
1,1,2-Trichloroethane		10	0.50	ug/L	10		100	70-130		
1,1,2-Trichlorotrifluoroethane		11	1.0	ug/L	10		106	70-130		
1,1-Dichloroethane		10	1.0	ug/L	10		101	70-130		
1,1-Dichloroethene		10	1.0	ug/L	10		103	70-130		
1,1-Dichloropropene		10	1.0	ug/L	10		104	70-130		
1,2,3-Trichlorobenzene		10	1.0	ug/L	10		100	70-130		
1,2,3-Trichloropropane		9.7	0.20	ug/L	10		97	70-130		
1,2,4-Trichlorobenzene		10	1.0	ug/L	10		102	70-130		
1,2,4-Trimethylbenzene		9.7	1.0	ug/L	10		97	70-130		
1,2-Dibromo-3-chloropropane (DBCP)		9.4	1.0	ug/L	10		94	70-130		
1,2-Dibromoethane (EDB)		9.8	0.50	ug/L	10		98	70-130		
1,2-Dichlorobenzene		9.7	1.0	ug/L	10		97	70-130		
1,2-Dichloroethane		10	0.20	ug/L	10		104	70-130		
1,2-Dichloropropane		10	1.0	ug/L	10		102	70-130		
1,3,5-Trimethylbenzene		9.8	1.0	ug/L	10		98	70-130		
1,3-Dichlorobenzene		9.8	1.0	ug/L	10		98	70-130		
1,3-Dichloropropane		9.9	1.0	ug/L	10		99	70-130		
1,4-Dichlorobenzene		9.9	1.0	ug/L	10		99	70-130		
2,2-Dichloropropane		11	1.0	ug/L	10		111	70-130		
2-Chlorotoluene		9.6	1.0	ug/L	10		96	70-130		
4-Chlorotoluene		9.7	1.0	ug/L	10		97	70-130		
Acetone		100	20	ug/L	100		102	70-130		

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Public Health Laboratory, Minnesota Department of Health

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Environmental Laboratory Section
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651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9C0458 - EPA 5030B Preparation

LCS (B9C0458-BS1) **Prepared: 03/29/19 13:22 Analyzed: 03/29/19 13:22**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Allyl chloride		10	1.0	ug/L	10		100	70-130		
Benzene		10	0.50	ug/L	10		100	70-130		
Bromobenzene		9.8	1.0	ug/L	10		98	70-130		
Bromochloromethane		10	1.0	ug/L	10		101	70-130		
Bromodichloromethane		10	1.0	ug/L	10		104	70-130		
Bromoform		10	1.0	ug/L	10		101	70-130		
Bromomethane	L3, V4, Z-01	4.9	2.0	ug/L	10		49	70-130		
Carbon tetrachloride		11	0.20	ug/L	10		112	70-130		
Chlorobenzene		10	1.0	ug/L	10		100	70-130		
Chlorodibromomethane		9.7	0.50	ug/L	10		97	70-130		
Chloroethane		10	1.0	ug/L	10		100	70-130		
Chloroform		10	1.0	ug/L	10		103	70-130		
Chloromethane		8.1	1.0	ug/L	10		81	70-130		
cis-1,2-Dichloroethene		10	1.0	ug/L	10		100	70-130		
cis-1,3-Dichloropropene		9.9	0.50	ug/L	10		99	70-130		
Dibromomethane		10	1.0	ug/L	10		105	70-130		
Dichlorodifluoromethane		8.1	1.0	ug/L	10		81	70-130		
Dichlorofluoromethane		10	1.0	ug/L	10		105	70-130		
Ethyl ether		9.8	1.0	ug/L	10		98	70-130		
Ethylbenzene		9.9	1.0	ug/L	10		99	70-130		
Hexachlorobutadiene		10	0.50	ug/L	10		104	70-130		
Isopropylbenzene		10	1.0	ug/L	10		100	70-130		
Methyl ethyl ketone (MEK)		51	10	ug/L	50		102	70-130		
Methyl isobutyl ketone (MIBK)		52	5.0	ug/L	50		103	70-130		
Methyl tertiary butyl ether (MTBE)		10	2.0	ug/L	10		102	70-130		
Methylene chloride		10	1.0	ug/L	10		103	70-130		
Naphthalene		9.8	1.0	ug/L	10		98	70-130		
n-Butylbenzene		11	1.0	ug/L	10		105	70-130		
n-Propylbenzene		10	1.0	ug/L	10		101	70-130		
o-Xylene		9.5	1.0	ug/L	10		95	70-130		
p&m-Xylene		10	1.0	ug/L	10		101	70-130		
p-Isopropyltoluene		10	1.0	ug/L	10		101	70-130		
sec-Butylbenzene		10	1.0	ug/L	10		101	70-130		
Styrene		9.0	1.0	ug/L	10		90	70-130		
tert-Butylbenzene		9.7	1.0	ug/L	10		97	70-130		

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9C0458 - EPA 5030B Preparation

LCS (B9C0458-BS1) **Prepared: 03/29/19 13:22 Analyzed: 03/29/19 13:22**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Tetrachloroethene		10	1.0	ug/L	10		102	70-130		
Tetrahydrofuran (THF)		100	10	ug/L	100		101	70-130		
Toluene		9.7	1.0	ug/L	10		97	70-130		
trans-1,2-Dichloroethene		10	1.0	ug/L	10		100	70-130		
trans-1,3-Dichloropropene		10	0.50	ug/L	10		101	70-130		
Trichloroethene (TCE)		9.9	0.10	ug/L	10		99	70-130		
Trichlorofluoromethane		11	1.0	ug/L	10		106	70-130		
Vinyl chloride		9.0	0.050	ug/L	10		90	70-130		

LCS Dup (B9C0458-BSD1) **Prepared: 03/29/19 13:50 Analyzed: 03/29/19 13:50**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: 1,2-Dichlorobenzene-d4		*99*	*70-130*	*%*	*10*					
Surrogate: 4-Bromofluorobenzene		*95*	*70-130*	*%*	*10*					
Surrogate: Methyl tertiary butyl ether-d3		*99*	*70-130*	*%*	*10*					
1,1,1,2-Tetrachloroethane		9.8	1.0	ug/L	10		98	70-130	4	30
1,1,1-Trichloroethane		10	1.0	ug/L	10		102	70-130	4	30
1,1,2,2-Tetrachloroethane		9.2	0.50	ug/L	10		92	70-130	3	30
1,1,2-Trichloroethane		9.8	0.50	ug/L	10		98	70-130	1	30
1,1,2-Trichlorotrifluoroethane		10	1.0	ug/L	10		105	70-130	0.9	30
1,1-Dichloroethane		9.8	1.0	ug/L	10		98	70-130	2	30
1,1-Dichloroethene		10	1.0	ug/L	10		100	70-130	3	30
1,1-Dichloropropene		10	1.0	ug/L	10		100	70-130	4	30
1,2,3-Trichlorobenzene		9.8	1.0	ug/L	10		98	70-130	2	30
1,2,3-Trichloropropane		9.4	0.20	ug/L	10		94	70-130	3	30
1,2,4-Trichlorobenzene		9.9	1.0	ug/L	10		99	70-130	3	30
1,2,4-Trimethylbenzene		9.4	1.0	ug/L	10		94	70-130	3	30
1,2-Dibromo-3-chloropropane (DBCP)		9.5	1.0	ug/L	10		95	70-130	0.9	30
1,2-Dibromoethane (EDB)		9.5	0.50	ug/L	10		95	70-130	3	30
1,2-Dichlorobenzene		9.5	1.0	ug/L	10		95	70-130	2	30
1,2-Dichloroethane		10	0.20	ug/L	10		100	70-130	4	30
1,2-Dichloropropane		10	1.0	ug/L	10		101	70-130	0.4	30
1,3,5-Trimethylbenzene		9.4	1.0	ug/L	10		94	70-130	5	30
1,3-Dichlorobenzene		9.7	1.0	ug/L	10		97	70-130	0.6	30

FINAL REPORT

Report ID: 04262019 91928

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9C0458 - EPA 5030B Preparation

LCS Dup (B9C0458-BSD1) **Prepared: 03/29/19 13:50 Analyzed: 03/29/19 13:50**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,3-Dichloropropane		9.7	1.0	ug/L	10		97	70-130	2	30
1,4-Dichlorobenzene		9.6	1.0	ug/L	10		96	70-130	3	30
2,2-Dichloropropane		11	1.0	ug/L	10		107	70-130	3	30
2-Chlorotoluene		9.5	1.0	ug/L	10		95	70-130	1	30
4-Chlorotoluene		9.4	1.0	ug/L	10		94	70-130	3	30
Acetone		99	20	ug/L	100		99	70-130	3	30
Allyl chloride		9.6	1.0	ug/L	10		96	70-130	3	30
Benzene		9.8	0.50	ug/L	10		98	70-130	2	30
Bromobenzene		9.6	1.0	ug/L	10		96	70-130	3	30
Bromochloromethane		10	1.0	ug/L	10		101	70-130	0.5	30
Bromodichloromethane		10	1.0	ug/L	10		103	70-130	0.7	30
Bromoform		9.3	1.0	ug/L	10		93	70-130	8	30
Bromomethane	L3, V4, Z-01	5.7	2.0	ug/L	10		57	70-130	15	30
Carbon tetrachloride		11	0.20	ug/L	10		108	70-130	3	30
Chlorobenzene		9.7	1.0	ug/L	10		97	70-130	3	30
Chlorodibromomethane		9.5	0.50	ug/L	10		95	70-130	2	30
Chloroethane		9.6	1.0	ug/L	10		96	70-130	4	30
Chloroform		10	1.0	ug/L	10		101	70-130	2	30
Chloromethane		7.5	1.0	ug/L	10		75	70-130	8	30
cis-1,2-Dichloroethene		9.8	1.0	ug/L	10		98	70-130	2	30
cis-1,3-Dichloropropene		9.5	0.50	ug/L	10		95	70-130	4	30
Dibromomethane		11	1.0	ug/L	10		106	70-130	1	30
Dichlorodifluoromethane		7.9	1.0	ug/L	10		79	70-130	3	30
Dichlorofluoromethane		10	1.0	ug/L	10		103	70-130	2	30
Ethyl ether		9.8	1.0	ug/L	10		98	70-130	0.7	30
Ethylbenzene		9.6	1.0	ug/L	10		96	70-130	3	30
Hexachlorobutadiene		10	0.50	ug/L	10		102	70-130	2	30
Isopropylbenzene		9.8	1.0	ug/L	10		98	70-130	3	30
Methyl ethyl ketone (MEK)		50	10	ug/L	50		100	70-130	2	30
Methyl isobutyl ketone (MIBK)		50	5.0	ug/L	50		100	70-130	3	30
Methyl tertiary butyl ether (MTBE)		10	2.0	ug/L	10		102	70-130	0.4	30
Methylene chloride		9.9	1.0	ug/L	10		99	70-130	4	30
Naphthalene		9.6	1.0	ug/L	10		96	70-130	2	30
n-Butylbenzene		10	1.0	ug/L	10		102	70-130	3	30
n-Propylbenzene		9.8	1.0	ug/L	10		98	70-130	3	30

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Environmental Laboratory Section
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St. Paul, MN 55164-0899
651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9C0458 - EPA 5030B Preparation

LCS Dup (B9C0458-BSD1) **Prepared: 03/29/19 13:50 Analyzed: 03/29/19 13:50**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
o-Xylene		9.4	1.0	ug/L	10		94	70-130	0.7	30
p&m-Xylene		9.6	1.0	ug/L	10		96	70-130	5	30
p-Isopropyltoluene		9.7	1.0	ug/L	10		97	70-130	4	30
sec-Butylbenzene		9.7	1.0	ug/L	10		97	70-130	4	30
Styrene		8.8	1.0	ug/L	10		88	70-130	2	30
tert-Butylbenzene		9.5	1.0	ug/L	10		95	70-130	2	30
Tetrachloroethene		10	1.0	ug/L	10		100	70-130	3	30
Tetrahydrofuran (THF)		100	10	ug/L	100		100	70-130	0.7	30
Toluene		9.5	1.0	ug/L	10		95	70-130	3	30
trans-1,2-Dichloroethene		10	1.0	ug/L	10		100	70-130	0.1	30
trans-1,3-Dichloropropene		9.8	0.50	ug/L	10		98	70-130	3	30
Trichloroethene (TCE)		9.7	0.10	ug/L	10		97	70-130	2	30
Trichlorofluoromethane		10	1.0	ug/L	10		102	70-130	4	30
Vinyl chloride		8.6	0.050	ug/L	10		86	70-130	4	30

Duplicate (B9C0458-DUP1) Source: 19C1238-02 **Prepared: 03/29/19 18:00 Analyzed: 03/29/19 18:00**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: 1,2-Dichlorobenzene-d4		*99*	*70-130*	*%*	*10*					
Surrogate: 4-Bromofluorobenzene		*97*	*70-130*	*%*	*10*					
Surrogate: Methyl tertiary butyl ether-d3		*100*	*70-130*	*%*	*10*					
1,1,1,2-Tetrachloroethane		<	1.0	ug/L		<				30
1,1,1-Trichloroethane		<	1.0	ug/L		<				30
1,1,2,2-Tetrachloroethane		<	0.50	ug/L		<				30
1,1,2-Trichloroethane		<	0.50	ug/L		<				30
1,1,2-Trichlorotrifluoroethane		<	1.0	ug/L		<				30
1,1-Dichloroethane		<	1.0	ug/L		<				30
1,1-Dichloroethene		<	1.0	ug/L		<				30
1,1-Dichloropropene		<	1.0	ug/L		<				30
1,2,3-Trichlorobenzene		<	1.0	ug/L		<				30
1,2,3-Trichloropropane		<	0.20	ug/L		<				30
1,2,4-Trichlorobenzene		<	1.0	ug/L		<				30
1,2,4-Trimethylbenzene		<	1.0	ug/L		<				30
1,2-Dibromo-3-chloropropane (DBCP)		<	1.0	ug/L		<				30

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651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9C0458 - EPA 5030B Preparation

Duplicate (B9C0458-DUP1) Source: 19C1238-02 **Prepared: 03/29/19 18:00 Analyzed: 03/29/19 18:00**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,2-Dibromoethane (EDB)		<	0.50	ug/L		<				30
1,2-Dichlorobenzene		<	1.0	ug/L		<				30
1,2-Dichloroethane		<	0.20	ug/L		<				30
1,2-Dichloropropane		<	1.0	ug/L		<				30
1,3,5-Trimethylbenzene		<	1.0	ug/L		<				30
1,3-Dichlorobenzene		<	1.0	ug/L		<				30
1,3-Dichloropropane		<	1.0	ug/L		<				30
1,4-Dichlorobenzene		<	1.0	ug/L		<				30
2,2-Dichloropropane		<	1.0	ug/L		<				30
2-Chlorotoluene		<	1.0	ug/L		<				30
4-Chlorotoluene		<	1.0	ug/L		<				30
Acetone		<	20	ug/L		<				30
Allyl chloride		<	1.0	ug/L		<				30
Benzene		<	0.50	ug/L		<				30
Bromobenzene		<	1.0	ug/L		<				30
Bromochloromethane		<	1.0	ug/L		<				30
Bromodichloromethane		<	1.0	ug/L		<				30
Bromoform		<	1.0	ug/L		<				30
Bromomethane	L3, V4, Z-01	<	2.0	ug/L		<				30
Carbon tetrachloride		<	0.20	ug/L		<				30
Chlorobenzene		<	1.0	ug/L		<				30
Chlorodibromomethane		<	0.50	ug/L		<				30
Chloroethane		<	1.0	ug/L		<				30
Chloroform		<	1.0	ug/L		<				30
Chloromethane		0.39	1.0	ug/L		<				30
cis-1,2-Dichloroethene		<	1.0	ug/L		<				30
cis-1,3-Dichloropropene		<	0.50	ug/L		<				30
Dibromomethane		<	1.0	ug/L		<				30
Dichlorodifluoromethane		<	1.0	ug/L		<				30
Dichlorofluoromethane		<	1.0	ug/L		<				30
Ethyl ether		<	1.0	ug/L		<				30
Ethylbenzene		<	1.0	ug/L		<				30
Hexachlorobutadiene		<	0.50	ug/L		<				30
Isopropylbenzene		<	1.0	ug/L		<				30
Methyl ethyl ketone (MEK)		<	10	ug/L		<				30

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9C0458 - EPA 5030B Preparation

Duplicate (B9C0458-DUP1) Source: 19C1238-02 **Prepared: 03/29/19 18:00 Analyzed: 03/29/19 18:00**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Methyl isobutyl ketone (MIBK)		<	5.0	ug/L		<				30
Methyl tertiary butyl ether (MTBE)		<	2.0	ug/L		<				30
Methylene chloride		<	1.0	ug/L		<				30
Naphthalene		<	1.0	ug/L		<				30
n-Butylbenzene		<	1.0	ug/L		<				30
n-Propylbenzene		<	1.0	ug/L		<				30
o-Xylene		<	1.0	ug/L		<				30
p&m-Xylene		<	1.0	ug/L		<				30
p-Isopropyltoluene		<	1.0	ug/L		<				30
sec-Butylbenzene		<	1.0	ug/L		<				30
Styrene		<	1.0	ug/L		<				30
tert-Butylbenzene		<	1.0	ug/L		<				30
Tetrachloroethene		<	1.0	ug/L		<				30
Tetrahydrofuran (THF)		<	10	ug/L		<				30
Toluene		<	1.0	ug/L		<				30
trans-1,2-Dichloroethene		<	1.0	ug/L		<				30
trans-1,3-Dichloropropene		<	0.50	ug/L		<				30
Trichloroethene (TCE)		0.75	0.10	ug/L		0.74			1	30
Trichlorofluoromethane		<	1.0	ug/L		<				30
Vinyl chloride		<	0.050	ug/L		<				30

Matrix Spike (B9C0458-MS1) Source: 19C1238-01 **Prepared: 03/29/19 14:17 Analyzed: 03/29/19 14:17**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: 1,2-Dichlorobenzene-d4		*99*	*70-130*	*%*	*10*					
Surrogate: 4-Bromofluorobenzene		*95*	*70-130*	*%*	*10*					
Surrogate: Methyl tertiary butyl ether-d3		*100*	*70-130*	*%*	*10*					
1,1,1,2-Tetrachloroethane		11	1.0	ug/L	10	<	105	70-130		
1,1,1-Trichloroethane		11	1.0	ug/L	10	<	111	70-130		
1,1,2,2-Tetrachloroethane		9.5	0.50	ug/L	10	<	95	70-130		
1,1,2-Trichloroethane		10	0.50	ug/L	10	<	101	70-130		
1,1,2-Trichlorotrifluoroethane		11	1.0	ug/L	10	<	112	70-130		
1,1-Dichloroethane		11	1.0	ug/L	10	<	106	70-130		
1,1-Dichloroethene		11	1.0	ug/L	10	<	109	70-130		
1,1-Dichloropropene		11	1.0	ug/L	10	<	108	70-130		

FINAL REPORT

Report ID: 04262019 91928

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9C0458 - EPA 5030B Preparation

Matrix Spike (B9C0458-MS1) Source: 19C1238-01 **Prepared: 03/29/19 14:17 Analyzed: 03/29/19 14:17**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,2,3-Trichlorobenzene		10	1.0	ug/L	10	<	103	70-130		
1,2,3-Trichloropropane		9.6	0.20	ug/L	10	<	96	70-130		
1,2,4-Trichlorobenzene		10	1.0	ug/L	10	<	102	70-130		
1,2,4-Trimethylbenzene		10	1.0	ug/L	10	<	100	70-130		
1,2-Dibromo-3-chloropropane (DBCP)		8.9	1.0	ug/L	10	<	89	70-130		
1,2-Dibromoethane (EDB)		9.7	0.50	ug/L	10	<	97	70-130		
1,2-Dichlorobenzene		9.8	1.0	ug/L	10	<	98	70-130		
1,2-Dichloroethane		10	0.20	ug/L	10	<	101	70-130		
1,2-Dichloropropane		10	1.0	ug/L	10	<	104	70-130		
1,3,5-Trimethylbenzene		10	1.0	ug/L	10	<	101	70-130		
1,3-Dichlorobenzene		10	1.0	ug/L	10	<	100	70-130		
1,3-Dichloropropane		10	1.0	ug/L	10	<	100	70-130		
1,4-Dichlorobenzene		10	1.0	ug/L	10	<	102	70-130		
2,2-Dichloropropane		12	1.0	ug/L	10	<	116	70-130		
2-Chlorotoluene		10	1.0	ug/L	10	<	101	70-130		
4-Chlorotoluene		10	1.0	ug/L	10	<	100	70-130		
Acetone		94	20	ug/L	100	<	94	70-130		
Allyl chloride		10	1.0	ug/L	10	<	101	70-130		
Benzene		10	0.50	ug/L	10	<	103	70-130		
Bromobenzene		9.9	1.0	ug/L	10	<	99	70-130		
Bromochloromethane		11	1.0	ug/L	10	<	106	70-130		
Bromodichloromethane		10	1.0	ug/L	10	<	104	70-130		
Bromoform		9.7	1.0	ug/L	10	<	97	70-130		
Bromomethane	L3, V4, Z-01a	6.7	2.0	ug/L	10	<	67	70-130		
Carbon tetrachloride		12	0.20	ug/L	10	<	118	70-130		
Chlorobenzene		10	1.0	ug/L	10	<	103	70-130		
Chlorodibromomethane		9.7	0.50	ug/L	10	<	97	70-130		
Chloroethane		10	1.0	ug/L	10	<	104	70-130		
Chloroform		11	1.0	ug/L	10	<	106	70-130		
Chloromethane		8.5	1.0	ug/L	10	<	85	70-130		
cis-1,2-Dichloroethene		10	1.0	ug/L	10	<	105	70-130		
cis-1,3-Dichloropropene		9.8	0.50	ug/L	10	<	98	70-130		
Dibromomethane		10	1.0	ug/L	10	<	101	70-130		
Dichlorodifluoromethane		8.7	1.0	ug/L	10	<	87	70-130		
Dichlorofluoromethane		11	1.0	ug/L	10	<	111	70-130		

FINAL REPORT

Report ID: 04262019 91928

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9C0458 - EPA 5030B Preparation

Matrix Spike (B9C0458-MS1) Source: 19C1238-01 **Prepared: 03/29/19 14:17 Analyzed: 03/29/19 14:17**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Ethyl ether		11	1.0	ug/L	10	1.2	94	70-130		
Ethylbenzene		10	1.0	ug/L	10	<	103	70-130		
Hexachlorobutadiene		11	0.50	ug/L	10	<	108	70-130		
Isopropylbenzene		10	1.0	ug/L	10	<	104	70-130		
Methyl ethyl ketone (MEK)		48	10	ug/L	50	<	96	70-130		
Methyl isobutyl ketone (MIBK)		50	5.0	ug/L	50	<	100	70-130		
Methyl tertiary butyl ether (MTBE)		10	2.0	ug/L	10	<	101	70-130		
Methylene chloride		10	1.0	ug/L	10	<	103	70-130		
Naphthalene		9.7	1.0	ug/L	10	<	97	70-130		
n-Butylbenzene		11	1.0	ug/L	10	<	110	70-130		
n-Propylbenzene		11	1.0	ug/L	10	<	105	70-130		
o-Xylene		9.9	1.0	ug/L	10	<	99	70-130		
p&m-Xylene		10	1.0	ug/L	10	<	104	70-130		
p-Isopropyltoluene		11	1.0	ug/L	10	<	106	70-130		
sec-Butylbenzene		11	1.0	ug/L	10	<	106	70-130		
Styrene		9.7	1.0	ug/L	10	<	97	70-130		
tert-Butylbenzene		10	1.0	ug/L	10	<	102	70-130		
Tetrachloroethene		11	1.0	ug/L	10	<	108	70-130		
Tetrahydrofuran (THF)		94	10	ug/L	100	<	94	70-130		
Toluene		10	1.0	ug/L	10	<	101	70-130		
trans-1,2-Dichloroethene		11	1.0	ug/L	10	<	106	70-130		
trans-1,3-Dichloropropene		9.8	0.50	ug/L	10	<	98	70-130		
Trichloroethene (TCE)		11	0.10	ug/L	10	0.25	104	70-130		
Trichlorofluoromethane		11	1.0	ug/L	10	<	113	70-130		
Vinyl chloride		9.9	0.050	ug/L	10	<	99	70-130		

Batch B9D0001 - EPA 5030B Preparation

Blank (B9D0001-BLK1) **Prepared: 04/01/19 14:35 Analyzed: 04/01/19 14:35**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: 1,2-Dichlorobenzene-d4		*100*	*70-130*	*%*	*10*					
Surrogate: 4-Bromofluorobenzene		*99*	*70-130*	*%*	*10*					
Surrogate: Methyl tertiary butyl ether-d3		*101*	*70-130*	*%*	*10*					
1,1,1,2-Tetrachloroethane		<	1.0	ug/L						

FINAL REPORT

Report ID: 04262019 91928

Authorized by:

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Paul Moyer, Environmental Laboratory Manager
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651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0001 - EPA 5030B Preparation

Blank (B9D0001-BLK1) **Prepared: 04/01/19 14:35 Analyzed: 04/01/19 14:35**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,1,1-Trichloroethane		<	1.0	ug/L						
1,1,2,2-Tetrachloroethane		<	0.50	ug/L						
1,1,2-Trichloroethane		<	0.50	ug/L						
1,1,2-Trichlorotrifluoroethane		<	1.0	ug/L						
1,1-Dichloroethane		<	1.0	ug/L						
1,1-Dichloroethene		<	1.0	ug/L						
1,1-Dichloropropene		<	1.0	ug/L						
1,2,3-Trichlorobenzene		<	1.0	ug/L						
1,2,3-Trichloropropane		<	0.20	ug/L						
1,2,4-Trichlorobenzene		<	1.0	ug/L						
1,2,4-Trimethylbenzene		<	1.0	ug/L						
1,2-Dibromo-3-chloropropane (DBCP)		<	1.0	ug/L						
1,2-Dibromoethane (EDB)		<	0.50	ug/L						
1,2-Dichlorobenzene		<	1.0	ug/L						
1,2-Dichloroethane		<	0.20	ug/L						
1,2-Dichloropropane		<	1.0	ug/L						
1,3,5-Trimethylbenzene		<	1.0	ug/L						
1,3-Dichlorobenzene		<	1.0	ug/L						
1,3-Dichloropropane		<	1.0	ug/L						
1,4-Dichlorobenzene		<	1.0	ug/L						
2,2-Dichloropropane		<	1.0	ug/L						
2-Chlorotoluene		<	1.0	ug/L						
4-Chlorotoluene		<	1.0	ug/L						
Acetone		<	20	ug/L						
Allyl chloride		<	1.0	ug/L						
Benzene		<	0.50	ug/L						
Bromobenzene		<	1.0	ug/L						
Bromochloromethane		<	1.0	ug/L						
Bromodichloromethane		<	1.0	ug/L						
Bromoform		<	1.0	ug/L						
Bromomethane	L3, V4, Z-01	<	2.0	ug/L						
Carbon tetrachloride		<	0.20	ug/L						
Chlorobenzene		<	1.0	ug/L						
Chlorodibromomethane		<	0.50	ug/L						
Chloroethane		<	1.0	ug/L						

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0001 - EPA 5030B Preparation

Blank (B9D0001-BLK1) **Prepared: 04/01/19 14:35 Analyzed: 04/01/19 14:35**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Chloroform		<	1.0	ug/L						
Chloromethane		<	1.0	ug/L						
cis-1,2-Dichloroethene		<	1.0	ug/L						
cis-1,3-Dichloropropene		<	0.50	ug/L						
Dibromomethane		<	1.0	ug/L						
Dichlorodifluoromethane		<	1.0	ug/L						
Dichlorofluoromethane		<	1.0	ug/L						
Ethyl ether		<	1.0	ug/L						
Ethylbenzene		<	1.0	ug/L						
Hexachlorobutadiene		<	0.50	ug/L						
Isopropylbenzene		<	1.0	ug/L						
Methyl ethyl ketone (MEK)		<	10	ug/L						
Methyl isobutyl ketone (MIBK)		<	5.0	ug/L						
Methyl tertiary butyl ether (MTBE)		<	2.0	ug/L						
Methylene chloride		<	1.0	ug/L						
Naphthalene		<	1.0	ug/L						
n-Butylbenzene		<	1.0	ug/L						
n-Propylbenzene		<	1.0	ug/L						
o-Xylene		<	1.0	ug/L						
p&m-Xylene		<	1.0	ug/L						
p-Isopropyltoluene		<	1.0	ug/L						
sec-Butylbenzene		<	1.0	ug/L						
Styrene		<	1.0	ug/L						
tert-Butylbenzene		<	1.0	ug/L						
Tetrachloroethene		<	1.0	ug/L						
Tetrahydrofuran (THF)		<	10	ug/L						
Toluene		<	1.0	ug/L						
trans-1,2-Dichloroethene		<	1.0	ug/L						
trans-1,3-Dichloropropene		<	0.50	ug/L						
Trichloroethene (TCE)		<	0.10	ug/L						
Trichlorofluoromethane		<	1.0	ug/L						
Vinyl chloride		<	0.050	ug/L						

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0001 - EPA 5030B Preparation

LCS (B9D0001-BS1) **Prepared: 04/01/19 12:44 Analyzed: 04/01/19 12:44**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: 1,2-Dichlorobenzene-d4		*99*	*70-130*	*%*	*10*					
Surrogate: 4-Bromofluorobenzene		*95*	*70-130*	*%*	*10*					
Surrogate: Methyl tertiary butyl ether-d3		*102*	*70-130*	*%*	*10*					
1,1,1,2-Tetrachloroethane		10	1.0	ug/L	10		102	70-130		
1,1,1-Trichloroethane		11	1.0	ug/L	10		107	70-130		
1,1,2,2-Tetrachloroethane		9.7	0.50	ug/L	10		97	70-130		
1,1,2-Trichloroethane		10	0.50	ug/L	10		102	70-130		
1,1,2-Trichlorotrifluoroethane		11	1.0	ug/L	10		109	70-130		
1,1-Dichloroethane		10	1.0	ug/L	10		104	70-130		
1,1-Dichloroethene		10	1.0	ug/L	10		104	70-130		
1,1-Dichloropropene		11	1.0	ug/L	10		107	70-130		
1,2,3-Trichlorobenzene		9.8	1.0	ug/L	10		98	70-130		
1,2,3-Trichloropropane		9.7	0.20	ug/L	10		97	70-130		
1,2,4-Trichlorobenzene		9.8	1.0	ug/L	10		98	70-130		
1,2,4-Trimethylbenzene		9.9	1.0	ug/L	10		99	70-130		
1,2-Dibromo-3-chloropropane (DBCP)		9.8	1.0	ug/L	10		98	70-130		
1,2-Dibromoethane (EDB)		10	0.50	ug/L	10		100	70-130		
1,2-Dichlorobenzene		9.8	1.0	ug/L	10		98	70-130		
1,2-Dichloroethane		11	0.20	ug/L	10		106	70-130		
1,2-Dichloropropane		10	1.0	ug/L	10		104	70-130		
1,3,5-Trimethylbenzene		9.7	1.0	ug/L	10		97	70-130		
1,3-Dichlorobenzene		9.9	1.0	ug/L	10		99	70-130		
1,3-Dichloropropane		9.8	1.0	ug/L	10		98	70-130		
1,4-Dichlorobenzene		9.9	1.0	ug/L	10		99	70-130		
2,2-Dichloropropane		11	1.0	ug/L	10		115	70-130		
2-Chlorotoluene		9.8	1.0	ug/L	10		98	70-130		
4-Chlorotoluene		9.8	1.0	ug/L	10		98	70-130		
Acetone		100	20	ug/L	100		101	70-130		
Allyl chloride		10	1.0	ug/L	10		103	70-130		
Benzene		10	0.50	ug/L	10		101	70-130		
Bromobenzene		10	1.0	ug/L	10		100	70-130		
Bromochloromethane		11	1.0	ug/L	10		107	70-130		
Bromodichloromethane		11	1.0	ug/L	10		108	70-130		
Bromoform		9.5	1.0	ug/L	10		95	70-130		

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651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0001 - EPA 5030B Preparation

LCS (B9D0001-BS1) **Prepared: 04/01/19 12:44 Analyzed: 04/01/19 12:44**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Bromomethane	L3, V4, Z-01	5.5	2.0	ug/L	10		55	70-130		
Carbon tetrachloride		11	0.20	ug/L	10		114	70-130		
Chlorobenzene		10	1.0	ug/L	10		100	70-130		
Chlorodibromomethane		9.9	0.50	ug/L	10		99	70-130		
Chloroethane		10	1.0	ug/L	10		104	70-130		
Chloroform		11	1.0	ug/L	10		105	70-130		
Chloromethane		8.1	1.0	ug/L	10		81	70-130		
cis-1,2-Dichloroethene		10	1.0	ug/L	10		104	70-130		
cis-1,3-Dichloropropene		10	0.50	ug/L	10		100	70-130		
Dibromomethane		11	1.0	ug/L	10		106	70-130		
Dichlorodifluoromethane		8.2	1.0	ug/L	10		82	70-130		
Dichlorofluoromethane		11	1.0	ug/L	10		109	70-130		
Ethyl ether		9.9	1.0	ug/L	10		99	70-130		
Ethylbenzene		10	1.0	ug/L	10		100	70-130		
Hexachlorobutadiene		10	0.50	ug/L	10		104	70-130		
Isopropylbenzene		10	1.0	ug/L	10		101	70-130		
Methyl ethyl ketone (MEK)		51	10	ug/L	50		102	70-130		
Methyl isobutyl ketone (MIBK)		51	5.0	ug/L	50		101	70-130		
Methyl tertiary butyl ether (MTBE)		10	2.0	ug/L	10		105	70-130		
Methylene chloride		11	1.0	ug/L	10		105	70-130		
Naphthalene		9.7	1.0	ug/L	10		97	70-130		
n-Butylbenzene		11	1.0	ug/L	10		107	70-130		
n-Propylbenzene		10	1.0	ug/L	10		101	70-130		
o-Xylene		9.6	1.0	ug/L	10		96	70-130		
p&m-Xylene		10	1.0	ug/L	10		100	70-130		
p-Isopropyltoluene		10	1.0	ug/L	10		100	70-130		
sec-Butylbenzene		10	1.0	ug/L	10		101	70-130		
Styrene		9.6	1.0	ug/L	10		96	70-130		
tert-Butylbenzene		9.9	1.0	ug/L	10		99	70-130		
Tetrachloroethene		10	1.0	ug/L	10		102	70-130		
Tetrahydrofuran (THF)		100	10	ug/L	100		101	70-130		
Toluene		9.7	1.0	ug/L	10		97	70-130		
trans-1,2-Dichloroethene		10	1.0	ug/L	10		103	70-130		
trans-1,3-Dichloropropene		10	0.50	ug/L	10		101	70-130		
Trichloroethene (TCE)		10	0.10	ug/L	10		101	70-130		

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0001 - EPA 5030B Preparation

LCS (B9D0001-BS1) **Prepared: 04/01/19 12:44 Analyzed: 04/01/19 12:44**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Trichlorofluoromethane		11	1.0	ug/L	10		108	70-130		
Vinyl chloride		9.5	0.050	ug/L	10		95	70-130		

LCS Dup (B9D0001-BSD1) **Prepared: 04/01/19 13:12 Analyzed: 04/01/19 13:12**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: 1,2-Dichlorobenzene-d4		*100*	*70-130*	*%*	*10*					
Surrogate: 4-Bromofluorobenzene		*97*	*70-130*	*%*	*10*					
Surrogate: Methyl tertiary butyl ether-d3		*101*	*70-130*	*%*	*10*					
1,1,1,2-Tetrachloroethane		10	1.0	ug/L	10		101	70-130	1	30
1,1,1-Trichloroethane		11	1.0	ug/L	10		106	70-130	1	30
1,1,2,2-Tetrachloroethane		9.4	0.50	ug/L	10		94	70-130	3	30
1,1,2-Trichloroethane		9.7	0.50	ug/L	10		97	70-130	5	30
1,1,2-Trichlorotrifluoroethane		10	1.0	ug/L	10		104	70-130	4	30
1,1-Dichloroethane		10	1.0	ug/L	10		101	70-130	3	30
1,1-Dichloroethene		10	1.0	ug/L	10		102	70-130	2	30
1,1-Dichloropropene		11	1.0	ug/L	10		105	70-130	1	30
1,2,3-Trichlorobenzene		10	1.0	ug/L	10		100	70-130	2	30
1,2,3-Trichloropropane		9.4	0.20	ug/L	10		94	70-130	3	30
1,2,4-Trichlorobenzene		9.9	1.0	ug/L	10		99	70-130	0.6	30
1,2,4-Trimethylbenzene		9.6	1.0	ug/L	10		96	70-130	3	30
1,2-Dibromo-3-chloropropane (DBCP)		9.3	1.0	ug/L	10		93	70-130	5	30
1,2-Dibromoethane (EDB)		9.4	0.50	ug/L	10		94	70-130	5	30
1,2-Dichlorobenzene		9.6	1.0	ug/L	10		96	70-130	2	30
1,2-Dichloroethane		10	0.20	ug/L	10		103	70-130	3	30
1,2-Dichloropropane		10	1.0	ug/L	10		103	70-130	2	30
1,3,5-Trimethylbenzene		9.4	1.0	ug/L	10		94	70-130	3	30
1,3-Dichlorobenzene		9.6	1.0	ug/L	10		96	70-130	3	30
1,3-Dichloropropane		9.8	1.0	ug/L	10		98	70-130	0.2	30
1,4-Dichlorobenzene		9.8	1.0	ug/L	10		98	70-130	2	30
2,2-Dichloropropane		11	1.0	ug/L	10		109	70-130	5	30
2-Chlorotoluene		9.6	1.0	ug/L	10		96	70-130	2	30
4-Chlorotoluene		9.5	1.0	ug/L	10		95	70-130	3	30
Acetone		100	20	ug/L	100		101	70-130	0.4	30

FINAL REPORT

Report ID: 04262019 91928

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0001 - EPA 5030B Preparation

LCS Dup (B9D0001-BSD1) **Prepared: 04/01/19 13:12 Analyzed: 04/01/19 13:12**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Allyl chloride		9.6	1.0	ug/L	10		96	70-130	7	30
Benzene		10	0.50	ug/L	10		100	70-130	2	30
Bromobenzene		9.5	1.0	ug/L	10		95	70-130	5	30
Bromochloromethane		10	1.0	ug/L	10		102	70-130	6	30
Bromodichloromethane		10	1.0	ug/L	10		103	70-130	5	30
Bromoform		9.2	1.0	ug/L	10		92	70-130	3	30
Bromomethane	L3, V4, Z-01	5.8	2.0	ug/L	10		58	70-130	4	30
Carbon tetrachloride		11	0.20	ug/L	10		111	70-130	3	30
Chlorobenzene		9.8	1.0	ug/L	10		98	70-130	2	30
Chlorodibromomethane		9.4	0.50	ug/L	10		94	70-130	5	30
Chloroethane		10	1.0	ug/L	10		101	70-130	4	30
Chloroform		10	1.0	ug/L	10		102	70-130	3	30
Chloromethane		7.8	1.0	ug/L	10		78	70-130	3	30
cis-1,2-Dichloroethene		9.9	1.0	ug/L	10		99	70-130	5	30
cis-1,3-Dichloropropene		9.6	0.50	ug/L	10		96	70-130	5	30
Dibromomethane		10	1.0	ug/L	10		105	70-130	1	30
Dichlorodifluoromethane		7.9	1.0	ug/L	10		79	70-130	4	30
Dichlorofluoromethane		11	1.0	ug/L	10		107	70-130	2	30
Ethyl ether		9.8	1.0	ug/L	10		98	70-130	1	30
Ethylbenzene		9.5	1.0	ug/L	10		95	70-130	6	30
Hexachlorobutadiene		10	0.50	ug/L	10		100	70-130	4	30
Isopropylbenzene		9.6	1.0	ug/L	10		96	70-130	5	30
Methyl ethyl ketone (MEK)		51	10	ug/L	50		102	70-130	0.5	30
Methyl isobutyl ketone (MIBK)		50	5.0	ug/L	50		100	70-130	1	30
Methyl tertiary butyl ether (MTBE)		10	2.0	ug/L	10		101	70-130	3	30
Methylene chloride		10	1.0	ug/L	10		102	70-130	3	30
Naphthalene		9.6	1.0	ug/L	10		96	70-130	2	30
n-Butylbenzene		10	1.0	ug/L	10		103	70-130	3	30
n-Propylbenzene		9.9	1.0	ug/L	10		99	70-130	2	30
o-Xylene		9.4	1.0	ug/L	10		94	70-130	2	30
p&m-Xylene		9.7	1.0	ug/L	10		97	70-130	4	30
p-Isopropyltoluene		9.9	1.0	ug/L	10		99	70-130	1	30
sec-Butylbenzene		9.8	1.0	ug/L	10		98	70-130	3	30
Styrene		9.0	1.0	ug/L	10		90	70-130	6	30
tert-Butylbenzene		9.7	1.0	ug/L	10		97	70-130	2	30

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Environmental Laboratory Section
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St. Paul, MN 55164-0899
651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0001 - EPA 5030B Preparation

LCS Dup (B9D0001-BSD1) **Prepared: 04/01/19 13:12 Analyzed: 04/01/19 13:12**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Tetrachloroethene		9.8	1.0	ug/L	10		98	70-130	3	30
Tetrahydrofuran (THF)		100	10	ug/L	100		102	70-130	0.6	30
Toluene		9.4	1.0	ug/L	10		94	70-130	3	30
trans-1,2-Dichloroethene		10	1.0	ug/L	10		101	70-130	2	30
trans-1,3-Dichloropropene		9.8	0.50	ug/L	10		98	70-130	3	30
Trichloroethene (TCE)		9.8	0.10	ug/L	10		98	70-130	3	30
Trichlorofluoromethane		10	1.0	ug/L	10		103	70-130	4	30
Vinyl chloride		9.1	0.050	ug/L	10		91	70-130	5	30

Duplicate (B9D0001-DUP1) Source: 19C1238-15 **Prepared: 04/01/19 16:26 Analyzed: 04/01/19 16:26**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: 1,2-Dichlorobenzene-d4		*104*	*70-130*	*%*	*10*					
Surrogate: 4-Bromofluorobenzene		*98*	*70-130*	*%*	*10*					
Surrogate: Methyl tertiary butyl ether-d3		*101*	*70-130*	*%*	*10*					
1,1,1,2-Tetrachloroethane		<	1.0	ug/L		<				30
1,1,1-Trichloroethane		<	1.0	ug/L		<				30
1,1,2,2-Tetrachloroethane		<	0.50	ug/L		<				30
1,1,2-Trichloroethane		<	0.50	ug/L		<				30
1,1,2-Trichlorotrifluoroethane		<	1.0	ug/L		<				30
1,1-Dichloroethane		0.60	1.0	ug/L		<			3	30
1,1-Dichloroethene		<	1.0	ug/L		<				30
1,1-Dichloropropene		<	1.0	ug/L		<				30
1,2,3-Trichlorobenzene		<	1.0	ug/L		<				30
1,2,3-Trichloropropane		<	0.20	ug/L		<				30
1,2,4-Trichlorobenzene		<	1.0	ug/L		<				30
1,2,4-Trimethylbenzene		<	1.0	ug/L		<				30
1,2-Dibromo-3-chloropropane (DBCP)		<	1.0	ug/L		<				30
1,2-Dibromoethane (EDB)		<	0.50	ug/L		<				30
1,2-Dichlorobenzene		<	1.0	ug/L		<				30
1,2-Dichloroethane		<	0.20	ug/L		<				30
1,2-Dichloropropane		<	1.0	ug/L		<				30
1,3,5-Trimethylbenzene		<	1.0	ug/L		<				30
1,3-Dichlorobenzene		<	1.0	ug/L		<				30

FINAL REPORT

Report ID: 04262019 91928

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651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0001 - EPA 5030B Preparation

Duplicate (B9D0001-DUP1) Source: 19C1238-15 **Prepared: 04/01/19 16:26 Analyzed: 04/01/19 16:26**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,3-Dichloropropane		<	1.0	ug/L		<				30
1,4-Dichlorobenzene		0.26	1.0	ug/L		<			8	30
2,2-Dichloropropane		<	1.0	ug/L		<				30
2-Chlorotoluene		<	1.0	ug/L		<				30
4-Chlorotoluene		<	1.0	ug/L		<				30
Acetone		<	20	ug/L		<				30
Allyl chloride		<	1.0	ug/L		<				30
Benzene		0.21	0.50	ug/L		<			5	30
Bromobenzene		<	1.0	ug/L		<				30
Bromochloromethane		<	1.0	ug/L		<				30
Bromodichloromethane		<	1.0	ug/L		<				30
Bromoform		<	1.0	ug/L		<				30
Bromomethane	L3, V4, Z-01	<	2.0	ug/L		<				30
Carbon tetrachloride		<	0.20	ug/L		<				30
Chlorobenzene		0.28	1.0	ug/L		<			15	30
Chlorodibromomethane		<	0.50	ug/L		<				30
Chloroethane		<	1.0	ug/L		<				30
Chloroform		<	1.0	ug/L		<				30
Chloromethane		<	1.0	ug/L		<				30
cis-1,2-Dichloroethene		0.67	1.0	ug/L		<			1	30
cis-1,3-Dichloropropene		<	0.50	ug/L		<				30
Dibromomethane		<	1.0	ug/L		<				30
Dichlorodifluoromethane		<	1.0	ug/L		<				30
Dichlorofluoromethane		0.61	1.0	ug/L		<			6	30
Ethyl ether		47	1.0	ug/L		47			0.4	30
Ethylbenzene		<	1.0	ug/L		<				30
Hexachlorobutadiene		<	0.50	ug/L		<				30
Isopropylbenzene		<	1.0	ug/L		<				30
Methyl ethyl ketone (MEK)		<	10	ug/L		<				30
Methyl isobutyl ketone (MIBK)		<	5.0	ug/L		<				30
Methyl tertiary butyl ether (MTBE)		<	2.0	ug/L		<				30
Methylene chloride		<	1.0	ug/L		<				30
Naphthalene		<	1.0	ug/L		<				30
n-Butylbenzene		<	1.0	ug/L		<				30
n-Propylbenzene		<	1.0	ug/L		<				30

FINAL REPORT

Report ID: 04262019 91928

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Public Health Laboratory, Minnesota Department of Health

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0001 - EPA 5030B Preparation

Duplicate (B9D0001-DUP1) Source: 19C1238-15 **Prepared: 04/01/19 16:26 Analyzed: 04/01/19 16:26**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
o-Xylene		<	1.0	ug/L		<				30
p&m-Xylene		<	1.0	ug/L		<				30
p-Isopropyltoluene		<	1.0	ug/L		<				30
sec-Butylbenzene		<	1.0	ug/L		<				30
Styrene		<	1.0	ug/L		<				30
tert-Butylbenzene		<	1.0	ug/L		<				30
Tetrachloroethene		0.91	1.0	ug/L		1.0			9	30
Tetrahydrofuran (THF)		<	10	ug/L		<				30
Toluene		<	1.0	ug/L		<				30
trans-1,2-Dichloroethene		<	1.0	ug/L		<				30
trans-1,3-Dichloropropene		<	0.50	ug/L		<				30
Trichloroethene (TCE)		0.56	0.10	ug/L		0.56			0	30
Trichlorofluoromethane		<	1.0	ug/L		<				30
Vinyl chloride		0.090	0.050	ug/L		0.090			0	30

Matrix Spike (B9D0001-MS1) Source: 19C1238-13 **Prepared: 04/01/19 13:40 Analyzed: 04/01/19 13:40**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: 1,2-Dichlorobenzene-d4		*100*	*70-130*	*%*	*10*					
Surrogate: 4-Bromofluorobenzene		*95*	*70-130*	*%*	*10*					
Surrogate: Methyl tertiary butyl ether-d3		*100*	*70-130*	*%*	*10*					
1,1,1,2-Tetrachloroethane		10	1.0	ug/L	10	<	105	70-130		
1,1,1-Trichloroethane		11	1.0	ug/L	10	<	114	70-130		
1,1,2,2-Tetrachloroethane		9.6	0.50	ug/L	10	<	96	70-130		
1,1,2-Trichloroethane		10	0.50	ug/L	10	<	104	70-130		
1,1,2-Trichlorotrifluoroethane		12	1.0	ug/L	10	<	118	70-130		
1,1-Dichloroethane		11	1.0	ug/L	10	<	109	70-130		
1,1-Dichloroethene		11	1.0	ug/L	10	<	112	70-130		
1,1-Dichloropropene		11	1.0	ug/L	10	<	112	70-130		
1,2,3-Trichlorobenzene		10	1.0	ug/L	10	<	102	70-130		
1,2,3-Trichloropropane		9.7	0.20	ug/L	10	<	97	70-130		
1,2,4-Trichlorobenzene		10	1.0	ug/L	10	<	102	70-130		
1,2,4-Trimethylbenzene		10	1.0	ug/L	10	<	103	70-130		
1,2-Dibromo-3-chloropropane (DBCP)		9.2	1.0	ug/L	10	<	92	70-130		

FINAL REPORT

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0001 - EPA 5030B Preparation

Matrix Spike (B9D0001-MS1) Source: 19C1238-13 **Prepared: 04/01/19 13:40 Analyzed: 04/01/19 13:40**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,2-Dibromoethane (EDB)		10	0.50	ug/L	10	<	100	70-130		
1,2-Dichlorobenzene		10	1.0	ug/L	10	<	101	70-130		
1,2-Dichloroethane		11	0.20	ug/L	10	<	107	70-130		
1,2-Dichloropropane		11	1.0	ug/L	10	<	108	70-130		
1,3,5-Trimethylbenzene		10	1.0	ug/L	10	<	102	70-130		
1,3-Dichlorobenzene		10	1.0	ug/L	10	<	101	70-130		
1,3-Dichloropropane		10	1.0	ug/L	10	<	102	70-130		
1,4-Dichlorobenzene		10	1.0	ug/L	10	<	103	70-130		
2,2-Dichloropropane		12	1.0	ug/L	10	<	122	70-130		
2-Chlorotoluene		10	1.0	ug/L	10	<	103	70-130		
4-Chlorotoluene		10	1.0	ug/L	10	<	102	70-130		
Acetone		96	20	ug/L	100	<	96	70-130		
Allyl chloride		11	1.0	ug/L	10	<	107	70-130		
Benzene		11	0.50	ug/L	10	<	107	70-130		
Bromobenzene		10	1.0	ug/L	10	<	100	70-130		
Bromochloromethane		11	1.0	ug/L	10	<	109	70-130		
Bromodichloromethane		11	1.0	ug/L	10	<	109	70-130		
Bromoform		9.5	1.0	ug/L	10	<	95	70-130		
Bromomethane	L3, V4, Z-01a	6.6	2.0	ug/L	10	<	66	70-130		
Carbon tetrachloride		12	0.20	ug/L	10	<	122	70-130		
Chlorobenzene		10	1.0	ug/L	10	<	105	70-130		
Chlorodibromomethane		9.8	0.50	ug/L	10	<	98	70-130		
Chloroethane		11	1.0	ug/L	10	<	111	70-130		
Chloroform		11	1.0	ug/L	10	<	112	70-130		
Chloromethane		8.5	1.0	ug/L	10	<	85	70-130		
cis-1,2-Dichloroethene		11	1.0	ug/L	10	<	107	70-130		
cis-1,3-Dichloropropene		10	0.50	ug/L	10	<	103	70-130		
Dibromomethane		11	1.0	ug/L	10	<	109	70-130		
Dichlorodifluoromethane		9.1	1.0	ug/L	10	<	91	70-130		
Dichlorofluoromethane		12	1.0	ug/L	10	<	116	70-130		
Ethyl ether		10	1.0	ug/L	10	<	101	70-130		
Ethylbenzene		10	1.0	ug/L	10	<	105	70-130		
Hexachlorobutadiene		11	0.50	ug/L	10	<	110	70-130		
Isopropylbenzene		11	1.0	ug/L	10	<	107	70-130		
Methyl ethyl ketone (MEK)		48	10	ug/L	50	<	96	70-130		

FINAL REPORT

Report ID: 04262019 91928

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0001 - EPA 5030B Preparation

Matrix Spike (B9D0001-MS1) Source: 19C1238-13 **Prepared: 04/01/19 13:40 Analyzed: 04/01/19 13:40**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Methyl isobutyl ketone (MIBK)		50	5.0	ug/L	50	<	99	70-130		
Methyl tertiary butyl ether (MTBE)		10	2.0	ug/L	10	<	105	70-130		
Methylene chloride		11	1.0	ug/L	10	<	108	70-130		
Naphthalene		9.5	1.0	ug/L	10	<	95	70-130		
n-Butylbenzene		11	1.0	ug/L	10	<	112	70-130		
n-Propylbenzene		11	1.0	ug/L	10	<	108	70-130		
o-Xylene		10	1.0	ug/L	10	<	100	70-130		
p&m-Xylene		11	1.0	ug/L	10	<	105	70-130		
p-Isopropyltoluene		11	1.0	ug/L	10	<	106	70-130		
sec-Butylbenzene		11	1.0	ug/L	10	<	108	70-130		
Styrene		9.8	1.0	ug/L	10	<	98	70-130		
tert-Butylbenzene		10	1.0	ug/L	10	<	104	70-130		
Tetrachloroethene		11	1.0	ug/L	10	<	108	70-130		
Tetrahydrofuran (THF)		96	10	ug/L	100	<	96	70-130		
Toluene		10	1.0	ug/L	10	<	104	70-130		
trans-1,2-Dichloroethene		11	1.0	ug/L	10	<	110	70-130		
trans-1,3-Dichloropropene		10	0.50	ug/L	10	<	104	70-130		
Trichloroethene (TCE)		11	0.10	ug/L	10	<	108	70-130		
Trichlorofluoromethane		12	1.0	ug/L	10	<	117	70-130		
Vinyl chloride		10	0.050	ug/L	10	<	104	70-130		

Batch B9D0019 - EPA 5030B Preparation

Blank (B9D0019-BLK1) **Prepared: 04/02/19 12:49 Analyzed: 04/02/19 12:49**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: 1,2-Dichlorobenzene-d4		*100*	*70-130*	*%*	*10*					
Surrogate: 4-Bromofluorobenzene		*99*	*70-130*	*%*	*10*					
Surrogate: Methyl tertiary butyl ether-d3		*100*	*70-130*	*%*	*10*					
1,1,1,2-Tetrachloroethane		<	1.0	ug/L						
1,1,1-Trichloroethane		<	1.0	ug/L						
1,1,2,2-Tetrachloroethane		<	0.50	ug/L						
1,1,2-Trichloroethane		<	0.50	ug/L						
1,1,2-Trichlorotrifluoroethane		<	1.0	ug/L						
1,1-Dichloroethane		<	1.0	ug/L						

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651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0019 - EPA 5030B Preparation

Blank (B9D0019-BLK1) **Prepared: 04/02/19 12:49 Analyzed: 04/02/19 12:49**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,1-Dichloroethene		<	1.0	ug/L						
1,1-Dichloropropene		<	1.0	ug/L						
1,2,3-Trichlorobenzene		<	1.0	ug/L						
1,2,3-Trichloropropane		<	0.20	ug/L						
1,2,4-Trichlorobenzene		<	1.0	ug/L						
1,2,4-Trimethylbenzene		<	1.0	ug/L						
1,2-Dibromo-3-chloropropane (DBCP)		<	1.0	ug/L						
1,2-Dibromoethane (EDB)		<	0.50	ug/L						
1,2-Dichlorobenzene		<	1.0	ug/L						
1,2-Dichloroethane		<	0.20	ug/L						
1,2-Dichloropropane		<	1.0	ug/L						
1,3,5-Trimethylbenzene		<	1.0	ug/L						
1,3-Dichlorobenzene		<	1.0	ug/L						
1,3-Dichloropropane		<	1.0	ug/L						
1,4-Dichlorobenzene		<	1.0	ug/L						
2,2-Dichloropropane		<	1.0	ug/L						
2-Chlorotoluene		<	1.0	ug/L						
4-Chlorotoluene		<	1.0	ug/L						
Acetone		<	20	ug/L						
Allyl chloride		<	1.0	ug/L						
Benzene		<	0.50	ug/L						
Bromobenzene		<	1.0	ug/L						
Bromochloromethane		<	1.0	ug/L						
Bromodichloromethane		<	1.0	ug/L						
Bromoform		<	1.0	ug/L						
Bromomethane	V4, Z-01, L3	<	2.0	ug/L						
Carbon tetrachloride		<	0.20	ug/L						
Chlorobenzene		<	1.0	ug/L						
Chlorodibromomethane		<	0.50	ug/L						
Chloroethane		<	1.0	ug/L						
Chloroform		<	1.0	ug/L						
Chloromethane		<	1.0	ug/L						
cis-1,2-Dichloroethene		<	1.0	ug/L						
cis-1,3-Dichloropropene		<	0.50	ug/L						
Dibromomethane		<	1.0	ug/L						

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0019 - EPA 5030B Preparation

Blank (B9D0019-BLK1) **Prepared: 04/02/19 12:49 Analyzed: 04/02/19 12:49**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Dichlorodifluoromethane		<	1.0	ug/L						
Dichlorofluoromethane		<	1.0	ug/L						
Ethyl ether		<	1.0	ug/L						
Ethylbenzene		<	1.0	ug/L						
Hexachlorobutadiene		<	0.50	ug/L						
Isopropylbenzene		<	1.0	ug/L						
Methyl ethyl ketone (MEK)		<	10	ug/L						
Methyl isobutyl ketone (MIBK)		<	5.0	ug/L						
Methyl tertiary butyl ether (MTBE)		<	2.0	ug/L						
Methylene chloride		<	1.0	ug/L						
Naphthalene		<	1.0	ug/L						
n-Butylbenzene		<	1.0	ug/L						
n-Propylbenzene		<	1.0	ug/L						
o-Xylene		<	1.0	ug/L						
p&m-Xylene		<	1.0	ug/L						
p-Isopropyltoluene		<	1.0	ug/L						
sec-Butylbenzene		<	1.0	ug/L						
Styrene		<	1.0	ug/L						
tert-Butylbenzene		<	1.0	ug/L						
Tetrachloroethene		<	1.0	ug/L						
Tetrahydrofuran (THF)		<	10	ug/L						
Toluene		<	1.0	ug/L						
trans-1,2-Dichloroethene		<	1.0	ug/L						
trans-1,3-Dichloropropene		<	0.50	ug/L						
Trichloroethene (TCE)		<	0.10	ug/L						
Trichlorofluoromethane		<	1.0	ug/L						
Vinyl chloride		<	0.050	ug/L						

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Paul Moyer, Environmental Laboratory Manager
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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
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St. Paul, MN 55164-0899
651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0019 - EPA 5030B Preparation

LCS (B9D0019-BS1) **Prepared: 04/02/19 10:30 Analyzed: 04/02/19 10:30**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: 1,2-Dichlorobenzene-d4		*98*	*70-130*	*%*	*10*					
Surrogate: 4-Bromofluorobenzene		*96*	*70-130*	*%*	*10*					
Surrogate: Methyl tertiary butyl ether-d3		*100*	*70-130*	*%*	*10*					
1,1,1,2-Tetrachloroethane		10	1.0	ug/L	10		101	70-130		
1,1,1-Trichloroethane		11	1.0	ug/L	10		109	70-130		
1,1,2,2-Tetrachloroethane		9.4	0.50	ug/L	10		94	70-130		
1,1,2-Trichloroethane		10	0.50	ug/L	10		101	70-130		
1,1,2-Trichlorotrifluoroethane		11	1.0	ug/L	10		109	70-130		
1,1-Dichloroethane		11	1.0	ug/L	10		105	70-130		
1,1-Dichloroethene		11	1.0	ug/L	10		106	70-130		
1,1-Dichloropropene		11	1.0	ug/L	10		108	70-130		
1,2,3-Trichlorobenzene		9.6	1.0	ug/L	10		96	70-130		
1,2,3-Trichloropropane		9.3	0.20	ug/L	10		93	70-130		
1,2,4-Trichlorobenzene		9.6	1.0	ug/L	10		96	70-130		
1,2,4-Trimethylbenzene		9.7	1.0	ug/L	10		97	70-130		
1,2-Dibromo-3-chloropropane (DBCP)		9.0	1.0	ug/L	10		90	70-130		
1,2-Dibromoethane (EDB)		9.5	0.50	ug/L	10		95	70-130		
1,2-Dichlorobenzene		9.4	1.0	ug/L	10		94	70-130		
1,2-Dichloroethane		10	0.20	ug/L	10		105	70-130		
1,2-Dichloropropane		11	1.0	ug/L	10		106	70-130		
1,3,5-Trimethylbenzene		9.8	1.0	ug/L	10		98	70-130		
1,3-Dichlorobenzene		9.6	1.0	ug/L	10		96	70-130		
1,3-Dichloropropane		10	1.0	ug/L	10		100	70-130		
1,4-Dichlorobenzene		9.6	1.0	ug/L	10		96	70-130		
2,2-Dichloropropane		11	1.0	ug/L	10		114	70-130		
2-Chlorotoluene		9.7	1.0	ug/L	10		97	70-130		
4-Chlorotoluene		9.6	1.0	ug/L	10		96	70-130		
Acetone		97	20	ug/L	100		97	70-130		
Allyl chloride		10	1.0	ug/L	10		101	70-130		
Benzene		10	0.50	ug/L	10		103	70-130		
Bromobenzene		9.5	1.0	ug/L	10		95	70-130		
Bromochloromethane		11	1.0	ug/L	10		106	70-130		
Bromodichloromethane		11	1.0	ug/L	10		107	70-130		
Bromoform		10	1.0	ug/L	10		100	70-130		

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Environmental Laboratory Section
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St. Paul, MN 55164-0899
651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0019 - EPA 5030B Preparation

LCS (B9D0019-BS1) **Prepared: 04/02/19 10:30 Analyzed: 04/02/19 10:30**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Bromomethane	L3, V4, Z-01	5.8	2.0	ug/L	10		58	70-130		
Carbon tetrachloride		11	0.20	ug/L	10		114	70-130		
Chlorobenzene		10	1.0	ug/L	10		100	70-130		
Chlorodibromomethane		9.7	0.50	ug/L	10		97	70-130		
Chloroethane		11	1.0	ug/L	10		106	70-130		
Chloroform		11	1.0	ug/L	10		107	70-130		
Chloromethane		8.4	1.0	ug/L	10		84	70-130		
cis-1,2-Dichloroethene		10	1.0	ug/L	10		103	70-130		
cis-1,3-Dichloropropene		10	0.50	ug/L	10		100	70-130		
Dibromomethane		10	1.0	ug/L	10		104	70-130		
Dichlorodifluoromethane		8.3	1.0	ug/L	10		83	70-130		
Dichlorofluoromethane		11	1.0	ug/L	10		110	70-130		
Ethyl ether		10	1.0	ug/L	10		101	70-130		
Ethylbenzene		10	1.0	ug/L	10		100	70-130		
Hexachlorobutadiene		9.9	0.50	ug/L	10		99	70-130		
Isopropylbenzene		10	1.0	ug/L	10		100	70-130		
Methyl ethyl ketone (MEK)		49	10	ug/L	50		99	70-130		
Methyl isobutyl ketone (MIBK)		50	5.0	ug/L	50		100	70-130		
Methyl tertiary butyl ether (MTBE)		10	2.0	ug/L	10		104	70-130		
Methylene chloride		10	1.0	ug/L	10		105	70-130		
Naphthalene		9.2	1.0	ug/L	10		92	70-130		
n-Butylbenzene		10	1.0	ug/L	10		104	70-130		
n-Propylbenzene		10	1.0	ug/L	10		100	70-130		
o-Xylene		9.6	1.0	ug/L	10		96	70-130		
p&m-Xylene		10	1.0	ug/L	10		101	70-130		
p-Isopropyltoluene		9.9	1.0	ug/L	10		99	70-130		
sec-Butylbenzene		10	1.0	ug/L	10		100	70-130		
Styrene		9.3	1.0	ug/L	10		93	70-130		
tert-Butylbenzene		9.7	1.0	ug/L	10		97	70-130		
Tetrachloroethene		10	1.0	ug/L	10		103	70-130		
Tetrahydrofuran (THF)		100	10	ug/L	100		101	70-130		
Toluene		9.9	1.0	ug/L	10		99	70-130		
trans-1,2-Dichloroethene		10	1.0	ug/L	10		104	70-130		
trans-1,3-Dichloropropene		9.8	0.50	ug/L	10		98	70-130		
Trichloroethene (TCE)		10	0.10	ug/L	10		101	70-130		

FINAL REPORT

Report ID: 04262019 91928

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651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0019 - EPA 5030B Preparation

LCS (B9D0019-BS1) **Prepared: 04/02/19 10:30 Analyzed: 04/02/19 10:30**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Trichlorofluoromethane		11	1.0	ug/L	10		109	70-130		
Vinyl chloride		9.8	0.050	ug/L	10		98	70-130		

LCS Dup (B9D0019-BSD1) **Prepared: 04/02/19 10:58 Analyzed: 04/02/19 10:58**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: 1,2-Dichlorobenzene-d4		*101*	*70-130*	*%*	*10*					
Surrogate: 4-Bromofluorobenzene		*97*	*70-130*	*%*	*10*					
Surrogate: Methyl tertiary butyl ether-d3		*100*	*70-130*	*%*	*10*					
1,1,1,2-Tetrachloroethane		10	1.0	ug/L	10		100	70-130	0.6	30
1,1,1-Trichloroethane		11	1.0	ug/L	10		106	70-130	3	30
1,1,2,2-Tetrachloroethane		9.5	0.50	ug/L	10		95	70-130	1	30
1,1,2-Trichloroethane		10	0.50	ug/L	10		103	70-130	2	30
1,1,2-Trichlorotrifluoroethane		11	1.0	ug/L	10		108	70-130	1	30
1,1-Dichloroethane		10	1.0	ug/L	10		104	70-130	1	30
1,1-Dichloroethene		10	1.0	ug/L	10		102	70-130	4	30
1,1-Dichloropropene		11	1.0	ug/L	10		107	70-130	1	30
1,2,3-Trichlorobenzene		9.7	1.0	ug/L	10		97	70-130	0.5	30
1,2,3-Trichloropropane		9.5	0.20	ug/L	10		95	70-130	2	30
1,2,4-Trichlorobenzene		9.6	1.0	ug/L	10		96	70-130	0.6	30
1,2,4-Trimethylbenzene		9.4	1.0	ug/L	10		94	70-130	2	30
1,2-Dibromo-3-chloropropane (DBCP)		9.3	1.0	ug/L	10		93	70-130	3	30
1,2-Dibromoethane (EDB)		9.6	0.50	ug/L	10		96	70-130	0.5	30
1,2-Dichlorobenzene		9.5	1.0	ug/L	10		95	70-130	0.5	30
1,2-Dichloroethane		11	0.20	ug/L	10		106	70-130	0.7	30
1,2-Dichloropropane		10	1.0	ug/L	10		105	70-130	1	30
1,3,5-Trimethylbenzene		9.5	1.0	ug/L	10		95	70-130	2	30
1,3-Dichlorobenzene		9.6	1.0	ug/L	10		96	70-130	0.7	30
1,3-Dichloropropane		10	1.0	ug/L	10		101	70-130	2	30
1,4-Dichlorobenzene		9.8	1.0	ug/L	10		98	70-130	3	30
2,2-Dichloropropane		11	1.0	ug/L	10		108	70-130	5	30
2-Chlorotoluene		9.7	1.0	ug/L	10		97	70-130	0.1	30
4-Chlorotoluene		9.6	1.0	ug/L	10		96	70-130	0.8	30
Acetone		94	20	ug/L	100		94	70-130	3	30

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0019 - EPA 5030B Preparation

LCS Dup (B9D0019-BSD1) **Prepared: 04/02/19 10:58 Analyzed: 04/02/19 10:58**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Allyl chloride		9.9	1.0	ug/L	10		99	70-130	3	30
Benzene		10	0.50	ug/L	10		102	70-130	2	30
Bromobenzene		9.6	1.0	ug/L	10		96	70-130	0.3	30
Bromochloromethane		10	1.0	ug/L	10		104	70-130	1	30
Bromodichloromethane		10	1.0	ug/L	10		104	70-130	3	30
Bromoform		9.8	1.0	ug/L	10		98	70-130	2	30
Bromomethane	L3, V4, Z-01	6.4	2.0	ug/L	10		64	70-130	10	30
Carbon tetrachloride		11	0.20	ug/L	10		112	70-130	2	30
Chlorobenzene		9.9	1.0	ug/L	10		99	70-130	1	30
Chlorodibromomethane		9.8	0.50	ug/L	10		98	70-130	1	30
Chloroethane		10	1.0	ug/L	10		102	70-130	4	30
Chloroform		10	1.0	ug/L	10		104	70-130	3	30
Chloromethane		8.3	1.0	ug/L	10		83	70-130	0.7	30
cis-1,2-Dichloroethene		10	1.0	ug/L	10		102	70-130	1	30
cis-1,3-Dichloropropene		9.8	0.50	ug/L	10		98	70-130	2	30
Dibromomethane		11	1.0	ug/L	10		106	70-130	2	30
Dichlorodifluoromethane		8.0	1.0	ug/L	10		80	70-130	3	30
Dichlorofluoromethane		11	1.0	ug/L	10		107	70-130	2	30
Ethyl ether		9.9	1.0	ug/L	10		99	70-130	2	30
Ethylbenzene		10	1.0	ug/L	10		100	70-130	0.2	30
Hexachlorobutadiene		9.9	0.50	ug/L	10		99	70-130	0.1	30
Isopropylbenzene		9.9	1.0	ug/L	10		99	70-130	1	30
Methyl ethyl ketone (MEK)		48	10	ug/L	50		96	70-130	3	30
Methyl isobutyl ketone (MIBK)		50	5.0	ug/L	50		100	70-130	0.1	30
Methyl tertiary butyl ether (MTBE)		11	2.0	ug/L	10		106	70-130	2	30
Methylene chloride		10	1.0	ug/L	10		104	70-130	1	30
Naphthalene		9.4	1.0	ug/L	10		94	70-130	2	30
n-Butylbenzene		10	1.0	ug/L	10		103	70-130	1	30
n-Propylbenzene		10	1.0	ug/L	10		100	70-130	0.1	30
o-Xylene		9.6	1.0	ug/L	10		96	70-130	0.1	30
p&m-Xylene		10	1.0	ug/L	10		101	70-130	0.3	30
p-Isopropyltoluene		9.8	1.0	ug/L	10		98	70-130	1	30
sec-Butylbenzene		9.9	1.0	ug/L	10		99	70-130	1	30
Styrene		9.5	1.0	ug/L	10		95	70-130	1	30
tert-Butylbenzene		9.6	1.0	ug/L	10		96	70-130	1	30

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0019 - EPA 5030B Preparation

LCS Dup (B9D0019-BSD1) **Prepared: 04/02/19 10:58 Analyzed: 04/02/19 10:58**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Tetrachloroethene		9.9	1.0	ug/L	10		99	70-130	4	30
Tetrahydrofuran (THF)		99	10	ug/L	100		99	70-130	2	30
Toluene		9.8	1.0	ug/L	10		98	70-130	2	30
trans-1,2-Dichloroethene		10	1.0	ug/L	10		103	70-130	2	30
trans-1,3-Dichloropropene		10	0.50	ug/L	10		103	70-130	5	30
Trichloroethene (TCE)		9.8	0.10	ug/L	10		98	70-130	3	30
Trichlorofluoromethane		10	1.0	ug/L	10		105	70-130	4	30
Vinyl chloride		9.4	0.050	ug/L	10		94	70-130	3	30

Duplicate (B9D0019-DUP1) Source: 19C1274-05 **Prepared: 04/02/19 14:13 Analyzed: 04/02/19 14:13**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: 1,2-Dichlorobenzene-d4		*101*	*70-130*	*%*	*10*					
Surrogate: 4-Bromofluorobenzene		*99*	*70-130*	*%*	*10*					
Surrogate: Methyl tertiary butyl ether-d3		*100*	*70-130*	*%*	*10*					
1,1,1,2-Tetrachloroethane		<	1.0	ug/L		<				30
1,1,1-Trichloroethane		<	1.0	ug/L		<				30
1,1,2,2-Tetrachloroethane		<	0.50	ug/L		<				30
1,1,2-Trichloroethane		<	0.50	ug/L		<				30
1,1,2-Trichlorotrifluoroethane		<	1.0	ug/L		<				30
1,1-Dichloroethane		<	1.0	ug/L		<				30
1,1-Dichloroethene		<	1.0	ug/L		<				30
1,1-Dichloropropene		<	1.0	ug/L		<				30
1,2,3-Trichlorobenzene		<	1.0	ug/L		<				30
1,2,3-Trichloropropane		<	0.20	ug/L		<				30
1,2,4-Trichlorobenzene		<	1.0	ug/L		<				30
1,2,4-Trimethylbenzene		<	1.0	ug/L		<				30
1,2-Dibromo-3-chloropropane (DBCP)		<	1.0	ug/L		<				30
1,2-Dibromoethane (EDB)		<	0.50	ug/L		<				30
1,2-Dichlorobenzene		<	1.0	ug/L		<				30
1,2-Dichloroethane		<	0.20	ug/L		<				30
1,2-Dichloropropane		<	1.0	ug/L		<				30
1,3,5-Trimethylbenzene		<	1.0	ug/L		<				30
1,3-Dichlorobenzene		<	1.0	ug/L		<				30

FINAL REPORT

Report ID: 04262019 91928

Authorized by:

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0019 - EPA 5030B Preparation

Duplicate (B9D0019-DUP1) Source: 19C1274-05 **Prepared: 04/02/19 14:13 Analyzed: 04/02/19 14:13**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,3-Dichloropropane		<	1.0	ug/L		<				30
1,4-Dichlorobenzene		<	1.0	ug/L		<				30
2,2-Dichloropropane		<	1.0	ug/L		<				30
2-Chlorotoluene		<	1.0	ug/L		<				30
4-Chlorotoluene		<	1.0	ug/L		<				30
Acetone		<	20	ug/L		<				30
Allyl chloride		<	1.0	ug/L		<				30
Benzene		<	0.50	ug/L		<				30
Bromobenzene		<	1.0	ug/L		<				30
Bromochloromethane		<	1.0	ug/L		<				30
Bromodichloromethane		<	1.0	ug/L		<				30
Bromoform		<	1.0	ug/L		<				30
Bromomethane	L3, V4, Z-01	<	2.0	ug/L		<				30
Carbon tetrachloride		<	0.20	ug/L		<				30
Chlorobenzene		<	1.0	ug/L		<				30
Chlorodibromomethane		<	0.50	ug/L		<				30
Chloroethane		<	1.0	ug/L		<				30
Chloroform		<	1.0	ug/L		<				30
Chloromethane		<	1.0	ug/L		<				30
cis-1,2-Dichloroethene		<	1.0	ug/L		<				30
cis-1,3-Dichloropropene		<	0.50	ug/L		<				30
Dibromomethane		<	1.0	ug/L		<				30
Dichlorodifluoromethane		<	1.0	ug/L		<				30
Dichlorofluoromethane		<	1.0	ug/L		<				30
Ethyl ether		3.1	1.0	ug/L		3.1			0	30
Ethylbenzene		<	1.0	ug/L		<				30
Hexachlorobutadiene		<	0.50	ug/L		<				30
Isopropylbenzene		<	1.0	ug/L		<				30
Methyl ethyl ketone (MEK)		<	10	ug/L		<				30
Methyl isobutyl ketone (MIBK)		<	5.0	ug/L		<				30
Methyl tertiary butyl ether (MTBE)		<	2.0	ug/L		<				30
Methylene chloride		<	1.0	ug/L		<				30
Naphthalene		<	1.0	ug/L		<				30
n-Butylbenzene		<	1.0	ug/L		<				30
n-Propylbenzene		<	1.0	ug/L		<				30

FINAL REPORT

Report ID: 04262019 91928

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
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St. Paul, MN 55164-0899
651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0019 - EPA 5030B Preparation

Duplicate (B9D0019-DUP1) Source: 19C1274-05 **Prepared: 04/02/19 14:13 Analyzed: 04/02/19 14:13**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
o-Xylene		<	1.0	ug/L		<				30
p&m-Xylene		<	1.0	ug/L		<				30
p-Isopropyltoluene		<	1.0	ug/L		<				30
sec-Butylbenzene		<	1.0	ug/L		<				30
Styrene		<	1.0	ug/L		<				30
tert-Butylbenzene		<	1.0	ug/L		<				30
Tetrachloroethene		<	1.0	ug/L		<				30
Tetrahydrofuran (THF)		2.8	10	ug/L		<			1	30
Toluene		<	1.0	ug/L		<				30
trans-1,2-Dichloroethene		<	1.0	ug/L		<				30
trans-1,3-Dichloropropene		<	0.50	ug/L		<				30
Trichloroethene (TCE)		<	0.10	ug/L		<				30
Trichlorofluoromethane		<	1.0	ug/L		<				30
Vinyl chloride		<	0.050	ug/L		<				30

Matrix Spike (B9D0019-MS1) Source: 19C1274-04 **Prepared: 04/02/19 11:26 Analyzed: 04/02/19 11:26**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: 1,2-Dichlorobenzene-d4		*98*	*70-130*	*%*	*10*					
Surrogate: 4-Bromofluorobenzene		*94*	*70-130*	*%*	*10*					
Surrogate: Methyl tertiary butyl ether-d3		*100*	*70-130*	*%*	*10*					
1,1,1,2-Tetrachloroethane		11	1.0	ug/L	10	<	105	70-130		
1,1,1-Trichloroethane		11	1.0	ug/L	10	<	115	70-130		
1,1,2,2-Tetrachloroethane		9.8	0.50	ug/L	10	<	98	70-130		
1,1,2-Trichloroethane		11	0.50	ug/L	10	<	106	70-130		
1,1,2-Trichlorotrifluoroethane		12	1.0	ug/L	10	<	118	70-130		
1,1-Dichloroethane		11	1.0	ug/L	10	<	111	70-130		
1,1-Dichloroethene		11	1.0	ug/L	10	<	114	70-130		
1,1-Dichloropropene		12	1.0	ug/L	10	<	117	70-130		
1,2,3-Trichlorobenzene		10	1.0	ug/L	10	<	100	70-130		
1,2,3-Trichloropropane		9.7	0.20	ug/L	10	<	97	70-130		
1,2,4-Trichlorobenzene		10	1.0	ug/L	10	<	101	70-130		
1,2,4-Trimethylbenzene		10	1.0	ug/L	10	<	101	70-130		
1,2-Dibromo-3-chloropropane (DBCP)		9.0	1.0	ug/L	10	<	90	70-130		

FINAL REPORT

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St. Paul, MN 55164-0899
651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 9:19

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Batch B9D0019 - EPA 5030B Preparation

Matrix Spike (B9D0019-MS1) Source: 19C1274-04 **Prepared: 04/02/19 11:26 Analyzed: 04/02/19 11:26**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,2-Dibromoethane (EDB)		10	0.50	ug/L	10	<	104	70-130		
1,2-Dichlorobenzene		9.9	1.0	ug/L	10	<	99	70-130		
1,2-Dichloroethane		11	0.20	ug/L	10	<	112	70-130		
1,2-Dichloropropane		11	1.0	ug/L	10	<	113	70-130		
1,3,5-Trimethylbenzene		10	1.0	ug/L	10	<	102	70-130		
1,3-Dichlorobenzene		10	1.0	ug/L	10	<	102	70-130		
1,3-Dichloropropane		11	1.0	ug/L	10	<	105	70-130		
1,4-Dichlorobenzene		10	1.0	ug/L	10	<	104	70-130		
2,2-Dichloropropane		12	1.0	ug/L	10	<	123	70-130		
2-Chlorotoluene		10	1.0	ug/L	10	<	101	70-130		
4-Chlorotoluene		10	1.0	ug/L	10	<	101	70-130		
Acetone		95	20	ug/L	100	<	95	70-130		
Allyl chloride		11	1.0	ug/L	10	<	110	70-130		
Benzene		11	0.50	ug/L	10	<	110	70-130		
Bromobenzene		9.8	1.0	ug/L	10	<	98	70-130		
Bromochloromethane		11	1.0	ug/L	10	<	110	70-130		
Bromodichloromethane		11	1.0	ug/L	10	<	111	70-130		
Bromoform		10	1.0	ug/L	10	<	101	70-130		
Bromomethane	L3, V4, Z-01	7.3	2.0	ug/L	10	<	73	70-130		
Carbon tetrachloride		12	0.20	ug/L	10	<	122	70-130		
Chlorobenzene		11	1.0	ug/L	10	<	107	70-130		
Chlorodibromomethane		10	0.50	ug/L	10	<	101	70-130		
Chloroethane		11	1.0	ug/L	10	<	112	70-130		
Chloroform		11	1.0	ug/L	10	<	114	70-130		
Chloromethane		9.3	1.0	ug/L	10	<	93	70-130		
cis-1,2-Dichloroethene		11	1.0	ug/L	10	<	109	70-130		
cis-1,3-Dichloropropene		11	0.50	ug/L	10	<	106	70-130		
Dibromomethane		11	1.0	ug/L	10	<	112	70-130		
Dichlorodifluoromethane		9.0	1.0	ug/L	10	<	90	70-130		
Dichlorofluoromethane		12	1.0	ug/L	10	<	118	70-130		
Ethyl ether		13	1.0	ug/L	10	3.3	102	70-130		
Ethylbenzene		11	1.0	ug/L	10	<	105	70-130		
Hexachlorobutadiene		10	0.50	ug/L	10	<	104	70-130		
Isopropylbenzene		11	1.0	ug/L	10	<	108	70-130		
Methyl ethyl ketone (MEK)		49	10	ug/L	50	<	99	70-130		

FINAL REPORT

Report ID: 04262019 91928

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651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0019 - EPA 5030B Preparation

Matrix Spike (B9D0019-MS1) Source: 19C1274-04 **Prepared: 04/02/19 11:26 Analyzed: 04/02/19 11:26**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Methyl isobutyl ketone (MIBK)		51	5.0	ug/L	50	<	103	70-130		
Methyl tertiary butyl ether (MTBE)		11	2.0	ug/L	10	<	110	70-130		
Methylene chloride		11	1.0	ug/L	10	<	113	70-130		
Naphthalene		9.6	1.0	ug/L	10	<	96	70-130		
n-Butylbenzene		11	1.0	ug/L	10	<	111	70-130		
n-Propylbenzene		11	1.0	ug/L	10	<	106	70-130		
o-Xylene		10	1.0	ug/L	10	<	103	70-130		
p&m-Xylene		11	1.0	ug/L	10	<	105	70-130		
p-Isopropyltoluene		10	1.0	ug/L	10	<	104	70-130		
sec-Butylbenzene		11	1.0	ug/L	10	<	106	70-130		
Styrene		9.9	1.0	ug/L	10	<	99	70-130		
tert-Butylbenzene		10	1.0	ug/L	10	<	102	70-130		
Tetrachloroethene		11	1.0	ug/L	10	<	106	70-130		
Tetrahydrofuran (THF)		100	10	ug/L	100	<	98	70-130		
Toluene		10	1.0	ug/L	10	<	104	70-130		
trans-1,2-Dichloroethene		11	1.0	ug/L	10	<	111	70-130		
trans-1,3-Dichloropropene		11	0.50	ug/L	10	<	107	70-130		
Trichloroethene (TCE)		11	0.10	ug/L	10	<	108	70-130		
Trichlorofluoromethane		12	1.0	ug/L	10	<	116	70-130		
Vinyl chloride		11	0.050	ug/L	10	<	106	70-130		

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651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0172 - 1,4 Dioxane in Water SPE

Blank (B9D0172-BLK1) **Prepared: 04/11/19 09:00 Analyzed: 04/15/19 10:01**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,4-Dioxane		<	0.050	ug/L						

Blank (B9D0172-BLK2) **Prepared: 04/11/19 09:00 Analyzed: 04/16/19 10:23**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,4-Dioxane		<	0.050	ug/L						

LCS (B9D0172-BS1) **Prepared: 04/11/19 09:00 Analyzed: 04/15/19 10:17**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,4-Dioxane		0.21	0.050	ug/L	0.19		105	80-120		

Duplicate (B9D0172-DUP1) Source: 19C1040-07 **Prepared: 04/11/19 09:00 Analyzed: 04/15/19 10:49**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,4-Dioxane		0.59	0.050	ug/L		0.61			4	30

Matrix Spike (B9D0172-MS1) Source: 19C1040-08 **Prepared: 04/11/19 09:00 Analyzed: 04/15/19 11:21**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,4-Dioxane		0.75	0.051	ug/L	0.45	0.25	109	70-130		

Batch B9D0228 - 1,4 Dioxane in Water SPE

Blank (B9D0228-BLK1) **Prepared: 04/12/19 09:22 Analyzed: 04/23/19 10:25**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,4-Dioxane		<	0.050	ug/L						

Blank (B9D0228-BLK2) **Prepared: 04/12/19 09:22 Analyzed: 04/24/19 17:54**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,4-Dioxane		<	0.050	ug/L						

Blank (B9D0228-BLK3) **Prepared: 04/12/19 09:22 Analyzed: 04/25/19 10:34**

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0228 - 1,4 Dioxane in Water SPE

Blank (B9D0228-BLK3) **Prepared: 04/12/19 09:22 Analyzed: 04/25/19 10:34**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,4-Dioxane		<	0.050	ug/L						

LCS (B9D0228-BS1) **Prepared: 04/12/19 09:22 Analyzed: 04/23/19 10:41**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,4-Dioxane		0.22	0.052	ug/L	0.20		108	80-120		

Duplicate (B9D0228-DUP1) Source: 19C1238-03 **Prepared: 04/12/19 09:22 Analyzed: 04/23/19 13:04**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,4-Dioxane		<	0.050	ug/L		<				30

Matrix Spike (B9D0228-MS2) Source: 19C1238-04RE1 **Prepared: 04/12/19 09:22 Analyzed: 04/24/19 19:29**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,4-Dioxane	D2, M4	28	0.51	ug/L	0.45	29	NR	70-130		

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0105 - PFCs Preparation

Blank (B9D0105-BLK1) **Prepared: 04/05/19 13:42 Analyzed: 04/05/19 13:42**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		<	0.050	ug/L						
Perfluorobutanoic acid (PFBA)		<	0.050	ug/L						
Perfluorohexanesulfonate (PFHxS)		<	0.025	ug/L						
Perfluorohexanoic acid (PFHxA)		<	0.050	ug/L						
Perfluorooctanesulfonate (PFOS)		<	0.025	ug/L						
Perfluorooctanoic acid (PFOA)		<	0.035	ug/L						
Perfluoropentanoic acid (PFPeA)		<	0.050	ug/L						

Blank (B9D0105-BLK2) **Prepared: 04/05/19 18:09 Analyzed: 04/05/19 18:09**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		<	0.050	ug/L						
Perfluorobutanoic acid (PFBA)		<	0.050	ug/L						
Perfluorohexanesulfonate (PFHxS)		<	0.025	ug/L						
Perfluorohexanoic acid (PFHxA)		<	0.050	ug/L						
Perfluorooctanesulfonate (PFOS)		<	0.025	ug/L						
Perfluorooctanoic acid (PFOA)		<	0.035	ug/L						
Perfluoropentanoic acid (PFPeA)		<	0.050	ug/L						

LCS (B9D0105-BS1) **Prepared: 04/05/19 13:34 Analyzed: 04/05/19 13:34**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.49	0.050	ug/L	0.50		98	80-120		
Perfluorobutanoic acid (PFBA)		0.53	0.050	ug/L	0.5		107	80-120		
Perfluorohexanesulfonate (PFHxS)		0.52	0.025	ug/L	0.50		103	80-120		
Perfluorohexanoic acid (PFHxA)		0.50	0.050	ug/L	0.5		101	80-120		
Perfluorooctanesulfonate (PFOS)		0.45	0.025	ug/L	0.49		91	80-120		
Perfluorooctanoic acid (PFOA)		0.49	0.035	ug/L	0.5		98	80-120		
Perfluoropentanoic acid (PFPeA)		0.50	0.050	ug/L	0.5		101	80-120		

LCS Dup (B9D0105-BSD1) **Prepared: 04/05/19 18:01 Analyzed: 04/05/19 18:01**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.53	0.050	ug/L	0.50		106	80-120	8	20
Perfluorobutanoic acid (PFBA)		0.53	0.050	ug/L	0.5		105	80-120	1	20
Perfluorohexanesulfonate (PFHxS)		0.54	0.025	ug/L	0.50		107	80-120	3	20

FINAL REPORT

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0105 - PFCs Preparation

LCS Dup (B9D0105-BSD1) — **Prepared: 04/05/19 18:01 Analyzed: 04/05/19 18:01**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorohexanoic acid (PFHxA)		0.53	0.050	ug/L	0.5		107	80-120	6	20
Perfluorooctanesulfonate (PFOS)		0.49	0.025	ug/L	0.49		97	80-120	6	20
Perfluorooctanoic acid (PFOA)		0.53	0.035	ug/L	0.5		107	80-120	9	20
Perfluoropentanoic acid (PFPeA)		0.52	0.050	ug/L	0.5		103	80-120	3	20

Duplicate (B9D0105-DUP1) — Source: 19C1132-03 — **Prepared: 04/05/19 14:39 Analyzed: 04/05/19 14:39**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		<	0.050	ug/L		<				20
Perfluorobutanoic acid (PFBA)		<	0.050	ug/L		<				20
Perfluorohexanesulfonate (PFHxS)		<	0.025	ug/L		<				20
Perfluorohexanoic acid (PFHxA)		<	0.050	ug/L		<				20
Perfluorooctanesulfonate (PFOS)		<	0.025	ug/L		<				20
Perfluorooctanoic acid (PFOA)		<	0.035	ug/L		<				20
Perfluoropentanoic acid (PFPeA)		<	0.050	ug/L		<				20

Matrix Spike (B9D0105-MS1) — Source: 19C1132-03 — **Prepared: 04/05/19 14:31 Analyzed: 04/05/19 14:31**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.51	0.050	ug/L	0.50	<	102	70-130		
Perfluorobutanoic acid (PFBA)		0.53	0.050	ug/L	0.5	<	106	70-130		
Perfluorohexanesulfonate (PFHxS)		0.51	0.025	ug/L	0.50	<	103	70-130		
Perfluorohexanoic acid (PFHxA)		0.52	0.050	ug/L	0.5	<	104	70-130		
Perfluorooctanesulfonate (PFOS)		0.48	0.025	ug/L	0.49	<	97	70-130		
Perfluorooctanoic acid (PFOA)		0.50	0.035	ug/L	0.5	<	101	70-130		
Perfluoropentanoic acid (PFPeA)		0.52	0.050	ug/L	0.5	<	104	70-130		

Matrix Spike (B9D0105-MS2) — Source: 19C1132-01 — **Prepared: 04/05/19 13:58 Analyzed: 04/05/19 13:58**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.49	0.050	ug/L	0.50	<	97	70-130		
Perfluorobutanoic acid (PFBA)		0.68	0.050	ug/L	0.5	0.17	102	70-130		
Perfluorohexanesulfonate (PFHxS)		0.54	0.025	ug/L	0.50	<	108	70-130		
Perfluorohexanoic acid (PFHxA)		0.53	0.050	ug/L	0.5	<	106	70-130		
Perfluorooctanesulfonate (PFOS)		0.47	0.025	ug/L	0.49	<	95	70-130		
Perfluorooctanoic acid (PFOA)		0.51	0.035	ug/L	0.5	<	102	70-130		

FINAL REPORT

Report ID: 04262019 91928

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0105 - PFCs Preparation

Matrix Spike (B9D0105-MS2) Source: 19C1132-01 **Prepared: 04/05/19 13:58 Analyzed: 04/05/19 13:58**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluoropentanoic acid (PFPeA)		0.53	0.050	ug/L	0.5	<	106	70-130		

Matrix Spike (B9D0105-MS3) Source: 19C1132-02 **Prepared: 04/05/19 14:15 Analyzed: 04/05/19 14:15**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.54	0.050	ug/L	0.50	<	109	70-130		
Perfluorobutanoic acid (PFBA)		0.71	0.050	ug/L	0.5	0.16	109	70-130		
Perfluorohexanesulfonate (PFHxS)		0.49	0.025	ug/L	0.50	<	98	70-130		
Perfluorohexanoic acid (PFHxA)		0.52	0.050	ug/L	0.5	<	103	70-130		
Perfluorooctanesulfonate (PFOS)		0.48	0.025	ug/L	0.49	<	95	70-130		
Perfluorooctanoic acid (PFOA)		0.49	0.035	ug/L	0.5	<	97	70-130		
Perfluoropentanoic acid (PFPeA)		0.52	0.050	ug/L	0.5	<	104	70-130		

Matrix Spike (B9D0105-MS4) Source: 19C1132-04 **Prepared: 04/05/19 15:03 Analyzed: 04/05/19 15:03**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.56	0.050	ug/L	0.50	<	112	70-130		
Perfluorobutanoic acid (PFBA)		0.69	0.050	ug/L	0.5	0.17	104	70-130		
Perfluorohexanesulfonate (PFHxS)		0.51	0.025	ug/L	0.50	<	102	70-130		
Perfluorohexanoic acid (PFHxA)		0.55	0.050	ug/L	0.5	<	109	70-130		
Perfluorooctanesulfonate (PFOS)		0.51	0.025	ug/L	0.49	0.025	97	70-130		
Perfluorooctanoic acid (PFOA)		0.54	0.035	ug/L	0.5	<	101	70-130		
Perfluoropentanoic acid (PFPeA)		0.52	0.050	ug/L	0.5	<	102	70-130		

Matrix Spike (B9D0105-MS5) Source: 19C1132-05 **Prepared: 04/05/19 15:19 Analyzed: 04/05/19 15:19**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.55	0.050	ug/L	0.50	<	109	70-130		
Perfluorobutanoic acid (PFBA)		0.72	0.050	ug/L	0.5	0.19	104	70-130		
Perfluorohexanesulfonate (PFHxS)		0.51	0.025	ug/L	0.50	<	101	70-130		
Perfluorohexanoic acid (PFHxA)		0.53	0.050	ug/L	0.5	<	107	70-130		
Perfluorooctanesulfonate (PFOS)		0.50	0.025	ug/L	0.49	<	96	70-130		
Perfluorooctanoic acid (PFOA)		0.52	0.035	ug/L	0.5	<	100	70-130		
Perfluoropentanoic acid (PFPeA)		0.54	0.050	ug/L	0.5	<	108	70-130		

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St. Paul, MN 55164-0899
651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 9:19

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Batch B9D0105 - PFCs Preparation

Matrix Spike (B9D0105-MS6) Source: 19C1132-06 **Prepared: 04/05/19 15:36 Analyzed: 04/05/19 15:36**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.52	0.050	ug/L	0.50	<	104	70-130		
Perfluorobutanoic acid (PFBA)		0.74	0.050	ug/L	0.5	0.21	105	70-130		
Perfluorohexanesulfonate (PFHxS)		0.51	0.025	ug/L	0.50	<	102	70-130		
Perfluorohexanoic acid (PFHxA)		0.50	0.050	ug/L	0.5	<	99	70-130		
Perfluorooctanesulfonate (PFOS)		0.53	0.025	ug/L	0.49	0.036	99	70-130		
Perfluorooctanoic acid (PFOA)		0.54	0.035	ug/L	0.5	<	101	70-130		
Perfluoropentanoic acid (PFPeA)		0.53	0.050	ug/L	0.5	<	103	70-130		

Matrix Spike (B9D0105-MS7) Source: 19C1132-07 **Prepared: 04/05/19 15:52 Analyzed: 04/05/19 15:52**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.54	0.050	ug/L	0.50	<	108	70-130		
Perfluorobutanoic acid (PFBA)		0.76	0.050	ug/L	0.5	0.23	105	70-130		
Perfluorohexanesulfonate (PFHxS)		0.49	0.025	ug/L	0.50	<	98	70-130		
Perfluorohexanoic acid (PFHxA)		0.50	0.050	ug/L	0.5	<	100	70-130		
Perfluorooctanesulfonate (PFOS)		0.48	0.025	ug/L	0.49	<	97	70-130		
Perfluorooctanoic acid (PFOA)		0.49	0.035	ug/L	0.5	<	94	70-130		
Perfluoropentanoic acid (PFPeA)		0.51	0.050	ug/L	0.5	<	102	70-130		

Matrix Spike (B9D0105-MS8) Source: 19C1132-08 **Prepared: 04/05/19 16:08 Analyzed: 04/05/19 16:08**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.51	0.050	ug/L	0.50	<	102	70-130		
Perfluorobutanoic acid (PFBA)		0.57	0.050	ug/L	0.5	0.052	104	70-130		
Perfluorohexanesulfonate (PFHxS)		0.50	0.025	ug/L	0.50	<	101	70-130		
Perfluorohexanoic acid (PFHxA)		0.53	0.050	ug/L	0.5	<	106	70-130		
Perfluorooctanesulfonate (PFOS)		0.48	0.025	ug/L	0.49	<	95	70-130		
Perfluorooctanoic acid (PFOA)		0.51	0.035	ug/L	0.5	<	102	70-130		
Perfluoropentanoic acid (PFPeA)		0.52	0.050	ug/L	0.5	<	104	70-130		

Matrix Spike (B9D0105-MS9) Source: 19C1132-09 **Prepared: 04/05/19 16:24 Analyzed: 04/05/19 16:24**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.53	0.050	ug/L	0.50	<	105	70-130		
Perfluorobutanoic acid (PFBA)		0.74	0.050	ug/L	0.5	0.22	104	70-130		
Perfluorohexanesulfonate (PFHxS)		0.53	0.025	ug/L	0.50	<	106	70-130		

FINAL REPORT

Report ID: 04262019 91928

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Environmental Laboratory Section
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St. Paul, MN 55164-0899
651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0105 - PFCs Preparation

Matrix Spike (B9D0105-MS9) Source: 19C1132-09 **Prepared: 04/05/19 16:24 Analyzed: 04/05/19 16:24**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorohexanoic acid (PFHxA)		0.50	0.050	ug/L	0.5	<	100	70-130		
Perfluorooctanesulfonate (PFOS)		0.53	0.025	ug/L	0.49	<	100	70-130		
Perfluorooctanoic acid (PFOA)		0.53	0.035	ug/L	0.5	<	100	70-130		
Perfluoropentanoic acid (PFPeA)		0.53	0.050	ug/L	0.5	<	104	70-130		

Matrix Spike (B9D0105-MSA) Source: 19C1132-10 **Prepared: 04/05/19 16:40 Analyzed: 04/05/19 16:40**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.54	0.050	ug/L	0.50	<	108	70-130		
Perfluorobutanoic acid (PFBA)		0.50	0.050	ug/L	0.5	<	101	70-130		
Perfluorohexanesulfonate (PFHxS)		0.51	0.025	ug/L	0.50	<	101	70-130		
Perfluorohexanoic acid (PFHxA)		0.53	0.050	ug/L	0.5	<	106	70-130		
Perfluorooctanesulfonate (PFOS)		0.48	0.025	ug/L	0.49	<	95	70-130		
Perfluorooctanoic acid (PFOA)		0.52	0.035	ug/L	0.5	<	104	70-130		
Perfluoropentanoic acid (PFPeA)		0.52	0.050	ug/L	0.5	<	103	70-130		

Matrix Spike (B9D0105-MSB) Source: 19C1132-11 **Prepared: 04/05/19 16:56 Analyzed: 04/05/19 16:56**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.52	0.050	ug/L	0.50	<	104	70-130		
Perfluorobutanoic acid (PFBA)		0.64	0.050	ug/L	0.5	0.13	103	70-130		
Perfluorohexanesulfonate (PFHxS)		0.50	0.025	ug/L	0.50	<	100	70-130		
Perfluorohexanoic acid (PFHxA)		0.50	0.050	ug/L	0.5	<	101	70-130		
Perfluorooctanesulfonate (PFOS)		0.48	0.025	ug/L	0.49	<	96	70-130		
Perfluorooctanoic acid (PFOA)		0.52	0.035	ug/L	0.5	<	101	70-130		
Perfluoropentanoic acid (PFPeA)		0.54	0.050	ug/L	0.5	<	105	70-130		

Matrix Spike (B9D0105-MSC) Source: 19C1132-12 **Prepared: 04/05/19 17:12 Analyzed: 04/05/19 17:12**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.51	0.050	ug/L	0.50	<	103	70-130		
Perfluorobutanoic acid (PFBA)		0.73	0.050	ug/L	0.5	0.21	104	70-130		
Perfluorohexanesulfonate (PFHxS)		0.50	0.025	ug/L	0.50	<	100	70-130		
Perfluorohexanoic acid (PFHxA)		0.49	0.050	ug/L	0.5	<	98	70-130		
Perfluorooctanesulfonate (PFOS)		0.52	0.025	ug/L	0.49	<	101	70-130		
Perfluorooctanoic acid (PFOA)		0.52	0.035	ug/L	0.5	<	101	70-130		

FINAL REPORT

Report ID: 04262019 91928

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0105 - PFCs Preparation

Matrix Spike (B9D0105-MSC) Source: 19C1132-12 **Prepared: 04/05/19 17:12 Analyzed: 04/05/19 17:12**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluoropentanoic acid (PFPeA)		0.52	0.050	ug/L	0.5	<	104	70-130		

Matrix Spike (B9D0105-MSD) Source: 19C1235-02 **Prepared: 04/05/19 17:29 Analyzed: 04/05/19 17:29**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.52	0.050	ug/L	0.50	<	104	70-130		
Perfluorobutanoic acid (PFBA)		0.52	0.050	ug/L	0.5	<	105	70-130		
Perfluorohexanesulfonate (PFHxS)		0.51	0.025	ug/L	0.50	<	102	70-130		
Perfluorohexanoic acid (PFHxA)		0.51	0.050	ug/L	0.5	<	102	70-130		
Perfluorooctanesulfonate (PFOS)		0.48	0.025	ug/L	0.49	<	96	70-130		
Perfluorooctanoic acid (PFOA)		0.50	0.035	ug/L	0.5	<	100	70-130		
Perfluoropentanoic acid (PFPeA)		0.53	0.050	ug/L	0.5	<	105	70-130		

Matrix Spike Dup (B9D0105-MSD1) Source: 19C1132-03 **Prepared: 04/05/19 14:47 Analyzed: 04/05/19 14:47**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.52	0.050	ug/L	0.50	<	104	70-130	2	20
Perfluorobutanoic acid (PFBA)		0.52	0.050	ug/L	0.5	<	104	70-130	2	20
Perfluorohexanesulfonate (PFHxS)		0.51	0.025	ug/L	0.50	<	103	70-130	0.05	20
Perfluorohexanoic acid (PFHxA)		0.50	0.050	ug/L	0.5	<	99	70-130	4	20
Perfluorooctanesulfonate (PFOS)		0.46	0.025	ug/L	0.49	<	91	70-130	6	20
Perfluorooctanoic acid (PFOA)		0.50	0.035	ug/L	0.5	<	100	70-130	0.4	20
Perfluoropentanoic acid (PFPeA)		0.54	0.050	ug/L	0.5	<	108	70-130	4	20

Matrix Spike (B9D0105-MSE) Source: 19C1235-03 **Prepared: 04/05/19 17:45 Analyzed: 04/05/19 17:45**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.50	0.050	ug/L	0.50	<	100	70-130		
Perfluorobutanoic acid (PFBA)		0.54	0.050	ug/L	0.5	<	104	70-130		
Perfluorohexanesulfonate (PFHxS)		0.52	0.025	ug/L	0.50	<	104	70-130		
Perfluorohexanoic acid (PFHxA)		0.49	0.050	ug/L	0.5	<	98	70-130		
Perfluorooctanesulfonate (PFOS)		0.52	0.025	ug/L	0.49	<	102	70-130		
Perfluorooctanoic acid (PFOA)		0.55	0.035	ug/L	0.5	<	105	70-130		
Perfluoropentanoic acid (PFPeA)		0.55	0.050	ug/L	0.5	<	108	70-130		

FINAL REPORT

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0111 - PFCs Preparation

Blank (B9D0111-BLK1) **Prepared: 04/05/19 18:09 Analyzed: 04/05/19 18:09**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		<	0.050	ug/L						
Perfluorobutanoic acid (PFBA)		<	0.050	ug/L						
Perfluorohexanesulfonate (PFHxS)		<	0.025	ug/L						
Perfluorohexanoic acid (PFHxA)		<	0.050	ug/L						
Perfluorooctanesulfonate (PFOS)		<	0.025	ug/L						
Perfluorooctanoic acid (PFOA)		<	0.035	ug/L						
Perfluoropentanoic acid (PFPeA)		<	0.050	ug/L						

Blank (B9D0111-BLK2) **Prepared: 04/05/19 23:08 Analyzed: 04/05/19 23:08**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		<	0.050	ug/L						
Perfluorobutanoic acid (PFBA)		<	0.050	ug/L						
Perfluorohexanesulfonate (PFHxS)		<	0.025	ug/L						
Perfluorohexanoic acid (PFHxA)		<	0.050	ug/L						
Perfluorooctanesulfonate (PFOS)		<	0.025	ug/L						
Perfluorooctanoic acid (PFOA)		<	0.035	ug/L						
Perfluoropentanoic acid (PFPeA)		<	0.050	ug/L						

LCS (B9D0111-BS1) **Prepared: 04/05/19 18:01 Analyzed: 04/05/19 18:01**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.53	0.050	ug/L	0.50		106	80-120		
Perfluorobutanoic acid (PFBA)		0.53	0.050	ug/L	0.5		105	80-120		
Perfluorohexanesulfonate (PFHxS)		0.54	0.025	ug/L	0.50		107	80-120		
Perfluorohexanoic acid (PFHxA)		0.53	0.050	ug/L	0.5		107	80-120		
Perfluorooctanesulfonate (PFOS)		0.49	0.025	ug/L	0.49		97	80-120		
Perfluorooctanoic acid (PFOA)		0.53	0.035	ug/L	0.5		107	80-120		
Perfluoropentanoic acid (PFPeA)		0.52	0.050	ug/L	0.5		103	80-120		

LCS Dup (B9D0111-BSD1) **Prepared: 04/05/19 23:00 Analyzed: 04/05/19 23:00**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.50	0.050	ug/L	0.50		101	80-120	6	20
Perfluorobutanoic acid (PFBA)		0.52	0.050	ug/L	0.5		105	80-120	0.5	20
Perfluorohexanesulfonate (PFHxS)		0.50	0.025	ug/L	0.50		101	80-120	6	20

FINAL REPORT

Report ID: 04262019 91928

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St. Paul, MN 55164-0899
651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0111 - PFCs Preparation

LCS Dup (B9D0111-BSD1) — **Prepared: 04/05/19 23:00 Analyzed: 04/05/19 23:00**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorohexanoic acid (PFHxA)		0.51	0.050	ug/L	0.5		102	80-120	4	20
Perfluorooctanesulfonate (PFOS)		0.50	0.025	ug/L	0.49		100	80-120	3	20
Perfluorooctanoic acid (PFOA)		0.52	0.035	ug/L	0.5		104	80-120	2	20
Perfluoropentanoic acid (PFPeA)		0.53	0.050	ug/L	0.5		106	80-120	3	20

Duplicate (B9D0111-DUP1) — Source: 19C1235-04 — **Prepared: 04/05/19 18:33 Analyzed: 04/05/19 18:33**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		<	0.050	ug/L		<				20
Perfluorobutanoic acid (PFBA)	J	0.018	0.050	ug/L		<			15	20
Perfluorohexanesulfonate (PFHxS)		<	0.025	ug/L		<				20
Perfluorohexanoic acid (PFHxA)		<	0.050	ug/L		<				20
Perfluorooctanesulfonate (PFOS)	J	0.011	0.025	ug/L		<			19	20
Perfluorooctanoic acid (PFOA)	J	0.019	0.035	ug/L		<			13	20
Perfluoropentanoic acid (PFPeA)		<	0.050	ug/L		<				20

Matrix Spike (B9D0111-MS1) — Source: 19C1235-04 — **Prepared: 04/05/19 18:25 Analyzed: 04/05/19 18:25**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.50	0.050	ug/L	0.50	<	101	70-130		
Perfluorobutanoic acid (PFBA)		0.54	0.050	ug/L	0.5	<	104	70-130		
Perfluorohexanesulfonate (PFHxS)		0.50	0.025	ug/L	0.50	<	100	70-130		
Perfluorohexanoic acid (PFHxA)		0.52	0.050	ug/L	0.5	<	105	70-130		
Perfluorooctanesulfonate (PFOS)		0.49	0.025	ug/L	0.49	<	96	70-130		
Perfluorooctanoic acid (PFOA)		0.50	0.035	ug/L	0.5	<	96	70-130		
Perfluoropentanoic acid (PFPeA)		0.52	0.050	ug/L	0.5	<	104	70-130		

Matrix Spike (B9D0111-MS2) — Source: 19C1235-05 — **Prepared: 04/05/19 18:58 Analyzed: 04/05/19 18:58**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.52	0.050	ug/L	0.50	<	103	70-130		
Perfluorobutanoic acid (PFBA)		0.52	0.050	ug/L	0.5	<	101	70-130		
Perfluorohexanesulfonate (PFHxS)		0.51	0.025	ug/L	0.50	<	102	70-130		
Perfluorohexanoic acid (PFHxA)		0.52	0.050	ug/L	0.5	<	104	70-130		
Perfluorooctanesulfonate (PFOS)		0.50	0.025	ug/L	0.49	<	96	70-130		
Perfluorooctanoic acid (PFOA)		0.51	0.035	ug/L	0.5	<	101	70-130		

FINAL REPORT

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651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0111 - PFCs Preparation

Matrix Spike (B9D0111-MS2) Source: 19C1235-05 **Prepared: 04/05/19 18:58 Analyzed: 04/05/19 18:58**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluoropentanoic acid (PFPeA)		0.53	0.050	ug/L	0.5	<	105	70-130		

Matrix Spike (B9D0111-MS3) Source: 19C1235-06 **Prepared: 04/05/19 19:14 Analyzed: 04/05/19 19:14**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.52	0.050	ug/L	0.50	<	104	70-130		
Perfluorobutanoic acid (PFBA)		0.56	0.050	ug/L	0.5	<	105	70-130		
Perfluorohexanesulfonate (PFHxS)		0.53	0.025	ug/L	0.50	<	102	70-130		
Perfluorohexanoic acid (PFHxA)		0.63	0.050	ug/L	0.5	0.11	104	70-130		
Perfluorooctanesulfonate (PFOS)		0.68	0.025	ug/L	0.49	0.20	98	70-130		
Perfluorooctanoic acid (PFOA)		1.5	0.035	ug/L	0.5	1.0	95	70-130		
Perfluoropentanoic acid (PFPeA)		0.57	0.050	ug/L	0.5	0.062	101	70-130		

Matrix Spike (B9D0111-MS4) Source: 19C1235-07 **Prepared: 04/05/19 19:30 Analyzed: 04/05/19 19:30**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.53	0.050	ug/L	0.50	<	105	70-130		
Perfluorobutanoic acid (PFBA)		0.57	0.050	ug/L	0.5	<	104	70-130		
Perfluorohexanesulfonate (PFHxS)		0.52	0.025	ug/L	0.50	<	101	70-130		
Perfluorohexanoic acid (PFHxA)		0.51	0.050	ug/L	0.5	<	98	70-130		
Perfluorooctanesulfonate (PFOS)		0.50	0.025	ug/L	0.49	0.045	90	70-130		
Perfluorooctanoic acid (PFOA)		0.70	0.035	ug/L	0.5	0.19	102	70-130		
Perfluoropentanoic acid (PFPeA)		0.55	0.050	ug/L	0.5	<	107	70-130		

Matrix Spike (B9D0111-MS5) Source: 19C1235-08 **Prepared: 04/05/19 19:46 Analyzed: 04/05/19 19:46**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.53	0.050	ug/L	0.50	<	105	70-130		
Perfluorobutanoic acid (PFBA)		0.63	0.050	ug/L	0.5	0.10	106	70-130		
Perfluorohexanesulfonate (PFHxS)		0.54	0.025	ug/L	0.50	<	105	70-130		
Perfluorohexanoic acid (PFHxA)		0.59	0.050	ug/L	0.5	0.084	101	70-130		
Perfluorooctanesulfonate (PFOS)		0.60	0.025	ug/L	0.49	0.082	103	70-130		
Perfluorooctanoic acid (PFOA)		0.91	0.035	ug/L	0.5	0.39	104	70-130		
Perfluoropentanoic acid (PFPeA)		0.56	0.050	ug/L	0.5	<	106	70-130		

FINAL REPORT

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0111 - PFCs Preparation

Matrix Spike (B9D0111-MS6) Source: 19C1235-09 **Prepared: 04/05/19 20:03 Analyzed: 04/05/19 20:03**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.53	0.050	ug/L	0.50	<	104	70-130		
Perfluorobutanoic acid (PFBA)		0.62	0.050	ug/L	0.5	0.11	103	70-130		
Perfluorohexanesulfonate (PFHxS)		0.53	0.025	ug/L	0.50	<	103	70-130		
Perfluorohexanoic acid (PFHxA)		0.57	0.050	ug/L	0.5	0.061	101	70-130		
Perfluorooctanesulfonate (PFOS)		0.53	0.025	ug/L	0.49	0.083	89	70-130		
Perfluorooctanoic acid (PFOA)		0.86	0.035	ug/L	0.5	0.36	100	70-130		
Perfluoropentanoic acid (PFPeA)		0.53	0.050	ug/L	0.5	<	102	70-130		

Matrix Spike (B9D0111-MS7) Source: 19C1235-10 **Prepared: 04/05/19 20:19 Analyzed: 04/05/19 20:19**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.51	0.050	ug/L	0.50	<	101	70-130		
Perfluorobutanoic acid (PFBA)		0.56	0.050	ug/L	0.5	<	104	70-130		
Perfluorohexanesulfonate (PFHxS)		0.54	0.025	ug/L	0.50	0.031	102	70-130		
Perfluorohexanoic acid (PFHxA)		0.57	0.050	ug/L	0.5	0.057	102	70-130		
Perfluorooctanesulfonate (PFOS)		0.63	0.025	ug/L	0.49	0.17	93	70-130		
Perfluorooctanoic acid (PFOA)		3.0	0.035	ug/L	0.5	2.6	82	70-130		
Perfluoropentanoic acid (PFPeA)		0.53	0.050	ug/L	0.5	<	103	70-130		

Matrix Spike (B9D0111-MS8) Source: 19C1235-11 **Prepared: 04/05/19 20:35 Analyzed: 04/05/19 20:35**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.53	0.050	ug/L	0.50	<	104	70-130		
Perfluorobutanoic acid (PFBA)		0.58	0.050	ug/L	0.5	0.067	102	70-130		
Perfluorohexanesulfonate (PFHxS)		0.55	0.025	ug/L	0.50	0.030	105	70-130		
Perfluorohexanoic acid (PFHxA)		0.58	0.050	ug/L	0.5	<	106	70-130		
Perfluorooctanesulfonate (PFOS)		0.63	0.025	ug/L	0.49	0.13	100	70-130		
Perfluorooctanoic acid (PFOA)		1.0	0.035	ug/L	0.5	0.57	96	70-130		
Perfluoropentanoic acid (PFPeA)		0.54	0.050	ug/L	0.5	<	105	70-130		

Matrix Spike (B9D0111-MS9) Source: 19C1235-12 **Prepared: 04/05/19 20:51 Analyzed: 04/05/19 20:51**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.56	0.050	ug/L	0.50	<	107	70-130		
Perfluorohexanesulfonate (PFHxS)		0.79	0.025	ug/L	0.50	0.29	99	70-130		
Perfluorohexanoic acid (PFHxA)		1.4	0.050	ug/L	0.5	0.89	103	70-130		

FINAL REPORT

Report ID: 04262019 91928

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 9:19

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Batch B9D0111 - PFCs Preparation

Matrix Spike (B9D0111-MS9) Source: 19C1235-12 **Prepared: 04/05/19 20:51 Analyzed: 04/05/19 20:51**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorooctanesulfonate (PFOS)		0.56	0.025	ug/L	0.49	0.092	94	70-130		
Perfluorooctanoic acid (PFOA)		0.87	0.035	ug/L	0.5	0.41	92	70-130		
Perfluoropentanoic acid (PFPeA)		1.5	0.050	ug/L	0.5	1.0	99	70-130		

Matrix Spike (B9D0111-MSA) Source: 19C1238-01 **Prepared: 04/05/19 21:07 Analyzed: 04/05/19 21:07**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.53	0.050	ug/L	0.50	<	107	70-130		
Perfluorohexanesulfonate (PFHxS)		0.54	0.025	ug/L	0.50	<	105	70-130		
Perfluorohexanoic acid (PFHxA)		0.58	0.050	ug/L	0.5	0.063	104	70-130		
Perfluorooctanesulfonate (PFOS)		0.51	0.025	ug/L	0.49	<	99	70-130		
Perfluorooctanoic acid (PFOA)		0.73	0.035	ug/L	0.5	0.23	100	70-130		
Perfluoropentanoic acid (PFPeA)		0.59	0.050	ug/L	0.5	0.058	106	70-130		

Matrix Spike (B9D0111-MSB) Source: 19C1238-02 **Prepared: 04/05/19 21:23 Analyzed: 04/05/19 21:23**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.53	0.050	ug/L	0.50	<	106	70-130		
Perfluorobutanoic acid (PFBA)		0.86	0.050	ug/L	0.5	0.33	106	70-130		
Perfluorohexanesulfonate (PFHxS)		0.51	0.025	ug/L	0.50	<	102	70-130		
Perfluorohexanoic acid (PFHxA)		0.52	0.050	ug/L	0.5	<	105	70-130		
Perfluorooctanesulfonate (PFOS)		0.51	0.025	ug/L	0.49	<	98	70-130		
Perfluorooctanoic acid (PFOA)		0.57	0.035	ug/L	0.5	0.057	102	70-130		
Perfluoropentanoic acid (PFPeA)		0.52	0.050	ug/L	0.5	<	102	70-130		

Matrix Spike (B9D0111-MSC) Source: 19C1238-03 **Prepared: 04/05/19 21:39 Analyzed: 04/05/19 21:39**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.52	0.050	ug/L	0.50	<	104	70-130		
Perfluorobutanoic acid (PFBA)		1.0	0.050	ug/L	0.5	0.53	101	70-130		
Perfluorohexanesulfonate (PFHxS)		0.50	0.025	ug/L	0.50	<	99	70-130		
Perfluorohexanoic acid (PFHxA)		0.53	0.050	ug/L	0.5	<	103	70-130		
Perfluorooctanesulfonate (PFOS)		0.53	0.025	ug/L	0.49	0.046	97	70-130		
Perfluorooctanoic acid (PFOA)		0.59	0.035	ug/L	0.5	0.11	97	70-130		
Perfluoropentanoic acid (PFPeA)		0.54	0.050	ug/L	0.5	<	105	70-130		

FINAL REPORT

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0111 - PFCs Preparation

Matrix Spike (B9D0111-MSD) Source: 19C1238-04 **Prepared: 04/05/19 21:56 Analyzed: 04/05/19 21:56**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.68	0.050	ug/L	0.50	0.16	103	70-130		
Perfluorohexanesulfonate (PFHxS)		0.73	0.025	ug/L	0.50	0.27	92	70-130		
Perfluorohexanoic acid (PFHxA)		3.2	0.050	ug/L	0.5	2.8	74	70-130		
Perfluorooctanesulfonate (PFOS)		1.1	0.025	ug/L	0.49	0.56	99	70-130		
Perfluoropentanoic acid (PFPeA)		2.4	0.050	ug/L	0.5	1.9	98	70-130		

Matrix Spike Dup (B9D0111-MSD1) Source: 19C1235-04 **Prepared: 04/05/19 18:41 Analyzed: 04/05/19 18:41**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.54	0.050	ug/L	0.50	<	108	70-130	7	20
Perfluorobutanoic acid (PFBA)		0.53	0.050	ug/L	0.5	<	102	70-130	1	20
Perfluorohexanesulfonate (PFHxS)		0.50	0.025	ug/L	0.50	<	100	70-130	0.1	20
Perfluorohexanoic acid (PFHxA)		0.52	0.050	ug/L	0.5	<	104	70-130	0.3	20
Perfluorooctanesulfonate (PFOS)		0.49	0.025	ug/L	0.49	<	96	70-130	0.08	20
Perfluorooctanoic acid (PFOA)		0.50	0.035	ug/L	0.5	<	96	70-130	0.4	20
Perfluoropentanoic acid (PFPeA)		0.52	0.050	ug/L	0.5	<	103	70-130	0.8	20

Matrix Spike (B9D0111-MSE) Source: 19C1238-05 **Prepared: 04/05/19 22:12 Analyzed: 04/05/19 22:12**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.78	0.050	ug/L	0.50	0.25	106	70-130		
Perfluorohexanesulfonate (PFHxS)		0.83	0.025	ug/L	0.50	0.32	104	70-130		
Perfluorohexanoic acid (PFHxA)		3.9	0.050	ug/L	0.5	3.3	120	70-130		
Perfluorooctanesulfonate (PFOS)		1.4	0.025	ug/L	0.49	0.97	87	70-130		
Perfluoropentanoic acid (PFPeA)		2.9	0.050	ug/L	0.5	2.5	99	70-130		

Matrix Spike (B9D0111-MSF) Source: 19C1238-06 **Prepared: 04/05/19 22:28 Analyzed: 04/05/19 22:28**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.77	0.050	ug/L	0.50	0.25	103	70-130		
Perfluorohexanesulfonate (PFHxS)		0.76	0.025	ug/L	0.50	0.27	98	70-130		
Perfluorohexanoic acid (PFHxA)		5.6	0.050	ug/L	0.5	5.2	77	70-130		
Perfluorooctanesulfonate (PFOS)		1.1	0.025	ug/L	0.49	0.64	93	70-130		
Perfluoropentanoic acid (PFPeA)		4.3	0.050	ug/L	0.5	3.9	80	70-130		

FINAL REPORT

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601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0111 - PFCs Preparation

Matrix Spike (B9D0111-MSG) Source: 19C1238-07 **Prepared: 04/05/19 22:44 Analyzed: 04/05/19 22:44**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.57	0.050	ug/L	0.50	<	105	70-130		
Perfluorohexanesulfonate (PFHxS)		0.59	0.025	ug/L	0.50	0.085	100	70-130		
Perfluorohexanoic acid (PFHxA)		1.3	0.050	ug/L	0.5	0.85	95	70-130		
Perfluorooctanesulfonate (PFOS)		0.59	0.025	ug/L	0.49	0.091	99	70-130		
Perfluoropentanoic acid (PFPeA)		1.1	0.050	ug/L	0.5	0.59	105	70-130		

Batch B9D0150 - PFCs Preparation

Blank (B9D0150-BLK1) **Prepared: 04/08/19 20:22 Analyzed: 04/08/19 20:22**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		<	0.050	ug/L						
Perfluorobutanoic acid (PFBA)		<	0.050	ug/L						
Perfluorohexanesulfonate (PFHxS)		<	0.025	ug/L						
Perfluorohexanoic acid (PFHxA)		<	0.050	ug/L						
Perfluorooctanesulfonate (PFOS)		<	0.025	ug/L						
Perfluorooctanoic acid (PFOA)		<	0.035	ug/L						
Perfluoropentanoic acid (PFPeA)		<	0.050	ug/L						

Blank (B9D0150-BLK2) **Prepared: 04/09/19 02:25 Analyzed: 04/09/19 02:25**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		<	0.050	ug/L						
Perfluorobutanoic acid (PFBA)		<	0.050	ug/L						
Perfluorohexanesulfonate (PFHxS)		<	0.025	ug/L						
Perfluorohexanoic acid (PFHxA)		<	0.050	ug/L						
Perfluorooctanesulfonate (PFOS)		<	0.025	ug/L						
Perfluorooctanoic acid (PFOA)		<	0.035	ug/L						
Perfluoropentanoic acid (PFPeA)		<	0.050	ug/L						

LCS (B9D0150-BS1) **Prepared: 04/08/19 20:14 Analyzed: 04/08/19 20:14**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.50	0.050	ug/L	0.50		101	80-120		
Perfluorobutanoic acid (PFBA)		0.52	0.050	ug/L	0.5		103	80-120		
Perfluorohexanesulfonate (PFHxS)		0.53	0.025	ug/L	0.50		105	80-120		

FINAL REPORT

Report ID: 04262019 91928

Authorized by:

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0150 - PFCs Preparation

LCS (B9D0150-BS1) **Prepared: 04/08/19 20:14 Analyzed: 04/08/19 20:14**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorohexanoic acid (PFHxA)		0.54	0.050	ug/L	0.5		108	80-120		
Perfluorooctanesulfonate (PFOS)		0.51	0.025	ug/L	0.49		102	80-120		
Perfluorooctanoic acid (PFOA)		0.52	0.035	ug/L	0.5		104	80-120		
Perfluoropentanoic acid (PFPeA)		0.51	0.050	ug/L	0.5		103	80-120		

LCS Dup (B9D0150-BSD1) **Prepared: 04/09/19 02:17 Analyzed: 04/09/19 02:17**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.51	0.050	ug/L	0.50		102	80-120	1	20
Perfluorobutanoic acid (PFBA)		0.52	0.050	ug/L	0.5		105	80-120	1	20
Perfluorohexanesulfonate (PFHxS)		0.53	0.025	ug/L	0.50		106	80-120	0.2	20
Perfluorohexanoic acid (PFHxA)		0.54	0.050	ug/L	0.5		108	80-120	0.3	20
Perfluorooctanesulfonate (PFOS)		0.54	0.025	ug/L	0.49		109	80-120	6	20
Perfluorooctanoic acid (PFOA)		0.51	0.035	ug/L	0.5		102	80-120	1	20
Perfluoropentanoic acid (PFPeA)		0.54	0.050	ug/L	0.5		108	80-120	5	20

Duplicate (B9D0150-DUP1) Source: 19C1235-12RE1 **Prepared: 04/08/19 20:46 Analyzed: 04/08/19 20:46**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)	D1	<	0.25	ug/L		<				20
Perfluorobutanoic acid (PFBA)	D1	7.4	0.25	ug/L		7.4			1	20
Perfluorohexanesulfonate (PFHxS)	D1	0.26	0.12	ug/L		0.31			15	20
Perfluorohexanoic acid (PFHxA)	D1	0.99	0.25	ug/L		0.85			15	20
Perfluorooctanesulfonate (PFOS)	D1	<	0.12	ug/L		<				20
Perfluorooctanoic acid (PFOA)	D1	0.44	0.18	ug/L		0.41			6	20
Perfluoropentanoic acid (PFPeA)	D1	1.2	0.25	ug/L		1.1			6	20

Matrix Spike (B9D0150-MS1) Source: 19C1235-12RE1 **Prepared: 04/08/19 20:38 Analyzed: 04/08/19 20:38**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)	D1	2.4	0.25	ug/L	2.50	<	95	70-130		
Perfluorobutanoic acid (PFBA)	D1	9.9	0.25	ug/L	2.5	7.4	100	70-130		
Perfluorohexanesulfonate (PFHxS)	D1	2.8	0.12	ug/L	2.50	0.31	101	70-130		
Perfluorohexanoic acid (PFHxA)	D1	3.5	0.25	ug/L	2.5	0.85	104	70-130		
Perfluorooctanesulfonate (PFOS)	D1	2.8	0.12	ug/L	2.49	<	107	70-130		
Perfluorooctanoic acid (PFOA)	D1	3.0	0.18	ug/L	2.5	0.41	102	70-130		

FINAL REPORT

Report ID: 04262019 91928

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0150 - PFCs Preparation

Matrix Spike (B9D0150-MS1) Source: 19C1235-12RE1 **Prepared: 04/08/19 20:38 Analyzed: 04/08/19 20:38**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluoropentanoic acid (PFPeA)	D1	3.7	0.25	ug/L	2.5	1.1	104	70-130		

Matrix Spike (B9D0150-MS2) Source: 19C1238-01RE1 **Prepared: 04/08/19 21:10 Analyzed: 04/08/19 21:10**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)	D1	7.6	0.25	ug/L	2.5	5.1	100	70-130		

Matrix Spike (B9D0150-MS3) Source: 19C1238-04RE1 **Prepared: 04/08/19 21:27 Analyzed: 04/08/19 21:27**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorooctanoic acid (PFOA)	D1	15	0.18	ug/L	2.5	13	74	70-130		

Matrix Spike (B9D0150-MS5) Source: 19C1238-04RE3 **Prepared: 04/08/19 21:59 Analyzed: 04/08/19 21:59**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)	D1	220	5.0	ug/L	50	170	95	70-130		

Matrix Spike (B9D0150-MS6) Source: 19C1238-05RE1 **Prepared: 04/08/19 22:15 Analyzed: 04/08/19 22:15**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorooctanoic acid (PFOA)	D1	19	0.18	ug/L	2.5	17	80	70-130		

Matrix Spike (B9D0150-MS8) Source: 19C1238-05RE3 **Prepared: 04/08/19 22:48 Analyzed: 04/08/19 22:48**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)	D1	280	5.0	ug/L	50	250	73	70-130		

Matrix Spike (B9D0150-MSA) Source: 19C1238-06RE2 **Prepared: 04/08/19 23:20 Analyzed: 04/08/19 23:20**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorooctanoic acid (PFOA)	D1	30	0.70	ug/L	10	19	103	70-130		

Matrix Spike (B9D0150-MSB) Source: 19C1238-06RE3 **Prepared: 04/08/19 23:36 Analyzed: 04/08/19 23:36**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)	D1	490	5.0	ug/L	50	450	83	70-130		

FINAL REPORT

Report ID: 04262019 91928

Authorized by:

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Environmental Laboratory Section
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St. Paul, MN 55164-0899
651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0150 - PFCs Preparation

Matrix Spike (B9D0150-MSC) Source: 19C1238-07RE1 **Prepared: 04/08/19 23:52 Analyzed: 04/08/19 23:52**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorooctanoic acid (PFOA)	D1	5.8	0.18	ug/L	2.5	3.4	96	70-130		

Matrix Spike (B9D0150-MSD) Source: 19C1238-07RE2 **Prepared: 04/09/19 00:08 Analyzed: 04/09/19 00:08**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)	D1, H2	57	1.0	ug/L	10	45	122	70-130		

Matrix Spike Dup (B9D0150-MSD1) Source: 19C1235-12RE1 **Prepared: 04/08/19 20:54 Analyzed: 04/08/19 20:54**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)	D1	2.6	0.25	ug/L	2.50	<	102	70-130	7	20
Perfluorobutanoic acid (PFBA)	D1	10	0.25	ug/L	2.5	7.4	107	70-130	2	20
Perfluorohexanesulfonate (PFHxS)	D1	2.9	0.12	ug/L	2.50	0.31	104	70-130	2	20
Perfluorohexanoic acid (PFHxA)	D1	3.5	0.25	ug/L	2.5	0.85	106	70-130	1	20
Perfluorooctanesulfonate (PFOS)	D1	2.6	0.12	ug/L	2.49	<	102	70-130	5	20
Perfluorooctanoic acid (PFOA)	D1	3.0	0.18	ug/L	2.5	0.41	104	70-130	2	20
Perfluoropentanoic acid (PFPeA)	D1	3.7	0.25	ug/L	2.5	1.1	104	70-130	0.3	20

Matrix Spike (B9D0150-MSF) Source: 19C1238-14RE2 **Prepared: 04/09/19 00:40 Analyzed: 04/09/19 00:40**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)	D1	160	1.0	ug/L	10	160	83	70-130		

Matrix Spike (B9D0150-MSH) Source: 19C1238-15RE2 **Prepared: 04/09/19 01:12 Analyzed: 04/09/19 01:12**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)	D1	87	1.0	ug/L	10	80	70	70-130		
Perfluorooctanoic acid (PFOA)	D1	16	0.70	ug/L	10	6.2	102	70-130		

Matrix Spike (B9D0150-MSI) Source: 19C1238-16RE1 **Prepared: 04/09/19 01:29 Analyzed: 04/09/19 01:29**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)	D1	25	0.25	ug/L	2.5	23	72	70-130		

Matrix Spike (B9D0150-MSK) Source: 19C1238-21RE1 **Prepared: 04/09/19 02:01 Analyzed: 04/09/19 02:01**

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Public Health Laboratory, Minnesota Department of Health

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651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0150 - PFCs Preparation

Matrix Spike (B9D0150-MSK) Source: 19C1238-21RE1 **Prepared: 04/09/19 02:01 Analyzed: 04/09/19 02:01**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)	D1	17	0.25	ug/L	2.5	14	107	70-130		

Authorized by:

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

Minnesota Department of Health
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Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
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Final Report
Quality Control

Data Qualifiers and Definitions

Z-01a	Low bias demonstrated by continuing calibration verification standard, samples may also display a low bias. Matrix spike recovery was low; the associated LCS/LCSD recovery was also low.
Z-01	Low bias demonstrated by continuing calibration verification standard, samples may also display a low bias.
V4	Calibration verification standard recovery was below method acceptance limits. See comments or additional qualifiers.
M4	The analysis of the spiked sample required a dilution such that the spike recovery calculation does not provide useful information. The associated laboratory control sample and/or laboratory control sample duplicate recovery was acceptable.
L3	The spike recovery was below laboratory acceptance limits for the associated laboratory control sample and/or laboratory control sample duplicate.
J	Analyte was present between the method detection limit and reporting limit and should be considered an estimated value.
H2	Initial analysis within holding time. Reanalysis for the required dilution was past holding time.
F5	The sample pH was greater than 2. The sample was analyzed within the 7 day holding time.
D2	Sample required dilution due to high concentration of target analyte(s). Reporting limit has been raised.
D1	Sample required dilution due to matrix. Reporting limit has been raised.
Dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
%REC	Percent Recovery

Authorized by:

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

MINNESOTA MDH DEPARTMENT OF HEALTH

Protecting, maintaining and improving the health of all Minnesotans

Report Date: 4/26/19
Client Name: QW - MPCA - Closed Landfill Assessment
Project Code: QW
Project Name: Closed Landfill Assessment

Work Order Number: 19C1274

Report To: QW - MPCA - Closed Landfill Assessment
Mark Umholtz
520 Lafayette Rd.
Saint Paul, MN 55155

The MDH Public Health Laboratory performs chemical, bacteriological and radiological analyses of environmental samples including water, waste water, sediment, air, soil and hazardous material. The laboratory provides testing services in accordance with standard operating procedures referencing approved methodology as defined in Standard Methods for the Examination of Water and Wastewater, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods: EPA SW-846, and 40 Code of Federal Regulation (CFR) parts 136, 141, and 261. In cases where analytes of interest do not have corresponding EPA approved methodology, the MDH Public Health Laboratory uses in-house methods that have undergone rigorous validation and documentation.

The results within this report are in compliance with the terms and conditions stated in the standard operating procedures, reference methodologies, and quality assurance project plan; unless otherwise narrated in the attached report.

Release of the data contained in this report has been authorized by laboratory management and is verified with the following signature affirmation. Thank you for using the MDH Public Health Laboratory.

Sincerely,

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Summary of Samples Received

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name: SW-57
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 16:02

Work Order Comment: The program code is QW per B. Scruton. -CNN 4/1/19 Use facility code SW-57 per M. Umholtz. -CNN 4/11/19

Field ID	MDH Sample Number	Matrix	Date & Time Collected	Date & Time Received	Receipt °C
Trip Blank 2	19C1274-01	QC-BLANK	03/28/19 7:30	03/29/19 11:47	1.1
462520	19C1274-02	Wtr-Ground	03/28/19 11:25	03/29/19 11:47	1.1
240818	19C1274-03	Wtr-Ground	03/28/19 11:00	03/29/19 11:47	1.1
462523	19C1274-04	Wtr-Ground	03/28/19 12:30	03/29/19 11:47	1.1
434011	19C1274-05	Wtr-Ground	03/28/19 14:20	03/29/19 11:47	1.1

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

Minnesota Pollution Control Agency

Chain-of-Custody Form revison 2013.0909

Work Order Number: 19C1274 | COC Type: Standard | Page:
Turnaround Time: Standard | COC ID:

PROJECT/CLIENT INFO				LABORATORY			
Facility Code:	MN SW-057	Program Code (MDH Lab Only):		Lab Name:	Minnesota Department of Health		
Project Name:	19-01567 MPCA Freeway Landfill 2019 MDH	Project Task Code:	PRJ07786	Address:	601 Robert Street N.		
Project Manager:	Mark Umholtz	651-757-2308			St. Paul	MN	55155
Potential Hazard?	If yes, add information to Sampler Comments Section			Phone No:	651-201-5058		

SAMPLE TYPE CODES
Sample=Routine Sample; S-IVP=Integrated Vertical Profile Sample; S-CWOP=Composite Sample; QC-FB=Field Blank Sample; QC-FR=Field Replicate Sample; QC-TB=Trip Blank Sample

LAB MATRIX CODES
DW=Drinking Water; NW=Non-potable Water; SD=Soil/Solid; WP=Wipe; AR=Air; BL=Biological Material; OT=Other; TS=Tissue

FIELD MATRIX CODES
Wtr-Ground=Groundwater; Wtr-Surf=Surface Water; QC-BLANK=Artificial Blank Water; Leachate=Leachate Sample

SAMPLE DETAILS / ANALYSIS REQUESTED

Location Identifier	Sample Type	Date	Time	Start Depth, in meters	End Depth, in meters	Grab (G) or Composite (C) Sample	Lab Matrix Code	Field Matrix Code	AIS	Sampler Comments (filter volume, special handling, etc.)	# of Cont	ANALYSIS	VOCs EPA 8260D	PFAS by MDH555	1,4 Dioxane				Lab Sample No.	#
										PRESERV.			HCl	None	None					
Trip Blank 2	QC-TB	3/28/19	0730			G	NW	QC-Blank	N		3		X						-01	1
462520	Sample	3/28/19	1125			G	NW	Wtr-Ground	N		5		X	X	X				-02	2
240818	Sample	3/28/19	1100			G	NW	Wtr-Ground	N		5		X	X	X				-03	3
462523	Sample	3/28/19	1230			G	NW	Wtr-Ground	N		5		X	X	X				-04	4
434011	Sample	3/28/19	1420			G	NW	Wtr-Ground	N		5		X	X	X				-05	5
									N											6
									N	SRA 3/28/19										7
									N											8
									N											9
									N											10

Sampled By: David Anderson / Chris Pelosi | Sampler's Signature: David Anderson / | Phone #:

Receiving Comments:

Relinquished By/Affiliation	Date/Time	Accepted By/ Affiliation	Date/Time
(Sampler) David Anderson / Pace Analytical	3/28/19 1630	Pace	3/29/19 9:00AM
	3/29/19 1145		3-29-19 11:47

DEPARTMENT OF HEALTH

Sample Condition Upon Receipt

Minnesota Department of Health Public Health Laboratory

Data Entry Worksheet

19C1274

Parcel Information

Date & time of receipt: MAR 29'19 11:47

Courier: ☒ Walk-in ☐ FedEx ☐ Spee-Dee ☐ UPS ☐ USPS ☐ Other courier _____

Tracking # _____

After hours drop-off: ☐ Refrigerator (207) (186) ( ) ☐ Freezer (185) ( ) ☐ Unrefrigerated

Parcel: ☒ Plastic cooler ☐ Styrofoam/cardboard cooler ☐ Cardboard box ☐ Envelope ☐ Plastic can ☐ None ☐ Other _____

Custody seals present: ☒ No; ☐ Yes, If "Yes" Custody seals intact: ☐ Yes; ☐ No _____

Custody seal # _____ **Evidentiary samples identified:** ☒ No ☐ Yes

Packaging, Temperature & Radiochemical Information

Packing material: ☐ Bubble wrap ☐ Styrofoam ☐ Paper ☒ None ☐ Other _____

Cooling material: ☒ Wet ice (loose) ☐ Wet ice pack #( ) ☐ Gel pack #( ) ☐ Dry ice ☐ None ☐ Other _____

Condition of cooling material: ☐ Solid ☒ Partially frozen ☐ Liquid; Liquid temperature: _____ °C ☐ N/A

Representative sample temperature: 1.1 °C **IR thermometer instrument used:** A10

Samples received with evidence of freezing: ☒ No; ☐ Yes _____

Rad Chem. request received: ☐ No; ☐ Yes, If "Yes" sample survey results: ☐ < 0.5 mrem/hr ☐ ≥ 0.5 mrem/hr

Initials of person receiving parcel: B

Chain of Custody, Sample Container & Analysis Information

Chain of custody received with sample containers: ☒ Yes ☐ No

Chain of custody type: ☒ Standard ☐ Civil ☐ Criminal ☐ Priority/Emergency ☐ Unknown

All sample containers are unique to a sample point listed on the chain of custody: ☒ Yes; ☐ No

All sample containers have been collected prior to the expiration date listed on container label: ☒ Yes; ☐ No ☐ Unknown _____

All sample containers received intact: ☒ Yes; ☐ No _____

All sample containers are appropriate for requested analysis: ☒ Yes; ☐ No ☐ Unknown

All analysis have been received within the specified holding time for analysis: ☒ Yes; ☐ No ☐ Unknown

Sample submission details are entered in the Environmental Laboratory LIMS.

Initials of person logging in the work order request into LIMS: TB

DOC-84
Revision: 4

Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Case Narrative

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name: SW-57
Collected by: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/2019 16:02

Except where noted in this report, no additional comments are needed for this Work Order.

Authorized by:

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelosi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: SW-57
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 04/26/19 16:02

MDH Sample Number: 19C1274-01

Location ID: Trip Blank 2
Field Name: None
Sampling Point: None
QA Type: Trip Blank

Collect Date: 03/28/19
Collect Time: 7:30
Matrix: QC-BLANK

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Surrogate: 1,2-Dichlorobenzene-d4		*102*	*70-130*	%	*1*	*B9D0001*	*04/01/19 15:03*	*04/01/19 15:03*	*EPA 8260D*
Surrogate: 4-Bromofluorobenzene		*98*	*70-130*	%	*1*	*B9D0001*	*04/01/19 15:03*	*04/01/19 15:03*	*EPA 8260D*
Surrogate: Methyl tertiary butyl ether-d3		*101*	*70-130*	%	*1*	*B9D0001*	*04/01/19 15:03*	*04/01/19 15:03*	*EPA 8260D*
1,1,1,2-Tetrachloroethane		<	1.0	ug/L	1	B9D0001	04/01/19 15:03	04/01/19 15:03	EPA 8260D
1,1,1-Trichloroethane		<	1.0	ug/L	1	B9D0001	04/01/19 15:03	04/01/19 15:03	EPA 8260D
1,1,2,2-Tetrachloroethane		<	0.50	ug/L	1	B9D0001	04/01/19 15:03	04/01/19 15:03	EPA 8260D
1,1,2-Trichloroethane		<	0.50	ug/L	1	B9D0001	04/01/19 15:03	04/01/19 15:03	EPA 8260D
1,1,2-Trichlorotrifluoroethane		<	1.0	ug/L	1	B9D0001	04/01/19 15:03	04/01/19 15:03	EPA 8260D
1,1-Dichloroethane		<	1.0	ug/L	1	B9D0001	04/01/19 15:03	04/01/19 15:03	EPA 8260D
1,1-Dichloroethene		<	1.0	ug/L	1	B9D0001	04/01/19 15:03	04/01/19 15:03	EPA 8260D
1,1-Dichloropropene		<	1.0	ug/L	1	B9D0001	04/01/19 15:03	04/01/19 15:03	EPA 8260D
1,2,3-Trichlorobenzene		<	1.0	ug/L	1	B9D0001	04/01/19 15:03	04/01/19 15:03	EPA 8260D
1,2,3-Trichloropropane		<	0.20	ug/L	1	B9D0001	04/01/19 15:03	04/01/19 15:03	EPA 8260D
1,2,4-Trichlorobenzene		<	1.0	ug/L	1	B9D0001	04/01/19 15:03	04/01/19 15:03	EPA 8260D
1,2,4-Trimethylbenzene		<	1.0	ug/L	1	B9D0001	04/01/19 15:03	04/01/19 15:03	EPA 8260D
1,2-Dibromo-3-chloropropane (DBCP)		<	1.0	ug/L	1	B9D0001	04/01/19 15:03	04/01/19 15:03	EPA 8260D
1,2-Dibromoethane (EDB)		<	0.50	ug/L	1	B9D0001	04/01/19 15:03	04/01/19 15:03	EPA 8260D
1,2-Dichlorobenzene		<	1.0	ug/L	1	B9D0001	04/01/19 15:03	04/01/19 15:03	EPA 8260D
1,2-Dichloroethane		<	0.20	ug/L	1	B9D0001	04/01/19 15:03	04/01/19 15:03	EPA 8260D
1,2-Dichloropropane		<	1.0	ug/L	1	B9D0001	04/01/19 15:03	04/01/19 15:03	EPA 8260D
1,3,5-Trimethylbenzene		<	1.0	ug/L	1	B9D0001	04/01/19 15:03	04/01/19 15:03	EPA 8260D
1,3-Dichlorobenzene		<	1.0	ug/L	1	B9D0001	04/01/19 15:03	04/01/19 15:03	EPA 8260D
1,3-Dichloropropane		<	1.0	ug/L	1	B9D0001	04/01/19 15:03	04/01/19 15:03	EPA 8260D
1,4-Dichlorobenzene		<	1.0	ug/L	1	B9D0001	04/01/19 15:03	04/01/19 15:03	EPA 8260D
2,2-Dichloropropane		<	1.0	ug/L	1	B9D0001	04/01/19 15:03	04/01/19 15:03	EPA 8260D

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelosi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: SW-57
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 04/26/19 16:02

MDH Sample Number: 19C1274-01

Location ID: Trip Blank 2
Field Name: None
Sampling Point: None
QA Type: Trip Blank

Collect Date: 03/28/19
Collect Time: 7:30
Matrix: QC-BLANK

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
2-Chlorotoluene		<	1.0	ug/L	1	B9D0001	04/01/19 15:03	04/01/19 15:03	EPA 8260D
4-Chlorotoluene		<	1.0	ug/L	1	B9D0001	04/01/19 15:03	04/01/19 15:03	EPA 8260D
Acetone		<	20	ug/L	1	B9D0001	04/01/19 15:03	04/01/19 15:03	EPA 8260D
Allyl chloride		<	1.0	ug/L	1	B9D0001	04/01/19 15:03	04/01/19 15:03	EPA 8260D
Benzene		<	0.50	ug/L	1	B9D0001	04/01/19 15:03	04/01/19 15:03	EPA 8260D
Bromobenzene		<	1.0	ug/L	1	B9D0001	04/01/19 15:03	04/01/19 15:03	EPA 8260D
Bromochloromethane		<	1.0	ug/L	1	B9D0001	04/01/19 15:03	04/01/19 15:03	EPA 8260D
Bromodichloromethane		<	1.0	ug/L	1	B9D0001	04/01/19 15:03	04/01/19 15:03	EPA 8260D
Bromoform		<	1.0	ug/L	1	B9D0001	04/01/19 15:03	04/01/19 15:03	EPA 8260D
Bromomethane	L3, V4, Z-01	<	2.0	ug/L	1	B9D0001	04/01/19 15:03	04/01/19 15:03	EPA 8260D
Carbon tetrachloride		<	0.20	ug/L	1	B9D0001	04/01/19 15:03	04/01/19 15:03	EPA 8260D
Chlorobenzene		<	1.0	ug/L	1	B9D0001	04/01/19 15:03	04/01/19 15:03	EPA 8260D
Chlorodibromomethane		<	0.50	ug/L	1	B9D0001	04/01/19 15:03	04/01/19 15:03	EPA 8260D
Chloroethane		<	1.0	ug/L	1	B9D0001	04/01/19 15:03	04/01/19 15:03	EPA 8260D
Chloroform		<	1.0	ug/L	1	B9D0001	04/01/19 15:03	04/01/19 15:03	EPA 8260D
Chloromethane		<	1.0	ug/L	1	B9D0001	04/01/19 15:03	04/01/19 15:03	EPA 8260D
cis-1,2-Dichloroethene		<	1.0	ug/L	1	B9D0001	04/01/19 15:03	04/01/19 15:03	EPA 8260D
cis-1,3-Dichloropropene		<	0.50	ug/L	1	B9D0001	04/01/19 15:03	04/01/19 15:03	EPA 8260D
Dibromomethane		<	1.0	ug/L	1	B9D0001	04/01/19 15:03	04/01/19 15:03	EPA 8260D
Dichlorodifluoromethane		<	1.0	ug/L	1	B9D0001	04/01/19 15:03	04/01/19 15:03	EPA 8260D
Dichlorofluoromethane		<	1.0	ug/L	1	B9D0001	04/01/19 15:03	04/01/19 15:03	EPA 8260D
Ethyl ether		<	1.0	ug/L	1	B9D0001	04/01/19 15:03	04/01/19 15:03	EPA 8260D
Ethylbenzene		<	1.0	ug/L	1	B9D0001	04/01/19 15:03	04/01/19 15:03	EPA 8260D
Hexachlorobutadiene		<	0.50	ug/L	1	B9D0001	04/01/19 15:03	04/01/19 15:03	EPA 8260D
Isopropylbenzene		<	1.0	ug/L	1	B9D0001	04/01/19 15:03	04/01/19 15:03	EPA 8260D
Methyl ethyl ketone (MEK)		<	10	ug/L	1	B9D0001	04/01/19 15:03	04/01/19 15:03	EPA 8260D
Methyl isobutyl ketone (MIBK)		<	5.0	ug/L	1	B9D0001	04/01/19 15:03	04/01/19 15:03	EPA 8260D

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Public Health Laboratory
Environmental Laboratory Section
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St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelosi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: SW-57
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 04/26/19 16:02

MDH Sample Number: 19C1274-01

Location ID: Trip Blank 2
Field Name: None
Sampling Point: None
QA Type: Trip Blank

Collect Date: 03/28/19
Collect Time: 7:30
Matrix: QC-BLANK

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Methyl tertiary butyl ether (MTBE)		<	2.0	ug/L	1	B9D0001	04/01/19 15:03	04/01/19 15:03	EPA 8260D
Methylene chloride		<	1.0	ug/L	1	B9D0001	04/01/19 15:03	04/01/19 15:03	EPA 8260D
Naphthalene		<	1.0	ug/L	1	B9D0001	04/01/19 15:03	04/01/19 15:03	EPA 8260D
n-Butylbenzene		<	1.0	ug/L	1	B9D0001	04/01/19 15:03	04/01/19 15:03	EPA 8260D
n-Propylbenzene		<	1.0	ug/L	1	B9D0001	04/01/19 15:03	04/01/19 15:03	EPA 8260D
o-Xylene		<	1.0	ug/L	1	B9D0001	04/01/19 15:03	04/01/19 15:03	EPA 8260D
p&m-Xylene		<	1.0	ug/L	1	B9D0001	04/01/19 15:03	04/01/19 15:03	EPA 8260D
p-Isopropyltoluene		<	1.0	ug/L	1	B9D0001	04/01/19 15:03	04/01/19 15:03	EPA 8260D
sec-Butylbenzene		<	1.0	ug/L	1	B9D0001	04/01/19 15:03	04/01/19 15:03	EPA 8260D
Styrene		<	1.0	ug/L	1	B9D0001	04/01/19 15:03	04/01/19 15:03	EPA 8260D
tert-Butylbenzene		<	1.0	ug/L	1	B9D0001	04/01/19 15:03	04/01/19 15:03	EPA 8260D
Tetrachloroethene		<	1.0	ug/L	1	B9D0001	04/01/19 15:03	04/01/19 15:03	EPA 8260D
Tetrahydrofuran (THF)		<	10	ug/L	1	B9D0001	04/01/19 15:03	04/01/19 15:03	EPA 8260D
Toluene		<	1.0	ug/L	1	B9D0001	04/01/19 15:03	04/01/19 15:03	EPA 8260D
trans-1,2-Dichloroethene		<	1.0	ug/L	1	B9D0001	04/01/19 15:03	04/01/19 15:03	EPA 8260D
trans-1,3-Dichloropropene		<	0.50	ug/L	1	B9D0001	04/01/19 15:03	04/01/19 15:03	EPA 8260D
Trichloroethene (TCE)		<	0.10	ug/L	1	B9D0001	04/01/19 15:03	04/01/19 15:03	EPA 8260D
Trichlorofluoromethane		<	1.0	ug/L	1	B9D0001	04/01/19 15:03	04/01/19 15:03	EPA 8260D
Vinyl chloride		<	0.050	ug/L	1	B9D0001	04/01/19 15:03	04/01/19 15:03	EPA 8260D

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelosi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: SW-57
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 04/26/19 16:02

MDH Sample Number: 19C1274-02

Location ID: 462520
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 03/28/19
Collect Time: 11:25
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Surrogate: 1,2-Dichlorobenzene-d4		*99*	*70-130*	%	*1*	*B9D0001*	*04/01/19 22:54*	*04/01/19 22:54*	*EPA 8260D*
Surrogate: 4-Bromofluorobenzene		*97*	*70-130*	%	*1*	*B9D0001*	*04/01/19 22:54*	*04/01/19 22:54*	*EPA 8260D*
Surrogate: Methyl tertiary butyl ether-d3		*98*	*70-130*	%	*1*	*B9D0001*	*04/01/19 22:54*	*04/01/19 22:54*	*EPA 8260D*
1,1,1,2-Tetrachloroethane		<	1.0	ug/L	1	B9D0001	04/01/19 22:54	04/01/19 22:54	EPA 8260D
1,1,1-Trichloroethane		<	1.0	ug/L	1	B9D0001	04/01/19 22:54	04/01/19 22:54	EPA 8260D
1,1,2,2-Tetrachloroethane		<	0.50	ug/L	1	B9D0001	04/01/19 22:54	04/01/19 22:54	EPA 8260D
1,1,2-Trichloroethane		<	0.50	ug/L	1	B9D0001	04/01/19 22:54	04/01/19 22:54	EPA 8260D
1,1,2-Trichlorotrifluoroethane		<	1.0	ug/L	1	B9D0001	04/01/19 22:54	04/01/19 22:54	EPA 8260D
1,1-Dichloroethane		<	1.0	ug/L	1	B9D0001	04/01/19 22:54	04/01/19 22:54	EPA 8260D
1,1-Dichloroethene		<	1.0	ug/L	1	B9D0001	04/01/19 22:54	04/01/19 22:54	EPA 8260D
1,1-Dichloropropene		<	1.0	ug/L	1	B9D0001	04/01/19 22:54	04/01/19 22:54	EPA 8260D
1,2,3-Trichlorobenzene		<	1.0	ug/L	1	B9D0001	04/01/19 22:54	04/01/19 22:54	EPA 8260D
1,2,3-Trichloropropane		<	0.20	ug/L	1	B9D0001	04/01/19 22:54	04/01/19 22:54	EPA 8260D
1,2,4-Trichlorobenzene		<	1.0	ug/L	1	B9D0001	04/01/19 22:54	04/01/19 22:54	EPA 8260D
1,2,4-Trimethylbenzene		<	1.0	ug/L	1	B9D0001	04/01/19 22:54	04/01/19 22:54	EPA 8260D
1,2-Dibromo-3-chloropropane (DBCP)		<	1.0	ug/L	1	B9D0001	04/01/19 22:54	04/01/19 22:54	EPA 8260D
1,2-Dibromoethane (EDB)		<	0.50	ug/L	1	B9D0001	04/01/19 22:54	04/01/19 22:54	EPA 8260D
1,2-Dichlorobenzene		<	1.0	ug/L	1	B9D0001	04/01/19 22:54	04/01/19 22:54	EPA 8260D
1,2-Dichloroethane		<	0.20	ug/L	1	B9D0001	04/01/19 22:54	04/01/19 22:54	EPA 8260D
1,2-Dichloropropane		<	1.0	ug/L	1	B9D0001	04/01/19 22:54	04/01/19 22:54	EPA 8260D
1,3,5-Trimethylbenzene		<	1.0	ug/L	1	B9D0001	04/01/19 22:54	04/01/19 22:54	EPA 8260D
1,3-Dichlorobenzene		<	1.0	ug/L	1	B9D0001	04/01/19 22:54	04/01/19 22:54	EPA 8260D
1,3-Dichloropropane		<	1.0	ug/L	1	B9D0001	04/01/19 22:54	04/01/19 22:54	EPA 8260D
1,4-Dichlorobenzene		<	1.0	ug/L	1	B9D0001	04/01/19 22:54	04/01/19 22:54	EPA 8260D
2,2-Dichloropropane		<	1.0	ug/L	1	B9D0001	04/01/19 22:54	04/01/19 22:54	EPA 8260D
2-Chlorotoluene		<	1.0	ug/L	1	B9D0001	04/01/19 22:54	04/01/19 22:54	EPA 8260D

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Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelosi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: SW-57
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 04/26/19 16:02

MDH Sample Number: 19C1274-02

Location ID: 462520
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 03/28/19
Collect Time: 11:25
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
4-Chlorotoluene		<	1.0	ug/L	1	B9D0001	04/01/19 22:54	04/01/19 22:54	EPA 8260D
Acetone		<	20	ug/L	1	B9D0001	04/01/19 22:54	04/01/19 22:54	EPA 8260D
Allyl chloride		<	1.0	ug/L	1	B9D0001	04/01/19 22:54	04/01/19 22:54	EPA 8260D
Benzene		<	0.50	ug/L	1	B9D0001	04/01/19 22:54	04/01/19 22:54	EPA 8260D
Bromobenzene		<	1.0	ug/L	1	B9D0001	04/01/19 22:54	04/01/19 22:54	EPA 8260D
Bromochloromethane		<	1.0	ug/L	1	B9D0001	04/01/19 22:54	04/01/19 22:54	EPA 8260D
Bromodichloromethane		<	1.0	ug/L	1	B9D0001	04/01/19 22:54	04/01/19 22:54	EPA 8260D
Bromoform		<	1.0	ug/L	1	B9D0001	04/01/19 22:54	04/01/19 22:54	EPA 8260D
Bromomethane	L3, V4, Z-01	<	2.0	ug/L	1	B9D0001	04/01/19 22:54	04/01/19 22:54	EPA 8260D
Carbon tetrachloride		<	0.20	ug/L	1	B9D0001	04/01/19 22:54	04/01/19 22:54	EPA 8260D
Chlorobenzene		<	1.0	ug/L	1	B9D0001	04/01/19 22:54	04/01/19 22:54	EPA 8260D
Chlorodibromomethane		<	0.50	ug/L	1	B9D0001	04/01/19 22:54	04/01/19 22:54	EPA 8260D
Chloroethane		<	1.0	ug/L	1	B9D0001	04/01/19 22:54	04/01/19 22:54	EPA 8260D
Chloroform		<	1.0	ug/L	1	B9D0001	04/01/19 22:54	04/01/19 22:54	EPA 8260D
Chloromethane		<	1.0	ug/L	1	B9D0001	04/01/19 22:54	04/01/19 22:54	EPA 8260D
cis-1,2-Dichloroethene		<	1.0	ug/L	1	B9D0001	04/01/19 22:54	04/01/19 22:54	EPA 8260D
cis-1,3-Dichloropropene		<	0.50	ug/L	1	B9D0001	04/01/19 22:54	04/01/19 22:54	EPA 8260D
Dibromomethane		<	1.0	ug/L	1	B9D0001	04/01/19 22:54	04/01/19 22:54	EPA 8260D
Dichlorodifluoromethane		<	1.0	ug/L	1	B9D0001	04/01/19 22:54	04/01/19 22:54	EPA 8260D
Dichlorofluoromethane		<	1.0	ug/L	1	B9D0001	04/01/19 22:54	04/01/19 22:54	EPA 8260D
Ethyl ether		<	1.0	ug/L	1	B9D0001	04/01/19 22:54	04/01/19 22:54	EPA 8260D
Ethylbenzene		<	1.0	ug/L	1	B9D0001	04/01/19 22:54	04/01/19 22:54	EPA 8260D
Hexachlorobutadiene		<	0.50	ug/L	1	B9D0001	04/01/19 22:54	04/01/19 22:54	EPA 8260D
Isopropylbenzene		<	1.0	ug/L	1	B9D0001	04/01/19 22:54	04/01/19 22:54	EPA 8260D
Methyl ethyl ketone (MEK)		<	10	ug/L	1	B9D0001	04/01/19 22:54	04/01/19 22:54	EPA 8260D
Methyl isobutyl ketone (MIBK)		<	5.0	ug/L	1	B9D0001	04/01/19 22:54	04/01/19 22:54	EPA 8260D
Methyl tertiary butyl ether (MTBE)		<	2.0	ug/L	1	B9D0001	04/01/19 22:54	04/01/19 22:54	EPA 8260D

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelosi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: SW-57
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 04/26/19 16:02

MDH Sample Number: 19C1274-02

Location ID: 462520
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 03/28/19
Collect Time: 11:25
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Methylene chloride		<	1.0	ug/L	1	B9D0001	04/01/19 22:54	04/01/19 22:54	EPA 8260D
Naphthalene		<	1.0	ug/L	1	B9D0001	04/01/19 22:54	04/01/19 22:54	EPA 8260D
n-Butylbenzene		<	1.0	ug/L	1	B9D0001	04/01/19 22:54	04/01/19 22:54	EPA 8260D
n-Propylbenzene		<	1.0	ug/L	1	B9D0001	04/01/19 22:54	04/01/19 22:54	EPA 8260D
o-Xylene		<	1.0	ug/L	1	B9D0001	04/01/19 22:54	04/01/19 22:54	EPA 8260D
p&m-Xylene		<	1.0	ug/L	1	B9D0001	04/01/19 22:54	04/01/19 22:54	EPA 8260D
p-Isopropyltoluene		<	1.0	ug/L	1	B9D0001	04/01/19 22:54	04/01/19 22:54	EPA 8260D
sec-Butylbenzene		<	1.0	ug/L	1	B9D0001	04/01/19 22:54	04/01/19 22:54	EPA 8260D
Styrene		<	1.0	ug/L	1	B9D0001	04/01/19 22:54	04/01/19 22:54	EPA 8260D
tert-Butylbenzene		<	1.0	ug/L	1	B9D0001	04/01/19 22:54	04/01/19 22:54	EPA 8260D
Tetrachloroethene		<	1.0	ug/L	1	B9D0001	04/01/19 22:54	04/01/19 22:54	EPA 8260D
Tetrahydrofuran (THF)		<	10	ug/L	1	B9D0001	04/01/19 22:54	04/01/19 22:54	EPA 8260D
Toluene		<	1.0	ug/L	1	B9D0001	04/01/19 22:54	04/01/19 22:54	EPA 8260D
trans-1,2-Dichloroethene		<	1.0	ug/L	1	B9D0001	04/01/19 22:54	04/01/19 22:54	EPA 8260D
trans-1,3-Dichloropropene		<	0.50	ug/L	1	B9D0001	04/01/19 22:54	04/01/19 22:54	EPA 8260D
Trichloroethene (TCE)		<	0.10	ug/L	1	B9D0001	04/01/19 22:54	04/01/19 22:54	EPA 8260D
Trichlorofluoromethane		<	1.0	ug/L	1	B9D0001	04/01/19 22:54	04/01/19 22:54	EPA 8260D
Vinyl chloride		<	0.050	ug/L	1	B9D0001	04/01/19 22:54	04/01/19 22:54	EPA 8260D

1,4-Dioxane

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
1,4-Dioxane		<	0.050	ug/L	1	B9D0396	04/23/19 08:00	04/24/19 13:14	EPA 522 Modified

PFC Expanded List

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorobutanesulfonate (PFBS)		<	0.050	ug/L	1	B9D0148	04/08/19 16:52	04/08/19 16:52	MDH 555
Perfluorobutanoic acid (PFBA)		<	0.050	ug/L	1	B9D0148	04/08/19 16:52	04/08/19 16:52	MDH 555

FINAL REPORT

Report ID: 04262019160231

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelosi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: SW-57
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 04/26/19 16:02

MDH Sample Number: 19C1274-02

Location ID: 462520
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 03/28/19
Collect Time: 11:25
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

PFC Expanded List - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorohexanesulfonate (PFHxS)		<	0.025	ug/L	1	B9D0148	04/08/19 16:52	04/08/19 16:52	MDH 555
Perfluorohexanoic acid (PFHxA)		<	0.050	ug/L	1	B9D0148	04/08/19 16:52	04/08/19 16:52	MDH 555
Perfluorooctanesulfonate (PFOS)		<	0.025	ug/L	1	B9D0148	04/08/19 16:52	04/08/19 16:52	MDH 555
Perfluorooctanoic acid (PFOA)		<	0.035	ug/L	1	B9D0148	04/08/19 16:52	04/08/19 16:52	MDH 555
Perfluoropentanoic acid (PFPeA)		<	0.050	ug/L	1	B9D0148	04/08/19 16:52	04/08/19 16:52	MDH 555

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Paul Moyer, Environmental Laboratory Manager
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St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelosi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: SW-57
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 04/26/19 16:02

MDH Sample Number: 19C1274-03

Location ID: 240818
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 03/28/19
Collect Time: 11:00
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

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VOCs by GCMS

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Surrogate: 1,2-Dichlorobenzene-d4		*101*	*70-130*	%	*1*	*B9D0001*	*04/01/19 23:22*	*04/01/19 23:22*	*EPA 8260D*
Surrogate: 4-Bromofluorobenzene		*97*	*70-130*	%	*1*	*B9D0001*	*04/01/19 23:22*	*04/01/19 23:22*	*EPA 8260D*
Surrogate: Methyl tertiary butyl ether-d3		*100*	*70-130*	%	*1*	*B9D0001*	*04/01/19 23:22*	*04/01/19 23:22*	*EPA 8260D*
1,1,1,2-Tetrachloroethane		<	1.0	ug/L	1	B9D0001	04/01/19 23:22	04/01/19 23:22	EPA 8260D
1,1,1-Trichloroethane		<	1.0	ug/L	1	B9D0001	04/01/19 23:22	04/01/19 23:22	EPA 8260D
1,1,2,2-Tetrachloroethane		<	0.50	ug/L	1	B9D0001	04/01/19 23:22	04/01/19 23:22	EPA 8260D
1,1,2-Trichloroethane		<	0.50	ug/L	1	B9D0001	04/01/19 23:22	04/01/19 23:22	EPA 8260D
1,1,2-Trichlorotrifluoroethane		<	1.0	ug/L	1	B9D0001	04/01/19 23:22	04/01/19 23:22	EPA 8260D
1,1-Dichloroethane		<	1.0	ug/L	1	B9D0001	04/01/19 23:22	04/01/19 23:22	EPA 8260D
1,1-Dichloroethene		<	1.0	ug/L	1	B9D0001	04/01/19 23:22	04/01/19 23:22	EPA 8260D
1,1-Dichloropropene		<	1.0	ug/L	1	B9D0001	04/01/19 23:22	04/01/19 23:22	EPA 8260D
1,2,3-Trichlorobenzene		<	1.0	ug/L	1	B9D0001	04/01/19 23:22	04/01/19 23:22	EPA 8260D
1,2,3-Trichloropropane		<	0.20	ug/L	1	B9D0001	04/01/19 23:22	04/01/19 23:22	EPA 8260D
1,2,4-Trichlorobenzene		<	1.0	ug/L	1	B9D0001	04/01/19 23:22	04/01/19 23:22	EPA 8260D
1,2,4-Trimethylbenzene		<	1.0	ug/L	1	B9D0001	04/01/19 23:22	04/01/19 23:22	EPA 8260D
1,2-Dibromo-3-chloropropane (DBCP)		<	1.0	ug/L	1	B9D0001	04/01/19 23:22	04/01/19 23:22	EPA 8260D
1,2-Dibromoethane (EDB)		<	0.50	ug/L	1	B9D0001	04/01/19 23:22	04/01/19 23:22	EPA 8260D
1,2-Dichlorobenzene		<	1.0	ug/L	1	B9D0001	04/01/19 23:22	04/01/19 23:22	EPA 8260D
1,2-Dichloroethane		<	0.20	ug/L	1	B9D0001	04/01/19 23:22	04/01/19 23:22	EPA 8260D
1,2-Dichloropropane		<	1.0	ug/L	1	B9D0001	04/01/19 23:22	04/01/19 23:22	EPA 8260D
1,3,5-Trimethylbenzene		<	1.0	ug/L	1	B9D0001	04/01/19 23:22	04/01/19 23:22	EPA 8260D
1,3-Dichlorobenzene		<	1.0	ug/L	1	B9D0001	04/01/19 23:22	04/01/19 23:22	EPA 8260D
1,3-Dichloropropane		<	1.0	ug/L	1	B9D0001	04/01/19 23:22	04/01/19 23:22	EPA 8260D
1,4-Dichlorobenzene		<	1.0	ug/L	1	B9D0001	04/01/19 23:22	04/01/19 23:22	EPA 8260D
2,2-Dichloropropane		<	1.0	ug/L	1	B9D0001	04/01/19 23:22	04/01/19 23:22	EPA 8260D
2-Chlorotoluene		<	1.0	ug/L	1	B9D0001	04/01/19 23:22	04/01/19 23:22	EPA 8260D

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Public Health Laboratory
Environmental Laboratory Section
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St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelosi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: SW-57
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 04/26/19 16:02

MDH Sample Number: 19C1274-03

Location ID: 240818
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 03/28/19
Collect Time: 11:00
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

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VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
4-Chlorotoluene		<	1.0	ug/L	1	B9D0001	04/01/19 23:22	04/01/19 23:22	EPA 8260D
Acetone		**72**	20	ug/L	1	B9D0001	04/01/19 23:22	04/01/19 23:22	EPA 8260D
Allyl chloride		<	1.0	ug/L	1	B9D0001	04/01/19 23:22	04/01/19 23:22	EPA 8260D
Benzene		<	0.50	ug/L	1	B9D0001	04/01/19 23:22	04/01/19 23:22	EPA 8260D
Bromobenzene		<	1.0	ug/L	1	B9D0001	04/01/19 23:22	04/01/19 23:22	EPA 8260D
Bromochloromethane		<	1.0	ug/L	1	B9D0001	04/01/19 23:22	04/01/19 23:22	EPA 8260D
Bromodichloromethane		<	1.0	ug/L	1	B9D0001	04/01/19 23:22	04/01/19 23:22	EPA 8260D
Bromoform		<	1.0	ug/L	1	B9D0001	04/01/19 23:22	04/01/19 23:22	EPA 8260D
Bromomethane	L3, V4, Z-01	<	2.0	ug/L	1	B9D0001	04/01/19 23:22	04/01/19 23:22	EPA 8260D
Carbon tetrachloride		<	0.20	ug/L	1	B9D0001	04/01/19 23:22	04/01/19 23:22	EPA 8260D
Chlorobenzene		<	1.0	ug/L	1	B9D0001	04/01/19 23:22	04/01/19 23:22	EPA 8260D
Chlorodibromomethane		<	0.50	ug/L	1	B9D0001	04/01/19 23:22	04/01/19 23:22	EPA 8260D
Chloroethane		<	1.0	ug/L	1	B9D0001	04/01/19 23:22	04/01/19 23:22	EPA 8260D
Chloroform		<	1.0	ug/L	1	B9D0001	04/01/19 23:22	04/01/19 23:22	EPA 8260D
Chloromethane		<	1.0	ug/L	1	B9D0001	04/01/19 23:22	04/01/19 23:22	EPA 8260D
cis-1,2-Dichloroethene		<	1.0	ug/L	1	B9D0001	04/01/19 23:22	04/01/19 23:22	EPA 8260D
cis-1,3-Dichloropropene		<	0.50	ug/L	1	B9D0001	04/01/19 23:22	04/01/19 23:22	EPA 8260D
Dibromomethane		<	1.0	ug/L	1	B9D0001	04/01/19 23:22	04/01/19 23:22	EPA 8260D
Dichlorodifluoromethane		<	1.0	ug/L	1	B9D0001	04/01/19 23:22	04/01/19 23:22	EPA 8260D
Dichlorofluoromethane		<	1.0	ug/L	1	B9D0001	04/01/19 23:22	04/01/19 23:22	EPA 8260D
Ethyl ether		<	1.0	ug/L	1	B9D0001	04/01/19 23:22	04/01/19 23:22	EPA 8260D
Ethylbenzene		<	1.0	ug/L	1	B9D0001	04/01/19 23:22	04/01/19 23:22	EPA 8260D
Hexachlorobutadiene		<	0.50	ug/L	1	B9D0001	04/01/19 23:22	04/01/19 23:22	EPA 8260D
Isopropylbenzene		<	1.0	ug/L	1	B9D0001	04/01/19 23:22	04/01/19 23:22	EPA 8260D
Methyl ethyl ketone (MEK)		<	10	ug/L	1	B9D0001	04/01/19 23:22	04/01/19 23:22	EPA 8260D
Methyl isobutyl ketone (MIBK)		<	5.0	ug/L	1	B9D0001	04/01/19 23:22	04/01/19 23:22	EPA 8260D
Methyl tertiary butyl ether (MTBE)		<	2.0	ug/L	1	B9D0001	04/01/19 23:22	04/01/19 23:22	EPA 8260D

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Public Health Laboratory, Minnesota Department of Health

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Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelosi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: SW-57
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 04/26/19 16:02

MDH Sample Number: 19C1274-03

Location ID: 240818
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 03/28/19
Collect Time: 11:00
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Methylene chloride		<	1.0	ug/L	1	B9D0001	04/01/19 23:22	04/01/19 23:22	EPA 8260D
Naphthalene		<	1.0	ug/L	1	B9D0001	04/01/19 23:22	04/01/19 23:22	EPA 8260D
n-Butylbenzene		<	1.0	ug/L	1	B9D0001	04/01/19 23:22	04/01/19 23:22	EPA 8260D
n-Propylbenzene		<	1.0	ug/L	1	B9D0001	04/01/19 23:22	04/01/19 23:22	EPA 8260D
o-Xylene		<	1.0	ug/L	1	B9D0001	04/01/19 23:22	04/01/19 23:22	EPA 8260D
p&m-Xylene		<	1.0	ug/L	1	B9D0001	04/01/19 23:22	04/01/19 23:22	EPA 8260D
p-Isopropyltoluene		<	1.0	ug/L	1	B9D0001	04/01/19 23:22	04/01/19 23:22	EPA 8260D
sec-Butylbenzene		<	1.0	ug/L	1	B9D0001	04/01/19 23:22	04/01/19 23:22	EPA 8260D
Styrene		<	1.0	ug/L	1	B9D0001	04/01/19 23:22	04/01/19 23:22	EPA 8260D
tert-Butylbenzene		<	1.0	ug/L	1	B9D0001	04/01/19 23:22	04/01/19 23:22	EPA 8260D
Tetrachloroethene		<	1.0	ug/L	1	B9D0001	04/01/19 23:22	04/01/19 23:22	EPA 8260D
Tetrahydrofuran (THF)		<	10	ug/L	1	B9D0001	04/01/19 23:22	04/01/19 23:22	EPA 8260D
Toluene		<	1.0	ug/L	1	B9D0001	04/01/19 23:22	04/01/19 23:22	EPA 8260D
trans-1,2-Dichloroethene		<	1.0	ug/L	1	B9D0001	04/01/19 23:22	04/01/19 23:22	EPA 8260D
trans-1,3-Dichloropropene		<	0.50	ug/L	1	B9D0001	04/01/19 23:22	04/01/19 23:22	EPA 8260D
Trichloroethene (TCE)		<	0.10	ug/L	1	B9D0001	04/01/19 23:22	04/01/19 23:22	EPA 8260D
Trichlorofluoromethane		<	1.0	ug/L	1	B9D0001	04/01/19 23:22	04/01/19 23:22	EPA 8260D
Vinyl chloride		<	0.050	ug/L	1	B9D0001	04/01/19 23:22	04/01/19 23:22	EPA 8260D

1,4-Dioxane

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
1,4-Dioxane		<	0.049	ug/L	1	B9D0396	04/23/19 08:00	04/24/19 13:30	EPA 522 Modified

PFC Expanded List

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorobutanesulfonate (PFBS)		<	0.050	ug/L	1	B9D0148	04/08/19 17:08	04/08/19 17:08	MDH 555
Perfluorobutanoic acid (PFBA)	J	**0.030**	0.050	ug/L	1	B9D0148	04/08/19 17:08	04/08/19 17:08	MDH 555

FINAL REPORT

Report ID: 04262019160231

Authorized by:

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelosi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: SW-57
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 04/26/19 16:02

MDH Sample Number: 19C1274-03

Location ID: 240818
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 03/28/19
Collect Time: 11:00
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

PFC Expanded List - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorohexanesulfonate (PFHxS)		<	0.025	ug/L	1	B9D0148	04/08/19 17:08	04/08/19 17:08	MDH 555
Perfluorohexanoic acid (PFHxA)		<	0.050	ug/L	1	B9D0148	04/08/19 17:08	04/08/19 17:08	MDH 555
Perfluorooctanesulfonate (PFOS)		<	0.025	ug/L	1	B9D0148	04/08/19 17:08	04/08/19 17:08	MDH 555
Perfluorooctanoic acid (PFOA)	J	**0.009**	0.035	ug/L	1	B9D0148	04/08/19 17:08	04/08/19 17:08	MDH 555
Perfluoropentanoic acid (PFPeA)		<	0.050	ug/L	1	B9D0148	04/08/19 17:08	04/08/19 17:08	MDH 555

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St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelosi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: SW-57
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 04/26/19 16:02

MDH Sample Number: 19C1274-04

Location ID: 462523
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 03/28/19
Collect Time: 12:30
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Surrogate: 1,2-Dichlorobenzene-d4		*101*	*70-130*	%	*1*	*B9D0019*	*04/02/19 13:17*	*04/02/19 13:17*	*EPA 8260D*
Surrogate: 4-Bromofluorobenzene		*98*	*70-130*	%	*1*	*B9D0019*	*04/02/19 13:17*	*04/02/19 13:17*	*EPA 8260D*
Surrogate: Methyl tertiary butyl ether-d3		*101*	*70-130*	%	*1*	*B9D0019*	*04/02/19 13:17*	*04/02/19 13:17*	*EPA 8260D*
1,1,1,2-Tetrachloroethane		<	1.0	ug/L	1	B9D0019	04/02/19 13:17	04/02/19 13:17	EPA 8260D
1,1,1-Trichloroethane		<	1.0	ug/L	1	B9D0019	04/02/19 13:17	04/02/19 13:17	EPA 8260D
1,1,2,2-Tetrachloroethane		<	0.50	ug/L	1	B9D0019	04/02/19 13:17	04/02/19 13:17	EPA 8260D
1,1,2-Trichloroethane		<	0.50	ug/L	1	B9D0019	04/02/19 13:17	04/02/19 13:17	EPA 8260D
1,1,2-Trichlorotrifluoroethane		<	1.0	ug/L	1	B9D0019	04/02/19 13:17	04/02/19 13:17	EPA 8260D
1,1-Dichloroethane		<	1.0	ug/L	1	B9D0019	04/02/19 13:17	04/02/19 13:17	EPA 8260D
1,1-Dichloroethene		<	1.0	ug/L	1	B9D0019	04/02/19 13:17	04/02/19 13:17	EPA 8260D
1,1-Dichloropropene		<	1.0	ug/L	1	B9D0019	04/02/19 13:17	04/02/19 13:17	EPA 8260D
1,2,3-Trichlorobenzene		<	1.0	ug/L	1	B9D0019	04/02/19 13:17	04/02/19 13:17	EPA 8260D
1,2,3-Trichloropropane		<	0.20	ug/L	1	B9D0019	04/02/19 13:17	04/02/19 13:17	EPA 8260D
1,2,4-Trichlorobenzene		<	1.0	ug/L	1	B9D0019	04/02/19 13:17	04/02/19 13:17	EPA 8260D
1,2,4-Trimethylbenzene		<	1.0	ug/L	1	B9D0019	04/02/19 13:17	04/02/19 13:17	EPA 8260D
1,2-Dibromo-3-chloropropane (DBCP)		<	1.0	ug/L	1	B9D0019	04/02/19 13:17	04/02/19 13:17	EPA 8260D
1,2-Dibromoethane (EDB)		<	0.50	ug/L	1	B9D0019	04/02/19 13:17	04/02/19 13:17	EPA 8260D
1,2-Dichlorobenzene		<	1.0	ug/L	1	B9D0019	04/02/19 13:17	04/02/19 13:17	EPA 8260D
1,2-Dichloroethane		<	0.20	ug/L	1	B9D0019	04/02/19 13:17	04/02/19 13:17	EPA 8260D
1,2-Dichloropropane		<	1.0	ug/L	1	B9D0019	04/02/19 13:17	04/02/19 13:17	EPA 8260D
1,3,5-Trimethylbenzene		<	1.0	ug/L	1	B9D0019	04/02/19 13:17	04/02/19 13:17	EPA 8260D
1,3-Dichlorobenzene		<	1.0	ug/L	1	B9D0019	04/02/19 13:17	04/02/19 13:17	EPA 8260D
1,3-Dichloropropane		<	1.0	ug/L	1	B9D0019	04/02/19 13:17	04/02/19 13:17	EPA 8260D
1,4-Dichlorobenzene		<	1.0	ug/L	1	B9D0019	04/02/19 13:17	04/02/19 13:17	EPA 8260D
2,2-Dichloropropane		<	1.0	ug/L	1	B9D0019	04/02/19 13:17	04/02/19 13:17	EPA 8260D
2-Chlorotoluene		<	1.0	ug/L	1	B9D0019	04/02/19 13:17	04/02/19 13:17	EPA 8260D

FINAL REPORT

Report ID: 04262019160231

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
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St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelosi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: SW-57
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 04/26/19 16:02

MDH Sample Number: 19C1274-04

Location ID: 462523
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 03/28/19
Collect Time: 12:30
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
4-Chlorotoluene		<	1.0	ug/L	1	B9D0019	04/02/19 13:17	04/02/19 13:17	EPA 8260D
Acetone		<	20	ug/L	1	B9D0019	04/02/19 13:17	04/02/19 13:17	EPA 8260D
Allyl chloride		<	1.0	ug/L	1	B9D0019	04/02/19 13:17	04/02/19 13:17	EPA 8260D
Benzene		<	0.50	ug/L	1	B9D0019	04/02/19 13:17	04/02/19 13:17	EPA 8260D
Bromobenzene		<	1.0	ug/L	1	B9D0019	04/02/19 13:17	04/02/19 13:17	EPA 8260D
Bromochloromethane		<	1.0	ug/L	1	B9D0019	04/02/19 13:17	04/02/19 13:17	EPA 8260D
Bromodichloromethane		<	1.0	ug/L	1	B9D0019	04/02/19 13:17	04/02/19 13:17	EPA 8260D
Bromoform		<	1.0	ug/L	1	B9D0019	04/02/19 13:17	04/02/19 13:17	EPA 8260D
Bromomethane	L3, V4, Z-01	<	2.0	ug/L	1	B9D0019	04/02/19 13:17	04/02/19 13:17	EPA 8260D
Carbon tetrachloride		<	0.20	ug/L	1	B9D0019	04/02/19 13:17	04/02/19 13:17	EPA 8260D
Chlorobenzene		<	1.0	ug/L	1	B9D0019	04/02/19 13:17	04/02/19 13:17	EPA 8260D
Chlorodibromomethane		<	0.50	ug/L	1	B9D0019	04/02/19 13:17	04/02/19 13:17	EPA 8260D
Chloroethane		<	1.0	ug/L	1	B9D0019	04/02/19 13:17	04/02/19 13:17	EPA 8260D
Chloroform		<	1.0	ug/L	1	B9D0019	04/02/19 13:17	04/02/19 13:17	EPA 8260D
Chloromethane		<	1.0	ug/L	1	B9D0019	04/02/19 13:17	04/02/19 13:17	EPA 8260D
cis-1,2-Dichloroethene		<	1.0	ug/L	1	B9D0019	04/02/19 13:17	04/02/19 13:17	EPA 8260D
cis-1,3-Dichloropropene		<	0.50	ug/L	1	B9D0019	04/02/19 13:17	04/02/19 13:17	EPA 8260D
Dibromomethane		<	1.0	ug/L	1	B9D0019	04/02/19 13:17	04/02/19 13:17	EPA 8260D
Dichlorodifluoromethane		<	1.0	ug/L	1	B9D0019	04/02/19 13:17	04/02/19 13:17	EPA 8260D
Dichlorofluoromethane		<	1.0	ug/L	1	B9D0019	04/02/19 13:17	04/02/19 13:17	EPA 8260D
Ethyl ether		**3.3**	1.0	ug/L	1	B9D0019	04/02/19 13:17	04/02/19 13:17	EPA 8260D
Ethylbenzene		<	1.0	ug/L	1	B9D0019	04/02/19 13:17	04/02/19 13:17	EPA 8260D
Hexachlorobutadiene		<	0.50	ug/L	1	B9D0019	04/02/19 13:17	04/02/19 13:17	EPA 8260D
Isopropylbenzene		<	1.0	ug/L	1	B9D0019	04/02/19 13:17	04/02/19 13:17	EPA 8260D
Methyl ethyl ketone (MEK)		<	10	ug/L	1	B9D0019	04/02/19 13:17	04/02/19 13:17	EPA 8260D
Methyl isobutyl ketone (MIBK)		<	5.0	ug/L	1	B9D0019	04/02/19 13:17	04/02/19 13:17	EPA 8260D
Methyl tertiary butyl ether (MTBE)		<	2.0	ug/L	1	B9D0019	04/02/19 13:17	04/02/19 13:17	EPA 8260D

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Public Health Laboratory
Environmental Laboratory Section
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St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelosi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: SW-57
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 04/26/19 16:02

MDH Sample Number: 19C1274-04

Location ID: 462523
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 03/28/19
Collect Time: 12:30
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Methylene chloride		<	1.0	ug/L	1	B9D0019	04/02/19 13:17	04/02/19 13:17	EPA 8260D
Naphthalene		<	1.0	ug/L	1	B9D0019	04/02/19 13:17	04/02/19 13:17	EPA 8260D
n-Butylbenzene		<	1.0	ug/L	1	B9D0019	04/02/19 13:17	04/02/19 13:17	EPA 8260D
n-Propylbenzene		<	1.0	ug/L	1	B9D0019	04/02/19 13:17	04/02/19 13:17	EPA 8260D
o-Xylene		<	1.0	ug/L	1	B9D0019	04/02/19 13:17	04/02/19 13:17	EPA 8260D
p&m-Xylene		<	1.0	ug/L	1	B9D0019	04/02/19 13:17	04/02/19 13:17	EPA 8260D
p-Isopropyltoluene		<	1.0	ug/L	1	B9D0019	04/02/19 13:17	04/02/19 13:17	EPA 8260D
sec-Butylbenzene		<	1.0	ug/L	1	B9D0019	04/02/19 13:17	04/02/19 13:17	EPA 8260D
Styrene		<	1.0	ug/L	1	B9D0019	04/02/19 13:17	04/02/19 13:17	EPA 8260D
tert-Butylbenzene		<	1.0	ug/L	1	B9D0019	04/02/19 13:17	04/02/19 13:17	EPA 8260D
Tetrachloroethene		<	1.0	ug/L	1	B9D0019	04/02/19 13:17	04/02/19 13:17	EPA 8260D
Tetrahydrofuran (THF)		<	10	ug/L	1	B9D0019	04/02/19 13:17	04/02/19 13:17	EPA 8260D
Toluene		<	1.0	ug/L	1	B9D0019	04/02/19 13:17	04/02/19 13:17	EPA 8260D
trans-1,2-Dichloroethene		<	1.0	ug/L	1	B9D0019	04/02/19 13:17	04/02/19 13:17	EPA 8260D
trans-1,3-Dichloropropene		<	0.50	ug/L	1	B9D0019	04/02/19 13:17	04/02/19 13:17	EPA 8260D
Trichloroethene (TCE)		<	0.10	ug/L	1	B9D0019	04/02/19 13:17	04/02/19 13:17	EPA 8260D
Trichlorofluoromethane		<	1.0	ug/L	1	B9D0019	04/02/19 13:17	04/02/19 13:17	EPA 8260D
Vinyl chloride		<	0.050	ug/L	1	B9D0019	04/02/19 13:17	04/02/19 13:17	EPA 8260D

1,4-Dioxane

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
1,4-Dioxane		**6.2**	0.049	ug/L	1	B9D0396	04/23/19 08:00	04/24/19 13:45	EPA 522 Modified

PFC Expanded List

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorobutanesulfonate (PFBS)		<	0.050	ug/L	1	B9D0148	04/08/19 17:24	04/08/19 17:24	MDH 555
Perfluorobutanoic acid (PFBA)		**0.10**	0.050	ug/L	1	B9D0148	04/08/19 17:24	04/08/19 17:24	MDH 555

FINAL REPORT

Report ID: 04262019160231

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Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelosi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: SW-57
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 04/26/19 16:02

MDH Sample Number: 19C1274-04

Location ID: 462523
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 03/28/19
Collect Time: 12:30
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

PFC Expanded List - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorohexanesulfonate (PFHxS)		<	0.025	ug/L	1	B9D0148	04/08/19 17:24	04/08/19 17:24	MDH 555
Perfluorohexanoic acid (PFHxA)		<	0.050	ug/L	1	B9D0148	04/08/19 17:24	04/08/19 17:24	MDH 555
Perfluorooctanesulfonate (PFOS)		**0.038**	0.025	ug/L	1	B9D0148	04/08/19 17:24	04/08/19 17:24	MDH 555
Perfluorooctanoic acid (PFOA)		**0.11**	0.035	ug/L	1	B9D0148	04/08/19 17:24	04/08/19 17:24	MDH 555
Perfluoropentanoic acid (PFPeA)	J	**0.014**	0.050	ug/L	1	B9D0148	04/08/19 17:24	04/08/19 17:24	MDH 555

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St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelosi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: SW-57
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 04/26/19 16:02

MDH Sample Number: 19C1274-05

Location ID: 434011
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 03/28/19
Collect Time: 14:20
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Surrogate: 1,2-Dichlorobenzene-d4		*100*	*70-130*	%	*1*	*B9D0019*	*04/02/19 13:45*	*04/02/19 13:45*	*EPA 8260D*
Surrogate: 4-Bromofluorobenzene		*98*	*70-130*	%	*1*	*B9D0019*	*04/02/19 13:45*	*04/02/19 13:45*	*EPA 8260D*
Surrogate: Methyl tertiary butyl ether-d3		*101*	*70-130*	%	*1*	*B9D0019*	*04/02/19 13:45*	*04/02/19 13:45*	*EPA 8260D*
1,1,1,2-Tetrachloroethane		<	1.0	ug/L	1	B9D0019	04/02/19 13:45	04/02/19 13:45	EPA 8260D
1,1,1-Trichloroethane		<	1.0	ug/L	1	B9D0019	04/02/19 13:45	04/02/19 13:45	EPA 8260D
1,1,2,2-Tetrachloroethane		<	0.50	ug/L	1	B9D0019	04/02/19 13:45	04/02/19 13:45	EPA 8260D
1,1,2-Trichloroethane		<	0.50	ug/L	1	B9D0019	04/02/19 13:45	04/02/19 13:45	EPA 8260D
1,1,2-Trichlorotrifluoroethane		<	1.0	ug/L	1	B9D0019	04/02/19 13:45	04/02/19 13:45	EPA 8260D
1,1-Dichloroethane		<	1.0	ug/L	1	B9D0019	04/02/19 13:45	04/02/19 13:45	EPA 8260D
1,1-Dichloroethene		<	1.0	ug/L	1	B9D0019	04/02/19 13:45	04/02/19 13:45	EPA 8260D
1,1-Dichloropropene		<	1.0	ug/L	1	B9D0019	04/02/19 13:45	04/02/19 13:45	EPA 8260D
1,2,3-Trichlorobenzene		<	1.0	ug/L	1	B9D0019	04/02/19 13:45	04/02/19 13:45	EPA 8260D
1,2,3-Trichloropropane		<	0.20	ug/L	1	B9D0019	04/02/19 13:45	04/02/19 13:45	EPA 8260D
1,2,4-Trichlorobenzene		<	1.0	ug/L	1	B9D0019	04/02/19 13:45	04/02/19 13:45	EPA 8260D
1,2,4-Trimethylbenzene		<	1.0	ug/L	1	B9D0019	04/02/19 13:45	04/02/19 13:45	EPA 8260D
1,2-Dibromo-3-chloropropane (DBCP)		<	1.0	ug/L	1	B9D0019	04/02/19 13:45	04/02/19 13:45	EPA 8260D
1,2-Dibromoethane (EDB)		<	0.50	ug/L	1	B9D0019	04/02/19 13:45	04/02/19 13:45	EPA 8260D
1,2-Dichlorobenzene		<	1.0	ug/L	1	B9D0019	04/02/19 13:45	04/02/19 13:45	EPA 8260D
1,2-Dichloroethane		<	0.20	ug/L	1	B9D0019	04/02/19 13:45	04/02/19 13:45	EPA 8260D
1,2-Dichloropropane		<	1.0	ug/L	1	B9D0019	04/02/19 13:45	04/02/19 13:45	EPA 8260D
1,3,5-Trimethylbenzene		<	1.0	ug/L	1	B9D0019	04/02/19 13:45	04/02/19 13:45	EPA 8260D
1,3-Dichlorobenzene		<	1.0	ug/L	1	B9D0019	04/02/19 13:45	04/02/19 13:45	EPA 8260D
1,3-Dichloropropane		<	1.0	ug/L	1	B9D0019	04/02/19 13:45	04/02/19 13:45	EPA 8260D
1,4-Dichlorobenzene		<	1.0	ug/L	1	B9D0019	04/02/19 13:45	04/02/19 13:45	EPA 8260D
2,2-Dichloropropane		<	1.0	ug/L	1	B9D0019	04/02/19 13:45	04/02/19 13:45	EPA 8260D
2-Chlorotoluene		<	1.0	ug/L	1	B9D0019	04/02/19 13:45	04/02/19 13:45	EPA 8260D

FINAL REPORT

Report ID: 04262019160231

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelosi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: SW-57
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 04/26/19 16:02

MDH Sample Number: 19C1274-05

Location ID: 434011
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 03/28/19
Collect Time: 14:20
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
4-Chlorotoluene		<	1.0	ug/L	1	B9D0019	04/02/19 13:45	04/02/19 13:45	EPA 8260D
Acetone		<	20	ug/L	1	B9D0019	04/02/19 13:45	04/02/19 13:45	EPA 8260D
Allyl chloride		<	1.0	ug/L	1	B9D0019	04/02/19 13:45	04/02/19 13:45	EPA 8260D
Benzene		<	0.50	ug/L	1	B9D0019	04/02/19 13:45	04/02/19 13:45	EPA 8260D
Bromobenzene		<	1.0	ug/L	1	B9D0019	04/02/19 13:45	04/02/19 13:45	EPA 8260D
Bromochloromethane		<	1.0	ug/L	1	B9D0019	04/02/19 13:45	04/02/19 13:45	EPA 8260D
Bromodichloromethane		<	1.0	ug/L	1	B9D0019	04/02/19 13:45	04/02/19 13:45	EPA 8260D
Bromoform		<	1.0	ug/L	1	B9D0019	04/02/19 13:45	04/02/19 13:45	EPA 8260D
Bromomethane	L3, V4, Z-01	<	2.0	ug/L	1	B9D0019	04/02/19 13:45	04/02/19 13:45	EPA 8260D
Carbon tetrachloride		<	0.20	ug/L	1	B9D0019	04/02/19 13:45	04/02/19 13:45	EPA 8260D
Chlorobenzene		<	1.0	ug/L	1	B9D0019	04/02/19 13:45	04/02/19 13:45	EPA 8260D
Chlorodibromomethane		<	0.50	ug/L	1	B9D0019	04/02/19 13:45	04/02/19 13:45	EPA 8260D
Chloroethane		<	1.0	ug/L	1	B9D0019	04/02/19 13:45	04/02/19 13:45	EPA 8260D
Chloroform		<	1.0	ug/L	1	B9D0019	04/02/19 13:45	04/02/19 13:45	EPA 8260D
Chloromethane		<	1.0	ug/L	1	B9D0019	04/02/19 13:45	04/02/19 13:45	EPA 8260D
cis-1,2-Dichloroethene		<	1.0	ug/L	1	B9D0019	04/02/19 13:45	04/02/19 13:45	EPA 8260D
cis-1,3-Dichloropropene		<	0.50	ug/L	1	B9D0019	04/02/19 13:45	04/02/19 13:45	EPA 8260D
Dibromomethane		<	1.0	ug/L	1	B9D0019	04/02/19 13:45	04/02/19 13:45	EPA 8260D
Dichlorodifluoromethane		<	1.0	ug/L	1	B9D0019	04/02/19 13:45	04/02/19 13:45	EPA 8260D
Dichlorofluoromethane		<	1.0	ug/L	1	B9D0019	04/02/19 13:45	04/02/19 13:45	EPA 8260D
Ethyl ether		**3.1**	1.0	ug/L	1	B9D0019	04/02/19 13:45	04/02/19 13:45	EPA 8260D
Ethylbenzene		<	1.0	ug/L	1	B9D0019	04/02/19 13:45	04/02/19 13:45	EPA 8260D
Hexachlorobutadiene		<	0.50	ug/L	1	B9D0019	04/02/19 13:45	04/02/19 13:45	EPA 8260D
Isopropylbenzene		<	1.0	ug/L	1	B9D0019	04/02/19 13:45	04/02/19 13:45	EPA 8260D
Methyl ethyl ketone (MEK)		<	10	ug/L	1	B9D0019	04/02/19 13:45	04/02/19 13:45	EPA 8260D
Methyl isobutyl ketone (MIBK)		<	5.0	ug/L	1	B9D0019	04/02/19 13:45	04/02/19 13:45	EPA 8260D
Methyl tertiary butyl ether (MTBE)		<	2.0	ug/L	1	B9D0019	04/02/19 13:45	04/02/19 13:45	EPA 8260D

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelosi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: SW-57
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 04/26/19 16:02

MDH Sample Number: 19C1274-05

Location ID: 434011
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 03/28/19
Collect Time: 14:20
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Methylene chloride		<	1.0	ug/L	1	B9D0019	04/02/19 13:45	04/02/19 13:45	EPA 8260D
Naphthalene		<	1.0	ug/L	1	B9D0019	04/02/19 13:45	04/02/19 13:45	EPA 8260D
n-Butylbenzene		<	1.0	ug/L	1	B9D0019	04/02/19 13:45	04/02/19 13:45	EPA 8260D
n-Propylbenzene		<	1.0	ug/L	1	B9D0019	04/02/19 13:45	04/02/19 13:45	EPA 8260D
o-Xylene		<	1.0	ug/L	1	B9D0019	04/02/19 13:45	04/02/19 13:45	EPA 8260D
p&m-Xylene		<	1.0	ug/L	1	B9D0019	04/02/19 13:45	04/02/19 13:45	EPA 8260D
p-Isopropyltoluene		<	1.0	ug/L	1	B9D0019	04/02/19 13:45	04/02/19 13:45	EPA 8260D
sec-Butylbenzene		<	1.0	ug/L	1	B9D0019	04/02/19 13:45	04/02/19 13:45	EPA 8260D
Styrene		<	1.0	ug/L	1	B9D0019	04/02/19 13:45	04/02/19 13:45	EPA 8260D
tert-Butylbenzene		<	1.0	ug/L	1	B9D0019	04/02/19 13:45	04/02/19 13:45	EPA 8260D
Tetrachloroethene		<	1.0	ug/L	1	B9D0019	04/02/19 13:45	04/02/19 13:45	EPA 8260D
Tetrahydrofuran (THF)		<	10	ug/L	1	B9D0019	04/02/19 13:45	04/02/19 13:45	EPA 8260D
Toluene		<	1.0	ug/L	1	B9D0019	04/02/19 13:45	04/02/19 13:45	EPA 8260D
trans-1,2-Dichloroethene		<	1.0	ug/L	1	B9D0019	04/02/19 13:45	04/02/19 13:45	EPA 8260D
trans-1,3-Dichloropropene		<	0.50	ug/L	1	B9D0019	04/02/19 13:45	04/02/19 13:45	EPA 8260D
Trichloroethene (TCE)		<	0.10	ug/L	1	B9D0019	04/02/19 13:45	04/02/19 13:45	EPA 8260D
Trichlorofluoromethane		<	1.0	ug/L	1	B9D0019	04/02/19 13:45	04/02/19 13:45	EPA 8260D
Vinyl chloride		<	0.050	ug/L	1	B9D0019	04/02/19 13:45	04/02/19 13:45	EPA 8260D

1,4-Dioxane

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
1,4-Dioxane		**9.9**	0.049	ug/L	1	B9D0396	04/23/19 08:00	04/24/19 14:01	EPA 522 Modified

PFC Expanded List

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorobutanesulfonate (PFBS)		<	0.050	ug/L	1	B9D0148	04/08/19 17:40	04/08/19 17:40	MDH 555
Perfluorobutanoic acid (PFBA)		**0.16**	0.050	ug/L	1	B9D0148	04/08/19 17:40	04/08/19 17:40	MDH 555

FINAL REPORT

Report ID: 04262019160231

Authorized by:

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St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelosi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: SW-57
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 04/26/19 16:02

MDH Sample Number: 19C1274-05

Location ID: 434011
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 03/28/19
Collect Time: 14:20
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

PFC Expanded List - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorohexanesulfonate (PFHxS)		<	0.025	ug/L	1	B9D0148	04/08/19 17:40	04/08/19 17:40	MDH 555
Perfluorohexanoic acid (PFHxA)	J	**0.024**	0.050	ug/L	1	B9D0148	04/08/19 17:40	04/08/19 17:40	MDH 555
Perfluorooctanesulfonate (PFOS)	J	**0.016**	0.025	ug/L	1	B9D0148	04/08/19 17:40	04/08/19 17:40	MDH 555
Perfluorooctanoic acid (PFOA)		**0.083**	0.035	ug/L	1	B9D0148	04/08/19 17:40	04/08/19 17:40	MDH 555
Perfluoropentanoic acid (PFPeA)	J	**0.021**	0.050	ug/L	1	B9D0148	04/08/19 17:40	04/08/19 17:40	MDH 555

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: SW-57
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 16:02

Batch Summary

Samples in Batch: B9D0001 - EPA 5030B Preparation

19C1274-01 19C1274-02 19C1274-03

Samples in Batch: B9D0019 - EPA 5030B Preparation

19C1274-04 19C1274-05

Samples in Batch: B9D0148 - PFCs Preparation

19C1274-02 19C1274-03 19C1274-04 19C1274-05

Samples in Batch: B9D0396 - 1,4 Dioxane in Water SPE

19C1274-02 19C1274-03 19C1274-04 19C1274-05

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: SW-57
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 16:02

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0001 - EPA 5030B Preparation

Blank (B9D0001-BLK1) **Prepared: 04/01/19 14:35 Analyzed: 04/01/19 14:35**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: 1,2-Dichlorobenzene-d4		*100*	*70-130*	*%*	*10*					
Surrogate: 4-Bromofluorobenzene		*99*	*70-130*	*%*	*10*					
Surrogate: Methyl tertiary butyl ether-d3		*101*	*70-130*	*%*	*10*					
1,1,1,2-Tetrachloroethane		<	1.0	ug/L						
1,1,1-Trichloroethane		<	1.0	ug/L						
1,1,2,2-Tetrachloroethane		<	0.50	ug/L						
1,1,2-Trichloroethane		<	0.50	ug/L						
1,1,2-Trichlorotrifluoroethane		<	1.0	ug/L						
1,1-Dichloroethane		<	1.0	ug/L						
1,1-Dichloroethene		<	1.0	ug/L						
1,1-Dichloropropene		<	1.0	ug/L						
1,2,3-Trichlorobenzene		<	1.0	ug/L						
1,2,3-Trichloropropane		<	0.20	ug/L						
1,2,4-Trichlorobenzene		<	1.0	ug/L						
1,2,4-Trimethylbenzene		<	1.0	ug/L						
1,2-Dibromo-3-chloropropane (DBCP)		<	1.0	ug/L						
1,2-Dibromoethane (EDB)		<	0.50	ug/L						
1,2-Dichlorobenzene		<	1.0	ug/L						
1,2-Dichloroethane		<	0.20	ug/L						
1,2-Dichloropropane		<	1.0	ug/L						
1,3,5-Trimethylbenzene		<	1.0	ug/L						
1,3-Dichlorobenzene		<	1.0	ug/L						
1,3-Dichloropropane		<	1.0	ug/L						
1,4-Dichlorobenzene		<	1.0	ug/L						
2,2-Dichloropropane		<	1.0	ug/L						
2-Chlorotoluene		<	1.0	ug/L						
4-Chlorotoluene		<	1.0	ug/L						
Acetone		<	20	ug/L						
Allyl chloride		<	1.0	ug/L						
Benzene		<	0.50	ug/L						
Bromobenzene		<	1.0	ug/L						
Bromochloromethane		<	1.0	ug/L						
Bromodichloromethane		<	1.0	ug/L						
Bromoform		<	1.0	ug/L						

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: SW-57
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 16:02

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0001 - EPA 5030B Preparation

Blank (B9D0001-BLK1) **Prepared: 04/01/19 14:35 Analyzed: 04/01/19 14:35**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Bromomethane	L3, V4, Z-01	<	2.0	ug/L						
Carbon tetrachloride		<	0.20	ug/L						
Chlorobenzene		<	1.0	ug/L						
Chlorodibromomethane		<	0.50	ug/L						
Chloroethane		<	1.0	ug/L						
Chloroform		<	1.0	ug/L						
Chloromethane		<	1.0	ug/L						
cis-1,2-Dichloroethene		<	1.0	ug/L						
cis-1,3-Dichloropropene		<	0.50	ug/L						
Dibromomethane		<	1.0	ug/L						
Dichlorodifluoromethane		<	1.0	ug/L						
Dichlorofluoromethane		<	1.0	ug/L						
Ethyl ether		<	1.0	ug/L						
Ethylbenzene		<	1.0	ug/L						
Hexachlorobutadiene		<	0.50	ug/L						
Isopropylbenzene		<	1.0	ug/L						
Methyl ethyl ketone (MEK)		<	10	ug/L						
Methyl isobutyl ketone (MIBK)		<	5.0	ug/L						
Methyl tertiary butyl ether (MTBE)		<	2.0	ug/L						
Methylene chloride		<	1.0	ug/L						
Naphthalene		<	1.0	ug/L						
n-Butylbenzene		<	1.0	ug/L						
n-Propylbenzene		<	1.0	ug/L						
o-Xylene		<	1.0	ug/L						
p&m-Xylene		<	1.0	ug/L						
p-Isopropyltoluene		<	1.0	ug/L						
sec-Butylbenzene		<	1.0	ug/L						
Styrene		<	1.0	ug/L						
tert-Butylbenzene		<	1.0	ug/L						
Tetrachloroethene		<	1.0	ug/L						
Tetrahydrofuran (THF)		<	10	ug/L						
Toluene		<	1.0	ug/L						
trans-1,2-Dichloroethene		<	1.0	ug/L						
trans-1,3-Dichloropropene		<	0.50	ug/L						
Trichloroethene (TCE)		<	0.10	ug/L						

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Public Health Laboratory, Minnesota Department of Health

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651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: SW-57
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 16:02

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0001 - EPA 5030B Preparation

Blank (B9D0001-BLK1) **Prepared: 04/01/19 14:35 Analyzed: 04/01/19 14:35**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Trichlorofluoromethane		<	1.0	ug/L						
Vinyl chloride		<	0.050	ug/L						

LCS (B9D0001-BS1) **Prepared: 04/01/19 12:44 Analyzed: 04/01/19 12:44**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: 1,2-Dichlorobenzene-d4		*99*	*70-130*	*%*	*10*					
Surrogate: 4-Bromofluorobenzene		*95*	*70-130*	*%*	*10*					
Surrogate: Methyl tertiary butyl ether-d3		*102*	*70-130*	*%*	*10*					
1,1,1,2-Tetrachloroethane		10	1.0	ug/L	10		102	70-130		
1,1,1-Trichloroethane		11	1.0	ug/L	10		107	70-130		
1,1,2,2-Tetrachloroethane		9.7	0.50	ug/L	10		97	70-130		
1,1,2-Trichloroethane		10	0.50	ug/L	10		102	70-130		
1,1,2-Trichlorotrifluoroethane		11	1.0	ug/L	10		109	70-130		
1,1-Dichloroethane		10	1.0	ug/L	10		104	70-130		
1,1-Dichloroethene		10	1.0	ug/L	10		104	70-130		
1,1-Dichloropropene		11	1.0	ug/L	10		107	70-130		
1,2,3-Trichlorobenzene		9.8	1.0	ug/L	10		98	70-130		
1,2,3-Trichloropropane		9.7	0.20	ug/L	10		97	70-130		
1,2,4-Trichlorobenzene		9.8	1.0	ug/L	10		98	70-130		
1,2,4-Trimethylbenzene		9.9	1.0	ug/L	10		99	70-130		
1,2-Dibromo-3-chloropropane (DBCP)		9.8	1.0	ug/L	10		98	70-130		
1,2-Dibromoethane (EDB)		10	0.50	ug/L	10		100	70-130		
1,2-Dichlorobenzene		9.8	1.0	ug/L	10		98	70-130		
1,2-Dichloroethane		11	0.20	ug/L	10		106	70-130		
1,2-Dichloropropane		10	1.0	ug/L	10		104	70-130		
1,3,5-Trimethylbenzene		9.7	1.0	ug/L	10		97	70-130		
1,3-Dichlorobenzene		9.9	1.0	ug/L	10		99	70-130		
1,3-Dichloropropane		9.8	1.0	ug/L	10		98	70-130		
1,4-Dichlorobenzene		9.9	1.0	ug/L	10		99	70-130		
2,2-Dichloropropane		11	1.0	ug/L	10		115	70-130		
2-Chlorotoluene		9.8	1.0	ug/L	10		98	70-130		
4-Chlorotoluene		9.8	1.0	ug/L	10		98	70-130		
Acetone		100	20	ug/L	100		101	70-130		

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: SW-57
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 16:02

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0001 - EPA 5030B Preparation

LCS (B9D0001-BS1) **Prepared: 04/01/19 12:44 Analyzed: 04/01/19 12:44**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Allyl chloride		10	1.0	ug/L	10		103	70-130		
Benzene		10	0.50	ug/L	10		101	70-130		
Bromobenzene		10	1.0	ug/L	10		100	70-130		
Bromochloromethane		11	1.0	ug/L	10		107	70-130		
Bromodichloromethane		11	1.0	ug/L	10		108	70-130		
Bromoform		9.5	1.0	ug/L	10		95	70-130		
Bromomethane	L3, V4, Z-01	5.5	2.0	ug/L	10		55	70-130		
Carbon tetrachloride		11	0.20	ug/L	10		114	70-130		
Chlorobenzene		10	1.0	ug/L	10		100	70-130		
Chlorodibromomethane		9.9	0.50	ug/L	10		99	70-130		
Chloroethane		10	1.0	ug/L	10		104	70-130		
Chloroform		11	1.0	ug/L	10		105	70-130		
Chloromethane		8.1	1.0	ug/L	10		81	70-130		
cis-1,2-Dichloroethene		10	1.0	ug/L	10		104	70-130		
cis-1,3-Dichloropropene		10	0.50	ug/L	10		100	70-130		
Dibromomethane		11	1.0	ug/L	10		106	70-130		
Dichlorodifluoromethane		8.2	1.0	ug/L	10		82	70-130		
Dichlorofluoromethane		11	1.0	ug/L	10		109	70-130		
Ethyl ether		9.9	1.0	ug/L	10		99	70-130		
Ethylbenzene		10	1.0	ug/L	10		100	70-130		
Hexachlorobutadiene		10	0.50	ug/L	10		104	70-130		
Isopropylbenzene		10	1.0	ug/L	10		101	70-130		
Methyl ethyl ketone (MEK)		51	10	ug/L	50		102	70-130		
Methyl isobutyl ketone (MIBK)		51	5.0	ug/L	50		101	70-130		
Methyl tertiary butyl ether (MTBE)		10	2.0	ug/L	10		105	70-130		
Methylene chloride		11	1.0	ug/L	10		105	70-130		
Naphthalene		9.7	1.0	ug/L	10		97	70-130		
n-Butylbenzene		11	1.0	ug/L	10		107	70-130		
n-Propylbenzene		10	1.0	ug/L	10		101	70-130		
o-Xylene		9.6	1.0	ug/L	10		96	70-130		
p&m-Xylene		10	1.0	ug/L	10		100	70-130		
p-Isopropyltoluene		10	1.0	ug/L	10		100	70-130		
sec-Butylbenzene		10	1.0	ug/L	10		101	70-130		
Styrene		9.6	1.0	ug/L	10		96	70-130		
tert-Butylbenzene		9.9	1.0	ug/L	10		99	70-130		

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: SW-57
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 16:02

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0001 - EPA 5030B Preparation

LCS (B9D0001-BS1) **Prepared: 04/01/19 12:44 Analyzed: 04/01/19 12:44**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Tetrachloroethene		10	1.0	ug/L	10		102	70-130		
Tetrahydrofuran (THF)		100	10	ug/L	100		101	70-130		
Toluene		9.7	1.0	ug/L	10		97	70-130		
trans-1,2-Dichloroethene		10	1.0	ug/L	10		103	70-130		
trans-1,3-Dichloropropene		10	0.50	ug/L	10		101	70-130		
Trichloroethene (TCE)		10	0.10	ug/L	10		101	70-130		
Trichlorofluoromethane		11	1.0	ug/L	10		108	70-130		
Vinyl chloride		9.5	0.050	ug/L	10		95	70-130		

LCS Dup (B9D0001-BSD1) **Prepared: 04/01/19 13:12 Analyzed: 04/01/19 13:12**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: 1,2-Dichlorobenzene-d4		*100*	*70-130*	*%*	*10*					
Surrogate: 4-Bromofluorobenzene		*97*	*70-130*	*%*	*10*					
Surrogate: Methyl tertiary butyl ether-d3		*101*	*70-130*	*%*	*10*					
1,1,1,2-Tetrachloroethane		10	1.0	ug/L	10		101	70-130	1	30
1,1,1-Trichloroethane		11	1.0	ug/L	10		106	70-130	1	30
1,1,2,2-Tetrachloroethane		9.4	0.50	ug/L	10		94	70-130	3	30
1,1,2-Trichloroethane		9.7	0.50	ug/L	10		97	70-130	5	30
1,1,2-Trichlorotrifluoroethane		10	1.0	ug/L	10		104	70-130	4	30
1,1-Dichloroethane		10	1.0	ug/L	10		101	70-130	3	30
1,1-Dichloroethene		10	1.0	ug/L	10		102	70-130	2	30
1,1-Dichloropropene		11	1.0	ug/L	10		105	70-130	1	30
1,2,3-Trichlorobenzene		10	1.0	ug/L	10		100	70-130	2	30
1,2,3-Trichloropropane		9.4	0.20	ug/L	10		94	70-130	3	30
1,2,4-Trichlorobenzene		9.9	1.0	ug/L	10		99	70-130	0.6	30
1,2,4-Trimethylbenzene		9.6	1.0	ug/L	10		96	70-130	3	30
1,2-Dibromo-3-chloropropane (DBCP)		9.3	1.0	ug/L	10		93	70-130	5	30
1,2-Dibromoethane (EDB)		9.4	0.50	ug/L	10		94	70-130	5	30
1,2-Dichlorobenzene		9.6	1.0	ug/L	10		96	70-130	2	30
1,2-Dichloroethane		10	0.20	ug/L	10		103	70-130	3	30
1,2-Dichloropropane		10	1.0	ug/L	10		103	70-130	2	30
1,3,5-Trimethylbenzene		9.4	1.0	ug/L	10		94	70-130	3	30
1,3-Dichlorobenzene		9.6	1.0	ug/L	10		96	70-130	3	30

FINAL REPORT

Report ID: 04262019160231

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Public Health Laboratory
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651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: SW-57
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 16:02

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0001 - EPA 5030B Preparation

LCS Dup (B9D0001-BSD1) **Prepared: 04/01/19 13:12 Analyzed: 04/01/19 13:12**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,3-Dichloropropane		9.8	1.0	ug/L	10		98	70-130	0.2	30
1,4-Dichlorobenzene		9.8	1.0	ug/L	10		98	70-130	2	30
2,2-Dichloropropane		11	1.0	ug/L	10		109	70-130	5	30
2-Chlorotoluene		9.6	1.0	ug/L	10		96	70-130	2	30
4-Chlorotoluene		9.5	1.0	ug/L	10		95	70-130	3	30
Acetone		100	20	ug/L	100		101	70-130	0.4	30
Allyl chloride		9.6	1.0	ug/L	10		96	70-130	7	30
Benzene		10	0.50	ug/L	10		100	70-130	2	30
Bromobenzene		9.5	1.0	ug/L	10		95	70-130	5	30
Bromochloromethane		10	1.0	ug/L	10		102	70-130	6	30
Bromodichloromethane		10	1.0	ug/L	10		103	70-130	5	30
Bromoform		9.2	1.0	ug/L	10		92	70-130	3	30
Bromomethane	L3, V4, Z-01	5.8	2.0	ug/L	10		58	70-130	4	30
Carbon tetrachloride		11	0.20	ug/L	10		111	70-130	3	30
Chlorobenzene		9.8	1.0	ug/L	10		98	70-130	2	30
Chlorodibromomethane		9.4	0.50	ug/L	10		94	70-130	5	30
Chloroethane		10	1.0	ug/L	10		101	70-130	4	30
Chloroform		10	1.0	ug/L	10		102	70-130	3	30
Chloromethane		7.8	1.0	ug/L	10		78	70-130	3	30
cis-1,2-Dichloroethene		9.9	1.0	ug/L	10		99	70-130	5	30
cis-1,3-Dichloropropene		9.6	0.50	ug/L	10		96	70-130	5	30
Dibromomethane		10	1.0	ug/L	10		105	70-130	1	30
Dichlorodifluoromethane		7.9	1.0	ug/L	10		79	70-130	4	30
Dichlorofluoromethane		11	1.0	ug/L	10		107	70-130	2	30
Ethyl ether		9.8	1.0	ug/L	10		98	70-130	1	30
Ethylbenzene		9.5	1.0	ug/L	10		95	70-130	6	30
Hexachlorobutadiene		10	0.50	ug/L	10		100	70-130	4	30
Isopropylbenzene		9.6	1.0	ug/L	10		96	70-130	5	30
Methyl ethyl ketone (MEK)		51	10	ug/L	50		102	70-130	0.5	30
Methyl isobutyl ketone (MIBK)		50	5.0	ug/L	50		100	70-130	1	30
Methyl tertiary butyl ether (MTBE)		10	2.0	ug/L	10		101	70-130	3	30
Methylene chloride		10	1.0	ug/L	10		102	70-130	3	30
Naphthalene		9.6	1.0	ug/L	10		96	70-130	2	30
n-Butylbenzene		10	1.0	ug/L	10		103	70-130	3	30
n-Propylbenzene		9.9	1.0	ug/L	10		99	70-130	2	30

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651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: SW-57
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 16:02

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0001 - EPA 5030B Preparation

LCS Dup (B9D0001-BSD1) **Prepared: 04/01/19 13:12 Analyzed: 04/01/19 13:12**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
o-Xylene		9.4	1.0	ug/L	10		94	70-130	2	30
p&m-Xylene		9.7	1.0	ug/L	10		97	70-130	4	30
p-Isopropyltoluene		9.9	1.0	ug/L	10		99	70-130	1	30
sec-Butylbenzene		9.8	1.0	ug/L	10		98	70-130	3	30
Styrene		9.0	1.0	ug/L	10		90	70-130	6	30
tert-Butylbenzene		9.7	1.0	ug/L	10		97	70-130	2	30
Tetrachloroethene		9.8	1.0	ug/L	10		98	70-130	3	30
Tetrahydrofuran (THF)		100	10	ug/L	100		102	70-130	0.6	30
Toluene		9.4	1.0	ug/L	10		94	70-130	3	30
trans-1,2-Dichloroethene		10	1.0	ug/L	10		101	70-130	2	30
trans-1,3-Dichloropropene		9.8	0.50	ug/L	10		98	70-130	3	30
Trichloroethene (TCE)		9.8	0.10	ug/L	10		98	70-130	3	30
Trichlorofluoromethane		10	1.0	ug/L	10		103	70-130	4	30
Vinyl chloride		9.1	0.050	ug/L	10		91	70-130	5	30

Duplicate (B9D0001-DUP1) Source: 19C1238-15 **Prepared: 04/01/19 16:26 Analyzed: 04/01/19 16:26**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: 1,2-Dichlorobenzene-d4		*104*	*70-130*	*%*	*10*					
Surrogate: 4-Bromofluorobenzene		*98*	*70-130*	*%*	*10*					
Surrogate: Methyl tertiary butyl ether-d3		*101*	*70-130*	*%*	*10*					
1,1,1,2-Tetrachloroethane		<	1.0	ug/L		<				30
1,1,1-Trichloroethane		<	1.0	ug/L		<				30
1,1,2,2-Tetrachloroethane		<	0.50	ug/L		<				30
1,1,2-Trichloroethane		<	0.50	ug/L		<				30
1,1,2-Trichlorotrifluoroethane		<	1.0	ug/L		<				30
1,1-Dichloroethane		0.60	1.0	ug/L		<			3	30
1,1-Dichloroethene		<	1.0	ug/L		<				30
1,1-Dichloropropene		<	1.0	ug/L		<				30
1,2,3-Trichlorobenzene		<	1.0	ug/L		<				30
1,2,3-Trichloropropane		<	0.20	ug/L		<				30
1,2,4-Trichlorobenzene		<	1.0	ug/L		<				30
1,2,4-Trimethylbenzene		<	1.0	ug/L		<				30
1,2-Dibromo-3-chloropropane (DBCP)		<	1.0	ug/L		<				30

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: SW-57
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 16:02

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0001 - EPA 5030B Preparation

Duplicate (B9D0001-DUP1) Source: 19C1238-15 **Prepared: 04/01/19 16:26 Analyzed: 04/01/19 16:26**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,2-Dibromoethane (EDB)		<	0.50	ug/L		<				30
1,2-Dichlorobenzene		<	1.0	ug/L		<				30
1,2-Dichloroethane		<	0.20	ug/L		<				30
1,2-Dichloropropane		<	1.0	ug/L		<				30
1,3,5-Trimethylbenzene		<	1.0	ug/L		<				30
1,3-Dichlorobenzene		<	1.0	ug/L		<				30
1,3-Dichloropropane		<	1.0	ug/L		<				30
1,4-Dichlorobenzene		0.26	1.0	ug/L		<			8	30
2,2-Dichloropropane		<	1.0	ug/L		<				30
2-Chlorotoluene		<	1.0	ug/L		<				30
4-Chlorotoluene		<	1.0	ug/L		<				30
Acetone		<	20	ug/L		<				30
Allyl chloride		<	1.0	ug/L		<				30
Benzene		0.21	0.50	ug/L		<			5	30
Bromobenzene		<	1.0	ug/L		<				30
Bromochloromethane		<	1.0	ug/L		<				30
Bromodichloromethane		<	1.0	ug/L		<				30
Bromoform		<	1.0	ug/L		<				30
Bromomethane	L3, V4, Z-01	<	2.0	ug/L		<				30
Carbon tetrachloride		<	0.20	ug/L		<				30
Chlorobenzene		0.28	1.0	ug/L		<			15	30
Chlorodibromomethane		<	0.50	ug/L		<				30
Chloroethane		<	1.0	ug/L		<				30
Chloroform		<	1.0	ug/L		<				30
Chloromethane		<	1.0	ug/L		<				30
cis-1,2-Dichloroethene		0.67	1.0	ug/L		<			1	30
cis-1,3-Dichloropropene		<	0.50	ug/L		<				30
Dibromomethane		<	1.0	ug/L		<				30
Dichlorodifluoromethane		<	1.0	ug/L		<				30
Dichlorofluoromethane		0.61	1.0	ug/L		<			6	30
Ethyl ether		47	1.0	ug/L		47			0.4	30
Ethylbenzene		<	1.0	ug/L		<				30
Hexachlorobutadiene		<	0.50	ug/L		<				30
Isopropylbenzene		<	1.0	ug/L		<				30
Methyl ethyl ketone (MEK)		<	10	ug/L		<				30

FINAL REPORT

Report ID: 04262019160231

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: SW-57
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 16:02

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0001 - EPA 5030B Preparation

Duplicate (B9D0001-DUP1) Source: 19C1238-15 **Prepared: 04/01/19 16:26 Analyzed: 04/01/19 16:26**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Methyl isobutyl ketone (MIBK)		<	5.0	ug/L		<				30
Methyl tertiary butyl ether (MTBE)		<	2.0	ug/L		<				30
Methylene chloride		<	1.0	ug/L		<				30
Naphthalene		<	1.0	ug/L		<				30
n-Butylbenzene		<	1.0	ug/L		<				30
n-Propylbenzene		<	1.0	ug/L		<				30
o-Xylene		<	1.0	ug/L		<				30
p&m-Xylene		<	1.0	ug/L		<				30
p-Isopropyltoluene		<	1.0	ug/L		<				30
sec-Butylbenzene		<	1.0	ug/L		<				30
Styrene		<	1.0	ug/L		<				30
tert-Butylbenzene		<	1.0	ug/L		<				30
Tetrachloroethene		0.91	1.0	ug/L		1.0			9	30
Tetrahydrofuran (THF)		<	10	ug/L		<				30
Toluene		<	1.0	ug/L		<				30
trans-1,2-Dichloroethene		<	1.0	ug/L		<				30
trans-1,3-Dichloropropene		<	0.50	ug/L		<				30
Trichloroethene (TCE)		0.56	0.10	ug/L		0.56			0	30
Trichlorofluoromethane		<	1.0	ug/L		<				30
Vinyl chloride		0.090	0.050	ug/L		0.090			0	30

Matrix Spike (B9D0001-MS1) Source: 19C1238-13 **Prepared: 04/01/19 13:40 Analyzed: 04/01/19 13:40**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: 1,2-Dichlorobenzene-d4		*100*	*70-130*	*%*	*10*					
Surrogate: 4-Bromofluorobenzene		*95*	*70-130*	*%*	*10*					
Surrogate: Methyl tertiary butyl ether-d3		*100*	*70-130*	*%*	*10*					
1,1,1,2-Tetrachloroethane		10	1.0	ug/L	10	<	105	70-130		
1,1,1-Trichloroethane		11	1.0	ug/L	10	<	114	70-130		
1,1,2,2-Tetrachloroethane		9.6	0.50	ug/L	10	<	96	70-130		
1,1,2-Trichloroethane		10	0.50	ug/L	10	<	104	70-130		
1,1,2-Trichlorotrifluoroethane		12	1.0	ug/L	10	<	118	70-130		
1,1-Dichloroethane		11	1.0	ug/L	10	<	109	70-130		
1,1-Dichloroethene		11	1.0	ug/L	10	<	112	70-130		
1,1-Dichloropropene		11	1.0	ug/L	10	<	112	70-130		

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
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651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: SW-57
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 16:02

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0001 - EPA 5030B Preparation

Matrix Spike (B9D0001-MS1) Source: 19C1238-13 **Prepared: 04/01/19 13:40 Analyzed: 04/01/19 13:40**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,2,3-Trichlorobenzene		10	1.0	ug/L	10	<	102	70-130		
1,2,3-Trichloropropane		9.7	0.20	ug/L	10	<	97	70-130		
1,2,4-Trichlorobenzene		10	1.0	ug/L	10	<	102	70-130		
1,2,4-Trimethylbenzene		10	1.0	ug/L	10	<	103	70-130		
1,2-Dibromo-3-chloropropane (DBCP)		9.2	1.0	ug/L	10	<	92	70-130		
1,2-Dibromoethane (EDB)		10	0.50	ug/L	10	<	100	70-130		
1,2-Dichlorobenzene		10	1.0	ug/L	10	<	101	70-130		
1,2-Dichloroethane		11	0.20	ug/L	10	<	107	70-130		
1,2-Dichloropropane		11	1.0	ug/L	10	<	108	70-130		
1,3,5-Trimethylbenzene		10	1.0	ug/L	10	<	102	70-130		
1,3-Dichlorobenzene		10	1.0	ug/L	10	<	101	70-130		
1,3-Dichloropropane		10	1.0	ug/L	10	<	102	70-130		
1,4-Dichlorobenzene		10	1.0	ug/L	10	<	103	70-130		
2,2-Dichloropropane		12	1.0	ug/L	10	<	122	70-130		
2-Chlorotoluene		10	1.0	ug/L	10	<	103	70-130		
4-Chlorotoluene		10	1.0	ug/L	10	<	102	70-130		
Acetone		96	20	ug/L	100	<	96	70-130		
Allyl chloride		11	1.0	ug/L	10	<	107	70-130		
Benzene		11	0.50	ug/L	10	<	107	70-130		
Bromobenzene		10	1.0	ug/L	10	<	100	70-130		
Bromochloromethane		11	1.0	ug/L	10	<	109	70-130		
Bromodichloromethane		11	1.0	ug/L	10	<	109	70-130		
Bromoform		9.5	1.0	ug/L	10	<	95	70-130		
Bromomethane	L3, V4, Z-01a	6.6	2.0	ug/L	10	<	66	70-130		
Carbon tetrachloride		12	0.20	ug/L	10	<	122	70-130		
Chlorobenzene		10	1.0	ug/L	10	<	105	70-130		
Chlorodibromomethane		9.8	0.50	ug/L	10	<	98	70-130		
Chloroethane		11	1.0	ug/L	10	<	111	70-130		
Chloroform		11	1.0	ug/L	10	<	112	70-130		
Chloromethane		8.5	1.0	ug/L	10	<	85	70-130		
cis-1,2-Dichloroethene		11	1.0	ug/L	10	<	107	70-130		
cis-1,3-Dichloropropene		10	0.50	ug/L	10	<	103	70-130		
Dibromomethane		11	1.0	ug/L	10	<	109	70-130		
Dichlorodifluoromethane		9.1	1.0	ug/L	10	<	91	70-130		
Dichlorofluoromethane		12	1.0	ug/L	10	<	116	70-130		

FINAL REPORT

Report ID: 04262019160231

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651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: SW-57
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 16:02

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0001 - EPA 5030B Preparation

Matrix Spike (B9D0001-MS1) Source: 19C1238-13 **Prepared: 04/01/19 13:40 Analyzed: 04/01/19 13:40**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Ethyl ether		10	1.0	ug/L	10	<	101	70-130		
Ethylbenzene		10	1.0	ug/L	10	<	105	70-130		
Hexachlorobutadiene		11	0.50	ug/L	10	<	110	70-130		
Isopropylbenzene		11	1.0	ug/L	10	<	107	70-130		
Methyl ethyl ketone (MEK)		48	10	ug/L	50	<	96	70-130		
Methyl isobutyl ketone (MIBK)		50	5.0	ug/L	50	<	99	70-130		
Methyl tertiary butyl ether (MTBE)		10	2.0	ug/L	10	<	105	70-130		
Methylene chloride		11	1.0	ug/L	10	<	108	70-130		
Naphthalene		9.5	1.0	ug/L	10	<	95	70-130		
n-Butylbenzene		11	1.0	ug/L	10	<	112	70-130		
n-Propylbenzene		11	1.0	ug/L	10	<	108	70-130		
o-Xylene		10	1.0	ug/L	10	<	100	70-130		
p&m-Xylene		11	1.0	ug/L	10	<	105	70-130		
p-Isopropyltoluene		11	1.0	ug/L	10	<	106	70-130		
sec-Butylbenzene		11	1.0	ug/L	10	<	108	70-130		
Styrene		9.8	1.0	ug/L	10	<	98	70-130		
tert-Butylbenzene		10	1.0	ug/L	10	<	104	70-130		
Tetrachloroethene		11	1.0	ug/L	10	<	108	70-130		
Tetrahydrofuran (THF)		96	10	ug/L	100	<	96	70-130		
Toluene		10	1.0	ug/L	10	<	104	70-130		
trans-1,2-Dichloroethene		11	1.0	ug/L	10	<	110	70-130		
trans-1,3-Dichloropropene		10	0.50	ug/L	10	<	104	70-130		
Trichloroethene (TCE)		11	0.10	ug/L	10	<	108	70-130		
Trichlorofluoromethane		12	1.0	ug/L	10	<	117	70-130		
Vinyl chloride		10	0.050	ug/L	10	<	104	70-130		

Batch B9D0019 - EPA 5030B Preparation

Blank (B9D0019-BLK1) **Prepared: 04/02/19 12:49 Analyzed: 04/02/19 12:49**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: 1,2-Dichlorobenzene-d4		*100*	*70-130*	*%*	*10*					
Surrogate: 4-Bromofluorobenzene		*99*	*70-130*	*%*	*10*					
Surrogate: Methyl tertiary butyl ether-d3		*100*	*70-130*	*%*	*10*					
1,1,1,2-Tetrachloroethane		<	1.0	ug/L						

FINAL REPORT

Report ID: 04262019160231

Authorized by:

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: SW-57
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 16:02

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0019 - EPA 5030B Preparation

Blank (B9D0019-BLK1) **Prepared: 04/02/19 12:49 Analyzed: 04/02/19 12:49**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,1,1-Trichloroethane		<	1.0	ug/L						
1,1,2,2-Tetrachloroethane		<	0.50	ug/L						
1,1,2-Trichloroethane		<	0.50	ug/L						
1,1,2-Trichlorotrifluoroethane		<	1.0	ug/L						
1,1-Dichloroethane		<	1.0	ug/L						
1,1-Dichloroethene		<	1.0	ug/L						
1,1-Dichloropropene		<	1.0	ug/L						
1,2,3-Trichlorobenzene		<	1.0	ug/L						
1,2,3-Trichloropropane		<	0.20	ug/L						
1,2,4-Trichlorobenzene		<	1.0	ug/L						
1,2,4-Trimethylbenzene		<	1.0	ug/L						
1,2-Dibromo-3-chloropropane (DBCP)		<	1.0	ug/L						
1,2-Dibromoethane (EDB)		<	0.50	ug/L						
1,2-Dichlorobenzene		<	1.0	ug/L						
1,2-Dichloroethane		<	0.20	ug/L						
1,2-Dichloropropane		<	1.0	ug/L						
1,3,5-Trimethylbenzene		<	1.0	ug/L						
1,3-Dichlorobenzene		<	1.0	ug/L						
1,3-Dichloropropane		<	1.0	ug/L						
1,4-Dichlorobenzene		<	1.0	ug/L						
2,2-Dichloropropane		<	1.0	ug/L						
2-Chlorotoluene		<	1.0	ug/L						
4-Chlorotoluene		<	1.0	ug/L						
Acetone		<	20	ug/L						
Allyl chloride		<	1.0	ug/L						
Benzene		<	0.50	ug/L						
Bromobenzene		<	1.0	ug/L						
Bromochloromethane		<	1.0	ug/L						
Bromodichloromethane		<	1.0	ug/L						
Bromoform		<	1.0	ug/L						
Bromomethane	L3, V4, Z-01	<	2.0	ug/L						
Carbon tetrachloride		<	0.20	ug/L						
Chlorobenzene		<	1.0	ug/L						
Chlorodibromomethane		<	0.50	ug/L						
Chloroethane		<	1.0	ug/L						

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: SW-57
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 16:02

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0019 - EPA 5030B Preparation

Blank (B9D0019-BLK1) **Prepared: 04/02/19 12:49 Analyzed: 04/02/19 12:49**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Chloroform		<	1.0	ug/L						
Chloromethane		<	1.0	ug/L						
cis-1,2-Dichloroethene		<	1.0	ug/L						
cis-1,3-Dichloropropene		<	0.50	ug/L						
Dibromomethane		<	1.0	ug/L						
Dichlorodifluoromethane		<	1.0	ug/L						
Dichlorofluoromethane		<	1.0	ug/L						
Ethyl ether		<	1.0	ug/L						
Ethylbenzene		<	1.0	ug/L						
Hexachlorobutadiene		<	0.50	ug/L						
Isopropylbenzene		<	1.0	ug/L						
Methyl ethyl ketone (MEK)		<	10	ug/L						
Methyl isobutyl ketone (MIBK)		<	5.0	ug/L						
Methyl tertiary butyl ether (MTBE)		<	2.0	ug/L						
Methylene chloride		<	1.0	ug/L						
Naphthalene		<	1.0	ug/L						
n-Butylbenzene		<	1.0	ug/L						
n-Propylbenzene		<	1.0	ug/L						
o-Xylene		<	1.0	ug/L						
p&m-Xylene		<	1.0	ug/L						
p-Isopropyltoluene		<	1.0	ug/L						
sec-Butylbenzene		<	1.0	ug/L						
Styrene		<	1.0	ug/L						
tert-Butylbenzene		<	1.0	ug/L						
Tetrachloroethene		<	1.0	ug/L						
Tetrahydrofuran (THF)		<	10	ug/L						
Toluene		<	1.0	ug/L						
trans-1,2-Dichloroethene		<	1.0	ug/L						
trans-1,3-Dichloropropene		<	0.50	ug/L						
Trichloroethene (TCE)		<	0.10	ug/L						
Trichlorofluoromethane		<	1.0	ug/L						
Vinyl chloride		<	0.050	ug/L						

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: SW-57
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 16:02

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0019 - EPA 5030B Preparation

LCS (B9D0019-BS1) **Prepared: 04/02/19 10:30 Analyzed: 04/02/19 10:30**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: 1,2-Dichlorobenzene-d4		*98*	*70-130*	*%*	*10*					
Surrogate: 4-Bromofluorobenzene		*96*	*70-130*	*%*	*10*					
Surrogate: Methyl tertiary butyl ether-d3		*100*	*70-130*	*%*	*10*					
1,1,1,2-Tetrachloroethane		10	1.0	ug/L	10		101	70-130		
1,1,1-Trichloroethane		11	1.0	ug/L	10		109	70-130		
1,1,2,2-Tetrachloroethane		9.4	0.50	ug/L	10		94	70-130		
1,1,2-Trichloroethane		10	0.50	ug/L	10		101	70-130		
1,1,2-Trichlorotrifluoroethane		11	1.0	ug/L	10		109	70-130		
1,1-Dichloroethane		11	1.0	ug/L	10		105	70-130		
1,1-Dichloroethene		11	1.0	ug/L	10		106	70-130		
1,1-Dichloropropene		11	1.0	ug/L	10		108	70-130		
1,2,3-Trichlorobenzene		9.6	1.0	ug/L	10		96	70-130		
1,2,3-Trichloropropane		9.3	0.20	ug/L	10		93	70-130		
1,2,4-Trichlorobenzene		9.6	1.0	ug/L	10		96	70-130		
1,2,4-Trimethylbenzene		9.7	1.0	ug/L	10		97	70-130		
1,2-Dibromo-3-chloropropane (DBCP)		9.0	1.0	ug/L	10		90	70-130		
1,2-Dibromoethane (EDB)		9.5	0.50	ug/L	10		95	70-130		
1,2-Dichlorobenzene		9.4	1.0	ug/L	10		94	70-130		
1,2-Dichloroethane		10	0.20	ug/L	10		105	70-130		
1,2-Dichloropropane		11	1.0	ug/L	10		106	70-130		
1,3,5-Trimethylbenzene		9.8	1.0	ug/L	10		98	70-130		
1,3-Dichlorobenzene		9.6	1.0	ug/L	10		96	70-130		
1,3-Dichloropropane		10	1.0	ug/L	10		100	70-130		
1,4-Dichlorobenzene		9.6	1.0	ug/L	10		96	70-130		
2,2-Dichloropropane		11	1.0	ug/L	10		114	70-130		
2-Chlorotoluene		9.7	1.0	ug/L	10		97	70-130		
4-Chlorotoluene		9.6	1.0	ug/L	10		96	70-130		
Acetone		97	20	ug/L	100		97	70-130		
Allyl chloride		10	1.0	ug/L	10		101	70-130		
Benzene		10	0.50	ug/L	10		103	70-130		
Bromobenzene		9.5	1.0	ug/L	10		95	70-130		
Bromochloromethane		11	1.0	ug/L	10		106	70-130		
Bromodichloromethane		11	1.0	ug/L	10		107	70-130		
Bromoform		10	1.0	ug/L	10		100	70-130		

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: SW-57
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 16:02

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0019 - EPA 5030B Preparation

LCS (B9D0019-BS1) **Prepared: 04/02/19 10:30 Analyzed: 04/02/19 10:30**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Bromomethane	L3, V4, Z-01	5.8	2.0	ug/L	10		58	70-130		
Carbon tetrachloride		11	0.20	ug/L	10		114	70-130		
Chlorobenzene		10	1.0	ug/L	10		100	70-130		
Chlorodibromomethane		9.7	0.50	ug/L	10		97	70-130		
Chloroethane		11	1.0	ug/L	10		106	70-130		
Chloroform		11	1.0	ug/L	10		107	70-130		
Chloromethane		8.4	1.0	ug/L	10		84	70-130		
cis-1,2-Dichloroethene		10	1.0	ug/L	10		103	70-130		
cis-1,3-Dichloropropene		10	0.50	ug/L	10		100	70-130		
Dibromomethane		10	1.0	ug/L	10		104	70-130		
Dichlorodifluoromethane		8.3	1.0	ug/L	10		83	70-130		
Dichlorofluoromethane		11	1.0	ug/L	10		110	70-130		
Ethyl ether		10	1.0	ug/L	10		101	70-130		
Ethylbenzene		10	1.0	ug/L	10		100	70-130		
Hexachlorobutadiene		9.9	0.50	ug/L	10		99	70-130		
Isopropylbenzene		10	1.0	ug/L	10		100	70-130		
Methyl ethyl ketone (MEK)		49	10	ug/L	50		99	70-130		
Methyl isobutyl ketone (MIBK)		50	5.0	ug/L	50		100	70-130		
Methyl tertiary butyl ether (MTBE)		10	2.0	ug/L	10		104	70-130		
Methylene chloride		10	1.0	ug/L	10		105	70-130		
Naphthalene		9.2	1.0	ug/L	10		92	70-130		
n-Butylbenzene		10	1.0	ug/L	10		104	70-130		
n-Propylbenzene		10	1.0	ug/L	10		100	70-130		
o-Xylene		9.6	1.0	ug/L	10		96	70-130		
p&m-Xylene		10	1.0	ug/L	10		101	70-130		
p-Isopropyltoluene		9.9	1.0	ug/L	10		99	70-130		
sec-Butylbenzene		10	1.0	ug/L	10		100	70-130		
Styrene		9.3	1.0	ug/L	10		93	70-130		
tert-Butylbenzene		9.7	1.0	ug/L	10		97	70-130		
Tetrachloroethene		10	1.0	ug/L	10		103	70-130		
Tetrahydrofuran (THF)		100	10	ug/L	100		101	70-130		
Toluene		9.9	1.0	ug/L	10		99	70-130		
trans-1,2-Dichloroethene		10	1.0	ug/L	10		104	70-130		
trans-1,3-Dichloropropene		9.8	0.50	ug/L	10		98	70-130		
Trichloroethene (TCE)		10	0.10	ug/L	10		101	70-130		

FINAL REPORT

Report ID: 04262019160231

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: SW-57
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 16:02

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0019 - EPA 5030B Preparation

LCS (B9D0019-BS1) **Prepared: 04/02/19 10:30 Analyzed: 04/02/19 10:30**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Trichlorofluoromethane		11	1.0	ug/L	10		109	70-130		
Vinyl chloride		9.8	0.050	ug/L	10		98	70-130		

LCS Dup (B9D0019-BSD1) **Prepared: 04/02/19 10:58 Analyzed: 04/02/19 10:58**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: 1,2-Dichlorobenzene-d4		*101*	*70-130*	*%*	*10*					
Surrogate: 4-Bromofluorobenzene		*97*	*70-130*	*%*	*10*					
Surrogate: Methyl tertiary butyl ether-d3		*100*	*70-130*	*%*	*10*					
1,1,1,2-Tetrachloroethane		10	1.0	ug/L	10		100	70-130	0.6	30
1,1,1-Trichloroethane		11	1.0	ug/L	10		106	70-130	3	30
1,1,2,2-Tetrachloroethane		9.5	0.50	ug/L	10		95	70-130	1	30
1,1,2-Trichloroethane		10	0.50	ug/L	10		103	70-130	2	30
1,1,2-Trichlorotrifluoroethane		11	1.0	ug/L	10		108	70-130	1	30
1,1-Dichloroethane		10	1.0	ug/L	10		104	70-130	1	30
1,1-Dichloroethene		10	1.0	ug/L	10		102	70-130	4	30
1,1-Dichloropropene		11	1.0	ug/L	10		107	70-130	1	30
1,2,3-Trichlorobenzene		9.7	1.0	ug/L	10		97	70-130	0.5	30
1,2,3-Trichloropropane		9.5	0.20	ug/L	10		95	70-130	2	30
1,2,4-Trichlorobenzene		9.6	1.0	ug/L	10		96	70-130	0.6	30
1,2,4-Trimethylbenzene		9.4	1.0	ug/L	10		94	70-130	2	30
1,2-Dibromo-3-chloropropane (DBCP)		9.3	1.0	ug/L	10		93	70-130	3	30
1,2-Dibromoethane (EDB)		9.6	0.50	ug/L	10		96	70-130	0.5	30
1,2-Dichlorobenzene		9.5	1.0	ug/L	10		95	70-130	0.5	30
1,2-Dichloroethane		11	0.20	ug/L	10		106	70-130	0.7	30
1,2-Dichloropropane		10	1.0	ug/L	10		105	70-130	1	30
1,3,5-Trimethylbenzene		9.5	1.0	ug/L	10		95	70-130	2	30
1,3-Dichlorobenzene		9.6	1.0	ug/L	10		96	70-130	0.7	30
1,3-Dichloropropane		10	1.0	ug/L	10		101	70-130	2	30
1,4-Dichlorobenzene		9.8	1.0	ug/L	10		98	70-130	3	30
2,2-Dichloropropane		11	1.0	ug/L	10		108	70-130	5	30
2-Chlorotoluene		9.7	1.0	ug/L	10		97	70-130	0.1	30
4-Chlorotoluene		9.6	1.0	ug/L	10		96	70-130	0.8	30
Acetone		94	20	ug/L	100		94	70-130	3	30

FINAL REPORT

Report ID: 04262019160231

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St. Paul, MN 55164-0899
651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: SW-57
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 16:02

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0019 - EPA 5030B Preparation

LCS Dup (B9D0019-BSD1) **Prepared: 04/02/19 10:58 Analyzed: 04/02/19 10:58**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Allyl chloride		9.9	1.0	ug/L	10		99	70-130	3	30
Benzene		10	0.50	ug/L	10		102	70-130	2	30
Bromobenzene		9.6	1.0	ug/L	10		96	70-130	0.3	30
Bromochloromethane		10	1.0	ug/L	10		104	70-130	1	30
Bromodichloromethane		10	1.0	ug/L	10		104	70-130	3	30
Bromoform		9.8	1.0	ug/L	10		98	70-130	2	30
Bromomethane	L3, V4, Z-01	6.4	2.0	ug/L	10		64	70-130	10	30
Carbon tetrachloride		11	0.20	ug/L	10		112	70-130	2	30
Chlorobenzene		9.9	1.0	ug/L	10		99	70-130	1	30
Chlorodibromomethane		9.8	0.50	ug/L	10		98	70-130	1	30
Chloroethane		10	1.0	ug/L	10		102	70-130	4	30
Chloroform		10	1.0	ug/L	10		104	70-130	3	30
Chloromethane		8.3	1.0	ug/L	10		83	70-130	0.7	30
cis-1,2-Dichloroethene		10	1.0	ug/L	10		102	70-130	1	30
cis-1,3-Dichloropropene		9.8	0.50	ug/L	10		98	70-130	2	30
Dibromomethane		11	1.0	ug/L	10		106	70-130	2	30
Dichlorodifluoromethane		8.0	1.0	ug/L	10		80	70-130	3	30
Dichlorofluoromethane		11	1.0	ug/L	10		107	70-130	2	30
Ethyl ether		9.9	1.0	ug/L	10		99	70-130	2	30
Ethylbenzene		10	1.0	ug/L	10		100	70-130	0.2	30
Hexachlorobutadiene		9.9	0.50	ug/L	10		99	70-130	0.1	30
Isopropylbenzene		9.9	1.0	ug/L	10		99	70-130	1	30
Methyl ethyl ketone (MEK)		48	10	ug/L	50		96	70-130	3	30
Methyl isobutyl ketone (MIBK)		50	5.0	ug/L	50		100	70-130	0.1	30
Methyl tertiary butyl ether (MTBE)		11	2.0	ug/L	10		106	70-130	2	30
Methylene chloride		10	1.0	ug/L	10		104	70-130	1	30
Naphthalene		9.4	1.0	ug/L	10		94	70-130	2	30
n-Butylbenzene		10	1.0	ug/L	10		103	70-130	1	30
n-Propylbenzene		10	1.0	ug/L	10		100	70-130	0.1	30
o-Xylene		9.6	1.0	ug/L	10		96	70-130	0.1	30
p&m-Xylene		10	1.0	ug/L	10		101	70-130	0.3	30
p-Isopropyltoluene		9.8	1.0	ug/L	10		98	70-130	1	30
sec-Butylbenzene		9.9	1.0	ug/L	10		99	70-130	1	30
Styrene		9.5	1.0	ug/L	10		95	70-130	1	30
tert-Butylbenzene		9.6	1.0	ug/L	10		96	70-130	1	30

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651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: SW-57
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 16:02

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0019 - EPA 5030B Preparation

LCS Dup (B9D0019-BSD1) **Prepared: 04/02/19 10:58 Analyzed: 04/02/19 10:58**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Tetrachloroethene		9.9	1.0	ug/L	10		99	70-130	4	30
Tetrahydrofuran (THF)		99	10	ug/L	100		99	70-130	2	30
Toluene		9.8	1.0	ug/L	10		98	70-130	2	30
trans-1,2-Dichloroethene		10	1.0	ug/L	10		103	70-130	2	30
trans-1,3-Dichloropropene		10	0.50	ug/L	10		103	70-130	5	30
Trichloroethene (TCE)		9.8	0.10	ug/L	10		98	70-130	3	30
Trichlorofluoromethane		10	1.0	ug/L	10		105	70-130	4	30
Vinyl chloride		9.4	0.050	ug/L	10		94	70-130	3	30

Duplicate (B9D0019-DUP1) Source: 19C1274-05 **Prepared: 04/02/19 14:13 Analyzed: 04/02/19 14:13**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: 1,2-Dichlorobenzene-d4		*101*	*70-130*	*%*	*10*					
Surrogate: 4-Bromofluorobenzene		*99*	*70-130*	*%*	*10*					
Surrogate: Methyl tertiary butyl ether-d3		*100*	*70-130*	*%*	*10*					
1,1,1,2-Tetrachloroethane		<	1.0	ug/L		<				30
1,1,1-Trichloroethane		<	1.0	ug/L		<				30
1,1,2,2-Tetrachloroethane		<	0.50	ug/L		<				30
1,1,2-Trichloroethane		<	0.50	ug/L		<				30
1,1,2-Trichlorotrifluoroethane		<	1.0	ug/L		<				30
1,1-Dichloroethane		<	1.0	ug/L		<				30
1,1-Dichloroethene		<	1.0	ug/L		<				30
1,1-Dichloropropene		<	1.0	ug/L		<				30
1,2,3-Trichlorobenzene		<	1.0	ug/L		<				30
1,2,3-Trichloropropane		<	0.20	ug/L		<				30
1,2,4-Trichlorobenzene		<	1.0	ug/L		<				30
1,2,4-Trimethylbenzene		<	1.0	ug/L		<				30
1,2-Dibromo-3-chloropropane (DBCP)		<	1.0	ug/L		<				30
1,2-Dibromoethane (EDB)		<	0.50	ug/L		<				30
1,2-Dichlorobenzene		<	1.0	ug/L		<				30
1,2-Dichloroethane		<	0.20	ug/L		<				30
1,2-Dichloropropane		<	1.0	ug/L		<				30
1,3,5-Trimethylbenzene		<	1.0	ug/L		<				30
1,3-Dichlorobenzene		<	1.0	ug/L		<				30

FINAL REPORT

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: SW-57
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 16:02

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0019 - EPA 5030B Preparation

Duplicate (B9D0019-DUP1) Source: 19C1274-05 **Prepared: 04/02/19 14:13 Analyzed: 04/02/19 14:13**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,3-Dichloropropane		<	1.0	ug/L		<				30
1,4-Dichlorobenzene		<	1.0	ug/L		<				30
2,2-Dichloropropane		<	1.0	ug/L		<				30
2-Chlorotoluene		<	1.0	ug/L		<				30
4-Chlorotoluene		<	1.0	ug/L		<				30
Acetone		<	20	ug/L		<				30
Allyl chloride		<	1.0	ug/L		<				30
Benzene		<	0.50	ug/L		<				30
Bromobenzene		<	1.0	ug/L		<				30
Bromochloromethane		<	1.0	ug/L		<				30
Bromodichloromethane		<	1.0	ug/L		<				30
Bromoform		<	1.0	ug/L		<				30
Bromomethane	L3, V4, Z-01	<	2.0	ug/L		<				30
Carbon tetrachloride		<	0.20	ug/L		<				30
Chlorobenzene		<	1.0	ug/L		<				30
Chlorodibromomethane		<	0.50	ug/L		<				30
Chloroethane		<	1.0	ug/L		<				30
Chloroform		<	1.0	ug/L		<				30
Chloromethane		<	1.0	ug/L		<				30
cis-1,2-Dichloroethene		<	1.0	ug/L		<				30
cis-1,3-Dichloropropene		<	0.50	ug/L		<				30
Dibromomethane		<	1.0	ug/L		<				30
Dichlorodifluoromethane		<	1.0	ug/L		<				30
Dichlorofluoromethane		<	1.0	ug/L		<				30
Ethyl ether		3.1	1.0	ug/L		3.1			0	30
Ethylbenzene		<	1.0	ug/L		<				30
Hexachlorobutadiene		<	0.50	ug/L		<				30
Isopropylbenzene		<	1.0	ug/L		<				30
Methyl ethyl ketone (MEK)		<	10	ug/L		<				30
Methyl isobutyl ketone (MIBK)		<	5.0	ug/L		<				30
Methyl tertiary butyl ether (MTBE)		<	2.0	ug/L		<				30
Methylene chloride		<	1.0	ug/L		<				30
Naphthalene		<	1.0	ug/L		<				30
n-Butylbenzene		<	1.0	ug/L		<				30
n-Propylbenzene		<	1.0	ug/L		<				30

FINAL REPORT

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: SW-57
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 16:02

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0019 - EPA 5030B Preparation

Duplicate (B9D0019-DUP1) Source: 19C1274-05 **Prepared: 04/02/19 14:13 Analyzed: 04/02/19 14:13**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
o-Xylene		<	1.0	ug/L		<				30
p&m-Xylene		<	1.0	ug/L		<				30
p-Isopropyltoluene		<	1.0	ug/L		<				30
sec-Butylbenzene		<	1.0	ug/L		<				30
Styrene		<	1.0	ug/L		<				30
tert-Butylbenzene		<	1.0	ug/L		<				30
Tetrachloroethene		<	1.0	ug/L		<				30
Tetrahydrofuran (THF)		2.8	10	ug/L		<			1	30
Toluene		<	1.0	ug/L		<				30
trans-1,2-Dichloroethene		<	1.0	ug/L		<				30
trans-1,3-Dichloropropene		<	0.50	ug/L		<				30
Trichloroethene (TCE)		<	0.10	ug/L		<				30
Trichlorofluoromethane		<	1.0	ug/L		<				30
Vinyl chloride		<	0.050	ug/L		<				30

Matrix Spike (B9D0019-MS1) Source: 19C1274-04 **Prepared: 04/02/19 11:26 Analyzed: 04/02/19 11:26**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: 1,2-Dichlorobenzene-d4		*98*	*70-130*	*%*	*10*					
Surrogate: 4-Bromofluorobenzene		*94*	*70-130*	*%*	*10*					
Surrogate: Methyl tertiary butyl ether-d3		*100*	*70-130*	*%*	*10*					
1,1,1,2-Tetrachloroethane		11	1.0	ug/L	10	<	105	70-130		
1,1,1-Trichloroethane		11	1.0	ug/L	10	<	115	70-130		
1,1,2,2-Tetrachloroethane		9.8	0.50	ug/L	10	<	98	70-130		
1,1,2-Trichloroethane		11	0.50	ug/L	10	<	106	70-130		
1,1,2-Trichlorotrifluoroethane		12	1.0	ug/L	10	<	118	70-130		
1,1-Dichloroethane		11	1.0	ug/L	10	<	111	70-130		
1,1-Dichloroethene		11	1.0	ug/L	10	<	114	70-130		
1,1-Dichloropropene		12	1.0	ug/L	10	<	117	70-130		
1,2,3-Trichlorobenzene		10	1.0	ug/L	10	<	100	70-130		
1,2,3-Trichloropropane		9.7	0.20	ug/L	10	<	97	70-130		
1,2,4-Trichlorobenzene		10	1.0	ug/L	10	<	101	70-130		
1,2,4-Trimethylbenzene		10	1.0	ug/L	10	<	101	70-130		
1,2-Dibromo-3-chloropropane (DBCP)		9.0	1.0	ug/L	10	<	90	70-130		

FINAL REPORT

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: SW-57
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 16:02

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0019 - EPA 5030B Preparation

Matrix Spike (B9D0019-MS1) Source: 19C1274-04 **Prepared: 04/02/19 11:26 Analyzed: 04/02/19 11:26**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,2-Dibromoethane (EDB)		10	0.50	ug/L	10	<	104	70-130		
1,2-Dichlorobenzene		9.9	1.0	ug/L	10	<	99	70-130		
1,2-Dichloroethane		11	0.20	ug/L	10	<	112	70-130		
1,2-Dichloropropane		11	1.0	ug/L	10	<	113	70-130		
1,3,5-Trimethylbenzene		10	1.0	ug/L	10	<	102	70-130		
1,3-Dichlorobenzene		10	1.0	ug/L	10	<	102	70-130		
1,3-Dichloropropane		11	1.0	ug/L	10	<	105	70-130		
1,4-Dichlorobenzene		10	1.0	ug/L	10	<	104	70-130		
2,2-Dichloropropane		12	1.0	ug/L	10	<	123	70-130		
2-Chlorotoluene		10	1.0	ug/L	10	<	101	70-130		
4-Chlorotoluene		10	1.0	ug/L	10	<	101	70-130		
Acetone		95	20	ug/L	100	<	95	70-130		
Allyl chloride		11	1.0	ug/L	10	<	110	70-130		
Benzene		11	0.50	ug/L	10	<	110	70-130		
Bromobenzene		9.8	1.0	ug/L	10	<	98	70-130		
Bromochloromethane		11	1.0	ug/L	10	<	110	70-130		
Bromodichloromethane		11	1.0	ug/L	10	<	111	70-130		
Bromoform		10	1.0	ug/L	10	<	101	70-130		
Bromomethane	L3, V4, Z-01	7.3	2.0	ug/L	10	<	73	70-130		
Carbon tetrachloride		12	0.20	ug/L	10	<	122	70-130		
Chlorobenzene		11	1.0	ug/L	10	<	107	70-130		
Chlorodibromomethane		10	0.50	ug/L	10	<	101	70-130		
Chloroethane		11	1.0	ug/L	10	<	112	70-130		
Chloroform		11	1.0	ug/L	10	<	114	70-130		
Chloromethane		9.3	1.0	ug/L	10	<	93	70-130		
cis-1,2-Dichloroethene		11	1.0	ug/L	10	<	109	70-130		
cis-1,3-Dichloropropene		11	0.50	ug/L	10	<	106	70-130		
Dibromomethane		11	1.0	ug/L	10	<	112	70-130		
Dichlorodifluoromethane		9.0	1.0	ug/L	10	<	90	70-130		
Dichlorofluoromethane		12	1.0	ug/L	10	<	118	70-130		
Ethyl ether		13	1.0	ug/L	10	3.3	102	70-130		
Ethylbenzene		11	1.0	ug/L	10	<	105	70-130		
Hexachlorobutadiene		10	0.50	ug/L	10	<	104	70-130		
Isopropylbenzene		11	1.0	ug/L	10	<	108	70-130		
Methyl ethyl ketone (MEK)		49	10	ug/L	50	<	99	70-130		

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: SW-57
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 16:02

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0019 - EPA 5030B Preparation

Matrix Spike (B9D0019-MS1) Source: 19C1274-04 **Prepared: 04/02/19 11:26 Analyzed: 04/02/19 11:26**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Methyl isobutyl ketone (MIBK)		51	5.0	ug/L	50	<	103	70-130		
Methyl tertiary butyl ether (MTBE)		11	2.0	ug/L	10	<	110	70-130		
Methylene chloride		11	1.0	ug/L	10	<	113	70-130		
Naphthalene		9.6	1.0	ug/L	10	<	96	70-130		
n-Butylbenzene		11	1.0	ug/L	10	<	111	70-130		
n-Propylbenzene		11	1.0	ug/L	10	<	106	70-130		
o-Xylene		10	1.0	ug/L	10	<	103	70-130		
p&m-Xylene		11	1.0	ug/L	10	<	105	70-130		
p-Isopropyltoluene		10	1.0	ug/L	10	<	104	70-130		
sec-Butylbenzene		11	1.0	ug/L	10	<	106	70-130		
Styrene		9.9	1.0	ug/L	10	<	99	70-130		
tert-Butylbenzene		10	1.0	ug/L	10	<	102	70-130		
Tetrachloroethene		11	1.0	ug/L	10	<	106	70-130		
Tetrahydrofuran (THF)		100	10	ug/L	100	<	98	70-130		
Toluene		10	1.0	ug/L	10	<	104	70-130		
trans-1,2-Dichloroethene		11	1.0	ug/L	10	<	111	70-130		
trans-1,3-Dichloropropene		11	0.50	ug/L	10	<	107	70-130		
Trichloroethene (TCE)		11	0.10	ug/L	10	<	108	70-130		
Trichlorofluoromethane		12	1.0	ug/L	10	<	116	70-130		
Vinyl chloride		11	0.050	ug/L	10	<	106	70-130		

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Final Report
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Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: SW-57
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 16:02

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Batch B9D0396 - 1,4 Dioxane in Water SPE

Blank (B9D0396-BLK1) **Prepared: 04/23/19 08:00 Analyzed: 04/24/19 10:18**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,4-Dioxane		<	0.049	ug/L						

LCS (B9D0396-BS1) **Prepared: 04/23/19 08:00 Analyzed: 04/24/19 10:34**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,4-Dioxane		0.20	0.049	ug/L	0.19		103	80-120		

Duplicate (B9D0396-DUP1) Source: 19C1238-20 **Prepared: 04/23/19 08:00 Analyzed: 04/24/19 12:10**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,4-Dioxane		0.073	0.049	ug/L		0.067			10	30

Matrix Spike (B9D0396-MS1) Source: 19C1238-21 **Prepared: 04/23/19 08:00 Analyzed: 04/24/19 12:42**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,4-Dioxane		1.4	0.050	ug/L	0.44	0.91	110	70-130		

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Final Report
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Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: SW-57
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 16:02

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Batch B9D0148 - PFCs Preparation

Blank (B9D0148-BLK1) **Prepared: 04/08/19 15:23 Analyzed: 04/08/19 15:23**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		<	0.050	ug/L						
Perfluorobutanoic acid (PFBA)		<	0.050	ug/L						
Perfluorohexanesulfonate (PFHxS)		<	0.025	ug/L						
Perfluorohexanoic acid (PFHxA)		<	0.050	ug/L						
Perfluorooctanesulfonate (PFOS)		<	0.025	ug/L						
Perfluorooctanoic acid (PFOA)		<	0.035	ug/L						
Perfluoropentanoic acid (PFPeA)		<	0.050	ug/L						

Blank (B9D0148-BLK2) **Prepared: 04/08/19 20:22 Analyzed: 04/08/19 20:22**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		<	0.050	ug/L						
Perfluorobutanoic acid (PFBA)		<	0.050	ug/L						
Perfluorohexanesulfonate (PFHxS)		<	0.025	ug/L						
Perfluorohexanoic acid (PFHxA)		<	0.050	ug/L						
Perfluorooctanesulfonate (PFOS)		<	0.025	ug/L						
Perfluorooctanoic acid (PFOA)		<	0.035	ug/L						
Perfluoropentanoic acid (PFPeA)		<	0.050	ug/L						

LCS (B9D0148-BS1) **Prepared: 04/08/19 15:15 Analyzed: 04/08/19 15:15**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.52	0.050	ug/L	0.50		104	80-120		
Perfluorobutanoic acid (PFBA)		0.52	0.050	ug/L	0.5		104	80-120		
Perfluorohexanesulfonate (PFHxS)		0.51	0.025	ug/L	0.50		102	80-120		
Perfluorohexanoic acid (PFHxA)		0.53	0.050	ug/L	0.5		106	80-120		
Perfluorooctanesulfonate (PFOS)		0.54	0.025	ug/L	0.49		108	80-120		
Perfluorooctanoic acid (PFOA)		0.50	0.035	ug/L	0.5		99	80-120		
Perfluoropentanoic acid (PFPeA)		0.52	0.050	ug/L	0.5		104	80-120		

LCS Dup (B9D0148-BSD1) **Prepared: 04/08/19 20:14 Analyzed: 04/08/19 20:14**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.50	0.050	ug/L	0.50		101	80-120	4	20
Perfluorobutanoic acid (PFBA)		0.52	0.050	ug/L	0.5		103	80-120	0.4	20
Perfluorohexanesulfonate (PFHxS)		0.53	0.025	ug/L	0.50		105	80-120	3	20

FINAL REPORT

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Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: SW-57
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 16:02

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Batch B9D0148 - PFCs Preparation

LCS Dup (B9D0148-BSD1) — **Prepared: 04/08/19 20:14 Analyzed: 04/08/19 20:14**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorohexanoic acid (PFHxA)		0.54	0.050	ug/L	0.5		108	80-120	2	20
Perfluorooctanesulfonate (PFOS)		0.51	0.025	ug/L	0.49		102	80-120	6	20
Perfluorooctanoic acid (PFOA)		0.52	0.035	ug/L	0.5		104	80-120	4	20
Perfluoropentanoic acid (PFPeA)		0.51	0.050	ug/L	0.5		103	80-120	1	20

Duplicate (B9D0148-DUP1) — Source: 19C1190-01 — **Prepared: 04/08/19 15:47 Analyzed: 04/08/19 15:47**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		<	0.050	ug/L		<				20
Perfluorobutanoic acid (PFBA)	WB, J	0.011	0.050	ug/L		<			22	20
Perfluorohexanesulfonate (PFHxS)		<	0.025	ug/L		<				20
Perfluorohexanoic acid (PFHxA)		<	0.050	ug/L		<				20
Perfluorooctanesulfonate (PFOS)		<	0.025	ug/L		<				20
Perfluorooctanoic acid (PFOA)		<	0.035	ug/L		<				20
Perfluoropentanoic acid (PFPeA)		<	0.050	ug/L		<				20

Matrix Spike (B9D0148-MS1) — Source: 19C1190-01 — **Prepared: 04/08/19 15:39 Analyzed: 04/08/19 15:39**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.51	0.050	ug/L	0.50	<	102	70-130		
Perfluorobutanoic acid (PFBA)		0.50	0.050	ug/L	0.5	<	98	70-130		
Perfluorohexanesulfonate (PFHxS)		0.50	0.025	ug/L	0.50	<	100	70-130		
Perfluorohexanoic acid (PFHxA)		0.54	0.050	ug/L	0.5	<	107	70-130		
Perfluorooctanesulfonate (PFOS)		0.55	0.025	ug/L	0.49	<	110	70-130		
Perfluorooctanoic acid (PFOA)		0.50	0.035	ug/L	0.5	<	100	70-130		
Perfluoropentanoic acid (PFPeA)		0.52	0.050	ug/L	0.5	<	104	70-130		

Matrix Spike (B9D0148-MS2) — Source: 19C1190-02 — **Prepared: 04/08/19 16:11 Analyzed: 04/08/19 16:11**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.49	0.050	ug/L	0.50	<	98	70-130		
Perfluorobutanoic acid (PFBA)		0.57	0.050	ug/L	0.5	0.058	103	70-130		
Perfluorohexanesulfonate (PFHxS)		0.54	0.025	ug/L	0.50	<	108	70-130		
Perfluorohexanoic acid (PFHxA)		0.53	0.050	ug/L	0.5	<	107	70-130		
Perfluorooctanesulfonate (PFOS)		0.51	0.025	ug/L	0.49	<	102	70-130		
Perfluorooctanoic acid (PFOA)		0.50	0.035	ug/L	0.5	<	100	70-130		

FINAL REPORT

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Program Name: Closed Landfill Assessment	Facility Name/ID: SW-57
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 16:02

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Batch B9D0148 - PFCs Preparation

Matrix Spike (B9D0148-MS2) Source: 19C1190-02 **Prepared: 04/08/19 16:11 Analyzed: 04/08/19 16:11**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluoropentanoic acid (PFPeA)		0.53	0.050	ug/L	0.5	<	106	70-130		

Matrix Spike (B9D0148-MS3) Source: 19C1190-03 **Prepared: 04/08/19 16:28 Analyzed: 04/08/19 16:28**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.48	0.050	ug/L	0.50	<	96	70-130		
Perfluorobutanoic acid (PFBA)		0.86	0.050	ug/L	0.5	0.33	105	70-130		
Perfluorohexanesulfonate (PFHxS)		0.53	0.025	ug/L	0.50	<	104	70-130		
Perfluorohexanoic acid (PFHxA)		0.56	0.050	ug/L	0.5	<	109	70-130		
Perfluorooctanesulfonate (PFOS)		0.69	0.025	ug/L	0.49	0.19	101	70-130		
Perfluorooctanoic acid (PFOA)		0.61	0.035	ug/L	0.5	0.078	106	70-130		
Perfluoropentanoic acid (PFPeA)		0.54	0.050	ug/L	0.5	<	106	70-130		

Matrix Spike (B9D0148-MS4) Source: 19C1190-04 **Prepared: 04/08/19 16:44 Analyzed: 04/08/19 16:44**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.51	0.050	ug/L	0.50	<	102	70-130		
Perfluorobutanoic acid (PFBA)		0.52	0.050	ug/L	0.5	<	103	70-130		
Perfluorohexanesulfonate (PFHxS)		0.48	0.025	ug/L	0.50	<	96	70-130		
Perfluorohexanoic acid (PFHxA)		0.53	0.050	ug/L	0.5	<	107	70-130		
Perfluorooctanesulfonate (PFOS)		0.54	0.025	ug/L	0.49	<	108	70-130		
Perfluorooctanoic acid (PFOA)		0.50	0.035	ug/L	0.5	<	100	70-130		
Perfluoropentanoic acid (PFPeA)		0.53	0.050	ug/L	0.5	<	105	70-130		

Matrix Spike (B9D0148-MS5) Source: 19C1274-02 **Prepared: 04/08/19 17:00 Analyzed: 04/08/19 17:00**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.50	0.050	ug/L	0.50	<	100	70-130		
Perfluorobutanoic acid (PFBA)		0.52	0.050	ug/L	0.5	<	105	70-130		
Perfluorohexanesulfonate (PFHxS)		0.54	0.025	ug/L	0.50	<	107	70-130		
Perfluorohexanoic acid (PFHxA)		0.52	0.050	ug/L	0.5	<	104	70-130		
Perfluorooctanesulfonate (PFOS)		0.52	0.025	ug/L	0.49	<	104	70-130		
Perfluorooctanoic acid (PFOA)		0.50	0.035	ug/L	0.5	<	100	70-130		
Perfluoropentanoic acid (PFPeA)		0.53	0.050	ug/L	0.5	<	105	70-130		

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Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 16:02

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Batch B9D0148 - PFCs Preparation

Matrix Spike (B9D0148-MS6) Source: 19C1274-03 **Prepared: 04/08/19 17:16 Analyzed: 04/08/19 17:16**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.52	0.050	ug/L	0.50	<	104	70-130		
Perfluorobutanoic acid (PFBA)		0.54	0.050	ug/L	0.5	<	102	70-130		
Perfluorohexanesulfonate (PFHxS)		0.55	0.025	ug/L	0.50	<	109	70-130		
Perfluorohexanoic acid (PFHxA)		0.54	0.050	ug/L	0.5	<	107	70-130		
Perfluorooctanesulfonate (PFOS)		0.53	0.025	ug/L	0.49	<	106	70-130		
Perfluorooctanoic acid (PFOA)		0.53	0.035	ug/L	0.5	<	105	70-130		
Perfluoropentanoic acid (PFPeA)		0.55	0.050	ug/L	0.5	<	110	70-130		

Matrix Spike (B9D0148-MS7) Source: 19C1274-04 **Prepared: 04/08/19 17:32 Analyzed: 04/08/19 17:32**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.51	0.050	ug/L	0.50	<	102	70-130		
Perfluorobutanoic acid (PFBA)		0.62	0.050	ug/L	0.5	0.10	103	70-130		
Perfluorohexanesulfonate (PFHxS)		0.56	0.025	ug/L	0.50	<	112	70-130		
Perfluorohexanoic acid (PFHxA)		0.53	0.050	ug/L	0.5	<	106	70-130		
Perfluorooctanesulfonate (PFOS)		0.56	0.025	ug/L	0.49	0.038	104	70-130		
Perfluorooctanoic acid (PFOA)		0.63	0.035	ug/L	0.5	0.11	103	70-130		
Perfluoropentanoic acid (PFPeA)		0.55	0.050	ug/L	0.5	<	106	70-130		

Matrix Spike (B9D0148-MS8) Source: 19C1274-05 **Prepared: 04/08/19 17:48 Analyzed: 04/08/19 17:48**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.50	0.050	ug/L	0.50	<	101	70-130		
Perfluorobutanoic acid (PFBA)		0.67	0.050	ug/L	0.5	0.16	102	70-130		
Perfluorohexanesulfonate (PFHxS)		0.55	0.025	ug/L	0.50	<	110	70-130		
Perfluorohexanoic acid (PFHxA)		0.54	0.050	ug/L	0.5	<	104	70-130		
Perfluorooctanesulfonate (PFOS)		0.53	0.025	ug/L	0.49	<	103	70-130		
Perfluorooctanoic acid (PFOA)		0.62	0.035	ug/L	0.5	0.083	108	70-130		
Perfluoropentanoic acid (PFPeA)		0.58	0.050	ug/L	0.5	<	112	70-130		

Matrix Spike (B9D0148-MS9) Source: 19C1281-01 **Prepared: 04/08/19 18:04 Analyzed: 04/08/19 18:04**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.51	0.050	ug/L	0.50	<	101	70-130		
Perfluorobutanoic acid (PFBA)		0.53	0.050	ug/L	0.5	<	105	70-130		
Perfluorohexanesulfonate (PFHxS)		0.50	0.025	ug/L	0.50	<	101	70-130		

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Program Name: Closed Landfill Assessment	Facility Name/ID: SW-57
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 16:02

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Batch B9D0148 - PFCs Preparation

Matrix Spike (B9D0148-MS9) Source: 19C1281-01 **Prepared: 04/08/19 18:04 Analyzed: 04/08/19 18:04**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorohexanoic acid (PFHxA)		0.53	0.050	ug/L	0.5	<	107	70-130		
Perfluorooctanesulfonate (PFOS)		0.55	0.025	ug/L	0.49	<	109	70-130		
Perfluorooctanoic acid (PFOA)		0.50	0.035	ug/L	0.5	<	101	70-130		
Perfluoropentanoic acid (PFPeA)		0.54	0.050	ug/L	0.5	<	108	70-130		

Matrix Spike (B9D0148-MSA) Source: 19C1281-02 **Prepared: 04/08/19 18:21 Analyzed: 04/08/19 18:21**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.49	0.050	ug/L	0.50	<	99	70-130		
Perfluorobutanoic acid (PFBA)		0.75	0.050	ug/L	0.5	0.28	93	70-130		
Perfluorohexanesulfonate (PFHxS)		0.54	0.025	ug/L	0.50	<	108	70-130		
Perfluorohexanoic acid (PFHxA)		0.55	0.050	ug/L	0.5	<	109	70-130		
Perfluorooctanesulfonate (PFOS)		0.58	0.025	ug/L	0.49	0.038	109	70-130		
Perfluorooctanoic acid (PFOA)		0.56	0.035	ug/L	0.5	0.040	103	70-130		
Perfluoropentanoic acid (PFPeA)		0.53	0.050	ug/L	0.5	<	103	70-130		

Matrix Spike (B9D0148-MSB) Source: 19C1281-03 **Prepared: 04/08/19 18:37 Analyzed: 04/08/19 18:37**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.50	0.050	ug/L	0.50	<	100	70-130		
Perfluorobutanoic acid (PFBA)		0.76	0.050	ug/L	0.5	0.23	106	70-130		
Perfluorohexanesulfonate (PFHxS)		0.52	0.025	ug/L	0.50	<	104	70-130		
Perfluorohexanoic acid (PFHxA)		0.51	0.050	ug/L	0.5	<	102	70-130		
Perfluorooctanesulfonate (PFOS)		0.52	0.025	ug/L	0.49	0.029	99	70-130		
Perfluorooctanoic acid (PFOA)		0.56	0.035	ug/L	0.5	0.039	104	70-130		
Perfluoropentanoic acid (PFPeA)		0.55	0.050	ug/L	0.5	<	109	70-130		

Matrix Spike (B9D0148-MSC) Source: 19C1281-04 **Prepared: 04/08/19 18:53 Analyzed: 04/08/19 18:53**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.50	0.050	ug/L	0.50	<	101	70-130		
Perfluorobutanoic acid (PFBA)		0.63	0.050	ug/L	0.5	0.11	105	70-130		
Perfluorohexanesulfonate (PFHxS)		0.51	0.025	ug/L	0.50	<	102	70-130		
Perfluorohexanoic acid (PFHxA)		0.52	0.050	ug/L	0.5	<	104	70-130		
Perfluorooctanesulfonate (PFOS)		0.51	0.025	ug/L	0.49	<	101	70-130		
Perfluorooctanoic acid (PFOA)		0.54	0.035	ug/L	0.5	<	107	70-130		

FINAL REPORT

Report ID: 04262019160231

Authorized by:

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: SW-57
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 16:02

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0148 - PFCs Preparation

Matrix Spike (B9D0148-MSC) Source: 19C1281-04 **Prepared: 04/08/19 18:53 Analyzed: 04/08/19 18:53**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluoropentanoic acid (PFPeA)		0.54	0.050	ug/L	0.5	<	107	70-130		

Matrix Spike (B9D0148-MSD) Source: 19C1281-05 **Prepared: 04/08/19 19:09 Analyzed: 04/08/19 19:09**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.49	0.050	ug/L	0.50	<	97	70-130		
Perfluorobutanoic acid (PFBA)		0.67	0.050	ug/L	0.5	0.18	98	70-130		
Perfluorohexanesulfonate (PFHxS)		0.53	0.025	ug/L	0.50	<	105	70-130		
Perfluorohexanoic acid (PFHxA)		0.56	0.050	ug/L	0.5	<	107	70-130		
Perfluorooctanesulfonate (PFOS)		0.54	0.025	ug/L	0.49	<	108	70-130		
Perfluorooctanoic acid (PFOA)		0.54	0.035	ug/L	0.5	<	105	70-130		
Perfluoropentanoic acid (PFPeA)		0.54	0.050	ug/L	0.5	<	104	70-130		

Matrix Spike Dup (B9D0148-MSD1) Source: 19C1190-01 **Prepared: 04/08/19 15:55 Analyzed: 04/08/19 15:55**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.50	0.050	ug/L	0.50	<	100	70-130	2	20
Perfluorobutanoic acid (PFBA)		0.52	0.050	ug/L	0.5	<	102	70-130	4	20
Perfluorohexanesulfonate (PFHxS)		0.54	0.025	ug/L	0.50	<	107	70-130	7	20
Perfluorohexanoic acid (PFHxA)		0.53	0.050	ug/L	0.5	<	106	70-130	0.9	20
Perfluorooctanesulfonate (PFOS)		0.52	0.025	ug/L	0.49	<	104	70-130	6	20
Perfluorooctanoic acid (PFOA)		0.52	0.035	ug/L	0.5	<	105	70-130	5	20
Perfluoropentanoic acid (PFPeA)		0.53	0.050	ug/L	0.5	<	107	70-130	2	20

Matrix Spike (B9D0148-MSE) Source: 19C1281-06 **Prepared: 04/08/19 19:25 Analyzed: 04/08/19 19:25**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.51	0.050	ug/L	0.50	<	103	70-130		
Perfluorobutanoic acid (PFBA)		0.80	0.050	ug/L	0.5	0.30	100	70-130		
Perfluorohexanesulfonate (PFHxS)		0.55	0.025	ug/L	0.50	<	109	70-130		
Perfluorohexanoic acid (PFHxA)		0.56	0.050	ug/L	0.5	<	109	70-130		
Perfluorooctanesulfonate (PFOS)		0.58	0.025	ug/L	0.49	0.048	107	70-130		
Perfluorooctanoic acid (PFOA)		0.59	0.035	ug/L	0.5	0.053	107	70-130		
Perfluoropentanoic acid (PFPeA)		0.53	0.050	ug/L	0.5	<	103	70-130		

FINAL REPORT

Report ID: 04262019160231

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: SW-57
Collected By: David Anderson/Chris Pelosi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 04/26/19 16:02

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0148 - PFCs Preparation

Matrix Spike (B9D0148-MSF) Source: 19C1281-07 **Prepared: 04/08/19 19:41 Analyzed: 04/08/19 19:41**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.49	0.050	ug/L	0.50	<	99	70-130		
Perfluorobutanoic acid (PFBA)		0.79	0.050	ug/L	0.5	0.30	98	70-130		
Perfluorohexanesulfonate (PFHxS)		0.51	0.025	ug/L	0.50	<	102	70-130		
Perfluorohexanoic acid (PFHxA)		0.55	0.050	ug/L	0.5	<	110	70-130		
Perfluorooctanesulfonate (PFOS)		0.58	0.025	ug/L	0.49	0.061	103	70-130		
Perfluorooctanoic acid (PFOA)		0.55	0.035	ug/L	0.5	0.047	102	70-130		
Perfluoropentanoic acid (PFPeA)		0.52	0.050	ug/L	0.5	<	103	70-130		

Matrix Spike (B9D0148-MSG) Source: 19C1281-08 **Prepared: 04/08/19 19:58 Analyzed: 04/08/19 19:58**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.51	0.050	ug/L	0.50	<	102	70-130		
Perfluorobutanoic acid (PFBA)		0.51	0.050	ug/L	0.5	<	102	70-130		
Perfluorohexanesulfonate (PFHxS)		0.53	0.025	ug/L	0.50	<	107	70-130		
Perfluorohexanoic acid (PFHxA)		0.52	0.050	ug/L	0.5	<	103	70-130		
Perfluorooctanesulfonate (PFOS)		0.51	0.025	ug/L	0.49	<	103	70-130		
Perfluorooctanoic acid (PFOA)		0.52	0.035	ug/L	0.5	<	104	70-130		
Perfluoropentanoic acid (PFPeA)		0.53	0.050	ug/L	0.5	<	106	70-130		

Authorized by:

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Quality Control

Data Qualifiers and Definitions

Z-01a	Low bias demonstrated by continuing calibration verification standard, samples may also display a low bias. Matrix spike recovery was low; the associated LCS/LCSD recovery was also low.
Z-01	Low bias demonstrated by continuing calibration verification standard, samples may also display a low bias.
WB	Relative percent difference exceeded the laboratory acceptance limit. Result less than 5 times the RL.
V4	Calibration verification standard recovery was below method acceptance limits. See comments or additional qualifiers.
L3	The spike recovery was below laboratory acceptance limits for the associated laboratory control sample and/or laboratory control sample duplicate.
J	Analyte was present between the method detection limit and reporting limit and should be considered an estimated value.
Dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
%REC	Percent Recovery

Authorized by:

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

MINNESOTA MDH DEPARTMENT OF HEALTH

Protecting, maintaining and improving the health of all Minnesotans

Report Date: 5/1/19
Client Name: QW - MPCA - Closed Landfill Assessment
Project Code: QW
Project Name: Closed Landfill Assessment

Work Order Number: 19D0067

Report To: QW - MPCA - Closed Landfill Assessment
Mark Umholtz
520 Lafayette Rd.
Saint Paul, MN 55155

The MDH Public Health Laboratory performs chemical, bacteriological and radiological analyses of environmental samples including water, waste water, sediment, air, soil and hazardous material. The laboratory provides testing services in accordance with standard operating procedures referencing approved methodology as defined in Standard Methods for the Examination of Water and Wastewater, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods: EPA SW-846, and 40 Code of Federal Regulation (CFR) parts 136, 141, and 261. In cases where analytes of interest do not have corresponding EPA approved methodology, the MDH Public Health Laboratory uses in-house methods that have undergone rigorous validation and documentation.

The results within this report are in compliance with the terms and conditions stated in the standard operating procedures, reference methodologies, and quality assurance project plan; unless otherwise narrated in the attached report.

Release of the data contained in this report has been authorized by laboratory management and is verified with the following signature affirmation. Thank you for using the MDH Public Health Laboratory.

Sincerely,

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Summary of Samples Received

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name: MN SW-057
Collected By: David Anderson/Chris Pelasi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 05/01/19 14:51

Work Order Comment: Project code is QW, Source for QC-FR is SP-02 per B. Scruton. -CCS 04/02/19 SP-07 1,4 dioxane container had excessive sediment, analysis cancelled, client notified. -CCS 04/26/19

Field ID	MDH Sample Number	Matrix	Date & Time Collected	Date & Time Received	Receipt °C
Trip Blank 3	19D0067-01	QC-BLANK	03/29/19 7:00	04/02/19 9:40	5.0
462521	19D0067-02	Wtr-Ground	03/29/19 13:00	04/02/19 9:40	5.0
M-2	19D0067-03	Wtr-Ground	03/29/19 13:05	04/02/19 9:40	5.0
462522	19D0067-04	Wtr-Ground	03/29/19 13:50	04/02/19 9:40	5.0
813740	19D0067-05	Wtr-Ground	04/01/19 10:10	04/02/19 9:40	5.0
813764	19D0067-06	Wtr-Ground	04/01/19 10:50	04/02/19 9:40	5.0
813761	19D0067-07	Wtr-Ground	04/01/19 13:00	04/02/19 9:40	5.0
240816	19D0067-08	Wtr-Ground	04/01/19 15:10	04/02/19 9:40	5.0

Field ID	MDH Sample Number	Receiving Comments
462521	19D0067-02	Parent sample for QC-FR -CCS
813761	19D0067-07	Excessive sediment in 1,4 dioxane. -CCS

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

Minnesota Pollution Control Agency

Chain-of-Custody Form revison 2013.0909

Work Order Number: 19D0067 | COC Type: Standard | Page: 1 of 1

Turnaround Time: Standard | COC ID:

PROJECT/CLIENT INFO

Facility Code: MN SW-057 | Program Code (MDH Lab Only):

Project Name: 19-01567 MPCA Freeway Landfill 2019 MDH | Project Task Code: PRJ07786

Project Manager: Mark Umholtz | 651-757-2308

Potential Hazard? If yes, add information to Sampler Comments Section

LABORATORY

Lab Name: Minnesota Department of Health

Address: 601 Robert Street N.

St. Paul MN 55155

Phone No: 651-201-5058

SAMPLE DETAILS

SAMPLE TYPE CODES
Sample=Routine Sample
S-IVP=Integrated Vertical Profile Sample
S-CWOP=Composite Sample
QC-FB=Field Blank Sample
QC-FR=Field Replicate Sample
QC-TB=Trip Blank Sample

LAB MATRIX CODES
DW=Drinking Water
NW=Non-potable Water
SD=Soil/Solid
WP=Wipe
AR=Air
BL=Biological Material
OT=Other
TS=Tissue

FIELD MATRIX CODES
Wtr-Ground=Groundwater
Wtr-Surf=Surface Water
QC-BLANK=Artificial Blank Water
Leachate=Leachate Sample

ANALYSIS REQUESTED

Location Identifier	Sample Type	Date	Time	Start Depth, in meters	End Depth, in meters	Grab (G) or Composite (C) Sample	Lab Matrix Code	Field Matrix Code	AIS	Sampler Comments (filter volume, special handling, etc.)	# of Cont	PRESERV.	ANALYSIS	VOCs EPA 8260D	PFAS by MDH555	1,4 Dioxane				Lab Sample No.	#
												HCl		None	None						
Trip Blank 3	QC-TB	3/29/19	0700			G	NW	QC Blank	N		3			X						-01	1
462521	Sample	3/29/19	1300			G	NW	Wtr-Ground	N		5			X	X	X				-02	2
M-2	QC-FR	3/29/19	1305			G	NW	Wtr-Ground	N		5			X	X	X				-03	3
462522	Sample	3/29/19	1350			G	NW	Wtr-Ground	N		5			X	X	X				-04	4
813740	Sample	4/1/19	1010			G	NW	Wtr-Ground	N		5			X	X	X				-05	5
813764	Sample	4/1/19	1050			G	NW	Wtr-Ground	N		5			X	X	X				-06	6
813761	Sample	4/1/19	1300			G	NW	Wtr-Ground	N		5			X	X	X				-07	7
240816	Sample	4/1/19	1510			G	NW	Wtr-Ground	N		5			X	X	X				-08	8
				DV		4/1/19			N												9
									N												10

Sampled By: David Anderson / Chris Relasi

Sampler's Signature: David Anderson

Phone #:

Receiving Comments:

Relinquished By/Affiliation	Date/Time	Accepted By/ Affiliation	Date/Time
(Sampler) David Anderson / Pace Analytical	4/1/19 1620	G ELMACK	4/2/19 9:40AM
G ELMACK	4/2/19		4/2/19 9:40AM

* sample 813761 is leachate type sample, very strong leachate odor.

DEPARTMENT OF HEALTH

Sample Condition Upon Receipt

Minnesota Department of Health Public Health Laboratory

Data Entry Worksheet

19D0067

Parcel Information

Date & time of receipt: APR 2'19 9:40

Courier: ☒ Walk-in ☐ FedEx ☐ Spee-Dee ☐ UPS ☐ USPS ☐ Other courier _____

Tracking # _____

After hours drop-off: ☐ Refrigerator (207) (186) ( ) ☐ Freezer (185) ( ) ☐ Unrefrigerated

Parcel: ☒ Plastic cooler ☐ Styrofoam/cardboard cooler ☐ Cardboard box ☐ Envelope ☐ Plastic can ☐ None ☐ Other _____

Custody seals present: ☒ No; ☐ Yes, If "Yes" Custody seals intact: ☐ Yes; ☐ No _____

Custody seal # _____ **Evidentiary samples identified:** ☒ No ☐ Yes

Packaging, Temperature & Radiochemical Information

Packing material: ☐ Bubble wrap ☐ Styrofoam ☐ Paper ☒ None ☐ Other _____

Cooling material: ☐ Wet ice (loose) ☒ Wet ice pack #(2) ☐ Gel pack #( ) ☐ Dry ice ☐ None ☐ Other _____

Condition of cooling material: ☐ Solid ☒ Partially frozen ☐ Liquid; Liquid temperature: _____ °C ☐ N/A

Representative sample temperature: 5.0 °C **IR thermometer instrument used:** BIO

Samples received with evidence of freezing: ☒ No; ☐ Yes _____

Rad Chem. request received: ☒ No; ☐ Yes, If "Yes" sample survey results: ☐ < 0.5 mrem/hr ☐ ≥ 0.5 mrem/hr

Initials of person receiving parcel: MKC

Chain of Custody, Sample Container & Analysis Information

Chain of custody received with sample containers: ☒ Yes ☐ No

Chain of custody type: ☒ Standard ☐ Civil ☐ Criminal ☐ Priority/Emergency ☐ Unknown

All sample containers are unique to a sample point listed on the chain of custody: ☒ Yes; ☐ No

All sample containers have been collected prior to the expiration date listed on container label: ☒ Yes; ☐ No ☐ Unknown _____

All sample containers received intact: ☒ Yes; ☐ No _____

All sample containers are appropriate for requested analysis: ☒ Yes; ☐ No ☐ Unknown

All analysis have been received within the specified holding time for analysis: ☒ Yes; ☐ No ☐ Unknown

Sample submission details are entered in the Environmental Laboratory LIMS.

Initials of person logging in the work order request into LIMS: MKC

Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Case Narrative

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name: MN SW-057
Collected by: David Anderson/Chris Pelasi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 05/01/2019 14:50

Except where noted in this report, no additional comments are needed for this Work Order.

Authorized by:

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelasi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 05/01/19 14:51

MDH Sample Number: 19D0067-01

Location ID: Trip Blank 3
Field Name: None
Sampling Point: None
QA Type: Trip Blank

Collect Date: 03/29/19
Collect Time: 7:00
Matrix: QC-BLANK

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Surrogate: 1,2-Dichlorobenzene-d4		*102*	*70-130*	%	*1*	*B9D0019*	*04/02/19 14:40*	*04/02/19 14:40*	*EPA 8260D*
Surrogate: 4-Bromofluorobenzene		*97*	*70-130*	%	*1*	*B9D0019*	*04/02/19 14:40*	*04/02/19 14:40*	*EPA 8260D*
Surrogate: Methyl tertiary butyl ether-d3		*100*	*70-130*	%	*1*	*B9D0019*	*04/02/19 14:40*	*04/02/19 14:40*	*EPA 8260D*
1,1,1,2-Tetrachloroethane		<	1.0	ug/L	1	B9D0019	04/02/19 14:40	04/02/19 14:40	EPA 8260D
1,1,1-Trichloroethane		<	1.0	ug/L	1	B9D0019	04/02/19 14:40	04/02/19 14:40	EPA 8260D
1,1,2,2-Tetrachloroethane		<	0.50	ug/L	1	B9D0019	04/02/19 14:40	04/02/19 14:40	EPA 8260D
1,1,2-Trichloroethane		<	0.50	ug/L	1	B9D0019	04/02/19 14:40	04/02/19 14:40	EPA 8260D
1,1,2-Trichlorotrifluoroethane		<	1.0	ug/L	1	B9D0019	04/02/19 14:40	04/02/19 14:40	EPA 8260D
1,1-Dichloroethane		<	1.0	ug/L	1	B9D0019	04/02/19 14:40	04/02/19 14:40	EPA 8260D
1,1-Dichloroethene		<	1.0	ug/L	1	B9D0019	04/02/19 14:40	04/02/19 14:40	EPA 8260D
1,1-Dichloropropene		<	1.0	ug/L	1	B9D0019	04/02/19 14:40	04/02/19 14:40	EPA 8260D
1,2,3-Trichlorobenzene		<	1.0	ug/L	1	B9D0019	04/02/19 14:40	04/02/19 14:40	EPA 8260D
1,2,3-Trichloropropane		<	0.20	ug/L	1	B9D0019	04/02/19 14:40	04/02/19 14:40	EPA 8260D
1,2,4-Trichlorobenzene		<	1.0	ug/L	1	B9D0019	04/02/19 14:40	04/02/19 14:40	EPA 8260D
1,2,4-Trimethylbenzene		<	1.0	ug/L	1	B9D0019	04/02/19 14:40	04/02/19 14:40	EPA 8260D
1,2-Dibromo-3-chloropropane (DBCP)		<	1.0	ug/L	1	B9D0019	04/02/19 14:40	04/02/19 14:40	EPA 8260D
1,2-Dibromoethane (EDB)		<	0.50	ug/L	1	B9D0019	04/02/19 14:40	04/02/19 14:40	EPA 8260D
1,2-Dichlorobenzene		<	1.0	ug/L	1	B9D0019	04/02/19 14:40	04/02/19 14:40	EPA 8260D
1,2-Dichloroethane		<	0.20	ug/L	1	B9D0019	04/02/19 14:40	04/02/19 14:40	EPA 8260D
1,2-Dichloropropane		<	1.0	ug/L	1	B9D0019	04/02/19 14:40	04/02/19 14:40	EPA 8260D
1,3,5-Trimethylbenzene		<	1.0	ug/L	1	B9D0019	04/02/19 14:40	04/02/19 14:40	EPA 8260D
1,3-Dichlorobenzene		<	1.0	ug/L	1	B9D0019	04/02/19 14:40	04/02/19 14:40	EPA 8260D
1,3-Dichloropropane		<	1.0	ug/L	1	B9D0019	04/02/19 14:40	04/02/19 14:40	EPA 8260D
1,4-Dichlorobenzene		<	1.0	ug/L	1	B9D0019	04/02/19 14:40	04/02/19 14:40	EPA 8260D
2,2-Dichloropropane		<	1.0	ug/L	1	B9D0019	04/02/19 14:40	04/02/19 14:40	EPA 8260D

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelasi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 05/01/19 14:51

MDH Sample Number: 19D0067-01

Location ID: Trip Blank 3
Field Name: None
Sampling Point: None
QA Type: Trip Blank

Collect Date: 03/29/19
Collect Time: 7:00
Matrix: QC-BLANK

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
2-Chlorotoluene		<	1.0	ug/L	1	B9D0019	04/02/19 14:40	04/02/19 14:40	EPA 8260D
4-Chlorotoluene		<	1.0	ug/L	1	B9D0019	04/02/19 14:40	04/02/19 14:40	EPA 8260D
Acetone		<	20	ug/L	1	B9D0019	04/02/19 14:40	04/02/19 14:40	EPA 8260D
Allyl chloride		<	1.0	ug/L	1	B9D0019	04/02/19 14:40	04/02/19 14:40	EPA 8260D
Benzene		<	0.50	ug/L	1	B9D0019	04/02/19 14:40	04/02/19 14:40	EPA 8260D
Bromobenzene		<	1.0	ug/L	1	B9D0019	04/02/19 14:40	04/02/19 14:40	EPA 8260D
Bromochloromethane		<	1.0	ug/L	1	B9D0019	04/02/19 14:40	04/02/19 14:40	EPA 8260D
Bromodichloromethane		<	1.0	ug/L	1	B9D0019	04/02/19 14:40	04/02/19 14:40	EPA 8260D
Bromoform		<	1.0	ug/L	1	B9D0019	04/02/19 14:40	04/02/19 14:40	EPA 8260D
Bromomethane	L3, V4, Z-01	<	2.0	ug/L	1	B9D0019	04/02/19 14:40	04/02/19 14:40	EPA 8260D
Carbon tetrachloride		<	0.20	ug/L	1	B9D0019	04/02/19 14:40	04/02/19 14:40	EPA 8260D
Chlorobenzene		<	1.0	ug/L	1	B9D0019	04/02/19 14:40	04/02/19 14:40	EPA 8260D
Chlorodibromomethane		<	0.50	ug/L	1	B9D0019	04/02/19 14:40	04/02/19 14:40	EPA 8260D
Chloroethane		<	1.0	ug/L	1	B9D0019	04/02/19 14:40	04/02/19 14:40	EPA 8260D
Chloroform		<	1.0	ug/L	1	B9D0019	04/02/19 14:40	04/02/19 14:40	EPA 8260D
Chloromethane		<	1.0	ug/L	1	B9D0019	04/02/19 14:40	04/02/19 14:40	EPA 8260D
cis-1,2-Dichloroethene		<	1.0	ug/L	1	B9D0019	04/02/19 14:40	04/02/19 14:40	EPA 8260D
cis-1,3-Dichloropropene		<	0.50	ug/L	1	B9D0019	04/02/19 14:40	04/02/19 14:40	EPA 8260D
Dibromomethane		<	1.0	ug/L	1	B9D0019	04/02/19 14:40	04/02/19 14:40	EPA 8260D
Dichlorodifluoromethane		<	1.0	ug/L	1	B9D0019	04/02/19 14:40	04/02/19 14:40	EPA 8260D
Dichlorofluoromethane		<	1.0	ug/L	1	B9D0019	04/02/19 14:40	04/02/19 14:40	EPA 8260D
Ethyl ether		<	1.0	ug/L	1	B9D0019	04/02/19 14:40	04/02/19 14:40	EPA 8260D
Ethylbenzene		<	1.0	ug/L	1	B9D0019	04/02/19 14:40	04/02/19 14:40	EPA 8260D
Hexachlorobutadiene		<	0.50	ug/L	1	B9D0019	04/02/19 14:40	04/02/19 14:40	EPA 8260D
Isopropylbenzene		<	1.0	ug/L	1	B9D0019	04/02/19 14:40	04/02/19 14:40	EPA 8260D
Methyl ethyl ketone (MEK)		<	10	ug/L	1	B9D0019	04/02/19 14:40	04/02/19 14:40	EPA 8260D
Methyl isobutyl ketone (MIBK)		<	5.0	ug/L	1	B9D0019	04/02/19 14:40	04/02/19 14:40	EPA 8260D

FINAL REPORT

Report ID: 05012019145117

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelasi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 05/01/19 14:51

MDH Sample Number: 19D0067-01

Location ID: Trip Blank 3
Field Name: None
Sampling Point: None
QA Type: Trip Blank

Collect Date: 03/29/19
Collect Time: 7:00
Matrix: QC-BLANK

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Methyl tertiary butyl ether (MTBE)		<	2.0	ug/L	1	B9D0019	04/02/19 14:40	04/02/19 14:40	EPA 8260D
Methylene chloride		<	1.0	ug/L	1	B9D0019	04/02/19 14:40	04/02/19 14:40	EPA 8260D
Naphthalene		<	1.0	ug/L	1	B9D0019	04/02/19 14:40	04/02/19 14:40	EPA 8260D
n-Butylbenzene		<	1.0	ug/L	1	B9D0019	04/02/19 14:40	04/02/19 14:40	EPA 8260D
n-Propylbenzene		<	1.0	ug/L	1	B9D0019	04/02/19 14:40	04/02/19 14:40	EPA 8260D
o-Xylene		<	1.0	ug/L	1	B9D0019	04/02/19 14:40	04/02/19 14:40	EPA 8260D
p&m-Xylene		<	1.0	ug/L	1	B9D0019	04/02/19 14:40	04/02/19 14:40	EPA 8260D
p-Isopropyltoluene		<	1.0	ug/L	1	B9D0019	04/02/19 14:40	04/02/19 14:40	EPA 8260D
sec-Butylbenzene		<	1.0	ug/L	1	B9D0019	04/02/19 14:40	04/02/19 14:40	EPA 8260D
Styrene		<	1.0	ug/L	1	B9D0019	04/02/19 14:40	04/02/19 14:40	EPA 8260D
tert-Butylbenzene		<	1.0	ug/L	1	B9D0019	04/02/19 14:40	04/02/19 14:40	EPA 8260D
Tetrachloroethene		<	1.0	ug/L	1	B9D0019	04/02/19 14:40	04/02/19 14:40	EPA 8260D
Tetrahydrofuran (THF)		<	10	ug/L	1	B9D0019	04/02/19 14:40	04/02/19 14:40	EPA 8260D
Toluene		<	1.0	ug/L	1	B9D0019	04/02/19 14:40	04/02/19 14:40	EPA 8260D
trans-1,2-Dichloroethene		<	1.0	ug/L	1	B9D0019	04/02/19 14:40	04/02/19 14:40	EPA 8260D
trans-1,3-Dichloropropene		<	0.50	ug/L	1	B9D0019	04/02/19 14:40	04/02/19 14:40	EPA 8260D
Trichloroethene (TCE)		<	0.10	ug/L	1	B9D0019	04/02/19 14:40	04/02/19 14:40	EPA 8260D
Trichlorofluoromethane		<	1.0	ug/L	1	B9D0019	04/02/19 14:40	04/02/19 14:40	EPA 8260D
Vinyl chloride		<	0.050	ug/L	1	B9D0019	04/02/19 14:40	04/02/19 14:40	EPA 8260D

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Environmental Laboratory Section
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St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelasi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 05/01/19 14:51

MDH Sample Number: 19D0067-02

Location ID: 462521
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 03/29/19
Collect Time: 13:00
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: Parent sample for QC-FR -CCS

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Surrogate: 1,2-Dichlorobenzene-d4		*102*	*70-130*	%	*1*	*B9D0019*	*04/02/19 15:36*	*04/02/19 15:36*	*EPA 8260D*
Surrogate: 4-Bromofluorobenzene		*100*	*70-130*	%	*1*	*B9D0019*	*04/02/19 15:36*	*04/02/19 15:36*	*EPA 8260D*
Surrogate: Methyl tertiary butyl ether-d3		*99*	*70-130*	%	*1*	*B9D0019*	*04/02/19 15:36*	*04/02/19 15:36*	*EPA 8260D*
1,1,1,2-Tetrachloroethane		<	1.0	ug/L	1	B9D0019	04/02/19 15:36	04/02/19 15:36	EPA 8260D
1,1,1-Trichloroethane		<	1.0	ug/L	1	B9D0019	04/02/19 15:36	04/02/19 15:36	EPA 8260D
1,1,2,2-Tetrachloroethane		<	0.50	ug/L	1	B9D0019	04/02/19 15:36	04/02/19 15:36	EPA 8260D
1,1,2-Trichloroethane		<	0.50	ug/L	1	B9D0019	04/02/19 15:36	04/02/19 15:36	EPA 8260D
1,1,2-Trichlorotrifluoroethane		<	1.0	ug/L	1	B9D0019	04/02/19 15:36	04/02/19 15:36	EPA 8260D
1,1-Dichloroethane		<	1.0	ug/L	1	B9D0019	04/02/19 15:36	04/02/19 15:36	EPA 8260D
1,1-Dichloroethene		<	1.0	ug/L	1	B9D0019	04/02/19 15:36	04/02/19 15:36	EPA 8260D
1,1-Dichloropropene		<	1.0	ug/L	1	B9D0019	04/02/19 15:36	04/02/19 15:36	EPA 8260D
1,2,3-Trichlorobenzene		<	1.0	ug/L	1	B9D0019	04/02/19 15:36	04/02/19 15:36	EPA 8260D
1,2,3-Trichloropropane		<	0.20	ug/L	1	B9D0019	04/02/19 15:36	04/02/19 15:36	EPA 8260D
1,2,4-Trichlorobenzene		<	1.0	ug/L	1	B9D0019	04/02/19 15:36	04/02/19 15:36	EPA 8260D
1,2,4-Trimethylbenzene		<	1.0	ug/L	1	B9D0019	04/02/19 15:36	04/02/19 15:36	EPA 8260D
1,2-Dibromo-3-chloropropane (DBCP)		<	1.0	ug/L	1	B9D0019	04/02/19 15:36	04/02/19 15:36	EPA 8260D
1,2-Dibromoethane (EDB)		<	0.50	ug/L	1	B9D0019	04/02/19 15:36	04/02/19 15:36	EPA 8260D
1,2-Dichlorobenzene		<	1.0	ug/L	1	B9D0019	04/02/19 15:36	04/02/19 15:36	EPA 8260D
1,2-Dichloroethane		<	0.20	ug/L	1	B9D0019	04/02/19 15:36	04/02/19 15:36	EPA 8260D
1,2-Dichloropropane		<	1.0	ug/L	1	B9D0019	04/02/19 15:36	04/02/19 15:36	EPA 8260D
1,3,5-Trimethylbenzene		<	1.0	ug/L	1	B9D0019	04/02/19 15:36	04/02/19 15:36	EPA 8260D
1,3-Dichlorobenzene		<	1.0	ug/L	1	B9D0019	04/02/19 15:36	04/02/19 15:36	EPA 8260D
1,3-Dichloropropane		<	1.0	ug/L	1	B9D0019	04/02/19 15:36	04/02/19 15:36	EPA 8260D
1,4-Dichlorobenzene		<	1.0	ug/L	1	B9D0019	04/02/19 15:36	04/02/19 15:36	EPA 8260D
2,2-Dichloropropane		<	1.0	ug/L	1	B9D0019	04/02/19 15:36	04/02/19 15:36	EPA 8260D
2-Chlorotoluene		<	1.0	ug/L	1	B9D0019	04/02/19 15:36	04/02/19 15:36	EPA 8260D

FINAL REPORT

Report ID: 05012019145117

Authorized by:

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Public Health Laboratory
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St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelasi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 05/01/19 14:51

MDH Sample Number: 19D0067-02

Location ID: 462521
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 03/29/19
Collect Time: 13:00
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: Parent sample for QC-FR -CCS

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
4-Chlorotoluene		<	1.0	ug/L	1	B9D0019	04/02/19 15:36	04/02/19 15:36	EPA 8260D
Acetone		<	20	ug/L	1	B9D0019	04/02/19 15:36	04/02/19 15:36	EPA 8260D
Allyl chloride		<	1.0	ug/L	1	B9D0019	04/02/19 15:36	04/02/19 15:36	EPA 8260D
Benzene		<	0.50	ug/L	1	B9D0019	04/02/19 15:36	04/02/19 15:36	EPA 8260D
Bromobenzene		<	1.0	ug/L	1	B9D0019	04/02/19 15:36	04/02/19 15:36	EPA 8260D
Bromochloromethane		<	1.0	ug/L	1	B9D0019	04/02/19 15:36	04/02/19 15:36	EPA 8260D
Bromodichloromethane		<	1.0	ug/L	1	B9D0019	04/02/19 15:36	04/02/19 15:36	EPA 8260D
Bromoform		<	1.0	ug/L	1	B9D0019	04/02/19 15:36	04/02/19 15:36	EPA 8260D
Bromomethane	L3, V4, Z-01	<	2.0	ug/L	1	B9D0019	04/02/19 15:36	04/02/19 15:36	EPA 8260D
Carbon tetrachloride		<	0.20	ug/L	1	B9D0019	04/02/19 15:36	04/02/19 15:36	EPA 8260D
Chlorobenzene		<	1.0	ug/L	1	B9D0019	04/02/19 15:36	04/02/19 15:36	EPA 8260D
Chlorodibromomethane		<	0.50	ug/L	1	B9D0019	04/02/19 15:36	04/02/19 15:36	EPA 8260D
Chloroethane		<	1.0	ug/L	1	B9D0019	04/02/19 15:36	04/02/19 15:36	EPA 8260D
Chloroform		<	1.0	ug/L	1	B9D0019	04/02/19 15:36	04/02/19 15:36	EPA 8260D
Chloromethane		<	1.0	ug/L	1	B9D0019	04/02/19 15:36	04/02/19 15:36	EPA 8260D
cis-1,2-Dichloroethene		<	1.0	ug/L	1	B9D0019	04/02/19 15:36	04/02/19 15:36	EPA 8260D
cis-1,3-Dichloropropene		<	0.50	ug/L	1	B9D0019	04/02/19 15:36	04/02/19 15:36	EPA 8260D
Dibromomethane		<	1.0	ug/L	1	B9D0019	04/02/19 15:36	04/02/19 15:36	EPA 8260D
Dichlorodifluoromethane		<	1.0	ug/L	1	B9D0019	04/02/19 15:36	04/02/19 15:36	EPA 8260D
Dichlorofluoromethane		<	1.0	ug/L	1	B9D0019	04/02/19 15:36	04/02/19 15:36	EPA 8260D
Ethyl ether		<	1.0	ug/L	1	B9D0019	04/02/19 15:36	04/02/19 15:36	EPA 8260D
Ethylbenzene		<	1.0	ug/L	1	B9D0019	04/02/19 15:36	04/02/19 15:36	EPA 8260D
Hexachlorobutadiene		<	0.50	ug/L	1	B9D0019	04/02/19 15:36	04/02/19 15:36	EPA 8260D
Isopropylbenzene		<	1.0	ug/L	1	B9D0019	04/02/19 15:36	04/02/19 15:36	EPA 8260D
Methyl ethyl ketone (MEK)		<	10	ug/L	1	B9D0019	04/02/19 15:36	04/02/19 15:36	EPA 8260D
Methyl isobutyl ketone (MIBK)		<	5.0	ug/L	1	B9D0019	04/02/19 15:36	04/02/19 15:36	EPA 8260D
Methyl tertiary butyl ether (MTBE)		<	2.0	ug/L	1	B9D0019	04/02/19 15:36	04/02/19 15:36	EPA 8260D

FINAL REPORT

Report ID: 05012019145117

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Minnesota Department of Health
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Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelasi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 05/01/19 14:51

MDH Sample Number: 19D0067-02

Location ID: 462521
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 03/29/19
Collect Time: 13:00
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: Parent sample for QC-FR -CCS

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Methylene chloride		<	1.0	ug/L	1	B9D0019	04/02/19 15:36	04/02/19 15:36	EPA 8260D
Naphthalene		<	1.0	ug/L	1	B9D0019	04/02/19 15:36	04/02/19 15:36	EPA 8260D
n-Butylbenzene		<	1.0	ug/L	1	B9D0019	04/02/19 15:36	04/02/19 15:36	EPA 8260D
n-Propylbenzene		<	1.0	ug/L	1	B9D0019	04/02/19 15:36	04/02/19 15:36	EPA 8260D
o-Xylene		<	1.0	ug/L	1	B9D0019	04/02/19 15:36	04/02/19 15:36	EPA 8260D
p&m-Xylene		<	1.0	ug/L	1	B9D0019	04/02/19 15:36	04/02/19 15:36	EPA 8260D
p-Isopropyltoluene		<	1.0	ug/L	1	B9D0019	04/02/19 15:36	04/02/19 15:36	EPA 8260D
sec-Butylbenzene		<	1.0	ug/L	1	B9D0019	04/02/19 15:36	04/02/19 15:36	EPA 8260D
Styrene		<	1.0	ug/L	1	B9D0019	04/02/19 15:36	04/02/19 15:36	EPA 8260D
tert-Butylbenzene		<	1.0	ug/L	1	B9D0019	04/02/19 15:36	04/02/19 15:36	EPA 8260D
Tetrachloroethene		<	1.0	ug/L	1	B9D0019	04/02/19 15:36	04/02/19 15:36	EPA 8260D
Tetrahydrofuran (THF)		<	10	ug/L	1	B9D0019	04/02/19 15:36	04/02/19 15:36	EPA 8260D
Toluene		<	1.0	ug/L	1	B9D0019	04/02/19 15:36	04/02/19 15:36	EPA 8260D
trans-1,2-Dichloroethene		<	1.0	ug/L	1	B9D0019	04/02/19 15:36	04/02/19 15:36	EPA 8260D
trans-1,3-Dichloropropene		<	0.50	ug/L	1	B9D0019	04/02/19 15:36	04/02/19 15:36	EPA 8260D
Trichloroethene (TCE)		<	0.10	ug/L	1	B9D0019	04/02/19 15:36	04/02/19 15:36	EPA 8260D
Trichlorofluoromethane		<	1.0	ug/L	1	B9D0019	04/02/19 15:36	04/02/19 15:36	EPA 8260D
Vinyl chloride		<	0.050	ug/L	1	B9D0019	04/02/19 15:36	04/02/19 15:36	EPA 8260D

1,4-Dioxane

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
1,4-Dioxane		**3.3**	0.049	ug/L	1	B9D0396	04/23/19 08:00	04/24/19 14:17	EPA 522 Modified

PFC Expanded List

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorobutanesulfonate (PFBS)		<	0.050	ug/L	1	B9D0230	04/12/19 13:07	04/12/19 13:07	MDH 555
Perfluorobutanoic acid (PFBA)	WB, J	**0.024**	0.050	ug/L	1	B9D0230	04/12/19 13:07	04/12/19 13:07	MDH 555

FINAL REPORT

Report ID: 05012019145117

Authorized by:

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelasi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 05/01/19 14:51

MDH Sample Number: 19D0067-02

Location ID: 462521
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 03/29/19
Collect Time: 13:00
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: Parent sample for QC-FR -CCS

Results were produced by the Minnesota Department of Health, except where noted.

PFC Expanded List - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorohexanesulfonate (PFHxS)		<	0.025	ug/L	1	B9D0230	04/12/19 13:07	04/12/19 13:07	MDH 555
Perfluorohexanoic acid (PFHxA)		<	0.050	ug/L	1	B9D0230	04/12/19 13:07	04/12/19 13:07	MDH 555
Perfluorooctanesulfonate (PFOS)		<	0.025	ug/L	1	B9D0230	04/12/19 13:07	04/12/19 13:07	MDH 555
Perfluorooctanoic acid (PFOA)		<	0.035	ug/L	1	B9D0230	04/12/19 13:07	04/12/19 13:07	MDH 555
Perfluoropentanoic acid (PFPeA)		<	0.050	ug/L	1	B9D0230	04/12/19 13:07	04/12/19 13:07	MDH 555

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St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelasi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 05/01/19 14:51

MDH Sample Number: 19D0067-03

Location ID: M-2
Field Name: None
Sampling Point: None
QA Type: Field Dup/Rep

Collect Date: 03/29/19
Collect Time: 13:05
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Surrogate: 1,2-Dichlorobenzene-d4		*100*	*70-130*	%	*1*	*B9D0019*	*04/02/19 16:04*	*04/02/19 16:04*	*EPA 8260D*
Surrogate: 4-Bromofluorobenzene		*98*	*70-130*	%	*1*	*B9D0019*	*04/02/19 16:04*	*04/02/19 16:04*	*EPA 8260D*
Surrogate: Methyl tertiary butyl ether-d3		*100*	*70-130*	%	*1*	*B9D0019*	*04/02/19 16:04*	*04/02/19 16:04*	*EPA 8260D*
1,1,1,2-Tetrachloroethane		<	1.0	ug/L	1	B9D0019	04/02/19 16:04	04/02/19 16:04	EPA 8260D
1,1,1-Trichloroethane		<	1.0	ug/L	1	B9D0019	04/02/19 16:04	04/02/19 16:04	EPA 8260D
1,1,2,2-Tetrachloroethane		<	0.50	ug/L	1	B9D0019	04/02/19 16:04	04/02/19 16:04	EPA 8260D
1,1,2-Trichloroethane		<	0.50	ug/L	1	B9D0019	04/02/19 16:04	04/02/19 16:04	EPA 8260D
1,1,2-Trichlorotrifluoroethane		<	1.0	ug/L	1	B9D0019	04/02/19 16:04	04/02/19 16:04	EPA 8260D
1,1-Dichloroethane		<	1.0	ug/L	1	B9D0019	04/02/19 16:04	04/02/19 16:04	EPA 8260D
1,1-Dichloroethene		<	1.0	ug/L	1	B9D0019	04/02/19 16:04	04/02/19 16:04	EPA 8260D
1,1-Dichloropropene		<	1.0	ug/L	1	B9D0019	04/02/19 16:04	04/02/19 16:04	EPA 8260D
1,2,3-Trichlorobenzene		<	1.0	ug/L	1	B9D0019	04/02/19 16:04	04/02/19 16:04	EPA 8260D
1,2,3-Trichloropropane		<	0.20	ug/L	1	B9D0019	04/02/19 16:04	04/02/19 16:04	EPA 8260D
1,2,4-Trichlorobenzene		<	1.0	ug/L	1	B9D0019	04/02/19 16:04	04/02/19 16:04	EPA 8260D
1,2,4-Trimethylbenzene		<	1.0	ug/L	1	B9D0019	04/02/19 16:04	04/02/19 16:04	EPA 8260D
1,2-Dibromo-3-chloropropane (DBCP)		<	1.0	ug/L	1	B9D0019	04/02/19 16:04	04/02/19 16:04	EPA 8260D
1,2-Dibromoethane (EDB)		<	0.50	ug/L	1	B9D0019	04/02/19 16:04	04/02/19 16:04	EPA 8260D
1,2-Dichlorobenzene		<	1.0	ug/L	1	B9D0019	04/02/19 16:04	04/02/19 16:04	EPA 8260D
1,2-Dichloroethane		<	0.20	ug/L	1	B9D0019	04/02/19 16:04	04/02/19 16:04	EPA 8260D
1,2-Dichloropropane		<	1.0	ug/L	1	B9D0019	04/02/19 16:04	04/02/19 16:04	EPA 8260D
1,3,5-Trimethylbenzene		<	1.0	ug/L	1	B9D0019	04/02/19 16:04	04/02/19 16:04	EPA 8260D
1,3-Dichlorobenzene		<	1.0	ug/L	1	B9D0019	04/02/19 16:04	04/02/19 16:04	EPA 8260D
1,3-Dichloropropane		<	1.0	ug/L	1	B9D0019	04/02/19 16:04	04/02/19 16:04	EPA 8260D
1,4-Dichlorobenzene		<	1.0	ug/L	1	B9D0019	04/02/19 16:04	04/02/19 16:04	EPA 8260D
2,2-Dichloropropane		<	1.0	ug/L	1	B9D0019	04/02/19 16:04	04/02/19 16:04	EPA 8260D
2-Chlorotoluene		<	1.0	ug/L	1	B9D0019	04/02/19 16:04	04/02/19 16:04	EPA 8260D

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Public Health Laboratory
Environmental Laboratory Section
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St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelasi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 05/01/19 14:51

MDH Sample Number: 19D0067-03

Location ID: M-2
Field Name: None
Sampling Point: None
QA Type: Field Dup/Rep

Collect Date: 03/29/19
Collect Time: 13:05
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
4-Chlorotoluene		<	1.0	ug/L	1	B9D0019	04/02/19 16:04	04/02/19 16:04	EPA 8260D
Acetone		<	20	ug/L	1	B9D0019	04/02/19 16:04	04/02/19 16:04	EPA 8260D
Allyl chloride		<	1.0	ug/L	1	B9D0019	04/02/19 16:04	04/02/19 16:04	EPA 8260D
Benzene		<	0.50	ug/L	1	B9D0019	04/02/19 16:04	04/02/19 16:04	EPA 8260D
Bromobenzene		<	1.0	ug/L	1	B9D0019	04/02/19 16:04	04/02/19 16:04	EPA 8260D
Bromochloromethane		<	1.0	ug/L	1	B9D0019	04/02/19 16:04	04/02/19 16:04	EPA 8260D
Bromodichloromethane		<	1.0	ug/L	1	B9D0019	04/02/19 16:04	04/02/19 16:04	EPA 8260D
Bromoform		<	1.0	ug/L	1	B9D0019	04/02/19 16:04	04/02/19 16:04	EPA 8260D
Bromomethane	L3, V4, Z-01	<	2.0	ug/L	1	B9D0019	04/02/19 16:04	04/02/19 16:04	EPA 8260D
Carbon tetrachloride		<	0.20	ug/L	1	B9D0019	04/02/19 16:04	04/02/19 16:04	EPA 8260D
Chlorobenzene		<	1.0	ug/L	1	B9D0019	04/02/19 16:04	04/02/19 16:04	EPA 8260D
Chlorodibromomethane		<	0.50	ug/L	1	B9D0019	04/02/19 16:04	04/02/19 16:04	EPA 8260D
Chloroethane		<	1.0	ug/L	1	B9D0019	04/02/19 16:04	04/02/19 16:04	EPA 8260D
Chloroform		<	1.0	ug/L	1	B9D0019	04/02/19 16:04	04/02/19 16:04	EPA 8260D
Chloromethane		<	1.0	ug/L	1	B9D0019	04/02/19 16:04	04/02/19 16:04	EPA 8260D
cis-1,2-Dichloroethene		<	1.0	ug/L	1	B9D0019	04/02/19 16:04	04/02/19 16:04	EPA 8260D
cis-1,3-Dichloropropene		<	0.50	ug/L	1	B9D0019	04/02/19 16:04	04/02/19 16:04	EPA 8260D
Dibromomethane		<	1.0	ug/L	1	B9D0019	04/02/19 16:04	04/02/19 16:04	EPA 8260D
Dichlorodifluoromethane		<	1.0	ug/L	1	B9D0019	04/02/19 16:04	04/02/19 16:04	EPA 8260D
Dichlorofluoromethane		<	1.0	ug/L	1	B9D0019	04/02/19 16:04	04/02/19 16:04	EPA 8260D
Ethyl ether		<	1.0	ug/L	1	B9D0019	04/02/19 16:04	04/02/19 16:04	EPA 8260D
Ethylbenzene		<	1.0	ug/L	1	B9D0019	04/02/19 16:04	04/02/19 16:04	EPA 8260D
Hexachlorobutadiene		<	0.50	ug/L	1	B9D0019	04/02/19 16:04	04/02/19 16:04	EPA 8260D
Isopropylbenzene		<	1.0	ug/L	1	B9D0019	04/02/19 16:04	04/02/19 16:04	EPA 8260D
Methyl ethyl ketone (MEK)		<	10	ug/L	1	B9D0019	04/02/19 16:04	04/02/19 16:04	EPA 8260D
Methyl isobutyl ketone (MIBK)		<	5.0	ug/L	1	B9D0019	04/02/19 16:04	04/02/19 16:04	EPA 8260D
Methyl tertiary butyl ether (MTBE)		<	2.0	ug/L	1	B9D0019	04/02/19 16:04	04/02/19 16:04	EPA 8260D

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelasi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 05/01/19 14:51

MDH Sample Number: 19D0067-03

Location ID: M-2
Field Name: None
Sampling Point: None
QA Type: Field Dup/Rep

Collect Date: 03/29/19
Collect Time: 13:05
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Methylene chloride		<	1.0	ug/L	1	B9D0019	04/02/19 16:04	04/02/19 16:04	EPA 8260D
Naphthalene		<	1.0	ug/L	1	B9D0019	04/02/19 16:04	04/02/19 16:04	EPA 8260D
n-Butylbenzene		<	1.0	ug/L	1	B9D0019	04/02/19 16:04	04/02/19 16:04	EPA 8260D
n-Propylbenzene		<	1.0	ug/L	1	B9D0019	04/02/19 16:04	04/02/19 16:04	EPA 8260D
o-Xylene		<	1.0	ug/L	1	B9D0019	04/02/19 16:04	04/02/19 16:04	EPA 8260D
p&m-Xylene		<	1.0	ug/L	1	B9D0019	04/02/19 16:04	04/02/19 16:04	EPA 8260D
p-Isopropyltoluene		<	1.0	ug/L	1	B9D0019	04/02/19 16:04	04/02/19 16:04	EPA 8260D
sec-Butylbenzene		<	1.0	ug/L	1	B9D0019	04/02/19 16:04	04/02/19 16:04	EPA 8260D
Styrene		<	1.0	ug/L	1	B9D0019	04/02/19 16:04	04/02/19 16:04	EPA 8260D
tert-Butylbenzene		<	1.0	ug/L	1	B9D0019	04/02/19 16:04	04/02/19 16:04	EPA 8260D
Tetrachloroethene		<	1.0	ug/L	1	B9D0019	04/02/19 16:04	04/02/19 16:04	EPA 8260D
Tetrahydrofuran (THF)		<	10	ug/L	1	B9D0019	04/02/19 16:04	04/02/19 16:04	EPA 8260D
Toluene		<	1.0	ug/L	1	B9D0019	04/02/19 16:04	04/02/19 16:04	EPA 8260D
trans-1,2-Dichloroethene		<	1.0	ug/L	1	B9D0019	04/02/19 16:04	04/02/19 16:04	EPA 8260D
trans-1,3-Dichloropropene		<	0.50	ug/L	1	B9D0019	04/02/19 16:04	04/02/19 16:04	EPA 8260D
Trichloroethene (TCE)		<	0.10	ug/L	1	B9D0019	04/02/19 16:04	04/02/19 16:04	EPA 8260D
Trichlorofluoromethane		<	1.0	ug/L	1	B9D0019	04/02/19 16:04	04/02/19 16:04	EPA 8260D
Vinyl chloride		<	0.050	ug/L	1	B9D0019	04/02/19 16:04	04/02/19 16:04	EPA 8260D

1,4-Dioxane

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
1,4-Dioxane		**3.2**	0.049	ug/L	1	B9D0396	04/23/19 08:00	04/24/19 14:33	EPA 522 Modified

PFC Expanded List

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorobutanesulfonate (PFBS)		<	0.050	ug/L	1	B9D0230	04/12/19 13:40	04/12/19 13:40	MDH 555
Perfluorobutanoic acid (PFBA)	J	**0.044**	0.050	ug/L	1	B9D0230	04/12/19 13:40	04/12/19 13:40	MDH 555

FINAL REPORT

Report ID: 05012019145117

Authorized by:

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St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelasi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 05/01/19 14:51

MDH Sample Number: 19D0067-03

Location ID: M-2
Field Name: None
Sampling Point: None
QA Type: Field Dup/Rep

Collect Date: 03/29/19
Collect Time: 13:05
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

PFC Expanded List - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorohexanesulfonate (PFHxS)		<	0.025	ug/L	1	B9D0230	04/12/19 13:40	04/12/19 13:40	MDH 555
Perfluorohexanoic acid (PFHxA)		<	0.050	ug/L	1	B9D0230	04/12/19 13:40	04/12/19 13:40	MDH 555
Perfluorooctanesulfonate (PFOS)		<	0.025	ug/L	1	B9D0230	04/12/19 13:40	04/12/19 13:40	MDH 555
Perfluorooctanoic acid (PFOA)		<	0.035	ug/L	1	B9D0230	04/12/19 13:40	04/12/19 13:40	MDH 555
Perfluoropentanoic acid (PFPeA)		<	0.050	ug/L	1	B9D0230	04/12/19 13:40	04/12/19 13:40	MDH 555

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651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelasi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 05/01/19 14:51

MDH Sample Number: 19D0067-04

Location ID: 462522
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 03/29/19
Collect Time: 13:50
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Surrogate: 1,2-Dichlorobenzene-d4		*103*	*70-130*	%	*1*	*B9D0019*	*04/02/19 16:32*	*04/02/19 16:32*	*EPA 8260D*
Surrogate: 4-Bromofluorobenzene		*99*	*70-130*	%	*1*	*B9D0019*	*04/02/19 16:32*	*04/02/19 16:32*	*EPA 8260D*
Surrogate: Methyl tertiary butyl ether-d3		*100*	*70-130*	%	*1*	*B9D0019*	*04/02/19 16:32*	*04/02/19 16:32*	*EPA 8260D*
1,1,1,2-Tetrachloroethane		<	1.0	ug/L	1	B9D0019	04/02/19 16:32	04/02/19 16:32	EPA 8260D
1,1,1-Trichloroethane		<	1.0	ug/L	1	B9D0019	04/02/19 16:32	04/02/19 16:32	EPA 8260D
1,1,2,2-Tetrachloroethane		<	0.50	ug/L	1	B9D0019	04/02/19 16:32	04/02/19 16:32	EPA 8260D
1,1,2-Trichloroethane		<	0.50	ug/L	1	B9D0019	04/02/19 16:32	04/02/19 16:32	EPA 8260D
1,1,2-Trichlorotrifluoroethane		<	1.0	ug/L	1	B9D0019	04/02/19 16:32	04/02/19 16:32	EPA 8260D
1,1-Dichloroethane		<	1.0	ug/L	1	B9D0019	04/02/19 16:32	04/02/19 16:32	EPA 8260D
1,1-Dichloroethene		<	1.0	ug/L	1	B9D0019	04/02/19 16:32	04/02/19 16:32	EPA 8260D
1,1-Dichloropropene		<	1.0	ug/L	1	B9D0019	04/02/19 16:32	04/02/19 16:32	EPA 8260D
1,2,3-Trichlorobenzene		<	1.0	ug/L	1	B9D0019	04/02/19 16:32	04/02/19 16:32	EPA 8260D
1,2,3-Trichloropropane		<	0.20	ug/L	1	B9D0019	04/02/19 16:32	04/02/19 16:32	EPA 8260D
1,2,4-Trichlorobenzene		<	1.0	ug/L	1	B9D0019	04/02/19 16:32	04/02/19 16:32	EPA 8260D
1,2,4-Trimethylbenzene		<	1.0	ug/L	1	B9D0019	04/02/19 16:32	04/02/19 16:32	EPA 8260D
1,2-Dibromo-3-chloropropane (DBCP)		<	1.0	ug/L	1	B9D0019	04/02/19 16:32	04/02/19 16:32	EPA 8260D
1,2-Dibromoethane (EDB)		<	0.50	ug/L	1	B9D0019	04/02/19 16:32	04/02/19 16:32	EPA 8260D
1,2-Dichlorobenzene		<	1.0	ug/L	1	B9D0019	04/02/19 16:32	04/02/19 16:32	EPA 8260D
1,2-Dichloroethane		<	0.20	ug/L	1	B9D0019	04/02/19 16:32	04/02/19 16:32	EPA 8260D
1,2-Dichloropropane		<	1.0	ug/L	1	B9D0019	04/02/19 16:32	04/02/19 16:32	EPA 8260D
1,3,5-Trimethylbenzene		<	1.0	ug/L	1	B9D0019	04/02/19 16:32	04/02/19 16:32	EPA 8260D
1,3-Dichlorobenzene		<	1.0	ug/L	1	B9D0019	04/02/19 16:32	04/02/19 16:32	EPA 8260D
1,3-Dichloropropane		<	1.0	ug/L	1	B9D0019	04/02/19 16:32	04/02/19 16:32	EPA 8260D
1,4-Dichlorobenzene		<	1.0	ug/L	1	B9D0019	04/02/19 16:32	04/02/19 16:32	EPA 8260D
2,2-Dichloropropane		<	1.0	ug/L	1	B9D0019	04/02/19 16:32	04/02/19 16:32	EPA 8260D
2-Chlorotoluene		<	1.0	ug/L	1	B9D0019	04/02/19 16:32	04/02/19 16:32	EPA 8260D

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelasi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 05/01/19 14:51

MDH Sample Number: 19D0067-04

Location ID: 462522
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 03/29/19
Collect Time: 13:50
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
4-Chlorotoluene		<	1.0	ug/L	1	B9D0019	04/02/19 16:32	04/02/19 16:32	EPA 8260D
Acetone		<	20	ug/L	1	B9D0019	04/02/19 16:32	04/02/19 16:32	EPA 8260D
Allyl chloride		<	1.0	ug/L	1	B9D0019	04/02/19 16:32	04/02/19 16:32	EPA 8260D
Benzene		<	0.50	ug/L	1	B9D0019	04/02/19 16:32	04/02/19 16:32	EPA 8260D
Bromobenzene		<	1.0	ug/L	1	B9D0019	04/02/19 16:32	04/02/19 16:32	EPA 8260D
Bromochloromethane		<	1.0	ug/L	1	B9D0019	04/02/19 16:32	04/02/19 16:32	EPA 8260D
Bromodichloromethane		<	1.0	ug/L	1	B9D0019	04/02/19 16:32	04/02/19 16:32	EPA 8260D
Bromoform		<	1.0	ug/L	1	B9D0019	04/02/19 16:32	04/02/19 16:32	EPA 8260D
Bromomethane	L3, V4, Z-01	<	2.0	ug/L	1	B9D0019	04/02/19 16:32	04/02/19 16:32	EPA 8260D
Carbon tetrachloride		<	0.20	ug/L	1	B9D0019	04/02/19 16:32	04/02/19 16:32	EPA 8260D
Chlorobenzene		<	1.0	ug/L	1	B9D0019	04/02/19 16:32	04/02/19 16:32	EPA 8260D
Chlorodibromomethane		<	0.50	ug/L	1	B9D0019	04/02/19 16:32	04/02/19 16:32	EPA 8260D
Chloroethane		<	1.0	ug/L	1	B9D0019	04/02/19 16:32	04/02/19 16:32	EPA 8260D
Chloroform		<	1.0	ug/L	1	B9D0019	04/02/19 16:32	04/02/19 16:32	EPA 8260D
Chloromethane		<	1.0	ug/L	1	B9D0019	04/02/19 16:32	04/02/19 16:32	EPA 8260D
cis-1,2-Dichloroethene		<	1.0	ug/L	1	B9D0019	04/02/19 16:32	04/02/19 16:32	EPA 8260D
cis-1,3-Dichloropropene		<	0.50	ug/L	1	B9D0019	04/02/19 16:32	04/02/19 16:32	EPA 8260D
Dibromomethane		<	1.0	ug/L	1	B9D0019	04/02/19 16:32	04/02/19 16:32	EPA 8260D
Dichlorodifluoromethane		<	1.0	ug/L	1	B9D0019	04/02/19 16:32	04/02/19 16:32	EPA 8260D
Dichlorofluoromethane		<	1.0	ug/L	1	B9D0019	04/02/19 16:32	04/02/19 16:32	EPA 8260D
Ethyl ether		<	1.0	ug/L	1	B9D0019	04/02/19 16:32	04/02/19 16:32	EPA 8260D
Ethylbenzene		<	1.0	ug/L	1	B9D0019	04/02/19 16:32	04/02/19 16:32	EPA 8260D
Hexachlorobutadiene		<	0.50	ug/L	1	B9D0019	04/02/19 16:32	04/02/19 16:32	EPA 8260D
Isopropylbenzene		<	1.0	ug/L	1	B9D0019	04/02/19 16:32	04/02/19 16:32	EPA 8260D
Methyl ethyl ketone (MEK)		<	10	ug/L	1	B9D0019	04/02/19 16:32	04/02/19 16:32	EPA 8260D
Methyl isobutyl ketone (MIBK)		<	5.0	ug/L	1	B9D0019	04/02/19 16:32	04/02/19 16:32	EPA 8260D
Methyl tertiary butyl ether (MTBE)		<	2.0	ug/L	1	B9D0019	04/02/19 16:32	04/02/19 16:32	EPA 8260D

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Public Health Laboratory
Environmental Laboratory Section
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St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelasi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 05/01/19 14:51

MDH Sample Number: 19D0067-04

Location ID: 462522
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 03/29/19
Collect Time: 13:50
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Methylene chloride		<	1.0	ug/L	1	B9D0019	04/02/19 16:32	04/02/19 16:32	EPA 8260D
Naphthalene		<	1.0	ug/L	1	B9D0019	04/02/19 16:32	04/02/19 16:32	EPA 8260D
n-Butylbenzene		<	1.0	ug/L	1	B9D0019	04/02/19 16:32	04/02/19 16:32	EPA 8260D
n-Propylbenzene		<	1.0	ug/L	1	B9D0019	04/02/19 16:32	04/02/19 16:32	EPA 8260D
o-Xylene		<	1.0	ug/L	1	B9D0019	04/02/19 16:32	04/02/19 16:32	EPA 8260D
p&m-Xylene		<	1.0	ug/L	1	B9D0019	04/02/19 16:32	04/02/19 16:32	EPA 8260D
p-Isopropyltoluene		<	1.0	ug/L	1	B9D0019	04/02/19 16:32	04/02/19 16:32	EPA 8260D
sec-Butylbenzene		<	1.0	ug/L	1	B9D0019	04/02/19 16:32	04/02/19 16:32	EPA 8260D
Styrene		<	1.0	ug/L	1	B9D0019	04/02/19 16:32	04/02/19 16:32	EPA 8260D
tert-Butylbenzene		<	1.0	ug/L	1	B9D0019	04/02/19 16:32	04/02/19 16:32	EPA 8260D
Tetrachloroethene		<	1.0	ug/L	1	B9D0019	04/02/19 16:32	04/02/19 16:32	EPA 8260D
Tetrahydrofuran (THF)		<	10	ug/L	1	B9D0019	04/02/19 16:32	04/02/19 16:32	EPA 8260D
Toluene		<	1.0	ug/L	1	B9D0019	04/02/19 16:32	04/02/19 16:32	EPA 8260D
trans-1,2-Dichloroethene		<	1.0	ug/L	1	B9D0019	04/02/19 16:32	04/02/19 16:32	EPA 8260D
trans-1,3-Dichloropropene		<	0.50	ug/L	1	B9D0019	04/02/19 16:32	04/02/19 16:32	EPA 8260D
Trichloroethene (TCE)		<	0.10	ug/L	1	B9D0019	04/02/19 16:32	04/02/19 16:32	EPA 8260D
Trichlorofluoromethane		<	1.0	ug/L	1	B9D0019	04/02/19 16:32	04/02/19 16:32	EPA 8260D
Vinyl chloride		<	0.050	ug/L	1	B9D0019	04/02/19 16:32	04/02/19 16:32	EPA 8260D

1,4-Dioxane

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
1,4-Dioxane		**3.8**	0.050	ug/L	1	B9D0396	04/23/19 08:00	04/24/19 14:49	EPA 522 Modified

PFC Expanded List

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorobutanesulfonate (PFBS)		<	0.050	ug/L	1	B9D0230	04/12/19 13:56	04/12/19 13:56	MDH 555
Perfluorobutanoic acid (PFBA)		**0.056**	0.050	ug/L	1	B9D0230	04/12/19 13:56	04/12/19 13:56	MDH 555

FINAL REPORT

Report ID: 05012019145117

Authorized by:

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Environmental Laboratory Section
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St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelasi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 05/01/19 14:51

MDH Sample Number: 19D0067-04

Location ID: 462522
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 03/29/19
Collect Time: 13:50
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

PFC Expanded List - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorohexanesulfonate (PFHxS)		<	0.025	ug/L	1	B9D0230	04/12/19 13:56	04/12/19 13:56	MDH 555
Perfluorohexanoic acid (PFHxA)	J	**0.024**	0.050	ug/L	1	B9D0230	04/12/19 13:56	04/12/19 13:56	MDH 555
Perfluorooctanesulfonate (PFOS)		<	0.025	ug/L	1	B9D0230	04/12/19 13:56	04/12/19 13:56	MDH 555
Perfluorooctanoic acid (PFOA)		**0.068**	0.035	ug/L	1	B9D0230	04/12/19 13:56	04/12/19 13:56	MDH 555
Perfluoropentanoic acid (PFPeA)	J	**0.010**	0.050	ug/L	1	B9D0230	04/12/19 13:56	04/12/19 13:56	MDH 555

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St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelasi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 05/01/19 14:51

MDH Sample Number: 19D0067-05

Location ID: 813740
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 04/01/19
Collect Time: 10:10
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

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VOCs by GCMS

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Surrogate: 1,2-Dichlorobenzene-d4		*100*	*70-130*	%	*1*	*B9D0019*	*04/02/19 17:00*	*04/02/19 17:00*	*EPA 8260D*
Surrogate: 4-Bromofluorobenzene		*98*	*70-130*	%	*1*	*B9D0019*	*04/02/19 17:00*	*04/02/19 17:00*	*EPA 8260D*
Surrogate: Methyl tertiary butyl ether-d3		*100*	*70-130*	%	*1*	*B9D0019*	*04/02/19 17:00*	*04/02/19 17:00*	*EPA 8260D*
1,1,1,2-Tetrachloroethane		<	1.0	ug/L	1	B9D0019	04/02/19 17:00	04/02/19 17:00	EPA 8260D
1,1,1-Trichloroethane		<	1.0	ug/L	1	B9D0019	04/02/19 17:00	04/02/19 17:00	EPA 8260D
1,1,2,2-Tetrachloroethane		<	0.50	ug/L	1	B9D0019	04/02/19 17:00	04/02/19 17:00	EPA 8260D
1,1,2-Trichloroethane		<	0.50	ug/L	1	B9D0019	04/02/19 17:00	04/02/19 17:00	EPA 8260D
1,1,2-Trichlorotrifluoroethane		<	1.0	ug/L	1	B9D0019	04/02/19 17:00	04/02/19 17:00	EPA 8260D
1,1-Dichloroethane		<	1.0	ug/L	1	B9D0019	04/02/19 17:00	04/02/19 17:00	EPA 8260D
1,1-Dichloroethene		<	1.0	ug/L	1	B9D0019	04/02/19 17:00	04/02/19 17:00	EPA 8260D
1,1-Dichloropropene		<	1.0	ug/L	1	B9D0019	04/02/19 17:00	04/02/19 17:00	EPA 8260D
1,2,3-Trichlorobenzene		<	1.0	ug/L	1	B9D0019	04/02/19 17:00	04/02/19 17:00	EPA 8260D
1,2,3-Trichloropropane		<	0.20	ug/L	1	B9D0019	04/02/19 17:00	04/02/19 17:00	EPA 8260D
1,2,4-Trichlorobenzene		<	1.0	ug/L	1	B9D0019	04/02/19 17:00	04/02/19 17:00	EPA 8260D
1,2,4-Trimethylbenzene		<	1.0	ug/L	1	B9D0019	04/02/19 17:00	04/02/19 17:00	EPA 8260D
1,2-Dibromo-3-chloropropane (DBCP)		<	1.0	ug/L	1	B9D0019	04/02/19 17:00	04/02/19 17:00	EPA 8260D
1,2-Dibromoethane (EDB)		<	0.50	ug/L	1	B9D0019	04/02/19 17:00	04/02/19 17:00	EPA 8260D
1,2-Dichlorobenzene		<	1.0	ug/L	1	B9D0019	04/02/19 17:00	04/02/19 17:00	EPA 8260D
1,2-Dichloroethane		<	0.20	ug/L	1	B9D0019	04/02/19 17:00	04/02/19 17:00	EPA 8260D
1,2-Dichloropropane		<	1.0	ug/L	1	B9D0019	04/02/19 17:00	04/02/19 17:00	EPA 8260D
1,3,5-Trimethylbenzene		<	1.0	ug/L	1	B9D0019	04/02/19 17:00	04/02/19 17:00	EPA 8260D
1,3-Dichlorobenzene		<	1.0	ug/L	1	B9D0019	04/02/19 17:00	04/02/19 17:00	EPA 8260D
1,3-Dichloropropane		<	1.0	ug/L	1	B9D0019	04/02/19 17:00	04/02/19 17:00	EPA 8260D
1,4-Dichlorobenzene		**1.6**	1.0	ug/L	1	B9D0019	04/02/19 17:00	04/02/19 17:00	EPA 8260D
2,2-Dichloropropane		<	1.0	ug/L	1	B9D0019	04/02/19 17:00	04/02/19 17:00	EPA 8260D
2-Chlorotoluene		<	1.0	ug/L	1	B9D0019	04/02/19 17:00	04/02/19 17:00	EPA 8260D

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651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelasi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 05/01/19 14:51

MDH Sample Number: 19D0067-05

Location ID: 813740
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 04/01/19
Collect Time: 10:10
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
4-Chlorotoluene		<	1.0	ug/L	1	B9D0019	04/02/19 17:00	04/02/19 17:00	EPA 8260D
Acetone		<	20	ug/L	1	B9D0019	04/02/19 17:00	04/02/19 17:00	EPA 8260D
Allyl chloride		<	1.0	ug/L	1	B9D0019	04/02/19 17:00	04/02/19 17:00	EPA 8260D
Benzene		**0.72**	0.50	ug/L	1	B9D0019	04/02/19 17:00	04/02/19 17:00	EPA 8260D
Bromobenzene		<	1.0	ug/L	1	B9D0019	04/02/19 17:00	04/02/19 17:00	EPA 8260D
Bromochloromethane		<	1.0	ug/L	1	B9D0019	04/02/19 17:00	04/02/19 17:00	EPA 8260D
Bromodichloromethane		<	1.0	ug/L	1	B9D0019	04/02/19 17:00	04/02/19 17:00	EPA 8260D
Bromoform		<	1.0	ug/L	1	B9D0019	04/02/19 17:00	04/02/19 17:00	EPA 8260D
Bromomethane	L3, V4, Z-01	<	2.0	ug/L	1	B9D0019	04/02/19 17:00	04/02/19 17:00	EPA 8260D
Carbon tetrachloride		<	0.20	ug/L	1	B9D0019	04/02/19 17:00	04/02/19 17:00	EPA 8260D
Chlorobenzene		**5.6**	1.0	ug/L	1	B9D0019	04/02/19 17:00	04/02/19 17:00	EPA 8260D
Chlorodibromomethane		<	0.50	ug/L	1	B9D0019	04/02/19 17:00	04/02/19 17:00	EPA 8260D
Chloroethane		<	1.0	ug/L	1	B9D0019	04/02/19 17:00	04/02/19 17:00	EPA 8260D
Chloroform		<	1.0	ug/L	1	B9D0019	04/02/19 17:00	04/02/19 17:00	EPA 8260D
Chloromethane		<	1.0	ug/L	1	B9D0019	04/02/19 17:00	04/02/19 17:00	EPA 8260D
cis-1,2-Dichloroethene		<	1.0	ug/L	1	B9D0019	04/02/19 17:00	04/02/19 17:00	EPA 8260D
cis-1,3-Dichloropropene		<	0.50	ug/L	1	B9D0019	04/02/19 17:00	04/02/19 17:00	EPA 8260D
Dibromomethane		<	1.0	ug/L	1	B9D0019	04/02/19 17:00	04/02/19 17:00	EPA 8260D
Dichlorodifluoromethane		<	1.0	ug/L	1	B9D0019	04/02/19 17:00	04/02/19 17:00	EPA 8260D
Dichlorofluoromethane		<	1.0	ug/L	1	B9D0019	04/02/19 17:00	04/02/19 17:00	EPA 8260D
Ethyl ether		**12**	1.0	ug/L	1	B9D0019	04/02/19 17:00	04/02/19 17:00	EPA 8260D
Ethylbenzene		<	1.0	ug/L	1	B9D0019	04/02/19 17:00	04/02/19 17:00	EPA 8260D
Hexachlorobutadiene		<	0.50	ug/L	1	B9D0019	04/02/19 17:00	04/02/19 17:00	EPA 8260D
Isopropylbenzene		<	1.0	ug/L	1	B9D0019	04/02/19 17:00	04/02/19 17:00	EPA 8260D
Methyl ethyl ketone (MEK)		<	10	ug/L	1	B9D0019	04/02/19 17:00	04/02/19 17:00	EPA 8260D
Methyl isobutyl ketone (MIBK)		<	5.0	ug/L	1	B9D0019	04/02/19 17:00	04/02/19 17:00	EPA 8260D
Methyl tertiary butyl ether (MTBE)		<	2.0	ug/L	1	B9D0019	04/02/19 17:00	04/02/19 17:00	EPA 8260D

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelasi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 05/01/19 14:51

MDH Sample Number: 19D0067-05

Location ID: 813740
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 04/01/19
Collect Time: 10:10
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Methylene chloride		<	1.0	ug/L	1	B9D0019	04/02/19 17:00	04/02/19 17:00	EPA 8260D
Naphthalene		<	1.0	ug/L	1	B9D0019	04/02/19 17:00	04/02/19 17:00	EPA 8260D
n-Butylbenzene		<	1.0	ug/L	1	B9D0019	04/02/19 17:00	04/02/19 17:00	EPA 8260D
n-Propylbenzene		<	1.0	ug/L	1	B9D0019	04/02/19 17:00	04/02/19 17:00	EPA 8260D
o-Xylene		<	1.0	ug/L	1	B9D0019	04/02/19 17:00	04/02/19 17:00	EPA 8260D
p&m-Xylene		<	1.0	ug/L	1	B9D0019	04/02/19 17:00	04/02/19 17:00	EPA 8260D
p-Isopropyltoluene		<	1.0	ug/L	1	B9D0019	04/02/19 17:00	04/02/19 17:00	EPA 8260D
sec-Butylbenzene		<	1.0	ug/L	1	B9D0019	04/02/19 17:00	04/02/19 17:00	EPA 8260D
Styrene		<	1.0	ug/L	1	B9D0019	04/02/19 17:00	04/02/19 17:00	EPA 8260D
tert-Butylbenzene		<	1.0	ug/L	1	B9D0019	04/02/19 17:00	04/02/19 17:00	EPA 8260D
Tetrachloroethene		<	1.0	ug/L	1	B9D0019	04/02/19 17:00	04/02/19 17:00	EPA 8260D
Tetrahydrofuran (THF)		**39**	10	ug/L	1	B9D0019	04/02/19 17:00	04/02/19 17:00	EPA 8260D
Toluene		<	1.0	ug/L	1	B9D0019	04/02/19 17:00	04/02/19 17:00	EPA 8260D
trans-1,2-Dichloroethene		<	1.0	ug/L	1	B9D0019	04/02/19 17:00	04/02/19 17:00	EPA 8260D
trans-1,3-Dichloropropene		<	0.50	ug/L	1	B9D0019	04/02/19 17:00	04/02/19 17:00	EPA 8260D
Trichloroethene (TCE)		<	0.10	ug/L	1	B9D0019	04/02/19 17:00	04/02/19 17:00	EPA 8260D
Trichlorofluoromethane		<	1.0	ug/L	1	B9D0019	04/02/19 17:00	04/02/19 17:00	EPA 8260D
Vinyl chloride		<	0.050	ug/L	1	B9D0019	04/02/19 17:00	04/02/19 17:00	EPA 8260D

PFC Expanded List

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorobutanesulfonate (PFBS)		**0.066**	0.050	ug/L	1	B9D0230	04/12/19 14:12	04/12/19 14:12	MDH 555
Perfluorobutanoic acid (PFBA)		**0.78**	0.050	ug/L	1	B9D0230	04/12/19 14:12	04/12/19 14:12	MDH 555
Perfluorohexanesulfonate (PFHxS)		**0.087**	0.025	ug/L	1	B9D0230	04/12/19 14:12	04/12/19 14:12	MDH 555
Perfluorohexanoic acid (PFHxA)		**0.30**	0.050	ug/L	1	B9D0230	04/12/19 14:12	04/12/19 14:12	MDH 555
Perfluorooctanesulfonate (PFOS)		**0.063**	0.025	ug/L	1	B9D0230	04/12/19 14:12	04/12/19 14:12	MDH 555
Perfluorooctanoic acid (PFOA)		**0.20**	0.035	ug/L	1	B9D0230	04/12/19 14:12	04/12/19 14:12	MDH 555

FINAL REPORT

Report ID: 05012019145117

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Public Health Laboratory, Minnesota Department of Health

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Environmental Laboratory Section
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St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelasi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 05/01/19 14:51

MDH Sample Number: 19D0067-05

Location ID: 813740
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 04/01/19
Collect Time: 10:10
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

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PFC Expanded List - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluoropentanoic acid (PFPeA)		**0.24**	0.050	ug/L	1	B9D0230	04/12/19 14:12	04/12/19 14:12	MDH 555

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651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelasi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 05/01/19 14:51

MDH Sample Number: 19D0067-05RE1

Location ID: 813740
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 04/01/19
Collect Time: 10:10
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

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1,4-Dioxane

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
1,4-Dioxane	D2	**40**	0.25	ug/L	5	B9D0423	04/24/19 08:00	04/28/19 21:11	EPA 522 Modified

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelasi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 05/01/19 14:51

MDH Sample Number: 19D0067-06

Location ID: 813764
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 04/01/19
Collect Time: 10:50
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

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VOCs by GCMS

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Surrogate: 1,2-Dichlorobenzene-d4		*102*	*70-130*	%	*1*	*B9D0019*	*04/02/19 17:28*	*04/02/19 17:28*	*EPA 8260D*
Surrogate: 4-Bromofluorobenzene		*98*	*70-130*	%	*1*	*B9D0019*	*04/02/19 17:28*	*04/02/19 17:28*	*EPA 8260D*
Surrogate: Methyl tertiary butyl ether-d3		*103*	*70-130*	%	*1*	*B9D0019*	*04/02/19 17:28*	*04/02/19 17:28*	*EPA 8260D*
1,1,1,2-Tetrachloroethane		<	1.0	ug/L	1	B9D0019	04/02/19 17:28	04/02/19 17:28	EPA 8260D
1,1,1-Trichloroethane		<	1.0	ug/L	1	B9D0019	04/02/19 17:28	04/02/19 17:28	EPA 8260D
1,1,2,2-Tetrachloroethane		<	0.50	ug/L	1	B9D0019	04/02/19 17:28	04/02/19 17:28	EPA 8260D
1,1,2-Trichloroethane		<	0.50	ug/L	1	B9D0019	04/02/19 17:28	04/02/19 17:28	EPA 8260D
1,1,2-Trichlorotrifluoroethane		<	1.0	ug/L	1	B9D0019	04/02/19 17:28	04/02/19 17:28	EPA 8260D
1,1-Dichloroethane		<	1.0	ug/L	1	B9D0019	04/02/19 17:28	04/02/19 17:28	EPA 8260D
1,1-Dichloroethene		<	1.0	ug/L	1	B9D0019	04/02/19 17:28	04/02/19 17:28	EPA 8260D
1,1-Dichloropropene		<	1.0	ug/L	1	B9D0019	04/02/19 17:28	04/02/19 17:28	EPA 8260D
1,2,3-Trichlorobenzene		<	1.0	ug/L	1	B9D0019	04/02/19 17:28	04/02/19 17:28	EPA 8260D
1,2,3-Trichloropropane		<	0.20	ug/L	1	B9D0019	04/02/19 17:28	04/02/19 17:28	EPA 8260D
1,2,4-Trichlorobenzene		<	1.0	ug/L	1	B9D0019	04/02/19 17:28	04/02/19 17:28	EPA 8260D
1,2,4-Trimethylbenzene		<	1.0	ug/L	1	B9D0019	04/02/19 17:28	04/02/19 17:28	EPA 8260D
1,2-Dibromo-3-chloropropane (DBCP)		<	1.0	ug/L	1	B9D0019	04/02/19 17:28	04/02/19 17:28	EPA 8260D
1,2-Dibromoethane (EDB)		<	0.50	ug/L	1	B9D0019	04/02/19 17:28	04/02/19 17:28	EPA 8260D
1,2-Dichlorobenzene		<	1.0	ug/L	1	B9D0019	04/02/19 17:28	04/02/19 17:28	EPA 8260D
1,2-Dichloroethane		<	0.20	ug/L	1	B9D0019	04/02/19 17:28	04/02/19 17:28	EPA 8260D
1,2-Dichloropropane		<	1.0	ug/L	1	B9D0019	04/02/19 17:28	04/02/19 17:28	EPA 8260D
1,3,5-Trimethylbenzene		<	1.0	ug/L	1	B9D0019	04/02/19 17:28	04/02/19 17:28	EPA 8260D
1,3-Dichlorobenzene		<	1.0	ug/L	1	B9D0019	04/02/19 17:28	04/02/19 17:28	EPA 8260D
1,3-Dichloropropane		<	1.0	ug/L	1	B9D0019	04/02/19 17:28	04/02/19 17:28	EPA 8260D
1,4-Dichlorobenzene		**2.8**	1.0	ug/L	1	B9D0019	04/02/19 17:28	04/02/19 17:28	EPA 8260D
2,2-Dichloropropane		<	1.0	ug/L	1	B9D0019	04/02/19 17:28	04/02/19 17:28	EPA 8260D
2-Chlorotoluene		<	1.0	ug/L	1	B9D0019	04/02/19 17:28	04/02/19 17:28	EPA 8260D

FINAL REPORT

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Paul Moyer, Environmental Laboratory Manager
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651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelasi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 05/01/19 14:51

MDH Sample Number: 19D0067-06

Location ID: 813764
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 04/01/19
Collect Time: 10:50
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
4-Chlorotoluene		<	1.0	ug/L	1	B9D0019	04/02/19 17:28	04/02/19 17:28	EPA 8260D
Acetone		<	20	ug/L	1	B9D0019	04/02/19 17:28	04/02/19 17:28	EPA 8260D
Allyl chloride		<	1.0	ug/L	1	B9D0019	04/02/19 17:28	04/02/19 17:28	EPA 8260D
Benzene		**2.8**	0.50	ug/L	1	B9D0019	04/02/19 17:28	04/02/19 17:28	EPA 8260D
Bromobenzene		<	1.0	ug/L	1	B9D0019	04/02/19 17:28	04/02/19 17:28	EPA 8260D
Bromochloromethane		<	1.0	ug/L	1	B9D0019	04/02/19 17:28	04/02/19 17:28	EPA 8260D
Bromodichloromethane		<	1.0	ug/L	1	B9D0019	04/02/19 17:28	04/02/19 17:28	EPA 8260D
Bromoform		<	1.0	ug/L	1	B9D0019	04/02/19 17:28	04/02/19 17:28	EPA 8260D
Bromomethane	L3, V4, Z-01	<	2.0	ug/L	1	B9D0019	04/02/19 17:28	04/02/19 17:28	EPA 8260D
Carbon tetrachloride		<	0.20	ug/L	1	B9D0019	04/02/19 17:28	04/02/19 17:28	EPA 8260D
Chlorobenzene		**5.6**	1.0	ug/L	1	B9D0019	04/02/19 17:28	04/02/19 17:28	EPA 8260D
Chlorodibromomethane		<	0.50	ug/L	1	B9D0019	04/02/19 17:28	04/02/19 17:28	EPA 8260D
Chloroethane		<	1.0	ug/L	1	B9D0019	04/02/19 17:28	04/02/19 17:28	EPA 8260D
Chloroform		<	1.0	ug/L	1	B9D0019	04/02/19 17:28	04/02/19 17:28	EPA 8260D
Chloromethane		<	1.0	ug/L	1	B9D0019	04/02/19 17:28	04/02/19 17:28	EPA 8260D
cis-1,2-Dichloroethene		<	1.0	ug/L	1	B9D0019	04/02/19 17:28	04/02/19 17:28	EPA 8260D
cis-1,3-Dichloropropene		<	0.50	ug/L	1	B9D0019	04/02/19 17:28	04/02/19 17:28	EPA 8260D
Dibromomethane		<	1.0	ug/L	1	B9D0019	04/02/19 17:28	04/02/19 17:28	EPA 8260D
Dichlorodifluoromethane		<	1.0	ug/L	1	B9D0019	04/02/19 17:28	04/02/19 17:28	EPA 8260D
Dichlorofluoromethane		<	1.0	ug/L	1	B9D0019	04/02/19 17:28	04/02/19 17:28	EPA 8260D
Ethyl ether		**19**	1.0	ug/L	1	B9D0019	04/02/19 17:28	04/02/19 17:28	EPA 8260D
Ethylbenzene		<	1.0	ug/L	1	B9D0019	04/02/19 17:28	04/02/19 17:28	EPA 8260D
Hexachlorobutadiene		<	0.50	ug/L	1	B9D0019	04/02/19 17:28	04/02/19 17:28	EPA 8260D
Isopropylbenzene		**1.4**	1.0	ug/L	1	B9D0019	04/02/19 17:28	04/02/19 17:28	EPA 8260D
Methyl ethyl ketone (MEK)		<	10	ug/L	1	B9D0019	04/02/19 17:28	04/02/19 17:28	EPA 8260D
Methyl isobutyl ketone (MIBK)		<	5.0	ug/L	1	B9D0019	04/02/19 17:28	04/02/19 17:28	EPA 8260D
Methyl tertiary butyl ether (MTBE)		<	2.0	ug/L	1	B9D0019	04/02/19 17:28	04/02/19 17:28	EPA 8260D

FINAL REPORT

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651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelasi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 05/01/19 14:51

MDH Sample Number: 19D0067-06

Location ID: 813764
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 04/01/19
Collect Time: 10:50
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Methylene chloride		<	1.0	ug/L	1	B9D0019	04/02/19 17:28	04/02/19 17:28	EPA 8260D
Naphthalene		**2.0**	1.0	ug/L	1	B9D0019	04/02/19 17:28	04/02/19 17:28	EPA 8260D
n-Butylbenzene		<	1.0	ug/L	1	B9D0019	04/02/19 17:28	04/02/19 17:28	EPA 8260D
n-Propylbenzene		**1.3**	1.0	ug/L	1	B9D0019	04/02/19 17:28	04/02/19 17:28	EPA 8260D
o-Xylene		**1.4**	1.0	ug/L	1	B9D0019	04/02/19 17:28	04/02/19 17:28	EPA 8260D
p&m-Xylene		<	1.0	ug/L	1	B9D0019	04/02/19 17:28	04/02/19 17:28	EPA 8260D
p-Isopropyltoluene		<	1.0	ug/L	1	B9D0019	04/02/19 17:28	04/02/19 17:28	EPA 8260D
sec-Butylbenzene		<	1.0	ug/L	1	B9D0019	04/02/19 17:28	04/02/19 17:28	EPA 8260D
Styrene		<	1.0	ug/L	1	B9D0019	04/02/19 17:28	04/02/19 17:28	EPA 8260D
tert-Butylbenzene		<	1.0	ug/L	1	B9D0019	04/02/19 17:28	04/02/19 17:28	EPA 8260D
Tetrachloroethene		<	1.0	ug/L	1	B9D0019	04/02/19 17:28	04/02/19 17:28	EPA 8260D
Tetrahydrofuran (THF)		**110**	10	ug/L	1	B9D0019	04/02/19 17:28	04/02/19 17:28	EPA 8260D
Toluene		<	1.0	ug/L	1	B9D0019	04/02/19 17:28	04/02/19 17:28	EPA 8260D
trans-1,2-Dichloroethene		<	1.0	ug/L	1	B9D0019	04/02/19 17:28	04/02/19 17:28	EPA 8260D
trans-1,3-Dichloropropene		<	0.50	ug/L	1	B9D0019	04/02/19 17:28	04/02/19 17:28	EPA 8260D
Trichloroethene (TCE)		<	0.10	ug/L	1	B9D0019	04/02/19 17:28	04/02/19 17:28	EPA 8260D
Trichlorofluoromethane		<	1.0	ug/L	1	B9D0019	04/02/19 17:28	04/02/19 17:28	EPA 8260D
Vinyl chloride		<	0.050	ug/L	1	B9D0019	04/02/19 17:28	04/02/19 17:28	EPA 8260D

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Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelasi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 05/01/19 14:51

MDH Sample Number: 19D0067-06RE1

Location ID: 813764
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 04/01/19
Collect Time: 10:50
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

1,4-Dioxane

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
1,4-Dioxane	D2	**98**	0.51	ug/L	10	B9D0423	04/24/19 08:00	04/28/19 21:27	EPA 522 Modified

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Public Health Laboratory, Minnesota Department of Health

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651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelasi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 05/01/19 14:51

MDH Sample Number: 19D0067-06RE3

Location ID: 813764
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 04/01/19
Collect Time: 10:50
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

PFC Expanded List

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorobutanesulfonate (PFBS)	D1, H2, J	**0.17**	0.25	ug/L	5	B9D0364	04/19/19 11:45	04/19/19 11:45	MDH 555
Perfluorobutanoic acid (PFBA)	D1, H2	**1.9**	0.25	ug/L	5	B9D0364	04/19/19 11:45	04/19/19 11:45	MDH 555
Perfluorohexanesulfonate (PFHxS)	D1, H2	**0.27**	0.12	ug/L	5	B9D0364	04/19/19 11:45	04/19/19 11:45	MDH 555
Perfluorohexanoic acid (PFHxA)	D1, H2	**0.84**	0.25	ug/L	5	B9D0364	04/19/19 11:45	04/19/19 11:45	MDH 555
Perfluorooctanesulfonate (PFOS)	D1, H2	**0.21**	0.12	ug/L	5	B9D0364	04/19/19 11:45	04/19/19 11:45	MDH 555
Perfluorooctanoic acid (PFOA)	D1, H2	**0.77**	0.18	ug/L	5	B9D0364	04/19/19 11:45	04/19/19 11:45	MDH 555
Perfluoropentanoic acid (PFPeA)	D1, H2	**0.73**	0.25	ug/L	5	B9D0364	04/19/19 11:45	04/19/19 11:45	MDH 555

Authorized by:

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelasi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 05/01/19 14:51

MDH Sample Number: 19D0067-07

Location ID: 813761
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 04/01/19
Collect Time: 13:00
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: Excessive sediment in 1,4 dioxane. -CCS

Results were produced by the Minnesota Department of Health, except where noted.

PFC Expanded List

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorobutanesulfonate (PFBS)	D1, J	**0.067**	0.25	ug/L	5	B9D0230	04/12/19 14:44	04/12/19 14:44	MDH 555
Perfluorobutanoic acid (PFBA)	D1	**4.0**	0.25	ug/L	5	B9D0230	04/12/19 14:44	04/12/19 14:44	MDH 555
Perfluorohexanesulfonate (PFHxS)	D1	**0.26**	0.12	ug/L	5	B9D0230	04/12/19 14:44	04/12/19 14:44	MDH 555
Perfluorohexanoic acid (PFHxA)	D1	**0.80**	0.25	ug/L	5	B9D0230	04/12/19 14:44	04/12/19 14:44	MDH 555
Perfluorooctanesulfonate (PFOS)	D1	**0.48**	0.12	ug/L	5	B9D0230	04/12/19 14:44	04/12/19 14:44	MDH 555
Perfluorooctanoic acid (PFOA)	D1	**0.53**	0.18	ug/L	5	B9D0230	04/12/19 14:44	04/12/19 14:44	MDH 555
Perfluoropentanoic acid (PFPeA)	D1	**0.59**	0.25	ug/L	5	B9D0230	04/12/19 14:44	04/12/19 14:44	MDH 555

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651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelasi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 05/01/19 14:51

MDH Sample Number: 19D0067-07RE1

Location ID: 813761
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 04/01/19
Collect Time: 13:00
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: Excessive sediment in 1,4 dioxane. -CCS

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Surrogate: 1,2-Dichlorobenzene-d4	F5	*102*	*70-130*	%	*1*	*B9D0019*	*04/02/19 18:24*	*04/02/19 18:24*	*EPA 8260D*
Surrogate: 4-Bromofluorobenzene	F5	*99*	*70-130*	%	*1*	*B9D0019*	*04/02/19 18:24*	*04/02/19 18:24*	*EPA 8260D*
Surrogate: Methyl tertiary butyl ether-d3	F5	*101*	*70-130*	%	*1*	*B9D0019*	*04/02/19 18:24*	*04/02/19 18:24*	*EPA 8260D*
1,1,1,2-Tetrachloroethane	D2, F5	<	10	ug/L	1	B9D0019	04/02/19 18:24	04/02/19 18:24	EPA 8260D
1,1,1-Trichloroethane	D2, F5	<	10	ug/L	1	B9D0019	04/02/19 18:24	04/02/19 18:24	EPA 8260D
1,1,2,2-Tetrachloroethane	D2, F5	<	5.0	ug/L	1	B9D0019	04/02/19 18:24	04/02/19 18:24	EPA 8260D
1,1,2-Trichloroethane	D2, F5	<	5.0	ug/L	1	B9D0019	04/02/19 18:24	04/02/19 18:24	EPA 8260D
1,1,2-Trichlorotrifluoroethane	D2, F5	<	10	ug/L	1	B9D0019	04/02/19 18:24	04/02/19 18:24	EPA 8260D
1,1-Dichloroethane	D2, F5	<	10	ug/L	1	B9D0019	04/02/19 18:24	04/02/19 18:24	EPA 8260D
1,1-Dichloroethene	D2, F5	<	10	ug/L	1	B9D0019	04/02/19 18:24	04/02/19 18:24	EPA 8260D
1,1-Dichloropropene	D2, F5	<	10	ug/L	1	B9D0019	04/02/19 18:24	04/02/19 18:24	EPA 8260D
1,2,3-Trichlorobenzene	D2, F5	<	10	ug/L	1	B9D0019	04/02/19 18:24	04/02/19 18:24	EPA 8260D
1,2,3-Trichloropropane	D2, F5	<	2.0	ug/L	1	B9D0019	04/02/19 18:24	04/02/19 18:24	EPA 8260D
1,2,4-Trichlorobenzene	D2, F5	<	10	ug/L	1	B9D0019	04/02/19 18:24	04/02/19 18:24	EPA 8260D
1,2,4-Trimethylbenzene	D2, F5	**72**	10	ug/L	1	B9D0019	04/02/19 18:24	04/02/19 18:24	EPA 8260D
1,2-Dibromo-3-chloropropane (DBCP)	D2, F5	<	10	ug/L	1	B9D0019	04/02/19 18:24	04/02/19 18:24	EPA 8260D
1,2-Dibromoethane (EDB)	D2, F5	<	5.0	ug/L	1	B9D0019	04/02/19 18:24	04/02/19 18:24	EPA 8260D
1,2-Dichlorobenzene	D2, F5	<	10	ug/L	1	B9D0019	04/02/19 18:24	04/02/19 18:24	EPA 8260D
1,2-Dichloroethane	D2, F5	<	2.0	ug/L	1	B9D0019	04/02/19 18:24	04/02/19 18:24	EPA 8260D
1,2-Dichloropropane	F5, D2	**13**	10	ug/L	1	B9D0019	04/02/19 18:24	04/02/19 18:24	EPA 8260D
1,3,5-Trimethylbenzene	D2, F5	**22**	10	ug/L	1	B9D0019	04/02/19 18:24	04/02/19 18:24	EPA 8260D
1,3-Dichlorobenzene	D2, F5	<	10	ug/L	1	B9D0019	04/02/19 18:24	04/02/19 18:24	EPA 8260D
1,3-Dichloropropane	D2, F5	<	10	ug/L	1	B9D0019	04/02/19 18:24	04/02/19 18:24	EPA 8260D
1,4-Dichlorobenzene	D2, F5	**16**	10	ug/L	1	B9D0019	04/02/19 18:24	04/02/19 18:24	EPA 8260D
2,2-Dichloropropane	D2, F5	<	10	ug/L	1	B9D0019	04/02/19 18:24	04/02/19 18:24	EPA 8260D
2-Chlorotoluene	D2, F5	<	10	ug/L	1	B9D0019	04/02/19 18:24	04/02/19 18:24	EPA 8260D

FINAL REPORT

Report ID: 05012019145117

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Minnesota Department of Health
Public Health Laboratory
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St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelasi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 05/01/19 14:51

MDH Sample Number: 19D0067-07RE1

Location ID: 813761
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 04/01/19
Collect Time: 13:00
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: Excessive sediment in 1,4 dioxane. -CCS

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
4-Chlorotoluene	D2, F5	<	10	ug/L	1	B9D0019	04/02/19 18:24	04/02/19 18:24	EPA 8260D
Allyl chloride	D2, F5	<	10	ug/L	1	B9D0019	04/02/19 18:24	04/02/19 18:24	EPA 8260D
Benzene	D2, F5	**16**	5.0	ug/L	1	B9D0019	04/02/19 18:24	04/02/19 18:24	EPA 8260D
Bromobenzene	D2, F5	<	10	ug/L	1	B9D0019	04/02/19 18:24	04/02/19 18:24	EPA 8260D
Bromochloromethane	D2, F5	<	10	ug/L	1	B9D0019	04/02/19 18:24	04/02/19 18:24	EPA 8260D
Bromodichloromethane	D2, F5	<	10	ug/L	1	B9D0019	04/02/19 18:24	04/02/19 18:24	EPA 8260D
Bromoform	D2, F5	<	10	ug/L	1	B9D0019	04/02/19 18:24	04/02/19 18:24	EPA 8260D
Bromomethane	F5, L3, V4, Z-01, D2	<	20	ug/L	1	B9D0019	04/02/19 18:24	04/02/19 18:24	EPA 8260D
Carbon tetrachloride	D2, F5	<	2.0	ug/L	1	B9D0019	04/02/19 18:24	04/02/19 18:24	EPA 8260D
Chlorobenzene	D2, F5	<	10	ug/L	1	B9D0019	04/02/19 18:24	04/02/19 18:24	EPA 8260D
Chlorodibromomethane	D2, F5	<	5.0	ug/L	1	B9D0019	04/02/19 18:24	04/02/19 18:24	EPA 8260D
Chloroethane	D2, F5	<	10	ug/L	1	B9D0019	04/02/19 18:24	04/02/19 18:24	EPA 8260D
Chloroform	D2, F5	<	10	ug/L	1	B9D0019	04/02/19 18:24	04/02/19 18:24	EPA 8260D
Chloromethane	F5, D2	<	10	ug/L	1	B9D0019	04/02/19 18:24	04/02/19 18:24	EPA 8260D
cis-1,2-Dichloroethene	D2, F5	**440**	10	ug/L	1	B9D0019	04/02/19 18:24	04/02/19 18:24	EPA 8260D
cis-1,3-Dichloropropene	D2, F5	<	5.0	ug/L	1	B9D0019	04/02/19 18:24	04/02/19 18:24	EPA 8260D
Dibromomethane	D2, F5	<	10	ug/L	1	B9D0019	04/02/19 18:24	04/02/19 18:24	EPA 8260D
Dichlorodifluoromethane	D2, F5	<	10	ug/L	1	B9D0019	04/02/19 18:24	04/02/19 18:24	EPA 8260D
Dichlorofluoromethane	D2, F5	<	10	ug/L	1	B9D0019	04/02/19 18:24	04/02/19 18:24	EPA 8260D
Ethyl ether	D2, F5	**50**	10	ug/L	1	B9D0019	04/02/19 18:24	04/02/19 18:24	EPA 8260D
Ethylbenzene	D2, F5	**120**	10	ug/L	1	B9D0019	04/02/19 18:24	04/02/19 18:24	EPA 8260D
Hexachlorobutadiene	D2, F5	<	5.0	ug/L	1	B9D0019	04/02/19 18:24	04/02/19 18:24	EPA 8260D
Isopropylbenzene	D2, F5	<	10	ug/L	1	B9D0019	04/02/19 18:24	04/02/19 18:24	EPA 8260D
Methyl tertiary butyl ether (MTBE)	D2, F5	<	20	ug/L	1	B9D0019	04/02/19 18:24	04/02/19 18:24	EPA 8260D
Methylene chloride	D2, F5	**39**	10	ug/L	1	B9D0019	04/02/19 18:24	04/02/19 18:24	EPA 8260D
Naphthalene	D2, F5	**18**	10	ug/L	1	B9D0019	04/02/19 18:24	04/02/19 18:24	EPA 8260D
n-Butylbenzene	D2, F5	<	10	ug/L	1	B9D0019	04/02/19 18:24	04/02/19 18:24	EPA 8260D

FINAL REPORT

Report ID: 05012019145117

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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601 Robert St. N., P.O. Box 64899
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651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelasi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 05/01/19 14:51

MDH Sample Number: 19D0067-07RE1

Location ID: 813761
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 04/01/19
Collect Time: 13:00
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: Excessive sediment in 1,4 dioxane. -CCS

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
n-Propylbenzene	D2, F5	**13**	10	ug/L	1	B9D0019	04/02/19 18:24	04/02/19 18:24	EPA 8260D
o-Xylene	D2, F5	**110**	10	ug/L	1	B9D0019	04/02/19 18:24	04/02/19 18:24	EPA 8260D
p&m-Xylene	D2, F5	**300**	10	ug/L	1	B9D0019	04/02/19 18:24	04/02/19 18:24	EPA 8260D
p-Isopropyltoluene	D2, F5	**27**	10	ug/L	1	B9D0019	04/02/19 18:24	04/02/19 18:24	EPA 8260D
sec-Butylbenzene	D2, F5	<	10	ug/L	1	B9D0019	04/02/19 18:24	04/02/19 18:24	EPA 8260D
Styrene	D2, F5	**30**	10	ug/L	1	B9D0019	04/02/19 18:24	04/02/19 18:24	EPA 8260D
tert-Butylbenzene	D2, F5	<	10	ug/L	1	B9D0019	04/02/19 18:24	04/02/19 18:24	EPA 8260D
Tetrachloroethene	D2, F5	**100**	10	ug/L	1	B9D0019	04/02/19 18:24	04/02/19 18:24	EPA 8260D
Tetrahydrofuran (THF)	D2, F5	**420**	100	ug/L	1	B9D0019	04/02/19 18:24	04/02/19 18:24	EPA 8260D
trans-1,2-Dichloroethene	D2, F5	**12**	10	ug/L	1	B9D0019	04/02/19 18:24	04/02/19 18:24	EPA 8260D
trans-1,3-Dichloropropene	D2, F5	<	5.0	ug/L	1	B9D0019	04/02/19 18:24	04/02/19 18:24	EPA 8260D
Trichloroethene (TCE)	D2, F5	**150**	1.0	ug/L	1	B9D0019	04/02/19 18:24	04/02/19 18:24	EPA 8260D
Trichlorofluoromethane	D2, F5	<	10	ug/L	1	B9D0019	04/02/19 18:24	04/02/19 18:24	EPA 8260D
Vinyl chloride	D2, F5	**32**	0.50	ug/L	1	B9D0019	04/02/19 18:24	04/02/19 18:24	EPA 8260D

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Public Health Laboratory, Minnesota Department of Health

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Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelasi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 05/01/19 14:51

MDH Sample Number: 19D0067-07RE2

Location ID: 813761
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 04/01/19
Collect Time: 13:00
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: Excessive sediment in 1,4 dioxane. -CCS

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Surrogate: 1,2-Dichlorobenzene-d4	F5	*102*	*70-130*	%	*1*	*B9D0043*	*04/03/19 16:41*	*04/03/19 16:41*	*EPA 8260D*
Surrogate: 4-Bromofluorobenzene	F5	*97*	*70-130*	%	*1*	*B9D0043*	*04/03/19 16:41*	*04/03/19 16:41*	*EPA 8260D*
Surrogate: Methyl tertiary butyl ether-d3	F5	*102*	*70-130*	%	*1*	*B9D0043*	*04/03/19 16:41*	*04/03/19 16:41*	*EPA 8260D*
Acetone	D2, F5	**8600**	2000	ug/L	1	B9D0043	04/03/19 16:41	04/03/19 16:41	EPA 8260D
Methyl ethyl ketone (MEK)	D2, F5	**14000**	1000	ug/L	1	B9D0043	04/03/19 16:41	04/03/19 16:41	EPA 8260D
Methyl isobutyl ketone (MIBK)	D2, F5	**1400**	500	ug/L	1	B9D0043	04/03/19 16:41	04/03/19 16:41	EPA 8260D
Toluene	D2, F5	**610**	100	ug/L	1	B9D0043	04/03/19 16:41	04/03/19 16:41	EPA 8260D

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Public Health Laboratory, Minnesota Department of Health

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Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelasi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 05/01/19 14:51

MDH Sample Number: 19D0067-08

Location ID: 240816
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 04/01/19
Collect Time: 15:10
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Surrogate: 1,2-Dichlorobenzene-d4		*100*	*70-130*	%	*1*	*B9D0019*	*04/02/19 17:56*	*04/02/19 17:56*	*EPA 8260D*
Surrogate: 4-Bromofluorobenzene		*98*	*70-130*	%	*1*	*B9D0019*	*04/02/19 17:56*	*04/02/19 17:56*	*EPA 8260D*
Surrogate: Methyl tertiary butyl ether-d3		*100*	*70-130*	%	*1*	*B9D0019*	*04/02/19 17:56*	*04/02/19 17:56*	*EPA 8260D*
1,1,1,2-Tetrachloroethane		<	1.0	ug/L	1	B9D0019	04/02/19 17:56	04/02/19 17:56	EPA 8260D
1,1,1-Trichloroethane		<	1.0	ug/L	1	B9D0019	04/02/19 17:56	04/02/19 17:56	EPA 8260D
1,1,2,2-Tetrachloroethane		<	0.50	ug/L	1	B9D0019	04/02/19 17:56	04/02/19 17:56	EPA 8260D
1,1,2-Trichloroethane		<	0.50	ug/L	1	B9D0019	04/02/19 17:56	04/02/19 17:56	EPA 8260D
1,1,2-Trichlorotrifluoroethane		<	1.0	ug/L	1	B9D0019	04/02/19 17:56	04/02/19 17:56	EPA 8260D
1,1-Dichloroethane		<	1.0	ug/L	1	B9D0019	04/02/19 17:56	04/02/19 17:56	EPA 8260D
1,1-Dichloroethene		<	1.0	ug/L	1	B9D0019	04/02/19 17:56	04/02/19 17:56	EPA 8260D
1,1-Dichloropropene		<	1.0	ug/L	1	B9D0019	04/02/19 17:56	04/02/19 17:56	EPA 8260D
1,2,3-Trichlorobenzene		<	1.0	ug/L	1	B9D0019	04/02/19 17:56	04/02/19 17:56	EPA 8260D
1,2,3-Trichloropropane		<	0.20	ug/L	1	B9D0019	04/02/19 17:56	04/02/19 17:56	EPA 8260D
1,2,4-Trichlorobenzene		<	1.0	ug/L	1	B9D0019	04/02/19 17:56	04/02/19 17:56	EPA 8260D
1,2,4-Trimethylbenzene		<	1.0	ug/L	1	B9D0019	04/02/19 17:56	04/02/19 17:56	EPA 8260D
1,2-Dibromo-3-chloropropane (DBCP)		<	1.0	ug/L	1	B9D0019	04/02/19 17:56	04/02/19 17:56	EPA 8260D
1,2-Dibromoethane (EDB)		<	0.50	ug/L	1	B9D0019	04/02/19 17:56	04/02/19 17:56	EPA 8260D
1,2-Dichlorobenzene		<	1.0	ug/L	1	B9D0019	04/02/19 17:56	04/02/19 17:56	EPA 8260D
1,2-Dichloroethane		<	0.20	ug/L	1	B9D0019	04/02/19 17:56	04/02/19 17:56	EPA 8260D
1,2-Dichloropropane		<	1.0	ug/L	1	B9D0019	04/02/19 17:56	04/02/19 17:56	EPA 8260D
1,3,5-Trimethylbenzene		<	1.0	ug/L	1	B9D0019	04/02/19 17:56	04/02/19 17:56	EPA 8260D
1,3-Dichlorobenzene		<	1.0	ug/L	1	B9D0019	04/02/19 17:56	04/02/19 17:56	EPA 8260D
1,3-Dichloropropane		<	1.0	ug/L	1	B9D0019	04/02/19 17:56	04/02/19 17:56	EPA 8260D
1,4-Dichlorobenzene		<	1.0	ug/L	1	B9D0019	04/02/19 17:56	04/02/19 17:56	EPA 8260D
2,2-Dichloropropane		<	1.0	ug/L	1	B9D0019	04/02/19 17:56	04/02/19 17:56	EPA 8260D
2-Chlorotoluene		<	1.0	ug/L	1	B9D0019	04/02/19 17:56	04/02/19 17:56	EPA 8260D

FINAL REPORT

Report ID: 05012019145117

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelasi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 05/01/19 14:51

MDH Sample Number: 19D0067-08

Location ID: 240816
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 04/01/19
Collect Time: 15:10
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
4-Chlorotoluene		<	1.0	ug/L	1	B9D0019	04/02/19 17:56	04/02/19 17:56	EPA 8260D
Acetone		<	20	ug/L	1	B9D0019	04/02/19 17:56	04/02/19 17:56	EPA 8260D
Allyl chloride		<	1.0	ug/L	1	B9D0019	04/02/19 17:56	04/02/19 17:56	EPA 8260D
Benzene		<	0.50	ug/L	1	B9D0019	04/02/19 17:56	04/02/19 17:56	EPA 8260D
Bromobenzene		<	1.0	ug/L	1	B9D0019	04/02/19 17:56	04/02/19 17:56	EPA 8260D
Bromochloromethane		<	1.0	ug/L	1	B9D0019	04/02/19 17:56	04/02/19 17:56	EPA 8260D
Bromodichloromethane		<	1.0	ug/L	1	B9D0019	04/02/19 17:56	04/02/19 17:56	EPA 8260D
Bromoform		<	1.0	ug/L	1	B9D0019	04/02/19 17:56	04/02/19 17:56	EPA 8260D
Bromomethane	V4, Z-01, L3	<	2.0	ug/L	1	B9D0019	04/02/19 17:56	04/02/19 17:56	EPA 8260D
Carbon tetrachloride		<	0.20	ug/L	1	B9D0019	04/02/19 17:56	04/02/19 17:56	EPA 8260D
Chlorobenzene		<	1.0	ug/L	1	B9D0019	04/02/19 17:56	04/02/19 17:56	EPA 8260D
Chlorodibromomethane		<	0.50	ug/L	1	B9D0019	04/02/19 17:56	04/02/19 17:56	EPA 8260D
Chloroethane		<	1.0	ug/L	1	B9D0019	04/02/19 17:56	04/02/19 17:56	EPA 8260D
Chloroform		<	1.0	ug/L	1	B9D0019	04/02/19 17:56	04/02/19 17:56	EPA 8260D
Chloromethane		<	1.0	ug/L	1	B9D0019	04/02/19 17:56	04/02/19 17:56	EPA 8260D
cis-1,2-Dichloroethene		<	1.0	ug/L	1	B9D0019	04/02/19 17:56	04/02/19 17:56	EPA 8260D
cis-1,3-Dichloropropene		<	0.50	ug/L	1	B9D0019	04/02/19 17:56	04/02/19 17:56	EPA 8260D
Dibromomethane		<	1.0	ug/L	1	B9D0019	04/02/19 17:56	04/02/19 17:56	EPA 8260D
Dichlorodifluoromethane		<	1.0	ug/L	1	B9D0019	04/02/19 17:56	04/02/19 17:56	EPA 8260D
Dichlorofluoromethane		<	1.0	ug/L	1	B9D0019	04/02/19 17:56	04/02/19 17:56	EPA 8260D
Ethyl ether		<	1.0	ug/L	1	B9D0019	04/02/19 17:56	04/02/19 17:56	EPA 8260D
Ethylbenzene		<	1.0	ug/L	1	B9D0019	04/02/19 17:56	04/02/19 17:56	EPA 8260D
Hexachlorobutadiene		<	0.50	ug/L	1	B9D0019	04/02/19 17:56	04/02/19 17:56	EPA 8260D
Isopropylbenzene		<	1.0	ug/L	1	B9D0019	04/02/19 17:56	04/02/19 17:56	EPA 8260D
Methyl ethyl ketone (MEK)		<	10	ug/L	1	B9D0019	04/02/19 17:56	04/02/19 17:56	EPA 8260D
Methyl isobutyl ketone (MIBK)		<	5.0	ug/L	1	B9D0019	04/02/19 17:56	04/02/19 17:56	EPA 8260D
Methyl tertiary butyl ether (MTBE)		<	2.0	ug/L	1	B9D0019	04/02/19 17:56	04/02/19 17:56	EPA 8260D

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelasi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 05/01/19 14:51

MDH Sample Number: 19D0067-08

Location ID: 240816
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 04/01/19
Collect Time: 15:10
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Methylene chloride		<	1.0	ug/L	1	B9D0019	04/02/19 17:56	04/02/19 17:56	EPA 8260D
Naphthalene		<	1.0	ug/L	1	B9D0019	04/02/19 17:56	04/02/19 17:56	EPA 8260D
n-Butylbenzene		<	1.0	ug/L	1	B9D0019	04/02/19 17:56	04/02/19 17:56	EPA 8260D
n-Propylbenzene		<	1.0	ug/L	1	B9D0019	04/02/19 17:56	04/02/19 17:56	EPA 8260D
o-Xylene		<	1.0	ug/L	1	B9D0019	04/02/19 17:56	04/02/19 17:56	EPA 8260D
p&m-Xylene		<	1.0	ug/L	1	B9D0019	04/02/19 17:56	04/02/19 17:56	EPA 8260D
p-Isopropyltoluene		<	1.0	ug/L	1	B9D0019	04/02/19 17:56	04/02/19 17:56	EPA 8260D
sec-Butylbenzene		<	1.0	ug/L	1	B9D0019	04/02/19 17:56	04/02/19 17:56	EPA 8260D
Styrene		<	1.0	ug/L	1	B9D0019	04/02/19 17:56	04/02/19 17:56	EPA 8260D
tert-Butylbenzene		<	1.0	ug/L	1	B9D0019	04/02/19 17:56	04/02/19 17:56	EPA 8260D
Tetrachloroethene		<	1.0	ug/L	1	B9D0019	04/02/19 17:56	04/02/19 17:56	EPA 8260D
Tetrahydrofuran (THF)		<	10	ug/L	1	B9D0019	04/02/19 17:56	04/02/19 17:56	EPA 8260D
Toluene		<	1.0	ug/L	1	B9D0019	04/02/19 17:56	04/02/19 17:56	EPA 8260D
trans-1,2-Dichloroethene		<	1.0	ug/L	1	B9D0019	04/02/19 17:56	04/02/19 17:56	EPA 8260D
trans-1,3-Dichloropropene		<	0.50	ug/L	1	B9D0019	04/02/19 17:56	04/02/19 17:56	EPA 8260D
Trichloroethene (TCE)		<	0.10	ug/L	1	B9D0019	04/02/19 17:56	04/02/19 17:56	EPA 8260D
Trichlorofluoromethane		<	1.0	ug/L	1	B9D0019	04/02/19 17:56	04/02/19 17:56	EPA 8260D
Vinyl chloride		<	0.050	ug/L	1	B9D0019	04/02/19 17:56	04/02/19 17:56	EPA 8260D

1,4-Dioxane

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
1,4-Dioxane		**1.2**	0.050	ug/L	1	B9D0423	04/24/19 08:00	04/26/19 12:59	EPA 522 Modified

PFC Expanded List

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorobutanesulfonate (PFBS)	J	**0.011**	0.050	ug/L	1	B9D0230	04/12/19 15:01	04/12/19 15:01	MDH 555
Perfluorobutanoic acid (PFBA)		**0.088**	0.050	ug/L	1	B9D0230	04/12/19 15:01	04/12/19 15:01	MDH 555

FINAL REPORT

Report ID: 05012019145117

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
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St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson/Chris Pelasi
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 05/01/19 14:51

MDH Sample Number: 19D0067-08

Location ID: 240816
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 04/01/19
Collect Time: 15:10
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

PFC Expanded List - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorohexanesulfonate (PFHxS)		**0.029**	0.025	ug/L	1	B9D0230	04/12/19 15:01	04/12/19 15:01	MDH 555
Perfluorohexanoic acid (PFHxA)		**0.051**	0.050	ug/L	1	B9D0230	04/12/19 15:01	04/12/19 15:01	MDH 555
Perfluorooctanesulfonate (PFOS)		**0.046**	0.025	ug/L	1	B9D0230	04/12/19 15:01	04/12/19 15:01	MDH 555
Perfluorooctanoic acid (PFOA)		**0.061**	0.035	ug/L	1	B9D0230	04/12/19 15:01	04/12/19 15:01	MDH 555
Perfluoropentanoic acid (PFPeA)	J	**0.049**	0.050	ug/L	1	B9D0230	04/12/19 15:01	04/12/19 15:01	MDH 555

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelasi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 05/01/19 14:51

Batch Summary

Samples in Batch: B9D0019 - EPA 5030B Preparation

19D0067-01 19D0067-02 19D0067-03 19D0067-04 19D0067-05 19D0067-06 19D0067-07RE1
19D0067-08

Samples in Batch: B9D0043 - EPA 5030B Preparation

19D0067-07RE2

Samples in Batch: B9D0230 - PFCs Preparation

19D0067-02 19D0067-03 19D0067-04 19D0067-05 19D0067-07 19D0067-08

Samples in Batch: B9D0364 - PFCs Preparation

19D0067-06RE3

Samples in Batch: B9D0396 - 1,4 Dioxane in Water SPE

19D0067-02 19D0067-03 19D0067-04

Samples in Batch: B9D0423 - 1,4 Dioxane in Water SPE

19D0067-05RE1 19D0067-06RE1 19D0067-08

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Public Health Laboratory, Minnesota Department of Health

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelasi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 05/01/19 14:51

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0019 - EPA 5030B Preparation

Blank (B9D0019-BLK1) **Prepared: 04/02/19 12:49 Analyzed: 04/02/19 12:49**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: 1,2-Dichlorobenzene-d4		*100*	*70-130*	*%*	*10*					
Surrogate: 4-Bromofluorobenzene		*99*	*70-130*	*%*	*10*					
Surrogate: Methyl tertiary butyl ether-d3		*100*	*70-130*	*%*	*10*					
1,1,1,2-Tetrachloroethane		<	1.0	ug/L						
1,1,1-Trichloroethane		<	1.0	ug/L						
1,1,2,2-Tetrachloroethane		<	0.50	ug/L						
1,1,2-Trichloroethane		<	0.50	ug/L						
1,1,2-Trichlorotrifluoroethane		<	1.0	ug/L						
1,1-Dichloroethane		<	1.0	ug/L						
1,1-Dichloroethene		<	1.0	ug/L						
1,1-Dichloropropene		<	1.0	ug/L						
1,2,3-Trichlorobenzene		<	1.0	ug/L						
1,2,3-Trichloropropane		<	0.20	ug/L						
1,2,4-Trichlorobenzene		<	1.0	ug/L						
1,2,4-Trimethylbenzene		<	1.0	ug/L						
1,2-Dibromo-3-chloropropane (DBCP)		<	1.0	ug/L						
1,2-Dibromoethane (EDB)		<	0.50	ug/L						
1,2-Dichlorobenzene		<	1.0	ug/L						
1,2-Dichloroethane		<	0.20	ug/L						
1,2-Dichloropropane		<	1.0	ug/L						
1,3,5-Trimethylbenzene		<	1.0	ug/L						
1,3-Dichlorobenzene		<	1.0	ug/L						
1,3-Dichloropropane		<	1.0	ug/L						
1,4-Dichlorobenzene		<	1.0	ug/L						
2,2-Dichloropropane		<	1.0	ug/L						
2-Chlorotoluene		<	1.0	ug/L						
4-Chlorotoluene		<	1.0	ug/L						
Acetone		<	20	ug/L						
Allyl chloride		<	1.0	ug/L						
Benzene		<	0.50	ug/L						
Bromobenzene		<	1.0	ug/L						
Bromochloromethane		<	1.0	ug/L						
Bromodichloromethane		<	1.0	ug/L						
Bromoform		<	1.0	ug/L						

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St. Paul, MN 55164-0899
651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelasi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 05/01/19 14:51

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0019 - EPA 5030B Preparation

Blank (B9D0019-BLK1) **Prepared: 04/02/19 12:49 Analyzed: 04/02/19 12:49**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Bromomethane	L3, V4, Z-01	<	2.0	ug/L						
Carbon tetrachloride		<	0.20	ug/L						
Chlorobenzene		<	1.0	ug/L						
Chlorodibromomethane		<	0.50	ug/L						
Chloroethane		<	1.0	ug/L						
Chloroform		<	1.0	ug/L						
Chloromethane		<	1.0	ug/L						
cis-1,2-Dichloroethene		<	1.0	ug/L						
cis-1,3-Dichloropropene		<	0.50	ug/L						
Dibromomethane		<	1.0	ug/L						
Dichlorodifluoromethane		<	1.0	ug/L						
Dichlorofluoromethane		<	1.0	ug/L						
Ethyl ether		<	1.0	ug/L						
Ethylbenzene		<	1.0	ug/L						
Hexachlorobutadiene		<	0.50	ug/L						
Isopropylbenzene		<	1.0	ug/L						
Methyl ethyl ketone (MEK)		<	10	ug/L						
Methyl isobutyl ketone (MIBK)		<	5.0	ug/L						
Methyl tertiary butyl ether (MTBE)		<	2.0	ug/L						
Methylene chloride		<	1.0	ug/L						
Naphthalene		<	1.0	ug/L						
n-Butylbenzene		<	1.0	ug/L						
n-Propylbenzene		<	1.0	ug/L						
o-Xylene		<	1.0	ug/L						
p&m-Xylene		<	1.0	ug/L						
p-Isopropyltoluene		<	1.0	ug/L						
sec-Butylbenzene		<	1.0	ug/L						
Styrene		<	1.0	ug/L						
tert-Butylbenzene		<	1.0	ug/L						
Tetrachloroethene		<	1.0	ug/L						
Tetrahydrofuran (THF)		<	10	ug/L						
Toluene		<	1.0	ug/L						
trans-1,2-Dichloroethene		<	1.0	ug/L						
trans-1,3-Dichloropropene		<	0.50	ug/L						
Trichloroethene (TCE)		<	0.10	ug/L						

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Public Health Laboratory, Minnesota Department of Health

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651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelasi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 05/01/19 14:51

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0019 - EPA 5030B Preparation

Blank (B9D0019-BLK1) **Prepared: 04/02/19 12:49 Analyzed: 04/02/19 12:49**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Trichlorofluoromethane		<	1.0	ug/L						
Vinyl chloride		<	0.050	ug/L						

LCS (B9D0019-BS1) **Prepared: 04/02/19 10:30 Analyzed: 04/02/19 10:30**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: 1,2-Dichlorobenzene-d4		*98*	*70-130*	*%*	*10*					
Surrogate: 4-Bromofluorobenzene		*96*	*70-130*	*%*	*10*					
Surrogate: Methyl tertiary butyl ether-d3		*100*	*70-130*	*%*	*10*					
1,1,1,2-Tetrachloroethane		10	1.0	ug/L	10		101	70-130		
1,1,1-Trichloroethane		11	1.0	ug/L	10		109	70-130		
1,1,2,2-Tetrachloroethane		9.4	0.50	ug/L	10		94	70-130		
1,1,2-Trichloroethane		10	0.50	ug/L	10		101	70-130		
1,1,2-Trichlorotrifluoroethane		11	1.0	ug/L	10		109	70-130		
1,1-Dichloroethane		11	1.0	ug/L	10		105	70-130		
1,1-Dichloroethene		11	1.0	ug/L	10		106	70-130		
1,1-Dichloropropene		11	1.0	ug/L	10		108	70-130		
1,2,3-Trichlorobenzene		9.6	1.0	ug/L	10		96	70-130		
1,2,3-Trichloropropane		9.3	0.20	ug/L	10		93	70-130		
1,2,4-Trichlorobenzene		9.6	1.0	ug/L	10		96	70-130		
1,2,4-Trimethylbenzene		9.7	1.0	ug/L	10		97	70-130		
1,2-Dibromo-3-chloropropane (DBCP)		9.0	1.0	ug/L	10		90	70-130		
1,2-Dibromoethane (EDB)		9.5	0.50	ug/L	10		95	70-130		
1,2-Dichlorobenzene		9.4	1.0	ug/L	10		94	70-130		
1,2-Dichloroethane		10	0.20	ug/L	10		105	70-130		
1,2-Dichloropropane		11	1.0	ug/L	10		106	70-130		
1,3,5-Trimethylbenzene		9.8	1.0	ug/L	10		98	70-130		
1,3-Dichlorobenzene		9.6	1.0	ug/L	10		96	70-130		
1,3-Dichloropropane		10	1.0	ug/L	10		100	70-130		
1,4-Dichlorobenzene		9.6	1.0	ug/L	10		96	70-130		
2,2-Dichloropropane		11	1.0	ug/L	10		114	70-130		
2-Chlorotoluene		9.7	1.0	ug/L	10		97	70-130		
4-Chlorotoluene		9.6	1.0	ug/L	10		96	70-130		
Acetone		97	20	ug/L	100		97	70-130		

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelasi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 05/01/19 14:51

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0019 - EPA 5030B Preparation

LCS (B9D0019-BS1) **Prepared: 04/02/19 10:30 Analyzed: 04/02/19 10:30**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Allyl chloride		10	1.0	ug/L	10		101	70-130		
Benzene		10	0.50	ug/L	10		103	70-130		
Bromobenzene		9.5	1.0	ug/L	10		95	70-130		
Bromochloromethane		11	1.0	ug/L	10		106	70-130		
Bromodichloromethane		11	1.0	ug/L	10		107	70-130		
Bromoform		10	1.0	ug/L	10		100	70-130		
Bromomethane	L3, V4, Z-01	5.8	2.0	ug/L	10		58	70-130		
Carbon tetrachloride		11	0.20	ug/L	10		114	70-130		
Chlorobenzene		10	1.0	ug/L	10		100	70-130		
Chlorodibromomethane		9.7	0.50	ug/L	10		97	70-130		
Chloroethane		11	1.0	ug/L	10		106	70-130		
Chloroform		11	1.0	ug/L	10		107	70-130		
Chloromethane		8.4	1.0	ug/L	10		84	70-130		
cis-1,2-Dichloroethene		10	1.0	ug/L	10		103	70-130		
cis-1,3-Dichloropropene		10	0.50	ug/L	10		100	70-130		
Dibromomethane		10	1.0	ug/L	10		104	70-130		
Dichlorodifluoromethane		8.3	1.0	ug/L	10		83	70-130		
Dichlorofluoromethane		11	1.0	ug/L	10		110	70-130		
Ethyl ether		10	1.0	ug/L	10		101	70-130		
Ethylbenzene		10	1.0	ug/L	10		100	70-130		
Hexachlorobutadiene		9.9	0.50	ug/L	10		99	70-130		
Isopropylbenzene		10	1.0	ug/L	10		100	70-130		
Methyl ethyl ketone (MEK)		49	10	ug/L	50		99	70-130		
Methyl isobutyl ketone (MIBK)		50	5.0	ug/L	50		100	70-130		
Methyl tertiary butyl ether (MTBE)		10	2.0	ug/L	10		104	70-130		
Methylene chloride		10	1.0	ug/L	10		105	70-130		
Naphthalene		9.2	1.0	ug/L	10		92	70-130		
n-Butylbenzene		10	1.0	ug/L	10		104	70-130		
n-Propylbenzene		10	1.0	ug/L	10		100	70-130		
o-Xylene		9.6	1.0	ug/L	10		96	70-130		
p&m-Xylene		10	1.0	ug/L	10		101	70-130		
p-Isopropyltoluene		9.9	1.0	ug/L	10		99	70-130		
sec-Butylbenzene		10	1.0	ug/L	10		100	70-130		
Styrene		9.3	1.0	ug/L	10		93	70-130		
tert-Butylbenzene		9.7	1.0	ug/L	10		97	70-130		

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelasi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 05/01/19 14:51

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0019 - EPA 5030B Preparation

LCS (B9D0019-BS1) **Prepared: 04/02/19 10:30 Analyzed: 04/02/19 10:30**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Tetrachloroethene		10	1.0	ug/L	10		103	70-130		
Tetrahydrofuran (THF)		100	10	ug/L	100		101	70-130		
Toluene		9.9	1.0	ug/L	10		99	70-130		
trans-1,2-Dichloroethene		10	1.0	ug/L	10		104	70-130		
trans-1,3-Dichloropropene		9.8	0.50	ug/L	10		98	70-130		
Trichloroethene (TCE)		10	0.10	ug/L	10		101	70-130		
Trichlorofluoromethane		11	1.0	ug/L	10		109	70-130		
Vinyl chloride		9.8	0.050	ug/L	10		98	70-130		

LCS Dup (B9D0019-BSD1) **Prepared: 04/02/19 10:58 Analyzed: 04/02/19 10:58**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: 1,2-Dichlorobenzene-d4		*101*	*70-130*	*%*	*10*					
Surrogate: 4-Bromofluorobenzene		*97*	*70-130*	*%*	*10*					
Surrogate: Methyl tertiary butyl ether-d3		*100*	*70-130*	*%*	*10*					
1,1,1,2-Tetrachloroethane		10	1.0	ug/L	10		100	70-130	0.6	30
1,1,1-Trichloroethane		11	1.0	ug/L	10		106	70-130	3	30
1,1,2,2-Tetrachloroethane		9.5	0.50	ug/L	10		95	70-130	1	30
1,1,2-Trichloroethane		10	0.50	ug/L	10		103	70-130	2	30
1,1,2-Trichlorotrifluoroethane		11	1.0	ug/L	10		108	70-130	1	30
1,1-Dichloroethane		10	1.0	ug/L	10		104	70-130	1	30
1,1-Dichloroethene		10	1.0	ug/L	10		102	70-130	4	30
1,1-Dichloropropene		11	1.0	ug/L	10		107	70-130	1	30
1,2,3-Trichlorobenzene		9.7	1.0	ug/L	10		97	70-130	0.5	30
1,2,3-Trichloropropane		9.5	0.20	ug/L	10		95	70-130	2	30
1,2,4-Trichlorobenzene		9.6	1.0	ug/L	10		96	70-130	0.6	30
1,2,4-Trimethylbenzene		9.4	1.0	ug/L	10		94	70-130	2	30
1,2-Dibromo-3-chloropropane (DBCP)		9.3	1.0	ug/L	10		93	70-130	3	30
1,2-Dibromoethane (EDB)		9.6	0.50	ug/L	10		96	70-130	0.5	30
1,2-Dichlorobenzene		9.5	1.0	ug/L	10		95	70-130	0.5	30
1,2-Dichloroethane		11	0.20	ug/L	10		106	70-130	0.7	30
1,2-Dichloropropane		10	1.0	ug/L	10		105	70-130	1	30
1,3,5-Trimethylbenzene		9.5	1.0	ug/L	10		95	70-130	2	30
1,3-Dichlorobenzene		9.6	1.0	ug/L	10		96	70-130	0.7	30

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Minnesota Department of Health
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Environmental Laboratory Section
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651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelasi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 05/01/19 14:51

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0019 - EPA 5030B Preparation

LCS Dup (B9D0019-BSD1) **Prepared: 04/02/19 10:58 Analyzed: 04/02/19 10:58**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,3-Dichloropropane		10	1.0	ug/L	10		101	70-130	2	30
1,4-Dichlorobenzene		9.8	1.0	ug/L	10		98	70-130	3	30
2,2-Dichloropropane		11	1.0	ug/L	10		108	70-130	5	30
2-Chlorotoluene		9.7	1.0	ug/L	10		97	70-130	0.1	30
4-Chlorotoluene		9.6	1.0	ug/L	10		96	70-130	0.8	30
Acetone		94	20	ug/L	100		94	70-130	3	30
Allyl chloride		9.9	1.0	ug/L	10		99	70-130	3	30
Benzene		10	0.50	ug/L	10		102	70-130	2	30
Bromobenzene		9.6	1.0	ug/L	10		96	70-130	0.3	30
Bromochloromethane		10	1.0	ug/L	10		104	70-130	1	30
Bromodichloromethane		10	1.0	ug/L	10		104	70-130	3	30
Bromoform		9.8	1.0	ug/L	10		98	70-130	2	30
Bromomethane	L3, V4, Z-01	6.4	2.0	ug/L	10		64	70-130	10	30
Carbon tetrachloride		11	0.20	ug/L	10		112	70-130	2	30
Chlorobenzene		9.9	1.0	ug/L	10		99	70-130	1	30
Chlorodibromomethane		9.8	0.50	ug/L	10		98	70-130	1	30
Chloroethane		10	1.0	ug/L	10		102	70-130	4	30
Chloroform		10	1.0	ug/L	10		104	70-130	3	30
Chloromethane		8.3	1.0	ug/L	10		83	70-130	0.7	30
cis-1,2-Dichloroethene		10	1.0	ug/L	10		102	70-130	1	30
cis-1,3-Dichloropropene		9.8	0.50	ug/L	10		98	70-130	2	30
Dibromomethane		11	1.0	ug/L	10		106	70-130	2	30
Dichlorodifluoromethane		8.0	1.0	ug/L	10		80	70-130	3	30
Dichlorofluoromethane		11	1.0	ug/L	10		107	70-130	2	30
Ethyl ether		9.9	1.0	ug/L	10		99	70-130	2	30
Ethylbenzene		10	1.0	ug/L	10		100	70-130	0.2	30
Hexachlorobutadiene		9.9	0.50	ug/L	10		99	70-130	0.1	30
Isopropylbenzene		9.9	1.0	ug/L	10		99	70-130	1	30
Methyl ethyl ketone (MEK)		48	10	ug/L	50		96	70-130	3	30
Methyl isobutyl ketone (MIBK)		50	5.0	ug/L	50		100	70-130	0.1	30
Methyl tertiary butyl ether (MTBE)		11	2.0	ug/L	10		106	70-130	2	30
Methylene chloride		10	1.0	ug/L	10		104	70-130	1	30
Naphthalene		9.4	1.0	ug/L	10		94	70-130	2	30
n-Butylbenzene		10	1.0	ug/L	10		103	70-130	1	30
n-Propylbenzene		10	1.0	ug/L	10		100	70-130	0.1	30

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelasi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 05/01/19 14:51

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0019 - EPA 5030B Preparation

LCS Dup (B9D0019-BSD1) **Prepared: 04/02/19 10:58 Analyzed: 04/02/19 10:58**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
o-Xylene		9.6	1.0	ug/L	10		96	70-130	0.1	30
p&m-Xylene		10	1.0	ug/L	10		101	70-130	0.3	30
p-Isopropyltoluene		9.8	1.0	ug/L	10		98	70-130	1	30
sec-Butylbenzene		9.9	1.0	ug/L	10		99	70-130	1	30
Styrene		9.5	1.0	ug/L	10		95	70-130	1	30
tert-Butylbenzene		9.6	1.0	ug/L	10		96	70-130	1	30
Tetrachloroethene		9.9	1.0	ug/L	10		99	70-130	4	30
Tetrahydrofuran (THF)		99	10	ug/L	100		99	70-130	2	30
Toluene		9.8	1.0	ug/L	10		98	70-130	2	30
trans-1,2-Dichloroethene		10	1.0	ug/L	10		103	70-130	2	30
trans-1,3-Dichloropropene		10	0.50	ug/L	10		103	70-130	5	30
Trichloroethene (TCE)		9.8	0.10	ug/L	10		98	70-130	3	30
Trichlorofluoromethane		10	1.0	ug/L	10		105	70-130	4	30
Vinyl chloride		9.4	0.050	ug/L	10		94	70-130	3	30

Duplicate (B9D0019-DUP1) Source: 19C1274-05 **Prepared: 04/02/19 14:13 Analyzed: 04/02/19 14:13**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: 1,2-Dichlorobenzene-d4		*101*	*70-130*	*%*	*10*					
Surrogate: 4-Bromofluorobenzene		*99*	*70-130*	*%*	*10*					
Surrogate: Methyl tertiary butyl ether-d3		*100*	*70-130*	*%*	*10*					
1,1,1,2-Tetrachloroethane		<	1.0	ug/L		<				30
1,1,1-Trichloroethane		<	1.0	ug/L		<				30
1,1,2,2-Tetrachloroethane		<	0.50	ug/L		<				30
1,1,2-Trichloroethane		<	0.50	ug/L		<				30
1,1,2-Trichlorotrifluoroethane		<	1.0	ug/L		<				30
1,1-Dichloroethane		<	1.0	ug/L		<				30
1,1-Dichloroethene		<	1.0	ug/L		<				30
1,1-Dichloropropene		<	1.0	ug/L		<				30
1,2,3-Trichlorobenzene		<	1.0	ug/L		<				30
1,2,3-Trichloropropane		<	0.20	ug/L		<				30
1,2,4-Trichlorobenzene		<	1.0	ug/L		<				30
1,2,4-Trimethylbenzene		<	1.0	ug/L		<				30
1,2-Dibromo-3-chloropropane (DBCP)		<	1.0	ug/L		<				30

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelasi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 05/01/19 14:51

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0019 - EPA 5030B Preparation

Duplicate (B9D0019-DUP1) Source: 19C1274-05 **Prepared: 04/02/19 14:13 Analyzed: 04/02/19 14:13**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,2-Dibromoethane (EDB)		<	0.50	ug/L		<				30
1,2-Dichlorobenzene		<	1.0	ug/L		<				30
1,2-Dichloroethane		<	0.20	ug/L		<				30
1,2-Dichloropropane		<	1.0	ug/L		<				30
1,3,5-Trimethylbenzene		<	1.0	ug/L		<				30
1,3-Dichlorobenzene		<	1.0	ug/L		<				30
1,3-Dichloropropane		<	1.0	ug/L		<				30
1,4-Dichlorobenzene		<	1.0	ug/L		<				30
2,2-Dichloropropane		<	1.0	ug/L		<				30
2-Chlorotoluene		<	1.0	ug/L		<				30
4-Chlorotoluene		<	1.0	ug/L		<				30
Acetone		<	20	ug/L		<				30
Allyl chloride		<	1.0	ug/L		<				30
Benzene		<	0.50	ug/L		<				30
Bromobenzene		<	1.0	ug/L		<				30
Bromochloromethane		<	1.0	ug/L		<				30
Bromodichloromethane		<	1.0	ug/L		<				30
Bromoform		<	1.0	ug/L		<				30
Bromomethane	L3, V4, Z-01	<	2.0	ug/L		<				30
Carbon tetrachloride		<	0.20	ug/L		<				30
Chlorobenzene		<	1.0	ug/L		<				30
Chlorodibromomethane		<	0.50	ug/L		<				30
Chloroethane		<	1.0	ug/L		<				30
Chloroform		<	1.0	ug/L		<				30
Chloromethane		<	1.0	ug/L		<				30
cis-1,2-Dichloroethene		<	1.0	ug/L		<				30
cis-1,3-Dichloropropene		<	0.50	ug/L		<				30
Dibromomethane		<	1.0	ug/L		<				30
Dichlorodifluoromethane		<	1.0	ug/L		<				30
Dichlorofluoromethane		<	1.0	ug/L		<				30
Ethyl ether		3.1	1.0	ug/L		3.1			0	30
Ethylbenzene		<	1.0	ug/L		<				30
Hexachlorobutadiene		<	0.50	ug/L		<				30
Isopropylbenzene		<	1.0	ug/L		<				30
Methyl ethyl ketone (MEK)		<	10	ug/L		<				30

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Public Health Laboratory, Minnesota Department of Health

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelasi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 05/01/19 14:51

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0019 - EPA 5030B Preparation

Duplicate (B9D0019-DUP1) Source: 19C1274-05 **Prepared: 04/02/19 14:13 Analyzed: 04/02/19 14:13**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Methyl isobutyl ketone (MIBK)		<	5.0	ug/L		<				30
Methyl tertiary butyl ether (MTBE)		<	2.0	ug/L		<				30
Methylene chloride		<	1.0	ug/L		<				30
Naphthalene		<	1.0	ug/L		<				30
n-Butylbenzene		<	1.0	ug/L		<				30
n-Propylbenzene		<	1.0	ug/L		<				30
o-Xylene		<	1.0	ug/L		<				30
p&m-Xylene		<	1.0	ug/L		<				30
p-Isopropyltoluene		<	1.0	ug/L		<				30
sec-Butylbenzene		<	1.0	ug/L		<				30
Styrene		<	1.0	ug/L		<				30
tert-Butylbenzene		<	1.0	ug/L		<				30
Tetrachloroethene		<	1.0	ug/L		<				30
Tetrahydrofuran (THF)		2.8	10	ug/L		<			1	30
Toluene		<	1.0	ug/L		<				30
trans-1,2-Dichloroethene		<	1.0	ug/L		<				30
trans-1,3-Dichloropropene		<	0.50	ug/L		<				30
Trichloroethene (TCE)		<	0.10	ug/L		<				30
Trichlorofluoromethane		<	1.0	ug/L		<				30
Vinyl chloride		<	0.050	ug/L		<				30

Matrix Spike (B9D0019-MS1) Source: 19C1274-04 **Prepared: 04/02/19 11:26 Analyzed: 04/02/19 11:26**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: 1,2-Dichlorobenzene-d4		*98*	*70-130*	*%*	*10*					
Surrogate: 4-Bromofluorobenzene		*94*	*70-130*	*%*	*10*					
Surrogate: Methyl tertiary butyl ether-d3		*100*	*70-130*	*%*	*10*					
1,1,1,2-Tetrachloroethane		11	1.0	ug/L	10	<	105	70-130		
1,1,1-Trichloroethane		11	1.0	ug/L	10	<	115	70-130		
1,1,2,2-Tetrachloroethane		9.8	0.50	ug/L	10	<	98	70-130		
1,1,2-Trichloroethane		11	0.50	ug/L	10	<	106	70-130		
1,1,2-Trichlorotrifluoroethane		12	1.0	ug/L	10	<	118	70-130		
1,1-Dichloroethane		11	1.0	ug/L	10	<	111	70-130		
1,1-Dichloroethene		11	1.0	ug/L	10	<	114	70-130		
1,1-Dichloropropene		12	1.0	ug/L	10	<	117	70-130		

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelasi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 05/01/19 14:51

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0019 - EPA 5030B Preparation

Matrix Spike (B9D0019-MS1) Source: 19C1274-04 **Prepared: 04/02/19 11:26 Analyzed: 04/02/19 11:26**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,2,3-Trichlorobenzene		10	1.0	ug/L	10	<	100	70-130		
1,2,3-Trichloropropane		9.7	0.20	ug/L	10	<	97	70-130		
1,2,4-Trichlorobenzene		10	1.0	ug/L	10	<	101	70-130		
1,2,4-Trimethylbenzene		10	1.0	ug/L	10	<	101	70-130		
1,2-Dibromo-3-chloropropane (DBCP)		9.0	1.0	ug/L	10	<	90	70-130		
1,2-Dibromoethane (EDB)		10	0.50	ug/L	10	<	104	70-130		
1,2-Dichlorobenzene		9.9	1.0	ug/L	10	<	99	70-130		
1,2-Dichloroethane		11	0.20	ug/L	10	<	112	70-130		
1,2-Dichloropropane		11	1.0	ug/L	10	<	113	70-130		
1,3,5-Trimethylbenzene		10	1.0	ug/L	10	<	102	70-130		
1,3-Dichlorobenzene		10	1.0	ug/L	10	<	102	70-130		
1,3-Dichloropropane		11	1.0	ug/L	10	<	105	70-130		
1,4-Dichlorobenzene		10	1.0	ug/L	10	<	104	70-130		
2,2-Dichloropropane		12	1.0	ug/L	10	<	123	70-130		
2-Chlorotoluene		10	1.0	ug/L	10	<	101	70-130		
4-Chlorotoluene		10	1.0	ug/L	10	<	101	70-130		
Acetone		95	20	ug/L	100	<	95	70-130		
Allyl chloride		11	1.0	ug/L	10	<	110	70-130		
Benzene		11	0.50	ug/L	10	<	110	70-130		
Bromobenzene		9.8	1.0	ug/L	10	<	98	70-130		
Bromochloromethane		11	1.0	ug/L	10	<	110	70-130		
Bromodichloromethane		11	1.0	ug/L	10	<	111	70-130		
Bromoform		10	1.0	ug/L	10	<	101	70-130		
Bromomethane	L3, V4, Z-01	7.3	2.0	ug/L	10	<	73	70-130		
Carbon tetrachloride		12	0.20	ug/L	10	<	122	70-130		
Chlorobenzene		11	1.0	ug/L	10	<	107	70-130		
Chlorodibromomethane		10	0.50	ug/L	10	<	101	70-130		
Chloroethane		11	1.0	ug/L	10	<	112	70-130		
Chloroform		11	1.0	ug/L	10	<	114	70-130		
Chloromethane		9.3	1.0	ug/L	10	<	93	70-130		
cis-1,2-Dichloroethene		11	1.0	ug/L	10	<	109	70-130		
cis-1,3-Dichloropropene		11	0.50	ug/L	10	<	106	70-130		
Dibromomethane		11	1.0	ug/L	10	<	112	70-130		
Dichlorodifluoromethane		9.0	1.0	ug/L	10	<	90	70-130		
Dichlorofluoromethane		12	1.0	ug/L	10	<	118	70-130		

FINAL REPORT

Report ID: 05012019145117

Authorized by:

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Public Health Laboratory
Environmental Laboratory Section
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St. Paul, MN 55164-0899
651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelasi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 05/01/19 14:51

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0019 - EPA 5030B Preparation

Matrix Spike (B9D0019-MS1) Source: 19C1274-04 **Prepared: 04/02/19 11:26 Analyzed: 04/02/19 11:26**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Ethyl ether		13	1.0	ug/L	10	3.3	102	70-130		
Ethylbenzene		11	1.0	ug/L	10	<	105	70-130		
Hexachlorobutadiene		10	0.50	ug/L	10	<	104	70-130		
Isopropylbenzene		11	1.0	ug/L	10	<	108	70-130		
Methyl ethyl ketone (MEK)		49	10	ug/L	50	<	99	70-130		
Methyl isobutyl ketone (MIBK)		51	5.0	ug/L	50	<	103	70-130		
Methyl tertiary butyl ether (MTBE)		11	2.0	ug/L	10	<	110	70-130		
Methylene chloride		11	1.0	ug/L	10	<	113	70-130		
Naphthalene		9.6	1.0	ug/L	10	<	96	70-130		
n-Butylbenzene		11	1.0	ug/L	10	<	111	70-130		
n-Propylbenzene		11	1.0	ug/L	10	<	106	70-130		
o-Xylene		10	1.0	ug/L	10	<	103	70-130		
p&m-Xylene		11	1.0	ug/L	10	<	105	70-130		
p-Isopropyltoluene		10	1.0	ug/L	10	<	104	70-130		
sec-Butylbenzene		11	1.0	ug/L	10	<	106	70-130		
Styrene		9.9	1.0	ug/L	10	<	99	70-130		
tert-Butylbenzene		10	1.0	ug/L	10	<	102	70-130		
Tetrachloroethene		11	1.0	ug/L	10	<	106	70-130		
Tetrahydrofuran (THF)		100	10	ug/L	100	<	98	70-130		
Toluene		10	1.0	ug/L	10	<	104	70-130		
trans-1,2-Dichloroethene		11	1.0	ug/L	10	<	111	70-130		
trans-1,3-Dichloropropene		11	0.50	ug/L	10	<	107	70-130		
Trichloroethene (TCE)		11	0.10	ug/L	10	<	108	70-130		
Trichlorofluoromethane		12	1.0	ug/L	10	<	116	70-130		
Vinyl chloride		11	0.050	ug/L	10	<	106	70-130		

Batch B9D0043 - EPA 5030B Preparation

Blank (B9D0043-BLK1) **Prepared: 04/03/19 15:45 Analyzed: 04/03/19 15:45**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: 1,2-Dichlorobenzene-d4		*100*	*70-130*	*%*	*10*					
Surrogate: 4-Bromofluorobenzene		*98*	*70-130*	*%*	*10*					
Surrogate: Methyl tertiary butyl ether-d3		*100*	*70-130*	*%*	*10*					
1,1,1,2-Tetrachloroethane		<	1.0	ug/L						

FINAL REPORT

Report ID: 05012019145117

Authorized by:

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651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelasi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 05/01/19 14:51

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0043 - EPA 5030B Preparation

Blank (B9D0043-BLK1) **Prepared: 04/03/19 15:45 Analyzed: 04/03/19 15:45**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,1,1-Trichloroethane		<	1.0	ug/L						
1,1,2,2-Tetrachloroethane		<	0.50	ug/L						
1,1,2-Trichloroethane		<	0.50	ug/L						
1,1,2-Trichlorotrifluoroethane		<	1.0	ug/L						
1,1-Dichloroethane		<	1.0	ug/L						
1,1-Dichloroethene		<	1.0	ug/L						
1,1-Dichloropropene		<	1.0	ug/L						
1,2,3-Trichlorobenzene		<	1.0	ug/L						
1,2,3-Trichloropropane		<	0.20	ug/L						
1,2,4-Trichlorobenzene		<	1.0	ug/L						
1,2,4-Trimethylbenzene		<	1.0	ug/L						
1,2-Dibromo-3-chloropropane (DBCP)		<	1.0	ug/L						
1,2-Dibromoethane (EDB)		<	0.50	ug/L						
1,2-Dichlorobenzene		<	1.0	ug/L						
1,2-Dichloroethane		<	0.20	ug/L						
1,2-Dichloropropane		<	1.0	ug/L						
1,3,5-Trimethylbenzene		<	1.0	ug/L						
1,3-Dichlorobenzene		<	1.0	ug/L						
1,3-Dichloropropane		<	1.0	ug/L						
1,4-Dichlorobenzene		<	1.0	ug/L						
2,2-Dichloropropane		<	1.0	ug/L						
2-Chlorotoluene		<	1.0	ug/L						
4-Chlorotoluene		<	1.0	ug/L						
Acetone		<	20	ug/L						
Allyl chloride		<	1.0	ug/L						
Benzene		<	0.50	ug/L						
Bromobenzene		<	1.0	ug/L						
Bromochloromethane		<	1.0	ug/L						
Bromodichloromethane		<	1.0	ug/L						
Bromoform		<	1.0	ug/L						
Bromomethane	V4, Z-01	<	2.0	ug/L						
Carbon tetrachloride		<	0.20	ug/L						
Chlorobenzene		<	1.0	ug/L						
Chlorodibromomethane		<	0.50	ug/L						
Chloroethane		<	1.0	ug/L						

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651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelasi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 05/01/19 14:51

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0043 - EPA 5030B Preparation

Blank (B9D0043-BLK1) **Prepared: 04/03/19 15:45 Analyzed: 04/03/19 15:45**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Chloroform		<	1.0	ug/L						
Chloromethane		<	1.0	ug/L						
cis-1,2-Dichloroethene		<	1.0	ug/L						
cis-1,3-Dichloropropene		<	0.50	ug/L						
Dibromomethane		<	1.0	ug/L						
Dichlorodifluoromethane	V4, Z-01	<	1.0	ug/L						
Dichlorofluoromethane		<	1.0	ug/L						
Ethyl ether		<	1.0	ug/L						
Ethylbenzene		<	1.0	ug/L						
Hexachlorobutadiene		<	0.50	ug/L						
Isopropylbenzene		<	1.0	ug/L						
Methyl ethyl ketone (MEK)		<	10	ug/L						
Methyl isobutyl ketone (MIBK)		<	5.0	ug/L						
Methyl tertiary butyl ether (MTBE)		<	2.0	ug/L						
Methylene chloride		<	1.0	ug/L						
Naphthalene		<	1.0	ug/L						
n-Butylbenzene		<	1.0	ug/L						
n-Propylbenzene		<	1.0	ug/L						
o-Xylene		<	1.0	ug/L						
p&m-Xylene		<	1.0	ug/L						
p-Isopropyltoluene		<	1.0	ug/L						
sec-Butylbenzene		<	1.0	ug/L						
Styrene		<	1.0	ug/L						
tert-Butylbenzene		<	1.0	ug/L						
Tetrachloroethene		<	1.0	ug/L						
Tetrahydrofuran (THF)		<	10	ug/L						
Toluene		<	1.0	ug/L						
trans-1,2-Dichloroethene		<	1.0	ug/L						
trans-1,3-Dichloropropene		<	0.50	ug/L						
Trichloroethene (TCE)		<	0.10	ug/L						
Trichlorofluoromethane		<	1.0	ug/L						
Vinyl chloride		<	0.050	ug/L						

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelasi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 05/01/19 14:51

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0043 - EPA 5030B Preparation

LCS (B9D0043-BS1) **Prepared: 04/03/19 13:54 Analyzed: 04/03/19 13:54**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: 1,2-Dichlorobenzene-d4		*100*	*70-130*	*%*	*10*					
Surrogate: 4-Bromofluorobenzene		*96*	*70-130*	*%*	*10*					
Surrogate: Methyl tertiary butyl ether-d3		*101*	*70-130*	*%*	*10*					
1,1,1,2-Tetrachloroethane		9.6	1.0	ug/L	10		96	70-130		
1,1,1-Trichloroethane		10	1.0	ug/L	10		104	70-130		
1,1,2,2-Tetrachloroethane		9.4	0.50	ug/L	10		94	70-130		
1,1,2-Trichloroethane		10	0.50	ug/L	10		101	70-130		
1,1,2-Trichlorotrifluoroethane		11	1.0	ug/L	10		106	70-130		
1,1-Dichloroethane		10	1.0	ug/L	10		101	70-130		
1,1-Dichloroethene		10	1.0	ug/L	10		103	70-130		
1,1-Dichloropropene		10	1.0	ug/L	10		103	70-130		
1,2,3-Trichlorobenzene		9.6	1.0	ug/L	10		96	70-130		
1,2,3-Trichloropropane		9.2	0.20	ug/L	10		92	70-130		
1,2,4-Trichlorobenzene		9.7	1.0	ug/L	10		97	70-130		
1,2,4-Trimethylbenzene		9.3	1.0	ug/L	10		93	70-130		
1,2-Dibromo-3-chloropropane (DBCP)		8.9	1.0	ug/L	10		89	70-130		
1,2-Dibromoethane (EDB)		9.3	0.50	ug/L	10		93	70-130		
1,2-Dichlorobenzene		9.4	1.0	ug/L	10		94	70-130		
1,2-Dichloroethane		10	0.20	ug/L	10		103	70-130		
1,2-Dichloropropane		10	1.0	ug/L	10		104	70-130		
1,3,5-Trimethylbenzene		9.3	1.0	ug/L	10		93	70-130		
1,3-Dichlorobenzene		9.5	1.0	ug/L	10		95	70-130		
1,3-Dichloropropane		9.5	1.0	ug/L	10		95	70-130		
1,4-Dichlorobenzene		9.4	1.0	ug/L	10		94	70-130		
2,2-Dichloropropane		11	1.0	ug/L	10		108	70-130		
2-Chlorotoluene		9.2	1.0	ug/L	10		92	70-130		
4-Chlorotoluene		9.3	1.0	ug/L	10		93	70-130		
Acetone		98	20	ug/L	100		98	70-130		
Allyl chloride		10	1.0	ug/L	10		100	70-130		
Benzene		10	0.50	ug/L	10		100	70-130		
Bromobenzene		9.3	1.0	ug/L	10		93	70-130		
Bromochloromethane		11	1.0	ug/L	10		107	70-130		
Bromodichloromethane		10	1.0	ug/L	10		104	70-130		
Bromoform		9.9	1.0	ug/L	10		99	70-130		

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelasi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 05/01/19 14:51

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0043 - EPA 5030B Preparation

LCS (B9D0043-BS1) **Prepared: 04/03/19 13:54 Analyzed: 04/03/19 13:54**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Bromomethane	Z-01, V4	7.4	2.0	ug/L	10		74	70-130		
Carbon tetrachloride		11	0.20	ug/L	10		107	70-130		
Chlorobenzene		9.6	1.0	ug/L	10		96	70-130		
Chlorodibromomethane		9.4	0.50	ug/L	10		94	70-130		
Chloroethane		9.8	1.0	ug/L	10		98	70-130		
Chloroform		10	1.0	ug/L	10		104	70-130		
Chloromethane		8.1	1.0	ug/L	10		81	70-130		
cis-1,2-Dichloroethene		10	1.0	ug/L	10		101	70-130		
cis-1,3-Dichloropropene		9.5	0.50	ug/L	10		95	70-130		
Dibromomethane		10	1.0	ug/L	10		104	70-130		
Dichlorodifluoromethane	V4, Z-01	7.8	1.0	ug/L	10		78	70-130		
Dichlorofluoromethane		11	1.0	ug/L	10		107	70-130		
Ethyl ether		10	1.0	ug/L	10		102	70-130		
Ethylbenzene		9.5	1.0	ug/L	10		95	70-130		
Hexachlorobutadiene		9.5	0.50	ug/L	10		95	70-130		
Isopropylbenzene		9.6	1.0	ug/L	10		96	70-130		
Methyl ethyl ketone (MEK)		50	10	ug/L	50		100	70-130		
Methyl isobutyl ketone (MIBK)		49	5.0	ug/L	50		98	70-130		
Methyl tertiary butyl ether (MTBE)		10	2.0	ug/L	10		104	70-130		
Methylene chloride		10	1.0	ug/L	10		101	70-130		
Naphthalene		9.3	1.0	ug/L	10		93	70-130		
n-Butylbenzene		10	1.0	ug/L	10		101	70-130		
n-Propylbenzene		9.7	1.0	ug/L	10		97	70-130		
o-Xylene		9.3	1.0	ug/L	10		93	70-130		
p&m-Xylene		9.4	1.0	ug/L	10		94	70-130		
p-Isopropyltoluene		9.4	1.0	ug/L	10		94	70-130		
sec-Butylbenzene		9.7	1.0	ug/L	10		97	70-130		
Styrene		9.0	1.0	ug/L	10		90	70-130		
tert-Butylbenzene		9.3	1.0	ug/L	10		93	70-130		
Tetrachloroethene		9.8	1.0	ug/L	10		98	70-130		
Tetrahydrofuran (THF)		100	10	ug/L	100		100	70-130		
Toluene		9.3	1.0	ug/L	10		93	70-130		
trans-1,2-Dichloroethene		10	1.0	ug/L	10		102	70-130		
trans-1,3-Dichloropropene		9.8	0.50	ug/L	10		98	70-130		
Trichloroethene (TCE)		9.7	0.10	ug/L	10		97	70-130		

FINAL REPORT

Report ID: 05012019145117

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Paul Moyer, Environmental Laboratory Manager
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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
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St. Paul, MN 55164-0899
651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelasi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 05/01/19 14:51

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0043 - EPA 5030B Preparation

LCS (B9D0043-BS1) **Prepared: 04/03/19 13:54 Analyzed: 04/03/19 13:54**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Trichlorofluoromethane		11	1.0	ug/L	10		105	70-130		
Vinyl chloride		9.2	0.050	ug/L	10		92	70-130		

LCS Dup (B9D0043-BSD1) **Prepared: 04/03/19 14:22 Analyzed: 04/03/19 14:22**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: 1,2-Dichlorobenzene-d4		*100*	*70-130*	*%*	*10*					
Surrogate: 4-Bromofluorobenzene		*97*	*70-130*	*%*	*10*					
Surrogate: Methyl tertiary butyl ether-d3		*98*	*70-130*	*%*	*10*					
1,1,1,2-Tetrachloroethane		10	1.0	ug/L	10		101	70-130	4	30
1,1,1-Trichloroethane		11	1.0	ug/L	10		110	70-130	7	30
1,1,2,2-Tetrachloroethane		9.5	0.50	ug/L	10		95	70-130	1	30
1,1,2-Trichloroethane		9.9	0.50	ug/L	10		99	70-130	2	30
1,1,2-Trichlorotrifluoroethane		11	1.0	ug/L	10		110	70-130	4	30
1,1-Dichloroethane		11	1.0	ug/L	10		106	70-130	4	30
1,1-Dichloroethene		10	1.0	ug/L	10		105	70-130	1	30
1,1-Dichloropropene		11	1.0	ug/L	10		108	70-130	4	30
1,2,3-Trichlorobenzene		9.9	1.0	ug/L	10		99	70-130	3	30
1,2,3-Trichloropropane		9.5	0.20	ug/L	10		95	70-130	3	30
1,2,4-Trichlorobenzene		9.9	1.0	ug/L	10		99	70-130	1	30
1,2,4-Trimethylbenzene		9.7	1.0	ug/L	10		97	70-130	4	30
1,2-Dibromo-3-chloropropane (DBCP)		9.4	1.0	ug/L	10		94	70-130	6	30
1,2-Dibromoethane (EDB)		9.7	0.50	ug/L	10		97	70-130	4	30
1,2-Dichlorobenzene		9.6	1.0	ug/L	10		96	70-130	2	30
1,2-Dichloroethane		11	0.20	ug/L	10		106	70-130	3	30
1,2-Dichloropropane		10	1.0	ug/L	10		105	70-130	1	30
1,3,5-Trimethylbenzene		9.6	1.0	ug/L	10		96	70-130	3	30
1,3-Dichlorobenzene		9.6	1.0	ug/L	10		96	70-130	0.4	30
1,3-Dichloropropane		9.9	1.0	ug/L	10		99	70-130	4	30
1,4-Dichlorobenzene		9.7	1.0	ug/L	10		97	70-130	3	30
2,2-Dichloropropane		11	1.0	ug/L	10		112	70-130	4	30
2-Chlorotoluene		9.8	1.0	ug/L	10		98	70-130	6	30
4-Chlorotoluene		9.7	1.0	ug/L	10		97	70-130	5	30
Acetone		100	20	ug/L	100		102	70-130	4	30

FINAL REPORT

Report ID: 05012019145117

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
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651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelasi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 05/01/19 14:51

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0043 - EPA 5030B Preparation

LCS Dup (B9D0043-BSD1) **Prepared: 04/03/19 14:22 Analyzed: 04/03/19 14:22**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Allyl chloride		10	1.0	ug/L	10		105	70-130	4	30
Benzene		10	0.50	ug/L	10		104	70-130	3	30
Bromobenzene		9.5	1.0	ug/L	10		95	70-130	2	30
Bromochloromethane		11	1.0	ug/L	10		106	70-130	1	30
Bromodichloromethane		11	1.0	ug/L	10		108	70-130	4	30
Bromoform		10	1.0	ug/L	10		100	70-130	1	30
Bromomethane	V4, Z-01	8.1	2.0	ug/L	10		81	70-130	9	30
Carbon tetrachloride		11	0.20	ug/L	10		113	70-130	5	30
Chlorobenzene		10	1.0	ug/L	10		100	70-130	4	30
Chlorodibromomethane		9.8	0.50	ug/L	10		98	70-130	4	30
Chloroethane		10	1.0	ug/L	10		104	70-130	6	30
Chloroform		11	1.0	ug/L	10		106	70-130	3	30
Chloromethane		8.3	1.0	ug/L	10		83	70-130	2	30
cis-1,2-Dichloroethene		10	1.0	ug/L	10		104	70-130	3	30
cis-1,3-Dichloropropene		9.7	0.50	ug/L	10		97	70-130	2	30
Dibromomethane		10	1.0	ug/L	10		104	70-130	0.4	30
Dichlorodifluoromethane	V4, Z-01	8.3	1.0	ug/L	10		83	70-130	6	30
Dichlorofluoromethane		11	1.0	ug/L	10		110	70-130	4	30
Ethyl ether		10	1.0	ug/L	10		101	70-130	1	30
Ethylbenzene		10	1.0	ug/L	10		101	70-130	6	30
Hexachlorobutadiene		10	0.50	ug/L	10		101	70-130	6	30
Isopropylbenzene		10	1.0	ug/L	10		101	70-130	5	30
Methyl ethyl ketone (MEK)		51	10	ug/L	50		103	70-130	3	30
Methyl isobutyl ketone (MIBK)		51	5.0	ug/L	50		102	70-130	4	30
Methyl tertiary butyl ether (MTBE)		10	2.0	ug/L	10		105	70-130	0.4	30
Methylene chloride		10	1.0	ug/L	10		104	70-130	3	30
Naphthalene		9.6	1.0	ug/L	10		96	70-130	3	30
n-Butylbenzene		10	1.0	ug/L	10		105	70-130	4	30
n-Propylbenzene		10	1.0	ug/L	10		101	70-130	4	30
o-Xylene		9.7	1.0	ug/L	10		97	70-130	4	30
p&m-Xylene		10	1.0	ug/L	10		101	70-130	7	30
p-Isopropyltoluene		10	1.0	ug/L	10		100	70-130	5	30
sec-Butylbenzene		10	1.0	ug/L	10		102	70-130	5	30
Styrene		9.3	1.0	ug/L	10		93	70-130	3	30
tert-Butylbenzene		10	1.0	ug/L	10		100	70-130	7	30

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Public Health Laboratory, Minnesota Department of Health

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651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelasi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 05/01/19 14:51

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0043 - EPA 5030B Preparation

LCS Dup (B9D0043-BSD1) **Prepared: 04/03/19 14:22 Analyzed: 04/03/19 14:22**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Tetrachloroethene		10	1.0	ug/L	10		101	70-130	3	30
Tetrahydrofuran (THF)		100	10	ug/L	100		104	70-130	4	30
Toluene		9.8	1.0	ug/L	10		98	70-130	6	30
trans-1,2-Dichloroethene		11	1.0	ug/L	10		107	70-130	5	30
trans-1,3-Dichloropropene		9.9	0.50	ug/L	10		99	70-130	0.1	30
Trichloroethene (TCE)		10	0.10	ug/L	10		102	70-130	5	30
Trichlorofluoromethane		11	1.0	ug/L	10		110	70-130	4	30
Vinyl chloride		9.7	0.050	ug/L	10		97	70-130	6	30

Duplicate (B9D0043-DUP1) Source: 19D0067-07RE2 **Prepared: 04/03/19 17:09 Analyzed: 04/03/19 17:09**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: 1,2-Dichlorobenzene-d4	F5	*99*	*70-130*	*%*	*10*					
Surrogate: 4-Bromofluorobenzene	F5	*98*	*70-130*	*%*	*10*					
Surrogate: Methyl tertiary butyl ether-d3	F5	*101*	*70-130*	*%*	*10*					
1,1,1,2-Tetrachloroethane	D2, F5	<	100	ug/L		<				30
1,1,1-Trichloroethane	D2, F5	<	100	ug/L		<				30
1,1,2,2-Tetrachloroethane	D2, F5	<	50	ug/L		<				30
1,1,2-Trichloroethane	D2, F5	<	50	ug/L		<				30
1,1,2-Trichlorotrifluoroethane	D2, F5	<	100	ug/L		<				30
1,1-Dichloroethane	D2, F5	<	100	ug/L		<				30
1,1-Dichloroethene	D2, F5	<	100	ug/L		<				30
1,1-Dichloropropene	D2, F5	<	100	ug/L		<				30
1,2,3-Trichlorobenzene	F5, D2	<	100	ug/L		<				30
1,2,3-Trichloropropane	D2, F5	<	20	ug/L		<				30
1,2,4-Trichlorobenzene	D2, F5	<	100	ug/L		<				30
1,2,4-Trimethylbenzene	D2, F5	53	100	ug/L		<			12	30
1,2-Dibromo-3-chloropropane (DBCP)	D2, F5	<	100	ug/L		<				30
1,2-Dibromoethane (EDB)	D2, F5	<	50	ug/L		<				30
1,2-Dichlorobenzene	D2, F5	<	100	ug/L		<				30
1,2-Dichloroethane	D2, F5	<	20	ug/L		<				30
1,2-Dichloropropane	D2, F5	<	100	ug/L		<				30
1,3,5-Trimethylbenzene	D2, F5	<	100	ug/L		<				30
1,3-Dichlorobenzene	D2, F5	<	100	ug/L		<				30

FINAL REPORT

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelasi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 05/01/19 14:51

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0043 - EPA 5030B Preparation

Duplicate (B9D0043-DUP1) Source: 19D0067-07RE2 **Prepared: 04/03/19 17:09 Analyzed: 04/03/19 17:09**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,3-Dichloropropane	D2, F5	<	100	ug/L		<				30
1,4-Dichlorobenzene	D2, F5	<	100	ug/L		<				30
2,2-Dichloropropane	D2, F5	<	100	ug/L		<				30
2-Chlorotoluene	D2, F5	<	100	ug/L		<				30
4-Chlorotoluene	D2, F5	<	100	ug/L		<				30
Acetone	D2, F5	8900	2000	ug/L		8600			3	30
Allyl chloride	D2, F5	<	100	ug/L		<				30
Benzene	D2, F5	17	50	ug/L		<				30
Bromobenzene	D2, F5	<	100	ug/L		<				30
Bromochloromethane	D2, F5	<	100	ug/L		<				30
Bromodichloromethane	D2, F5	<	100	ug/L		<				30
Bromoform	D2, F5	<	100	ug/L		<				30
Bromomethane	D2, F5, V4, Z-01	<	200	ug/L		<				30
Carbon tetrachloride	D2, F5	<	20	ug/L		<				30
Chlorobenzene	D2, F5	<	100	ug/L		<				30
Chlorodibromomethane	D2, F5	<	50	ug/L		<				30
Chloroethane	D2, F5	<	100	ug/L		<				30
Chloroform	D2, F5	<	100	ug/L		<				30
Chloromethane	D2, F5	36	100	ug/L		<			18	30
cis-1,2-Dichloroethene	D2, F5	450	100	ug/L		440			0.9	30
cis-1,3-Dichloropropene	D2, F5	<	50	ug/L		<				30
Dibromomethane	D2, F5	<	100	ug/L		<				30
Dichlorodifluoromethane	D2, F5, V4, Z-01	<	100	ug/L		<				30
Dichlorofluoromethane	D2, F5	<	100	ug/L		<				30
Ethyl ether	D2, F5	51	100	ug/L		<			0	30
Ethylbenzene	D2, F5	110	100	ug/L		100			7	30
Hexachlorobutadiene	D2, F5	<	50	ug/L		<				30
Isopropylbenzene	D2, F5	<	100	ug/L		<				30
Methyl ethyl ketone (MEK)	D2, F5	14000	1000	ug/L		14000			0.5	30
Methyl isobutyl ketone (MIBK)	D2, F5	1500	500	ug/L		1400			4	30
Methyl tertiary butyl ether (MTBE)	D2, F5	<	200	ug/L		<				30
Methylene chloride	D2, F5	45	100	ug/L		<			7	30
Naphthalene	D2, F5	<	100	ug/L		<				30
n-Butylbenzene	D2, F5	<	100	ug/L		<				30

FINAL REPORT

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651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelasi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 05/01/19 14:51

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0043 - EPA 5030B Preparation

Duplicate (B9D0043-DUP1) Source: 19D0067-07RE2 **Prepared: 04/03/19 17:09 Analyzed: 04/03/19 17:09**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
n-Propylbenzene	D2, F5	<	100	ug/L		<				30
o-Xylene	D2, F5	98	100	ug/L		<			6	30
p&m-Xylene	D2, F5	260	100	ug/L		240			6	30
p-Isopropyltoluene	D2, F5	<	100	ug/L		<				30
sec-Butylbenzene	D2, F5	<	100	ug/L		<				30
Styrene	D2, F5	28	100	ug/L		<			4	30
tert-Butylbenzene	F5, D2	<	100	ug/L		<				30
Tetrachloroethene	D2, F5	93	100	ug/L		<			8	30
Tetrahydrofuran (THF)	D2, F5	890	1000	ug/L		<			1	30
Toluene	D2, F5	640	100	ug/L		610			4	30
trans-1,2-Dichloroethene	D2, F5	<	100	ug/L		<				30
trans-1,3-Dichloropropene	D2, F5	<	50	ug/L		<				30
Trichloroethene (TCE)	D2, F5	140	10	ug/L		140			4	30
Trichlorofluoromethane	D2, F5	<	100	ug/L		<				30
Vinyl chloride	D2, F5	32	5.0	ug/L		30			6	30

Matrix Spike (B9D0043-MS1) Source: 19D0067-07RE3 **Prepared: 04/03/19 14:50 Analyzed: 04/03/19 14:50**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: 1,2-Dichlorobenzene-d4	F5	*102*	*70-130*	*%*	*10*					
Surrogate: 4-Bromofluorobenzene	F5	*96*	*70-130*	*%*	*10*					
Surrogate: Methyl tertiary butyl ether-d3	F5	*100*	*70-130*	*%*	*10*					
1,1,1,2-Tetrachloroethane	D2, F5	11000	1000	ug/L	10,000	<	109	70-130		
1,1,1-Trichloroethane	D2, F5	11000	1000	ug/L	10,000	<	112	70-130		
1,1,2,2-Tetrachloroethane	D2, F5	9700	500	ug/L	10,000	<	97	70-130		
1,1,2-Trichloroethane	D2, F5	11000	500	ug/L	10,000	<	105	70-130		
1,1,2-Trichlorotrifluoroethane	D2, F5	12000	1000	ug/L	10,000	<	118	70-130		
1,1-Dichloroethane	D2, F5	11000	1000	ug/L	10,000	<	109	70-130		
1,1-Dichloroethene	D2, F5	11000	1000	ug/L	10,000	<	111	70-130		
1,1-Dichloropropene	D2, F5	11000	1000	ug/L	10,000	<	113	70-130		
1,2,3-Trichlorobenzene	D2, F5	10000	1000	ug/L	10,000	<	103	70-130		
1,2,3-Trichloropropane	D2, F5	9800	200	ug/L	10,000	<	98	70-130		
1,2,4-Trichlorobenzene	D2, F5	10000	1000	ug/L	10,000	<	102	70-130		
1,2,4-Trimethylbenzene	D2, F5	10000	1000	ug/L	10,000	<	103	70-130		

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelasi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 05/01/19 14:51

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0043 - EPA 5030B Preparation

Matrix Spike (B9D0043-MS1) Source: 19D0067-07RE3 **Prepared: 04/03/19 14:50 Analyzed: 04/03/19 14:50**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,2-Dibromo-3-chloropropane (DBCP)	D2, F5	9200	1000	ug/L	10,000	<	92	70-130		
1,2-Dibromoethane (EDB)	F5, D2	10000	500	ug/L	10,000	<	104	70-130		
1,2-Dichlorobenzene	D2, F5	10000	1000	ug/L	10,000	<	100	70-130		
1,2-Dichloroethane	D2, F5	11000	200	ug/L	10,000	<	108	70-130		
1,2-Dichloropropane	D2, F5	11000	1000	ug/L	10,000	<	110	70-130		
1,3,5-Trimethylbenzene	D2, F5	10000	1000	ug/L	10,000	<	102	70-130		
1,3-Dichlorobenzene	D2, F5	10000	1000	ug/L	10,000	<	102	70-130		
1,3-Dichloropropane	D2, F5	11000	1000	ug/L	10,000	<	106	70-130		
1,4-Dichlorobenzene	D2, F5	10000	1000	ug/L	10,000	<	101	70-130		
2,2-Dichloropropane	D2, F5	12000	1000	ug/L	10,000	<	119	70-130		
2-Chlorotoluene	D2, F5	10000	1000	ug/L	10,000	<	101	70-130		
4-Chlorotoluene	D2, F5	10000	1000	ug/L	10,000	<	100	70-130		
Acetone	D2, F5	110000	20000	ug/L	100,000	<	99	70-130		
Allyl chloride	D2, F5	11000	1000	ug/L	10,000	<	108	70-130		
Benzene	D2, F5	11000	500	ug/L	10,000	<	108	70-130		
Bromobenzene	D2, F5	10000	1000	ug/L	10,000	<	100	70-130		
Bromochloromethane	D2, F5	11000	1000	ug/L	10,000	<	111	70-130		
Bromodichloromethane	D2, F5	11000	1000	ug/L	10,000	<	109	70-130		
Bromoform	D2, F5	10000	1000	ug/L	10,000	<	105	70-130		
Bromomethane	Z-01, D2, F5, V4	8800	2000	ug/L	10,000	<	88	70-130		
Carbon tetrachloride	D2, F5	12000	200	ug/L	10,000	<	117	70-130		
Chlorobenzene	D2, F5	11000	1000	ug/L	10,000	<	107	70-130		
Chlorodibromomethane	D2, F5	10000	500	ug/L	10,000	<	103	70-130		
Chloroethane	D2, F5	11000	1000	ug/L	10,000	<	110	70-130		
Chloroform	D2, F5	11000	1000	ug/L	10,000	<	110	70-130		
Chloromethane	D2, F5	8900	1000	ug/L	10,000	<	86	70-130		
cis-1,2-Dichloroethene	D2, F5	11000	1000	ug/L	10,000	<	106	70-130		
cis-1,3-Dichloropropene	F5, D2	10000	500	ug/L	10,000	<	105	70-130		
Dibromomethane	D2, F5	11000	1000	ug/L	10,000	<	111	70-130		
Dichlorodifluoromethane	D2, F5, V4, Z-01	8700	1000	ug/L	10,000	<	87	70-130		
Dichlorofluoromethane	D2, F5	11000	1000	ug/L	10,000	<	115	70-130		
Ethyl ether	D2, F5	10000	1000	ug/L	10,000	<	105	70-130		
Ethylbenzene	D2, F5	11000	1000	ug/L	10,000	<	108	70-130		

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651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelasi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 05/01/19 14:51

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0043 - EPA 5030B Preparation

Matrix Spike (B9D0043-MS1) Source: 19D0067-07RE3 **Prepared: 04/03/19 14:50 Analyzed: 04/03/19 14:50**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Hexachlorobutadiene	D2, F5	11000	500	ug/L	10,000	<	105	70-130		
Isopropylbenzene	D2, F5	11000	1000	ug/L	10,000	<	108	70-130		
Methyl ethyl ketone (MEK)	D2, F5	64000	10000	ug/L	50,000	13000	102	70-130		
Methyl isobutyl ketone (MIBK)	F5, D2	54000	5000	ug/L	50,000	<	106	70-130		
Methyl tertiary butyl ether (MTBE)	D2, F5	11000	2000	ug/L	10,000	<	110	70-130		
Methylene chloride	D2, F5	11000	1000	ug/L	10,000	<	110	70-130		
Naphthalene	D2, F5	9800	1000	ug/L	10,000	<	98	70-130		
n-Butylbenzene	D2, F5	11000	1000	ug/L	10,000	<	110	70-130		
n-Propylbenzene	D2, F5	11000	1000	ug/L	10,000	<	105	70-130		
o-Xylene	D2, F5	10000	1000	ug/L	10,000	<	104	70-130		
p&m-Xylene	D2, F5	11000	1000	ug/L	10,000	<	109	70-130		
p-Isopropyltoluene	D2, F5	10000	1000	ug/L	10,000	<	104	70-130		
sec-Butylbenzene	D2, F5	11000	1000	ug/L	10,000	<	106	70-130		
Styrene	D2, F5	10000	1000	ug/L	10,000	<	100	70-130		
tert-Butylbenzene	D2, F5	10000	1000	ug/L	10,000	<	104	70-130		
Tetrachloroethene	D2, F5	11000	1000	ug/L	10,000	<	109	70-130		
Tetrahydrofuran (THF)	D2, F5	100000	10000	ug/L	100,000	<	100	70-130		
Toluene	D2, F5	11000	1000	ug/L	10,000	<	104	70-130		
trans-1,2-Dichloroethene	D2, F5	11000	1000	ug/L	10,000	<	108	70-130		
trans-1,3-Dichloropropene	D2, F5	11000	500	ug/L	10,000	<	108	70-130		
Trichloroethene (TCE)	D2, F5	11000	100	ug/L	10,000	150	106	70-130		
Trichlorofluoromethane	D2, F5	12000	1000	ug/L	10,000	<	116	70-130		
Vinyl chloride	D2, F5	11000	50	ug/L	10,000	<	105	70-130		

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelasi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 05/01/19 14:51

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0396 - 1,4 Dioxane in Water SPE

Blank (B9D0396-BLK1) **Prepared: 04/23/19 08:00 Analyzed: 04/24/19 10:18**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,4-Dioxane		<	0.049	ug/L						

LCS (B9D0396-BS1) **Prepared: 04/23/19 08:00 Analyzed: 04/24/19 10:34**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,4-Dioxane		0.20	0.049	ug/L	0.19		103	80-120		

Duplicate (B9D0396-DUP1) Source: 19C1238-20 **Prepared: 04/23/19 08:00 Analyzed: 04/24/19 12:10**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,4-Dioxane		0.073	0.049	ug/L		0.067			10	30

Matrix Spike (B9D0396-MS1) Source: 19C1238-21 **Prepared: 04/23/19 08:00 Analyzed: 04/24/19 12:42**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,4-Dioxane		1.4	0.050	ug/L	0.44	0.91	110	70-130		

Batch B9D0423 - 1,4 Dioxane in Water SPE

Blank (B9D0423-BLK1) **Prepared: 04/24/19 08:00 Analyzed: 04/26/19 11:55**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,4-Dioxane		<	0.051	ug/L						

LCS (B9D0423-BS1) **Prepared: 04/24/19 08:00 Analyzed: 04/26/19 12:11**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,4-Dioxane		0.21	0.051	ug/L	0.20		100	80-120		

Duplicate (B9D0423-DUP1) Source: 19D0434-02 **Prepared: 04/24/19 08:00 Analyzed: 04/26/19 14:51**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,4-Dioxane		0.23	0.052	ug/L		0.20			15	30

Matrix Spike (B9D0423-MS1) Source: 19D0434-03 **Prepared: 04/24/19 08:00 Analyzed: 04/26/19 15:38**

FINAL REPORT

Report ID: 05012019145117

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelasi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 05/01/19 14:51

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0423 - 1,4 Dioxane in Water SPE

Matrix Spike (B9D0423-MS1) Source: 19D0434-03 **Prepared: 04/24/19 08:00 Analyzed: 04/26/19 15:38**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,4-Dioxane		0.48	0.051	ug/L	0.45	<	105	70-130		

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelasi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 05/01/19 14:51

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Batch B9D0230 - PFCs Preparation

Blank (B9D0230-BLK1) — **Prepared: 04/12/19 12:59 Analyzed: 04/12/19 12:59**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		<	0.050	ug/L						
Perfluorobutanoic acid (PFBA)		<	0.050	ug/L						
Perfluorohexanesulfonate (PFHxS)		<	0.025	ug/L						
Perfluorohexanoic acid (PFHxA)		<	0.050	ug/L						
Perfluorooctanesulfonate (PFOS)		<	0.025	ug/L						
Perfluorooctanoic acid (PFOA)		<	0.035	ug/L						
Perfluoropentanoic acid (PFPeA)		<	0.050	ug/L						

Blank (B9D0230-BLK2) — **Prepared: 04/12/19 18:46 Analyzed: 04/12/19 18:46**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		<	0.050	ug/L						
Perfluorobutanoic acid (PFBA)		<	0.050	ug/L						
Perfluorohexanesulfonate (PFHxS)		<	0.025	ug/L						
Perfluorohexanoic acid (PFHxA)		<	0.050	ug/L						
Perfluorooctanesulfonate (PFOS)		<	0.025	ug/L						
Perfluorooctanoic acid (PFOA)		<	0.035	ug/L						
Perfluoropentanoic acid (PFPeA)		<	0.050	ug/L						

LCS (B9D0230-BS1) — **Prepared: 04/12/19 12:51 Analyzed: 04/12/19 12:51**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.50	0.050	ug/L	0.50		101	80-120		
Perfluorobutanoic acid (PFBA)		0.51	0.050	ug/L	0.5		103	80-120		
Perfluorohexanesulfonate (PFHxS)		0.55	0.025	ug/L	0.50		109	80-120		
Perfluorohexanoic acid (PFHxA)		0.53	0.050	ug/L	0.5		107	80-120		
Perfluorooctanesulfonate (PFOS)		0.52	0.025	ug/L	0.49		104	80-120		
Perfluorooctanoic acid (PFOA)		0.52	0.035	ug/L	0.5		105	80-120		
Perfluoropentanoic acid (PFPeA)		0.49	0.050	ug/L	0.5		98	80-120		

LCS Dup (B9D0230-BSD1) — **Prepared: 04/12/19 18:38 Analyzed: 04/12/19 18:38**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.53	0.050	ug/L	0.50		107	80-120	6	20
Perfluorobutanoic acid (PFBA)		0.53	0.050	ug/L	0.5		106	80-120	3	20
Perfluorohexanesulfonate (PFHxS)		0.52	0.025	ug/L	0.50		103	80-120	6	20

FINAL REPORT

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelasi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 05/01/19 14:51

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0230 - PFCs Preparation

LCS Dup (B9D0230-BSD1) — **Prepared: 04/12/19 18:38 Analyzed: 04/12/19 18:38**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorohexanoic acid (PFHxA)		0.50	0.050	ug/L	0.5		100	80-120	6	20
Perfluorooctanesulfonate (PFOS)		0.52	0.025	ug/L	0.49		105	80-120	0.8	20
Perfluorooctanoic acid (PFOA)		0.55	0.035	ug/L	0.5		111	80-120	6	20
Perfluoropentanoic acid (PFPeA)		0.52	0.050	ug/L	0.5		105	80-120	6	20

Duplicate (B9D0230-DUP1) — Source: 19D0067-02 — **Prepared: 04/12/19 13:24 Analyzed: 04/12/19 13:24**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		<	0.050	ug/L		<				20
Perfluorobutanoic acid (PFBA)	J, WB	0.019	0.050	ug/L		<			23	20
Perfluorohexanesulfonate (PFHxS)		<	0.025	ug/L		<				20
Perfluorohexanoic acid (PFHxA)		<	0.050	ug/L		<				20
Perfluorooctanesulfonate (PFOS)		<	0.025	ug/L		<				20
Perfluorooctanoic acid (PFOA)		<	0.035	ug/L		<				20
Perfluoropentanoic acid (PFPeA)		<	0.050	ug/L		<				20

Matrix Spike (B9D0230-MS1) — Source: 19D0067-02 — **Prepared: 04/12/19 13:16 Analyzed: 04/12/19 13:16**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.53	0.050	ug/L	0.50	<	105	70-130		
Perfluorobutanoic acid (PFBA)		0.52	0.050	ug/L	0.5	<	99	70-130		
Perfluorohexanesulfonate (PFHxS)		0.54	0.025	ug/L	0.50	<	107	70-130		
Perfluorohexanoic acid (PFHxA)		0.52	0.050	ug/L	0.5	<	104	70-130		
Perfluorooctanesulfonate (PFOS)		0.51	0.025	ug/L	0.49	<	101	70-130		
Perfluorooctanoic acid (PFOA)		0.49	0.035	ug/L	0.5	<	98	70-130		
Perfluoropentanoic acid (PFPeA)		0.52	0.050	ug/L	0.5	<	105	70-130		

Matrix Spike (B9D0230-MS2) — Source: 19D0067-03 — **Prepared: 04/12/19 13:48 Analyzed: 04/12/19 13:48**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.53	0.050	ug/L	0.50	<	105	70-130		
Perfluorobutanoic acid (PFBA)		0.55	0.050	ug/L	0.5	<	101	70-130		
Perfluorohexanesulfonate (PFHxS)		0.54	0.025	ug/L	0.50	<	108	70-130		
Perfluorohexanoic acid (PFHxA)		0.50	0.050	ug/L	0.5	<	99	70-130		
Perfluorooctanesulfonate (PFOS)		0.50	0.025	ug/L	0.49	<	99	70-130		
Perfluorooctanoic acid (PFOA)		0.55	0.035	ug/L	0.5	<	109	70-130		

FINAL REPORT

Report ID: 05012019145117

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelasi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 05/01/19 14:51

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0230 - PFCs Preparation

Matrix Spike (B9D0230-MS2) Source: 19D0067-03 **Prepared: 04/12/19 13:48 Analyzed: 04/12/19 13:48**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluoropentanoic acid (PFPeA)		0.53	0.050	ug/L	0.5	<	105	70-130		

Matrix Spike (B9D0230-MS3) Source: 19D0067-04 **Prepared: 04/12/19 14:04 Analyzed: 04/12/19 14:04**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.53	0.050	ug/L	0.50	<	105	70-130		
Perfluorobutanoic acid (PFBA)		0.57	0.050	ug/L	0.5	0.056	103	70-130		
Perfluorohexanesulfonate (PFHxS)		0.56	0.025	ug/L	0.50	<	112	70-130		
Perfluorohexanoic acid (PFHxA)		0.49	0.050	ug/L	0.5	<	94	70-130		
Perfluorooctanesulfonate (PFOS)		0.50	0.025	ug/L	0.49	<	100	70-130		
Perfluorooctanoic acid (PFOA)		0.57	0.035	ug/L	0.5	0.068	100	70-130		
Perfluoropentanoic acid (PFPeA)		0.52	0.050	ug/L	0.5	<	102	70-130		

Matrix Spike (B9D0230-MS4) Source: 19D0067-05 **Prepared: 04/12/19 14:20 Analyzed: 04/12/19 14:20**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.57	0.050	ug/L	0.50	0.066	101	70-130		
Perfluorobutanoic acid (PFBA)		1.3	0.050	ug/L	0.5	0.78	101	70-130		
Perfluorohexanesulfonate (PFHxS)		0.60	0.025	ug/L	0.50	0.087	103	70-130		
Perfluorohexanoic acid (PFHxA)		0.84	0.050	ug/L	0.5	0.30	108	70-130		
Perfluorooctanesulfonate (PFOS)		0.59	0.025	ug/L	0.49	0.063	105	70-130		
Perfluorooctanoic acid (PFOA)		0.75	0.035	ug/L	0.5	0.20	110	70-130		
Perfluoropentanoic acid (PFPeA)		0.73	0.050	ug/L	0.5	0.24	97	70-130		

Matrix Spike (B9D0230-MS6) Source: 19D0067-07 **Prepared: 04/12/19 14:52 Analyzed: 04/12/19 14:52**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)	D1	2.8	0.25	ug/L	2.50	<	110	70-130		
Perfluorobutanoic acid (PFBA)	D1	6.4	0.25	ug/L	2.5	4.0	96	70-130		
Perfluorohexanesulfonate (PFHxS)	D1	2.9	0.12	ug/L	2.50	0.26	105	70-130		
Perfluorohexanoic acid (PFHxA)	D1	3.3	0.25	ug/L	2.5	0.80	98	70-130		
Perfluorooctanesulfonate (PFOS)	D1	3.0	0.12	ug/L	2.49	0.48	101	70-130		
Perfluorooctanoic acid (PFOA)	D1	3.1	0.18	ug/L	2.5	0.53	101	70-130		
Perfluoropentanoic acid (PFPeA)	D1	3.0	0.25	ug/L	2.5	0.59	98	70-130		

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St. Paul, MN 55164-0899
651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelasi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 05/01/19 14:51

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0230 - PFCs Preparation

Matrix Spike (B9D0230-MS7) Source: 19D0067-08 **Prepared: 04/12/19 15:09 Analyzed: 04/12/19 15:09**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.51	0.050	ug/L	0.50	<	99	70-130		
Perfluorobutanoic acid (PFBA)		0.59	0.050	ug/L	0.5	0.088	100	70-130		
Perfluorohexanesulfonate (PFHxS)		0.54	0.025	ug/L	0.50	0.029	102	70-130		
Perfluorohexanoic acid (PFHxA)		0.56	0.050	ug/L	0.5	0.051	102	70-130		
Perfluorooctanesulfonate (PFOS)		0.57	0.025	ug/L	0.49	0.046	105	70-130		
Perfluorooctanoic acid (PFOA)		0.62	0.035	ug/L	0.5	0.061	112	70-130		
Perfluoropentanoic acid (PFPeA)		0.55	0.050	ug/L	0.5	<	100	70-130		

Matrix Spike (B9D0230-MS8) Source: 19D0244-02 **Prepared: 04/12/19 15:25 Analyzed: 04/12/19 15:25**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.55	0.050	ug/L	0.50	<	104	70-130		
Perfluorobutanoic acid (PFBA)		0.59	0.050	ug/L	0.5	0.078	102	70-130		
Perfluorohexanesulfonate (PFHxS)		0.63	0.025	ug/L	0.50	0.12	102	70-130		
Perfluorohexanoic acid (PFHxA)		0.59	0.050	ug/L	0.5	0.085	101	70-130		
Perfluorooctanesulfonate (PFOS)		0.67	0.025	ug/L	0.49	0.12	111	70-130		
Perfluorooctanoic acid (PFOA)		1.4	0.035	ug/L	0.5	0.93	84	70-130		
Perfluoropentanoic acid (PFPeA)		0.57	0.050	ug/L	0.5	<	106	70-130		

Matrix Spike (B9D0230-MS9) Source: 19D0244-03 **Prepared: 04/12/19 15:41 Analyzed: 04/12/19 15:41**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.58	0.050	ug/L	0.50	0.060	103	70-130		
Perfluorobutanoic acid (PFBA)		1.4	0.050	ug/L	0.5	0.92	92	70-130		
Perfluorohexanesulfonate (PFHxS)		0.72	0.025	ug/L	0.50	0.15	113	70-130		
Perfluorohexanoic acid (PFHxA)		1.7	0.050	ug/L	0.5	1.2	95	70-130		
Perfluorooctanesulfonate (PFOS)		0.92	0.025	ug/L	0.49	0.43	98	70-130		
Perfluoropentanoic acid (PFPeA)		1.1	0.050	ug/L	0.5	0.62	91	70-130		

Matrix Spike (B9D0230-MSA) Source: 19D0244-04 **Prepared: 04/12/19 15:57 Analyzed: 04/12/19 15:57**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.52	0.050	ug/L	0.50	<	100	70-130		
Perfluorobutanoic acid (PFBA)		0.63	0.050	ug/L	0.5	0.10	104	70-130		
Perfluorohexanesulfonate (PFHxS)		0.74	0.025	ug/L	0.50	0.21	105	70-130		
Perfluorohexanoic acid (PFHxA)		0.66	0.050	ug/L	0.5	0.15	102	70-130		

FINAL REPORT

Report ID: 05012019145117

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelasi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 05/01/19 14:51

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0230 - PFCs Preparation

Matrix Spike (B9D0230-MSA) Source: 19D0244-04 **Prepared: 04/12/19 15:57 Analyzed: 04/12/19 15:57**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorooctanesulfonate (PFOS)		2.2	0.025	ug/L	0.49	1.6	111	70-130		
Perfluorooctanoic acid (PFOA)		2.6	0.035	ug/L	0.5	2.1	98	70-130		
Perfluoropentanoic acid (PFPeA)		0.57	0.050	ug/L	0.5	0.070	100	70-130		

Matrix Spike (B9D0230-MSB) Source: 19D0244-05 **Prepared: 04/12/19 16:13 Analyzed: 04/12/19 16:13**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.51	0.050	ug/L	0.50	<	101	70-130		
Perfluorobutanoic acid (PFBA)		0.50	0.050	ug/L	0.5	<	100	70-130		
Perfluorohexanesulfonate (PFHxS)		0.51	0.025	ug/L	0.50	<	102	70-130		
Perfluorohexanoic acid (PFHxA)		0.51	0.050	ug/L	0.5	<	103	70-130		
Perfluorooctanesulfonate (PFOS)		0.52	0.025	ug/L	0.49	<	104	70-130		
Perfluorooctanoic acid (PFOA)		0.54	0.035	ug/L	0.5	<	107	70-130		
Perfluoropentanoic acid (PFPeA)		0.52	0.050	ug/L	0.5	<	104	70-130		

Matrix Spike (B9D0230-MSC) Source: 19D0244-06 **Prepared: 04/12/19 16:29 Analyzed: 04/12/19 16:29**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.59	0.050	ug/L	0.50	0.065	106	70-130		
Perfluorobutanoic acid (PFBA)		0.59	0.050	ug/L	0.5	0.056	107	70-130		
Perfluorohexanesulfonate (PFHxS)		0.65	0.025	ug/L	0.50	0.12	106	70-130		
Perfluorohexanoic acid (PFHxA)		0.68	0.050	ug/L	0.5	0.21	95	70-130		
Perfluorooctanesulfonate (PFOS)		0.79	0.025	ug/L	0.49	0.28	103	70-130		
Perfluorooctanoic acid (PFOA)		1.4	0.035	ug/L	0.5	0.95	89	70-130		
Perfluoropentanoic acid (PFPeA)		0.59	0.050	ug/L	0.5	0.076	103	70-130		

Matrix Spike (B9D0230-MSD) Source: 19D0293-01 **Prepared: 04/12/19 16:45 Analyzed: 04/12/19 16:45**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.51	0.050	ug/L	0.50	<	103	70-130		
Perfluorobutanoic acid (PFBA)		0.69	0.050	ug/L	0.5	0.20	99	70-130		
Perfluorohexanesulfonate (PFHxS)		0.53	0.025	ug/L	0.50	<	106	70-130		
Perfluorohexanoic acid (PFHxA)		0.52	0.050	ug/L	0.5	<	104	70-130		
Perfluorooctanesulfonate (PFOS)		0.56	0.025	ug/L	0.49	0.043	103	70-130		
Perfluorooctanoic acid (PFOA)		0.51	0.035	ug/L	0.5	<	96	70-130		
Perfluoropentanoic acid (PFPeA)		0.50	0.050	ug/L	0.5	<	100	70-130		

FINAL REPORT

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelasi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 05/01/19 14:51

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0230 - PFCs Preparation

Matrix Spike Dup (B9D0230-MSD1) Source: 19D0067-02 **Prepared: 04/12/19 13:32 Analyzed: 04/12/19 13:32**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.55	0.050	ug/L	0.50	<	109	70-130	4	20
Perfluorobutanoic acid (PFBA)		0.55	0.050	ug/L	0.5	<	105	70-130	5	20
Perfluorohexanesulfonate (PFHxS)		0.50	0.025	ug/L	0.50	<	101	70-130	6	20
Perfluorohexanoic acid (PFHxA)		0.48	0.050	ug/L	0.5	<	97	70-130	7	20
Perfluorooctanesulfonate (PFOS)		0.50	0.025	ug/L	0.49	<	100	70-130	0.7	20
Perfluorooctanoic acid (PFOA)		0.53	0.035	ug/L	0.5	<	105	70-130	7	20
Perfluoropentanoic acid (PFPeA)		0.50	0.050	ug/L	0.5	<	100	70-130	5	20

Matrix Spike (B9D0230-MSE) Source: 19D0293-02 **Prepared: 04/12/19 17:01 Analyzed: 04/12/19 17:01**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.50	0.050	ug/L	0.50	<	101	70-130		
Perfluorobutanoic acid (PFBA)		0.52	0.050	ug/L	0.5	<	104	70-130		
Perfluorohexanesulfonate (PFHxS)		0.52	0.025	ug/L	0.50	<	105	70-130		
Perfluorohexanoic acid (PFHxA)		0.50	0.050	ug/L	0.5	<	101	70-130		
Perfluorooctanesulfonate (PFOS)		0.52	0.025	ug/L	0.49	<	105	70-130		
Perfluorooctanoic acid (PFOA)		0.52	0.035	ug/L	0.5	<	105	70-130		
Perfluoropentanoic acid (PFPeA)		0.53	0.050	ug/L	0.5	<	106	70-130		

Matrix Spike (B9D0230-MSF) Source: 19D0293-03 **Prepared: 04/12/19 17:17 Analyzed: 04/12/19 17:17**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.50	0.050	ug/L	0.50	<	100	70-130		
Perfluorobutanoic acid (PFBA)		0.52	0.050	ug/L	0.5	<	104	70-130		
Perfluorohexanesulfonate (PFHxS)		0.50	0.025	ug/L	0.50	<	99	70-130		
Perfluorohexanoic acid (PFHxA)		0.48	0.050	ug/L	0.5	<	96	70-130		
Perfluorooctanesulfonate (PFOS)		0.52	0.025	ug/L	0.49	<	104	70-130		
Perfluorooctanoic acid (PFOA)		0.54	0.035	ug/L	0.5	<	107	70-130		
Perfluoropentanoic acid (PFPeA)		0.51	0.050	ug/L	0.5	<	102	70-130		

Matrix Spike (B9D0230-MSG) Source: 19D0293-04 **Prepared: 04/12/19 17:34 Analyzed: 04/12/19 17:34**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.51	0.050	ug/L	0.50	<	102	70-130		
Perfluorobutanoic acid (PFBA)		0.72	0.050	ug/L	0.5	0.20	104	70-130		

FINAL REPORT

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelasi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 05/01/19 14:51

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0230 - PFCs Preparation

Matrix Spike (B9D0230-MSG) Source: 19D0293-04 **Prepared: 04/12/19 17:34 Analyzed: 04/12/19 17:34**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorohexanesulfonate (PFHxS)		0.51	0.025	ug/L	0.50	<	101	70-130		
Perfluorohexanoic acid (PFHxA)		0.50	0.050	ug/L	0.5	<	99	70-130		
Perfluorooctanesulfonate (PFOS)		0.52	0.025	ug/L	0.49	<	104	70-130		
Perfluorooctanoic acid (PFOA)		0.55	0.035	ug/L	0.5	<	109	70-130		
Perfluoropentanoic acid (PFPeA)		0.51	0.050	ug/L	0.5	<	102	70-130		

Matrix Spike (B9D0230-MSH) Source: 19D0293-05 **Prepared: 04/12/19 17:50 Analyzed: 04/12/19 17:50**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.56	0.050	ug/L	0.50	<	111	70-130		
Perfluorobutanoic acid (PFBA)		0.69	0.050	ug/L	0.5	0.20	98	70-130		
Perfluorohexanesulfonate (PFHxS)		0.53	0.025	ug/L	0.50	<	106	70-130		
Perfluorohexanoic acid (PFHxA)		0.47	0.050	ug/L	0.5	<	95	70-130		
Perfluorooctanesulfonate (PFOS)		0.52	0.025	ug/L	0.49	<	105	70-130		
Perfluorooctanoic acid (PFOA)		0.52	0.035	ug/L	0.5	<	105	70-130		
Perfluoropentanoic acid (PFPeA)		0.51	0.050	ug/L	0.5	<	102	70-130		

Matrix Spike (B9D0230-MSI) Source: 19D0293-06 **Prepared: 04/12/19 18:06 Analyzed: 04/12/19 18:06**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.51	0.050	ug/L	0.50	<	103	70-130		
Perfluorobutanoic acid (PFBA)		0.74	0.050	ug/L	0.5	0.24	101	70-130		
Perfluorohexanesulfonate (PFHxS)		0.54	0.025	ug/L	0.50	<	107	70-130		
Perfluorohexanoic acid (PFHxA)		0.52	0.050	ug/L	0.5	<	100	70-130		
Perfluorooctanesulfonate (PFOS)		0.56	0.025	ug/L	0.49	0.032	107	70-130		
Perfluorooctanoic acid (PFOA)		0.54	0.035	ug/L	0.5	<	102	70-130		
Perfluoropentanoic acid (PFPeA)		0.53	0.050	ug/L	0.5	<	105	70-130		

Matrix Spike (B9D0230-MSJ) Source: 19D0293-07 **Prepared: 04/12/19 18:22 Analyzed: 04/12/19 18:22**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.50	0.050	ug/L	0.50	<	100	70-130		
Perfluorobutanoic acid (PFBA)		0.53	0.050	ug/L	0.5	<	106	70-130		
Perfluorohexanesulfonate (PFHxS)		0.50	0.025	ug/L	0.50	<	100	70-130		
Perfluorohexanoic acid (PFHxA)		0.49	0.050	ug/L	0.5	<	97	70-130		
Perfluorooctanesulfonate (PFOS)		0.53	0.025	ug/L	0.49	<	106	70-130		

FINAL REPORT

Report ID: 05012019145117

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelasi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 05/01/19 14:51

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0230 - PFCs Preparation

Matrix Spike (B9D0230-MSJ) Source: 19D0293-07 **Prepared: 04/12/19 18:22 Analyzed: 04/12/19 18:22**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorooctanoic acid (PFOA)		0.54	0.035	ug/L	0.5	<	108	70-130		
Perfluoropentanoic acid (PFPeA)		0.54	0.050	ug/L	0.5	<	107	70-130		

Batch B9D0274 - PFCs Preparation

Blank (B9D0274-BLK1) **Prepared: 04/15/19 16:09 Analyzed: 04/15/19 16:09**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		<	0.050	ug/L						
Perfluorobutanoic acid (PFBA)		<	0.050	ug/L						
Perfluorohexanesulfonate (PFHxS)		<	0.025	ug/L						
Perfluorohexanoic acid (PFHxA)		<	0.050	ug/L						
Perfluorooctanesulfonate (PFOS)		<	0.025	ug/L						
Perfluorooctanoic acid (PFOA)		<	0.035	ug/L						
Perfluoropentanoic acid (PFPeA)		<	0.050	ug/L						

Blank (B9D0274-BLK2) **Prepared: 04/15/19 21:40 Analyzed: 04/15/19 21:40**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		<	0.050	ug/L						
Perfluorobutanoic acid (PFBA)		<	0.050	ug/L						
Perfluorohexanesulfonate (PFHxS)		<	0.025	ug/L						
Perfluorohexanoic acid (PFHxA)		<	0.050	ug/L						
Perfluorooctanesulfonate (PFOS)		<	0.025	ug/L						
Perfluorooctanoic acid (PFOA)		<	0.035	ug/L						
Perfluoropentanoic acid (PFPeA)		<	0.050	ug/L						

LCS (B9D0274-BS1) **Prepared: 04/15/19 16:01 Analyzed: 04/15/19 16:01**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.51	0.050	ug/L	0.50		102	80-120		
Perfluorobutanoic acid (PFBA)		0.52	0.050	ug/L	0.5		105	80-120		
Perfluorohexanesulfonate (PFHxS)		0.51	0.025	ug/L	0.50		102	80-120		
Perfluorohexanoic acid (PFHxA)		0.53	0.050	ug/L	0.5		106	80-120		
Perfluorooctanesulfonate (PFOS)		0.54	0.025	ug/L	0.49		108	80-120		
Perfluorooctanoic acid (PFOA)		0.52	0.035	ug/L	0.5		104	80-120		

FINAL REPORT

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelasi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 05/01/19 14:51

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0274 - PFCs Preparation

LCS (B9D0274-BS1) **Prepared: 04/15/19 16:01 Analyzed: 04/15/19 16:01**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluoropentanoic acid (PFPeA)		0.52	0.050	ug/L	0.5		105	80-120		

LCS Dup (B9D0274-BSD1) **Prepared: 04/15/19 21:32 Analyzed: 04/15/19 21:32**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.50	0.050	ug/L	0.50		100	80-120	2	20
Perfluorobutanoic acid (PFBA)		0.54	0.050	ug/L	0.5		108	80-120	3	20
Perfluorohexanesulfonate (PFHxS)		0.55	0.025	ug/L	0.50		110	80-120	7	20
Perfluorohexanoic acid (PFHxA)		0.53	0.050	ug/L	0.5		106	80-120	0.6	20
Perfluorooctanesulfonate (PFOS)		0.52	0.025	ug/L	0.49		104	80-120	3	20
Perfluorooctanoic acid (PFOA)		0.48	0.035	ug/L	0.5		97	80-120	7	20
Perfluoropentanoic acid (PFPeA)		0.54	0.050	ug/L	0.5		108	80-120	3	20

Duplicate (B9D0274-DUP1) Source: 19D0380-01 **Prepared: 04/15/19 17:06 Analyzed: 04/15/19 17:06**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		<	0.050	ug/L		<				20
Perfluorobutanoic acid (PFBA)		0.19	0.050	ug/L		0.17			10	20
Perfluorohexanesulfonate (PFHxS)		<	0.025	ug/L		<				20
Perfluorohexanoic acid (PFHxA)		<	0.050	ug/L		<				20
Perfluorooctanesulfonate (PFOS)		<	0.025	ug/L		<				20
Perfluorooctanoic acid (PFOA)		<	0.035	ug/L		<				20
Perfluoropentanoic acid (PFPeA)		<	0.050	ug/L		<				20

Matrix Spike (B9D0274-MS1) Source: 19D0380-01 **Prepared: 04/15/19 16:58 Analyzed: 04/15/19 16:58**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.51	0.050	ug/L	0.50	<	102	70-130		
Perfluorobutanoic acid (PFBA)		0.70	0.050	ug/L	0.5	0.17	107	70-130		
Perfluorohexanesulfonate (PFHxS)		0.51	0.025	ug/L	0.50	<	101	70-130		
Perfluorohexanoic acid (PFHxA)		0.50	0.050	ug/L	0.5	<	100	70-130		
Perfluorooctanesulfonate (PFOS)		0.52	0.025	ug/L	0.49	<	104	70-130		
Perfluorooctanoic acid (PFOA)		0.53	0.035	ug/L	0.5	<	106	70-130		
Perfluoropentanoic acid (PFPeA)		0.53	0.050	ug/L	0.5	<	106	70-130		

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelasi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 05/01/19 14:51

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0274 - PFCs Preparation

Matrix Spike (B9D0274-MS3) Source: 19D0244-03RE1 **Prepared: 04/15/19 16:42 Analyzed: 04/15/19 16:42**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorooctanoic acid (PFOA)	D1	16	0.18	ug/L	2.5	13	110	70-130		

Matrix Spike (B9D0274-MS4) Source: 19D0380-02 **Prepared: 04/15/19 17:30 Analyzed: 04/15/19 17:30**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.52	0.050	ug/L	0.50	<	103	70-130		
Perfluorobutanoic acid (PFBA)		0.54	0.050	ug/L	0.5	<	107	70-130		
Perfluorohexanesulfonate (PFHxS)		0.51	0.025	ug/L	0.50	<	101	70-130		
Perfluorohexanoic acid (PFHxA)		0.53	0.050	ug/L	0.5	<	106	70-130		
Perfluorooctanesulfonate (PFOS)		0.51	0.025	ug/L	0.49	<	102	70-130		
Perfluorooctanoic acid (PFOA)		0.52	0.035	ug/L	0.5	<	104	70-130		
Perfluoropentanoic acid (PFPeA)		0.53	0.050	ug/L	0.5	<	107	70-130		

Matrix Spike (B9D0274-MS5) Source: 19D0389-01 **Prepared: 04/15/19 17:47 Analyzed: 04/15/19 17:47**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.53	0.050	ug/L	0.50	<	105	70-130		
Perfluorobutanoic acid (PFBA)		0.54	0.050	ug/L	0.5	<	107	70-130		
Perfluorohexanesulfonate (PFHxS)		0.54	0.025	ug/L	0.50	<	108	70-130		
Perfluorohexanoic acid (PFHxA)		0.55	0.050	ug/L	0.5	<	109	70-130		
Perfluorooctanesulfonate (PFOS)		0.52	0.025	ug/L	0.49	<	103	70-130		
Perfluorooctanoic acid (PFOA)		0.50	0.035	ug/L	0.5	<	100	70-130		
Perfluoropentanoic acid (PFPeA)		0.54	0.050	ug/L	0.5	<	108	70-130		

Matrix Spike (B9D0274-MS6) Source: 19D0389-02 **Prepared: 04/15/19 18:03 Analyzed: 04/15/19 18:03**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.53	0.050	ug/L	0.50	<	106	70-130		
Perfluorobutanoic acid (PFBA)		0.75	0.050	ug/L	0.5	0.21	107	70-130		
Perfluorohexanesulfonate (PFHxS)		0.50	0.025	ug/L	0.50	<	100	70-130		
Perfluorohexanoic acid (PFHxA)		0.57	0.050	ug/L	0.5	<	115	70-130		
Perfluorooctanesulfonate (PFOS)		0.55	0.025	ug/L	0.49	<	111	70-130		
Perfluorooctanoic acid (PFOA)		0.53	0.035	ug/L	0.5	<	106	70-130		
Perfluoropentanoic acid (PFPeA)		0.54	0.050	ug/L	0.5	<	109	70-130		

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651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelasi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 05/01/19 14:51

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Batch B9D0274 - PFCs Preparation

Matrix Spike (B9D0274-MS7) Source: 19D0389-03 **Prepared: 04/15/19 18:19 Analyzed: 04/15/19 18:19**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.53	0.050	ug/L	0.50	<	106	70-130		
Perfluorobutanoic acid (PFBA)		0.75	0.050	ug/L	0.5	0.20	109	70-130		
Perfluorohexanesulfonate (PFHxS)		0.50	0.025	ug/L	0.50	<	100	70-130		
Perfluorohexanoic acid (PFHxA)		0.53	0.050	ug/L	0.5	<	106	70-130		
Perfluorooctanesulfonate (PFOS)		0.52	0.025	ug/L	0.49	<	104	70-130		
Perfluorooctanoic acid (PFOA)		0.52	0.035	ug/L	0.5	<	103	70-130		
Perfluoropentanoic acid (PFPeA)		0.51	0.050	ug/L	0.5	<	103	70-130		

Matrix Spike (B9D0274-MS8) Source: 19D0434-02 **Prepared: 04/15/19 18:35 Analyzed: 04/15/19 18:35**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.54	0.050	ug/L	0.50	<	109	70-130		
Perfluorobutanoic acid (PFBA)		0.57	0.050	ug/L	0.5	<	111	70-130		
Perfluorohexanesulfonate (PFHxS)		0.50	0.025	ug/L	0.50	<	101	70-130		
Perfluorohexanoic acid (PFHxA)		0.54	0.050	ug/L	0.5	<	107	70-130		
Perfluorooctanesulfonate (PFOS)		0.53	0.025	ug/L	0.49	<	106	70-130		
Perfluorooctanoic acid (PFOA)		0.47	0.035	ug/L	0.5	<	95	70-130		
Perfluoropentanoic acid (PFPeA)		0.53	0.050	ug/L	0.5	<	105	70-130		

Matrix Spike (B9D0274-MS9) Source: 19D0434-09 **Prepared: 04/15/19 18:51 Analyzed: 04/15/19 18:51**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.54	0.050	ug/L	0.50	<	102	70-130		
Perfluorobutanoic acid (PFBA)		1.3	0.050	ug/L	0.5	0.80	97	70-130		
Perfluorohexanesulfonate (PFHxS)		0.55	0.025	ug/L	0.50	0.031	104	70-130		
Perfluorohexanoic acid (PFHxA)		0.76	0.050	ug/L	0.5	0.26	100	70-130		
Perfluorooctanesulfonate (PFOS)		0.52	0.025	ug/L	0.49	<	104	70-130		
Perfluorooctanoic acid (PFOA)		0.58	0.035	ug/L	0.5	0.075	100	70-130		
Perfluoropentanoic acid (PFPeA)		0.76	0.050	ug/L	0.5	0.26	100	70-130		

Matrix Spike (B9D0274-MSA) Source: 19D0435-07 **Prepared: 04/15/19 19:07 Analyzed: 04/15/19 19:07**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.49	0.050	ug/L	0.50	<	99	70-130		
Perfluorobutanoic acid (PFBA)		0.56	0.050	ug/L	0.5	<	107	70-130		
Perfluorohexanesulfonate (PFHxS)		0.51	0.025	ug/L	0.50	<	102	70-130		

FINAL REPORT

Report ID: 05012019145117

Authorized by:

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651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelasi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 05/01/19 14:51

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0274 - PFCs Preparation

Matrix Spike (B9D0274-MSA) Source: 19D0435-07 **Prepared: 04/15/19 19:07 Analyzed: 04/15/19 19:07**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorohexanoic acid (PFHxA)		0.54	0.050	ug/L	0.5	<	108	70-130		
Perfluorooctanesulfonate (PFOS)		0.53	0.025	ug/L	0.49	<	106	70-130		
Perfluorooctanoic acid (PFOA)		0.50	0.035	ug/L	0.5	<	100	70-130		
Perfluoropentanoic acid (PFPeA)		0.53	0.050	ug/L	0.5	<	107	70-130		

Matrix Spike (B9D0274-MSB) Source: 19D0435-09 **Prepared: 04/15/19 19:23 Analyzed: 04/15/19 19:23**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.53	0.050	ug/L	0.50	<	106	70-130		
Perfluorobutanoic acid (PFBA)		0.63	0.050	ug/L	0.5	0.084	109	70-130		
Perfluorohexanesulfonate (PFHxS)		0.57	0.025	ug/L	0.50	<	113	70-130		
Perfluorohexanoic acid (PFHxA)		0.53	0.050	ug/L	0.5	<	103	70-130		
Perfluorooctanesulfonate (PFOS)		0.52	0.025	ug/L	0.49	<	104	70-130		
Perfluorooctanoic acid (PFOA)		0.50	0.035	ug/L	0.5	<	94	70-130		
Perfluoropentanoic acid (PFPeA)		0.53	0.050	ug/L	0.5	<	105	70-130		

Matrix Spike (B9D0274-MSC) Source: 19D0435-10 **Prepared: 04/15/19 19:39 Analyzed: 04/15/19 19:39**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.58	0.050	ug/L	0.50	<	110	70-130		
Perfluorobutanoic acid (PFBA)		1.5	0.050	ug/L	0.5	0.97	100	70-130		
Perfluorohexanesulfonate (PFHxS)		0.60	0.025	ug/L	0.50	0.11	98	70-130		
Perfluorohexanoic acid (PFHxA)		0.87	0.050	ug/L	0.5	0.37	100	70-130		
Perfluorooctanesulfonate (PFOS)		0.55	0.025	ug/L	0.49	0.037	103	70-130		
Perfluorooctanoic acid (PFOA)		0.76	0.035	ug/L	0.5	0.27	99	70-130		
Perfluoropentanoic acid (PFPeA)		0.79	0.050	ug/L	0.5	0.32	94	70-130		

Matrix Spike (B9D0274-MSD) Source: 19D0435-16 **Prepared: 04/15/19 19:56 Analyzed: 04/15/19 19:56**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.53	0.050	ug/L	0.50	<	106	70-130		
Perfluorobutanoic acid (PFBA)		0.53	0.050	ug/L	0.5	<	105	70-130		
Perfluorohexanesulfonate (PFHxS)		0.53	0.025	ug/L	0.50	<	106	70-130		
Perfluorohexanoic acid (PFHxA)		0.52	0.050	ug/L	0.5	<	104	70-130		
Perfluorooctanesulfonate (PFOS)		0.53	0.025	ug/L	0.49	<	106	70-130		
Perfluorooctanoic acid (PFOA)		0.53	0.035	ug/L	0.5	<	105	70-130		

FINAL REPORT

Report ID: 05012019145117

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelasi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 05/01/19 14:51

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0274 - PFCs Preparation

Matrix Spike (B9D0274-MSD) Source: 19D0435-16 **Prepared: 04/15/19 19:56 Analyzed: 04/15/19 19:56**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluoropentanoic acid (PFPeA)		0.52	0.050	ug/L	0.5	<	103	70-130		

Matrix Spike Dup (B9D0274-MSD1) Source: 19D0380-01 **Prepared: 04/15/19 17:14 Analyzed: 04/15/19 17:14**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.52	0.050	ug/L	0.50	<	104	70-130	3	20
Perfluorobutanoic acid (PFBA)		0.71	0.050	ug/L	0.5	0.17	107	70-130	0.4	20
Perfluorohexanesulfonate (PFHxS)		0.50	0.025	ug/L	0.50	<	100	70-130	2	20
Perfluorohexanoic acid (PFHxA)		0.53	0.050	ug/L	0.5	<	106	70-130	6	20
Perfluorooctanesulfonate (PFOS)		0.49	0.025	ug/L	0.49	<	99	70-130	5	20
Perfluorooctanoic acid (PFOA)		0.50	0.035	ug/L	0.5	<	100	70-130	6	20
Perfluoropentanoic acid (PFPeA)		0.53	0.050	ug/L	0.5	<	105	70-130	1	20

Matrix Spike (B9D0274-MSE) Source: 19D0435-17 **Prepared: 04/15/19 20:12 Analyzed: 04/15/19 20:12**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.54	0.050	ug/L	0.50	<	108	70-130		
Perfluorobutanoic acid (PFBA)		0.61	0.050	ug/L	0.5	0.091	104	70-130		
Perfluorohexanesulfonate (PFHxS)		0.52	0.025	ug/L	0.50	<	105	70-130		
Perfluorohexanoic acid (PFHxA)		0.53	0.050	ug/L	0.5	<	106	70-130		
Perfluorooctanesulfonate (PFOS)		0.53	0.025	ug/L	0.49	<	106	70-130		
Perfluorooctanoic acid (PFOA)		0.53	0.035	ug/L	0.5	<	107	70-130		
Perfluoropentanoic acid (PFPeA)		0.52	0.050	ug/L	0.5	<	103	70-130		

Matrix Spike (B9D0274-MSF) Source: 19D0435-21 **Prepared: 04/15/19 20:28 Analyzed: 04/15/19 20:28**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.54	0.050	ug/L	0.50	<	107	70-130		
Perfluorobutanoic acid (PFBA)		0.54	0.050	ug/L	0.5	<	109	70-130		
Perfluorohexanesulfonate (PFHxS)		0.54	0.025	ug/L	0.50	<	108	70-130		
Perfluorohexanoic acid (PFHxA)		0.54	0.050	ug/L	0.5	<	108	70-130		
Perfluorooctanesulfonate (PFOS)		0.53	0.025	ug/L	0.49	<	107	70-130		
Perfluorooctanoic acid (PFOA)		0.51	0.035	ug/L	0.5	<	101	70-130		
Perfluoropentanoic acid (PFPeA)		0.54	0.050	ug/L	0.5	<	107	70-130		

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelasi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 05/01/19 14:51

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0274 - PFCs Preparation

Matrix Spike (B9D0274-MSG) Source: 19D0435-22 **Prepared: 04/15/19 20:44 Analyzed: 04/15/19 20:44**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.54	0.050	ug/L	0.50	<	109	70-130		
Perfluorobutanoic acid (PFBA)		0.54	0.050	ug/L	0.5	<	108	70-130		
Perfluorohexanesulfonate (PFHxS)		0.51	0.025	ug/L	0.50	<	102	70-130		
Perfluorohexanoic acid (PFHxA)		0.53	0.050	ug/L	0.5	<	106	70-130		
Perfluorooctanesulfonate (PFOS)		0.53	0.025	ug/L	0.49	<	106	70-130		
Perfluorooctanoic acid (PFOA)		0.49	0.035	ug/L	0.5	<	98	70-130		
Perfluoropentanoic acid (PFPeA)		0.55	0.050	ug/L	0.5	<	109	70-130		

Matrix Spike (B9D0274-MSH) Source: 19D0435-23 **Prepared: 04/15/19 21:00 Analyzed: 04/15/19 21:00**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.51	0.050	ug/L	0.50	<	101	70-130		
Perfluorobutanoic acid (PFBA)		0.54	0.050	ug/L	0.5	<	109	70-130		
Perfluorohexanesulfonate (PFHxS)		0.51	0.025	ug/L	0.50	<	103	70-130		
Perfluorohexanoic acid (PFHxA)		0.53	0.050	ug/L	0.5	<	107	70-130		
Perfluorooctanesulfonate (PFOS)		0.53	0.025	ug/L	0.49	<	105	70-130		
Perfluorooctanoic acid (PFOA)		0.52	0.035	ug/L	0.5	<	103	70-130		
Perfluoropentanoic acid (PFPeA)		0.52	0.050	ug/L	0.5	<	104	70-130		

Matrix Spike (B9D0274-MSI) Source: 19D0435-24 **Prepared: 04/15/19 21:16 Analyzed: 04/15/19 21:16**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.55	0.050	ug/L	0.50	<	110	70-130		
Perfluorobutanoic acid (PFBA)		0.52	0.050	ug/L	0.5	<	105	70-130		
Perfluorohexanesulfonate (PFHxS)		0.50	0.025	ug/L	0.50	<	100	70-130		
Perfluorohexanoic acid (PFHxA)		0.53	0.050	ug/L	0.5	<	105	70-130		
Perfluorooctanesulfonate (PFOS)		0.55	0.025	ug/L	0.49	<	111	70-130		
Perfluorooctanoic acid (PFOA)		0.50	0.035	ug/L	0.5	<	99	70-130		
Perfluoropentanoic acid (PFPeA)		0.51	0.050	ug/L	0.5	<	103	70-130		

Batch B9D0364 - PFCs Preparation

Blank (B9D0364-BLK1) **Prepared: 04/19/19 11:36 Analyzed: 04/19/19 11:36**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		<	0.050	ug/L						

FINAL REPORT

Report ID: 05012019145117

Authorized by:

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelasi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 05/01/19 14:51

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0364 - PFCs Preparation

Blank (B9D0364-BLK1) **Prepared: 04/19/19 11:36 Analyzed: 04/19/19 11:36**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)		<	0.050	ug/L						
Perfluorohexanesulfonate (PFHxS)		<	0.025	ug/L						
Perfluorohexanoic acid (PFHxA)		<	0.050	ug/L						
Perfluorooctanesulfonate (PFOS)		<	0.025	ug/L						
Perfluorooctanoic acid (PFOA)		<	0.035	ug/L						
Perfluoropentanoic acid (PFPeA)		<	0.050	ug/L						

Blank (B9D0364-BLK2) **Prepared: 04/19/19 14:10 Analyzed: 04/19/19 14:10**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		<	0.050	ug/L						
Perfluorobutanoic acid (PFBA)		<	0.050	ug/L						
Perfluorohexanesulfonate (PFHxS)		<	0.025	ug/L						
Perfluorohexanoic acid (PFHxA)		<	0.050	ug/L						
Perfluorooctanesulfonate (PFOS)		<	0.025	ug/L						
Perfluorooctanoic acid (PFOA)		<	0.035	ug/L						
Perfluoropentanoic acid (PFPeA)		<	0.050	ug/L						

LCS (B9D0364-BS1) **Prepared: 04/19/19 11:28 Analyzed: 04/19/19 11:28**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.49	0.050	ug/L	0.50		98	80-120		
Perfluorobutanoic acid (PFBA)		0.51	0.050	ug/L	0.5		102	80-120		
Perfluorohexanesulfonate (PFHxS)		0.51	0.025	ug/L	0.50		101	80-120		
Perfluorohexanoic acid (PFHxA)		0.53	0.050	ug/L	0.5		107	80-120		
Perfluorooctanesulfonate (PFOS)		0.53	0.025	ug/L	0.49		106	80-120		
Perfluorooctanoic acid (PFOA)		0.54	0.035	ug/L	0.5		109	80-120		
Perfluoropentanoic acid (PFPeA)		0.52	0.050	ug/L	0.5		105	80-120		

LCS Dup (B9D0364-BSD1) **Prepared: 04/19/19 14:02 Analyzed: 04/19/19 14:02**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.50	0.050	ug/L	0.50		99	80-120	1	20
Perfluorobutanoic acid (PFBA)		0.51	0.050	ug/L	0.5		102	80-120	0.1	20
Perfluorohexanesulfonate (PFHxS)		0.51	0.025	ug/L	0.50		101	80-120	0.2	20
Perfluorohexanoic acid (PFHxA)		0.51	0.050	ug/L	0.5		102	80-120	5	20

FINAL REPORT

Report ID: 05012019145117

Authorized by:

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Public Health Laboratory, Minnesota Department of Health

Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson/Chris Pelasi	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 05/01/19 14:51

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0364 - PFCs Preparation

LCS Dup (B9D0364-BSD1) **Prepared: 04/19/19 14:02 Analyzed: 04/19/19 14:02**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorooctanesulfonate (PFOS)		0.52	0.025	ug/L	0.49		105	80-120	0.7	20
Perfluorooctanoic acid (PFOA)		0.52	0.035	ug/L	0.5		103	80-120	5	20
Perfluoropentanoic acid (PFPeA)		0.53	0.050	ug/L	0.5		105	80-120	0.6	20

Matrix Spike (B9D0364-MS1) Source: 19D0499-03RE1 **Prepared: 04/19/19 12:17 Analyzed: 04/19/19 12:17**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.49	0.050	ug/L	0.50	<	98	70-130		
Perfluorobutanoic acid (PFBA)		0.66	0.050	ug/L	0.5	0.15	101	70-130		
Perfluorohexanesulfonate (PFHxS)		0.52	0.025	ug/L	0.50	<	105	70-130		
Perfluorohexanoic acid (PFHxA)		0.55	0.050	ug/L	0.5	<	110	70-130		
Perfluorooctanesulfonate (PFOS)		0.55	0.025	ug/L	0.49	<	110	70-130		
Perfluorooctanoic acid (PFOA)		0.54	0.035	ug/L	0.5	<	106	70-130		
Perfluoropentanoic acid (PFPeA)		0.51	0.050	ug/L	0.5	<	102	70-130		

Matrix Spike Dup (B9D0364-MSD1) Source: 19D0499-03RE1 **Prepared: 04/19/19 12:25 Analyzed: 04/19/19 12:25**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.50	0.050	ug/L	0.50	<	100	70-130	2	20
Perfluorobutanoic acid (PFBA)		0.66	0.050	ug/L	0.5	0.15	101	70-130	0.04	20
Perfluorohexanesulfonate (PFHxS)		0.52	0.025	ug/L	0.50	<	103	70-130	1	20
Perfluorohexanoic acid (PFHxA)		0.53	0.050	ug/L	0.5	<	105	70-130	4	20
Perfluorooctanesulfonate (PFOS)		0.53	0.025	ug/L	0.49	<	106	70-130	3	20
Perfluorooctanoic acid (PFOA)		0.55	0.035	ug/L	0.5	<	107	70-130	0.7	20
Perfluoropentanoic acid (PFPeA)		0.52	0.050	ug/L	0.5	<	105	70-130	3	20

Authorized by:

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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601 Robert St. N., P.O. Box 64899
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Final Report
Quality Control

Data Qualifiers and Definitions

Z-01	Low bias demonstrated by continuing calibration verification standard, samples may also display a low bias.
WB	Relative percent difference exceeded the laboratory acceptance limit. Result less than 5 times the RL.
V4	Calibration verification standard recovery was below method acceptance limits. See comments or additional qualifiers.
L3	The spike recovery was below laboratory acceptance limits for the associated laboratory control sample and/or laboratory control sample duplicate.
J	Analyte was present between the method detection limit and reporting limit and should be considered an estimated value.
H2	Initial analysis within holding time. Reanalysis for the required dilution was past holding time.
F5	The sample pH was greater than 2. The sample was analyzed within the 7 day holding time.
D2	Sample required dilution due to high concentration of target analyte(s). Reporting limit has been raised.
D1	Sample required dilution due to matrix. Reporting limit has been raised.
Dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
%REC	Percent Recovery

Authorized by:

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

Protecting, maintaining and improving the health of all Minnesotans

Report Date: 5/1/19
Client Name: QW - MPCA - Closed Landfill Assessment
Project Code: QW
Project Name: Closed Landfill Assessment

Work Order Number: 19D0244

Report To: QW - MPCA - Closed Landfill Assessment
Mark Umholtz
520 Lafayette Rd.
Saint Paul, MN 55155

The MDH Public Health Laboratory performs chemical, bacteriological and radiological analyses of environmental samples including water, waste water, sediment, air, soil and hazardous material. The laboratory provides testing services in accordance with standard operating procedures referencing approved methodology as defined in Standard Methods for the Examination of Water and Wastewater, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods: EPA SW-846, and 40 Code of Federal Regulation (CFR) parts 136, 141, and 261. In cases where analytes of interest do not have corresponding EPA approved methodology, the MDH Public Health Laboratory uses in-house methods that have undergone rigorous validation and documentation.

The results within this report are in compliance with the terms and conditions stated in the standard operating procedures, reference methodologies, and quality assurance project plan; unless otherwise narrated in the attached report.

Release of the data contained in this report has been authorized by laboratory management and is verified with the following signature affirmation. Thank you for using the MDH Public Health Laboratory.

Sincerely,

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Summary of Samples Received

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 05/01/19 15:14

Work Order Comment: Project code is QW per M. Umholtz. -CCS 04/12/19

Field ID	MDH Sample Number	Matrix	Date & Time Collected	Date & Time Received	Receipt °C
Trip Blank4	19D0244-01	QC-BLANK	04/03/19 7:30	04/04/19 10:14	1.5
834662	19D0244-02	Wtr-Ground	04/03/19 9:20	04/04/19 10:14	1.5
834663	19D0244-03	Wtr-Ground	04/03/19 10:40	04/04/19 10:14	1.5
834661	19D0244-04	Wtr-Ground	04/03/19 11:35	04/04/19 10:14	1.5
FB-2	19D0244-05	QC-BLANK	04/03/19 12:30	04/04/19 10:14	1.5
834660	19D0244-06	Wtr-Ground	04/03/19 13:30	04/04/19 10:14	1.5

Authorized by:

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

Minnesota Pollution Control Agency

Chain-of-Custody Form revison 2013.0909

Work Order Number: 19D0244 | COC Type: Standard | Page:

Turnaround Time: Standard | COC ID:

PROJECT/CLIENT INFO		LABORATORY	
Facility Code:	MN SW-057 Program Code (MDH Lab Only):	Lab Name:	Minnesota Department of Health
Project Name:	19-01567 MPCA Freeway Landfill 2019 MDH Project Task Code: PRJ07786	Address:	601 Robert Street N.
Project Manager:	Mark Umholtz 651-757-2308		St. Paul MN 55155
Potential Hazard?	If yes, add information to Sampler Comments Section	Phone No:	651-201-5058

SAMPLE TYPE CODES
Sample=Routine Sample; S-IVP=Integrated Vertical Profile Sample; S-CWOP=Composite Sample; QC-FB=Field Blank Sample; QC-FR=Field Replicate Sample; QC-TB=Trip Blank Sample

LAB MATRIX CODES
DW=Drinking Water; NW=Non-potable Water; SD=Soil/Solid; WP=Wipe; AR=Air; BL=Biological Material; OT=Other; TS=Tissue

FIELD MATRIX CODES
Wtr-Ground=Groundwater; Wtr-Surf=Surface Water; QC-BLANK=Artificial Blank Water; Leachate=Leachate Sample

SAMPLE DETAILS / ANALYSIS REQUESTED

Location Identifier	Sample Type	Date	Time	Start Depth, in meters	End Depth, in meters	Grab (G) or Composite (C) Sample	Lab Matrix Code	Field Matrix Code	AIS	Sampler Comments (filter volume, special handling, etc.)	# of Cont	ANALYSIS / PRESERV.	VOCs EPA 8260D (HCl)	PFAS by MDH555 (None)	1,4 Dioxane (None)	Lab Sample No.	#
Trip Blank 4	QC-TB	4/3/19	0730			G	NW	QC-Blank	N		3		X			-01	1
834662	sample	4/3/19	0920			G	NW	Wtr-Ground	N		5		X	X	X	-02	2
834663	sample	4/3/19	1040			G	NW	Wtr-Ground	N		5		X	X	X	-03	3
834661	sample	4/3/19	1135			G	NW	Wtr-Ground	N		5		X	X	X	-04	4
FB-2	QC-FB	4/3/19	1230			G	NW	QC-Blank	N		5		X	X	X	-05	5
834660	sample	4/3/19	1330			G	NW	Wtr-Ground	N		5		X	X	X	-06	6
									N								7
						PTA		4/3/19	N								8
									N								9
									N								10

Sampled By: David Anderson | Sampler's Signature: David Anderson | Phone #:

Receiving Comments:

Relinquished By/Affiliation	Date/Time	Accepted By/ Affiliation	Date/Time
(Sampler) David Anderson / Pace Analytical	4/3/19 1600	ELAKE	4/3/19 1600AM
ELAKE	4/3/19 930		4/4/19 1014

DEPARTMENT OF HEALTH

Sample Condition Upon Receipt

Minnesota Department of Health Public Health Laboratory

Data Entry Worksheet

19D0244

Parcel Information

Date & time of receipt: APR 4'19 10:14

Courier: ☒ Walk-in ☐ FedEx ☐ Spee-Dee ☐ UPS ☐ USPS ☐ Other courier _____

Tracking # _____

After hours drop-off: ☐ Refrigerator (207) (186) ( ) ☐ Freezer (185) ( ) ☐ Unrefrigerated

Parcel: ☒ Plastic cooler ☐ Styrofoam/cardboard cooler ☐ Cardboard box ☐ Envelope ☐ Plastic can ☐ None ☐ Other _____

Custody seals present: ☒ No; ☐ Yes, If "Yes" Custody seals intact: ☐ Yes; ☐ No _____

Custody seal # _____ **Evidentiary samples identified:** ☒ No ☐ Yes

Packaging, Temperature & Radiochemical Information

Packing material: ☒ Bubble wrap ☐ Styrofoam ☐ Paper ☐ None ☐ Other _____

Cooling material: ☐ Wet ice (loose) ☒ Wet ice pack #(2) ☐ Gel pack #( ) ☐ Dry ice ☐ None ☐ Other _____

Condition of cooling material: ☐ Solid ☒ Partially frozen ☐ Liquid; Liquid temperature: _____ °C ☐ N/A

Representative sample temperature: 1.5 °C **IR thermometer instrument used:** 410

Samples received with evidence of freezing: ☒ No; ☐ Yes _____

Rad Chem. request received: ☒ No; ☐ Yes, If "Yes" sample survey results: ☐ < 0.5 mrem/hr ☐ ≥ 0.5 mrem/hr

Initials of person receiving parcel: VD

Chain of Custody, Sample Container & Analysis Information

Chain of custody received with sample containers: ☒ Yes ☐ No

Chain of custody type: ☒ Standard ☐ Civil ☐ Criminal ☐ Priority/Emergency ☐ Unknown

All sample containers are unique to a sample point listed on the chain of custody: ☒ Yes; ☐ No

_____

All sample containers have been collected prior to the expiration date listed on container label: ☒ Yes; ☐ No ☐ Unknown _____

All sample containers received intact: ☒ Yes; ☐ No _____

All sample containers are appropriate for requested analysis: ☒ Yes; ☐ No ☐ Unknown

_____

All analysis have been received within the specified holding time for analysis: ☒ Yes; ☐ No ☐ Unknown

_____

Sample submission details are entered in the Environmental Laboratory LIMS.

Initials of person logging in the work order request into LIMS: MKC

Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Case Narrative

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name: MN SW-057
Collected by: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 05/01/2019 15:14

Except where noted in this report, no additional comments are needed for this Work Order.

Authorized by:

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 05/01/19 15:14

MDH Sample Number: 19D0244-01

Location ID: Trip Blank4
Field Name: None
Sampling Point: None
QA Type: Trip Blank

Collect Date: 04/03/19
Collect Time: 7:30
Matrix: QC-BLANK

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Surrogate: 1,2-Dichlorobenzene-d4		*103*	*70-130*	%	*1*	*B9D0098*	*04/05/19 13:59*	*04/05/19 13:59*	*EPA 8260D*
Surrogate: 4-Bromofluorobenzene		*99*	*70-130*	%	*1*	*B9D0098*	*04/05/19 13:59*	*04/05/19 13:59*	*EPA 8260D*
Surrogate: Methyl tertiary butyl ether-d3		*101*	*70-130*	%	*1*	*B9D0098*	*04/05/19 13:59*	*04/05/19 13:59*	*EPA 8260D*
1,1,1,2-Tetrachloroethane		<	1.0	ug/L	1	B9D0098	04/05/19 13:59	04/05/19 13:59	EPA 8260D
1,1,1-Trichloroethane		<	1.0	ug/L	1	B9D0098	04/05/19 13:59	04/05/19 13:59	EPA 8260D
1,1,2,2-Tetrachloroethane		<	0.50	ug/L	1	B9D0098	04/05/19 13:59	04/05/19 13:59	EPA 8260D
1,1,2-Trichloroethane		<	0.50	ug/L	1	B9D0098	04/05/19 13:59	04/05/19 13:59	EPA 8260D
1,1,2-Trichlorotrifluoroethane		<	1.0	ug/L	1	B9D0098	04/05/19 13:59	04/05/19 13:59	EPA 8260D
1,1-Dichloroethane		<	1.0	ug/L	1	B9D0098	04/05/19 13:59	04/05/19 13:59	EPA 8260D
1,1-Dichloroethene		<	1.0	ug/L	1	B9D0098	04/05/19 13:59	04/05/19 13:59	EPA 8260D
1,1-Dichloropropene		<	1.0	ug/L	1	B9D0098	04/05/19 13:59	04/05/19 13:59	EPA 8260D
1,2,3-Trichlorobenzene		<	1.0	ug/L	1	B9D0098	04/05/19 13:59	04/05/19 13:59	EPA 8260D
1,2,3-Trichloropropane		<	0.20	ug/L	1	B9D0098	04/05/19 13:59	04/05/19 13:59	EPA 8260D
1,2,4-Trichlorobenzene		<	1.0	ug/L	1	B9D0098	04/05/19 13:59	04/05/19 13:59	EPA 8260D
1,2,4-Trimethylbenzene		<	1.0	ug/L	1	B9D0098	04/05/19 13:59	04/05/19 13:59	EPA 8260D
1,2-Dibromo-3-chloropropane (DBCP)		<	1.0	ug/L	1	B9D0098	04/05/19 13:59	04/05/19 13:59	EPA 8260D
1,2-Dibromoethane (EDB)		<	0.50	ug/L	1	B9D0098	04/05/19 13:59	04/05/19 13:59	EPA 8260D
1,2-Dichlorobenzene		<	1.0	ug/L	1	B9D0098	04/05/19 13:59	04/05/19 13:59	EPA 8260D
1,2-Dichloroethane		<	0.20	ug/L	1	B9D0098	04/05/19 13:59	04/05/19 13:59	EPA 8260D
1,2-Dichloropropane		<	1.0	ug/L	1	B9D0098	04/05/19 13:59	04/05/19 13:59	EPA 8260D
1,3,5-Trimethylbenzene		<	1.0	ug/L	1	B9D0098	04/05/19 13:59	04/05/19 13:59	EPA 8260D
1,3-Dichlorobenzene		<	1.0	ug/L	1	B9D0098	04/05/19 13:59	04/05/19 13:59	EPA 8260D
1,3-Dichloropropane		<	1.0	ug/L	1	B9D0098	04/05/19 13:59	04/05/19 13:59	EPA 8260D
1,4-Dichlorobenzene		<	1.0	ug/L	1	B9D0098	04/05/19 13:59	04/05/19 13:59	EPA 8260D
2,2-Dichloropropane		<	1.0	ug/L	1	B9D0098	04/05/19 13:59	04/05/19 13:59	EPA 8260D

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 05/01/19 15:14

MDH Sample Number: 19D0244-01

Location ID: Trip Blank4
Field Name: None
Sampling Point: None
QA Type: Trip Blank

Collect Date: 04/03/19
Collect Time: 7:30
Matrix: QC-BLANK

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
2-Chlorotoluene		<	1.0	ug/L	1	B9D0098	04/05/19 13:59	04/05/19 13:59	EPA 8260D
4-Chlorotoluene		<	1.0	ug/L	1	B9D0098	04/05/19 13:59	04/05/19 13:59	EPA 8260D
Acetone		<	20	ug/L	1	B9D0098	04/05/19 13:59	04/05/19 13:59	EPA 8260D
Allyl chloride		<	1.0	ug/L	1	B9D0098	04/05/19 13:59	04/05/19 13:59	EPA 8260D
Benzene		<	0.50	ug/L	1	B9D0098	04/05/19 13:59	04/05/19 13:59	EPA 8260D
Bromobenzene		<	1.0	ug/L	1	B9D0098	04/05/19 13:59	04/05/19 13:59	EPA 8260D
Bromochloromethane		<	1.0	ug/L	1	B9D0098	04/05/19 13:59	04/05/19 13:59	EPA 8260D
Bromodichloromethane		<	1.0	ug/L	1	B9D0098	04/05/19 13:59	04/05/19 13:59	EPA 8260D
Bromoform		<	1.0	ug/L	1	B9D0098	04/05/19 13:59	04/05/19 13:59	EPA 8260D
Bromomethane	V4, Z-01	<	2.0	ug/L	1	B9D0098	04/05/19 13:59	04/05/19 13:59	EPA 8260D
Carbon tetrachloride		<	0.20	ug/L	1	B9D0098	04/05/19 13:59	04/05/19 13:59	EPA 8260D
Chlorobenzene		<	1.0	ug/L	1	B9D0098	04/05/19 13:59	04/05/19 13:59	EPA 8260D
Chlorodibromomethane		<	0.50	ug/L	1	B9D0098	04/05/19 13:59	04/05/19 13:59	EPA 8260D
Chloroethane		<	1.0	ug/L	1	B9D0098	04/05/19 13:59	04/05/19 13:59	EPA 8260D
Chloroform		<	1.0	ug/L	1	B9D0098	04/05/19 13:59	04/05/19 13:59	EPA 8260D
Chloromethane		<	1.0	ug/L	1	B9D0098	04/05/19 13:59	04/05/19 13:59	EPA 8260D
cis-1,2-Dichloroethene		<	1.0	ug/L	1	B9D0098	04/05/19 13:59	04/05/19 13:59	EPA 8260D
cis-1,3-Dichloropropene		<	0.50	ug/L	1	B9D0098	04/05/19 13:59	04/05/19 13:59	EPA 8260D
Dibromomethane		<	1.0	ug/L	1	B9D0098	04/05/19 13:59	04/05/19 13:59	EPA 8260D
Dichlorodifluoromethane		<	1.0	ug/L	1	B9D0098	04/05/19 13:59	04/05/19 13:59	EPA 8260D
Dichlorofluoromethane		<	1.0	ug/L	1	B9D0098	04/05/19 13:59	04/05/19 13:59	EPA 8260D
Ethyl ether		<	1.0	ug/L	1	B9D0098	04/05/19 13:59	04/05/19 13:59	EPA 8260D
Ethylbenzene		<	1.0	ug/L	1	B9D0098	04/05/19 13:59	04/05/19 13:59	EPA 8260D
Hexachlorobutadiene		<	0.50	ug/L	1	B9D0098	04/05/19 13:59	04/05/19 13:59	EPA 8260D
Isopropylbenzene		<	1.0	ug/L	1	B9D0098	04/05/19 13:59	04/05/19 13:59	EPA 8260D
Methyl ethyl ketone (MEK)		<	10	ug/L	1	B9D0098	04/05/19 13:59	04/05/19 13:59	EPA 8260D
Methyl isobutyl ketone (MIBK)		<	5.0	ug/L	1	B9D0098	04/05/19 13:59	04/05/19 13:59	EPA 8260D

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 05/01/19 15:14

MDH Sample Number: 19D0244-01

Location ID: Trip Blank4
Field Name: None
Sampling Point: None
QA Type: Trip Blank

Collect Date: 04/03/19
Collect Time: 7:30
Matrix: QC-BLANK

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Methyl tertiary butyl ether (MTBE)		<	2.0	ug/L	1	B9D0098	04/05/19 13:59	04/05/19 13:59	EPA 8260D
Methylene chloride		<	1.0	ug/L	1	B9D0098	04/05/19 13:59	04/05/19 13:59	EPA 8260D
Naphthalene		<	1.0	ug/L	1	B9D0098	04/05/19 13:59	04/05/19 13:59	EPA 8260D
n-Butylbenzene		<	1.0	ug/L	1	B9D0098	04/05/19 13:59	04/05/19 13:59	EPA 8260D
n-Propylbenzene		<	1.0	ug/L	1	B9D0098	04/05/19 13:59	04/05/19 13:59	EPA 8260D
o-Xylene		<	1.0	ug/L	1	B9D0098	04/05/19 13:59	04/05/19 13:59	EPA 8260D
p&m-Xylene		<	1.0	ug/L	1	B9D0098	04/05/19 13:59	04/05/19 13:59	EPA 8260D
p-Isopropyltoluene		<	1.0	ug/L	1	B9D0098	04/05/19 13:59	04/05/19 13:59	EPA 8260D
sec-Butylbenzene		<	1.0	ug/L	1	B9D0098	04/05/19 13:59	04/05/19 13:59	EPA 8260D
Styrene		<	1.0	ug/L	1	B9D0098	04/05/19 13:59	04/05/19 13:59	EPA 8260D
tert-Butylbenzene		<	1.0	ug/L	1	B9D0098	04/05/19 13:59	04/05/19 13:59	EPA 8260D
Tetrachloroethene		<	1.0	ug/L	1	B9D0098	04/05/19 13:59	04/05/19 13:59	EPA 8260D
Tetrahydrofuran (THF)		<	10	ug/L	1	B9D0098	04/05/19 13:59	04/05/19 13:59	EPA 8260D
Toluene		<	1.0	ug/L	1	B9D0098	04/05/19 13:59	04/05/19 13:59	EPA 8260D
trans-1,2-Dichloroethene		<	1.0	ug/L	1	B9D0098	04/05/19 13:59	04/05/19 13:59	EPA 8260D
trans-1,3-Dichloropropene		<	0.50	ug/L	1	B9D0098	04/05/19 13:59	04/05/19 13:59	EPA 8260D
Trichloroethene (TCE)		<	0.10	ug/L	1	B9D0098	04/05/19 13:59	04/05/19 13:59	EPA 8260D
Trichlorofluoromethane		<	1.0	ug/L	1	B9D0098	04/05/19 13:59	04/05/19 13:59	EPA 8260D
Vinyl chloride		<	0.050	ug/L	1	B9D0098	04/05/19 13:59	04/05/19 13:59	EPA 8260D

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Environmental Laboratory Section
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St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 05/01/19 15:14

MDH Sample Number: 19D0244-02

Location ID: 834662
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 04/03/19
Collect Time: 9:20
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

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VOCs by GCMS

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Surrogate: 1,2-Dichlorobenzene-d4		*100*	*70-130*	%	*1*	*B9D0098*	*04/05/19 14:54*	*04/05/19 14:54*	*EPA 8260D*
Surrogate: 4-Bromofluorobenzene		*96*	*70-130*	%	*1*	*B9D0098*	*04/05/19 14:54*	*04/05/19 14:54*	*EPA 8260D*
Surrogate: Methyl tertiary butyl ether-d3		*100*	*70-130*	%	*1*	*B9D0098*	*04/05/19 14:54*	*04/05/19 14:54*	*EPA 8260D*
1,1,1,2-Tetrachloroethane		<	1.0	ug/L	1	B9D0098	04/05/19 14:54	04/05/19 14:54	EPA 8260D
1,1,1-Trichloroethane		<	1.0	ug/L	1	B9D0098	04/05/19 14:54	04/05/19 14:54	EPA 8260D
1,1,2,2-Tetrachloroethane		<	0.50	ug/L	1	B9D0098	04/05/19 14:54	04/05/19 14:54	EPA 8260D
1,1,2-Trichloroethane		**1.5**	0.50	ug/L	1	B9D0098	04/05/19 14:54	04/05/19 14:54	EPA 8260D
1,1,2-Trichlorotrifluoroethane		<	1.0	ug/L	1	B9D0098	04/05/19 14:54	04/05/19 14:54	EPA 8260D
1,1-Dichloroethane		<	1.0	ug/L	1	B9D0098	04/05/19 14:54	04/05/19 14:54	EPA 8260D
1,1-Dichloroethene		<	1.0	ug/L	1	B9D0098	04/05/19 14:54	04/05/19 14:54	EPA 8260D
1,1-Dichloropropene		<	1.0	ug/L	1	B9D0098	04/05/19 14:54	04/05/19 14:54	EPA 8260D
1,2,3-Trichlorobenzene		<	1.0	ug/L	1	B9D0098	04/05/19 14:54	04/05/19 14:54	EPA 8260D
1,2,3-Trichloropropane		<	0.20	ug/L	1	B9D0098	04/05/19 14:54	04/05/19 14:54	EPA 8260D
1,2,4-Trichlorobenzene		<	1.0	ug/L	1	B9D0098	04/05/19 14:54	04/05/19 14:54	EPA 8260D
1,2,4-Trimethylbenzene		<	1.0	ug/L	1	B9D0098	04/05/19 14:54	04/05/19 14:54	EPA 8260D
1,2-Dibromo-3-chloropropane (DBCP)		<	1.0	ug/L	1	B9D0098	04/05/19 14:54	04/05/19 14:54	EPA 8260D
1,2-Dibromoethane (EDB)		<	0.50	ug/L	1	B9D0098	04/05/19 14:54	04/05/19 14:54	EPA 8260D
1,2-Dichlorobenzene		<	1.0	ug/L	1	B9D0098	04/05/19 14:54	04/05/19 14:54	EPA 8260D
1,2-Dichloroethane		<	0.20	ug/L	1	B9D0098	04/05/19 14:54	04/05/19 14:54	EPA 8260D
1,2-Dichloropropane		<	1.0	ug/L	1	B9D0098	04/05/19 14:54	04/05/19 14:54	EPA 8260D
1,3,5-Trimethylbenzene		<	1.0	ug/L	1	B9D0098	04/05/19 14:54	04/05/19 14:54	EPA 8260D
1,3-Dichlorobenzene		<	1.0	ug/L	1	B9D0098	04/05/19 14:54	04/05/19 14:54	EPA 8260D
1,3-Dichloropropane		<	1.0	ug/L	1	B9D0098	04/05/19 14:54	04/05/19 14:54	EPA 8260D
1,4-Dichlorobenzene		<	1.0	ug/L	1	B9D0098	04/05/19 14:54	04/05/19 14:54	EPA 8260D
2,2-Dichloropropane		<	1.0	ug/L	1	B9D0098	04/05/19 14:54	04/05/19 14:54	EPA 8260D
2-Chlorotoluene		<	1.0	ug/L	1	B9D0098	04/05/19 14:54	04/05/19 14:54	EPA 8260D

FINAL REPORT

Report ID: 05012019151451

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
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St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 05/01/19 15:14

MDH Sample Number: 19D0244-02

Location ID: 834662
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 04/03/19
Collect Time: 9:20
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
4-Chlorotoluene		<	1.0	ug/L	1	B9D0098	04/05/19 14:54	04/05/19 14:54	EPA 8260D
Acetone		<	20	ug/L	1	B9D0098	04/05/19 14:54	04/05/19 14:54	EPA 8260D
Allyl chloride		<	1.0	ug/L	1	B9D0098	04/05/19 14:54	04/05/19 14:54	EPA 8260D
Benzene		<	0.50	ug/L	1	B9D0098	04/05/19 14:54	04/05/19 14:54	EPA 8260D
Bromobenzene		<	1.0	ug/L	1	B9D0098	04/05/19 14:54	04/05/19 14:54	EPA 8260D
Bromochloromethane		<	1.0	ug/L	1	B9D0098	04/05/19 14:54	04/05/19 14:54	EPA 8260D
Bromodichloromethane		<	1.0	ug/L	1	B9D0098	04/05/19 14:54	04/05/19 14:54	EPA 8260D
Bromoform		<	1.0	ug/L	1	B9D0098	04/05/19 14:54	04/05/19 14:54	EPA 8260D
Bromomethane	V4, Z-01	<	2.0	ug/L	1	B9D0098	04/05/19 14:54	04/05/19 14:54	EPA 8260D
Carbon tetrachloride		<	0.20	ug/L	1	B9D0098	04/05/19 14:54	04/05/19 14:54	EPA 8260D
Chlorobenzene		<	1.0	ug/L	1	B9D0098	04/05/19 14:54	04/05/19 14:54	EPA 8260D
Chlorodibromomethane		<	0.50	ug/L	1	B9D0098	04/05/19 14:54	04/05/19 14:54	EPA 8260D
Chloroethane		<	1.0	ug/L	1	B9D0098	04/05/19 14:54	04/05/19 14:54	EPA 8260D
Chloroform		<	1.0	ug/L	1	B9D0098	04/05/19 14:54	04/05/19 14:54	EPA 8260D
Chloromethane		<	1.0	ug/L	1	B9D0098	04/05/19 14:54	04/05/19 14:54	EPA 8260D
cis-1,2-Dichloroethene		<	1.0	ug/L	1	B9D0098	04/05/19 14:54	04/05/19 14:54	EPA 8260D
cis-1,3-Dichloropropene		<	0.50	ug/L	1	B9D0098	04/05/19 14:54	04/05/19 14:54	EPA 8260D
Dibromomethane		<	1.0	ug/L	1	B9D0098	04/05/19 14:54	04/05/19 14:54	EPA 8260D
Dichlorodifluoromethane		<	1.0	ug/L	1	B9D0098	04/05/19 14:54	04/05/19 14:54	EPA 8260D
Dichlorofluoromethane		<	1.0	ug/L	1	B9D0098	04/05/19 14:54	04/05/19 14:54	EPA 8260D
Ethyl ether		<	1.0	ug/L	1	B9D0098	04/05/19 14:54	04/05/19 14:54	EPA 8260D
Ethylbenzene		<	1.0	ug/L	1	B9D0098	04/05/19 14:54	04/05/19 14:54	EPA 8260D
Hexachlorobutadiene		<	0.50	ug/L	1	B9D0098	04/05/19 14:54	04/05/19 14:54	EPA 8260D
Isopropylbenzene		<	1.0	ug/L	1	B9D0098	04/05/19 14:54	04/05/19 14:54	EPA 8260D
Methyl ethyl ketone (MEK)		<	10	ug/L	1	B9D0098	04/05/19 14:54	04/05/19 14:54	EPA 8260D
Methyl isobutyl ketone (MIBK)		<	5.0	ug/L	1	B9D0098	04/05/19 14:54	04/05/19 14:54	EPA 8260D
Methyl tertiary butyl ether (MTBE)		<	2.0	ug/L	1	B9D0098	04/05/19 14:54	04/05/19 14:54	EPA 8260D

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601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 05/01/19 15:14

MDH Sample Number: 19D0244-02

Location ID: 834662
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 04/03/19
Collect Time: 9:20
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Methylene chloride		<	1.0	ug/L	1	B9D0098	04/05/19 14:54	04/05/19 14:54	EPA 8260D
Naphthalene		<	1.0	ug/L	1	B9D0098	04/05/19 14:54	04/05/19 14:54	EPA 8260D
n-Butylbenzene		<	1.0	ug/L	1	B9D0098	04/05/19 14:54	04/05/19 14:54	EPA 8260D
n-Propylbenzene		<	1.0	ug/L	1	B9D0098	04/05/19 14:54	04/05/19 14:54	EPA 8260D
o-Xylene		<	1.0	ug/L	1	B9D0098	04/05/19 14:54	04/05/19 14:54	EPA 8260D
p&m-Xylene		<	1.0	ug/L	1	B9D0098	04/05/19 14:54	04/05/19 14:54	EPA 8260D
p-Isopropyltoluene		<	1.0	ug/L	1	B9D0098	04/05/19 14:54	04/05/19 14:54	EPA 8260D
sec-Butylbenzene		<	1.0	ug/L	1	B9D0098	04/05/19 14:54	04/05/19 14:54	EPA 8260D
Styrene		<	1.0	ug/L	1	B9D0098	04/05/19 14:54	04/05/19 14:54	EPA 8260D
tert-Butylbenzene		<	1.0	ug/L	1	B9D0098	04/05/19 14:54	04/05/19 14:54	EPA 8260D
Tetrachloroethene		<	1.0	ug/L	1	B9D0098	04/05/19 14:54	04/05/19 14:54	EPA 8260D
Tetrahydrofuran (THF)		<	10	ug/L	1	B9D0098	04/05/19 14:54	04/05/19 14:54	EPA 8260D
Toluene		<	1.0	ug/L	1	B9D0098	04/05/19 14:54	04/05/19 14:54	EPA 8260D
trans-1,2-Dichloroethene		<	1.0	ug/L	1	B9D0098	04/05/19 14:54	04/05/19 14:54	EPA 8260D
trans-1,3-Dichloropropene		<	0.50	ug/L	1	B9D0098	04/05/19 14:54	04/05/19 14:54	EPA 8260D
Trichloroethene (TCE)		**0.47**	0.10	ug/L	1	B9D0098	04/05/19 14:54	04/05/19 14:54	EPA 8260D
Trichlorofluoromethane		<	1.0	ug/L	1	B9D0098	04/05/19 14:54	04/05/19 14:54	EPA 8260D
Vinyl chloride		<	0.050	ug/L	1	B9D0098	04/05/19 14:54	04/05/19 14:54	EPA 8260D

1,4-Dioxane

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
1,4-Dioxane		**3.4**	0.050	ug/L	1	B9D0423	04/24/19 08:00	04/26/19 13:15	EPA 522 Modified

PFC Expanded List

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorobutanesulfonate (PFBS)	J	**0.031**	0.050	ug/L	1	B9D0230	04/12/19 15:17	04/12/19 15:17	MDH 555
Perfluorobutanoic acid (PFBA)		**0.078**	0.050	ug/L	1	B9D0230	04/12/19 15:17	04/12/19 15:17	MDH 555

FINAL REPORT

Report ID: 05012019151451

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 05/01/19 15:14

MDH Sample Number: 19D0244-02

Location ID: 834662
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 04/03/19
Collect Time: 9:20
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

PFC Expanded List - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorohexanesulfonate (PFHxS)		**0.12**	0.025	ug/L	1	B9D0230	04/12/19 15:17	04/12/19 15:17	MDH 555
Perfluorohexanoic acid (PFHxA)		**0.085**	0.050	ug/L	1	B9D0230	04/12/19 15:17	04/12/19 15:17	MDH 555
Perfluorooctanesulfonate (PFOS)		**0.12**	0.025	ug/L	1	B9D0230	04/12/19 15:17	04/12/19 15:17	MDH 555
Perfluorooctanoic acid (PFOA)		**0.93**	0.035	ug/L	1	B9D0230	04/12/19 15:17	04/12/19 15:17	MDH 555
Perfluoropentanoic acid (PFPeA)	J	**0.043**	0.050	ug/L	1	B9D0230	04/12/19 15:17	04/12/19 15:17	MDH 555

Authorized by:

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Public Health Laboratory
Environmental Laboratory Section
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St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 05/01/19 15:14

MDH Sample Number: 19D0244-03

Location ID: 834663
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 04/03/19
Collect Time: 10:40
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Surrogate: 1,2-Dichlorobenzene-d4		*102*	*70-130*	%	*1*	*B9D0098*	*04/05/19 15:21*	*04/05/19 15:21*	*EPA 8260D*
Surrogate: 4-Bromofluorobenzene		*99*	*70-130*	%	*1*	*B9D0098*	*04/05/19 15:21*	*04/05/19 15:21*	*EPA 8260D*
Surrogate: Methyl tertiary butyl ether-d3		*101*	*70-130*	%	*1*	*B9D0098*	*04/05/19 15:21*	*04/05/19 15:21*	*EPA 8260D*
1,1,1,2-Tetrachloroethane		<	1.0	ug/L	1	B9D0098	04/05/19 15:21	04/05/19 15:21	EPA 8260D
1,1,1-Trichloroethane		<	1.0	ug/L	1	B9D0098	04/05/19 15:21	04/05/19 15:21	EPA 8260D
1,1,2,2-Tetrachloroethane		<	0.50	ug/L	1	B9D0098	04/05/19 15:21	04/05/19 15:21	EPA 8260D
1,1,2-Trichloroethane		<	0.50	ug/L	1	B9D0098	04/05/19 15:21	04/05/19 15:21	EPA 8260D
1,1,2-Trichlorotrifluoroethane		<	1.0	ug/L	1	B9D0098	04/05/19 15:21	04/05/19 15:21	EPA 8260D
1,1-Dichloroethane		<	1.0	ug/L	1	B9D0098	04/05/19 15:21	04/05/19 15:21	EPA 8260D
1,1-Dichloroethene		<	1.0	ug/L	1	B9D0098	04/05/19 15:21	04/05/19 15:21	EPA 8260D
1,1-Dichloropropene		<	1.0	ug/L	1	B9D0098	04/05/19 15:21	04/05/19 15:21	EPA 8260D
1,2,3-Trichlorobenzene		<	1.0	ug/L	1	B9D0098	04/05/19 15:21	04/05/19 15:21	EPA 8260D
1,2,3-Trichloropropane		<	0.20	ug/L	1	B9D0098	04/05/19 15:21	04/05/19 15:21	EPA 8260D
1,2,4-Trichlorobenzene		<	1.0	ug/L	1	B9D0098	04/05/19 15:21	04/05/19 15:21	EPA 8260D
1,2,4-Trimethylbenzene		<	1.0	ug/L	1	B9D0098	04/05/19 15:21	04/05/19 15:21	EPA 8260D
1,2-Dibromo-3-chloropropane (DBCP)		<	1.0	ug/L	1	B9D0098	04/05/19 15:21	04/05/19 15:21	EPA 8260D
1,2-Dibromoethane (EDB)		<	0.50	ug/L	1	B9D0098	04/05/19 15:21	04/05/19 15:21	EPA 8260D
1,2-Dichlorobenzene		<	1.0	ug/L	1	B9D0098	04/05/19 15:21	04/05/19 15:21	EPA 8260D
1,2-Dichloroethane		<	0.20	ug/L	1	B9D0098	04/05/19 15:21	04/05/19 15:21	EPA 8260D
1,2-Dichloropropane		<	1.0	ug/L	1	B9D0098	04/05/19 15:21	04/05/19 15:21	EPA 8260D
1,3,5-Trimethylbenzene		<	1.0	ug/L	1	B9D0098	04/05/19 15:21	04/05/19 15:21	EPA 8260D
1,3-Dichlorobenzene		<	1.0	ug/L	1	B9D0098	04/05/19 15:21	04/05/19 15:21	EPA 8260D
1,3-Dichloropropane		<	1.0	ug/L	1	B9D0098	04/05/19 15:21	04/05/19 15:21	EPA 8260D
1,4-Dichlorobenzene		**2.3**	1.0	ug/L	1	B9D0098	04/05/19 15:21	04/05/19 15:21	EPA 8260D
2,2-Dichloropropane		<	1.0	ug/L	1	B9D0098	04/05/19 15:21	04/05/19 15:21	EPA 8260D
2-Chlorotoluene		<	1.0	ug/L	1	B9D0098	04/05/19 15:21	04/05/19 15:21	EPA 8260D

FINAL REPORT

Report ID: 05012019151451

Authorized by:

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Public Health Laboratory
Environmental Laboratory Section
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St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 05/01/19 15:14

MDH Sample Number: 19D0244-03

Location ID: 834663
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 04/03/19
Collect Time: 10:40
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
4-Chlorotoluene		<	1.0	ug/L	1	B9D0098	04/05/19 15:21	04/05/19 15:21	EPA 8260D
Acetone		<	20	ug/L	1	B9D0098	04/05/19 15:21	04/05/19 15:21	EPA 8260D
Allyl chloride		<	1.0	ug/L	1	B9D0098	04/05/19 15:21	04/05/19 15:21	EPA 8260D
Benzene		**7.1**	0.50	ug/L	1	B9D0098	04/05/19 15:21	04/05/19 15:21	EPA 8260D
Bromobenzene		<	1.0	ug/L	1	B9D0098	04/05/19 15:21	04/05/19 15:21	EPA 8260D
Bromochloromethane		<	1.0	ug/L	1	B9D0098	04/05/19 15:21	04/05/19 15:21	EPA 8260D
Bromodichloromethane		<	1.0	ug/L	1	B9D0098	04/05/19 15:21	04/05/19 15:21	EPA 8260D
Bromoform		<	1.0	ug/L	1	B9D0098	04/05/19 15:21	04/05/19 15:21	EPA 8260D
Bromomethane	V4, Z-01	<	2.0	ug/L	1	B9D0098	04/05/19 15:21	04/05/19 15:21	EPA 8260D
Carbon tetrachloride		<	0.20	ug/L	1	B9D0098	04/05/19 15:21	04/05/19 15:21	EPA 8260D
Chlorobenzene		<	1.0	ug/L	1	B9D0098	04/05/19 15:21	04/05/19 15:21	EPA 8260D
Chlorodibromomethane		<	0.50	ug/L	1	B9D0098	04/05/19 15:21	04/05/19 15:21	EPA 8260D
Chloroethane		<	1.0	ug/L	1	B9D0098	04/05/19 15:21	04/05/19 15:21	EPA 8260D
Chloroform		<	1.0	ug/L	1	B9D0098	04/05/19 15:21	04/05/19 15:21	EPA 8260D
Chloromethane		<	1.0	ug/L	1	B9D0098	04/05/19 15:21	04/05/19 15:21	EPA 8260D
cis-1,2-Dichloroethene		<	1.0	ug/L	1	B9D0098	04/05/19 15:21	04/05/19 15:21	EPA 8260D
cis-1,3-Dichloropropene		<	0.50	ug/L	1	B9D0098	04/05/19 15:21	04/05/19 15:21	EPA 8260D
Dibromomethane		<	1.0	ug/L	1	B9D0098	04/05/19 15:21	04/05/19 15:21	EPA 8260D
Dichlorodifluoromethane		<	1.0	ug/L	1	B9D0098	04/05/19 15:21	04/05/19 15:21	EPA 8260D
Dichlorofluoromethane		<	1.0	ug/L	1	B9D0098	04/05/19 15:21	04/05/19 15:21	EPA 8260D
Ethyl ether		**2.6**	1.0	ug/L	1	B9D0098	04/05/19 15:21	04/05/19 15:21	EPA 8260D
Ethylbenzene		<	1.0	ug/L	1	B9D0098	04/05/19 15:21	04/05/19 15:21	EPA 8260D
Hexachlorobutadiene		<	0.50	ug/L	1	B9D0098	04/05/19 15:21	04/05/19 15:21	EPA 8260D
Isopropylbenzene		**1.8**	1.0	ug/L	1	B9D0098	04/05/19 15:21	04/05/19 15:21	EPA 8260D
Methyl ethyl ketone (MEK)		<	10	ug/L	1	B9D0098	04/05/19 15:21	04/05/19 15:21	EPA 8260D
Methyl isobutyl ketone (MIBK)		<	5.0	ug/L	1	B9D0098	04/05/19 15:21	04/05/19 15:21	EPA 8260D
Methyl tertiary butyl ether (MTBE)		<	2.0	ug/L	1	B9D0098	04/05/19 15:21	04/05/19 15:21	EPA 8260D

Authorized by:

Paul Moyer, Environmental Laboratory Manager
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Public Health Laboratory
Environmental Laboratory Section
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St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 05/01/19 15:14

MDH Sample Number: 19D0244-03

Location ID: 834663
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 04/03/19
Collect Time: 10:40
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Methylene chloride		<	1.0	ug/L	1	B9D0098	04/05/19 15:21	04/05/19 15:21	EPA 8260D
Naphthalene		<	1.0	ug/L	1	B9D0098	04/05/19 15:21	04/05/19 15:21	EPA 8260D
n-Butylbenzene		<	1.0	ug/L	1	B9D0098	04/05/19 15:21	04/05/19 15:21	EPA 8260D
n-Propylbenzene		**1.3**	1.0	ug/L	1	B9D0098	04/05/19 15:21	04/05/19 15:21	EPA 8260D
o-Xylene		<	1.0	ug/L	1	B9D0098	04/05/19 15:21	04/05/19 15:21	EPA 8260D
p&m-Xylene		<	1.0	ug/L	1	B9D0098	04/05/19 15:21	04/05/19 15:21	EPA 8260D
p-Isopropyltoluene		<	1.0	ug/L	1	B9D0098	04/05/19 15:21	04/05/19 15:21	EPA 8260D
sec-Butylbenzene		<	1.0	ug/L	1	B9D0098	04/05/19 15:21	04/05/19 15:21	EPA 8260D
Styrene		<	1.0	ug/L	1	B9D0098	04/05/19 15:21	04/05/19 15:21	EPA 8260D
tert-Butylbenzene		<	1.0	ug/L	1	B9D0098	04/05/19 15:21	04/05/19 15:21	EPA 8260D
Tetrachloroethene		<	1.0	ug/L	1	B9D0098	04/05/19 15:21	04/05/19 15:21	EPA 8260D
Tetrahydrofuran (THF)		<	10	ug/L	1	B9D0098	04/05/19 15:21	04/05/19 15:21	EPA 8260D
Toluene		<	1.0	ug/L	1	B9D0098	04/05/19 15:21	04/05/19 15:21	EPA 8260D
trans-1,2-Dichloroethene		<	1.0	ug/L	1	B9D0098	04/05/19 15:21	04/05/19 15:21	EPA 8260D
trans-1,3-Dichloropropene		<	0.50	ug/L	1	B9D0098	04/05/19 15:21	04/05/19 15:21	EPA 8260D
Trichloroethene (TCE)		<	0.10	ug/L	1	B9D0098	04/05/19 15:21	04/05/19 15:21	EPA 8260D
Trichlorofluoromethane		<	1.0	ug/L	1	B9D0098	04/05/19 15:21	04/05/19 15:21	EPA 8260D
Vinyl chloride		<	0.050	ug/L	1	B9D0098	04/05/19 15:21	04/05/19 15:21	EPA 8260D

PFC Expanded List

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorobutanesulfonate (PFBS)		**0.060**	0.050	ug/L	1	B9D0230	04/12/19 15:33	04/12/19 15:33	MDH 555
Perfluorobutanoic acid (PFBA)		**0.92**	0.050	ug/L	1	B9D0230	04/12/19 15:33	04/12/19 15:33	MDH 555
Perfluorohexanesulfonate (PFHxS)		**0.15**	0.025	ug/L	1	B9D0230	04/12/19 15:33	04/12/19 15:33	MDH 555
Perfluorohexanoic acid (PFHxA)		**1.2**	0.050	ug/L	1	B9D0230	04/12/19 15:33	04/12/19 15:33	MDH 555
Perfluorooctanesulfonate (PFOS)		**0.43**	0.025	ug/L	1	B9D0230	04/12/19 15:33	04/12/19 15:33	MDH 555
Perfluoropentanoic acid (PFPeA)		**0.62**	0.050	ug/L	1	B9D0230	04/12/19 15:33	04/12/19 15:33	MDH 555

FINAL REPORT

Report ID: 05012019151451

Authorized by:

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Public Health Laboratory, Minnesota Department of Health

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Public Health Laboratory
Environmental Laboratory Section
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St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 05/01/19 15:14

MDH Sample Number: 19D0244-03

Location ID: 834663
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 04/03/19
Collect Time: 10:40
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Authorized by:

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651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 05/01/19 15:14

MDH Sample Number: 19D0244-03RE1

Location ID: 834663
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 04/03/19
Collect Time: 10:40
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

1,4-Dioxane

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
1,4-Dioxane	D2	**13**	0.099	ug/L	2	B9D0423	04/24/19 08:00	04/28/19 21:43	EPA 522 Modified

PFC Expanded List

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorooctanoic acid (PFOA)	D1	**13**	0.18	ug/L	5	B9D0274	04/15/19 16:34	04/15/19 16:34	MDH 555

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 05/01/19 15:14

MDH Sample Number: 19D0244-04

Location ID: 834661
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 04/03/19
Collect Time: 11:35
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Surrogate: 1,2-Dichlorobenzene-d4		*104*	*70-130*	%	*1*	*B9D0098*	*04/05/19 16:17*	*04/05/19 16:17*	*EPA 8260D*
Surrogate: 4-Bromofluorobenzene		*99*	*70-130*	%	*1*	*B9D0098*	*04/05/19 16:17*	*04/05/19 16:17*	*EPA 8260D*
Surrogate: Methyl tertiary butyl ether-d3		*99*	*70-130*	%	*1*	*B9D0098*	*04/05/19 16:17*	*04/05/19 16:17*	*EPA 8260D*
1,1,1,2-Tetrachloroethane		<	1.0	ug/L	1	B9D0098	04/05/19 16:17	04/05/19 16:17	EPA 8260D
1,1,1-Trichloroethane		<	1.0	ug/L	1	B9D0098	04/05/19 16:17	04/05/19 16:17	EPA 8260D
1,1,2,2-Tetrachloroethane		<	0.50	ug/L	1	B9D0098	04/05/19 16:17	04/05/19 16:17	EPA 8260D
1,1,2-Trichloroethane		<	0.50	ug/L	1	B9D0098	04/05/19 16:17	04/05/19 16:17	EPA 8260D
1,1,2-Trichlorotrifluoroethane		<	1.0	ug/L	1	B9D0098	04/05/19 16:17	04/05/19 16:17	EPA 8260D
1,1-Dichloroethane		<	1.0	ug/L	1	B9D0098	04/05/19 16:17	04/05/19 16:17	EPA 8260D
1,1-Dichloroethene		<	1.0	ug/L	1	B9D0098	04/05/19 16:17	04/05/19 16:17	EPA 8260D
1,1-Dichloropropene		<	1.0	ug/L	1	B9D0098	04/05/19 16:17	04/05/19 16:17	EPA 8260D
1,2,3-Trichlorobenzene		<	1.0	ug/L	1	B9D0098	04/05/19 16:17	04/05/19 16:17	EPA 8260D
1,2,3-Trichloropropane		<	0.20	ug/L	1	B9D0098	04/05/19 16:17	04/05/19 16:17	EPA 8260D
1,2,4-Trichlorobenzene		<	1.0	ug/L	1	B9D0098	04/05/19 16:17	04/05/19 16:17	EPA 8260D
1,2,4-Trimethylbenzene		<	1.0	ug/L	1	B9D0098	04/05/19 16:17	04/05/19 16:17	EPA 8260D
1,2-Dibromo-3-chloropropane (DBCP)		<	1.0	ug/L	1	B9D0098	04/05/19 16:17	04/05/19 16:17	EPA 8260D
1,2-Dibromoethane (EDB)		<	0.50	ug/L	1	B9D0098	04/05/19 16:17	04/05/19 16:17	EPA 8260D
1,2-Dichlorobenzene		<	1.0	ug/L	1	B9D0098	04/05/19 16:17	04/05/19 16:17	EPA 8260D
1,2-Dichloroethane		<	0.20	ug/L	1	B9D0098	04/05/19 16:17	04/05/19 16:17	EPA 8260D
1,2-Dichloropropane		<	1.0	ug/L	1	B9D0098	04/05/19 16:17	04/05/19 16:17	EPA 8260D
1,3,5-Trimethylbenzene		<	1.0	ug/L	1	B9D0098	04/05/19 16:17	04/05/19 16:17	EPA 8260D
1,3-Dichlorobenzene		<	1.0	ug/L	1	B9D0098	04/05/19 16:17	04/05/19 16:17	EPA 8260D
1,3-Dichloropropane		<	1.0	ug/L	1	B9D0098	04/05/19 16:17	04/05/19 16:17	EPA 8260D
1,4-Dichlorobenzene		<	1.0	ug/L	1	B9D0098	04/05/19 16:17	04/05/19 16:17	EPA 8260D
2,2-Dichloropropane		<	1.0	ug/L	1	B9D0098	04/05/19 16:17	04/05/19 16:17	EPA 8260D
2-Chlorotoluene		<	1.0	ug/L	1	B9D0098	04/05/19 16:17	04/05/19 16:17	EPA 8260D

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 05/01/19 15:14

MDH Sample Number: 19D0244-04

Location ID: 834661
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 04/03/19
Collect Time: 11:35
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
4-Chlorotoluene		<	1.0	ug/L	1	B9D0098	04/05/19 16:17	04/05/19 16:17	EPA 8260D
Acetone		<	20	ug/L	1	B9D0098	04/05/19 16:17	04/05/19 16:17	EPA 8260D
Allyl chloride		<	1.0	ug/L	1	B9D0098	04/05/19 16:17	04/05/19 16:17	EPA 8260D
Benzene		**4.2**	0.50	ug/L	1	B9D0098	04/05/19 16:17	04/05/19 16:17	EPA 8260D
Bromobenzene		<	1.0	ug/L	1	B9D0098	04/05/19 16:17	04/05/19 16:17	EPA 8260D
Bromochloromethane		<	1.0	ug/L	1	B9D0098	04/05/19 16:17	04/05/19 16:17	EPA 8260D
Bromodichloromethane		<	1.0	ug/L	1	B9D0098	04/05/19 16:17	04/05/19 16:17	EPA 8260D
Bromoform		<	1.0	ug/L	1	B9D0098	04/05/19 16:17	04/05/19 16:17	EPA 8260D
Bromomethane	Z-01, V4	<	2.0	ug/L	1	B9D0098	04/05/19 16:17	04/05/19 16:17	EPA 8260D
Carbon tetrachloride		<	0.20	ug/L	1	B9D0098	04/05/19 16:17	04/05/19 16:17	EPA 8260D
Chlorobenzene		**3.5**	1.0	ug/L	1	B9D0098	04/05/19 16:17	04/05/19 16:17	EPA 8260D
Chlorodibromomethane		<	0.50	ug/L	1	B9D0098	04/05/19 16:17	04/05/19 16:17	EPA 8260D
Chloroethane		<	1.0	ug/L	1	B9D0098	04/05/19 16:17	04/05/19 16:17	EPA 8260D
Chloroform		<	1.0	ug/L	1	B9D0098	04/05/19 16:17	04/05/19 16:17	EPA 8260D
Chloromethane		<	1.0	ug/L	1	B9D0098	04/05/19 16:17	04/05/19 16:17	EPA 8260D
cis-1,2-Dichloroethene		<	1.0	ug/L	1	B9D0098	04/05/19 16:17	04/05/19 16:17	EPA 8260D
cis-1,3-Dichloropropene		<	0.50	ug/L	1	B9D0098	04/05/19 16:17	04/05/19 16:17	EPA 8260D
Dibromomethane		<	1.0	ug/L	1	B9D0098	04/05/19 16:17	04/05/19 16:17	EPA 8260D
Dichlorodifluoromethane		<	1.0	ug/L	1	B9D0098	04/05/19 16:17	04/05/19 16:17	EPA 8260D
Dichlorofluoromethane		<	1.0	ug/L	1	B9D0098	04/05/19 16:17	04/05/19 16:17	EPA 8260D
Ethyl ether		**1.6**	1.0	ug/L	1	B9D0098	04/05/19 16:17	04/05/19 16:17	EPA 8260D
Ethylbenzene		<	1.0	ug/L	1	B9D0098	04/05/19 16:17	04/05/19 16:17	EPA 8260D
Hexachlorobutadiene		<	0.50	ug/L	1	B9D0098	04/05/19 16:17	04/05/19 16:17	EPA 8260D
Isopropylbenzene		<	1.0	ug/L	1	B9D0098	04/05/19 16:17	04/05/19 16:17	EPA 8260D
Methyl ethyl ketone (MEK)		<	10	ug/L	1	B9D0098	04/05/19 16:17	04/05/19 16:17	EPA 8260D
Methyl isobutyl ketone (MIBK)		<	5.0	ug/L	1	B9D0098	04/05/19 16:17	04/05/19 16:17	EPA 8260D
Methyl tertiary butyl ether (MTBE)		<	2.0	ug/L	1	B9D0098	04/05/19 16:17	04/05/19 16:17	EPA 8260D

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Environmental Laboratory Section
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St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 05/01/19 15:14

MDH Sample Number: 19D0244-04

Location ID: 834661
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 04/03/19
Collect Time: 11:35
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Methylene chloride		<	1.0	ug/L	1	B9D0098	04/05/19 16:17	04/05/19 16:17	EPA 8260D
Naphthalene		<	1.0	ug/L	1	B9D0098	04/05/19 16:17	04/05/19 16:17	EPA 8260D
n-Butylbenzene		<	1.0	ug/L	1	B9D0098	04/05/19 16:17	04/05/19 16:17	EPA 8260D
n-Propylbenzene		<	1.0	ug/L	1	B9D0098	04/05/19 16:17	04/05/19 16:17	EPA 8260D
o-Xylene		<	1.0	ug/L	1	B9D0098	04/05/19 16:17	04/05/19 16:17	EPA 8260D
p&m-Xylene		<	1.0	ug/L	1	B9D0098	04/05/19 16:17	04/05/19 16:17	EPA 8260D
p-Isopropyltoluene		<	1.0	ug/L	1	B9D0098	04/05/19 16:17	04/05/19 16:17	EPA 8260D
sec-Butylbenzene		<	1.0	ug/L	1	B9D0098	04/05/19 16:17	04/05/19 16:17	EPA 8260D
Styrene		<	1.0	ug/L	1	B9D0098	04/05/19 16:17	04/05/19 16:17	EPA 8260D
tert-Butylbenzene		<	1.0	ug/L	1	B9D0098	04/05/19 16:17	04/05/19 16:17	EPA 8260D
Tetrachloroethene		<	1.0	ug/L	1	B9D0098	04/05/19 16:17	04/05/19 16:17	EPA 8260D
Tetrahydrofuran (THF)		<	10	ug/L	1	B9D0098	04/05/19 16:17	04/05/19 16:17	EPA 8260D
Toluene		<	1.0	ug/L	1	B9D0098	04/05/19 16:17	04/05/19 16:17	EPA 8260D
trans-1,2-Dichloroethene		<	1.0	ug/L	1	B9D0098	04/05/19 16:17	04/05/19 16:17	EPA 8260D
trans-1,3-Dichloropropene		<	0.50	ug/L	1	B9D0098	04/05/19 16:17	04/05/19 16:17	EPA 8260D
Trichloroethene (TCE)		<	0.10	ug/L	1	B9D0098	04/05/19 16:17	04/05/19 16:17	EPA 8260D
Trichlorofluoromethane		<	1.0	ug/L	1	B9D0098	04/05/19 16:17	04/05/19 16:17	EPA 8260D
Vinyl chloride		**0.24**	0.050	ug/L	1	B9D0098	04/05/19 16:17	04/05/19 16:17	EPA 8260D

1,4-Dioxane

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
1,4-Dioxane		**7.1**	0.052	ug/L	1	B9D0423	04/24/19 08:00	04/26/19 13:47	EPA 522 Modified

PFC Expanded List

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorobutanesulfonate (PFBS)	J	**0.022**	0.050	ug/L	1	B9D0230	04/12/19 15:49	04/12/19 15:49	MDH 555
Perfluorobutanoic acid (PFBA)		**0.10**	0.050	ug/L	1	B9D0230	04/12/19 15:49	04/12/19 15:49	MDH 555

FINAL REPORT

Report ID: 05012019151451

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 05/01/19 15:14

MDH Sample Number: 19D0244-04

Location ID: 834661
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 04/03/19
Collect Time: 11:35
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

PFC Expanded List - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorohexanesulfonate (PFHxS)		**0.21**	0.025	ug/L	1	B9D0230	04/12/19 15:49	04/12/19 15:49	MDH 555
Perfluorohexanoic acid (PFHxA)		**0.15**	0.050	ug/L	1	B9D0230	04/12/19 15:49	04/12/19 15:49	MDH 555
Perfluorooctanesulfonate (PFOS)		**1.6**	0.025	ug/L	1	B9D0230	04/12/19 15:49	04/12/19 15:49	MDH 555
Perfluorooctanoic acid (PFOA)		**2.1**	0.035	ug/L	1	B9D0230	04/12/19 15:49	04/12/19 15:49	MDH 555
Perfluoropentanoic acid (PFPeA)		**0.070**	0.050	ug/L	1	B9D0230	04/12/19 15:49	04/12/19 15:49	MDH 555

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 05/01/19 15:14

MDH Sample Number: 19D0244-05

Location ID: FB-2
Field Name: None
Sampling Point: None
QA Type: Field Blank

Collect Date: 04/03/19
Collect Time: 12:30
Matrix: QC-BLANK

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Surrogate: 1,2-Dichlorobenzene-d4		*99*	*70-130*	%	*1*	*B9D0098*	*04/05/19 14:26*	*04/05/19 14:26*	*EPA 8260D*
Surrogate: 4-Bromofluorobenzene		*95*	*70-130*	%	*1*	*B9D0098*	*04/05/19 14:26*	*04/05/19 14:26*	*EPA 8260D*
Surrogate: Methyl tertiary butyl ether-d3		*101*	*70-130*	%	*1*	*B9D0098*	*04/05/19 14:26*	*04/05/19 14:26*	*EPA 8260D*
1,1,1,2-Tetrachloroethane		<	1.0	ug/L	1	B9D0098	04/05/19 14:26	04/05/19 14:26	EPA 8260D
1,1,1-Trichloroethane		<	1.0	ug/L	1	B9D0098	04/05/19 14:26	04/05/19 14:26	EPA 8260D
1,1,2,2-Tetrachloroethane		<	0.50	ug/L	1	B9D0098	04/05/19 14:26	04/05/19 14:26	EPA 8260D
1,1,2-Trichloroethane		<	0.50	ug/L	1	B9D0098	04/05/19 14:26	04/05/19 14:26	EPA 8260D
1,1,2-Trichlorotrifluoroethane		<	1.0	ug/L	1	B9D0098	04/05/19 14:26	04/05/19 14:26	EPA 8260D
1,1-Dichloroethane		<	1.0	ug/L	1	B9D0098	04/05/19 14:26	04/05/19 14:26	EPA 8260D
1,1-Dichloroethene		<	1.0	ug/L	1	B9D0098	04/05/19 14:26	04/05/19 14:26	EPA 8260D
1,1-Dichloropropene		<	1.0	ug/L	1	B9D0098	04/05/19 14:26	04/05/19 14:26	EPA 8260D
1,2,3-Trichlorobenzene		<	1.0	ug/L	1	B9D0098	04/05/19 14:26	04/05/19 14:26	EPA 8260D
1,2,3-Trichloropropane		<	0.20	ug/L	1	B9D0098	04/05/19 14:26	04/05/19 14:26	EPA 8260D
1,2,4-Trichlorobenzene		<	1.0	ug/L	1	B9D0098	04/05/19 14:26	04/05/19 14:26	EPA 8260D
1,2,4-Trimethylbenzene		<	1.0	ug/L	1	B9D0098	04/05/19 14:26	04/05/19 14:26	EPA 8260D
1,2-Dibromo-3-chloropropane (DBCP)		<	1.0	ug/L	1	B9D0098	04/05/19 14:26	04/05/19 14:26	EPA 8260D
1,2-Dibromoethane (EDB)		<	0.50	ug/L	1	B9D0098	04/05/19 14:26	04/05/19 14:26	EPA 8260D
1,2-Dichlorobenzene		<	1.0	ug/L	1	B9D0098	04/05/19 14:26	04/05/19 14:26	EPA 8260D
1,2-Dichloroethane		<	0.20	ug/L	1	B9D0098	04/05/19 14:26	04/05/19 14:26	EPA 8260D
1,2-Dichloropropane		<	1.0	ug/L	1	B9D0098	04/05/19 14:26	04/05/19 14:26	EPA 8260D
1,3,5-Trimethylbenzene		<	1.0	ug/L	1	B9D0098	04/05/19 14:26	04/05/19 14:26	EPA 8260D
1,3-Dichlorobenzene		<	1.0	ug/L	1	B9D0098	04/05/19 14:26	04/05/19 14:26	EPA 8260D
1,3-Dichloropropane		<	1.0	ug/L	1	B9D0098	04/05/19 14:26	04/05/19 14:26	EPA 8260D
1,4-Dichlorobenzene		<	1.0	ug/L	1	B9D0098	04/05/19 14:26	04/05/19 14:26	EPA 8260D
2,2-Dichloropropane		<	1.0	ug/L	1	B9D0098	04/05/19 14:26	04/05/19 14:26	EPA 8260D
2-Chlorotoluene		<	1.0	ug/L	1	B9D0098	04/05/19 14:26	04/05/19 14:26	EPA 8260D

FINAL REPORT

Report ID: 05012019151451

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 05/01/19 15:14

MDH Sample Number: 19D0244-05

Location ID: FB-2
Field Name: None
Sampling Point: None
QA Type: Field Blank

Collect Date: 04/03/19
Collect Time: 12:30
Matrix: QC-BLANK

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
4-Chlorotoluene		<	1.0	ug/L	1	B9D0098	04/05/19 14:26	04/05/19 14:26	EPA 8260D
Acetone		<	20	ug/L	1	B9D0098	04/05/19 14:26	04/05/19 14:26	EPA 8260D
Allyl chloride		<	1.0	ug/L	1	B9D0098	04/05/19 14:26	04/05/19 14:26	EPA 8260D
Benzene		<	0.50	ug/L	1	B9D0098	04/05/19 14:26	04/05/19 14:26	EPA 8260D
Bromobenzene		<	1.0	ug/L	1	B9D0098	04/05/19 14:26	04/05/19 14:26	EPA 8260D
Bromochloromethane		<	1.0	ug/L	1	B9D0098	04/05/19 14:26	04/05/19 14:26	EPA 8260D
Bromodichloromethane		<	1.0	ug/L	1	B9D0098	04/05/19 14:26	04/05/19 14:26	EPA 8260D
Bromoform		<	1.0	ug/L	1	B9D0098	04/05/19 14:26	04/05/19 14:26	EPA 8260D
Bromomethane	V4, Z-01	<	2.0	ug/L	1	B9D0098	04/05/19 14:26	04/05/19 14:26	EPA 8260D
Carbon tetrachloride		<	0.20	ug/L	1	B9D0098	04/05/19 14:26	04/05/19 14:26	EPA 8260D
Chlorobenzene		<	1.0	ug/L	1	B9D0098	04/05/19 14:26	04/05/19 14:26	EPA 8260D
Chlorodibromomethane		<	0.50	ug/L	1	B9D0098	04/05/19 14:26	04/05/19 14:26	EPA 8260D
Chloroethane		<	1.0	ug/L	1	B9D0098	04/05/19 14:26	04/05/19 14:26	EPA 8260D
Chloroform		<	1.0	ug/L	1	B9D0098	04/05/19 14:26	04/05/19 14:26	EPA 8260D
Chloromethane		<	1.0	ug/L	1	B9D0098	04/05/19 14:26	04/05/19 14:26	EPA 8260D
cis-1,2-Dichloroethene		<	1.0	ug/L	1	B9D0098	04/05/19 14:26	04/05/19 14:26	EPA 8260D
cis-1,3-Dichloropropene		<	0.50	ug/L	1	B9D0098	04/05/19 14:26	04/05/19 14:26	EPA 8260D
Dibromomethane		<	1.0	ug/L	1	B9D0098	04/05/19 14:26	04/05/19 14:26	EPA 8260D
Dichlorodifluoromethane		<	1.0	ug/L	1	B9D0098	04/05/19 14:26	04/05/19 14:26	EPA 8260D
Dichlorofluoromethane		<	1.0	ug/L	1	B9D0098	04/05/19 14:26	04/05/19 14:26	EPA 8260D
Ethyl ether		<	1.0	ug/L	1	B9D0098	04/05/19 14:26	04/05/19 14:26	EPA 8260D
Ethylbenzene		<	1.0	ug/L	1	B9D0098	04/05/19 14:26	04/05/19 14:26	EPA 8260D
Hexachlorobutadiene		<	0.50	ug/L	1	B9D0098	04/05/19 14:26	04/05/19 14:26	EPA 8260D
Isopropylbenzene		<	1.0	ug/L	1	B9D0098	04/05/19 14:26	04/05/19 14:26	EPA 8260D
Methyl ethyl ketone (MEK)		<	10	ug/L	1	B9D0098	04/05/19 14:26	04/05/19 14:26	EPA 8260D
Methyl isobutyl ketone (MIBK)		<	5.0	ug/L	1	B9D0098	04/05/19 14:26	04/05/19 14:26	EPA 8260D
Methyl tertiary butyl ether (MTBE)		<	2.0	ug/L	1	B9D0098	04/05/19 14:26	04/05/19 14:26	EPA 8260D

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 05/01/19 15:14

MDH Sample Number: 19D0244-05

Location ID: FB-2
Field Name: None
Sampling Point: None
QA Type: Field Blank

Collect Date: 04/03/19
Collect Time: 12:30
Matrix: QC-BLANK

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Methylene chloride		**7.2**	1.0	ug/L	1	B9D0098	04/05/19 14:26	04/05/19 14:26	EPA 8260D
Naphthalene		<	1.0	ug/L	1	B9D0098	04/05/19 14:26	04/05/19 14:26	EPA 8260D
n-Butylbenzene		<	1.0	ug/L	1	B9D0098	04/05/19 14:26	04/05/19 14:26	EPA 8260D
n-Propylbenzene		<	1.0	ug/L	1	B9D0098	04/05/19 14:26	04/05/19 14:26	EPA 8260D
o-Xylene		<	1.0	ug/L	1	B9D0098	04/05/19 14:26	04/05/19 14:26	EPA 8260D
p&m-Xylene		<	1.0	ug/L	1	B9D0098	04/05/19 14:26	04/05/19 14:26	EPA 8260D
p-Isopropyltoluene		<	1.0	ug/L	1	B9D0098	04/05/19 14:26	04/05/19 14:26	EPA 8260D
sec-Butylbenzene		<	1.0	ug/L	1	B9D0098	04/05/19 14:26	04/05/19 14:26	EPA 8260D
Styrene		<	1.0	ug/L	1	B9D0098	04/05/19 14:26	04/05/19 14:26	EPA 8260D
tert-Butylbenzene		<	1.0	ug/L	1	B9D0098	04/05/19 14:26	04/05/19 14:26	EPA 8260D
Tetrachloroethene		<	1.0	ug/L	1	B9D0098	04/05/19 14:26	04/05/19 14:26	EPA 8260D
Tetrahydrofuran (THF)		<	10	ug/L	1	B9D0098	04/05/19 14:26	04/05/19 14:26	EPA 8260D
Toluene		<	1.0	ug/L	1	B9D0098	04/05/19 14:26	04/05/19 14:26	EPA 8260D
trans-1,2-Dichloroethene		<	1.0	ug/L	1	B9D0098	04/05/19 14:26	04/05/19 14:26	EPA 8260D
trans-1,3-Dichloropropene		<	0.50	ug/L	1	B9D0098	04/05/19 14:26	04/05/19 14:26	EPA 8260D
Trichloroethene (TCE)		<	0.10	ug/L	1	B9D0098	04/05/19 14:26	04/05/19 14:26	EPA 8260D
Trichlorofluoromethane		<	1.0	ug/L	1	B9D0098	04/05/19 14:26	04/05/19 14:26	EPA 8260D
Vinyl chloride		<	0.050	ug/L	1	B9D0098	04/05/19 14:26	04/05/19 14:26	EPA 8260D

1,4-Dioxane

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
1,4-Dioxane		<	0.049	ug/L	1	B9D0423	04/24/19 08:00	04/26/19 14:03	EPA 522 Modified

PFC Expanded List

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorobutanesulfonate (PFBS)		<	0.050	ug/L	1	B9D0230	04/12/19 16:05	04/12/19 16:05	MDH 555
Perfluorobutanoic acid (PFBA)		<	0.050	ug/L	1	B9D0230	04/12/19 16:05	04/12/19 16:05	MDH 555

FINAL REPORT

Report ID: 05012019151451

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 05/01/19 15:14

MDH Sample Number: 19D0244-05

Location ID: FB-2
Field Name: None
Sampling Point: None
QA Type: Field Blank

Collect Date: 04/03/19
Collect Time: 12:30
Matrix: QC-BLANK

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

PFC Expanded List - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorohexanesulfonate (PFHxS)		<	0.025	ug/L	1	B9D0230	04/12/19 16:05	04/12/19 16:05	MDH 555
Perfluorohexanoic acid (PFHxA)		<	0.050	ug/L	1	B9D0230	04/12/19 16:05	04/12/19 16:05	MDH 555
Perfluorooctanesulfonate (PFOS)		<	0.025	ug/L	1	B9D0230	04/12/19 16:05	04/12/19 16:05	MDH 555
Perfluorooctanoic acid (PFOA)		<	0.035	ug/L	1	B9D0230	04/12/19 16:05	04/12/19 16:05	MDH 555
Perfluoropentanoic acid (PFPeA)		<	0.050	ug/L	1	B9D0230	04/12/19 16:05	04/12/19 16:05	MDH 555

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Public Health Laboratory
Environmental Laboratory Section
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St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 05/01/19 15:14

MDH Sample Number: 19D0244-06

Location ID: 834660
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 04/03/19
Collect Time: 13:30
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Surrogate: 1,2-Dichlorobenzene-d4		*104*	*70-130*	%	*1*	*B9D0098*	*04/05/19 16:44*	*04/05/19 16:44*	*EPA 8260D*
Surrogate: 4-Bromofluorobenzene		*96*	*70-130*	%	*1*	*B9D0098*	*04/05/19 16:44*	*04/05/19 16:44*	*EPA 8260D*
Surrogate: Methyl tertiary butyl ether-d3		*102*	*70-130*	%	*1*	*B9D0098*	*04/05/19 16:44*	*04/05/19 16:44*	*EPA 8260D*
1,1,1,2-Tetrachloroethane		<	1.0	ug/L	1	B9D0098	04/05/19 16:44	04/05/19 16:44	EPA 8260D
1,1,1-Trichloroethane		<	1.0	ug/L	1	B9D0098	04/05/19 16:44	04/05/19 16:44	EPA 8260D
1,1,2,2-Tetrachloroethane		<	0.50	ug/L	1	B9D0098	04/05/19 16:44	04/05/19 16:44	EPA 8260D
1,1,2-Trichloroethane		<	0.50	ug/L	1	B9D0098	04/05/19 16:44	04/05/19 16:44	EPA 8260D
1,1,2-Trichlorotrifluoroethane		<	1.0	ug/L	1	B9D0098	04/05/19 16:44	04/05/19 16:44	EPA 8260D
1,1-Dichloroethane		<	1.0	ug/L	1	B9D0098	04/05/19 16:44	04/05/19 16:44	EPA 8260D
1,1-Dichloroethene		<	1.0	ug/L	1	B9D0098	04/05/19 16:44	04/05/19 16:44	EPA 8260D
1,1-Dichloropropene		<	1.0	ug/L	1	B9D0098	04/05/19 16:44	04/05/19 16:44	EPA 8260D
1,2,3-Trichlorobenzene		<	1.0	ug/L	1	B9D0098	04/05/19 16:44	04/05/19 16:44	EPA 8260D
1,2,3-Trichloropropane		<	0.20	ug/L	1	B9D0098	04/05/19 16:44	04/05/19 16:44	EPA 8260D
1,2,4-Trichlorobenzene		<	1.0	ug/L	1	B9D0098	04/05/19 16:44	04/05/19 16:44	EPA 8260D
1,2,4-Trimethylbenzene		<	1.0	ug/L	1	B9D0098	04/05/19 16:44	04/05/19 16:44	EPA 8260D
1,2-Dibromo-3-chloropropane (DBCP)		<	1.0	ug/L	1	B9D0098	04/05/19 16:44	04/05/19 16:44	EPA 8260D
1,2-Dibromoethane (EDB)		<	0.50	ug/L	1	B9D0098	04/05/19 16:44	04/05/19 16:44	EPA 8260D
1,2-Dichlorobenzene		<	1.0	ug/L	1	B9D0098	04/05/19 16:44	04/05/19 16:44	EPA 8260D
1,2-Dichloroethane		<	0.20	ug/L	1	B9D0098	04/05/19 16:44	04/05/19 16:44	EPA 8260D
1,2-Dichloropropane		<	1.0	ug/L	1	B9D0098	04/05/19 16:44	04/05/19 16:44	EPA 8260D
1,3,5-Trimethylbenzene		<	1.0	ug/L	1	B9D0098	04/05/19 16:44	04/05/19 16:44	EPA 8260D
1,3-Dichlorobenzene		<	1.0	ug/L	1	B9D0098	04/05/19 16:44	04/05/19 16:44	EPA 8260D
1,3-Dichloropropane		<	1.0	ug/L	1	B9D0098	04/05/19 16:44	04/05/19 16:44	EPA 8260D
1,4-Dichlorobenzene		<	1.0	ug/L	1	B9D0098	04/05/19 16:44	04/05/19 16:44	EPA 8260D
2,2-Dichloropropane		<	1.0	ug/L	1	B9D0098	04/05/19 16:44	04/05/19 16:44	EPA 8260D
2-Chlorotoluene		<	1.0	ug/L	1	B9D0098	04/05/19 16:44	04/05/19 16:44	EPA 8260D

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 05/01/19 15:14

MDH Sample Number: 19D0244-06

Location ID: 834660
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 04/03/19
Collect Time: 13:30
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
4-Chlorotoluene		<	1.0	ug/L	1	B9D0098	04/05/19 16:44	04/05/19 16:44	EPA 8260D
Acetone		<	20	ug/L	1	B9D0098	04/05/19 16:44	04/05/19 16:44	EPA 8260D
Allyl chloride		<	1.0	ug/L	1	B9D0098	04/05/19 16:44	04/05/19 16:44	EPA 8260D
Benzene		<	0.50	ug/L	1	B9D0098	04/05/19 16:44	04/05/19 16:44	EPA 8260D
Bromobenzene		<	1.0	ug/L	1	B9D0098	04/05/19 16:44	04/05/19 16:44	EPA 8260D
Bromochloromethane		<	1.0	ug/L	1	B9D0098	04/05/19 16:44	04/05/19 16:44	EPA 8260D
Bromodichloromethane		<	1.0	ug/L	1	B9D0098	04/05/19 16:44	04/05/19 16:44	EPA 8260D
Bromoform		<	1.0	ug/L	1	B9D0098	04/05/19 16:44	04/05/19 16:44	EPA 8260D
Bromomethane	V4, Z-01	<	2.0	ug/L	1	B9D0098	04/05/19 16:44	04/05/19 16:44	EPA 8260D
Carbon tetrachloride		<	0.20	ug/L	1	B9D0098	04/05/19 16:44	04/05/19 16:44	EPA 8260D
Chlorobenzene		<	1.0	ug/L	1	B9D0098	04/05/19 16:44	04/05/19 16:44	EPA 8260D
Chlorodibromomethane		<	0.50	ug/L	1	B9D0098	04/05/19 16:44	04/05/19 16:44	EPA 8260D
Chloroethane		<	1.0	ug/L	1	B9D0098	04/05/19 16:44	04/05/19 16:44	EPA 8260D
Chloroform		<	1.0	ug/L	1	B9D0098	04/05/19 16:44	04/05/19 16:44	EPA 8260D
Chloromethane		<	1.0	ug/L	1	B9D0098	04/05/19 16:44	04/05/19 16:44	EPA 8260D
cis-1,2-Dichloroethene		<	1.0	ug/L	1	B9D0098	04/05/19 16:44	04/05/19 16:44	EPA 8260D
cis-1,3-Dichloropropene		<	0.50	ug/L	1	B9D0098	04/05/19 16:44	04/05/19 16:44	EPA 8260D
Dibromomethane		<	1.0	ug/L	1	B9D0098	04/05/19 16:44	04/05/19 16:44	EPA 8260D
Dichlorodifluoromethane		<	1.0	ug/L	1	B9D0098	04/05/19 16:44	04/05/19 16:44	EPA 8260D
Dichlorofluoromethane		<	1.0	ug/L	1	B9D0098	04/05/19 16:44	04/05/19 16:44	EPA 8260D
Ethyl ether		<	1.0	ug/L	1	B9D0098	04/05/19 16:44	04/05/19 16:44	EPA 8260D
Ethylbenzene		<	1.0	ug/L	1	B9D0098	04/05/19 16:44	04/05/19 16:44	EPA 8260D
Hexachlorobutadiene		<	0.50	ug/L	1	B9D0098	04/05/19 16:44	04/05/19 16:44	EPA 8260D
Isopropylbenzene		<	1.0	ug/L	1	B9D0098	04/05/19 16:44	04/05/19 16:44	EPA 8260D
Methyl ethyl ketone (MEK)		<	10	ug/L	1	B9D0098	04/05/19 16:44	04/05/19 16:44	EPA 8260D
Methyl isobutyl ketone (MIBK)		<	5.0	ug/L	1	B9D0098	04/05/19 16:44	04/05/19 16:44	EPA 8260D
Methyl tertiary butyl ether (MTBE)		<	2.0	ug/L	1	B9D0098	04/05/19 16:44	04/05/19 16:44	EPA 8260D

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 05/01/19 15:14

MDH Sample Number: 19D0244-06

Location ID: 834660
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 04/03/19
Collect Time: 13:30
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Methylene chloride		<	1.0	ug/L	1	B9D0098	04/05/19 16:44	04/05/19 16:44	EPA 8260D
Naphthalene		<	1.0	ug/L	1	B9D0098	04/05/19 16:44	04/05/19 16:44	EPA 8260D
n-Butylbenzene		<	1.0	ug/L	1	B9D0098	04/05/19 16:44	04/05/19 16:44	EPA 8260D
n-Propylbenzene		<	1.0	ug/L	1	B9D0098	04/05/19 16:44	04/05/19 16:44	EPA 8260D
o-Xylene		<	1.0	ug/L	1	B9D0098	04/05/19 16:44	04/05/19 16:44	EPA 8260D
p&m-Xylene		<	1.0	ug/L	1	B9D0098	04/05/19 16:44	04/05/19 16:44	EPA 8260D
p-Isopropyltoluene		<	1.0	ug/L	1	B9D0098	04/05/19 16:44	04/05/19 16:44	EPA 8260D
sec-Butylbenzene		<	1.0	ug/L	1	B9D0098	04/05/19 16:44	04/05/19 16:44	EPA 8260D
Styrene		<	1.0	ug/L	1	B9D0098	04/05/19 16:44	04/05/19 16:44	EPA 8260D
tert-Butylbenzene		<	1.0	ug/L	1	B9D0098	04/05/19 16:44	04/05/19 16:44	EPA 8260D
Tetrachloroethene		<	1.0	ug/L	1	B9D0098	04/05/19 16:44	04/05/19 16:44	EPA 8260D
Tetrahydrofuran (THF)		<	10	ug/L	1	B9D0098	04/05/19 16:44	04/05/19 16:44	EPA 8260D
Toluene		<	1.0	ug/L	1	B9D0098	04/05/19 16:44	04/05/19 16:44	EPA 8260D
trans-1,2-Dichloroethene		<	1.0	ug/L	1	B9D0098	04/05/19 16:44	04/05/19 16:44	EPA 8260D
trans-1,3-Dichloropropene		<	0.50	ug/L	1	B9D0098	04/05/19 16:44	04/05/19 16:44	EPA 8260D
Trichloroethene (TCE)		<	0.10	ug/L	1	B9D0098	04/05/19 16:44	04/05/19 16:44	EPA 8260D
Trichlorofluoromethane		<	1.0	ug/L	1	B9D0098	04/05/19 16:44	04/05/19 16:44	EPA 8260D
Vinyl chloride		<	0.050	ug/L	1	B9D0098	04/05/19 16:44	04/05/19 16:44	EPA 8260D

1,4-Dioxane

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
1,4-Dioxane		<	0.051	ug/L	1	B9D0423	04/24/19 08:00	04/26/19 14:19	EPA 522 Modified

PFC Expanded List

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorobutanesulfonate (PFBS)		**0.065**	0.050	ug/L	1	B9D0230	04/12/19 16:21	04/12/19 16:21	MDH 555
Perfluorobutanoic acid (PFBA)		**0.056**	0.050	ug/L	1	B9D0230	04/12/19 16:21	04/12/19 16:21	MDH 555

FINAL REPORT

Report ID: 05012019151451

Authorized by:

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 05/01/19 15:14

MDH Sample Number: 19D0244-06

Location ID: 834660
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 04/03/19
Collect Time: 13:30
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

PFC Expanded List - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorohexanesulfonate (PFHxS)		**0.12**	0.025	ug/L	1	B9D0230	04/12/19 16:21	04/12/19 16:21	MDH 555
Perfluorohexanoic acid (PFHxA)		**0.21**	0.050	ug/L	1	B9D0230	04/12/19 16:21	04/12/19 16:21	MDH 555
Perfluorooctanesulfonate (PFOS)		**0.28**	0.025	ug/L	1	B9D0230	04/12/19 16:21	04/12/19 16:21	MDH 555
Perfluorooctanoic acid (PFOA)		**0.95**	0.035	ug/L	1	B9D0230	04/12/19 16:21	04/12/19 16:21	MDH 555
Perfluoropentanoic acid (PFPeA)		**0.076**	0.050	ug/L	1	B9D0230	04/12/19 16:21	04/12/19 16:21	MDH 555

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Public Health Laboratory, Minnesota Department of Health

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Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 05/01/19 15:14

Batch Summary

Samples in Batch: B9D0098 - EPA 5030B Preparation

19D0244-01 19D0244-02 19D0244-03 19D0244-04 19D0244-05 19D0244-06

Samples in Batch: B9D0230 - PFCs Preparation

19D0244-02 19D0244-03 19D0244-04 19D0244-05 19D0244-06

Samples in Batch: B9D0274 - PFCs Preparation

19D0244-03RE1

Samples in Batch: B9D0423 - 1,4 Dioxane in Water SPE

19D0244-02 19D0244-03RE1 19D0244-04 19D0244-05 19D0244-06

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 05/01/19 15:14

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0098 - EPA 5030B Preparation

Blank (B9D0098-BLK1) **Prepared: 04/05/19 13:31 Analyzed: 04/05/19 13:31**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: 1,2-Dichlorobenzene-d4		*104*	*70-130*	*%*	*10*					
Surrogate: 4-Bromofluorobenzene		*98*	*70-130*	*%*	*10*					
Surrogate: Methyl tertiary butyl ether-d3		*100*	*70-130*	*%*	*10*					
1,1,1,2-Tetrachloroethane		<	1.0	ug/L						
1,1,1-Trichloroethane		<	1.0	ug/L						
1,1,2,2-Tetrachloroethane		<	0.50	ug/L						
1,1,2-Trichloroethane		<	0.50	ug/L						
1,1,2-Trichlorotrifluoroethane		<	1.0	ug/L						
1,1-Dichloroethane		<	1.0	ug/L						
1,1-Dichloroethene		<	1.0	ug/L						
1,1-Dichloropropene		<	1.0	ug/L						
1,2,3-Trichlorobenzene		<	1.0	ug/L						
1,2,3-Trichloropropane		<	0.20	ug/L						
1,2,4-Trichlorobenzene		<	1.0	ug/L						
1,2,4-Trimethylbenzene		<	1.0	ug/L						
1,2-Dibromo-3-chloropropane (DBCP)		<	1.0	ug/L						
1,2-Dibromoethane (EDB)		<	0.50	ug/L						
1,2-Dichlorobenzene		<	1.0	ug/L						
1,2-Dichloroethane		<	0.20	ug/L						
1,2-Dichloropropane		<	1.0	ug/L						
1,3,5-Trimethylbenzene		<	1.0	ug/L						
1,3-Dichlorobenzene		<	1.0	ug/L						
1,3-Dichloropropane		<	1.0	ug/L						
1,4-Dichlorobenzene		<	1.0	ug/L						
2,2-Dichloropropane		<	1.0	ug/L						
2-Chlorotoluene		<	1.0	ug/L						
4-Chlorotoluene		<	1.0	ug/L						
Acetone		<	20	ug/L						
Allyl chloride		<	1.0	ug/L						
Benzene		<	0.50	ug/L						
Bromobenzene		<	1.0	ug/L						
Bromochloromethane		<	1.0	ug/L						
Bromodichloromethane		<	1.0	ug/L						
Bromoform		<	1.0	ug/L						

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Paul Moyer, Environmental Laboratory Manager
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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 05/01/19 15:14

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0098 - EPA 5030B Preparation

Blank (B9D0098-BLK1) **Prepared: 04/05/19 13:31 Analyzed: 04/05/19 13:31**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Bromomethane	V4, Z-01	<	2.0	ug/L						
Carbon tetrachloride		<	0.20	ug/L						
Chlorobenzene		<	1.0	ug/L						
Chlorodibromomethane		<	0.50	ug/L						
Chloroethane		<	1.0	ug/L						
Chloroform		<	1.0	ug/L						
Chloromethane		<	1.0	ug/L						
cis-1,2-Dichloroethene		<	1.0	ug/L						
cis-1,3-Dichloropropene		<	0.50	ug/L						
Dibromomethane		<	1.0	ug/L						
Dichlorodifluoromethane		<	1.0	ug/L						
Dichlorofluoromethane		<	1.0	ug/L						
Ethyl ether		<	1.0	ug/L						
Ethylbenzene		<	1.0	ug/L						
Hexachlorobutadiene		<	0.50	ug/L						
Isopropylbenzene		<	1.0	ug/L						
Methyl ethyl ketone (MEK)		<	10	ug/L						
Methyl isobutyl ketone (MIBK)		<	5.0	ug/L						
Methyl tertiary butyl ether (MTBE)		<	2.0	ug/L						
Methylene chloride		<	1.0	ug/L						
Naphthalene		<	1.0	ug/L						
n-Butylbenzene		<	1.0	ug/L						
n-Propylbenzene		<	1.0	ug/L						
o-Xylene		<	1.0	ug/L						
p&m-Xylene		<	1.0	ug/L						
p-Isopropyltoluene		<	1.0	ug/L						
sec-Butylbenzene		<	1.0	ug/L						
Styrene		<	1.0	ug/L						
tert-Butylbenzene		<	1.0	ug/L						
Tetrachloroethene		<	1.0	ug/L						
Tetrahydrofuran (THF)		<	10	ug/L						
Toluene		<	1.0	ug/L						
trans-1,2-Dichloroethene		<	1.0	ug/L						
trans-1,3-Dichloropropene		<	0.50	ug/L						
Trichloroethene (TCE)		<	0.10	ug/L						

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 05/01/19 15:14

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0098 - EPA 5030B Preparation

Blank (B9D0098-BLK1) **Prepared: 04/05/19 13:31 Analyzed: 04/05/19 13:31**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Trichlorofluoromethane		<	1.0	ug/L						
Vinyl chloride		<	0.050	ug/L						

LCS (B9D0098-BS1) **Prepared: 04/05/19 11:12 Analyzed: 04/05/19 11:12**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: 1,2-Dichlorobenzene-d4		*100*	*70-130*	*%*	*10*					
Surrogate: 4-Bromofluorobenzene		*95*	*70-130*	*%*	*10*					
Surrogate: Methyl tertiary butyl ether-d3		*99*	*70-130*	*%*	*10*					
1,1,1,2-Tetrachloroethane		9.8	1.0	ug/L	10		98	70-130		
1,1,1-Trichloroethane		10	1.0	ug/L	10		104	70-130		
1,1,2,2-Tetrachloroethane		9.5	0.50	ug/L	10		95	70-130		
1,1,2-Trichloroethane		9.9	0.50	ug/L	10		99	70-130		
1,1,2-Trichlorotrifluoroethane		10	1.0	ug/L	10		102	70-130		
1,1-Dichloroethane		10	1.0	ug/L	10		103	70-130		
1,1-Dichloroethene		10	1.0	ug/L	10		101	70-130		
1,1-Dichloropropene		10	1.0	ug/L	10		102	70-130		
1,2,3-Trichlorobenzene		9.4	1.0	ug/L	10		94	70-130		
1,2,3-Trichloropropane		9.5	0.20	ug/L	10		95	70-130		
1,2,4-Trichlorobenzene		9.4	1.0	ug/L	10		94	70-130		
1,2,4-Trimethylbenzene		9.3	1.0	ug/L	10		93	70-130		
1,2-Dibromo-3-chloropropane (DBCP)		9.4	1.0	ug/L	10		94	70-130		
1,2-Dibromoethane (EDB)		9.6	0.50	ug/L	10		96	70-130		
1,2-Dichlorobenzene		9.2	1.0	ug/L	10		92	70-130		
1,2-Dichloroethane		10	0.20	ug/L	10		104	70-130		
1,2-Dichloropropane		11	1.0	ug/L	10		107	70-130		
1,3,5-Trimethylbenzene		9.2	1.0	ug/L	10		92	70-130		
1,3-Dichlorobenzene		9.4	1.0	ug/L	10		94	70-130		
1,3-Dichloropropane		9.8	1.0	ug/L	10		98	70-130		
1,4-Dichlorobenzene		9.4	1.0	ug/L	10		94	70-130		
2,2-Dichloropropane		11	1.0	ug/L	10		111	70-130		
2-Chlorotoluene		9.4	1.0	ug/L	10		94	70-130		
4-Chlorotoluene		9.3	1.0	ug/L	10		93	70-130		
Acetone		110	20	ug/L	100		108	70-130		

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 05/01/19 15:14

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0098 - EPA 5030B Preparation

LCS (B9D0098-BS1) **Prepared: 04/05/19 11:12 Analyzed: 04/05/19 11:12**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Allyl chloride		10	1.0	ug/L	10		100	70-130		
Benzene		9.9	0.50	ug/L	10		99	70-130		
Bromobenzene		9.2	1.0	ug/L	10		92	70-130		
Bromochloromethane		10	1.0	ug/L	10		102	70-130		
Bromodichloromethane		10	1.0	ug/L	10		104	70-130		
Bromoform		9.3	1.0	ug/L	10		93	70-130		
Bromomethane	V4, Z-01	7.8	2.0	ug/L	10		78	70-130		
Carbon tetrachloride		11	0.20	ug/L	10		106	70-130		
Chlorobenzene		9.7	1.0	ug/L	10		97	70-130		
Chlorodibromomethane		9.2	0.50	ug/L	10		92	70-130		
Chloroethane		11	1.0	ug/L	10		107	70-130		
Chloroform		10	1.0	ug/L	10		104	70-130		
Chloromethane		9.6	1.0	ug/L	10		96	70-130		
cis-1,2-Dichloroethene		10	1.0	ug/L	10		102	70-130		
cis-1,3-Dichloropropene		9.8	0.50	ug/L	10		98	70-130		
Dibromomethane		10	1.0	ug/L	10		104	70-130		
Dichlorodifluoromethane		11	1.0	ug/L	10		106	70-130		
Dichlorofluoromethane		11	1.0	ug/L	10		107	70-130		
Ethyl ether		9.8	1.0	ug/L	10		98	70-130		
Ethylbenzene		9.6	1.0	ug/L	10		96	70-130		
Hexachlorobutadiene		9.7	0.50	ug/L	10		97	70-130		
Isopropylbenzene		9.6	1.0	ug/L	10		96	70-130		
Methyl ethyl ketone (MEK)		53	10	ug/L	50		106	70-130		
Methyl isobutyl ketone (MIBK)		51	5.0	ug/L	50		102	70-130		
Methyl tertiary butyl ether (MTBE)		10	2.0	ug/L	10		103	70-130		
Methylene chloride		10	1.0	ug/L	10		103	70-130		
Naphthalene		9.3	1.0	ug/L	10		93	70-130		
n-Butylbenzene		10	1.0	ug/L	10		102	70-130		
n-Propylbenzene		9.7	1.0	ug/L	10		97	70-130		
o-Xylene		9.2	1.0	ug/L	10		92	70-130		
p&m-Xylene		9.7	1.0	ug/L	10		97	70-130		
p-Isopropyltoluene		9.6	1.0	ug/L	10		96	70-130		
sec-Butylbenzene		9.5	1.0	ug/L	10		95	70-130		
Styrene		9.1	1.0	ug/L	10		91	70-130		
tert-Butylbenzene		9.2	1.0	ug/L	10		92	70-130		

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 05/01/19 15:14

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0098 - EPA 5030B Preparation

LCS (B9D0098-BS1) **Prepared: 04/05/19 11:12 Analyzed: 04/05/19 11:12**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Tetrachloroethene		9.6	1.0	ug/L	10		96	70-130		
Tetrahydrofuran (THF)		110	10	ug/L	100		108	70-130		
Toluene		9.5	1.0	ug/L	10		95	70-130		
trans-1,2-Dichloroethene		10	1.0	ug/L	10		101	70-130		
trans-1,3-Dichloropropene		9.7	0.50	ug/L	10		97	70-130		
Trichloroethene (TCE)		9.7	0.10	ug/L	10		97	70-130		
Trichlorofluoromethane		11	1.0	ug/L	10		107	70-130		
Vinyl chloride		10	0.050	ug/L	10		104	70-130		

LCS Dup (B9D0098-BSD1) **Prepared: 04/05/19 11:40 Analyzed: 04/05/19 11:40**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: 1,2-Dichlorobenzene-d4		*99*	*70-130*	*%*	*10*					
Surrogate: 4-Bromofluorobenzene		*97*	*70-130*	*%*	*10*					
Surrogate: Methyl tertiary butyl ether-d3		*99*	*70-130*	*%*	*10*					
1,1,1,2-Tetrachloroethane		9.8	1.0	ug/L	10		98	70-130	0.1	30
1,1,1-Trichloroethane		11	1.0	ug/L	10		106	70-130	2	30
1,1,2,2-Tetrachloroethane		9.5	0.50	ug/L	10		95	70-130	0	30
1,1,2-Trichloroethane		10	0.50	ug/L	10		100	70-130	0.6	30
1,1,2-Trichlorotrifluoroethane		11	1.0	ug/L	10		106	70-130	4	30
1,1-Dichloroethane		11	1.0	ug/L	10		106	70-130	3	30
1,1-Dichloroethene		10	1.0	ug/L	10		105	70-130	3	30
1,1-Dichloropropene		11	1.0	ug/L	10		107	70-130	4	30
1,2,3-Trichlorobenzene		9.4	1.0	ug/L	10		94	70-130	0.3	30
1,2,3-Trichloropropane		9.3	0.20	ug/L	10		93	70-130	2	30
1,2,4-Trichlorobenzene		9.4	1.0	ug/L	10		94	70-130	0	30
1,2,4-Trimethylbenzene		9.5	1.0	ug/L	10		95	70-130	3	30
1,2-Dibromo-3-chloropropane (DBCP)		8.9	1.0	ug/L	10		89	70-130	6	30
1,2-Dibromoethane (EDB)		9.6	0.50	ug/L	10		96	70-130	0.1	30
1,2-Dichlorobenzene		9.5	1.0	ug/L	10		95	70-130	3	30
1,2-Dichloroethane		10	0.20	ug/L	10		103	70-130	0.4	30
1,2-Dichloropropane		11	1.0	ug/L	10		109	70-130	2	30
1,3,5-Trimethylbenzene		9.5	1.0	ug/L	10		95	70-130	3	30
1,3-Dichlorobenzene		9.5	1.0	ug/L	10		95	70-130	1	30

FINAL REPORT

Report ID: 05012019151451

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 05/01/19 15:14

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0098 - EPA 5030B Preparation

LCS Dup (B9D0098-BSD1) **Prepared: 04/05/19 11:40 Analyzed: 04/05/19 11:40**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,3-Dichloropropane		9.8	1.0	ug/L	10		98	70-130	0.7	30
1,4-Dichlorobenzene		9.6	1.0	ug/L	10		96	70-130	2	30
2,2-Dichloropropane		11	1.0	ug/L	10		112	70-130	2	30
2-Chlorotoluene		9.6	1.0	ug/L	10		96	70-130	2	30
4-Chlorotoluene		9.6	1.0	ug/L	10		96	70-130	3	30
Acetone		97	20	ug/L	100		97	70-130	11	30
Allyl chloride		10	1.0	ug/L	10		102	70-130	1	30
Benzene		10	0.50	ug/L	10		104	70-130	5	30
Bromobenzene		9.6	1.0	ug/L	10		96	70-130	4	30
Bromochloromethane		11	1.0	ug/L	10		105	70-130	4	30
Bromodichloromethane		11	1.0	ug/L	10		106	70-130	2	30
Bromoform		10	1.0	ug/L	10		100	70-130	7	30
Bromomethane	V4, Z-01	9.1	2.0	ug/L	10		91	70-130	15	30
Carbon tetrachloride		11	0.20	ug/L	10		109	70-130	3	30
Chlorobenzene		9.8	1.0	ug/L	10		98	70-130	1	30
Chlorodibromomethane		9.8	0.50	ug/L	10		98	70-130	6	30
Chloroethane		11	1.0	ug/L	10		114	70-130	6	30
Chloroform		11	1.0	ug/L	10		107	70-130	4	30
Chloromethane		9.9	1.0	ug/L	10		99	70-130	3	30
cis-1,2-Dichloroethene		10	1.0	ug/L	10		103	70-130	1	30
cis-1,3-Dichloropropene		10	0.50	ug/L	10		100	70-130	2	30
Dibromomethane		11	1.0	ug/L	10		107	70-130	3	30
Dichlorodifluoromethane		11	1.0	ug/L	10		111	70-130	4	30
Dichlorofluoromethane		11	1.0	ug/L	10		109	70-130	2	30
Ethyl ether		10	1.0	ug/L	10		102	70-130	4	30
Ethylbenzene		9.8	1.0	ug/L	10		98	70-130	2	30
Hexachlorobutadiene		9.7	0.50	ug/L	10		97	70-130	0.4	30
Isopropylbenzene		9.9	1.0	ug/L	10		99	70-130	3	30
Methyl ethyl ketone (MEK)		49	10	ug/L	50		97	70-130	8	30
Methyl isobutyl ketone (MIBK)		49	5.0	ug/L	50		98	70-130	4	30
Methyl tertiary butyl ether (MTBE)		11	2.0	ug/L	10		106	70-130	2	30
Methylene chloride		11	1.0	ug/L	10		106	70-130	3	30
Naphthalene		9.3	1.0	ug/L	10		93	70-130	0.1	30
n-Butylbenzene		10	1.0	ug/L	10		103	70-130	1	30
n-Propylbenzene		10	1.0	ug/L	10		100	70-130	3	30

FINAL REPORT

Report ID: 05012019151451

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 05/01/19 15:14

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0098 - EPA 5030B Preparation

LCS Dup (B9D0098-BSD1) **Prepared: 04/05/19 11:40 Analyzed: 04/05/19 11:40**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
o-Xylene		9.6	1.0	ug/L	10		96	70-130	4	30
p&m-Xylene		9.8	1.0	ug/L	10		98	70-130	0.6	30
p-Isopropyltoluene		9.7	1.0	ug/L	10		97	70-130	2	30
sec-Butylbenzene		9.8	1.0	ug/L	10		98	70-130	3	30
Styrene		9.2	1.0	ug/L	10		92	70-130	1	30
tert-Butylbenzene		9.5	1.0	ug/L	10		95	70-130	3	30
Tetrachloroethene		9.7	1.0	ug/L	10		97	70-130	0.6	30
Tetrahydrofuran (THF)		99	10	ug/L	100		99	70-130	8	30
Toluene		9.7	1.0	ug/L	10		97	70-130	2	30
trans-1,2-Dichloroethene		10	1.0	ug/L	10		104	70-130	3	30
trans-1,3-Dichloropropene		10	0.50	ug/L	10		101	70-130	4	30
Trichloroethene (TCE)		10	0.10	ug/L	10		101	70-130	4	30
Trichlorofluoromethane		11	1.0	ug/L	10		112	70-130	5	30
Vinyl chloride		11	0.050	ug/L	10		111	70-130	6	30

Duplicate (B9D0098-DUP1) Source: 19D0244-03 **Prepared: 04/05/19 15:49 Analyzed: 04/05/19 15:49**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: 1,2-Dichlorobenzene-d4		*102*	*70-130*	*%*	*10*					
Surrogate: 4-Bromofluorobenzene		*99*	*70-130*	*%*	*10*					
Surrogate: Methyl tertiary butyl ether-d3		*102*	*70-130*	*%*	*10*					
1,1,1,2-Tetrachloroethane		<	1.0	ug/L		<				30
1,1,1-Trichloroethane		<	1.0	ug/L		<				30
1,1,2,2-Tetrachloroethane		<	0.50	ug/L		<				30
1,1,2-Trichloroethane		<	0.50	ug/L		<				30
1,1,2-Trichlorotrifluoroethane		<	1.0	ug/L		<				30
1,1-Dichloroethane		<	1.0	ug/L		<				30
1,1-Dichloroethene		<	1.0	ug/L		<				30
1,1-Dichloropropene		<	1.0	ug/L		<				30
1,2,3-Trichlorobenzene		<	1.0	ug/L		<				30
1,2,3-Trichloropropane		<	0.20	ug/L		<				30
1,2,4-Trichlorobenzene		<	1.0	ug/L		<				30
1,2,4-Trimethylbenzene		<	1.0	ug/L		<				30
1,2-Dibromo-3-chloropropane (DBCP)		<	1.0	ug/L		<				30

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 05/01/19 15:14

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0098 - EPA 5030B Preparation

Duplicate (B9D0098-DUP1) Source: 19D0244-03 **Prepared: 04/05/19 15:49 Analyzed: 04/05/19 15:49**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,2-Dibromoethane (EDB)		<	0.50	ug/L		<				30
1,2-Dichlorobenzene		0.26	1.0	ug/L		<			0	30
1,2-Dichloroethane		<	0.20	ug/L		<				30
1,2-Dichloropropane		<	1.0	ug/L		<				30
1,3,5-Trimethylbenzene		<	1.0	ug/L		<				30
1,3-Dichlorobenzene		<	1.0	ug/L		<				30
1,3-Dichloropropane		<	1.0	ug/L		<				30
1,4-Dichlorobenzene		2.2	1.0	ug/L		2.3			6	30
2,2-Dichloropropane		<	1.0	ug/L		<				30
2-Chlorotoluene		<	1.0	ug/L		<				30
4-Chlorotoluene		<	1.0	ug/L		<				30
Acetone		4.0	20	ug/L		<			12	30
Allyl chloride		<	1.0	ug/L		<				30
Benzene		6.8	0.50	ug/L		7.1			4	30
Bromobenzene		<	1.0	ug/L		<				30
Bromochloromethane		<	1.0	ug/L		<				30
Bromodichloromethane		<	1.0	ug/L		<				30
Bromoform		<	1.0	ug/L		<				30
Bromomethane	V4, Z-01	<	2.0	ug/L		<				30
Carbon tetrachloride		<	0.20	ug/L		<				30
Chlorobenzene		0.91	1.0	ug/L		<			1	30
Chlorodibromomethane		<	0.50	ug/L		<				30
Chloroethane		<	1.0	ug/L		<				30
Chloroform		<	1.0	ug/L		<				30
Chloromethane		<	1.0	ug/L		<				30
cis-1,2-Dichloroethene		<	1.0	ug/L		<				30
cis-1,3-Dichloropropene		<	0.50	ug/L		<				30
Dibromomethane		<	1.0	ug/L		<				30
Dichlorodifluoromethane		<	1.0	ug/L		<				30
Dichlorofluoromethane		<	1.0	ug/L		<				30
Ethyl ether		2.4	1.0	ug/L		2.6			7	30
Ethylbenzene		<	1.0	ug/L		<				30
Hexachlorobutadiene		<	0.50	ug/L		<				30
Isopropylbenzene		1.8	1.0	ug/L		1.8			3	30
Methyl ethyl ketone (MEK)		<	10	ug/L		<				30

FINAL REPORT

Report ID: 05012019151451

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651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 05/01/19 15:14

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Batch B9D0098 - EPA 5030B Preparation

Duplicate (B9D0098-DUP1) Source: 19D0244-03 **Prepared: 04/05/19 15:49 Analyzed: 04/05/19 15:49**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Methyl isobutyl ketone (MIBK)		<	5.0	ug/L		<				30
Methyl tertiary butyl ether (MTBE)		<	2.0	ug/L		<				30
Methylene chloride		<	1.0	ug/L		<				30
Naphthalene		0.23	1.0	ug/L		<			0	30
n-Butylbenzene		0.35	1.0	ug/L		<			6	30
n-Propylbenzene		1.3	1.0	ug/L		1.3			3	30
o-Xylene		<	1.0	ug/L		<				30
p&m-Xylene		0.28	1.0	ug/L		<			13	30
p-Isopropyltoluene		<	1.0	ug/L		<				30
sec-Butylbenzene		0.67	1.0	ug/L		<			2	30
Styrene		<	1.0	ug/L		<				30
tert-Butylbenzene		0.36	1.0	ug/L		<			3	30
Tetrachloroethene		<	1.0	ug/L		<				30
Tetrahydrofuran (THF)		9.3	10	ug/L		<			3	30
Toluene		<	1.0	ug/L		<				30
trans-1,2-Dichloroethene		<	1.0	ug/L		<				30
trans-1,3-Dichloropropene		<	0.50	ug/L		<				30
Trichloroethene (TCE)		<	0.10	ug/L		<				30
Trichlorofluoromethane		<	1.0	ug/L		<				30
Vinyl chloride		0.030	0.050	ug/L		<			29	30

Matrix Spike (B9D0098-MS1) Source: 19D0244-02 **Prepared: 04/05/19 12:08 Analyzed: 04/05/19 12:08**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: 1,2-Dichlorobenzene-d4		*98*	*70-130*	*%*	*10*					
Surrogate: 4-Bromofluorobenzene		*95*	*70-130*	*%*	*10*					
Surrogate: Methyl tertiary butyl ether-d3		*101*	*70-130*	*%*	*10*					
1,1,1,2-Tetrachloroethane		10	1.0	ug/L	10	<	100	70-130		
1,1,1-Trichloroethane		11	1.0	ug/L	10	<	113	70-130		
1,1,2,2-Tetrachloroethane		9.6	0.50	ug/L	10	<	96	70-130		
1,1,2-Trichloroethane		11	0.50	ug/L	10	1.5	100	70-130		
1,1,2-Trichlorotrifluoroethane		12	1.0	ug/L	10	<	115	70-130		
1,1-Dichloroethane		11	1.0	ug/L	10	<	111	70-130		
1,1-Dichloroethene		11	1.0	ug/L	10	<	113	70-130		
1,1-Dichloropropene		11	1.0	ug/L	10	<	114	70-130		

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 05/01/19 15:14

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0098 - EPA 5030B Preparation

Matrix Spike (B9D0098-MS1) Source: 19D0244-02 **Prepared: 04/05/19 12:08 Analyzed: 04/05/19 12:08**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,2,3-Trichlorobenzene		9.5	1.0	ug/L	10	<	95	70-130		
1,2,3-Trichloropropane		9.4	0.20	ug/L	10	<	94	70-130		
1,2,4-Trichlorobenzene		9.7	1.0	ug/L	10	<	97	70-130		
1,2,4-Trimethylbenzene		9.8	1.0	ug/L	10	<	98	70-130		
1,2-Dibromo-3-chloropropane (DBCP)		8.4	1.0	ug/L	10	<	84	70-130		
1,2-Dibromoethane (EDB)		9.8	0.50	ug/L	10	<	98	70-130		
1,2-Dichlorobenzene		9.6	1.0	ug/L	10	<	96	70-130		
1,2-Dichloroethane		10	0.20	ug/L	10	<	105	70-130		
1,2-Dichloropropane		11	1.0	ug/L	10	<	110	70-130		
1,3,5-Trimethylbenzene		9.9	1.0	ug/L	10	<	99	70-130		
1,3-Dichlorobenzene		9.9	1.0	ug/L	10	<	99	70-130		
1,3-Dichloropropane		10	1.0	ug/L	10	<	100	70-130		
1,4-Dichlorobenzene		9.9	1.0	ug/L	10	<	99	70-130		
2,2-Dichloropropane		12	1.0	ug/L	10	<	122	70-130		
2-Chlorotoluene		9.9	1.0	ug/L	10	<	99	70-130		
4-Chlorotoluene		9.8	1.0	ug/L	10	<	98	70-130		
Acetone		100	20	ug/L	100	<	100	70-130		
Allyl chloride		11	1.0	ug/L	10	<	111	70-130		
Benzene		11	0.50	ug/L	10	<	108	70-130		
Bromobenzene		9.7	1.0	ug/L	10	<	97	70-130		
Bromochloromethane		11	1.0	ug/L	10	<	107	70-130		
Bromodichloromethane		11	1.0	ug/L	10	<	108	70-130		
Bromoform		10	1.0	ug/L	10	<	101	70-130		
Bromomethane	V4, Z-01	9.9	2.0	ug/L	10	<	99	70-130		
Carbon tetrachloride		12	0.20	ug/L	10	<	118	70-130		
Chlorobenzene		10	1.0	ug/L	10	<	103	70-130		
Chlorodibromomethane		9.9	0.50	ug/L	10	<	99	70-130		
Chloroethane		12	1.0	ug/L	10	<	123	70-130		
Chloroform		11	1.0	ug/L	10	<	110	70-130		
Chloromethane		11	1.0	ug/L	10	<	107	70-130		
cis-1,2-Dichloroethene		11	1.0	ug/L	10	<	108	70-130		
cis-1,3-Dichloropropene		10	0.50	ug/L	10	<	101	70-130		
Dibromomethane		11	1.0	ug/L	10	<	107	70-130		
Dichlorodifluoromethane		13	1.0	ug/L	10	<	126	70-130		
Dichlorofluoromethane		12	1.0	ug/L	10	<	118	70-130		

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 05/01/19 15:14

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0098 - EPA 5030B Preparation

Matrix Spike (B9D0098-MS1) Source: 19D0244-02 **Prepared: 04/05/19 12:08 Analyzed: 04/05/19 12:08**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Ethyl ether		11	1.0	ug/L	10	<	104	70-130		
Ethylbenzene		10	1.0	ug/L	10	<	104	70-130		
Hexachlorobutadiene		9.9	0.50	ug/L	10	<	99	70-130		
Isopropylbenzene		10	1.0	ug/L	10	<	104	70-130		
Methyl ethyl ketone (MEK)		50	10	ug/L	50	<	99	70-130		
Methyl isobutyl ketone (MIBK)		50	5.0	ug/L	50	<	100	70-130		
Methyl tertiary butyl ether (MTBE)		11	2.0	ug/L	10	<	107	70-130		
Methylene chloride		11	1.0	ug/L	10	<	110	70-130		
Naphthalene		9.3	1.0	ug/L	10	<	93	70-130		
n-Butylbenzene		11	1.0	ug/L	10	<	110	70-130		
n-Propylbenzene		11	1.0	ug/L	10	<	105	70-130		
o-Xylene		9.9	1.0	ug/L	10	<	99	70-130		
p&m-Xylene		11	1.0	ug/L	10	<	106	70-130		
p-Isopropyltoluene		10	1.0	ug/L	10	<	102	70-130		
sec-Butylbenzene		10	1.0	ug/L	10	<	104	70-130		
Styrene		9.6	1.0	ug/L	10	<	96	70-130		
tert-Butylbenzene		10	1.0	ug/L	10	<	100	70-130		
Tetrachloroethene		10	1.0	ug/L	10	<	105	70-130		
Tetrahydrofuran (THF)		100	10	ug/L	100	<	100	70-130		
Toluene		10	1.0	ug/L	10	<	102	70-130		
trans-1,2-Dichloroethene		11	1.0	ug/L	10	<	110	70-130		
trans-1,3-Dichloropropene		10	0.50	ug/L	10	<	102	70-130		
Trichloroethene (TCE)		11	0.10	ug/L	10	0.47	106	70-130		
Trichlorofluoromethane		13	1.0	ug/L	10	<	125	70-130		
Vinyl chloride		12	0.050	ug/L	10	<	124	70-130		

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 05/01/19 15:14

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0423 - 1,4 Dioxane in Water SPE

Blank (B9D0423-BLK1) — **Prepared: 04/24/19 08:00 Analyzed: 04/26/19 11:55**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,4-Dioxane		<	0.051	ug/L						

LCS (B9D0423-BS1) — **Prepared: 04/24/19 08:00 Analyzed: 04/26/19 12:11**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,4-Dioxane		0.21	0.051	ug/L	0.20		100	80-120		

Duplicate (B9D0423-DUP1) — Source: 19D0434-02 — **Prepared: 04/24/19 08:00 Analyzed: 04/26/19 14:51**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,4-Dioxane		0.23	0.052	ug/L		0.20			15	30

Matrix Spike (B9D0423-MS1) — Source: 19D0434-03 — **Prepared: 04/24/19 08:00 Analyzed: 04/26/19 15:38**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,4-Dioxane		0.48	0.051	ug/L	0.45	<	105	70-130		

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 05/01/19 15:14

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0230 - PFCs Preparation

Blank (B9D0230-BLK1) **Prepared: 04/12/19 12:59 Analyzed: 04/12/19 12:59**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		<	0.050	ug/L						
Perfluorobutanoic acid (PFBA)		<	0.050	ug/L						
Perfluorohexanesulfonate (PFHxS)		<	0.025	ug/L						
Perfluorohexanoic acid (PFHxA)		<	0.050	ug/L						
Perfluorooctanesulfonate (PFOS)		<	0.025	ug/L						
Perfluorooctanoic acid (PFOA)		<	0.035	ug/L						
Perfluoropentanoic acid (PFPeA)		<	0.050	ug/L						

Blank (B9D0230-BLK2) **Prepared: 04/12/19 18:46 Analyzed: 04/12/19 18:46**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		<	0.050	ug/L						
Perfluorobutanoic acid (PFBA)		<	0.050	ug/L						
Perfluorohexanesulfonate (PFHxS)		<	0.025	ug/L						
Perfluorohexanoic acid (PFHxA)		<	0.050	ug/L						
Perfluorooctanesulfonate (PFOS)		<	0.025	ug/L						
Perfluorooctanoic acid (PFOA)		<	0.035	ug/L						
Perfluoropentanoic acid (PFPeA)		<	0.050	ug/L						

LCS (B9D0230-BS1) **Prepared: 04/12/19 12:51 Analyzed: 04/12/19 12:51**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.50	0.050	ug/L	0.50		101	80-120		
Perfluorobutanoic acid (PFBA)		0.51	0.050	ug/L	0.5		103	80-120		
Perfluorohexanesulfonate (PFHxS)		0.55	0.025	ug/L	0.50		109	80-120		
Perfluorohexanoic acid (PFHxA)		0.53	0.050	ug/L	0.5		107	80-120		
Perfluorooctanesulfonate (PFOS)		0.52	0.025	ug/L	0.49		104	80-120		
Perfluorooctanoic acid (PFOA)		0.52	0.035	ug/L	0.5		105	80-120		
Perfluoropentanoic acid (PFPeA)		0.49	0.050	ug/L	0.5		98	80-120		

LCS Dup (B9D0230-BSD1) **Prepared: 04/12/19 18:38 Analyzed: 04/12/19 18:38**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.53	0.050	ug/L	0.50		107	80-120	6	20
Perfluorobutanoic acid (PFBA)		0.53	0.050	ug/L	0.5		106	80-120	3	20
Perfluorohexanesulfonate (PFHxS)		0.52	0.025	ug/L	0.50		103	80-120	6	20

FINAL REPORT

Report ID: 05012019151451

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Minnesota Department of Health
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St. Paul, MN 55164-0899
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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 05/01/19 15:14

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0230 - PFCs Preparation

LCS Dup (B9D0230-BSD1) — **Prepared: 04/12/19 18:38 Analyzed: 04/12/19 18:38**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorohexanoic acid (PFHxA)		0.50	0.050	ug/L	0.5		100	80-120	6	20
Perfluorooctanesulfonate (PFOS)		0.52	0.025	ug/L	0.49		105	80-120	0.8	20
Perfluorooctanoic acid (PFOA)		0.55	0.035	ug/L	0.5		111	80-120	6	20
Perfluoropentanoic acid (PFPeA)		0.52	0.050	ug/L	0.5		105	80-120	6	20

Duplicate (B9D0230-DUP1) — Source: 19D0067-02 — **Prepared: 04/12/19 13:24 Analyzed: 04/12/19 13:24**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		<	0.050	ug/L		<				20
Perfluorobutanoic acid (PFBA)	WB, J	0.019	0.050	ug/L		<			23	20
Perfluorohexanesulfonate (PFHxS)		<	0.025	ug/L		<				20
Perfluorohexanoic acid (PFHxA)		<	0.050	ug/L		<				20
Perfluorooctanesulfonate (PFOS)		<	0.025	ug/L		<				20
Perfluorooctanoic acid (PFOA)		<	0.035	ug/L		<				20
Perfluoropentanoic acid (PFPeA)		<	0.050	ug/L		<				20

Matrix Spike (B9D0230-MS1) — Source: 19D0067-02 — **Prepared: 04/12/19 13:16 Analyzed: 04/12/19 13:16**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.53	0.050	ug/L	0.50	<	105	70-130		
Perfluorobutanoic acid (PFBA)		0.52	0.050	ug/L	0.5	<	99	70-130		
Perfluorohexanesulfonate (PFHxS)		0.54	0.025	ug/L	0.50	<	107	70-130		
Perfluorohexanoic acid (PFHxA)		0.52	0.050	ug/L	0.5	<	104	70-130		
Perfluorooctanesulfonate (PFOS)		0.51	0.025	ug/L	0.49	<	101	70-130		
Perfluorooctanoic acid (PFOA)		0.49	0.035	ug/L	0.5	<	98	70-130		
Perfluoropentanoic acid (PFPeA)		0.52	0.050	ug/L	0.5	<	105	70-130		

Matrix Spike (B9D0230-MS2) — Source: 19D0067-03 — **Prepared: 04/12/19 13:48 Analyzed: 04/12/19 13:48**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.53	0.050	ug/L	0.50	<	105	70-130		
Perfluorobutanoic acid (PFBA)		0.55	0.050	ug/L	0.5	<	101	70-130		
Perfluorohexanesulfonate (PFHxS)		0.54	0.025	ug/L	0.50	<	108	70-130		
Perfluorohexanoic acid (PFHxA)		0.50	0.050	ug/L	0.5	<	99	70-130		
Perfluorooctanesulfonate (PFOS)		0.50	0.025	ug/L	0.49	<	99	70-130		
Perfluorooctanoic acid (PFOA)		0.55	0.035	ug/L	0.5	<	109	70-130		

FINAL REPORT

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651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 05/01/19 15:14

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0230 - PFCs Preparation

Matrix Spike (B9D0230-MS2) Source: 19D0067-03 **Prepared: 04/12/19 13:48 Analyzed: 04/12/19 13:48**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluoropentanoic acid (PFPeA)		0.53	0.050	ug/L	0.5	<	105	70-130		

Matrix Spike (B9D0230-MS3) Source: 19D0067-04 **Prepared: 04/12/19 14:04 Analyzed: 04/12/19 14:04**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.53	0.050	ug/L	0.50	<	105	70-130		
Perfluorobutanoic acid (PFBA)		0.57	0.050	ug/L	0.5	0.056	103	70-130		
Perfluorohexanesulfonate (PFHxS)		0.56	0.025	ug/L	0.50	<	112	70-130		
Perfluorohexanoic acid (PFHxA)		0.49	0.050	ug/L	0.5	<	94	70-130		
Perfluorooctanesulfonate (PFOS)		0.50	0.025	ug/L	0.49	<	100	70-130		
Perfluorooctanoic acid (PFOA)		0.57	0.035	ug/L	0.5	0.068	100	70-130		
Perfluoropentanoic acid (PFPeA)		0.52	0.050	ug/L	0.5	<	102	70-130		

Matrix Spike (B9D0230-MS4) Source: 19D0067-05 **Prepared: 04/12/19 14:20 Analyzed: 04/12/19 14:20**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.57	0.050	ug/L	0.50	0.066	101	70-130		
Perfluorobutanoic acid (PFBA)		1.3	0.050	ug/L	0.5	0.78	101	70-130		
Perfluorohexanesulfonate (PFHxS)		0.60	0.025	ug/L	0.50	0.087	103	70-130		
Perfluorohexanoic acid (PFHxA)		0.84	0.050	ug/L	0.5	0.30	108	70-130		
Perfluorooctanesulfonate (PFOS)		0.59	0.025	ug/L	0.49	0.063	105	70-130		
Perfluorooctanoic acid (PFOA)		0.75	0.035	ug/L	0.5	0.20	110	70-130		
Perfluoropentanoic acid (PFPeA)		0.73	0.050	ug/L	0.5	0.24	97	70-130		

Matrix Spike (B9D0230-MS6) Source: 19D0067-07 **Prepared: 04/12/19 14:52 Analyzed: 04/12/19 14:52**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)	D1	2.8	0.25	ug/L	2.50	<	110	70-130		
Perfluorobutanoic acid (PFBA)	D1	6.4	0.25	ug/L	2.5	4.0	96	70-130		
Perfluorohexanesulfonate (PFHxS)	D1	2.9	0.12	ug/L	2.50	0.26	105	70-130		
Perfluorohexanoic acid (PFHxA)	D1	3.3	0.25	ug/L	2.5	0.80	98	70-130		
Perfluorooctanesulfonate (PFOS)	D1	3.0	0.12	ug/L	2.49	0.48	101	70-130		
Perfluorooctanoic acid (PFOA)	D1	3.1	0.18	ug/L	2.5	0.53	101	70-130		
Perfluoropentanoic acid (PFPeA)	D1	3.0	0.25	ug/L	2.5	0.59	98	70-130		

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 05/01/19 15:14

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0230 - PFCs Preparation

Matrix Spike (B9D0230-MS7) Source: 19D0067-08 **Prepared: 04/12/19 15:09 Analyzed: 04/12/19 15:09**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.51	0.050	ug/L	0.50	<	99	70-130		
Perfluorobutanoic acid (PFBA)		0.59	0.050	ug/L	0.5	0.088	100	70-130		
Perfluorohexanesulfonate (PFHxS)		0.54	0.025	ug/L	0.50	0.029	102	70-130		
Perfluorohexanoic acid (PFHxA)		0.56	0.050	ug/L	0.5	0.051	102	70-130		
Perfluorooctanesulfonate (PFOS)		0.57	0.025	ug/L	0.49	0.046	105	70-130		
Perfluorooctanoic acid (PFOA)		0.62	0.035	ug/L	0.5	0.061	112	70-130		
Perfluoropentanoic acid (PFPeA)		0.55	0.050	ug/L	0.5	<	100	70-130		

Matrix Spike (B9D0230-MS8) Source: 19D0244-02 **Prepared: 04/12/19 15:25 Analyzed: 04/12/19 15:25**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.55	0.050	ug/L	0.50	<	104	70-130		
Perfluorobutanoic acid (PFBA)		0.59	0.050	ug/L	0.5	0.078	102	70-130		
Perfluorohexanesulfonate (PFHxS)		0.63	0.025	ug/L	0.50	0.12	102	70-130		
Perfluorohexanoic acid (PFHxA)		0.59	0.050	ug/L	0.5	0.085	101	70-130		
Perfluorooctanesulfonate (PFOS)		0.67	0.025	ug/L	0.49	0.12	111	70-130		
Perfluorooctanoic acid (PFOA)		1.4	0.035	ug/L	0.5	0.93	84	70-130		
Perfluoropentanoic acid (PFPeA)		0.57	0.050	ug/L	0.5	<	106	70-130		

Matrix Spike (B9D0230-MS9) Source: 19D0244-03 **Prepared: 04/12/19 15:41 Analyzed: 04/12/19 15:41**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.58	0.050	ug/L	0.50	0.060	103	70-130		
Perfluorobutanoic acid (PFBA)		1.4	0.050	ug/L	0.5	0.92	92	70-130		
Perfluorohexanesulfonate (PFHxS)		0.72	0.025	ug/L	0.50	0.15	113	70-130		
Perfluorohexanoic acid (PFHxA)		1.7	0.050	ug/L	0.5	1.2	95	70-130		
Perfluorooctanesulfonate (PFOS)		0.92	0.025	ug/L	0.49	0.43	98	70-130		
Perfluoropentanoic acid (PFPeA)		1.1	0.050	ug/L	0.5	0.62	91	70-130		

Matrix Spike (B9D0230-MSA) Source: 19D0244-04 **Prepared: 04/12/19 15:57 Analyzed: 04/12/19 15:57**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.52	0.050	ug/L	0.50	<	100	70-130		
Perfluorobutanoic acid (PFBA)		0.63	0.050	ug/L	0.5	0.10	104	70-130		
Perfluorohexanesulfonate (PFHxS)		0.74	0.025	ug/L	0.50	0.21	105	70-130		
Perfluorohexanoic acid (PFHxA)		0.66	0.050	ug/L	0.5	0.15	102	70-130		

FINAL REPORT

Report ID: 05012019151451

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 05/01/19 15:14

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Batch B9D0230 - PFCs Preparation

Matrix Spike (B9D0230-MSA) Source: 19D0244-04 **Prepared: 04/12/19 15:57 Analyzed: 04/12/19 15:57**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorooctanesulfonate (PFOS)		2.2	0.025	ug/L	0.49	1.6	111	70-130		
Perfluorooctanoic acid (PFOA)		2.6	0.035	ug/L	0.5	2.1	98	70-130		
Perfluoropentanoic acid (PFPeA)		0.57	0.050	ug/L	0.5	0.070	100	70-130		

Matrix Spike (B9D0230-MSB) Source: 19D0244-05 **Prepared: 04/12/19 16:13 Analyzed: 04/12/19 16:13**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.51	0.050	ug/L	0.50	<	101	70-130		
Perfluorobutanoic acid (PFBA)		0.50	0.050	ug/L	0.5	<	100	70-130		
Perfluorohexanesulfonate (PFHxS)		0.51	0.025	ug/L	0.50	<	102	70-130		
Perfluorohexanoic acid (PFHxA)		0.51	0.050	ug/L	0.5	<	103	70-130		
Perfluorooctanesulfonate (PFOS)		0.52	0.025	ug/L	0.49	<	104	70-130		
Perfluorooctanoic acid (PFOA)		0.54	0.035	ug/L	0.5	<	107	70-130		
Perfluoropentanoic acid (PFPeA)		0.52	0.050	ug/L	0.5	<	104	70-130		

Matrix Spike (B9D0230-MSC) Source: 19D0244-06 **Prepared: 04/12/19 16:29 Analyzed: 04/12/19 16:29**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.59	0.050	ug/L	0.50	0.065	106	70-130		
Perfluorobutanoic acid (PFBA)		0.59	0.050	ug/L	0.5	0.056	107	70-130		
Perfluorohexanesulfonate (PFHxS)		0.65	0.025	ug/L	0.50	0.12	106	70-130		
Perfluorohexanoic acid (PFHxA)		0.68	0.050	ug/L	0.5	0.21	95	70-130		
Perfluorooctanesulfonate (PFOS)		0.79	0.025	ug/L	0.49	0.28	103	70-130		
Perfluorooctanoic acid (PFOA)		1.4	0.035	ug/L	0.5	0.95	89	70-130		
Perfluoropentanoic acid (PFPeA)		0.59	0.050	ug/L	0.5	0.076	103	70-130		

Matrix Spike (B9D0230-MSD) Source: 19D0293-01 **Prepared: 04/12/19 16:45 Analyzed: 04/12/19 16:45**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.51	0.050	ug/L	0.50	<	103	70-130		
Perfluorobutanoic acid (PFBA)		0.69	0.050	ug/L	0.5	0.20	99	70-130		
Perfluorohexanesulfonate (PFHxS)		0.53	0.025	ug/L	0.50	<	106	70-130		
Perfluorohexanoic acid (PFHxA)		0.52	0.050	ug/L	0.5	<	104	70-130		
Perfluorooctanesulfonate (PFOS)		0.56	0.025	ug/L	0.49	0.043	103	70-130		
Perfluorooctanoic acid (PFOA)		0.51	0.035	ug/L	0.5	<	96	70-130		
Perfluoropentanoic acid (PFPeA)		0.50	0.050	ug/L	0.5	<	100	70-130		

FINAL REPORT

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 05/01/19 15:14

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0230 - PFCs Preparation

Matrix Spike Dup (B9D0230-MSD1) Source: 19D0067-02 **Prepared: 04/12/19 13:32 Analyzed: 04/12/19 13:32**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.55	0.050	ug/L	0.50	<	109	70-130	4	20
Perfluorobutanoic acid (PFBA)		0.55	0.050	ug/L	0.5	<	105	70-130	5	20
Perfluorohexanesulfonate (PFHxS)		0.50	0.025	ug/L	0.50	<	101	70-130	6	20
Perfluorohexanoic acid (PFHxA)		0.48	0.050	ug/L	0.5	<	97	70-130	7	20
Perfluorooctanesulfonate (PFOS)		0.50	0.025	ug/L	0.49	<	100	70-130	0.7	20
Perfluorooctanoic acid (PFOA)		0.53	0.035	ug/L	0.5	<	105	70-130	7	20
Perfluoropentanoic acid (PFPeA)		0.50	0.050	ug/L	0.5	<	100	70-130	5	20

Matrix Spike (B9D0230-MSE) Source: 19D0293-02 **Prepared: 04/12/19 17:01 Analyzed: 04/12/19 17:01**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.50	0.050	ug/L	0.50	<	101	70-130		
Perfluorobutanoic acid (PFBA)		0.52	0.050	ug/L	0.5	<	104	70-130		
Perfluorohexanesulfonate (PFHxS)		0.52	0.025	ug/L	0.50	<	105	70-130		
Perfluorohexanoic acid (PFHxA)		0.50	0.050	ug/L	0.5	<	101	70-130		
Perfluorooctanesulfonate (PFOS)		0.52	0.025	ug/L	0.49	<	105	70-130		
Perfluorooctanoic acid (PFOA)		0.52	0.035	ug/L	0.5	<	105	70-130		
Perfluoropentanoic acid (PFPeA)		0.53	0.050	ug/L	0.5	<	106	70-130		

Matrix Spike (B9D0230-MSF) Source: 19D0293-03 **Prepared: 04/12/19 17:17 Analyzed: 04/12/19 17:17**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.50	0.050	ug/L	0.50	<	100	70-130		
Perfluorobutanoic acid (PFBA)		0.52	0.050	ug/L	0.5	<	104	70-130		
Perfluorohexanesulfonate (PFHxS)		0.50	0.025	ug/L	0.50	<	99	70-130		
Perfluorohexanoic acid (PFHxA)		0.48	0.050	ug/L	0.5	<	96	70-130		
Perfluorooctanesulfonate (PFOS)		0.52	0.025	ug/L	0.49	<	104	70-130		
Perfluorooctanoic acid (PFOA)		0.54	0.035	ug/L	0.5	<	107	70-130		
Perfluoropentanoic acid (PFPeA)		0.51	0.050	ug/L	0.5	<	102	70-130		

Matrix Spike (B9D0230-MSG) Source: 19D0293-04 **Prepared: 04/12/19 17:34 Analyzed: 04/12/19 17:34**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.51	0.050	ug/L	0.50	<	102	70-130		
Perfluorobutanoic acid (PFBA)		0.72	0.050	ug/L	0.5	0.20	104	70-130		

FINAL REPORT

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Final Report
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Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 05/01/19 15:14

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0230 - PFCs Preparation

Matrix Spike (B9D0230-MSG) Source: 19D0293-04 **Prepared: 04/12/19 17:34 Analyzed: 04/12/19 17:34**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorohexanesulfonate (PFHxS)		0.51	0.025	ug/L	0.50	<	101	70-130		
Perfluorohexanoic acid (PFHxA)		0.50	0.050	ug/L	0.5	<	99	70-130		
Perfluorooctanesulfonate (PFOS)		0.52	0.025	ug/L	0.49	<	104	70-130		
Perfluorooctanoic acid (PFOA)		0.55	0.035	ug/L	0.5	<	109	70-130		
Perfluoropentanoic acid (PFPeA)		0.51	0.050	ug/L	0.5	<	102	70-130		

Matrix Spike (B9D0230-MSH) Source: 19D0293-05 **Prepared: 04/12/19 17:50 Analyzed: 04/12/19 17:50**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.56	0.050	ug/L	0.50	<	111	70-130		
Perfluorobutanoic acid (PFBA)		0.69	0.050	ug/L	0.5	0.20	98	70-130		
Perfluorohexanesulfonate (PFHxS)		0.53	0.025	ug/L	0.50	<	106	70-130		
Perfluorohexanoic acid (PFHxA)		0.47	0.050	ug/L	0.5	<	95	70-130		
Perfluorooctanesulfonate (PFOS)		0.52	0.025	ug/L	0.49	<	105	70-130		
Perfluorooctanoic acid (PFOA)		0.52	0.035	ug/L	0.5	<	105	70-130		
Perfluoropentanoic acid (PFPeA)		0.51	0.050	ug/L	0.5	<	102	70-130		

Matrix Spike (B9D0230-MSI) Source: 19D0293-06 **Prepared: 04/12/19 18:06 Analyzed: 04/12/19 18:06**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.51	0.050	ug/L	0.50	<	103	70-130		
Perfluorobutanoic acid (PFBA)		0.74	0.050	ug/L	0.5	0.24	101	70-130		
Perfluorohexanesulfonate (PFHxS)		0.54	0.025	ug/L	0.50	<	107	70-130		
Perfluorohexanoic acid (PFHxA)		0.52	0.050	ug/L	0.5	<	100	70-130		
Perfluorooctanesulfonate (PFOS)		0.56	0.025	ug/L	0.49	0.032	107	70-130		
Perfluorooctanoic acid (PFOA)		0.54	0.035	ug/L	0.5	<	102	70-130		
Perfluoropentanoic acid (PFPeA)		0.53	0.050	ug/L	0.5	<	105	70-130		

Matrix Spike (B9D0230-MSJ) Source: 19D0293-07 **Prepared: 04/12/19 18:22 Analyzed: 04/12/19 18:22**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.50	0.050	ug/L	0.50	<	100	70-130		
Perfluorobutanoic acid (PFBA)		0.53	0.050	ug/L	0.5	<	106	70-130		
Perfluorohexanesulfonate (PFHxS)		0.50	0.025	ug/L	0.50	<	100	70-130		
Perfluorohexanoic acid (PFHxA)		0.49	0.050	ug/L	0.5	<	97	70-130		
Perfluorooctanesulfonate (PFOS)		0.53	0.025	ug/L	0.49	<	106	70-130		

FINAL REPORT

Report ID: 05012019151451

Authorized by:

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St. Paul, MN 55164-0899
651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 05/01/19 15:14

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0230 - PFCs Preparation

Matrix Spike (B9D0230-MSJ) Source: 19D0293-07 **Prepared: 04/12/19 18:22 Analyzed: 04/12/19 18:22**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorooctanoic acid (PFOA)		0.54	0.035	ug/L	0.5	<	108	70-130		
Perfluoropentanoic acid (PFPeA)		0.54	0.050	ug/L	0.5	<	107	70-130		

Batch B9D0274 - PFCs Preparation

Blank (B9D0274-BLK1) **Prepared: 04/15/19 16:09 Analyzed: 04/15/19 16:09**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		<	0.050	ug/L						
Perfluorobutanoic acid (PFBA)		<	0.050	ug/L						
Perfluorohexanesulfonate (PFHxS)		<	0.025	ug/L						
Perfluorohexanoic acid (PFHxA)		<	0.050	ug/L						
Perfluorooctanesulfonate (PFOS)		<	0.025	ug/L						
Perfluorooctanoic acid (PFOA)		<	0.035	ug/L						
Perfluoropentanoic acid (PFPeA)		<	0.050	ug/L						

Blank (B9D0274-BLK2) **Prepared: 04/15/19 21:40 Analyzed: 04/15/19 21:40**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		<	0.050	ug/L						
Perfluorobutanoic acid (PFBA)		<	0.050	ug/L						
Perfluorohexanesulfonate (PFHxS)		<	0.025	ug/L						
Perfluorohexanoic acid (PFHxA)		<	0.050	ug/L						
Perfluorooctanesulfonate (PFOS)		<	0.025	ug/L						
Perfluorooctanoic acid (PFOA)		<	0.035	ug/L						
Perfluoropentanoic acid (PFPeA)		<	0.050	ug/L						

LCS (B9D0274-BS1) **Prepared: 04/15/19 16:01 Analyzed: 04/15/19 16:01**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.51	0.050	ug/L	0.50		102	80-120		
Perfluorobutanoic acid (PFBA)		0.52	0.050	ug/L	0.5		105	80-120		
Perfluorohexanesulfonate (PFHxS)		0.51	0.025	ug/L	0.50		102	80-120		
Perfluorohexanoic acid (PFHxA)		0.53	0.050	ug/L	0.5		106	80-120		
Perfluorooctanesulfonate (PFOS)		0.54	0.025	ug/L	0.49		108	80-120		
Perfluorooctanoic acid (PFOA)		0.52	0.035	ug/L	0.5		104	80-120		

FINAL REPORT

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 05/01/19 15:14

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Batch B9D0274 - PFCs Preparation

LCS (B9D0274-BS1) **Prepared: 04/15/19 16:01 Analyzed: 04/15/19 16:01**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluoropentanoic acid (PFPeA)		0.52	0.050	ug/L	0.5		105	80-120		

LCS Dup (B9D0274-BSD1) **Prepared: 04/15/19 21:32 Analyzed: 04/15/19 21:32**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.50	0.050	ug/L	0.50		100	80-120	2	20
Perfluorobutanoic acid (PFBA)		0.54	0.050	ug/L	0.5		108	80-120	3	20
Perfluorohexanesulfonate (PFHxS)		0.55	0.025	ug/L	0.50		110	80-120	7	20
Perfluorohexanoic acid (PFHxA)		0.53	0.050	ug/L	0.5		106	80-120	0.6	20
Perfluorooctanesulfonate (PFOS)		0.52	0.025	ug/L	0.49		104	80-120	3	20
Perfluorooctanoic acid (PFOA)		0.48	0.035	ug/L	0.5		97	80-120	7	20
Perfluoropentanoic acid (PFPeA)		0.54	0.050	ug/L	0.5		108	80-120	3	20

Duplicate (B9D0274-DUP1) Source: 19D0380-01 **Prepared: 04/15/19 17:06 Analyzed: 04/15/19 17:06**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		<	0.050	ug/L		<				20
Perfluorobutanoic acid (PFBA)		0.19	0.050	ug/L		0.17			10	20
Perfluorohexanesulfonate (PFHxS)		<	0.025	ug/L		<				20
Perfluorohexanoic acid (PFHxA)		<	0.050	ug/L		<				20
Perfluorooctanesulfonate (PFOS)		<	0.025	ug/L		<				20
Perfluorooctanoic acid (PFOA)		<	0.035	ug/L		<				20
Perfluoropentanoic acid (PFPeA)		<	0.050	ug/L		<				20

Matrix Spike (B9D0274-MS1) Source: 19D0380-01 **Prepared: 04/15/19 16:58 Analyzed: 04/15/19 16:58**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.51	0.050	ug/L	0.50	<	102	70-130		
Perfluorobutanoic acid (PFBA)		0.70	0.050	ug/L	0.5	0.17	107	70-130		
Perfluorohexanesulfonate (PFHxS)		0.51	0.025	ug/L	0.50	<	101	70-130		
Perfluorohexanoic acid (PFHxA)		0.50	0.050	ug/L	0.5	<	100	70-130		
Perfluorooctanesulfonate (PFOS)		0.52	0.025	ug/L	0.49	<	104	70-130		
Perfluorooctanoic acid (PFOA)		0.53	0.035	ug/L	0.5	<	106	70-130		
Perfluoropentanoic acid (PFPeA)		0.53	0.050	ug/L	0.5	<	106	70-130		

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651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 05/01/19 15:14

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Batch B9D0274 - PFCs Preparation

Matrix Spike (B9D0274-MS3) Source: 19D0244-03RE1 **Prepared: 04/15/19 16:42 Analyzed: 04/15/19 16:42**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorooctanoic acid (PFOA)	D1	16	0.18	ug/L	2.5	13	110	70-130		

Matrix Spike (B9D0274-MS4) Source: 19D0380-02 **Prepared: 04/15/19 17:30 Analyzed: 04/15/19 17:30**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.52	0.050	ug/L	0.50	<	103	70-130		
Perfluorobutanoic acid (PFBA)		0.54	0.050	ug/L	0.5	<	107	70-130		
Perfluorohexanesulfonate (PFHxS)		0.51	0.025	ug/L	0.50	<	101	70-130		
Perfluorohexanoic acid (PFHxA)		0.53	0.050	ug/L	0.5	<	106	70-130		
Perfluorooctanesulfonate (PFOS)		0.51	0.025	ug/L	0.49	<	102	70-130		
Perfluorooctanoic acid (PFOA)		0.52	0.035	ug/L	0.5	<	104	70-130		
Perfluoropentanoic acid (PFPeA)		0.53	0.050	ug/L	0.5	<	107	70-130		

Matrix Spike (B9D0274-MS5) Source: 19D0389-01 **Prepared: 04/15/19 17:47 Analyzed: 04/15/19 17:47**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.53	0.050	ug/L	0.50	<	105	70-130		
Perfluorobutanoic acid (PFBA)		0.54	0.050	ug/L	0.5	<	107	70-130		
Perfluorohexanesulfonate (PFHxS)		0.54	0.025	ug/L	0.50	<	108	70-130		
Perfluorohexanoic acid (PFHxA)		0.55	0.050	ug/L	0.5	<	109	70-130		
Perfluorooctanesulfonate (PFOS)		0.52	0.025	ug/L	0.49	<	103	70-130		
Perfluorooctanoic acid (PFOA)		0.50	0.035	ug/L	0.5	<	100	70-130		
Perfluoropentanoic acid (PFPeA)		0.54	0.050	ug/L	0.5	<	108	70-130		

Matrix Spike (B9D0274-MS6) Source: 19D0389-02 **Prepared: 04/15/19 18:03 Analyzed: 04/15/19 18:03**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.53	0.050	ug/L	0.50	<	106	70-130		
Perfluorobutanoic acid (PFBA)		0.75	0.050	ug/L	0.5	0.21	107	70-130		
Perfluorohexanesulfonate (PFHxS)		0.50	0.025	ug/L	0.50	<	100	70-130		
Perfluorohexanoic acid (PFHxA)		0.57	0.050	ug/L	0.5	<	115	70-130		
Perfluorooctanesulfonate (PFOS)		0.55	0.025	ug/L	0.49	<	111	70-130		
Perfluorooctanoic acid (PFOA)		0.53	0.035	ug/L	0.5	<	106	70-130		
Perfluoropentanoic acid (PFPeA)		0.54	0.050	ug/L	0.5	<	109	70-130		

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 05/01/19 15:14

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Batch B9D0274 - PFCs Preparation

Matrix Spike (B9D0274-MS7) Source: 19D0389-03 **Prepared: 04/15/19 18:19 Analyzed: 04/15/19 18:19**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.53	0.050	ug/L	0.50	<	106	70-130		
Perfluorobutanoic acid (PFBA)		0.75	0.050	ug/L	0.5	0.20	109	70-130		
Perfluorohexanesulfonate (PFHxS)		0.50	0.025	ug/L	0.50	<	100	70-130		
Perfluorohexanoic acid (PFHxA)		0.53	0.050	ug/L	0.5	<	106	70-130		
Perfluorooctanesulfonate (PFOS)		0.52	0.025	ug/L	0.49	<	104	70-130		
Perfluorooctanoic acid (PFOA)		0.52	0.035	ug/L	0.5	<	103	70-130		
Perfluoropentanoic acid (PFPeA)		0.51	0.050	ug/L	0.5	<	103	70-130		

Matrix Spike (B9D0274-MS8) Source: 19D0434-02 **Prepared: 04/15/19 18:35 Analyzed: 04/15/19 18:35**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.54	0.050	ug/L	0.50	<	109	70-130		
Perfluorobutanoic acid (PFBA)		0.57	0.050	ug/L	0.5	<	111	70-130		
Perfluorohexanesulfonate (PFHxS)		0.50	0.025	ug/L	0.50	<	101	70-130		
Perfluorohexanoic acid (PFHxA)		0.54	0.050	ug/L	0.5	<	107	70-130		
Perfluorooctanesulfonate (PFOS)		0.53	0.025	ug/L	0.49	<	106	70-130		
Perfluorooctanoic acid (PFOA)		0.47	0.035	ug/L	0.5	<	95	70-130		
Perfluoropentanoic acid (PFPeA)		0.53	0.050	ug/L	0.5	<	105	70-130		

Matrix Spike (B9D0274-MS9) Source: 19D0434-09 **Prepared: 04/15/19 18:51 Analyzed: 04/15/19 18:51**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.54	0.050	ug/L	0.50	<	102	70-130		
Perfluorobutanoic acid (PFBA)		1.3	0.050	ug/L	0.5	0.80	97	70-130		
Perfluorohexanesulfonate (PFHxS)		0.55	0.025	ug/L	0.50	0.031	104	70-130		
Perfluorohexanoic acid (PFHxA)		0.76	0.050	ug/L	0.5	0.26	100	70-130		
Perfluorooctanesulfonate (PFOS)		0.52	0.025	ug/L	0.49	<	104	70-130		
Perfluorooctanoic acid (PFOA)		0.58	0.035	ug/L	0.5	0.075	100	70-130		
Perfluoropentanoic acid (PFPeA)		0.76	0.050	ug/L	0.5	0.26	100	70-130		

Matrix Spike (B9D0274-MSA) Source: 19D0435-07 **Prepared: 04/15/19 19:07 Analyzed: 04/15/19 19:07**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.49	0.050	ug/L	0.50	<	99	70-130		
Perfluorobutanoic acid (PFBA)		0.56	0.050	ug/L	0.5	<	107	70-130		
Perfluorohexanesulfonate (PFHxS)		0.51	0.025	ug/L	0.50	<	102	70-130		

FINAL REPORT

Report ID: 05012019151451

Authorized by:

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Public Health Laboratory, Minnesota Department of Health

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 05/01/19 15:14

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Batch B9D0274 - PFCs Preparation

Matrix Spike (B9D0274-MSA) Source: 19D0435-07 **Prepared: 04/15/19 19:07 Analyzed: 04/15/19 19:07**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorohexanoic acid (PFHxA)		0.54	0.050	ug/L	0.5	<	108	70-130		
Perfluorooctanesulfonate (PFOS)		0.53	0.025	ug/L	0.49	<	106	70-130		
Perfluorooctanoic acid (PFOA)		0.50	0.035	ug/L	0.5	<	100	70-130		
Perfluoropentanoic acid (PFPeA)		0.53	0.050	ug/L	0.5	<	107	70-130		

Matrix Spike (B9D0274-MSB) Source: 19D0435-09 **Prepared: 04/15/19 19:23 Analyzed: 04/15/19 19:23**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.53	0.050	ug/L	0.50	<	106	70-130		
Perfluorobutanoic acid (PFBA)		0.63	0.050	ug/L	0.5	0.084	109	70-130		
Perfluorohexanesulfonate (PFHxS)		0.57	0.025	ug/L	0.50	<	113	70-130		
Perfluorohexanoic acid (PFHxA)		0.53	0.050	ug/L	0.5	<	103	70-130		
Perfluorooctanesulfonate (PFOS)		0.52	0.025	ug/L	0.49	<	104	70-130		
Perfluorooctanoic acid (PFOA)		0.50	0.035	ug/L	0.5	<	94	70-130		
Perfluoropentanoic acid (PFPeA)		0.53	0.050	ug/L	0.5	<	105	70-130		

Matrix Spike (B9D0274-MSC) Source: 19D0435-10 **Prepared: 04/15/19 19:39 Analyzed: 04/15/19 19:39**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.58	0.050	ug/L	0.50	<	110	70-130		
Perfluorobutanoic acid (PFBA)		1.5	0.050	ug/L	0.5	0.97	100	70-130		
Perfluorohexanesulfonate (PFHxS)		0.60	0.025	ug/L	0.50	0.11	98	70-130		
Perfluorohexanoic acid (PFHxA)		0.87	0.050	ug/L	0.5	0.37	100	70-130		
Perfluorooctanesulfonate (PFOS)		0.55	0.025	ug/L	0.49	0.037	103	70-130		
Perfluorooctanoic acid (PFOA)		0.76	0.035	ug/L	0.5	0.27	99	70-130		
Perfluoropentanoic acid (PFPeA)		0.79	0.050	ug/L	0.5	0.32	94	70-130		

Matrix Spike (B9D0274-MSD) Source: 19D0435-16 **Prepared: 04/15/19 19:56 Analyzed: 04/15/19 19:56**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.53	0.050	ug/L	0.50	<	106	70-130		
Perfluorobutanoic acid (PFBA)		0.53	0.050	ug/L	0.5	<	105	70-130		
Perfluorohexanesulfonate (PFHxS)		0.53	0.025	ug/L	0.50	<	106	70-130		
Perfluorohexanoic acid (PFHxA)		0.52	0.050	ug/L	0.5	<	104	70-130		
Perfluorooctanesulfonate (PFOS)		0.53	0.025	ug/L	0.49	<	106	70-130		
Perfluorooctanoic acid (PFOA)		0.53	0.035	ug/L	0.5	<	105	70-130		

FINAL REPORT

Report ID: 05012019151451

Authorized by:

The results in this report apply only to the samples analyzed.
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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 05/01/19 15:14

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0274 - PFCs Preparation

Matrix Spike (B9D0274-MSD) Source: 19D0435-16 **Prepared: 04/15/19 19:56 Analyzed: 04/15/19 19:56**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluoropentanoic acid (PFPeA)		0.52	0.050	ug/L	0.5	<	103	70-130		

Matrix Spike Dup (B9D0274-MSD1) Source: 19D0380-01 **Prepared: 04/15/19 17:14 Analyzed: 04/15/19 17:14**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.52	0.050	ug/L	0.50	<	104	70-130	3	20
Perfluorobutanoic acid (PFBA)		0.71	0.050	ug/L	0.5	0.17	107	70-130	0.4	20
Perfluorohexanesulfonate (PFHxS)		0.50	0.025	ug/L	0.50	<	100	70-130	2	20
Perfluorohexanoic acid (PFHxA)		0.53	0.050	ug/L	0.5	<	106	70-130	6	20
Perfluorooctanesulfonate (PFOS)		0.49	0.025	ug/L	0.49	<	99	70-130	5	20
Perfluorooctanoic acid (PFOA)		0.50	0.035	ug/L	0.5	<	100	70-130	6	20
Perfluoropentanoic acid (PFPeA)		0.53	0.050	ug/L	0.5	<	105	70-130	1	20

Matrix Spike (B9D0274-MSE) Source: 19D0435-17 **Prepared: 04/15/19 20:12 Analyzed: 04/15/19 20:12**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.54	0.050	ug/L	0.50	<	108	70-130		
Perfluorobutanoic acid (PFBA)		0.61	0.050	ug/L	0.5	0.091	104	70-130		
Perfluorohexanesulfonate (PFHxS)		0.52	0.025	ug/L	0.50	<	105	70-130		
Perfluorohexanoic acid (PFHxA)		0.53	0.050	ug/L	0.5	<	106	70-130		
Perfluorooctanesulfonate (PFOS)		0.53	0.025	ug/L	0.49	<	106	70-130		
Perfluorooctanoic acid (PFOA)		0.53	0.035	ug/L	0.5	<	107	70-130		
Perfluoropentanoic acid (PFPeA)		0.52	0.050	ug/L	0.5	<	103	70-130		

Matrix Spike (B9D0274-MSF) Source: 19D0435-21 **Prepared: 04/15/19 20:28 Analyzed: 04/15/19 20:28**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.54	0.050	ug/L	0.50	<	107	70-130		
Perfluorobutanoic acid (PFBA)		0.54	0.050	ug/L	0.5	<	109	70-130		
Perfluorohexanesulfonate (PFHxS)		0.54	0.025	ug/L	0.50	<	108	70-130		
Perfluorohexanoic acid (PFHxA)		0.54	0.050	ug/L	0.5	<	108	70-130		
Perfluorooctanesulfonate (PFOS)		0.53	0.025	ug/L	0.49	<	107	70-130		
Perfluorooctanoic acid (PFOA)		0.51	0.035	ug/L	0.5	<	101	70-130		
Perfluoropentanoic acid (PFPeA)		0.54	0.050	ug/L	0.5	<	107	70-130		

Authorized by:

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 05/01/19 15:14

Results were produced by Minnesota Department of Health, except where noted.

Batch B9D0274 - PFCs Preparation

Matrix Spike (B9D0274-MSG) Source: 19D0435-22 **Prepared: 04/15/19 20:44 Analyzed: 04/15/19 20:44**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.54	0.050	ug/L	0.50	<	109	70-130		
Perfluorobutanoic acid (PFBA)		0.54	0.050	ug/L	0.5	<	108	70-130		
Perfluorohexanesulfonate (PFHxS)		0.51	0.025	ug/L	0.50	<	102	70-130		
Perfluorohexanoic acid (PFHxA)		0.53	0.050	ug/L	0.5	<	106	70-130		
Perfluorooctanesulfonate (PFOS)		0.53	0.025	ug/L	0.49	<	106	70-130		
Perfluorooctanoic acid (PFOA)		0.49	0.035	ug/L	0.5	<	98	70-130		
Perfluoropentanoic acid (PFPeA)		0.55	0.050	ug/L	0.5	<	109	70-130		

Matrix Spike (B9D0274-MSH) Source: 19D0435-23 **Prepared: 04/15/19 21:00 Analyzed: 04/15/19 21:00**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.51	0.050	ug/L	0.50	<	101	70-130		
Perfluorobutanoic acid (PFBA)		0.54	0.050	ug/L	0.5	<	109	70-130		
Perfluorohexanesulfonate (PFHxS)		0.51	0.025	ug/L	0.50	<	103	70-130		
Perfluorohexanoic acid (PFHxA)		0.53	0.050	ug/L	0.5	<	107	70-130		
Perfluorooctanesulfonate (PFOS)		0.53	0.025	ug/L	0.49	<	105	70-130		
Perfluorooctanoic acid (PFOA)		0.52	0.035	ug/L	0.5	<	103	70-130		
Perfluoropentanoic acid (PFPeA)		0.52	0.050	ug/L	0.5	<	104	70-130		

Matrix Spike (B9D0274-MSI) Source: 19D0435-24 **Prepared: 04/15/19 21:16 Analyzed: 04/15/19 21:16**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.55	0.050	ug/L	0.50	<	110	70-130		
Perfluorobutanoic acid (PFBA)		0.52	0.050	ug/L	0.5	<	105	70-130		
Perfluorohexanesulfonate (PFHxS)		0.50	0.025	ug/L	0.50	<	100	70-130		
Perfluorohexanoic acid (PFHxA)		0.53	0.050	ug/L	0.5	<	105	70-130		
Perfluorooctanesulfonate (PFOS)		0.55	0.025	ug/L	0.49	<	111	70-130		
Perfluorooctanoic acid (PFOA)		0.50	0.035	ug/L	0.5	<	99	70-130		
Perfluoropentanoic acid (PFPeA)		0.51	0.050	ug/L	0.5	<	103	70-130		

Authorized by:

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Quality Control

Data Qualifiers and Definitions

Z-01	Low bias demonstrated by continuing calibration verification standard, samples may also display a low bias.
WB	Relative percent difference exceeded the laboratory acceptance limit. Result less than 5 times the RL.
V4	Calibration verification standard recovery was below method acceptance limits. See comments or additional qualifiers.
J	Analyte was present between the method detection limit and reporting limit and should be considered an estimated value.
D2	Sample required dilution due to high concentration of target analyte(s). Reporting limit has been raised.
D1	Sample required dilution due to matrix. Reporting limit has been raised.
Dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
%REC	Percent Recovery

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

MINNESOTA MDH DEPARTMENT OF HEALTH

Protecting, maintaining and improving the health of all Minnesotans

Report Date: 6/19/19
Client Name: QW - MPCA - Closed Landfill Assessment
Project Code: QW
Project Name: Closed Landfill Assessment

Work Order Number: 19E1829

Report To: QW - MPCA - Closed Landfill Assessment
Mark Umholtz
520 Lafayette Rd.
Saint Paul, MN 55155

The MDH Public Health Laboratory performs chemical, bacteriological and radiological analyses of environmental samples including water, waste water, sediment, air, soil and hazardous material. The laboratory provides testing services in accordance with standard operating procedures referencing approved methodology as defined in Standard Methods for the Examination of Water and Wastewater, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods: EPA SW-846, and 40 Code of Federal Regulation (CFR) parts 136, 141, and 261. In cases where analytes of interest do not have corresponding EPA approved methodology, the MDH Public Health Laboratory uses in-house methods that have undergone rigorous validation and documentation.

The results within this report are in compliance with the terms and conditions stated in the standard operating procedures, reference methodologies, and quality assurance project plan; unless otherwise narrated in the attached report.

Release of the data contained in this report has been authorized by laboratory management and is verified with the following signature affirmation. Thank you for using the MDH Public Health Laboratory.

Sincerely,

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Summary of Samples Received

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 06/19/19 9:43

Work Order Comment: Program Code is QW per M. Umholtz & D. Anderson. -CTS 05/23/19

Field ID	MDH Sample Number	Matrix	Date & Time Collected	Date & Time Received	Receipt °C
472759	19E1829-01	Wtr-Ground	05/21/19 10:45	05/23/19 11:26	2.8
603286	19E1829-02	Wtr-Ground	05/21/19 12:50	05/23/19 11:26	2.8
603284	19E1829-03	Wtr-Ground	05/21/19 14:20	05/23/19 11:26	2.8
603283	19E1829-04	Wtr-Ground	05/21/19 15:40	05/23/19 11:26	2.8
813763	19E1829-05	Wtr-Ground	05/22/19 12:00	05/23/19 11:26	2.8

Field ID	MDH Sample Number	Receiving Comments
472759	19E1829-01	(0FMW-1)
603286	19E1829-02	(MW-97-9)
603284	19E1829-03	(MW-97-7)
603283	19E1829-04	(MW-97-3)
813763	19E1829-05	(MW-3)

Authorized by:

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

Minnesota Pollution Control Agency

Chain-of-Custody Form revision 2013.0909

Work Order Number: 19E1829 | COC Type: Standard | Page

Turnaround Time: Standard | COC ID:

PROJECT/CLIENT INFO

Facility Code: MN SW-057 | Program Code (MDH Lab Only):

Project Name: 19-01567 MPCA Freeway Landfill 2019 MDH | Project Task Code: PRJ07786

Project Manager: Mark Umholtz | 651-757-2308

Potential Hazard? If yes, add information to Sampler Comments Section

LABORATORY

Lab Name: Minnesota Department of Health

Address: 601 Robert Street N.

St. Paul | MN | 55155

Phone No: 651-201-5058

SAMPLE DETAILS

SAMPLE TYPE CODES
Sample=Routine Sample
S-IVP=Integrated Vertical Profile Sample
S-CWOP=Composite Sample
QC-FB=Field Blank Sample
QC-FR=Field Replicate Sample
QC-TB=Trip Blank Sample

LAB MATRIX CODES
DW=Drinking Water
NW=Non-potable Water
SD=Soil/Solid
WP=Wipe
AR=Air
BL=Biological Material
OT=Other
TS=Tissue

FIELD MATRIX CODES
Wtr-Ground=Groundwater
Wtr-Surf=Surface Water
QC-BLANK=Artificial Blank Water
Leachate=Leachate Sample

ANALYSIS REQUESTED

Location Identifier	Sample Type	Date	Time	Start Depth, in meters	End Depth, in meters	Grab (G) or Composite (C) Sample	Lab Matrix Code	Field Matrix Code	AIS	Sampler Comments (filter volume, special handling, etc.)	# of Cont	ANALYSIS / PRESERV.	VOCs EPA 8260D (HCl)	PFAS by MDH555 (None)	1,4 Dioxane (None)			Lab Sample No.	#
472759	Sample	5/21/19	1045			G	NW	Wtr-Ground	N	(OFmw-1)	5		✓	✓	✓			-01	1
603286	Sample	5/21/19	1250			G	NW	Wtr-Ground	N	(MW-97-9)	5		✓	✓	✓			-02	2
603284	Sample	5/21/19	1420			G	NW	Wtr-Ground	N	(MW-97-7)	5		✓	✓	✓			-03	3
603283	Sample	5/21/19	1540			G	NW	Wtr-Ground	N	(MW-97-3)	5		✓	✓	✓			-04	4
813763	Sample	5/22/19	1200			G	NW	Wtr-Ground	N	(MW-3)	5		✓	✓	✓			-05	5
									N										6
									N										7
									N										8
									N										9
									N										10

DTA 5/22/19

Sampled By: David Anderson | Sampler's Signature: David Anderson | Phone #:

Receiving Comments:

Relinquished By/Affiliation	Date/Time	Accepted By/ Affiliation	Date/Time
(Sampler) David Anderson / Pace Analytical	5/22/19 / 1400	[illegible] / MDH	5/23/19 1126

DEPARTMENT OF HEALTH

Sample Condition Upon Receipt

Minnesota Department of Health Public Health Laboratory

Data Entry Worksheet

19E1829

Parcel Information

Date & time of receipt: MAY 23 '19 11:26

Courier: ☒ Walk-in ☐ FedEx ☐ Spee-Dee ☐ UPS ☐ USPS ☐ Other courier _____

Tracking # _____

After hours drop-off: ☐ Refrigerator (207) (186) ( ) ☐ Freezer (185) ( ) ☐ Unrefrigerated

Parcel: ☒ Plastic cooler ☐ Styrofoam/cardboard cooler ☐ Cardboard box ☐ Envelope ☐ Plastic can

☐ None ☐ Other _____ Info: _____

Custody seals present: ☒ No; ☐ Yes, If "Yes" Custody seals intact: ☐ Yes; ☐ No _____

Custody seal # _____ **Evidentiary samples identified:** ☒ No; ☐ Yes

Packaging & Temperature Information

Packing material: ☒ Bubble wrap ☐ Styrofoam ☐ Paper ☐ None ☐ Other _____

Cooling material: ☒ Wet ice (loose) ☐ Wet ice pack #( ) ☐ Gel pack #( ) ☐ Dry ice ☐ None ☐ Other _____

Condition of cooling material: ☐ Solid ☒ Partially frozen ☐ Liquid; Liquid temperature: _____ °C ☐ N/A

Representative sample temperature: 2-8 °C **IR thermometer instrument used:** A10

Samples received without evidence of freezing: ☒ Yes; ☐ No _____

Initials of person receiving parcel: LD

Chain of Custody, Sample Container & Analysis Information

Chain of custody received with sample containers: ☒ Yes; ☐ No

Chain of custody type: ☒ Standard ☐ Civil ☐ Criminal ☐ Priority/Emergency ☐ Unknown

All sample containers are unique to a sample point listed on the chain of custody: ☒ Yes; ☐ No

All sample containers have been collected prior to the expiration date listed on container label:

☒ Yes; ☐ No; ☐ Unknown _____

All sample containers received intact: ☒ Yes; ☐ No _____

All sample containers are appropriate for requested analysis: ☒ Yes; ☐ No; ☐ Unknown

All analysis have been received within the specified holding time for analysis: ☒ Yes; ☐ No ☐ Unknown

Rad Chem. request received: ☐ Yes; ☒ No, If "Yes" sample survey results: ☐ < 0.5 mrem/hr ☐ ≥ 0.5 mrem/hr

Rad Chem. meter calibration date verified: ☐ Yes; ☒ No

Sample submission details are entered in the Environmental Laboratory LIMS.

Initials of person logging in the work order request into LIMS: B

DOC-84
Revision: 5

Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Case Narrative

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name: MN SW-057
Collected by: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 06/19/2019 9:43

Except where noted in this report, no additional comments are needed for this Work Order.

Authorized by:

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 06/19/19 9:43

MDH Sample Number: 19E1829-01

Location ID: 472759
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 05/21/19
Collect Time: 10:45
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: (0FMW-1)

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Surrogate: 1,2-Dichlorobenzene-d4		*99*	*70-130*	%	*1*	*B9E0506*	*05/28/19 14:17*	*05/28/19 14:17*	*EPA 8260D*
Surrogate: 4-Bromofluorobenzene		*103*	*70-130*	%	*1*	*B9E0506*	*05/28/19 14:17*	*05/28/19 14:17*	*EPA 8260D*
Surrogate: Methyl tertiary butyl ether-d3		*107*	*70-130*	%	*1*	*B9E0506*	*05/28/19 14:17*	*05/28/19 14:17*	*EPA 8260D*
1,1,1,2-Tetrachloroethane		<	1.0	ug/L	1	B9E0506	05/28/19 14:17	05/28/19 14:17	EPA 8260D
1,1,1-Trichloroethane		<	1.0	ug/L	1	B9E0506	05/28/19 14:17	05/28/19 14:17	EPA 8260D
1,1,2,2-Tetrachloroethane		<	0.50	ug/L	1	B9E0506	05/28/19 14:17	05/28/19 14:17	EPA 8260D
1,1,2-Trichloroethane		<	0.50	ug/L	1	B9E0506	05/28/19 14:17	05/28/19 14:17	EPA 8260D
1,1,2-Trichlorotrifluoroethane		<	1.0	ug/L	1	B9E0506	05/28/19 14:17	05/28/19 14:17	EPA 8260D
1,1-Dichloroethane		<	1.0	ug/L	1	B9E0506	05/28/19 14:17	05/28/19 14:17	EPA 8260D
1,1-Dichloroethene		<	1.0	ug/L	1	B9E0506	05/28/19 14:17	05/28/19 14:17	EPA 8260D
1,1-Dichloropropene		<	1.0	ug/L	1	B9E0506	05/28/19 14:17	05/28/19 14:17	EPA 8260D
1,2,3-Trichlorobenzene		<	1.0	ug/L	1	B9E0506	05/28/19 14:17	05/28/19 14:17	EPA 8260D
1,2,3-Trichloropropane		<	0.20	ug/L	1	B9E0506	05/28/19 14:17	05/28/19 14:17	EPA 8260D
1,2,4-Trichlorobenzene		<	1.0	ug/L	1	B9E0506	05/28/19 14:17	05/28/19 14:17	EPA 8260D
1,2,4-Trimethylbenzene		<	1.0	ug/L	1	B9E0506	05/28/19 14:17	05/28/19 14:17	EPA 8260D
1,2-Dibromo-3-chloropropane (DBCP)		<	1.0	ug/L	1	B9E0506	05/28/19 14:17	05/28/19 14:17	EPA 8260D
1,2-Dibromoethane (EDB)		<	0.50	ug/L	1	B9E0506	05/28/19 14:17	05/28/19 14:17	EPA 8260D
1,2-Dichlorobenzene		<	1.0	ug/L	1	B9E0506	05/28/19 14:17	05/28/19 14:17	EPA 8260D
1,2-Dichloroethane		<	0.20	ug/L	1	B9E0506	05/28/19 14:17	05/28/19 14:17	EPA 8260D
1,2-Dichloropropane		<	1.0	ug/L	1	B9E0506	05/28/19 14:17	05/28/19 14:17	EPA 8260D
1,3,5-Trimethylbenzene		<	1.0	ug/L	1	B9E0506	05/28/19 14:17	05/28/19 14:17	EPA 8260D
1,3-Dichlorobenzene		<	1.0	ug/L	1	B9E0506	05/28/19 14:17	05/28/19 14:17	EPA 8260D
1,3-Dichloropropane		<	1.0	ug/L	1	B9E0506	05/28/19 14:17	05/28/19 14:17	EPA 8260D
1,4-Dichlorobenzene		<	1.0	ug/L	1	B9E0506	05/28/19 14:17	05/28/19 14:17	EPA 8260D
2,2-Dichloropropane		<	1.0	ug/L	1	B9E0506	05/28/19 14:17	05/28/19 14:17	EPA 8260D

FINAL REPORT

Report ID: 06192019 94335

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 06/19/19 9:43

MDH Sample Number: 19E1829-01

Location ID: 472759
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 05/21/19
Collect Time: 10:45
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: (0FMW-1)

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
2-Chlorotoluene		<	1.0	ug/L	1	B9E0506	05/28/19 14:17	05/28/19 14:17	EPA 8260D
4-Chlorotoluene		<	1.0	ug/L	1	B9E0506	05/28/19 14:17	05/28/19 14:17	EPA 8260D
Acetone		<	20	ug/L	1	B9E0506	05/28/19 14:17	05/28/19 14:17	EPA 8260D
Allyl chloride		<	1.0	ug/L	1	B9E0506	05/28/19 14:17	05/28/19 14:17	EPA 8260D
Benzene		<	0.50	ug/L	1	B9E0506	05/28/19 14:17	05/28/19 14:17	EPA 8260D
Bromobenzene		<	1.0	ug/L	1	B9E0506	05/28/19 14:17	05/28/19 14:17	EPA 8260D
Bromochloromethane		<	1.0	ug/L	1	B9E0506	05/28/19 14:17	05/28/19 14:17	EPA 8260D
Bromodichloromethane		<	1.0	ug/L	1	B9E0506	05/28/19 14:17	05/28/19 14:17	EPA 8260D
Bromoform		<	1.0	ug/L	1	B9E0506	05/28/19 14:17	05/28/19 14:17	EPA 8260D
Bromomethane		<	2.0	ug/L	1	B9E0506	05/28/19 14:17	05/28/19 14:17	EPA 8260D
Carbon tetrachloride		<	0.20	ug/L	1	B9E0506	05/28/19 14:17	05/28/19 14:17	EPA 8260D
Chlorobenzene		<	1.0	ug/L	1	B9E0506	05/28/19 14:17	05/28/19 14:17	EPA 8260D
Chlorodibromomethane		<	0.50	ug/L	1	B9E0506	05/28/19 14:17	05/28/19 14:17	EPA 8260D
Chloroethane		<	1.0	ug/L	1	B9E0506	05/28/19 14:17	05/28/19 14:17	EPA 8260D
Chloroform		<	1.0	ug/L	1	B9E0506	05/28/19 14:17	05/28/19 14:17	EPA 8260D
Chloromethane		<	1.0	ug/L	1	B9E0506	05/28/19 14:17	05/28/19 14:17	EPA 8260D
cis-1,2-Dichloroethene		<	1.0	ug/L	1	B9E0506	05/28/19 14:17	05/28/19 14:17	EPA 8260D
cis-1,3-Dichloropropene		<	0.50	ug/L	1	B9E0506	05/28/19 14:17	05/28/19 14:17	EPA 8260D
Dibromomethane		<	1.0	ug/L	1	B9E0506	05/28/19 14:17	05/28/19 14:17	EPA 8260D
Dichlorodifluoromethane		<	1.0	ug/L	1	B9E0506	05/28/19 14:17	05/28/19 14:17	EPA 8260D
Dichlorofluoromethane		<	1.0	ug/L	1	B9E0506	05/28/19 14:17	05/28/19 14:17	EPA 8260D
Ethyl ether		<	1.0	ug/L	1	B9E0506	05/28/19 14:17	05/28/19 14:17	EPA 8260D
Ethylbenzene		<	1.0	ug/L	1	B9E0506	05/28/19 14:17	05/28/19 14:17	EPA 8260D
Hexachlorobutadiene		<	0.50	ug/L	1	B9E0506	05/28/19 14:17	05/28/19 14:17	EPA 8260D
Isopropylbenzene		<	1.0	ug/L	1	B9E0506	05/28/19 14:17	05/28/19 14:17	EPA 8260D
Methyl ethyl ketone (MEK)		<	10	ug/L	1	B9E0506	05/28/19 14:17	05/28/19 14:17	EPA 8260D
Methyl isobutyl ketone (MIBK)		<	5.0	ug/L	1	B9E0506	05/28/19 14:17	05/28/19 14:17	EPA 8260D

FINAL REPORT

Report ID: 06192019 94335

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 06/19/19 9:43

MDH Sample Number: 19E1829-01

Location ID: 472759
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 05/21/19
Collect Time: 10:45
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: (0FMW-1)

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Methyl tertiary butyl ether (MTBE)		<	2.0	ug/L	1	B9E0506	05/28/19 14:17	05/28/19 14:17	EPA 8260D
Methylene chloride		<	1.0	ug/L	1	B9E0506	05/28/19 14:17	05/28/19 14:17	EPA 8260D
Naphthalene		<	1.0	ug/L	1	B9E0506	05/28/19 14:17	05/28/19 14:17	EPA 8260D
n-Butylbenzene		<	1.0	ug/L	1	B9E0506	05/28/19 14:17	05/28/19 14:17	EPA 8260D
n-Propylbenzene		<	1.0	ug/L	1	B9E0506	05/28/19 14:17	05/28/19 14:17	EPA 8260D
o-Xylene		<	1.0	ug/L	1	B9E0506	05/28/19 14:17	05/28/19 14:17	EPA 8260D
p&m-Xylene		<	1.0	ug/L	1	B9E0506	05/28/19 14:17	05/28/19 14:17	EPA 8260D
p-Isopropyltoluene		<	1.0	ug/L	1	B9E0506	05/28/19 14:17	05/28/19 14:17	EPA 8260D
sec-Butylbenzene		<	1.0	ug/L	1	B9E0506	05/28/19 14:17	05/28/19 14:17	EPA 8260D
Styrene		<	1.0	ug/L	1	B9E0506	05/28/19 14:17	05/28/19 14:17	EPA 8260D
tert-Butylbenzene		<	1.0	ug/L	1	B9E0506	05/28/19 14:17	05/28/19 14:17	EPA 8260D
Tetrachloroethene		<	1.0	ug/L	1	B9E0506	05/28/19 14:17	05/28/19 14:17	EPA 8260D
Tetrahydrofuran (THF)		<	10	ug/L	1	B9E0506	05/28/19 14:17	05/28/19 14:17	EPA 8260D
Toluene		<	1.0	ug/L	1	B9E0506	05/28/19 14:17	05/28/19 14:17	EPA 8260D
trans-1,2-Dichloroethene		<	1.0	ug/L	1	B9E0506	05/28/19 14:17	05/28/19 14:17	EPA 8260D
trans-1,3-Dichloropropene		<	0.50	ug/L	1	B9E0506	05/28/19 14:17	05/28/19 14:17	EPA 8260D
Trichloroethene (TCE)		<	0.10	ug/L	1	B9E0506	05/28/19 14:17	05/28/19 14:17	EPA 8260D
Trichlorofluoromethane		<	1.0	ug/L	1	B9E0506	05/28/19 14:17	05/28/19 14:17	EPA 8260D
Vinyl chloride		<	0.050	ug/L	1	B9E0506	05/28/19 14:17	05/28/19 14:17	EPA 8260D

1,4-Dioxane

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
1,4-Dioxane		**0.70**	0.049	ug/L	1	B9F0115	06/07/19 08:00	06/07/19 18:55	EPA 522 Modified

PFC Expanded List

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorobutanesulfonate (PFBS)	J	**0.007**	0.050	ug/L	1	B9E0550	05/28/19 12:26	05/28/19 12:26	MDH 555

FINAL REPORT

Report ID: 06192019 94335

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 06/19/19 9:43

MDH Sample Number: 19E1829-01

Location ID: 472759
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 05/21/19
Collect Time: 10:45
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: (0FMW-1)

Results were produced by the Minnesota Department of Health, except where noted.

PFC Expanded List - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorobutanoic acid (PFBA)	J	**0.041**	0.050	ug/L	1	B9E0550	05/28/19 12:26	05/28/19 12:26	MDH 555
Perfluorohexanesulfonate (PFHxS)		<	0.025	ug/L	1	B9E0550	05/28/19 12:26	05/28/19 12:26	MDH 555
Perfluorohexanoic acid (PFHxA)	J	**0.034**	0.050	ug/L	1	B9E0550	05/28/19 12:26	05/28/19 12:26	MDH 555
Perfluorooctanesulfonate (PFOS)		<	0.015	ug/L	1	B9E0550	05/28/19 12:26	05/28/19 12:26	MDH 555
Perfluorooctanoic acid (PFOA)		**0.11**	0.035	ug/L	1	B9E0550	05/28/19 12:26	05/28/19 12:26	MDH 555
Perfluoropentanoic acid (PFPeA)	J	**0.023**	0.050	ug/L	1	B9E0550	05/28/19 12:26	05/28/19 12:26	MDH 555

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Public Health Laboratory, Minnesota Department of Health

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St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 06/19/19 9:43

MDH Sample Number: 19E1829-02

Location ID: 603286
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 05/21/19
Collect Time: 12:50
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: (MW-97-9)

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Surrogate: 1,2-Dichlorobenzene-d4		*102*	*70-130*	%	*1*	*B9E0506*	*05/28/19 14:45*	*05/28/19 14:45*	*EPA 8260D*
Surrogate: 4-Bromofluorobenzene		*104*	*70-130*	%	*1*	*B9E0506*	*05/28/19 14:45*	*05/28/19 14:45*	*EPA 8260D*
Surrogate: Methyl tertiary butyl ether-d3		*107*	*70-130*	%	*1*	*B9E0506*	*05/28/19 14:45*	*05/28/19 14:45*	*EPA 8260D*
1,1,1,2-Tetrachloroethane		<	1.0	ug/L	1	B9E0506	05/28/19 14:45	05/28/19 14:45	EPA 8260D
1,1,1-Trichloroethane		<	1.0	ug/L	1	B9E0506	05/28/19 14:45	05/28/19 14:45	EPA 8260D
1,1,2,2-Tetrachloroethane		<	0.50	ug/L	1	B9E0506	05/28/19 14:45	05/28/19 14:45	EPA 8260D
1,1,2-Trichloroethane		<	0.50	ug/L	1	B9E0506	05/28/19 14:45	05/28/19 14:45	EPA 8260D
1,1,2-Trichlorotrifluoroethane		<	1.0	ug/L	1	B9E0506	05/28/19 14:45	05/28/19 14:45	EPA 8260D
1,1-Dichloroethane		<	1.0	ug/L	1	B9E0506	05/28/19 14:45	05/28/19 14:45	EPA 8260D
1,1-Dichloroethene		<	1.0	ug/L	1	B9E0506	05/28/19 14:45	05/28/19 14:45	EPA 8260D
1,1-Dichloropropene		<	1.0	ug/L	1	B9E0506	05/28/19 14:45	05/28/19 14:45	EPA 8260D
1,2,3-Trichlorobenzene		<	1.0	ug/L	1	B9E0506	05/28/19 14:45	05/28/19 14:45	EPA 8260D
1,2,3-Trichloropropane		<	0.20	ug/L	1	B9E0506	05/28/19 14:45	05/28/19 14:45	EPA 8260D
1,2,4-Trichlorobenzene		<	1.0	ug/L	1	B9E0506	05/28/19 14:45	05/28/19 14:45	EPA 8260D
1,2,4-Trimethylbenzene		<	1.0	ug/L	1	B9E0506	05/28/19 14:45	05/28/19 14:45	EPA 8260D
1,2-Dibromo-3-chloropropane (DBCP)		<	1.0	ug/L	1	B9E0506	05/28/19 14:45	05/28/19 14:45	EPA 8260D
1,2-Dibromoethane (EDB)		<	0.50	ug/L	1	B9E0506	05/28/19 14:45	05/28/19 14:45	EPA 8260D
1,2-Dichlorobenzene		<	1.0	ug/L	1	B9E0506	05/28/19 14:45	05/28/19 14:45	EPA 8260D
1,2-Dichloroethane		<	0.20	ug/L	1	B9E0506	05/28/19 14:45	05/28/19 14:45	EPA 8260D
1,2-Dichloropropane		<	1.0	ug/L	1	B9E0506	05/28/19 14:45	05/28/19 14:45	EPA 8260D
1,3,5-Trimethylbenzene		<	1.0	ug/L	1	B9E0506	05/28/19 14:45	05/28/19 14:45	EPA 8260D
1,3-Dichlorobenzene		<	1.0	ug/L	1	B9E0506	05/28/19 14:45	05/28/19 14:45	EPA 8260D
1,3-Dichloropropane		<	1.0	ug/L	1	B9E0506	05/28/19 14:45	05/28/19 14:45	EPA 8260D
1,4-Dichlorobenzene		<	1.0	ug/L	1	B9E0506	05/28/19 14:45	05/28/19 14:45	EPA 8260D
2,2-Dichloropropane		<	1.0	ug/L	1	B9E0506	05/28/19 14:45	05/28/19 14:45	EPA 8260D
2-Chlorotoluene		<	1.0	ug/L	1	B9E0506	05/28/19 14:45	05/28/19 14:45	EPA 8260D

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 06/19/19 9:43

MDH Sample Number: 19E1829-02

Location ID: 603286
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 05/21/19
Collect Time: 12:50
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: (MW-97-9)

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
4-Chlorotoluene		<	1.0	ug/L	1	B9E0506	05/28/19 14:45	05/28/19 14:45	EPA 8260D
Acetone		<	20	ug/L	1	B9E0506	05/28/19 14:45	05/28/19 14:45	EPA 8260D
Allyl chloride		<	1.0	ug/L	1	B9E0506	05/28/19 14:45	05/28/19 14:45	EPA 8260D
Benzene		<	0.50	ug/L	1	B9E0506	05/28/19 14:45	05/28/19 14:45	EPA 8260D
Bromobenzene		<	1.0	ug/L	1	B9E0506	05/28/19 14:45	05/28/19 14:45	EPA 8260D
Bromochloromethane		<	1.0	ug/L	1	B9E0506	05/28/19 14:45	05/28/19 14:45	EPA 8260D
Bromodichloromethane		<	1.0	ug/L	1	B9E0506	05/28/19 14:45	05/28/19 14:45	EPA 8260D
Bromoform		<	1.0	ug/L	1	B9E0506	05/28/19 14:45	05/28/19 14:45	EPA 8260D
Bromomethane		<	2.0	ug/L	1	B9E0506	05/28/19 14:45	05/28/19 14:45	EPA 8260D
Carbon tetrachloride		<	0.20	ug/L	1	B9E0506	05/28/19 14:45	05/28/19 14:45	EPA 8260D
Chlorobenzene		<	1.0	ug/L	1	B9E0506	05/28/19 14:45	05/28/19 14:45	EPA 8260D
Chlorodibromomethane		<	0.50	ug/L	1	B9E0506	05/28/19 14:45	05/28/19 14:45	EPA 8260D
Chloroethane		<	1.0	ug/L	1	B9E0506	05/28/19 14:45	05/28/19 14:45	EPA 8260D
Chloroform		<	1.0	ug/L	1	B9E0506	05/28/19 14:45	05/28/19 14:45	EPA 8260D
Chloromethane		<	1.0	ug/L	1	B9E0506	05/28/19 14:45	05/28/19 14:45	EPA 8260D
cis-1,2-Dichloroethene		<	1.0	ug/L	1	B9E0506	05/28/19 14:45	05/28/19 14:45	EPA 8260D
cis-1,3-Dichloropropene		<	0.50	ug/L	1	B9E0506	05/28/19 14:45	05/28/19 14:45	EPA 8260D
Dibromomethane		<	1.0	ug/L	1	B9E0506	05/28/19 14:45	05/28/19 14:45	EPA 8260D
Dichlorodifluoromethane		<	1.0	ug/L	1	B9E0506	05/28/19 14:45	05/28/19 14:45	EPA 8260D
Dichlorofluoromethane		<	1.0	ug/L	1	B9E0506	05/28/19 14:45	05/28/19 14:45	EPA 8260D
Ethyl ether		<	1.0	ug/L	1	B9E0506	05/28/19 14:45	05/28/19 14:45	EPA 8260D
Ethylbenzene		<	1.0	ug/L	1	B9E0506	05/28/19 14:45	05/28/19 14:45	EPA 8260D
Hexachlorobutadiene		<	0.50	ug/L	1	B9E0506	05/28/19 14:45	05/28/19 14:45	EPA 8260D
Isopropylbenzene		<	1.0	ug/L	1	B9E0506	05/28/19 14:45	05/28/19 14:45	EPA 8260D
Methyl ethyl ketone (MEK)		<	10	ug/L	1	B9E0506	05/28/19 14:45	05/28/19 14:45	EPA 8260D
Methyl isobutyl ketone (MIBK)		<	5.0	ug/L	1	B9E0506	05/28/19 14:45	05/28/19 14:45	EPA 8260D
Methyl tertiary butyl ether (MTBE)		<	2.0	ug/L	1	B9E0506	05/28/19 14:45	05/28/19 14:45	EPA 8260D

FINAL REPORT

Report ID: 06192019 94335

Authorized by:

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Public Health Laboratory, Minnesota Department of Health

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651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 06/19/19 9:43

MDH Sample Number: 19E1829-02

Location ID: 603286
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 05/21/19
Collect Time: 12:50
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: (MW-97-9)

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Methylene chloride		<	1.0	ug/L	1	B9E0506	05/28/19 14:45	05/28/19 14:45	EPA 8260D
Naphthalene		<	1.0	ug/L	1	B9E0506	05/28/19 14:45	05/28/19 14:45	EPA 8260D
n-Butylbenzene		<	1.0	ug/L	1	B9E0506	05/28/19 14:45	05/28/19 14:45	EPA 8260D
n-Propylbenzene		<	1.0	ug/L	1	B9E0506	05/28/19 14:45	05/28/19 14:45	EPA 8260D
o-Xylene		<	1.0	ug/L	1	B9E0506	05/28/19 14:45	05/28/19 14:45	EPA 8260D
p&m-Xylene		<	1.0	ug/L	1	B9E0506	05/28/19 14:45	05/28/19 14:45	EPA 8260D
p-Isopropyltoluene		<	1.0	ug/L	1	B9E0506	05/28/19 14:45	05/28/19 14:45	EPA 8260D
sec-Butylbenzene		<	1.0	ug/L	1	B9E0506	05/28/19 14:45	05/28/19 14:45	EPA 8260D
Styrene		<	1.0	ug/L	1	B9E0506	05/28/19 14:45	05/28/19 14:45	EPA 8260D
tert-Butylbenzene		<	1.0	ug/L	1	B9E0506	05/28/19 14:45	05/28/19 14:45	EPA 8260D
Tetrachloroethene		<	1.0	ug/L	1	B9E0506	05/28/19 14:45	05/28/19 14:45	EPA 8260D
Tetrahydrofuran (THF)		<	10	ug/L	1	B9E0506	05/28/19 14:45	05/28/19 14:45	EPA 8260D
Toluene		<	1.0	ug/L	1	B9E0506	05/28/19 14:45	05/28/19 14:45	EPA 8260D
trans-1,2-Dichloroethene		<	1.0	ug/L	1	B9E0506	05/28/19 14:45	05/28/19 14:45	EPA 8260D
trans-1,3-Dichloropropene		<	0.50	ug/L	1	B9E0506	05/28/19 14:45	05/28/19 14:45	EPA 8260D
Trichloroethene (TCE)		<	0.10	ug/L	1	B9E0506	05/28/19 14:45	05/28/19 14:45	EPA 8260D
Trichlorofluoromethane		<	1.0	ug/L	1	B9E0506	05/28/19 14:45	05/28/19 14:45	EPA 8260D
Vinyl chloride		<	0.050	ug/L	1	B9E0506	05/28/19 14:45	05/28/19 14:45	EPA 8260D

1,4-Dioxane

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
1,4-Dioxane		**0.36**	0.049	ug/L	1	B9F0115	06/07/19 08:00	06/07/19 19:11	EPA 522 Modified

PFC Expanded List

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorobutanesulfonate (PFBS)		<	0.050	ug/L	1	B9E0550	05/28/19 12:51	05/28/19 12:51	MDH 555
Perfluorobutanoic acid (PFBA)	J	**0.022**	0.050	ug/L	1	B9E0550	05/28/19 12:51	05/28/19 12:51	MDH 555

FINAL REPORT

Report ID: 06192019 94335

Authorized by:

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 06/19/19 9:43

MDH Sample Number: 19E1829-02

Location ID: 603286
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 05/21/19
Collect Time: 12:50
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: (MW-97-9)

Results were produced by the Minnesota Department of Health, except where noted.

PFC Expanded List - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorohexanesulfonate (PFHxS)		<	0.025	ug/L	1	B9E0550	05/28/19 12:51	05/28/19 12:51	MDH 555
Perfluorohexanoic acid (PFHxA)		<	0.050	ug/L	1	B9E0550	05/28/19 12:51	05/28/19 12:51	MDH 555
Perfluorooctanesulfonate (PFOS)		**0.037**	0.015	ug/L	1	B9E0550	05/28/19 12:51	05/28/19 12:51	MDH 555
Perfluorooctanoic acid (PFOA)		**0.077**	0.035	ug/L	1	B9E0550	05/28/19 12:51	05/28/19 12:51	MDH 555
Perfluoropentanoic acid (PFPeA)	J	**0.006**	0.050	ug/L	1	B9E0550	05/28/19 12:51	05/28/19 12:51	MDH 555

Authorized by:

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Public Health Laboratory, Minnesota Department of Health

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Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 06/19/19 9:43

MDH Sample Number: 19E1829-03

Location ID: 603284
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 05/21/19
Collect Time: 14:20
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: (MW-97-7)

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Surrogate: 1,2-Dichlorobenzene-d4		*99*	*70-130*	%	*1*	*B9E0506*	*05/28/19 15:41*	*05/28/19 15:41*	*EPA 8260D*
Surrogate: 4-Bromofluorobenzene		*104*	*70-130*	%	*1*	*B9E0506*	*05/28/19 15:41*	*05/28/19 15:41*	*EPA 8260D*
Surrogate: Methyl tertiary butyl ether-d3		*109*	*70-130*	%	*1*	*B9E0506*	*05/28/19 15:41*	*05/28/19 15:41*	*EPA 8260D*
1,1,1,2-Tetrachloroethane		<	1.0	ug/L	1	B9E0506	05/28/19 15:41	05/28/19 15:41	EPA 8260D
1,1,1-Trichloroethane		<	1.0	ug/L	1	B9E0506	05/28/19 15:41	05/28/19 15:41	EPA 8260D
1,1,2,2-Tetrachloroethane		<	0.50	ug/L	1	B9E0506	05/28/19 15:41	05/28/19 15:41	EPA 8260D
1,1,2-Trichloroethane		<	0.50	ug/L	1	B9E0506	05/28/19 15:41	05/28/19 15:41	EPA 8260D
1,1,2-Trichlorotrifluoroethane		<	1.0	ug/L	1	B9E0506	05/28/19 15:41	05/28/19 15:41	EPA 8260D
1,1-Dichloroethane		<	1.0	ug/L	1	B9E0506	05/28/19 15:41	05/28/19 15:41	EPA 8260D
1,1-Dichloroethene		<	1.0	ug/L	1	B9E0506	05/28/19 15:41	05/28/19 15:41	EPA 8260D
1,1-Dichloropropene		<	1.0	ug/L	1	B9E0506	05/28/19 15:41	05/28/19 15:41	EPA 8260D
1,2,3-Trichlorobenzene		<	1.0	ug/L	1	B9E0506	05/28/19 15:41	05/28/19 15:41	EPA 8260D
1,2,3-Trichloropropane		<	0.20	ug/L	1	B9E0506	05/28/19 15:41	05/28/19 15:41	EPA 8260D
1,2,4-Trichlorobenzene		<	1.0	ug/L	1	B9E0506	05/28/19 15:41	05/28/19 15:41	EPA 8260D
1,2,4-Trimethylbenzene		<	1.0	ug/L	1	B9E0506	05/28/19 15:41	05/28/19 15:41	EPA 8260D
1,2-Dibromo-3-chloropropane (DBCP)		<	1.0	ug/L	1	B9E0506	05/28/19 15:41	05/28/19 15:41	EPA 8260D
1,2-Dibromoethane (EDB)		<	0.50	ug/L	1	B9E0506	05/28/19 15:41	05/28/19 15:41	EPA 8260D
1,2-Dichlorobenzene		<	1.0	ug/L	1	B9E0506	05/28/19 15:41	05/28/19 15:41	EPA 8260D
1,2-Dichloroethane		<	0.20	ug/L	1	B9E0506	05/28/19 15:41	05/28/19 15:41	EPA 8260D
1,2-Dichloropropane		<	1.0	ug/L	1	B9E0506	05/28/19 15:41	05/28/19 15:41	EPA 8260D
1,3,5-Trimethylbenzene		<	1.0	ug/L	1	B9E0506	05/28/19 15:41	05/28/19 15:41	EPA 8260D
1,3-Dichlorobenzene		<	1.0	ug/L	1	B9E0506	05/28/19 15:41	05/28/19 15:41	EPA 8260D
1,3-Dichloropropane		<	1.0	ug/L	1	B9E0506	05/28/19 15:41	05/28/19 15:41	EPA 8260D
1,4-Dichlorobenzene		<	1.0	ug/L	1	B9E0506	05/28/19 15:41	05/28/19 15:41	EPA 8260D
2,2-Dichloropropane		<	1.0	ug/L	1	B9E0506	05/28/19 15:41	05/28/19 15:41	EPA 8260D
2-Chlorotoluene		<	1.0	ug/L	1	B9E0506	05/28/19 15:41	05/28/19 15:41	EPA 8260D

FINAL REPORT

Report ID: 06192019 94335

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Public Health Laboratory, Minnesota Department of Health

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Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 06/19/19 9:43

MDH Sample Number: 19E1829-03

Location ID: 603284
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 05/21/19
Collect Time: 14:20
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: (MW-97-7)

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
4-Chlorotoluene		<	1.0	ug/L	1	B9E0506	05/28/19 15:41	05/28/19 15:41	EPA 8260D
Acetone		<	20	ug/L	1	B9E0506	05/28/19 15:41	05/28/19 15:41	EPA 8260D
Allyl chloride		<	1.0	ug/L	1	B9E0506	05/28/19 15:41	05/28/19 15:41	EPA 8260D
Benzene		<	0.50	ug/L	1	B9E0506	05/28/19 15:41	05/28/19 15:41	EPA 8260D
Bromobenzene		<	1.0	ug/L	1	B9E0506	05/28/19 15:41	05/28/19 15:41	EPA 8260D
Bromochloromethane		<	1.0	ug/L	1	B9E0506	05/28/19 15:41	05/28/19 15:41	EPA 8260D
Bromodichloromethane		<	1.0	ug/L	1	B9E0506	05/28/19 15:41	05/28/19 15:41	EPA 8260D
Bromoform		<	1.0	ug/L	1	B9E0506	05/28/19 15:41	05/28/19 15:41	EPA 8260D
Bromomethane		<	2.0	ug/L	1	B9E0506	05/28/19 15:41	05/28/19 15:41	EPA 8260D
Carbon tetrachloride		<	0.20	ug/L	1	B9E0506	05/28/19 15:41	05/28/19 15:41	EPA 8260D
Chlorobenzene		<	1.0	ug/L	1	B9E0506	05/28/19 15:41	05/28/19 15:41	EPA 8260D
Chlorodibromomethane		<	0.50	ug/L	1	B9E0506	05/28/19 15:41	05/28/19 15:41	EPA 8260D
Chloroethane		<	1.0	ug/L	1	B9E0506	05/28/19 15:41	05/28/19 15:41	EPA 8260D
Chloroform		<	1.0	ug/L	1	B9E0506	05/28/19 15:41	05/28/19 15:41	EPA 8260D
Chloromethane		<	1.0	ug/L	1	B9E0506	05/28/19 15:41	05/28/19 15:41	EPA 8260D
cis-1,2-Dichloroethene		<	1.0	ug/L	1	B9E0506	05/28/19 15:41	05/28/19 15:41	EPA 8260D
cis-1,3-Dichloropropene		<	0.50	ug/L	1	B9E0506	05/28/19 15:41	05/28/19 15:41	EPA 8260D
Dibromomethane		<	1.0	ug/L	1	B9E0506	05/28/19 15:41	05/28/19 15:41	EPA 8260D
Dichlorodifluoromethane		<	1.0	ug/L	1	B9E0506	05/28/19 15:41	05/28/19 15:41	EPA 8260D
Dichlorofluoromethane		<	1.0	ug/L	1	B9E0506	05/28/19 15:41	05/28/19 15:41	EPA 8260D
Ethyl ether		<	1.0	ug/L	1	B9E0506	05/28/19 15:41	05/28/19 15:41	EPA 8260D
Ethylbenzene		<	1.0	ug/L	1	B9E0506	05/28/19 15:41	05/28/19 15:41	EPA 8260D
Hexachlorobutadiene		<	0.50	ug/L	1	B9E0506	05/28/19 15:41	05/28/19 15:41	EPA 8260D
Isopropylbenzene		<	1.0	ug/L	1	B9E0506	05/28/19 15:41	05/28/19 15:41	EPA 8260D
Methyl ethyl ketone (MEK)		<	10	ug/L	1	B9E0506	05/28/19 15:41	05/28/19 15:41	EPA 8260D
Methyl isobutyl ketone (MIBK)		<	5.0	ug/L	1	B9E0506	05/28/19 15:41	05/28/19 15:41	EPA 8260D
Methyl tertiary butyl ether (MTBE)		<	2.0	ug/L	1	B9E0506	05/28/19 15:41	05/28/19 15:41	EPA 8260D

FINAL REPORT

Report ID: 06192019 94335

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 06/19/19 9:43

MDH Sample Number: 19E1829-03

Location ID: 603284
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 05/21/19
Collect Time: 14:20
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: (MW-97-7)

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Methylene chloride		<	1.0	ug/L	1	B9E0506	05/28/19 15:41	05/28/19 15:41	EPA 8260D
Naphthalene		<	1.0	ug/L	1	B9E0506	05/28/19 15:41	05/28/19 15:41	EPA 8260D
n-Butylbenzene		<	1.0	ug/L	1	B9E0506	05/28/19 15:41	05/28/19 15:41	EPA 8260D
n-Propylbenzene		<	1.0	ug/L	1	B9E0506	05/28/19 15:41	05/28/19 15:41	EPA 8260D
o-Xylene		<	1.0	ug/L	1	B9E0506	05/28/19 15:41	05/28/19 15:41	EPA 8260D
p&m-Xylene		<	1.0	ug/L	1	B9E0506	05/28/19 15:41	05/28/19 15:41	EPA 8260D
p-Isopropyltoluene		<	1.0	ug/L	1	B9E0506	05/28/19 15:41	05/28/19 15:41	EPA 8260D
sec-Butylbenzene		<	1.0	ug/L	1	B9E0506	05/28/19 15:41	05/28/19 15:41	EPA 8260D
Styrene		<	1.0	ug/L	1	B9E0506	05/28/19 15:41	05/28/19 15:41	EPA 8260D
tert-Butylbenzene		<	1.0	ug/L	1	B9E0506	05/28/19 15:41	05/28/19 15:41	EPA 8260D
Tetrachloroethene		<	1.0	ug/L	1	B9E0506	05/28/19 15:41	05/28/19 15:41	EPA 8260D
Tetrahydrofuran (THF)		<	10	ug/L	1	B9E0506	05/28/19 15:41	05/28/19 15:41	EPA 8260D
Toluene		<	1.0	ug/L	1	B9E0506	05/28/19 15:41	05/28/19 15:41	EPA 8260D
trans-1,2-Dichloroethene		<	1.0	ug/L	1	B9E0506	05/28/19 15:41	05/28/19 15:41	EPA 8260D
trans-1,3-Dichloropropene		<	0.50	ug/L	1	B9E0506	05/28/19 15:41	05/28/19 15:41	EPA 8260D
Trichloroethene (TCE)		<	0.10	ug/L	1	B9E0506	05/28/19 15:41	05/28/19 15:41	EPA 8260D
Trichlorofluoromethane		<	1.0	ug/L	1	B9E0506	05/28/19 15:41	05/28/19 15:41	EPA 8260D
Vinyl chloride		<	0.050	ug/L	1	B9E0506	05/28/19 15:41	05/28/19 15:41	EPA 8260D

1,4-Dioxane

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
1,4-Dioxane		<	0.051	ug/L	1	B9F0115	06/07/19 08:00	06/07/19 19:28	EPA 522 Modified

PFC Expanded List

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorobutanesulfonate (PFBS)	J	**0.008**	0.050	ug/L	1	B9E0550	05/28/19 12:59	05/28/19 12:59	MDH 555
Perfluorobutanoic acid (PFBA)	J	**0.022**	0.050	ug/L	1	B9E0550	05/28/19 12:59	05/28/19 12:59	MDH 555

FINAL REPORT

Report ID: 06192019 94335

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651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 06/19/19 9:43

MDH Sample Number: 19E1829-03

Location ID: 603284
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 05/21/19
Collect Time: 14:20
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: (MW-97-7)

Results were produced by the Minnesota Department of Health, except where noted.

PFC Expanded List - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorohexanesulfonate (PFHxS)	J	**0.006**	0.025	ug/L	1	B9E0550	05/28/19 12:59	05/28/19 12:59	MDH 555
Perfluorohexanoic acid (PFHxA)	J	**0.029**	0.050	ug/L	1	B9E0550	05/28/19 12:59	05/28/19 12:59	MDH 555
Perfluorooctanesulfonate (PFOS)		**0.037**	0.015	ug/L	1	B9E0550	05/28/19 12:59	05/28/19 12:59	MDH 555
Perfluorooctanoic acid (PFOA)		**0.069**	0.035	ug/L	1	B9E0550	05/28/19 12:59	05/28/19 12:59	MDH 555
Perfluoropentanoic acid (PFPeA)	J	**0.015**	0.050	ug/L	1	B9E0550	05/28/19 12:59	05/28/19 12:59	MDH 555

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Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 06/19/19 9:43

MDH Sample Number: 19E1829-04

Location ID: 603283
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 05/21/19
Collect Time: 15:40
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: (MW-97-3)

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Surrogate: 1,2-Dichlorobenzene-d4		*99*	*70-130*	%	*1*	*B9E0506*	*05/28/19 16:08*	*05/28/19 16:08*	*EPA 8260D*
Surrogate: 4-Bromofluorobenzene		*99*	*70-130*	%	*1*	*B9E0506*	*05/28/19 16:08*	*05/28/19 16:08*	*EPA 8260D*
Surrogate: Methyl tertiary butyl ether-d3		*109*	*70-130*	%	*1*	*B9E0506*	*05/28/19 16:08*	*05/28/19 16:08*	*EPA 8260D*
1,1,1,2-Tetrachloroethane		<	1.0	ug/L	1	B9E0506	05/28/19 16:08	05/28/19 16:08	EPA 8260D
1,1,1-Trichloroethane		<	1.0	ug/L	1	B9E0506	05/28/19 16:08	05/28/19 16:08	EPA 8260D
1,1,2,2-Tetrachloroethane		<	0.50	ug/L	1	B9E0506	05/28/19 16:08	05/28/19 16:08	EPA 8260D
1,1,2-Trichloroethane		<	0.50	ug/L	1	B9E0506	05/28/19 16:08	05/28/19 16:08	EPA 8260D
1,1,2-Trichlorotrifluoroethane		<	1.0	ug/L	1	B9E0506	05/28/19 16:08	05/28/19 16:08	EPA 8260D
1,1-Dichloroethane		<	1.0	ug/L	1	B9E0506	05/28/19 16:08	05/28/19 16:08	EPA 8260D
1,1-Dichloroethene		<	1.0	ug/L	1	B9E0506	05/28/19 16:08	05/28/19 16:08	EPA 8260D
1,1-Dichloropropene		<	1.0	ug/L	1	B9E0506	05/28/19 16:08	05/28/19 16:08	EPA 8260D
1,2,3-Trichlorobenzene		<	1.0	ug/L	1	B9E0506	05/28/19 16:08	05/28/19 16:08	EPA 8260D
1,2,3-Trichloropropane		<	0.20	ug/L	1	B9E0506	05/28/19 16:08	05/28/19 16:08	EPA 8260D
1,2,4-Trichlorobenzene		<	1.0	ug/L	1	B9E0506	05/28/19 16:08	05/28/19 16:08	EPA 8260D
1,2,4-Trimethylbenzene		<	1.0	ug/L	1	B9E0506	05/28/19 16:08	05/28/19 16:08	EPA 8260D
1,2-Dibromo-3-chloropropane (DBCP)		<	1.0	ug/L	1	B9E0506	05/28/19 16:08	05/28/19 16:08	EPA 8260D
1,2-Dibromoethane (EDB)		<	0.50	ug/L	1	B9E0506	05/28/19 16:08	05/28/19 16:08	EPA 8260D
1,2-Dichlorobenzene		<	1.0	ug/L	1	B9E0506	05/28/19 16:08	05/28/19 16:08	EPA 8260D
1,2-Dichloroethane		<	0.20	ug/L	1	B9E0506	05/28/19 16:08	05/28/19 16:08	EPA 8260D
1,2-Dichloropropane		<	1.0	ug/L	1	B9E0506	05/28/19 16:08	05/28/19 16:08	EPA 8260D
1,3,5-Trimethylbenzene		<	1.0	ug/L	1	B9E0506	05/28/19 16:08	05/28/19 16:08	EPA 8260D
1,3-Dichlorobenzene		<	1.0	ug/L	1	B9E0506	05/28/19 16:08	05/28/19 16:08	EPA 8260D
1,3-Dichloropropane		<	1.0	ug/L	1	B9E0506	05/28/19 16:08	05/28/19 16:08	EPA 8260D
1,4-Dichlorobenzene		<	1.0	ug/L	1	B9E0506	05/28/19 16:08	05/28/19 16:08	EPA 8260D
2,2-Dichloropropane		<	1.0	ug/L	1	B9E0506	05/28/19 16:08	05/28/19 16:08	EPA 8260D
2-Chlorotoluene		<	1.0	ug/L	1	B9E0506	05/28/19 16:08	05/28/19 16:08	EPA 8260D

FINAL REPORT

Report ID: 06192019 94335

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 06/19/19 9:43

MDH Sample Number: 19E1829-04

Location ID: 603283
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 05/21/19
Collect Time: 15:40
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: (MW-97-3)

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
4-Chlorotoluene		<	1.0	ug/L	1	B9E0506	05/28/19 16:08	05/28/19 16:08	EPA 8260D
Acetone		<	20	ug/L	1	B9E0506	05/28/19 16:08	05/28/19 16:08	EPA 8260D
Allyl chloride		<	1.0	ug/L	1	B9E0506	05/28/19 16:08	05/28/19 16:08	EPA 8260D
Benzene		<	0.50	ug/L	1	B9E0506	05/28/19 16:08	05/28/19 16:08	EPA 8260D
Bromobenzene		<	1.0	ug/L	1	B9E0506	05/28/19 16:08	05/28/19 16:08	EPA 8260D
Bromochloromethane		<	1.0	ug/L	1	B9E0506	05/28/19 16:08	05/28/19 16:08	EPA 8260D
Bromodichloromethane		<	1.0	ug/L	1	B9E0506	05/28/19 16:08	05/28/19 16:08	EPA 8260D
Bromoform		<	1.0	ug/L	1	B9E0506	05/28/19 16:08	05/28/19 16:08	EPA 8260D
Bromomethane		<	2.0	ug/L	1	B9E0506	05/28/19 16:08	05/28/19 16:08	EPA 8260D
Carbon tetrachloride		<	0.20	ug/L	1	B9E0506	05/28/19 16:08	05/28/19 16:08	EPA 8260D
Chlorobenzene		<	1.0	ug/L	1	B9E0506	05/28/19 16:08	05/28/19 16:08	EPA 8260D
Chlorodibromomethane		<	0.50	ug/L	1	B9E0506	05/28/19 16:08	05/28/19 16:08	EPA 8260D
Chloroethane		<	1.0	ug/L	1	B9E0506	05/28/19 16:08	05/28/19 16:08	EPA 8260D
Chloroform		<	1.0	ug/L	1	B9E0506	05/28/19 16:08	05/28/19 16:08	EPA 8260D
Chloromethane		<	1.0	ug/L	1	B9E0506	05/28/19 16:08	05/28/19 16:08	EPA 8260D
cis-1,2-Dichloroethene		<	1.0	ug/L	1	B9E0506	05/28/19 16:08	05/28/19 16:08	EPA 8260D
cis-1,3-Dichloropropene		<	0.50	ug/L	1	B9E0506	05/28/19 16:08	05/28/19 16:08	EPA 8260D
Dibromomethane		<	1.0	ug/L	1	B9E0506	05/28/19 16:08	05/28/19 16:08	EPA 8260D
Dichlorodifluoromethane		<	1.0	ug/L	1	B9E0506	05/28/19 16:08	05/28/19 16:08	EPA 8260D
Dichlorofluoromethane		<	1.0	ug/L	1	B9E0506	05/28/19 16:08	05/28/19 16:08	EPA 8260D
Ethyl ether		<	1.0	ug/L	1	B9E0506	05/28/19 16:08	05/28/19 16:08	EPA 8260D
Ethylbenzene		<	1.0	ug/L	1	B9E0506	05/28/19 16:08	05/28/19 16:08	EPA 8260D
Hexachlorobutadiene		<	0.50	ug/L	1	B9E0506	05/28/19 16:08	05/28/19 16:08	EPA 8260D
Isopropylbenzene		<	1.0	ug/L	1	B9E0506	05/28/19 16:08	05/28/19 16:08	EPA 8260D
Methyl ethyl ketone (MEK)		<	10	ug/L	1	B9E0506	05/28/19 16:08	05/28/19 16:08	EPA 8260D
Methyl isobutyl ketone (MIBK)		<	5.0	ug/L	1	B9E0506	05/28/19 16:08	05/28/19 16:08	EPA 8260D
Methyl tertiary butyl ether (MTBE)		<	2.0	ug/L	1	B9E0506	05/28/19 16:08	05/28/19 16:08	EPA 8260D

FINAL REPORT

Report ID: 06192019 94335

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 06/19/19 9:43

MDH Sample Number: 19E1829-04

Location ID: 603283
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 05/21/19
Collect Time: 15:40
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: (MW-97-3)

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Methylene chloride		<	1.0	ug/L	1	B9E0506	05/28/19 16:08	05/28/19 16:08	EPA 8260D
Naphthalene		<	1.0	ug/L	1	B9E0506	05/28/19 16:08	05/28/19 16:08	EPA 8260D
n-Butylbenzene		<	1.0	ug/L	1	B9E0506	05/28/19 16:08	05/28/19 16:08	EPA 8260D
n-Propylbenzene		<	1.0	ug/L	1	B9E0506	05/28/19 16:08	05/28/19 16:08	EPA 8260D
o-Xylene		<	1.0	ug/L	1	B9E0506	05/28/19 16:08	05/28/19 16:08	EPA 8260D
p&m-Xylene		<	1.0	ug/L	1	B9E0506	05/28/19 16:08	05/28/19 16:08	EPA 8260D
p-Isopropyltoluene		<	1.0	ug/L	1	B9E0506	05/28/19 16:08	05/28/19 16:08	EPA 8260D
sec-Butylbenzene		<	1.0	ug/L	1	B9E0506	05/28/19 16:08	05/28/19 16:08	EPA 8260D
Styrene		<	1.0	ug/L	1	B9E0506	05/28/19 16:08	05/28/19 16:08	EPA 8260D
tert-Butylbenzene		<	1.0	ug/L	1	B9E0506	05/28/19 16:08	05/28/19 16:08	EPA 8260D
Tetrachloroethene		<	1.0	ug/L	1	B9E0506	05/28/19 16:08	05/28/19 16:08	EPA 8260D
Tetrahydrofuran (THF)		<	10	ug/L	1	B9E0506	05/28/19 16:08	05/28/19 16:08	EPA 8260D
Toluene		<	1.0	ug/L	1	B9E0506	05/28/19 16:08	05/28/19 16:08	EPA 8260D
trans-1,2-Dichloroethene		<	1.0	ug/L	1	B9E0506	05/28/19 16:08	05/28/19 16:08	EPA 8260D
trans-1,3-Dichloropropene		<	0.50	ug/L	1	B9E0506	05/28/19 16:08	05/28/19 16:08	EPA 8260D
Trichloroethene (TCE)		<	0.10	ug/L	1	B9E0506	05/28/19 16:08	05/28/19 16:08	EPA 8260D
Trichlorofluoromethane		<	1.0	ug/L	1	B9E0506	05/28/19 16:08	05/28/19 16:08	EPA 8260D
Vinyl chloride		<	0.050	ug/L	1	B9E0506	05/28/19 16:08	05/28/19 16:08	EPA 8260D

1,4-Dioxane

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
1,4-Dioxane		**0.11**	0.050	ug/L	1	B9F0115	06/07/19 08:00	06/07/19 20:01	EPA 522 Modified

PFC Expanded List

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorobutanesulfonate (PFBS)		<	0.050	ug/L	1	B9E0550	05/28/19 13:07	05/28/19 13:07	MDH 555
Perfluorobutanoic acid (PFBA)	J	**0.043**	0.050	ug/L	1	B9E0550	05/28/19 13:07	05/28/19 13:07	MDH 555

FINAL REPORT

Report ID: 06192019 94335

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 06/19/19 9:43

MDH Sample Number: 19E1829-04

Location ID: 603283
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 05/21/19
Collect Time: 15:40
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: (MW-97-3)

Results were produced by the Minnesota Department of Health, except where noted.

PFC Expanded List - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorohexanesulfonate (PFHxS)		<	0.025	ug/L	1	B9E0550	05/28/19 13:07	05/28/19 13:07	MDH 555
Perfluorohexanoic acid (PFHxA)		<	0.050	ug/L	1	B9E0550	05/28/19 13:07	05/28/19 13:07	MDH 555
Perfluorooctanesulfonate (PFOS)		<	0.015	ug/L	1	B9E0550	05/28/19 13:07	05/28/19 13:07	MDH 555
Perfluorooctanoic acid (PFOA)	J	**0.025**	0.035	ug/L	1	B9E0550	05/28/19 13:07	05/28/19 13:07	MDH 555
Perfluoropentanoic acid (PFPeA)	J	**0.006**	0.050	ug/L	1	B9E0550	05/28/19 13:07	05/28/19 13:07	MDH 555

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Public Health Laboratory, Minnesota Department of Health

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651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 06/19/19 9:43

MDH Sample Number: 19E1829-05

Location ID: 813763
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 05/22/19
Collect Time: 12:00
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: (MW-3)

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Surrogate: 1,2-Dichlorobenzene-d4	F5	*105*	*70-130*	%	*1*	*B9E0506*	*05/28/19 16:36*	*05/28/19 16:36*	*EPA 8260D*
Surrogate: 4-Bromofluorobenzene	F5	*106*	*70-130*	%	*1*	*B9E0506*	*05/28/19 16:36*	*05/28/19 16:36*	*EPA 8260D*
Surrogate: Methyl tertiary butyl ether-d3	F5	*106*	*70-130*	%	*1*	*B9E0506*	*05/28/19 16:36*	*05/28/19 16:36*	*EPA 8260D*
1,1,1,2-Tetrachloroethane	F5	<	1.0	ug/L	1	B9E0506	05/28/19 16:36	05/28/19 16:36	EPA 8260D
1,1,1-Trichloroethane	F5	<	1.0	ug/L	1	B9E0506	05/28/19 16:36	05/28/19 16:36	EPA 8260D
1,1,2,2-Tetrachloroethane	F5	<	0.50	ug/L	1	B9E0506	05/28/19 16:36	05/28/19 16:36	EPA 8260D
1,1,2-Trichloroethane	F5	<	0.50	ug/L	1	B9E0506	05/28/19 16:36	05/28/19 16:36	EPA 8260D
1,1,2-Trichlorotrifluoroethane	F5	<	1.0	ug/L	1	B9E0506	05/28/19 16:36	05/28/19 16:36	EPA 8260D
1,1-Dichloroethane	F5	<	1.0	ug/L	1	B9E0506	05/28/19 16:36	05/28/19 16:36	EPA 8260D
1,1-Dichloroethene	F5	<	1.0	ug/L	1	B9E0506	05/28/19 16:36	05/28/19 16:36	EPA 8260D
1,1-Dichloropropene	F5	<	1.0	ug/L	1	B9E0506	05/28/19 16:36	05/28/19 16:36	EPA 8260D
1,2,3-Trichlorobenzene	F5	<	1.0	ug/L	1	B9E0506	05/28/19 16:36	05/28/19 16:36	EPA 8260D
1,2,3-Trichloropropane	F5	<	0.20	ug/L	1	B9E0506	05/28/19 16:36	05/28/19 16:36	EPA 8260D
1,2,4-Trichlorobenzene	F5	<	1.0	ug/L	1	B9E0506	05/28/19 16:36	05/28/19 16:36	EPA 8260D
1,2,4-Trimethylbenzene	F5	**21**	1.0	ug/L	1	B9E0506	05/28/19 16:36	05/28/19 16:36	EPA 8260D
1,2-Dibromo-3-chloropropane (DBCP)	F5	<	1.0	ug/L	1	B9E0506	05/28/19 16:36	05/28/19 16:36	EPA 8260D
1,2-Dibromoethane (EDB)	F5	<	0.50	ug/L	1	B9E0506	05/28/19 16:36	05/28/19 16:36	EPA 8260D
1,2-Dichlorobenzene	F5	<	1.0	ug/L	1	B9E0506	05/28/19 16:36	05/28/19 16:36	EPA 8260D
1,2-Dichloroethane	F5	<	0.20	ug/L	1	B9E0506	05/28/19 16:36	05/28/19 16:36	EPA 8260D
1,2-Dichloropropane	F5	<	1.0	ug/L	1	B9E0506	05/28/19 16:36	05/28/19 16:36	EPA 8260D
1,3,5-Trimethylbenzene	F5	**4.7**	1.0	ug/L	1	B9E0506	05/28/19 16:36	05/28/19 16:36	EPA 8260D
1,3-Dichlorobenzene	F5	<	1.0	ug/L	1	B9E0506	05/28/19 16:36	05/28/19 16:36	EPA 8260D
1,3-Dichloropropane	F5	<	1.0	ug/L	1	B9E0506	05/28/19 16:36	05/28/19 16:36	EPA 8260D
1,4-Dichlorobenzene	F5	<	1.0	ug/L	1	B9E0506	05/28/19 16:36	05/28/19 16:36	EPA 8260D
2,2-Dichloropropane	F5	<	1.0	ug/L	1	B9E0506	05/28/19 16:36	05/28/19 16:36	EPA 8260D
2-Chlorotoluene	F5	<	1.0	ug/L	1	B9E0506	05/28/19 16:36	05/28/19 16:36	EPA 8260D

FINAL REPORT

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Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 06/19/19 9:43

MDH Sample Number: 19E1829-05

Location ID: 813763
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 05/22/19
Collect Time: 12:00
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: (MW-3)

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
4-Chlorotoluene	F5	<	1.0	ug/L	1	B9E0506	05/28/19 16:36	05/28/19 16:36	EPA 8260D
Allyl chloride	F5	<	1.0	ug/L	1	B9E0506	05/28/19 16:36	05/28/19 16:36	EPA 8260D
Benzene	F5	**5.6**	0.50	ug/L	1	B9E0506	05/28/19 16:36	05/28/19 16:36	EPA 8260D
Bromobenzene	F5	<	1.0	ug/L	1	B9E0506	05/28/19 16:36	05/28/19 16:36	EPA 8260D
Bromochloromethane	F5	<	1.0	ug/L	1	B9E0506	05/28/19 16:36	05/28/19 16:36	EPA 8260D
Bromodichloromethane	F5	<	1.0	ug/L	1	B9E0506	05/28/19 16:36	05/28/19 16:36	EPA 8260D
Bromoform	F5	<	1.0	ug/L	1	B9E0506	05/28/19 16:36	05/28/19 16:36	EPA 8260D
Bromomethane	F5	<	2.0	ug/L	1	B9E0506	05/28/19 16:36	05/28/19 16:36	EPA 8260D
Carbon tetrachloride	F5	<	0.20	ug/L	1	B9E0506	05/28/19 16:36	05/28/19 16:36	EPA 8260D
Chlorobenzene	F5	**1.7**	1.0	ug/L	1	B9E0506	05/28/19 16:36	05/28/19 16:36	EPA 8260D
Chlorodibromomethane	F5	<	0.50	ug/L	1	B9E0506	05/28/19 16:36	05/28/19 16:36	EPA 8260D
Chloroethane	F5	**2.4**	1.0	ug/L	1	B9E0506	05/28/19 16:36	05/28/19 16:36	EPA 8260D
Chloroform	F5	<	1.0	ug/L	1	B9E0506	05/28/19 16:36	05/28/19 16:36	EPA 8260D
Chloromethane	F5	<	1.0	ug/L	1	B9E0506	05/28/19 16:36	05/28/19 16:36	EPA 8260D
cis-1,2-Dichloroethene	F5	**1.6**	1.0	ug/L	1	B9E0506	05/28/19 16:36	05/28/19 16:36	EPA 8260D
cis-1,3-Dichloropropene	F5	<	0.50	ug/L	1	B9E0506	05/28/19 16:36	05/28/19 16:36	EPA 8260D
Dibromomethane	F5	<	1.0	ug/L	1	B9E0506	05/28/19 16:36	05/28/19 16:36	EPA 8260D
Dichlorodifluoromethane	F5	<	1.0	ug/L	1	B9E0506	05/28/19 16:36	05/28/19 16:36	EPA 8260D
Dichlorofluoromethane	F5	**4.3**	1.0	ug/L	1	B9E0506	05/28/19 16:36	05/28/19 16:36	EPA 8260D
Ethyl ether	F5	**56**	1.0	ug/L	1	B9E0506	05/28/19 16:36	05/28/19 16:36	EPA 8260D
Ethylbenzene	F5	**19**	1.0	ug/L	1	B9E0506	05/28/19 16:36	05/28/19 16:36	EPA 8260D
Hexachlorobutadiene	F5	<	0.50	ug/L	1	B9E0506	05/28/19 16:36	05/28/19 16:36	EPA 8260D
Isopropylbenzene	F5	**2.6**	1.0	ug/L	1	B9E0506	05/28/19 16:36	05/28/19 16:36	EPA 8260D
Methyl tertiary butyl ether (MTBE)	F5	<	2.0	ug/L	1	B9E0506	05/28/19 16:36	05/28/19 16:36	EPA 8260D
Methylene chloride	F5	<	1.0	ug/L	1	B9E0506	05/28/19 16:36	05/28/19 16:36	EPA 8260D
Naphthalene	F5	**28**	1.0	ug/L	1	B9E0506	05/28/19 16:36	05/28/19 16:36	EPA 8260D
n-Butylbenzene	F5	<	1.0	ug/L	1	B9E0506	05/28/19 16:36	05/28/19 16:36	EPA 8260D

FINAL REPORT

Report ID: 06192019 94335

Authorized by:

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Paul Moyer, Environmental Laboratory Manager
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Minnesota Department of Health
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St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 06/19/19 9:43

MDH Sample Number: 19E1829-05

Location ID: 813763
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 05/22/19
Collect Time: 12:00
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: (MW-3)

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
n-Propylbenzene	F5	**2.7**	1.0	ug/L	1	B9E0506	05/28/19 16:36	05/28/19 16:36	EPA 8260D
o-Xylene	F5	**16**	1.0	ug/L	1	B9E0506	05/28/19 16:36	05/28/19 16:36	EPA 8260D
p-Isopropyltoluene	F5	**15**	1.0	ug/L	1	B9E0506	05/28/19 16:36	05/28/19 16:36	EPA 8260D
sec-Butylbenzene	F5	<	1.0	ug/L	1	B9E0506	05/28/19 16:36	05/28/19 16:36	EPA 8260D
Styrene	F5	<	1.0	ug/L	1	B9E0506	05/28/19 16:36	05/28/19 16:36	EPA 8260D
tert-Butylbenzene	F5	<	1.0	ug/L	1	B9E0506	05/28/19 16:36	05/28/19 16:36	EPA 8260D
Tetrachloroethene	F5	<	1.0	ug/L	1	B9E0506	05/28/19 16:36	05/28/19 16:36	EPA 8260D
Toluene	F5	**18**	1.0	ug/L	1	B9E0506	05/28/19 16:36	05/28/19 16:36	EPA 8260D
trans-1,2-Dichloroethene	F5	<	1.0	ug/L	1	B9E0506	05/28/19 16:36	05/28/19 16:36	EPA 8260D
trans-1,3-Dichloropropene	F5	<	0.50	ug/L	1	B9E0506	05/28/19 16:36	05/28/19 16:36	EPA 8260D
Trichloroethene (TCE)	F5	**0.25**	0.10	ug/L	1	B9E0506	05/28/19 16:36	05/28/19 16:36	EPA 8260D
Trichlorofluoromethane	F5	<	1.0	ug/L	1	B9E0506	05/28/19 16:36	05/28/19 16:36	EPA 8260D
Vinyl chloride	F5	**4.0**	0.050	ug/L	1	B9E0506	05/28/19 16:36	05/28/19 16:36	EPA 8260D

PFC Expanded List

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorohexanesulfonate (PFHxS)		**0.055**	0.025	ug/L	1	B9E0550	05/28/19 13:16	05/28/19 13:16	MDH 555
Perfluorooctanesulfonate (PFOS)	J	**0.015**	0.015	ug/L	1	B9E0550	05/28/19 13:16	05/28/19 13:16	MDH 555

FINAL REPORT

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651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 06/19/19 9:43

MDH Sample Number: 19E1829-05RE1

Location ID: 813763
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 05/22/19
Collect Time: 12:00
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: (MW-3)

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VOCs by GCMS

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Surrogate: 1,2-Dichlorobenzene-d4	F5	*100*	*70-130*	%	*1*	*B9E0506*	*05/28/19 19:23*	*05/28/19 19:23*	*EPA 8260D*
Surrogate: 4-Bromofluorobenzene	F5	*102*	*70-130*	%	*1*	*B9E0506*	*05/28/19 19:23*	*05/28/19 19:23*	*EPA 8260D*
Surrogate: Methyl tertiary butyl ether-d3	F5	*101*	*70-130*	%	*1*	*B9E0506*	*05/28/19 19:23*	*05/28/19 19:23*	*EPA 8260D*
Methyl isobutyl ketone (MIBK)	D2, F5	**630**	50	ug/L	1	B9E0506	05/28/19 19:23	05/28/19 19:23	EPA 8260D
p&m-Xylene	D2, F5	**41**	10	ug/L	1	B9E0506	05/28/19 19:23	05/28/19 19:23	EPA 8260D
Tetrahydrofuran (THF)	D2, F5	**680**	100	ug/L	1	B9E0506	05/28/19 19:23	05/28/19 19:23	EPA 8260D

1,4-Dioxane

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
1,4-Dioxane	D2	**220**	5.1	ug/L	100	B9F0115	06/07/19 08:00	06/08/19 19:01	EPA 522 Modified

PFC Expanded List

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorobutanesulfonate (PFBS)	D1, J	**0.14**	0.25	ug/L	5	B9E0550	05/28/19 13:40	05/28/19 13:40	MDH 555
Perfluorobutanoic acid (PFBA)	D1	**2.9**	0.25	ug/L	5	B9E0550	05/28/19 13:40	05/28/19 13:40	MDH 555
Perfluorohexanoic acid (PFHxA)	D1	**0.57**	0.25	ug/L	5	B9E0550	05/28/19 13:40	05/28/19 13:40	MDH 555
Perfluorooctanoic acid (PFOA)	D1	**0.87**	0.18	ug/L	5	B9E0550	05/28/19 13:40	05/28/19 13:40	MDH 555
Perfluoropentanoic acid (PFPeA)	J, D1	**0.13**	0.25	ug/L	5	B9E0550	05/28/19 13:40	05/28/19 13:40	MDH 555

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 06/19/19 9:43

MDH Sample Number: 19E1829-05RE2

Location ID: 813763
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 05/22/19
Collect Time: 12:00
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: (MW-3)

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Surrogate: 1,2-Dichlorobenzene-d4	F5	*98*	*70-130*	%	*1*	*B9E0506*	*05/28/19 18:55*	*05/28/19 18:55*	*EPA 8260D*
Surrogate: 4-Bromofluorobenzene	F5	*104*	*70-130*	%	*1*	*B9E0506*	*05/28/19 18:55*	*05/28/19 18:55*	*EPA 8260D*
Surrogate: Methyl tertiary butyl ether-d3	F5	*102*	*70-130*	%	*1*	*B9E0506*	*05/28/19 18:55*	*05/28/19 18:55*	*EPA 8260D*
Acetone	D2, F5	**11000**	2000	ug/L	1	B9E0506	05/28/19 18:55	05/28/19 18:55	EPA 8260D
Methyl ethyl ketone (MEK)	F5, D2	**15000**	1000	ug/L	1	B9E0506	05/28/19 18:55	05/28/19 18:55	EPA 8260D

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651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 06/19/19 9:43

Batch Summary

Samples in Batch: B9E0506 - EPA 5030B Preparation

19E1829-01	19E1829-02	19E1829-03	19E1829-04	19E1829-05	19E1829-05RE1	19E1829-05RE2

Samples in Batch: B9E0550 - PFCs Preparation

19E1829-01	19E1829-02	19E1829-03	19E1829-04	19E1829-05	19E1829-05RE1

Samples in Batch: B9F0115 - 1,4 Dioxane in Water SPE

19E1829-01	19E1829-02	19E1829-03	19E1829-04	19E1829-05RE1

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 06/19/19 9:43

Results were produced by Minnesota Department of Health, except where noted.

Batch B9E0506 - EPA 5030B Preparation

Blank (B9E0506-BLK1) **Prepared: 05/28/19 13:49 Analyzed: 05/28/19 13:49**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: 1,2-Dichlorobenzene-d4		*99*	*70-130*	*%*	*10*					
Surrogate: 4-Bromofluorobenzene		*104*	*70-130*	*%*	*10*					
Surrogate: Methyl tertiary butyl ether-d3		*108*	*70-130*	*%*	*10*					
1,1,1,2-Tetrachloroethane		<	1.0	ug/L						
1,1,1-Trichloroethane		<	1.0	ug/L						
1,1,2,2-Tetrachloroethane		<	0.50	ug/L						
1,1,2-Trichloroethane		<	0.50	ug/L						
1,1,2-Trichlorotrifluoroethane		<	1.0	ug/L						
1,1-Dichloroethane		<	1.0	ug/L						
1,1-Dichloroethene		<	1.0	ug/L						
1,1-Dichloropropene		<	1.0	ug/L						
1,2,3-Trichlorobenzene		<	1.0	ug/L						
1,2,3-Trichloropropane		<	0.20	ug/L						
1,2,4-Trichlorobenzene		<	1.0	ug/L						
1,2,4-Trimethylbenzene		<	1.0	ug/L						
1,2-Dibromo-3-chloropropane (DBCP)		<	1.0	ug/L						
1,2-Dibromoethane (EDB)		<	0.50	ug/L						
1,2-Dichlorobenzene		<	1.0	ug/L						
1,2-Dichloroethane		<	0.20	ug/L						
1,2-Dichloropropane		<	1.0	ug/L						
1,3,5-Trimethylbenzene		<	1.0	ug/L						
1,3-Dichlorobenzene		<	1.0	ug/L						
1,3-Dichloropropane		<	1.0	ug/L						
1,4-Dichlorobenzene		<	1.0	ug/L						
2,2-Dichloropropane		<	1.0	ug/L						
2-Chlorotoluene		<	1.0	ug/L						
4-Chlorotoluene		<	1.0	ug/L						
Acetone		<	20	ug/L						
Allyl chloride		<	1.0	ug/L						
Benzene		<	0.50	ug/L						
Bromobenzene		<	1.0	ug/L						
Bromochloromethane		<	1.0	ug/L						
Bromodichloromethane		<	1.0	ug/L						
Bromoform		<	1.0	ug/L						

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 06/19/19 9:43

Results were produced by Minnesota Department of Health, except where noted.

Batch B9E0506 - EPA 5030B Preparation

Blank (B9E0506-BLK1) **Prepared: 05/28/19 13:49 Analyzed: 05/28/19 13:49**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Bromomethane		<	2.0	ug/L						
Carbon tetrachloride		<	0.20	ug/L						
Chlorobenzene		<	1.0	ug/L						
Chlorodibromomethane		<	0.50	ug/L						
Chloroethane		<	1.0	ug/L						
Chloroform		<	1.0	ug/L						
Chloromethane		<	1.0	ug/L						
cis-1,2-Dichloroethene		<	1.0	ug/L						
cis-1,3-Dichloropropene		<	0.50	ug/L						
Dibromomethane		<	1.0	ug/L						
Dichlorodifluoromethane		<	1.0	ug/L						
Dichlorofluoromethane		<	1.0	ug/L						
Ethyl ether		<	1.0	ug/L						
Ethylbenzene		<	1.0	ug/L						
Hexachlorobutadiene		<	0.50	ug/L						
Isopropylbenzene		<	1.0	ug/L						
Methyl ethyl ketone (MEK)		<	10	ug/L						
Methyl isobutyl ketone (MIBK)		<	5.0	ug/L						
Methyl tertiary butyl ether (MTBE)		<	2.0	ug/L						
Methylene chloride		<	1.0	ug/L						
Naphthalene		<	1.0	ug/L						
n-Butylbenzene		<	1.0	ug/L						
n-Propylbenzene		<	1.0	ug/L						
o-Xylene		<	1.0	ug/L						
p&m-Xylene		<	1.0	ug/L						
p-Isopropyltoluene		<	1.0	ug/L						
sec-Butylbenzene		<	1.0	ug/L						
Styrene		<	1.0	ug/L						
tert-Butylbenzene		<	1.0	ug/L						
Tetrachloroethene		<	1.0	ug/L						
Tetrahydrofuran (THF)		<	10	ug/L						
Toluene		<	1.0	ug/L						
trans-1,2-Dichloroethene		<	1.0	ug/L						
trans-1,3-Dichloropropene		<	0.50	ug/L						
Trichloroethene (TCE)		<	0.10	ug/L						

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651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 06/19/19 9:43

Results were produced by Minnesota Department of Health, except where noted.

Batch B9E0506 - EPA 5030B Preparation

Blank (B9E0506-BLK1) **Prepared: 05/28/19 13:49 Analyzed: 05/28/19 13:49**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Trichlorofluoromethane		<	1.0	ug/L						
Vinyl chloride		<	0.050	ug/L						

LCS (B9E0506-BS1) **Prepared: 05/28/19 11:30 Analyzed: 05/28/19 11:30**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: 1,2-Dichlorobenzene-d4		*100*	*70-130*	*%*	*10*					
Surrogate: 4-Bromofluorobenzene		*104*	*70-130*	*%*	*10*					
Surrogate: Methyl tertiary butyl ether-d3		*104*	*70-130*	*%*	*10*					
1,1,1,2-Tetrachloroethane		9.7	1.0	ug/L	10		97	70-130		
1,1,1-Trichloroethane		10	1.0	ug/L	10		105	70-130		
1,1,2,2-Tetrachloroethane		10	0.50	ug/L	10		102	70-130		
1,1,2-Trichloroethane		9.7	0.50	ug/L	10		97	70-130		
1,1,2-Trichlorotrifluoroethane		10	1.0	ug/L	10		105	70-130		
1,1-Dichloroethane		11	1.0	ug/L	10		106	70-130		
1,1-Dichloroethene		10	1.0	ug/L	10		100	70-130		
1,1-Dichloropropene		11	1.0	ug/L	10		107	70-130		
1,2,3-Trichlorobenzene		9.5	1.0	ug/L	10		95	70-130		
1,2,3-Trichloropropane		10	0.20	ug/L	10		103	70-130		
1,2,4-Trichlorobenzene		9.4	1.0	ug/L	10		94	70-130		
1,2,4-Trimethylbenzene		10	1.0	ug/L	10		103	70-130		
1,2-Dibromo-3-chloropropane (DBCP)		11	1.0	ug/L	10		108	70-130		
1,2-Dibromoethane (EDB)		9.8	0.50	ug/L	10		98	70-130		
1,2-Dichlorobenzene		9.5	1.0	ug/L	10		95	70-130		
1,2-Dichloroethane		11	0.20	ug/L	10		106	70-130		
1,2-Dichloropropane		11	1.0	ug/L	10		106	70-130		
1,3,5-Trimethylbenzene		11	1.0	ug/L	10		105	70-130		
1,3-Dichlorobenzene		9.7	1.0	ug/L	10		97	70-130		
1,3-Dichloropropane		10	1.0	ug/L	10		101	70-130		
1,4-Dichlorobenzene		9.7	1.0	ug/L	10		97	70-130		
2,2-Dichloropropane		11	1.0	ug/L	10		113	70-130		
2-Chlorotoluene		11	1.0	ug/L	10		105	70-130		
4-Chlorotoluene		10	1.0	ug/L	10		104	70-130		
Acetone		110	20	ug/L	100		109	70-130		

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 06/19/19 9:43

Results were produced by Minnesota Department of Health, except where noted.

Batch B9E0506 - EPA 5030B Preparation

LCS (B9E0506-BS1) **Prepared: 05/28/19 11:30 Analyzed: 05/28/19 11:30**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Allyl chloride		10	1.0	ug/L	10		103	70-130		
Benzene		10	0.50	ug/L	10		104	70-130		
Bromobenzene		9.3	1.0	ug/L	10		93	70-130		
Bromochloromethane		9.8	1.0	ug/L	10		98	70-130		
Bromodichloromethane		11	1.0	ug/L	10		107	70-130		
Bromoform		9.7	1.0	ug/L	10		97	70-130		
Bromomethane		9.6	2.0	ug/L	10		96	70-130		
Carbon tetrachloride		11	0.20	ug/L	10		106	70-130		
Chlorobenzene		9.9	1.0	ug/L	10		99	70-130		
Chlorodibromomethane		9.9	0.50	ug/L	10		99	70-130		
Chloroethane		11	1.0	ug/L	10		112	70-130		
Chloroform		10	1.0	ug/L	10		104	70-130		
Chloromethane		8.8	1.0	ug/L	10		88	70-130		
cis-1,2-Dichloroethene		10	1.0	ug/L	10		100	70-130		
cis-1,3-Dichloropropene		10	0.50	ug/L	10		102	70-130		
Dibromomethane		10	1.0	ug/L	10		102	70-130		
Dichlorodifluoromethane		9.0	1.0	ug/L	10		90	70-130		
Dichlorofluoromethane		11	1.0	ug/L	10		107	70-130		
Ethyl ether		10	1.0	ug/L	10		101	70-130		
Ethylbenzene		10	1.0	ug/L	10		104	70-130		
Hexachlorobutadiene		9.3	0.50	ug/L	10		93	70-130		
Isopropylbenzene		10	1.0	ug/L	10		102	70-130		
Methyl ethyl ketone (MEK)		56	10	ug/L	50		112	70-130		
Methyl isobutyl ketone (MIBK)		57	5.0	ug/L	50		114	70-130		
Methyl tertiary butyl ether (MTBE)		10	2.0	ug/L	10		103	70-130		
Methylene chloride		10	1.0	ug/L	10		101	70-130		
Naphthalene		9.8	1.0	ug/L	10		98	70-130		
n-Butylbenzene		11	1.0	ug/L	10		111	70-130		
n-Propylbenzene		11	1.0	ug/L	10		111	70-130		
o-Xylene		9.9	1.0	ug/L	10		99	70-130		
p&m-Xylene		10	1.0	ug/L	10		101	70-130		
p-Isopropyltoluene		10	1.0	ug/L	10		105	70-130		
sec-Butylbenzene		11	1.0	ug/L	10		108	70-130		
Styrene		9.9	1.0	ug/L	10		99	70-130		
tert-Butylbenzene		10	1.0	ug/L	10		101	70-130		

FINAL REPORT

Report ID: 06192019 94335

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Paul Moyer, Environmental Laboratory Manager
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Public Health Laboratory
Environmental Laboratory Section
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St. Paul, MN 55164-0899
651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 06/19/19 9:43

Results were produced by Minnesota Department of Health, except where noted.

Batch B9E0506 - EPA 5030B Preparation

LCS (B9E0506-BS1) **Prepared: 05/28/19 11:30 Analyzed: 05/28/19 11:30**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Tetrachloroethene		9.7	1.0	ug/L	10		97	70-130		
Tetrahydrofuran (THF)		100	10	ug/L	100		101	70-130		
Toluene		10	1.0	ug/L	10		103	70-130		
trans-1,2-Dichloroethene		10	1.0	ug/L	10		101	70-130		
trans-1,3-Dichloropropene		10	0.50	ug/L	10		102	70-130		
Trichloroethene (TCE)		10	0.10	ug/L	10		101	70-130		
Trichlorofluoromethane		10	1.0	ug/L	10		102	70-130		
Vinyl chloride		11	0.050	ug/L	10		108	70-130		

LCS Dup (B9E0506-BSD1) **Prepared: 05/28/19 11:58 Analyzed: 05/28/19 11:58**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: 1,2-Dichlorobenzene-d4		*98*	*70-130*	*%*	*10*					
Surrogate: 4-Bromofluorobenzene		*103*	*70-130*	*%*	*10*					
Surrogate: Methyl tertiary butyl ether-d3		*106*	*70-130*	*%*	*10*					
1,1,1,2-Tetrachloroethane		10	1.0	ug/L	10		102	70-130	5	30
1,1,1-Trichloroethane		11	1.0	ug/L	10		110	70-130	5	30
1,1,2,2-Tetrachloroethane		10	0.50	ug/L	10		101	70-130	1	30
1,1,2-Trichloroethane		10	0.50	ug/L	10		100	70-130	3	30
1,1,2-Trichlorotrifluoroethane		11	1.0	ug/L	10		110	70-130	4	30
1,1-Dichloroethane		11	1.0	ug/L	10		111	70-130	5	30
1,1-Dichloroethene		11	1.0	ug/L	10		106	70-130	6	30
1,1-Dichloropropene		11	1.0	ug/L	10		114	70-130	6	30
1,2,3-Trichlorobenzene		9.7	1.0	ug/L	10		97	70-130	2	30
1,2,3-Trichloropropane		10	0.20	ug/L	10		101	70-130	2	30
1,2,4-Trichlorobenzene		9.6	1.0	ug/L	10		96	70-130	2	30
1,2,4-Trimethylbenzene		11	1.0	ug/L	10		107	70-130	3	30
1,2-Dibromo-3-chloropropane (DBCP)		10	1.0	ug/L	10		104	70-130	4	30
1,2-Dibromoethane (EDB)		10	0.50	ug/L	10		102	70-130	3	30
1,2-Dichlorobenzene		9.7	1.0	ug/L	10		97	70-130	2	30
1,2-Dichloroethane		11	0.20	ug/L	10		110	70-130	4	30
1,2-Dichloropropane		11	1.0	ug/L	10		110	70-130	3	30
1,3,5-Trimethylbenzene		11	1.0	ug/L	10		107	70-130	2	30
1,3-Dichlorobenzene		10	1.0	ug/L	10		100	70-130	4	30

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Paul Moyer, Environmental Laboratory Manager
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Minnesota Department of Health
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St. Paul, MN 55164-0899
651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 06/19/19 9:43

Results were produced by Minnesota Department of Health, except where noted.

Batch B9E0506 - EPA 5030B Preparation

LCS Dup (B9E0506-BSD1) **Prepared: 05/28/19 11:58 Analyzed: 05/28/19 11:58**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,3-Dichloropropane		11	1.0	ug/L	10		108	70-130	6	30
1,4-Dichlorobenzene		10	1.0	ug/L	10		100	70-130	3	30
2,2-Dichloropropane		12	1.0	ug/L	10		118	70-130	4	30
2-Chlorotoluene		11	1.0	ug/L	10		106	70-130	0.9	30
4-Chlorotoluene		11	1.0	ug/L	10		108	70-130	4	30
Acetone		110	20	ug/L	100		109	70-130	0.2	30
Allyl chloride		11	1.0	ug/L	10		109	70-130	6	30
Benzene		11	0.50	ug/L	10		110	70-130	6	30
Bromobenzene		9.8	1.0	ug/L	10		98	70-130	5	30
Bromochloromethane		10	1.0	ug/L	10		104	70-130	5	30
Bromodichloromethane		11	1.0	ug/L	10		109	70-130	2	30
Bromoform		9.5	1.0	ug/L	10		95	70-130	2	30
Bromomethane		11	2.0	ug/L	10		107	70-130	10	30
Carbon tetrachloride		11	0.20	ug/L	10		110	70-130	4	30
Chlorobenzene		10	1.0	ug/L	10		104	70-130	5	30
Chlorodibromomethane		10	0.50	ug/L	10		101	70-130	2	30
Chloroethane		10	1.0	ug/L	10		103	70-130	9	30
Chloroform		11	1.0	ug/L	10		111	70-130	7	30
Chloromethane		9.4	1.0	ug/L	10		94	70-130	6	30
cis-1,2-Dichloroethene		10	1.0	ug/L	10		105	70-130	5	30
cis-1,3-Dichloropropene		11	0.50	ug/L	10		107	70-130	5	30
Dibromomethane		11	1.0	ug/L	10		106	70-130	4	30
Dichlorodifluoromethane		9.6	1.0	ug/L	10		96	70-130	6	30
Dichlorofluoromethane		11	1.0	ug/L	10		111	70-130	4	30
Ethyl ether		10	1.0	ug/L	10		102	70-130	2	30
Ethylbenzene		11	1.0	ug/L	10		109	70-130	6	30
Hexachlorobutadiene		9.5	0.50	ug/L	10		95	70-130	2	30
Isopropylbenzene		11	1.0	ug/L	10		108	70-130	6	30
Methyl ethyl ketone (MEK)		56	10	ug/L	50		112	70-130	0.3	30
Methyl isobutyl ketone (MIBK)		58	5.0	ug/L	50		116	70-130	1	30
Methyl tertiary butyl ether (MTBE)		11	2.0	ug/L	10		106	70-130	3	30
Methylene chloride		11	1.0	ug/L	10		106	70-130	5	30
Naphthalene		10	1.0	ug/L	10		100	70-130	2	30
n-Butylbenzene		11	1.0	ug/L	10		114	70-130	2	30
n-Propylbenzene		11	1.0	ug/L	10		114	70-130	3	30

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Environmental Laboratory Section
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651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 06/19/19 9:43

Results were produced by Minnesota Department of Health, except where noted.

Batch B9E0506 - EPA 5030B Preparation

LCS Dup (B9E0506-BSD1) **Prepared: 05/28/19 11:58 Analyzed: 05/28/19 11:58**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
o-Xylene		11	1.0	ug/L	10		108	70-130	8	30
p&m-Xylene		11	1.0	ug/L	10		108	70-130	7	30
p-Isopropyltoluene		11	1.0	ug/L	10		107	70-130	2	30
sec-Butylbenzene		11	1.0	ug/L	10		111	70-130	4	30
Styrene		11	1.0	ug/L	10		105	70-130	7	30
tert-Butylbenzene		11	1.0	ug/L	10		105	70-130	4	30
Tetrachloroethene		10	1.0	ug/L	10		100	70-130	4	30
Tetrahydrofuran (THF)		100	10	ug/L	100		100	70-130	0.6	30
Toluene		11	1.0	ug/L	10		107	70-130	4	30
trans-1,2-Dichloroethene		11	1.0	ug/L	10		107	70-130	6	30
trans-1,3-Dichloropropene		11	0.50	ug/L	10		107	70-130	5	30
Trichloroethene (TCE)		11	0.10	ug/L	10		106	70-130	5	30
Trichlorofluoromethane		11	1.0	ug/L	10		108	70-130	6	30
Vinyl chloride		11	0.050	ug/L	10		114	70-130	6	30

Duplicate (B9E0506-DUP1) Source: 19E1829-02 **Prepared: 05/28/19 15:13 Analyzed: 05/28/19 15:13**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: 1,2-Dichlorobenzene-d4		*102*	*70-130*	*%*	*10*					
Surrogate: 4-Bromofluorobenzene		*105*	*70-130*	*%*	*10*					
Surrogate: Methyl tertiary butyl ether-d3		*107*	*70-130*	*%*	*10*					
1,1,1,2-Tetrachloroethane		<	1.0	ug/L		<				30
1,1,1-Trichloroethane		<	1.0	ug/L		<				30
1,1,2,2-Tetrachloroethane		<	0.50	ug/L		<				30
1,1,2-Trichloroethane		<	0.50	ug/L		<				30
1,1,2-Trichlorotrifluoroethane		<	1.0	ug/L		<				30
1,1-Dichloroethane		<	1.0	ug/L		<				30
1,1-Dichloroethene		<	1.0	ug/L		<				30
1,1-Dichloropropene		<	1.0	ug/L		<				30
1,2,3-Trichlorobenzene		<	1.0	ug/L		<				30
1,2,3-Trichloropropane		<	0.20	ug/L		<				30
1,2,4-Trichlorobenzene		<	1.0	ug/L		<				30
1,2,4-Trimethylbenzene		<	1.0	ug/L		<				30
1,2-Dibromo-3-chloropropane (DBCP)		<	1.0	ug/L		<				30

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 06/19/19 9:43

Results were produced by Minnesota Department of Health, except where noted.

Batch B9E0506 - EPA 5030B Preparation

Duplicate (B9E0506-DUP1) Source: 19E1829-02 **Prepared: 05/28/19 15:13 Analyzed: 05/28/19 15:13**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,2-Dibromoethane (EDB)		<	0.50	ug/L		<				30
1,2-Dichlorobenzene		<	1.0	ug/L		<				30
1,2-Dichloroethane		<	0.20	ug/L		<				30
1,2-Dichloropropane		<	1.0	ug/L		<				30
1,3,5-Trimethylbenzene		<	1.0	ug/L		<				30
1,3-Dichlorobenzene		<	1.0	ug/L		<				30
1,3-Dichloropropane		<	1.0	ug/L		<				30
1,4-Dichlorobenzene		<	1.0	ug/L		<				30
2,2-Dichloropropane		<	1.0	ug/L		<				30
2-Chlorotoluene		<	1.0	ug/L		<				30
4-Chlorotoluene		<	1.0	ug/L		<				30
Acetone		<	20	ug/L		<				30
Allyl chloride		<	1.0	ug/L		<				30
Benzene		<	0.50	ug/L		<				30
Bromobenzene		<	1.0	ug/L		<				30
Bromochloromethane		<	1.0	ug/L		<				30
Bromodichloromethane		<	1.0	ug/L		<				30
Bromoform		<	1.0	ug/L		<				30
Bromomethane		<	2.0	ug/L		<				30
Carbon tetrachloride		<	0.20	ug/L		<				30
Chlorobenzene		<	1.0	ug/L		<				30
Chlorodibromomethane		<	0.50	ug/L		<				30
Chloroethane		<	1.0	ug/L		<				30
Chloroform		<	1.0	ug/L		<				30
Chloromethane		<	1.0	ug/L		<				30
cis-1,2-Dichloroethene		<	1.0	ug/L		<				30
cis-1,3-Dichloropropene		<	0.50	ug/L		<				30
Dibromomethane		<	1.0	ug/L		<				30
Dichlorodifluoromethane		<	1.0	ug/L		<				30
Dichlorofluoromethane		<	1.0	ug/L		<				30
Ethyl ether		<	1.0	ug/L		<				30
Ethylbenzene		<	1.0	ug/L		<				30
Hexachlorobutadiene		<	0.50	ug/L		<				30
Isopropylbenzene		<	1.0	ug/L		<				30
Methyl ethyl ketone (MEK)		<	10	ug/L		<				30

FINAL REPORT

Report ID: 06192019 94335

Authorized by:

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 06/19/19 9:43

Results were produced by Minnesota Department of Health, except where noted.

Batch B9E0506 - EPA 5030B Preparation

Duplicate (B9E0506-DUP1) Source: 19E1829-02 **Prepared: 05/28/19 15:13 Analyzed: 05/28/19 15:13**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Methyl isobutyl ketone (MIBK)		<	5.0	ug/L		<				30
Methyl tertiary butyl ether (MTBE)		<	2.0	ug/L		<				30
Methylene chloride		<	1.0	ug/L		<				30
Naphthalene		<	1.0	ug/L		<				30
n-Butylbenzene		<	1.0	ug/L		<				30
n-Propylbenzene		<	1.0	ug/L		<				30
o-Xylene		<	1.0	ug/L		<				30
p&m-Xylene		<	1.0	ug/L		<				30
p-Isopropyltoluene		<	1.0	ug/L		<				30
sec-Butylbenzene		<	1.0	ug/L		<				30
Styrene		<	1.0	ug/L		<				30
tert-Butylbenzene		<	1.0	ug/L		<				30
Tetrachloroethene		<	1.0	ug/L		<				30
Tetrahydrofuran (THF)		<	10	ug/L		<				30
Toluene		<	1.0	ug/L		<				30
trans-1,2-Dichloroethene		<	1.0	ug/L		<				30
trans-1,3-Dichloropropene		<	0.50	ug/L		<				30
Trichloroethene (TCE)		<	0.10	ug/L		<				30
Trichlorofluoromethane		<	1.0	ug/L		<				30
Vinyl chloride		<	0.050	ug/L		<				30

Matrix Spike (B9E0506-MS1) Source: 19E1829-01 **Prepared: 05/28/19 12:26 Analyzed: 05/28/19 12:26**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: 1,2-Dichlorobenzene-d4		*98*	*70-130*	*%*	*10*					
Surrogate: 4-Bromofluorobenzene		*105*	*70-130*	*%*	*10*					
Surrogate: Methyl tertiary butyl ether-d3		*107*	*70-130*	*%*	*10*					
1,1,1,2-Tetrachloroethane		10	1.0	ug/L	10	<	104	70-130		
1,1,1-Trichloroethane		12	1.0	ug/L	10	<	117	70-130		
1,1,2,2-Tetrachloroethane		11	0.50	ug/L	10	<	108	70-130		
1,1,2-Trichloroethane		10	0.50	ug/L	10	<	103	70-130		
1,1,2-Trichlorotrifluoroethane		12	1.0	ug/L	10	<	116	70-130		
1,1-Dichloroethane		12	1.0	ug/L	10	<	118	70-130		
1,1-Dichloroethene		12	1.0	ug/L	10	<	116	70-130		
1,1-Dichloropropene		12	1.0	ug/L	10	<	122	70-130		

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 06/19/19 9:43

Results were produced by Minnesota Department of Health, except where noted.

Batch B9E0506 - EPA 5030B Preparation

Matrix Spike (B9E0506-MS1) Source: 19E1829-01 **Prepared: 05/28/19 12:26 Analyzed: 05/28/19 12:26**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,2,3-Trichlorobenzene		10	1.0	ug/L	10	<	102	70-130		
1,2,3-Trichloropropane		11	0.20	ug/L	10	<	106	70-130		
1,2,4-Trichlorobenzene		10	1.0	ug/L	10	<	101	70-130		
1,2,4-Trimethylbenzene		11	1.0	ug/L	10	<	114	70-130		
1,2-Dibromo-3-chloropropane (DBCP)		10	1.0	ug/L	10	<	103	70-130		
1,2-Dibromoethane (EDB)		10	0.50	ug/L	10	<	103	70-130		
1,2-Dichlorobenzene		10	1.0	ug/L	10	<	103	70-130		
1,2-Dichloroethane		11	0.20	ug/L	10	<	114	70-130		
1,2-Dichloropropane		12	1.0	ug/L	10	<	116	70-130		
1,3,5-Trimethylbenzene		11	1.0	ug/L	10	<	115	70-130		
1,3-Dichlorobenzene		11	1.0	ug/L	10	<	106	70-130		
1,3-Dichloropropane		11	1.0	ug/L	10	<	109	70-130		
1,4-Dichlorobenzene		10	1.0	ug/L	10	<	102	70-130		
2,2-Dichloropropane		13	1.0	ug/L	10	<	126	70-130		
2-Chlorotoluene		11	1.0	ug/L	10	<	114	70-130		
4-Chlorotoluene		11	1.0	ug/L	10	<	112	70-130		
Acetone		110	20	ug/L	100	<	114	70-130		
Allyl chloride		10	1.0	ug/L	10	<	104	70-130		
Benzene		11	0.50	ug/L	10	<	115	70-130		
Bromobenzene		10	1.0	ug/L	10	<	102	70-130		
Bromochloromethane		11	1.0	ug/L	10	<	106	70-130		
Bromodichloromethane		11	1.0	ug/L	10	<	111	70-130		
Bromoform		9.3	1.0	ug/L	10	<	93	70-130		
Bromomethane		11	2.0	ug/L	10	<	108	70-130		
Carbon tetrachloride		12	0.20	ug/L	10	<	119	70-130		
Chlorobenzene		11	1.0	ug/L	10	<	110	70-130		
Chlorodibromomethane		10	0.50	ug/L	10	<	102	70-130		
Chloroethane		13	1.0	ug/L	10	<	129	70-130		
Chloroform		12	1.0	ug/L	10	<	116	70-130		
Chloromethane		10	1.0	ug/L	10	<	104	70-130		
cis-1,2-Dichloroethene		11	1.0	ug/L	10	<	109	70-130		
cis-1,3-Dichloropropene		10	0.50	ug/L	10	<	100	70-130		
Dibromomethane		11	1.0	ug/L	10	<	112	70-130		
Dichlorodifluoromethane		11	1.0	ug/L	10	<	106	70-130		
Dichlorofluoromethane		12	1.0	ug/L	10	<	119	70-130		

FINAL REPORT

Report ID: 06192019 94335

Authorized by:

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 06/19/19 9:43

Results were produced by Minnesota Department of Health, except where noted.

Batch B9E0506 - EPA 5030B Preparation

Matrix Spike (B9E0506-MS1) Source: 19E1829-01 **Prepared: 05/28/19 12:26 Analyzed: 05/28/19 12:26**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Ethyl ether		11	1.0	ug/L	10	<	105	70-130		
Ethylbenzene		11	1.0	ug/L	10	<	114	70-130		
Hexachlorobutadiene		10	0.50	ug/L	10	<	105	70-130		
Isopropylbenzene		11	1.0	ug/L	10	<	115	70-130		
Methyl ethyl ketone (MEK)		58	10	ug/L	50	<	115	70-130		
Methyl isobutyl ketone (MIBK)		60	5.0	ug/L	50	<	119	70-130		
Methyl tertiary butyl ether (MTBE)		11	2.0	ug/L	10	<	109	70-130		
Methylene chloride		11	1.0	ug/L	10	<	111	70-130		
Naphthalene		10	1.0	ug/L	10	<	103	70-130		
n-Butylbenzene		12	1.0	ug/L	10	<	124	70-130		
n-Propylbenzene		12	1.0	ug/L	10	<	121	70-130		
o-Xylene		11	1.0	ug/L	10	<	112	70-130		
p&m-Xylene		11	1.0	ug/L	10	<	113	70-130		
p-Isopropyltoluene		12	1.0	ug/L	10	<	116	70-130		
sec-Butylbenzene		12	1.0	ug/L	10	<	119	70-130		
Styrene		11	1.0	ug/L	10	<	110	70-130		
tert-Butylbenzene		11	1.0	ug/L	10	<	114	70-130		
Tetrachloroethene		11	1.0	ug/L	10	<	110	70-130		
Tetrahydrofuran (THF)		100	10	ug/L	100	<	103	70-130		
Toluene		11	1.0	ug/L	10	<	114	70-130		
trans-1,2-Dichloroethene		11	1.0	ug/L	10	<	113	70-130		
trans-1,3-Dichloropropene		9.8	0.50	ug/L	10	<	98	70-130		
Trichloroethene (TCE)		11	0.10	ug/L	10	<	112	70-130		
Trichlorofluoromethane		12	1.0	ug/L	10	<	118	70-130		
Vinyl chloride		13	0.050	ug/L	10	<	126	70-130		

Authorized by:

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 06/19/19 9:43

Results were produced by Minnesota Department of Health, except where noted.

Batch B9F0115 - 1,4 Dioxane in Water SPE

Blank (B9F0115-BLK1) — **Prepared: 06/07/19 08:00 Analyzed: 06/07/19 15:52**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,4-Dioxane		<	0.049	ug/L						

LCS (B9F0115-BS1) — **Prepared: 06/07/19 08:00 Analyzed: 06/07/19 16:08**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,4-Dioxane		0.23	0.052	ug/L	0.20		111	80-120		

Duplicate (B9F0115-DUP1) — Source: 19E1582-15 — **Prepared: 06/07/19 08:00 Analyzed: 06/07/19 16:42**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,4-Dioxane		<	0.051	ug/L		<				30

Matrix Spike (B9F0115-MS1) — Source: 19E1582-16 — **Prepared: 06/07/19 08:00 Analyzed: 06/07/19 17:15**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,4-Dioxane		0.52	0.052	ug/L	0.46	<	110	70-130		

Authorized by:

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 06/19/19 9:43

Results were produced by Minnesota Department of Health, except where noted.

Batch B9E0550 - PFCs Preparation

Blank (B9E0550-BLK1) **Prepared: 05/28/19 12:17 Analyzed: 05/28/19 12:17**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		<	0.050	ug/L						
Perfluorobutanoic acid (PFBA)		<	0.050	ug/L						
Perfluorohexanesulfonate (PFHxS)		<	0.025	ug/L						
Perfluorohexanoic acid (PFHxA)		<	0.050	ug/L						
Perfluorooctanesulfonate (PFOS)		<	0.015	ug/L						
Perfluorooctanoic acid (PFOA)		<	0.035	ug/L						
Perfluoropentanoic acid (PFPeA)		<	0.050	ug/L						

Blank (B9E0550-BLK2) **Prepared: 05/28/19 16:02 Analyzed: 05/28/19 16:02**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		<	0.050	ug/L						
Perfluorobutanoic acid (PFBA)		<	0.050	ug/L						
Perfluorohexanesulfonate (PFHxS)		<	0.025	ug/L						
Perfluorohexanoic acid (PFHxA)		<	0.050	ug/L						
Perfluorooctanesulfonate (PFOS)		<	0.015	ug/L						
Perfluorooctanoic acid (PFOA)		<	0.035	ug/L						
Perfluoropentanoic acid (PFPeA)		<	0.050	ug/L						

LCS (B9E0550-BS1) **Prepared: 05/28/19 12:09 Analyzed: 05/28/19 12:09**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.51	0.050	ug/L	0.50		102	80-120		
Perfluorobutanoic acid (PFBA)		0.51	0.050	ug/L	0.5		102	80-120		
Perfluorohexanesulfonate (PFHxS)		0.53	0.025	ug/L	0.50		105	80-120		
Perfluorohexanoic acid (PFHxA)		0.49	0.050	ug/L	0.5		98	80-120		
Perfluorooctanesulfonate (PFOS)		0.49	0.015	ug/L	0.49		97	80-120		
Perfluorooctanoic acid (PFOA)		0.49	0.035	ug/L	0.5		98	80-120		
Perfluoropentanoic acid (PFPeA)		0.50	0.050	ug/L	0.5		101	80-120		

LCS Dup (B9E0550-BSD1) **Prepared: 05/28/19 15:54 Analyzed: 05/28/19 15:54**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.52	0.050	ug/L	0.50		104	80-120	3	20
Perfluorobutanoic acid (PFBA)		0.50	0.050	ug/L	0.5		100	80-120	3	20
Perfluorohexanesulfonate (PFHxS)		0.51	0.025	ug/L	0.50		101	80-120	4	20

FINAL REPORT

Report ID: 06192019 94335

Authorized by:

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 06/19/19 9:43

Results were produced by Minnesota Department of Health, except where noted.

Batch B9E0550 - PFCs Preparation

LCS Dup (B9E0550-BSD1) **Prepared: 05/28/19 15:54 Analyzed: 05/28/19 15:54**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorohexanoic acid (PFHxA)		0.51	0.050	ug/L	0.5		101	80-120	3	20
Perfluorooctanesulfonate (PFOS)		0.49	0.015	ug/L	0.49		98	80-120	0.4	20
Perfluorooctanoic acid (PFOA)		0.50	0.035	ug/L	0.5		101	80-120	3	20
Perfluoropentanoic acid (PFPeA)		0.51	0.050	ug/L	0.5		102	80-120	0.9	20

Matrix Spike (B9E0550-MS1) Source: 19E1829-01 **Prepared: 05/28/19 12:34 Analyzed: 05/28/19 12:34**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.52	0.050	ug/L	0.50	<	102	70-130		
Perfluorobutanoic acid (PFBA)		0.55	0.050	ug/L	0.5	<	102	70-130		
Perfluorohexanesulfonate (PFHxS)		0.51	0.025	ug/L	0.50	<	102	70-130		
Perfluorohexanoic acid (PFHxA)		0.55	0.050	ug/L	0.5	<	102	70-130		
Perfluorooctanesulfonate (PFOS)		0.48	0.015	ug/L	0.49	<	95	70-130		
Perfluorooctanoic acid (PFOA)		0.65	0.035	ug/L	0.5	0.11	106	70-130		
Perfluoropentanoic acid (PFPeA)		0.51	0.050	ug/L	0.5	<	97	70-130		

Matrix Spike Dup (B9E0550-MSD1) Source: 19E1829-01 **Prepared: 05/28/19 12:42 Analyzed: 05/28/19 12:42**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.50	0.050	ug/L	0.50	<	98	70-130	4	20
Perfluorobutanoic acid (PFBA)		0.55	0.050	ug/L	0.5	<	101	70-130	0.5	20
Perfluorohexanesulfonate (PFHxS)		0.50	0.025	ug/L	0.50	<	99	70-130	3	20
Perfluorohexanoic acid (PFHxA)		0.51	0.050	ug/L	0.5	<	96	70-130	6	20
Perfluorooctanesulfonate (PFOS)		0.48	0.015	ug/L	0.49	<	96	70-130	0.8	20
Perfluorooctanoic acid (PFOA)		0.61	0.035	ug/L	0.5	0.11	100	70-130	5	20
Perfluoropentanoic acid (PFPeA)		0.53	0.050	ug/L	0.5	<	101	70-130	3	20

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
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651-201-5300

Final Report
Quality Control

Data Qualifiers and Definitions

J	Analyte was present between the method detection limit and reporting limit and should be considered an estimated value.
F5	The sample pH was greater than 2. The sample was analyzed within the 7 day holding time.
D2	Sample required dilution due to high concentration of target analyte(s). Reporting limit has been raised.
D1	Sample required dilution due to matrix. Reporting limit has been raised.
Dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
%REC	Percent Recovery

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Protecting, maintaining and improving the health of all Minnesotans

Report Date: 6/19/19
Client Name: QW - MPCA - Closed Landfill Assessment
Project Code: QW
Project Name: Closed Landfill Assessment

Work Order Number: 19E2197

Report To: QW - MPCA - Closed Landfill Assessment
Mark Umholtz
520 Lafayette Rd.
Saint Paul, MN 55155

The MDH Public Health Laboratory performs chemical, bacteriological and radiological analyses of environmental samples including water, waste water, sediment, air, soil and hazardous material. The laboratory provides testing services in accordance with standard operating procedures referencing approved methodology as defined in Standard Methods for the Examination of Water and Wastewater, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods: EPA SW-846, and 40 Code of Federal Regulation (CFR) parts 136, 141, and 261. In cases where analytes of interest do not have corresponding EPA approved methodology, the MDH Public Health Laboratory uses in-house methods that have undergone rigorous validation and documentation.

The results within this report are in compliance with the terms and conditions stated in the standard operating procedures, reference methodologies, and quality assurance project plan; unless otherwise narrated in the attached report.

Release of the data contained in this report has been authorized by laboratory management and is verified with the following signature affirmation. Thank you for using the MDH Public Health Laboratory.

Sincerely,

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Summary of Samples Received

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None
Project ID: PRJ07786
Facility Name: MN SW-057
City: 19-02057 MPCA Freeway-Kraemers Mine 2019 MDH
Generated: 06/19/19 9:40

Work Order Comment: SP-03 1,4 dioxane analysis cancelled due to lab error. -CCS 06/10/19

Field ID	MDH Sample Number	Matrix	Date & Time Collected	Date & Time Received	Receipt °C
Seep 01	19E2197-01	Wtr-Surf	05/29/19 9:40	05/30/19 10:19	2.6
Discharge 01	19E2197-02	Wtr-Surf	05/29/19 10:30	05/30/19 10:19	2.6
Duplicate	19E2197-03	Wtr-Surf	05/29/19 10:40	05/30/19 10:19	2.6

Field ID	MDH Sample Number	Receiving Comments
Duplicate	19E2197-03	Lab error. -CCS

Authorized by:

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

Minnesota Pollution Control Agency

Chain-of-Custody Form revison 2013.0909

Work Order Number: 19E2197 **COC Type:** Standard **Page:** 1 of 1

Turnaround Time: Standard **COC ID:**

PROJECT/CLIENT INFO			LABORATORY	
Facility Code:	MN SW-057	Program Code (MDH Lab Only): QW	Lab Name:	Minnesota Department of Health
Project Name:	19-02057 MPCA Freeway-Kraemers Mine 2019 ~~MAVE~~ MDH	Project Task Code: PRJ07786	Address:	601 Robert Street N.
Project Manager:	Mark Umholtz 651-757-2308			St. Paul MN 55155
Potential Hazard?	If yes, add information to Sampler Comments Section		Phone No:	651-201-5058

SAMPLE DETAILS

SAMPLE TYPE CODES
Sample=Routine Sample
S-IVP=Integrated Vertical Profile Sample
S-CWOP=Composite Sample
QC-FB=Field Blank Sample
QC-FR=Field Replicate Sample
QC-TB=Trip Blank Sample

LAB MATRIX CODES
DW=Drinking Water
NW=Non-potable Water
SD=Soil/Solid
WP=Wipe
AR=Air
BL=Biological Material
OT=Other
TS=Tissue

FIELD MATRIX CODES
Wtr-Ground=Groundwater
Wtr-Surf=Surface Water
QC-BLANK=Artificial Blank Water
Leachate=Leachate Sample

ANALYSIS REQUESTED

Location Identifier	Sample Type	Date	Time	Start Depth, in meters	End Depth, in meters	Grab (G) or Composite (C) Sample	Lab Matrix Code	Field Matrix Code	AIS	Sampler Comments (filter volume, special handling, etc.)	# of Cont	PRESERV.	VOCs EPA 8260D (HCl)	PFAS by MDH555 (None)	1,4 Dioxane (None)				Lab Sample No.	#
												ANALYSIS								
Seep 01	Sample	5/29/19	0940			G	NW	Wtr-Surf	N		5		X	X	X				-01	1
Discharge 01	Sample	5/29/19	1030			G	NW	Wtr-Surf	N		5		X	X	X				-02	2
Duplicate	QC-FR	5/29/19	1040			G	NW	Wtr-Surf	N		5		X	X	X				-03	3
									N											4
									N											5
									N											6
									N											7
									N											8
									N											9
									N											10

~~N/A 5/29/19~~

Sampled By: David Anderson **Sampler's Signature:** Dand Anderson **Phone #:**

Receiving Comments:

Relinquished By/Affiliation	Date/Time	Accepted By/ Affilliation	Date/Time
(Sampler) Dand Anderson / Pace Analytical	5/29/19 1300	MDH	5/30/19 1014

DEPARTMENT OF HEALTH

Sample Condition Upon Receipt

Minnesota Department of Health Public Health Laboratory

Data Entry Worksheet

19E2197

Parcel Information

Date & time of receipt: MAY 30'19 10:19

Courier: ☒ Walk-in ☐ FedEx ☐ Spee-Dee ☐ UPS ☐ USPS ☐ Other courier _____

Tracking # _____

After hours drop-off: ☐ Refrigerator (207) (186) ( ) ☐ Freezer (185) ( ) ☐ Unrefrigerated

Parcel: ☒ Plastic cooler ☐ Styrofoam/cardboard cooler ☐ Cardboard box ☐ Envelope ☐ Plastic can ☐ None ☐ Other _____ Info: _____

Custody seals present: ☒ No; ☐ Yes, If "Yes" Custody seals intact: ☐ Yes; ☐ No _____

Custody seal # _____ **Evidentiary samples identified:** ☒ No; ☐ Yes

Packaging & Temperature Information

Packing material: ☒ Bubble wrap ☐ Styrofoam ☐ Paper ☐ None ☐ Other _____

Cooling material: ☒ Wet ice (loose) ☐ Wet ice pack #( ) ☐ Gel pack #( ) ☐ Dry ice ☐ None ☐ Other _____

Condition of cooling material: ☐ Solid ☒ Partially frozen ☐ Liquid; Liquid temperature: _____ °C ☐ N/A

Representative sample temperature: 2.6 °C **IR thermometer instrument used:** A10

Samples received without evidence of freezing: ☒ Yes; ☐ No _____

Initials of person receiving parcel: US

Chain of Custody, Sample Container & Analysis Information

Chain of custody received with sample containers: ☒ Yes; ☐ No

Chain of custody type: ☒ Standard ☐ Civil ☐ Criminal ☐ Priority/Emergency ☐ Unknown

All sample containers are unique to a sample point listed on the chain of custody: ☒ Yes; ☐ No _____

All sample containers have been collected prior to the expiration date listed on container label: ☒ Yes; ☐ No; ☐ Unknown _____

All sample containers received intact: ☒ Yes; ☐ No _____

All sample containers are appropriate for requested analysis: ☒ Yes; ☐ No; ☐ Unknown _____

All analysis have been received within the specified holding time for analysis: ☒ Yes; ☐ No ☐ Unknown _____

Rad Chem. request received: ☐ Yes; ☒ No, If "Yes" sample survey results: ☐ < 0.5 mrem/hr ☐ ≥ 0.5 mrem/hr

Rad Chem. meter calibration date verified: ☐ Yes; ☒ No

Sample submission details are entered in the Environmental Laboratory LIMS.

Initials of person logging in the work order request into LIMS: B

DOC-84
Revision: 5

Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Case Narrative

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name: MN SW-057
Collected by: David Anderson	City: 19-02057 MPCA Freeway-Kraemers Mine 2019 MDH
Collector ID: None	Generated: 06/19/2019 9:40

Except where noted in this report, no additional comments are needed for this Work Order.

Authorized by:

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-02057 MPCA Freeway-Kraemers Mine 2019 MDH
Generated: 06/19/19 9:40

MDH Sample Number: 19E2197-01

Location ID: Seep 01
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 05/29/19
Collect Time: 9:40
Matrix: Wtr-Surf

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Surrogate: 1,2-Dichlorobenzene-d4		*98*	*70-130*	%	*1*	*B9F0130*	*06/07/19 16:15*	*06/07/19 16:15*	*EPA 8260D*
Surrogate: 4-Bromofluorobenzene		*103*	*70-130*	%	*1*	*B9F0130*	*06/07/19 16:15*	*06/07/19 16:15*	*EPA 8260D*
Surrogate: Methyl tertiary butyl ether-d3		*98*	*70-130*	%	*1*	*B9F0130*	*06/07/19 16:15*	*06/07/19 16:15*	*EPA 8260D*
1,1,1,2-Tetrachloroethane		<	1.0	ug/L	1	B9F0130	06/07/19 16:15	06/07/19 16:15	EPA 8260D
1,1,1-Trichloroethane		<	1.0	ug/L	1	B9F0130	06/07/19 16:15	06/07/19 16:15	EPA 8260D
1,1,2,2-Tetrachloroethane		<	0.50	ug/L	1	B9F0130	06/07/19 16:15	06/07/19 16:15	EPA 8260D
1,1,2-Trichloroethane		<	0.50	ug/L	1	B9F0130	06/07/19 16:15	06/07/19 16:15	EPA 8260D
1,1,2-Trichlorotrifluoroethane		<	1.0	ug/L	1	B9F0130	06/07/19 16:15	06/07/19 16:15	EPA 8260D
1,1-Dichloroethane		<	1.0	ug/L	1	B9F0130	06/07/19 16:15	06/07/19 16:15	EPA 8260D
1,1-Dichloroethene		<	1.0	ug/L	1	B9F0130	06/07/19 16:15	06/07/19 16:15	EPA 8260D
1,1-Dichloropropene		<	1.0	ug/L	1	B9F0130	06/07/19 16:15	06/07/19 16:15	EPA 8260D
1,2,3-Trichlorobenzene		<	1.0	ug/L	1	B9F0130	06/07/19 16:15	06/07/19 16:15	EPA 8260D
1,2,3-Trichloropropane		<	0.20	ug/L	1	B9F0130	06/07/19 16:15	06/07/19 16:15	EPA 8260D
1,2,4-Trichlorobenzene		<	1.0	ug/L	1	B9F0130	06/07/19 16:15	06/07/19 16:15	EPA 8260D
1,2,4-Trimethylbenzene		<	1.0	ug/L	1	B9F0130	06/07/19 16:15	06/07/19 16:15	EPA 8260D
1,2-Dibromo-3-chloropropane (DBCP)		<	1.0	ug/L	1	B9F0130	06/07/19 16:15	06/07/19 16:15	EPA 8260D
1,2-Dibromoethane (EDB)		<	0.50	ug/L	1	B9F0130	06/07/19 16:15	06/07/19 16:15	EPA 8260D
1,2-Dichlorobenzene		<	1.0	ug/L	1	B9F0130	06/07/19 16:15	06/07/19 16:15	EPA 8260D
1,2-Dichloroethane		<	0.20	ug/L	1	B9F0130	06/07/19 16:15	06/07/19 16:15	EPA 8260D
1,2-Dichloropropane		<	1.0	ug/L	1	B9F0130	06/07/19 16:15	06/07/19 16:15	EPA 8260D
1,3,5-Trimethylbenzene		<	1.0	ug/L	1	B9F0130	06/07/19 16:15	06/07/19 16:15	EPA 8260D
1,3-Dichlorobenzene		<	1.0	ug/L	1	B9F0130	06/07/19 16:15	06/07/19 16:15	EPA 8260D
1,3-Dichloropropane		<	1.0	ug/L	1	B9F0130	06/07/19 16:15	06/07/19 16:15	EPA 8260D
1,4-Dichlorobenzene		<	1.0	ug/L	1	B9F0130	06/07/19 16:15	06/07/19 16:15	EPA 8260D
2,2-Dichloropropane		<	1.0	ug/L	1	B9F0130	06/07/19 16:15	06/07/19 16:15	EPA 8260D

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-02057 MPCA Freeway-Kraemers Mine 2019 MDH
Generated: 06/19/19 9:40

MDH Sample Number: 19E2197-01

Location ID: Seep 01
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 05/29/19
Collect Time: 9:40
Matrix: Wtr-Surf

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
2-Chlorotoluene		<	1.0	ug/L	1	B9F0130	06/07/19 16:15	06/07/19 16:15	EPA 8260D
4-Chlorotoluene		<	1.0	ug/L	1	B9F0130	06/07/19 16:15	06/07/19 16:15	EPA 8260D
Acetone		<	20	ug/L	1	B9F0130	06/07/19 16:15	06/07/19 16:15	EPA 8260D
Allyl chloride		<	1.0	ug/L	1	B9F0130	06/07/19 16:15	06/07/19 16:15	EPA 8260D
Benzene		<	0.50	ug/L	1	B9F0130	06/07/19 16:15	06/07/19 16:15	EPA 8260D
Bromobenzene		<	1.0	ug/L	1	B9F0130	06/07/19 16:15	06/07/19 16:15	EPA 8260D
Bromochloromethane		<	1.0	ug/L	1	B9F0130	06/07/19 16:15	06/07/19 16:15	EPA 8260D
Bromodichloromethane		<	1.0	ug/L	1	B9F0130	06/07/19 16:15	06/07/19 16:15	EPA 8260D
Bromoform		<	1.0	ug/L	1	B9F0130	06/07/19 16:15	06/07/19 16:15	EPA 8260D
Bromomethane		<	2.0	ug/L	1	B9F0130	06/07/19 16:15	06/07/19 16:15	EPA 8260D
Carbon tetrachloride		<	0.20	ug/L	1	B9F0130	06/07/19 16:15	06/07/19 16:15	EPA 8260D
Chlorobenzene		<	1.0	ug/L	1	B9F0130	06/07/19 16:15	06/07/19 16:15	EPA 8260D
Chlorodibromomethane		<	0.50	ug/L	1	B9F0130	06/07/19 16:15	06/07/19 16:15	EPA 8260D
Chloroethane		<	1.0	ug/L	1	B9F0130	06/07/19 16:15	06/07/19 16:15	EPA 8260D
Chloroform		<	1.0	ug/L	1	B9F0130	06/07/19 16:15	06/07/19 16:15	EPA 8260D
Chloromethane		<	1.0	ug/L	1	B9F0130	06/07/19 16:15	06/07/19 16:15	EPA 8260D
cis-1,2-Dichloroethene		<	1.0	ug/L	1	B9F0130	06/07/19 16:15	06/07/19 16:15	EPA 8260D
cis-1,3-Dichloropropene		<	0.50	ug/L	1	B9F0130	06/07/19 16:15	06/07/19 16:15	EPA 8260D
Dibromomethane		<	1.0	ug/L	1	B9F0130	06/07/19 16:15	06/07/19 16:15	EPA 8260D
Dichlorodifluoromethane		<	1.0	ug/L	1	B9F0130	06/07/19 16:15	06/07/19 16:15	EPA 8260D
Dichlorofluoromethane		<	1.0	ug/L	1	B9F0130	06/07/19 16:15	06/07/19 16:15	EPA 8260D
Ethyl ether		**3.8**	1.0	ug/L	1	B9F0130	06/07/19 16:15	06/07/19 16:15	EPA 8260D
Ethylbenzene		<	1.0	ug/L	1	B9F0130	06/07/19 16:15	06/07/19 16:15	EPA 8260D
Hexachlorobutadiene		<	0.50	ug/L	1	B9F0130	06/07/19 16:15	06/07/19 16:15	EPA 8260D
Isopropylbenzene		<	1.0	ug/L	1	B9F0130	06/07/19 16:15	06/07/19 16:15	EPA 8260D
Methyl ethyl ketone (MEK)		<	10	ug/L	1	B9F0130	06/07/19 16:15	06/07/19 16:15	EPA 8260D
Methyl isobutyl ketone (MIBK)		<	5.0	ug/L	1	B9F0130	06/07/19 16:15	06/07/19 16:15	EPA 8260D

FINAL REPORT

Report ID: 06192019 94030

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-02057 MPCA Freeway-Kraemers Mine 2019 MDH
Generated: 06/19/19 9:40

MDH Sample Number: 19E2197-01

Location ID: Seep 01
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 05/29/19
Collect Time: 9:40
Matrix: Wtr-Surf

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Methyl tertiary butyl ether (MTBE)		<	2.0	ug/L	1	B9F0130	06/07/19 16:15	06/07/19 16:15	EPA 8260D
Methylene chloride		<	1.0	ug/L	1	B9F0130	06/07/19 16:15	06/07/19 16:15	EPA 8260D
Naphthalene		<	1.0	ug/L	1	B9F0130	06/07/19 16:15	06/07/19 16:15	EPA 8260D
n-Butylbenzene		<	1.0	ug/L	1	B9F0130	06/07/19 16:15	06/07/19 16:15	EPA 8260D
n-Propylbenzene		<	1.0	ug/L	1	B9F0130	06/07/19 16:15	06/07/19 16:15	EPA 8260D
o-Xylene		<	1.0	ug/L	1	B9F0130	06/07/19 16:15	06/07/19 16:15	EPA 8260D
p&m-Xylene		<	1.0	ug/L	1	B9F0130	06/07/19 16:15	06/07/19 16:15	EPA 8260D
p-Isopropyltoluene		<	1.0	ug/L	1	B9F0130	06/07/19 16:15	06/07/19 16:15	EPA 8260D
sec-Butylbenzene		<	1.0	ug/L	1	B9F0130	06/07/19 16:15	06/07/19 16:15	EPA 8260D
Styrene		<	1.0	ug/L	1	B9F0130	06/07/19 16:15	06/07/19 16:15	EPA 8260D
tert-Butylbenzene		<	1.0	ug/L	1	B9F0130	06/07/19 16:15	06/07/19 16:15	EPA 8260D
Tetrachloroethene		<	1.0	ug/L	1	B9F0130	06/07/19 16:15	06/07/19 16:15	EPA 8260D
Tetrahydrofuran (THF)		<	10	ug/L	1	B9F0130	06/07/19 16:15	06/07/19 16:15	EPA 8260D
Toluene		<	1.0	ug/L	1	B9F0130	06/07/19 16:15	06/07/19 16:15	EPA 8260D
trans-1,2-Dichloroethene		<	1.0	ug/L	1	B9F0130	06/07/19 16:15	06/07/19 16:15	EPA 8260D
trans-1,3-Dichloropropene		<	0.50	ug/L	1	B9F0130	06/07/19 16:15	06/07/19 16:15	EPA 8260D
Trichloroethene (TCE)		<	0.10	ug/L	1	B9F0130	06/07/19 16:15	06/07/19 16:15	EPA 8260D
Trichlorofluoromethane		<	1.0	ug/L	1	B9F0130	06/07/19 16:15	06/07/19 16:15	EPA 8260D
Vinyl chloride		<	0.050	ug/L	1	B9F0130	06/07/19 16:15	06/07/19 16:15	EPA 8260D

PFC Expanded List

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorobutanesulfonate (PFBS)	J	**0.006**	0.050	ug/L	1	B9F0037	06/04/19 17:28	06/04/19 17:28	MDH 555
Perfluorobutanoic acid (PFBA)		**0.25**	0.050	ug/L	1	B9F0037	06/04/19 17:28	06/04/19 17:28	MDH 555
Perfluorohexanesulfonate (PFHxS)	J	**0.022**	0.025	ug/L	1	B9F0037	06/04/19 17:28	06/04/19 17:28	MDH 555
Perfluorohexanoic acid (PFHxA)		**0.051**	0.050	ug/L	1	B9F0037	06/04/19 17:28	06/04/19 17:28	MDH 555
Perfluorooctanesulfonate (PFOS)		**0.037**	0.015	ug/L	1	B9F0037	06/04/19 17:28	06/04/19 17:28	MDH 555

FINAL REPORT

Report ID: 06192019 94030

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-02057 MPCA Freeway-Kraemers Mine 2019 MDH
Generated: 06/19/19 9:40

MDH Sample Number: 19E2197-01

Location ID: Seep 01
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 05/29/19
Collect Time: 9:40
Matrix: Wtr-Surf

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

PFC Expanded List - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorooctanoic acid (PFOA)		**0.25**	0.035	ug/L	1	B9F0037	06/04/19 17:28	06/04/19 17:28	MDH 555
Perfluoropentanoic acid (PFPeA)	J	**0.035**	0.050	ug/L	1	B9F0037	06/04/19 17:28	06/04/19 17:28	MDH 555

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-02057 MPCA Freeway-Kraemers Mine 2019 MDH
Generated: 06/19/19 9:40

MDH Sample Number: 19E2197-01RE1

Location ID: Seep 01
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 05/29/19
Collect Time: 9:40
Matrix: Wtr-Surf

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

1,4-Dioxane

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
1,4-Dioxane	D2, Q9	**19**	0.21	ug/L	4	B9F0117	06/09/19 08:00	06/10/19 22:09	EPA 522 Modified

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-02057 MPCA Freeway-Kraemers Mine 2019 MDH
Generated: 06/19/19 9:40

MDH Sample Number: 19E2197-02

Location ID: Discharge 01
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 05/29/19
Collect Time: 10:30
Matrix: Wtr-Surf

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Surrogate: 1,2-Dichlorobenzene-d4		*101*	*70-130*	%	*1*	*B9F0130*	*06/07/19 16:43*	*06/07/19 16:43*	*EPA 8260D*
Surrogate: 4-Bromofluorobenzene		*103*	*70-130*	%	*1*	*B9F0130*	*06/07/19 16:43*	*06/07/19 16:43*	*EPA 8260D*
Surrogate: Methyl tertiary butyl ether-d3		*98*	*70-130*	%	*1*	*B9F0130*	*06/07/19 16:43*	*06/07/19 16:43*	*EPA 8260D*
1,1,1,2-Tetrachloroethane		<	1.0	ug/L	1	B9F0130	06/07/19 16:43	06/07/19 16:43	EPA 8260D
1,1,1-Trichloroethane		<	1.0	ug/L	1	B9F0130	06/07/19 16:43	06/07/19 16:43	EPA 8260D
1,1,2,2-Tetrachloroethane		<	0.50	ug/L	1	B9F0130	06/07/19 16:43	06/07/19 16:43	EPA 8260D
1,1,2-Trichloroethane		<	0.50	ug/L	1	B9F0130	06/07/19 16:43	06/07/19 16:43	EPA 8260D
1,1,2-Trichlorotrifluoroethane		<	1.0	ug/L	1	B9F0130	06/07/19 16:43	06/07/19 16:43	EPA 8260D
1,1-Dichloroethane		<	1.0	ug/L	1	B9F0130	06/07/19 16:43	06/07/19 16:43	EPA 8260D
1,1-Dichloroethene		<	1.0	ug/L	1	B9F0130	06/07/19 16:43	06/07/19 16:43	EPA 8260D
1,1-Dichloropropene		<	1.0	ug/L	1	B9F0130	06/07/19 16:43	06/07/19 16:43	EPA 8260D
1,2,3-Trichlorobenzene		<	1.0	ug/L	1	B9F0130	06/07/19 16:43	06/07/19 16:43	EPA 8260D
1,2,3-Trichloropropane		<	0.20	ug/L	1	B9F0130	06/07/19 16:43	06/07/19 16:43	EPA 8260D
1,2,4-Trichlorobenzene		<	1.0	ug/L	1	B9F0130	06/07/19 16:43	06/07/19 16:43	EPA 8260D
1,2,4-Trimethylbenzene		<	1.0	ug/L	1	B9F0130	06/07/19 16:43	06/07/19 16:43	EPA 8260D
1,2-Dibromo-3-chloropropane (DBCP)		<	1.0	ug/L	1	B9F0130	06/07/19 16:43	06/07/19 16:43	EPA 8260D
1,2-Dibromoethane (EDB)		<	0.50	ug/L	1	B9F0130	06/07/19 16:43	06/07/19 16:43	EPA 8260D
1,2-Dichlorobenzene		<	1.0	ug/L	1	B9F0130	06/07/19 16:43	06/07/19 16:43	EPA 8260D
1,2-Dichloroethane		<	0.20	ug/L	1	B9F0130	06/07/19 16:43	06/07/19 16:43	EPA 8260D
1,2-Dichloropropane		<	1.0	ug/L	1	B9F0130	06/07/19 16:43	06/07/19 16:43	EPA 8260D
1,3,5-Trimethylbenzene		<	1.0	ug/L	1	B9F0130	06/07/19 16:43	06/07/19 16:43	EPA 8260D
1,3-Dichlorobenzene		<	1.0	ug/L	1	B9F0130	06/07/19 16:43	06/07/19 16:43	EPA 8260D
1,3-Dichloropropane		<	1.0	ug/L	1	B9F0130	06/07/19 16:43	06/07/19 16:43	EPA 8260D
1,4-Dichlorobenzene		<	1.0	ug/L	1	B9F0130	06/07/19 16:43	06/07/19 16:43	EPA 8260D
2,2-Dichloropropane		<	1.0	ug/L	1	B9F0130	06/07/19 16:43	06/07/19 16:43	EPA 8260D
2-Chlorotoluene		<	1.0	ug/L	1	B9F0130	06/07/19 16:43	06/07/19 16:43	EPA 8260D

Authorized by:

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-02057 MPCA Freeway-Kraemers Mine 2019 MDH
Generated: 06/19/19 9:40

MDH Sample Number: 19E2197-02

Location ID: Discharge 01
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 05/29/19
Collect Time: 10:30
Matrix: Wtr-Surf

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
4-Chlorotoluene		<	1.0	ug/L	1	B9F0130	06/07/19 16:43	06/07/19 16:43	EPA 8260D
Acetone		<	20	ug/L	1	B9F0130	06/07/19 16:43	06/07/19 16:43	EPA 8260D
Allyl chloride		<	1.0	ug/L	1	B9F0130	06/07/19 16:43	06/07/19 16:43	EPA 8260D
Benzene		<	0.50	ug/L	1	B9F0130	06/07/19 16:43	06/07/19 16:43	EPA 8260D
Bromobenzene		<	1.0	ug/L	1	B9F0130	06/07/19 16:43	06/07/19 16:43	EPA 8260D
Bromochloromethane		<	1.0	ug/L	1	B9F0130	06/07/19 16:43	06/07/19 16:43	EPA 8260D
Bromodichloromethane		<	1.0	ug/L	1	B9F0130	06/07/19 16:43	06/07/19 16:43	EPA 8260D
Bromoform		<	1.0	ug/L	1	B9F0130	06/07/19 16:43	06/07/19 16:43	EPA 8260D
Bromomethane		<	2.0	ug/L	1	B9F0130	06/07/19 16:43	06/07/19 16:43	EPA 8260D
Carbon tetrachloride		<	0.20	ug/L	1	B9F0130	06/07/19 16:43	06/07/19 16:43	EPA 8260D
Chlorobenzene		<	1.0	ug/L	1	B9F0130	06/07/19 16:43	06/07/19 16:43	EPA 8260D
Chlorodibromomethane		<	0.50	ug/L	1	B9F0130	06/07/19 16:43	06/07/19 16:43	EPA 8260D
Chloroethane		<	1.0	ug/L	1	B9F0130	06/07/19 16:43	06/07/19 16:43	EPA 8260D
Chloroform		<	1.0	ug/L	1	B9F0130	06/07/19 16:43	06/07/19 16:43	EPA 8260D
Chloromethane		<	1.0	ug/L	1	B9F0130	06/07/19 16:43	06/07/19 16:43	EPA 8260D
cis-1,2-Dichloroethene		<	1.0	ug/L	1	B9F0130	06/07/19 16:43	06/07/19 16:43	EPA 8260D
cis-1,3-Dichloropropene		<	0.50	ug/L	1	B9F0130	06/07/19 16:43	06/07/19 16:43	EPA 8260D
Dibromomethane		<	1.0	ug/L	1	B9F0130	06/07/19 16:43	06/07/19 16:43	EPA 8260D
Dichlorodifluoromethane		<	1.0	ug/L	1	B9F0130	06/07/19 16:43	06/07/19 16:43	EPA 8260D
Dichlorofluoromethane		<	1.0	ug/L	1	B9F0130	06/07/19 16:43	06/07/19 16:43	EPA 8260D
Ethyl ether		<	1.0	ug/L	1	B9F0130	06/07/19 16:43	06/07/19 16:43	EPA 8260D
Ethylbenzene		<	1.0	ug/L	1	B9F0130	06/07/19 16:43	06/07/19 16:43	EPA 8260D
Hexachlorobutadiene		<	0.50	ug/L	1	B9F0130	06/07/19 16:43	06/07/19 16:43	EPA 8260D
Isopropylbenzene		<	1.0	ug/L	1	B9F0130	06/07/19 16:43	06/07/19 16:43	EPA 8260D
Methyl ethyl ketone (MEK)		<	10	ug/L	1	B9F0130	06/07/19 16:43	06/07/19 16:43	EPA 8260D
Methyl isobutyl ketone (MIBK)		<	5.0	ug/L	1	B9F0130	06/07/19 16:43	06/07/19 16:43	EPA 8260D
Methyl tertiary butyl ether (MTBE)		<	2.0	ug/L	1	B9F0130	06/07/19 16:43	06/07/19 16:43	EPA 8260D

FINAL REPORT

Report ID: 06192019 94030

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-02057 MPCA Freeway-Kraemers Mine 2019 MDH
Generated: 06/19/19 9:40

MDH Sample Number: 19E2197-02

Location ID: Discharge 01
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 05/29/19
Collect Time: 10:30
Matrix: Wtr-Surf

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Methylene chloride		<	1.0	ug/L	1	B9F0130	06/07/19 16:43	06/07/19 16:43	EPA 8260D
Naphthalene		<	1.0	ug/L	1	B9F0130	06/07/19 16:43	06/07/19 16:43	EPA 8260D
n-Butylbenzene		<	1.0	ug/L	1	B9F0130	06/07/19 16:43	06/07/19 16:43	EPA 8260D
n-Propylbenzene		<	1.0	ug/L	1	B9F0130	06/07/19 16:43	06/07/19 16:43	EPA 8260D
o-Xylene		<	1.0	ug/L	1	B9F0130	06/07/19 16:43	06/07/19 16:43	EPA 8260D
p&m-Xylene		<	1.0	ug/L	1	B9F0130	06/07/19 16:43	06/07/19 16:43	EPA 8260D
p-Isopropyltoluene		<	1.0	ug/L	1	B9F0130	06/07/19 16:43	06/07/19 16:43	EPA 8260D
sec-Butylbenzene		<	1.0	ug/L	1	B9F0130	06/07/19 16:43	06/07/19 16:43	EPA 8260D
Styrene		<	1.0	ug/L	1	B9F0130	06/07/19 16:43	06/07/19 16:43	EPA 8260D
tert-Butylbenzene		<	1.0	ug/L	1	B9F0130	06/07/19 16:43	06/07/19 16:43	EPA 8260D
Tetrachloroethene		<	1.0	ug/L	1	B9F0130	06/07/19 16:43	06/07/19 16:43	EPA 8260D
Tetrahydrofuran (THF)		<	10	ug/L	1	B9F0130	06/07/19 16:43	06/07/19 16:43	EPA 8260D
Toluene		<	1.0	ug/L	1	B9F0130	06/07/19 16:43	06/07/19 16:43	EPA 8260D
trans-1,2-Dichloroethene		<	1.0	ug/L	1	B9F0130	06/07/19 16:43	06/07/19 16:43	EPA 8260D
trans-1,3-Dichloropropene		<	0.50	ug/L	1	B9F0130	06/07/19 16:43	06/07/19 16:43	EPA 8260D
Trichloroethene (TCE)		<	0.10	ug/L	1	B9F0130	06/07/19 16:43	06/07/19 16:43	EPA 8260D
Trichlorofluoromethane		<	1.0	ug/L	1	B9F0130	06/07/19 16:43	06/07/19 16:43	EPA 8260D
Vinyl chloride		<	0.050	ug/L	1	B9F0130	06/07/19 16:43	06/07/19 16:43	EPA 8260D

1,4-Dioxane

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
1,4-Dioxane	Q9	**1.5**	0.051	ug/L	1	B9F0117	06/09/19 08:00	06/09/19 20:39	EPA 522 Modified

PFC Expanded List

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorobutanesulfonate (PFBS)	J	**0.006**	0.050	ug/L	1	B9F0037	06/04/19 17:36	06/04/19 17:36	MDH 555
Perfluorobutanoic acid (PFBA)		**0.080**	0.050	ug/L	1	B9F0037	06/04/19 17:36	06/04/19 17:36	MDH 555

FINAL REPORT

Report ID: 06192019 94030

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-02057 MPCA Freeway-Kraemers Mine 2019 MDH
Generated: 06/19/19 9:40

MDH Sample Number: 19E2197-02

Location ID: Discharge 01
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 05/29/19
Collect Time: 10:30
Matrix: Wtr-Surf

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

PFC Expanded List - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorohexanesulfonate (PFHxS)	J	**0.004**	0.025	ug/L	1	B9F0037	06/04/19 17:36	06/04/19 17:36	MDH 555
Perfluorohexanoic acid (PFHxA)	J	**0.018**	0.050	ug/L	1	B9F0037	06/04/19 17:36	06/04/19 17:36	MDH 555
Perfluorooctanesulfonate (PFOS)		**0.034**	0.015	ug/L	1	B9F0037	06/04/19 17:36	06/04/19 17:36	MDH 555
Perfluorooctanoic acid (PFOA)		**0.066**	0.035	ug/L	1	B9F0037	06/04/19 17:36	06/04/19 17:36	MDH 555
Perfluoropentanoic acid (PFPeA)	J	**0.013**	0.050	ug/L	1	B9F0037	06/04/19 17:36	06/04/19 17:36	MDH 555

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Public Health Laboratory, Minnesota Department of Health

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Environmental Laboratory Section
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St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-02057 MPCA Freeway-Kraemers Mine 2019 MDH
Generated: 06/19/19 9:40

MDH Sample Number: 19E2197-03

Location ID: Duplicate
Field Name: None
Sampling Point: None
QA Type: Field Dup/Rep

Collect Date: 05/29/19
Collect Time: 10:40
Matrix: Wtr-Surf

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: Lab error. -CCS

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Surrogate: 1,2-Dichlorobenzene-d4		*100*	*70-130*	%	*1*	*B9F0130*	*06/07/19 17:11*	*06/07/19 17:11*	*EPA 8260D*
Surrogate: 4-Bromofluorobenzene		*100*	*70-130*	%	*1*	*B9F0130*	*06/07/19 17:11*	*06/07/19 17:11*	*EPA 8260D*
Surrogate: Methyl tertiary butyl ether-d3		*97*	*70-130*	%	*1*	*B9F0130*	*06/07/19 17:11*	*06/07/19 17:11*	*EPA 8260D*
1,1,1,2-Tetrachloroethane		<	1.0	ug/L	1	B9F0130	06/07/19 17:11	06/07/19 17:11	EPA 8260D
1,1,1-Trichloroethane		<	1.0	ug/L	1	B9F0130	06/07/19 17:11	06/07/19 17:11	EPA 8260D
1,1,2,2-Tetrachloroethane		<	0.50	ug/L	1	B9F0130	06/07/19 17:11	06/07/19 17:11	EPA 8260D
1,1,2-Trichloroethane		<	0.50	ug/L	1	B9F0130	06/07/19 17:11	06/07/19 17:11	EPA 8260D
1,1,2-Trichlorotrifluoroethane		<	1.0	ug/L	1	B9F0130	06/07/19 17:11	06/07/19 17:11	EPA 8260D
1,1-Dichloroethane		<	1.0	ug/L	1	B9F0130	06/07/19 17:11	06/07/19 17:11	EPA 8260D
1,1-Dichloroethene		<	1.0	ug/L	1	B9F0130	06/07/19 17:11	06/07/19 17:11	EPA 8260D
1,1-Dichloropropene		<	1.0	ug/L	1	B9F0130	06/07/19 17:11	06/07/19 17:11	EPA 8260D
1,2,3-Trichlorobenzene		<	1.0	ug/L	1	B9F0130	06/07/19 17:11	06/07/19 17:11	EPA 8260D
1,2,3-Trichloropropane		<	0.20	ug/L	1	B9F0130	06/07/19 17:11	06/07/19 17:11	EPA 8260D
1,2,4-Trichlorobenzene		<	1.0	ug/L	1	B9F0130	06/07/19 17:11	06/07/19 17:11	EPA 8260D
1,2,4-Trimethylbenzene		<	1.0	ug/L	1	B9F0130	06/07/19 17:11	06/07/19 17:11	EPA 8260D
1,2-Dibromo-3-chloropropane (DBCP)		<	1.0	ug/L	1	B9F0130	06/07/19 17:11	06/07/19 17:11	EPA 8260D
1,2-Dibromoethane (EDB)		<	0.50	ug/L	1	B9F0130	06/07/19 17:11	06/07/19 17:11	EPA 8260D
1,2-Dichlorobenzene		<	1.0	ug/L	1	B9F0130	06/07/19 17:11	06/07/19 17:11	EPA 8260D
1,2-Dichloroethane		<	0.20	ug/L	1	B9F0130	06/07/19 17:11	06/07/19 17:11	EPA 8260D
1,2-Dichloropropane		<	1.0	ug/L	1	B9F0130	06/07/19 17:11	06/07/19 17:11	EPA 8260D
1,3,5-Trimethylbenzene		<	1.0	ug/L	1	B9F0130	06/07/19 17:11	06/07/19 17:11	EPA 8260D
1,3-Dichlorobenzene		<	1.0	ug/L	1	B9F0130	06/07/19 17:11	06/07/19 17:11	EPA 8260D
1,3-Dichloropropane		<	1.0	ug/L	1	B9F0130	06/07/19 17:11	06/07/19 17:11	EPA 8260D
1,4-Dichlorobenzene		<	1.0	ug/L	1	B9F0130	06/07/19 17:11	06/07/19 17:11	EPA 8260D
2,2-Dichloropropane		<	1.0	ug/L	1	B9F0130	06/07/19 17:11	06/07/19 17:11	EPA 8260D
2-Chlorotoluene		<	1.0	ug/L	1	B9F0130	06/07/19 17:11	06/07/19 17:11	EPA 8260D

FINAL REPORT

Report ID: 06192019 94030

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-02057 MPCA Freeway-Kraemers Mine 2019 MDH
Generated: 06/19/19 9:40

MDH Sample Number: 19E2197-03

Location ID: Duplicate
Field Name: None
Sampling Point: None
QA Type: Field Dup/Rep

Collect Date: 05/29/19
Collect Time: 10:40
Matrix: Wtr-Surf

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: Lab error. -CCS

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
4-Chlorotoluene		<	1.0	ug/L	1	B9F0130	06/07/19 17:11	06/07/19 17:11	EPA 8260D
Acetone		<	20	ug/L	1	B9F0130	06/07/19 17:11	06/07/19 17:11	EPA 8260D
Allyl chloride		<	1.0	ug/L	1	B9F0130	06/07/19 17:11	06/07/19 17:11	EPA 8260D
Benzene		<	0.50	ug/L	1	B9F0130	06/07/19 17:11	06/07/19 17:11	EPA 8260D
Bromobenzene		<	1.0	ug/L	1	B9F0130	06/07/19 17:11	06/07/19 17:11	EPA 8260D
Bromochloromethane		<	1.0	ug/L	1	B9F0130	06/07/19 17:11	06/07/19 17:11	EPA 8260D
Bromodichloromethane		<	1.0	ug/L	1	B9F0130	06/07/19 17:11	06/07/19 17:11	EPA 8260D
Bromoform		<	1.0	ug/L	1	B9F0130	06/07/19 17:11	06/07/19 17:11	EPA 8260D
Bromomethane		<	2.0	ug/L	1	B9F0130	06/07/19 17:11	06/07/19 17:11	EPA 8260D
Carbon tetrachloride		<	0.20	ug/L	1	B9F0130	06/07/19 17:11	06/07/19 17:11	EPA 8260D
Chlorobenzene		<	1.0	ug/L	1	B9F0130	06/07/19 17:11	06/07/19 17:11	EPA 8260D
Chlorodibromomethane		<	0.50	ug/L	1	B9F0130	06/07/19 17:11	06/07/19 17:11	EPA 8260D
Chloroethane		<	1.0	ug/L	1	B9F0130	06/07/19 17:11	06/07/19 17:11	EPA 8260D
Chloroform		<	1.0	ug/L	1	B9F0130	06/07/19 17:11	06/07/19 17:11	EPA 8260D
Chloromethane		<	1.0	ug/L	1	B9F0130	06/07/19 17:11	06/07/19 17:11	EPA 8260D
cis-1,2-Dichloroethene		<	1.0	ug/L	1	B9F0130	06/07/19 17:11	06/07/19 17:11	EPA 8260D
cis-1,3-Dichloropropene		<	0.50	ug/L	1	B9F0130	06/07/19 17:11	06/07/19 17:11	EPA 8260D
Dibromomethane		<	1.0	ug/L	1	B9F0130	06/07/19 17:11	06/07/19 17:11	EPA 8260D
Dichlorodifluoromethane		<	1.0	ug/L	1	B9F0130	06/07/19 17:11	06/07/19 17:11	EPA 8260D
Dichlorofluoromethane		<	1.0	ug/L	1	B9F0130	06/07/19 17:11	06/07/19 17:11	EPA 8260D
Ethyl ether		<	1.0	ug/L	1	B9F0130	06/07/19 17:11	06/07/19 17:11	EPA 8260D
Ethylbenzene		<	1.0	ug/L	1	B9F0130	06/07/19 17:11	06/07/19 17:11	EPA 8260D
Hexachlorobutadiene		<	0.50	ug/L	1	B9F0130	06/07/19 17:11	06/07/19 17:11	EPA 8260D
Isopropylbenzene		<	1.0	ug/L	1	B9F0130	06/07/19 17:11	06/07/19 17:11	EPA 8260D
Methyl ethyl ketone (MEK)		<	10	ug/L	1	B9F0130	06/07/19 17:11	06/07/19 17:11	EPA 8260D
Methyl isobutyl ketone (MIBK)		<	5.0	ug/L	1	B9F0130	06/07/19 17:11	06/07/19 17:11	EPA 8260D
Methyl tertiary butyl ether (MTBE)		<	2.0	ug/L	1	B9F0130	06/07/19 17:11	06/07/19 17:11	EPA 8260D

FINAL REPORT

Report ID: 06192019 94030

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-02057 MPCA Freeway-Kraemers Mine 2019 MDH
Generated: 06/19/19 9:40

MDH Sample Number: 19E2197-03

Location ID: Duplicate
Field Name: None
Sampling Point: None
QA Type: Field Dup/Rep

Collect Date: 05/29/19
Collect Time: 10:40
Matrix: Wtr-Surf

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: Lab error. -CCS

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Methylene chloride		<	1.0	ug/L	1	B9F0130	06/07/19 17:11	06/07/19 17:11	EPA 8260D
Naphthalene		<	1.0	ug/L	1	B9F0130	06/07/19 17:11	06/07/19 17:11	EPA 8260D
n-Butylbenzene		<	1.0	ug/L	1	B9F0130	06/07/19 17:11	06/07/19 17:11	EPA 8260D
n-Propylbenzene		<	1.0	ug/L	1	B9F0130	06/07/19 17:11	06/07/19 17:11	EPA 8260D
o-Xylene		<	1.0	ug/L	1	B9F0130	06/07/19 17:11	06/07/19 17:11	EPA 8260D
p&m-Xylene		<	1.0	ug/L	1	B9F0130	06/07/19 17:11	06/07/19 17:11	EPA 8260D
p-Isopropyltoluene		<	1.0	ug/L	1	B9F0130	06/07/19 17:11	06/07/19 17:11	EPA 8260D
sec-Butylbenzene		<	1.0	ug/L	1	B9F0130	06/07/19 17:11	06/07/19 17:11	EPA 8260D
Styrene		<	1.0	ug/L	1	B9F0130	06/07/19 17:11	06/07/19 17:11	EPA 8260D
tert-Butylbenzene		<	1.0	ug/L	1	B9F0130	06/07/19 17:11	06/07/19 17:11	EPA 8260D
Tetrachloroethene		<	1.0	ug/L	1	B9F0130	06/07/19 17:11	06/07/19 17:11	EPA 8260D
Tetrahydrofuran (THF)		<	10	ug/L	1	B9F0130	06/07/19 17:11	06/07/19 17:11	EPA 8260D
Toluene		<	1.0	ug/L	1	B9F0130	06/07/19 17:11	06/07/19 17:11	EPA 8260D
trans-1,2-Dichloroethene		<	1.0	ug/L	1	B9F0130	06/07/19 17:11	06/07/19 17:11	EPA 8260D
trans-1,3-Dichloropropene		<	0.50	ug/L	1	B9F0130	06/07/19 17:11	06/07/19 17:11	EPA 8260D
Trichloroethene (TCE)		<	0.10	ug/L	1	B9F0130	06/07/19 17:11	06/07/19 17:11	EPA 8260D
Trichlorofluoromethane		<	1.0	ug/L	1	B9F0130	06/07/19 17:11	06/07/19 17:11	EPA 8260D
Vinyl chloride		<	0.050	ug/L	1	B9F0130	06/07/19 17:11	06/07/19 17:11	EPA 8260D

PFC Expanded List

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorobutanesulfonate (PFBS)		<	0.050	ug/L	1	B9F0037	06/04/19 17:45	06/04/19 17:45	MDH 555
Perfluorobutanoic acid (PFBA)		**0.079**	0.050	ug/L	1	B9F0037	06/04/19 17:45	06/04/19 17:45	MDH 555
Perfluorohexanesulfonate (PFHxS)		<	0.025	ug/L	1	B9F0037	06/04/19 17:45	06/04/19 17:45	MDH 555
Perfluorohexanoic acid (PFHxA)	J	**0.019**	0.050	ug/L	1	B9F0037	06/04/19 17:45	06/04/19 17:45	MDH 555
Perfluorooctanesulfonate (PFOS)		**0.029**	0.015	ug/L	1	B9F0037	06/04/19 17:45	06/04/19 17:45	MDH 555
Perfluorooctanoic acid (PFOA)		**0.059**	0.035	ug/L	1	B9F0037	06/04/19 17:45	06/04/19 17:45	MDH 555

FINAL REPORT

Report ID: 06192019 94030

Authorized by:

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Public Health Laboratory
Environmental Laboratory Section
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St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-02057 MPCA Freeway-Kraemers Mine 2019 MDH
Generated: 06/19/19 9:40

MDH Sample Number: 19E2197-03

Location ID: Duplicate
Field Name: None
Sampling Point: None
QA Type: Field Dup/Rep

Collect Date: 05/29/19
Collect Time: 10:40
Matrix: Wtr-Surf

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: Lab error. -CCS

Results were produced by the Minnesota Department of Health, except where noted.

PFC Expanded List - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluoropentanoic acid (PFPeA)	J	**0.012**	0.050	ug/L	1	B9F0037	06/04/19 17:45	06/04/19 17:45	MDH 555

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-02057 MPCA Freeway-Kraemers Mine 2019 MDH
Collector ID: None	Generated: 06/19/19 9:40

Batch Summary

Samples in Batch: B9F0037 - PFCs Preparation

19E2197-01 19E2197-02 19E2197-03

Samples in Batch: B9F0117 - 1,4 Dioxane in Water SPE

19E2197-01RE1 19E2197-02

Samples in Batch: B9F0130 - EPA 5030B Preparation

19E2197-01 19E2197-02 19E2197-03

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-02057 MPCA Freeway-Kraemers Mine 2019 MDH
Collector ID: None	Generated: 06/19/19 9:40

Results were produced by Minnesota Department of Health, except where noted.

Batch B9F0130 - EPA 5030B Preparation

Blank (B9F0130-BLK1) **Prepared: 06/07/19 13:28 Analyzed: 06/07/19 13:28**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: 1,2-Dichlorobenzene-d4		*101*	*70-130*	*%*	*10*					
Surrogate: 4-Bromofluorobenzene		*103*	*70-130*	*%*	*10*					
Surrogate: Methyl tertiary butyl ether-d3		*99*	*70-130*	*%*	*10*					
1,1,1,2-Tetrachloroethane		<	1.0	ug/L						
1,1,1-Trichloroethane		<	1.0	ug/L						
1,1,2,2-Tetrachloroethane		<	0.50	ug/L						
1,1,2-Trichloroethane		<	0.50	ug/L						
1,1,2-Trichlorotrifluoroethane		<	1.0	ug/L						
1,1-Dichloroethane		<	1.0	ug/L						
1,1-Dichloroethene		<	1.0	ug/L						
1,1-Dichloropropene		<	1.0	ug/L						
1,2,3-Trichlorobenzene		<	1.0	ug/L						
1,2,3-Trichloropropane		<	0.20	ug/L						
1,2,4-Trichlorobenzene		<	1.0	ug/L						
1,2,4-Trimethylbenzene		<	1.0	ug/L						
1,2-Dibromo-3-chloropropane (DBCP)		<	1.0	ug/L						
1,2-Dibromoethane (EDB)		<	0.50	ug/L						
1,2-Dichlorobenzene		<	1.0	ug/L						
1,2-Dichloroethane		<	0.20	ug/L						
1,2-Dichloropropane		<	1.0	ug/L						
1,3,5-Trimethylbenzene		<	1.0	ug/L						
1,3-Dichlorobenzene		<	1.0	ug/L						
1,3-Dichloropropane		<	1.0	ug/L						
1,4-Dichlorobenzene		<	1.0	ug/L						
2,2-Dichloropropane		<	1.0	ug/L						
2-Chlorotoluene		<	1.0	ug/L						
4-Chlorotoluene		<	1.0	ug/L						
Acetone		<	20	ug/L						
Allyl chloride		<	1.0	ug/L						
Benzene		<	0.50	ug/L						
Bromobenzene		<	1.0	ug/L						
Bromochloromethane		<	1.0	ug/L						
Bromodichloromethane		<	1.0	ug/L						
Bromoform		<	1.0	ug/L						

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Environmental Laboratory Section
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651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-02057 MPCA Freeway-Kraemers Mine 2019 MDH
Collector ID: None	Generated: 06/19/19 9:40

Results were produced by Minnesota Department of Health, except where noted.

Batch B9F0130 - EPA 5030B Preparation

Blank (B9F0130-BLK1) **Prepared: 06/07/19 13:28 Analyzed: 06/07/19 13:28**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Bromomethane		<	2.0	ug/L						
Carbon tetrachloride		<	0.20	ug/L						
Chlorobenzene		<	1.0	ug/L						
Chlorodibromomethane		<	0.50	ug/L						
Chloroethane		<	1.0	ug/L						
Chloroform		<	1.0	ug/L						
Chloromethane		<	1.0	ug/L						
cis-1,2-Dichloroethene		<	1.0	ug/L						
cis-1,3-Dichloropropene		<	0.50	ug/L						
Dibromomethane		<	1.0	ug/L						
Dichlorodifluoromethane		<	1.0	ug/L						
Dichlorofluoromethane		<	1.0	ug/L						
Ethyl ether		<	1.0	ug/L						
Ethylbenzene		<	1.0	ug/L						
Hexachlorobutadiene		<	0.50	ug/L						
Isopropylbenzene		<	1.0	ug/L						
Methyl ethyl ketone (MEK)		<	10	ug/L						
Methyl isobutyl ketone (MIBK)		<	5.0	ug/L						
Methyl tertiary butyl ether (MTBE)		<	2.0	ug/L						
Methylene chloride		<	1.0	ug/L						
Naphthalene		<	1.0	ug/L						
n-Butylbenzene		<	1.0	ug/L						
n-Propylbenzene		<	1.0	ug/L						
o-Xylene		<	1.0	ug/L						
p&m-Xylene		<	1.0	ug/L						
p-Isopropyltoluene		<	1.0	ug/L						
sec-Butylbenzene		<	1.0	ug/L						
Styrene		<	1.0	ug/L						
tert-Butylbenzene		<	1.0	ug/L						
Tetrachloroethene		<	1.0	ug/L						
Tetrahydrofuran (THF)		<	10	ug/L						
Toluene		<	1.0	ug/L						
trans-1,2-Dichloroethene		<	1.0	ug/L						
trans-1,3-Dichloropropene		<	0.50	ug/L						
Trichloroethene (TCE)		<	0.10	ug/L						

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651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-02057 MPCA Freeway-Kraemers Mine 2019 MDH
Collector ID: None	Generated: 06/19/19 9:40

Results were produced by Minnesota Department of Health, except where noted.

Batch B9F0130 - EPA 5030B Preparation

Blank (B9F0130-BLK1) **Prepared: 06/07/19 13:28 Analyzed: 06/07/19 13:28**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Trichlorofluoromethane		<	1.0	ug/L						
Vinyl chloride		<	0.050	ug/L						

LCS (B9F0130-BS1) **Prepared: 06/07/19 11:09 Analyzed: 06/07/19 11:09**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: 1,2-Dichlorobenzene-d4		*98*	*70-130*	*%*	*10*					
Surrogate: 4-Bromofluorobenzene		*101*	*70-130*	*%*	*10*					
Surrogate: Methyl tertiary butyl ether-d3		*96*	*70-130*	*%*	*10*					
1,1,1,2-Tetrachloroethane		9.8	1.0	ug/L	10		98	70-130		
1,1,1-Trichloroethane		10	1.0	ug/L	10		100	70-130		
1,1,2,2-Tetrachloroethane		9.7	0.50	ug/L	10		97	70-130		
1,1,2-Trichloroethane		9.5	0.50	ug/L	10		95	70-130		
1,1,2-Trichlorotrifluoroethane		10	1.0	ug/L	10		105	70-130		
1,1-Dichloroethane		10	1.0	ug/L	10		100	70-130		
1,1-Dichloroethene		10	1.0	ug/L	10		102	70-130		
1,1-Dichloropropene		10	1.0	ug/L	10		103	70-130		
1,2,3-Trichlorobenzene		9.8	1.0	ug/L	10		98	70-130		
1,2,3-Trichloropropane		9.5	0.20	ug/L	10		95	70-130		
1,2,4-Trichlorobenzene		9.9	1.0	ug/L	10		99	70-130		
1,2,4-Trimethylbenzene		11	1.0	ug/L	10		107	70-130		
1,2-Dibromo-3-chloropropane (DBCP)		10	1.0	ug/L	10		101	70-130		
1,2-Dibromoethane (EDB)		10	0.50	ug/L	10		101	70-130		
1,2-Dichlorobenzene		9.6	1.0	ug/L	10		96	70-130		
1,2-Dichloroethane		9.2	0.20	ug/L	10		92	70-130		
1,2-Dichloropropane		9.6	1.0	ug/L	10		96	70-130		
1,3,5-Trimethylbenzene		10	1.0	ug/L	10		105	70-130		
1,3-Dichlorobenzene		10	1.0	ug/L	10		100	70-130		
1,3-Dichloropropane		9.7	1.0	ug/L	10		97	70-130		
1,4-Dichlorobenzene		10	1.0	ug/L	10		101	70-130		
2,2-Dichloropropane		11	1.0	ug/L	10		107	70-130		
2-Chlorotoluene		10	1.0	ug/L	10		104	70-130		
4-Chlorotoluene		10	1.0	ug/L	10		102	70-130		
Acetone		100	20	ug/L	100		104	70-130		

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Public Health Laboratory, Minnesota Department of Health

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St. Paul, MN 55164-0899
651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-02057 MPCA Freeway-Kraemers Mine 2019 MDH
Collector ID: None	Generated: 06/19/19 9:40

Results were produced by Minnesota Department of Health, except where noted.

Batch B9F0130 - EPA 5030B Preparation

LCS (B9F0130-BS1) **Prepared: 06/07/19 11:09 Analyzed: 06/07/19 11:09**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Allyl chloride		10	1.0	ug/L	10		100	70-130		
Benzene		10	0.50	ug/L	10		100	70-130		
Bromobenzene		9.6	1.0	ug/L	10		96	70-130		
Bromochloromethane		9.9	1.0	ug/L	10		99	70-130		
Bromodichloromethane		9.8	1.0	ug/L	10		98	70-130		
Bromoform		11	1.0	ug/L	10		108	70-130		
Bromomethane		9.2	2.0	ug/L	10		92	70-130		
Carbon tetrachloride		10	0.20	ug/L	10		101	70-130		
Chlorobenzene		10	1.0	ug/L	10		100	70-130		
Chlorodibromomethane		10	0.50	ug/L	10		103	70-130		
Chloroethane		9.9	1.0	ug/L	10		99	70-130		
Chloroform		10	1.0	ug/L	10		100	70-130		
Chloromethane		9.2	1.0	ug/L	10		92	70-130		
cis-1,2-Dichloroethene		9.8	1.0	ug/L	10		98	70-130		
cis-1,3-Dichloropropene		9.7	0.50	ug/L	10		97	70-130		
Dibromomethane		9.4	1.0	ug/L	10		94	70-130		
Dichlorodifluoromethane		9.8	1.0	ug/L	10		98	70-130		
Dichlorofluoromethane		10	1.0	ug/L	10		100	70-130		
Ethyl ether		9.6	1.0	ug/L	10		96	70-130		
Ethylbenzene		10	1.0	ug/L	10		102	70-130		
Hexachlorobutadiene		11	0.50	ug/L	10		107	70-130		
Isopropylbenzene		11	1.0	ug/L	10		107	70-130		
Methyl ethyl ketone (MEK)		52	10	ug/L	50		105	70-130		
Methyl isobutyl ketone (MIBK)		54	5.0	ug/L	50		108	70-130		
Methyl tertiary butyl ether (MTBE)		9.6	2.0	ug/L	10		96	70-130		
Methylene chloride		9.6	1.0	ug/L	10		96	70-130		
Naphthalene		10	1.0	ug/L	10		100	70-130		
n-Butylbenzene		11	1.0	ug/L	10		105	70-130		
n-Propylbenzene		10	1.0	ug/L	10		105	70-130		
o-Xylene		10	1.0	ug/L	10		103	70-130		
p&m-Xylene		11	1.0	ug/L	10		106	70-130		
p-Isopropyltoluene		11	1.0	ug/L	10		106	70-130		
sec-Butylbenzene		11	1.0	ug/L	10		106	70-130		
Styrene		10	1.0	ug/L	10		104	70-130		
tert-Butylbenzene		11	1.0	ug/L	10		106	70-130		

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Public Health Laboratory, Minnesota Department of Health

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-02057 MPCA Freeway-Kraemers Mine 2019 MDH
Collector ID: None	Generated: 06/19/19 9:40

Results were produced by Minnesota Department of Health, except where noted.

Batch B9F0130 - EPA 5030B Preparation

LCS (B9F0130-BS1) **Prepared: 06/07/19 11:09 Analyzed: 06/07/19 11:09**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Tetrachloroethene		10	1.0	ug/L	10		101	70-130		
Tetrahydrofuran (THF)		96	10	ug/L	100		96	70-130		
Toluene		10	1.0	ug/L	10		102	70-130		
trans-1,2-Dichloroethene		10	1.0	ug/L	10		102	70-130		
trans-1,3-Dichloropropene		10	0.50	ug/L	10		101	70-130		
Trichloroethene (TCE)		10	0.10	ug/L	10		101	70-130		
Trichlorofluoromethane		10	1.0	ug/L	10		102	70-130		
Vinyl chloride		9.4	0.050	ug/L	10		94	70-130		

LCS Dup (B9F0130-BSD1) **Prepared: 06/07/19 11:37 Analyzed: 06/07/19 11:37**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: 1,2-Dichlorobenzene-d4		*99*	*70-130*	*%*	*10*					
Surrogate: 4-Bromofluorobenzene		*100*	*70-130*	*%*	*10*					
Surrogate: Methyl tertiary butyl ether-d3		*96*	*70-130*	*%*	*10*					
1,1,1,2-Tetrachloroethane		9.9	1.0	ug/L	10		99	70-130	0.7	30
1,1,1-Trichloroethane		11	1.0	ug/L	10		106	70-130	6	30
1,1,2,2-Tetrachloroethane		9.4	0.50	ug/L	10		94	70-130	3	30
1,1,2-Trichloroethane		9.6	0.50	ug/L	10		96	70-130	0.8	30
1,1,2-Trichlorotrifluoroethane		11	1.0	ug/L	10		108	70-130	3	30
1,1-Dichloroethane		10	1.0	ug/L	10		104	70-130	4	30
1,1-Dichloroethene		11	1.0	ug/L	10		109	70-130	6	30
1,1-Dichloropropene		11	1.0	ug/L	10		108	70-130	4	30
1,2,3-Trichlorobenzene		9.6	1.0	ug/L	10		96	70-130	2	30
1,2,3-Trichloropropane		9.3	0.20	ug/L	10		93	70-130	3	30
1,2,4-Trichlorobenzene		10	1.0	ug/L	10		101	70-130	2	30
1,2,4-Trimethylbenzene		11	1.0	ug/L	10		109	70-130	2	30
1,2-Dibromo-3-chloropropane (DBCP)		10	1.0	ug/L	10		101	70-130	0.2	30
1,2-Dibromoethane (EDB)		10	0.50	ug/L	10		100	70-130	1	30
1,2-Dichlorobenzene		9.7	1.0	ug/L	10		97	70-130	0.5	30
1,2-Dichloroethane		9.3	0.20	ug/L	10		93	70-130	2	30
1,2-Dichloropropane		9.9	1.0	ug/L	10		99	70-130	2	30
1,3,5-Trimethylbenzene		11	1.0	ug/L	10		106	70-130	1	30
1,3-Dichlorobenzene		10	1.0	ug/L	10		101	70-130	1	30

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-02057 MPCA Freeway-Kraemers Mine 2019 MDH
Collector ID: None	Generated: 06/19/19 9:40

Results were produced by Minnesota Department of Health, except where noted.

Batch B9F0130 - EPA 5030B Preparation

LCS Dup (B9F0130-BSD1) **Prepared: 06/07/19 11:37 Analyzed: 06/07/19 11:37**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,3-Dichloropropane		9.7	1.0	ug/L	10		97	70-130	0.4	30
1,4-Dichlorobenzene		10	1.0	ug/L	10		100	70-130	0.5	30
2,2-Dichloropropane		11	1.0	ug/L	10		111	70-130	4	30
2-Chlorotoluene		10	1.0	ug/L	10		105	70-130	1	30
4-Chlorotoluene		10	1.0	ug/L	10		104	70-130	1	30
Acetone		100	20	ug/L	100		103	70-130	0.5	30
Allyl chloride		10	1.0	ug/L	10		102	70-130	2	30
Benzene		10	0.50	ug/L	10		104	70-130	5	30
Bromobenzene		9.8	1.0	ug/L	10		98	70-130	2	30
Bromochloromethane		10	1.0	ug/L	10		103	70-130	4	30
Bromodichloromethane		10	1.0	ug/L	10		101	70-130	2	30
Bromoform		11	1.0	ug/L	10		106	70-130	1	30
Bromomethane		10	2.0	ug/L	10		102	70-130	10	30
Carbon tetrachloride		11	0.20	ug/L	10		107	70-130	5	30
Chlorobenzene		10	1.0	ug/L	10		101	70-130	0.7	30
Chlorodibromomethane		10	0.50	ug/L	10		101	70-130	2	30
Chloroethane		10	1.0	ug/L	10		104	70-130	5	30
Chloroform		10	1.0	ug/L	10		103	70-130	2	30
Chloromethane		9.6	1.0	ug/L	10		96	70-130	5	30
cis-1,2-Dichloroethene		10	1.0	ug/L	10		102	70-130	4	30
cis-1,3-Dichloropropene		10	0.50	ug/L	10		100	70-130	3	30
Dibromomethane		9.5	1.0	ug/L	10		95	70-130	1	30
Dichlorodifluoromethane		10	1.0	ug/L	10		105	70-130	6	30
Dichlorofluoromethane		11	1.0	ug/L	10		106	70-130	6	30
Ethyl ether		10	1.0	ug/L	10		100	70-130	4	30
Ethylbenzene		10	1.0	ug/L	10		104	70-130	2	30
Hexachlorobutadiene		11	0.50	ug/L	10		110	70-130	3	30
Isopropylbenzene		11	1.0	ug/L	10		109	70-130	2	30
Methyl ethyl ketone (MEK)		52	10	ug/L	50		104	70-130	1	30
Methyl isobutyl ketone (MIBK)		53	5.0	ug/L	50		106	70-130	2	30
Methyl tertiary butyl ether (MTBE)		9.8	2.0	ug/L	10		98	70-130	2	30
Methylene chloride		9.7	1.0	ug/L	10		97	70-130	1	30
Naphthalene		10	1.0	ug/L	10		100	70-130	0.2	30
n-Butylbenzene		11	1.0	ug/L	10		107	70-130	1	30
n-Propylbenzene		11	1.0	ug/L	10		109	70-130	4	30

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-02057 MPCA Freeway-Kraemers Mine 2019 MDH
Collector ID: None	Generated: 06/19/19 9:40

Results were produced by Minnesota Department of Health, except where noted.

Batch B9F0130 - EPA 5030B Preparation

LCS Dup (B9F0130-BSD1) **Prepared: 06/07/19 11:37 Analyzed: 06/07/19 11:37**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
o-Xylene		10	1.0	ug/L	10		104	70-130	0.8	30
p&m-Xylene		11	1.0	ug/L	10		107	70-130	2	30
p-Isopropyltoluene		11	1.0	ug/L	10		110	70-130	4	30
sec-Butylbenzene		11	1.0	ug/L	10		109	70-130	3	30
Styrene		11	1.0	ug/L	10		106	70-130	2	30
tert-Butylbenzene		11	1.0	ug/L	10		108	70-130	2	30
Tetrachloroethene		10	1.0	ug/L	10		103	70-130	1	30
Tetrahydrofuran (THF)		97	10	ug/L	100		97	70-130	0.6	30
Toluene		11	1.0	ug/L	10		106	70-130	4	30
trans-1,2-Dichloroethene		11	1.0	ug/L	10		106	70-130	4	30
trans-1,3-Dichloropropene		9.9	0.50	ug/L	10		99	70-130	2	30
Trichloroethene (TCE)		11	0.10	ug/L	10		105	70-130	4	30
Trichlorofluoromethane		11	1.0	ug/L	10		107	70-130	6	30
Vinyl chloride		10	0.050	ug/L	10		100	70-130	6	30

Duplicate (B9F0130-DUP1) Source: 19E2198-03 **Prepared: 06/07/19 15:47 Analyzed: 06/07/19 15:47**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: 1,2-Dichlorobenzene-d4		*98*	*70-130*	*%*	*10*					
Surrogate: 4-Bromofluorobenzene		*103*	*70-130*	*%*	*10*					
Surrogate: Methyl tertiary butyl ether-d3		*100*	*70-130*	*%*	*10*					
1,1,1,2-Tetrachloroethane		<	1.0	ug/L		<				30
1,1,1-Trichloroethane		<	1.0	ug/L		<				30
1,1,2,2-Tetrachloroethane		<	0.50	ug/L		<				30
1,1,2-Trichloroethane		<	0.50	ug/L		<				30
1,1,2-Trichlorotrifluoroethane		<	1.0	ug/L		<				30
1,1-Dichloroethane		<	1.0	ug/L		<				30
1,1-Dichloroethene		<	1.0	ug/L		<				30
1,1-Dichloropropene		<	1.0	ug/L		<				30
1,2,3-Trichlorobenzene		<	1.0	ug/L		<				30
1,2,3-Trichloropropane		<	0.20	ug/L		<				30
1,2,4-Trichlorobenzene		<	1.0	ug/L		<				30
1,2,4-Trimethylbenzene		<	1.0	ug/L		<				30
1,2-Dibromo-3-chloropropane (DBCP)		<	1.0	ug/L		<				30

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-02057 MPCA Freeway-Kraemers Mine 2019 MDH
Collector ID: None	Generated: 06/19/19 9:40

Results were produced by Minnesota Department of Health, except where noted.

Batch B9F0130 - EPA 5030B Preparation

Duplicate (B9F0130-DUP1) Source: 19E2198-03 **Prepared: 06/07/19 15:47 Analyzed: 06/07/19 15:47**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,2-Dibromoethane (EDB)		<	0.50	ug/L		<				30
1,2-Dichlorobenzene		<	1.0	ug/L		<				30
1,2-Dichloroethane		<	0.20	ug/L		<				30
1,2-Dichloropropane		<	1.0	ug/L		<				30
1,3,5-Trimethylbenzene		<	1.0	ug/L		<				30
1,3-Dichlorobenzene		<	1.0	ug/L		<				30
1,3-Dichloropropane		<	1.0	ug/L		<				30
1,4-Dichlorobenzene		0.29	1.0	ug/L		<			7	30
2,2-Dichloropropane		<	1.0	ug/L		<				30
2-Chlorotoluene		<	1.0	ug/L		<				30
4-Chlorotoluene		<	1.0	ug/L		<				30
Acetone		<	20	ug/L		<				30
Allyl chloride		<	1.0	ug/L		<				30
Benzene		0.11	0.50	ug/L		<			0	30
Bromobenzene		<	1.0	ug/L		<				30
Bromochloromethane		<	1.0	ug/L		<				30
Bromodichloromethane		<	1.0	ug/L		<				30
Bromoform		<	1.0	ug/L		<				30
Bromomethane		<	2.0	ug/L		<				30
Carbon tetrachloride		<	0.20	ug/L		<				30
Chlorobenzene		<	1.0	ug/L		<				30
Chlorodibromomethane		<	0.50	ug/L		<				30
Chloroethane		<	1.0	ug/L		<				30
Chloroform		<	1.0	ug/L		<				30
Chloromethane		<	1.0	ug/L		<				30
cis-1,2-Dichloroethene		<	1.0	ug/L		<				30
cis-1,3-Dichloropropene		<	0.50	ug/L		<				30
Dibromomethane		<	1.0	ug/L		<				30
Dichlorodifluoromethane		<	1.0	ug/L		<				30
Dichlorofluoromethane		<	1.0	ug/L		<				30
Ethyl ether		<	1.0	ug/L		<				30
Ethylbenzene		<	1.0	ug/L		<				30
Hexachlorobutadiene		<	0.50	ug/L		<				30
Isopropylbenzene		<	1.0	ug/L		<				30
Methyl ethyl ketone (MEK)		<	10	ug/L		<				30

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-02057 MPCA Freeway-Kraemers Mine 2019 MDH
Collector ID: None	Generated: 06/19/19 9:40

Results were produced by Minnesota Department of Health, except where noted.

Batch B9F0130 - EPA 5030B Preparation

Duplicate (B9F0130-DUP1) Source: 19E2198-03 **Prepared: 06/07/19 15:47 Analyzed: 06/07/19 15:47**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Methyl isobutyl ketone (MIBK)		<	5.0	ug/L		<				30
Methyl tertiary butyl ether (MTBE)		<	2.0	ug/L		<				30
Methylene chloride		<	1.0	ug/L		<				30
Naphthalene		<	1.0	ug/L		<				30
n-Butylbenzene		<	1.0	ug/L		<				30
n-Propylbenzene		<	1.0	ug/L		<				30
o-Xylene		<	1.0	ug/L		<				30
p&m-Xylene		<	1.0	ug/L		<				30
p-Isopropyltoluene		<	1.0	ug/L		<				30
sec-Butylbenzene		<	1.0	ug/L		<				30
Styrene		<	1.0	ug/L		<				30
tert-Butylbenzene		<	1.0	ug/L		<				30
Tetrachloroethene		<	1.0	ug/L		<				30
Tetrahydrofuran (THF)		<	10	ug/L		<				30
Toluene		<	1.0	ug/L		<				30
trans-1,2-Dichloroethene		<	1.0	ug/L		<				30
trans-1,3-Dichloropropene		<	0.50	ug/L		<				30
Trichloroethene (TCE)		0.060	0.10	ug/L		<			15	30
Trichlorofluoromethane		<	1.0	ug/L		<				30
Vinyl chloride		<	0.050	ug/L		<				30

Matrix Spike (B9F0130-MS1) Source: 19E2198-02 **Prepared: 06/07/19 12:05 Analyzed: 06/07/19 12:05**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: 1,2-Dichlorobenzene-d4		*98*	*70-130*	*%*	*10*					
Surrogate: 4-Bromofluorobenzene		*102*	*70-130*	*%*	*10*					
Surrogate: Methyl tertiary butyl ether-d3		*96*	*70-130*	*%*	*10*					
1,1,1,2-Tetrachloroethane		10	1.0	ug/L	10	<	100	70-130		
1,1,1-Trichloroethane		11	1.0	ug/L	10	<	108	70-130		
1,1,2,2-Tetrachloroethane		9.5	0.50	ug/L	10	<	95	70-130		
1,1,2-Trichloroethane		9.6	0.50	ug/L	10	<	96	70-130		
1,1,2-Trichlorotrifluoroethane		11	1.0	ug/L	10	<	115	70-130		
1,1-Dichloroethane		11	1.0	ug/L	10	<	105	70-130		
1,1-Dichloroethene		11	1.0	ug/L	10	<	109	70-130		
1,1-Dichloropropene		11	1.0	ug/L	10	<	110	70-130		

FINAL REPORT

Report ID: 06192019 94030

Authorized by:

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Public Health Laboratory
Environmental Laboratory Section
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St. Paul, MN 55164-0899
651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-02057 MPCA Freeway-Kraemers Mine 2019 MDH
Collector ID: None	Generated: 06/19/19 9:40

Results were produced by Minnesota Department of Health, except where noted.

Batch B9F0130 - EPA 5030B Preparation

Matrix Spike (B9F0130-MS1) Source: 19E2198-02 **Prepared: 06/07/19 12:05 Analyzed: 06/07/19 12:05**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,2,3-Trichlorobenzene		10	1.0	ug/L	10	<	100	70-130		
1,2,3-Trichloropropane		9.1	0.20	ug/L	10	<	91	70-130		
1,2,4-Trichlorobenzene		10	1.0	ug/L	10	<	102	70-130		
1,2,4-Trimethylbenzene		11	1.0	ug/L	10	<	110	70-130		
1,2-Dibromo-3-chloropropane (DBCP)		9.7	1.0	ug/L	10	<	97	70-130		
1,2-Dibromoethane (EDB)		10	0.50	ug/L	10	<	101	70-130		
1,2-Dichlorobenzene		10	1.0	ug/L	10	<	100	70-130		
1,2-Dichloroethane		9.4	0.20	ug/L	10	<	94	70-130		
1,2-Dichloropropane		10	1.0	ug/L	10	<	100	70-130		
1,3,5-Trimethylbenzene		11	1.0	ug/L	10	<	109	70-130		
1,3-Dichlorobenzene		10	1.0	ug/L	10	<	102	70-130		
1,3-Dichloropropane		9.7	1.0	ug/L	10	<	97	70-130		
1,4-Dichlorobenzene		11	1.0	ug/L	10	<	104	70-130		
2,2-Dichloropropane		12	1.0	ug/L	10	<	116	70-130		
2-Chlorotoluene		11	1.0	ug/L	10	<	107	70-130		
4-Chlorotoluene		11	1.0	ug/L	10	<	107	70-130		
Acetone		98	20	ug/L	100	<	98	70-130		
Allyl chloride		10	1.0	ug/L	10	<	101	70-130		
Benzene		11	0.50	ug/L	10	<	107	70-130		
Bromobenzene		9.9	1.0	ug/L	10	<	99	70-130		
Bromochloromethane		10	1.0	ug/L	10	<	102	70-130		
Bromodichloromethane		10	1.0	ug/L	10	<	101	70-130		
Bromoform		10	1.0	ug/L	10	<	100	70-130		
Bromomethane		10	2.0	ug/L	10	<	105	70-130		
Carbon tetrachloride		11	0.20	ug/L	10	<	109	70-130		
Chlorobenzene		11	1.0	ug/L	10	<	104	70-130		
Chlorodibromomethane		10	0.50	ug/L	10	<	100	70-130		
Chloroethane		11	1.0	ug/L	10	<	108	70-130		
Chloroform		10	1.0	ug/L	10	<	104	70-130		
Chloromethane		9.9	1.0	ug/L	10	<	99	70-130		
cis-1,2-Dichloroethene		10	1.0	ug/L	10	<	104	70-130		
cis-1,3-Dichloropropene		9.8	0.50	ug/L	10	<	98	70-130		
Dibromomethane		9.5	1.0	ug/L	10	<	95	70-130		
Dichlorodifluoromethane		11	1.0	ug/L	10	<	109	70-130		
Dichlorofluoromethane		11	1.0	ug/L	10	<	110	70-130		

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Paul Moyer, Environmental Laboratory Manager
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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-02057 MPCA Freeway-Kraemers Mine 2019 MDH
Collector ID: None	Generated: 06/19/19 9:40

Results were produced by Minnesota Department of Health, except where noted.

Batch B9F0130 - EPA 5030B Preparation

Matrix Spike (B9F0130-MS1) Source: 19E2198-02 **Prepared: 06/07/19 12:05 Analyzed: 06/07/19 12:05**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Ethyl ether		10	1.0	ug/L	10	<	101	70-130		
Ethylbenzene		11	1.0	ug/L	10	<	108	70-130		
Hexachlorobutadiene		11	0.50	ug/L	10	<	115	70-130		
Isopropylbenzene		12	1.0	ug/L	10	<	115	70-130		
Methyl ethyl ketone (MEK)		50	10	ug/L	50	<	100	70-130		
Methyl isobutyl ketone (MIBK)		53	5.0	ug/L	50	<	107	70-130		
Methyl tertiary butyl ether (MTBE)		9.7	2.0	ug/L	10	<	97	70-130		
Methylene chloride		10	1.0	ug/L	10	<	101	70-130		
Naphthalene		10	1.0	ug/L	10	<	102	70-130		
n-Butylbenzene		11	1.0	ug/L	10	<	112	70-130		
n-Propylbenzene		11	1.0	ug/L	10	<	110	70-130		
o-Xylene		11	1.0	ug/L	10	<	109	70-130		
p&m-Xylene		11	1.0	ug/L	10	<	114	70-130		
p-Isopropyltoluene		11	1.0	ug/L	10	<	114	70-130		
sec-Butylbenzene		12	1.0	ug/L	10	<	116	70-130		
Styrene		11	1.0	ug/L	10	<	109	70-130		
tert-Butylbenzene		11	1.0	ug/L	10	<	112	70-130		
Tetrachloroethene		11	1.0	ug/L	10	<	110	70-130		
Tetrahydrofuran (THF)		91	10	ug/L	100	<	91	70-130		
Toluene		11	1.0	ug/L	10	<	109	70-130		
trans-1,2-Dichloroethene		11	1.0	ug/L	10	<	106	70-130		
trans-1,3-Dichloropropene		9.7	0.50	ug/L	10	<	97	70-130		
Trichloroethene (TCE)		11	0.10	ug/L	10	<	108	70-130		
Trichlorofluoromethane		11	1.0	ug/L	10	<	111	70-130		
Vinyl chloride		10	0.050	ug/L	10	<	104	70-130		

Authorized by:

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-02057 MPCA Freeway-Kraemers Mine 2019 MDH
Collector ID: None	Generated: 06/19/19 9:40

Results were produced by Minnesota Department of Health, except where noted.

Batch B9F0117 - 1,4 Dioxane in Water SPE

Blank (B9F0117-BLK1) **Prepared: 06/09/19 08:00 Analyzed: 06/09/19 14:52**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,4-Dioxane	Q9	<	0.050	ug/L						

LCS (B9F0117-BS1) **Prepared: 06/09/19 08:00 Analyzed: 06/09/19 15:08**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,4-Dioxane	Q9	0.22	0.052	ug/L	0.20		105	80-120		

LCS Dup (B9F0117-BSD1) **Prepared: 06/09/19 08:00 Analyzed: 06/09/19 15:25**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,4-Dioxane	Q9	0.23	0.051	ug/L	0.20		112	80-120	6	20

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Public Health Laboratory, Minnesota Department of Health

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601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-02057 MPCA Freeway-Kraemers Mine 2019 MDH
Collector ID: None	Generated: 06/19/19 9:40

Results were produced by Minnesota Department of Health, except where noted.

Batch B9F0037 - PFCs Preparation

Blank (B9F0037-BLK1) **Prepared: 06/04/19 15:40 Analyzed: 06/04/19 15:40**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		<	0.050	ug/L						
Perfluorobutanoic acid (PFBA)		<	0.050	ug/L						
Perfluorohexanesulfonate (PFHxS)		<	0.025	ug/L						
Perfluorohexanoic acid (PFHxA)		<	0.050	ug/L						
Perfluorooctanesulfonate (PFOS)		<	0.015	ug/L						
Perfluorooctanoic acid (PFOA)		<	0.035	ug/L						
Perfluoropentanoic acid (PFPeA)		<	0.050	ug/L						

Blank (B9F0037-BLK2) **Prepared: 06/04/19 19:08 Analyzed: 06/04/19 19:08**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		<	0.050	ug/L						
Perfluorobutanoic acid (PFBA)		<	0.050	ug/L						
Perfluorohexanesulfonate (PFHxS)		<	0.025	ug/L						
Perfluorohexanoic acid (PFHxA)		<	0.050	ug/L						
Perfluorooctanesulfonate (PFOS)		<	0.015	ug/L						
Perfluorooctanoic acid (PFOA)		<	0.035	ug/L						
Perfluoropentanoic acid (PFPeA)		<	0.050	ug/L						

LCS (B9F0037-BS1) **Prepared: 06/04/19 15:31 Analyzed: 06/04/19 15:31**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.55	0.050	ug/L	0.50		110	80-120		
Perfluorobutanoic acid (PFBA)		0.51	0.050	ug/L	0.5		101	80-120		
Perfluorohexanesulfonate (PFHxS)		0.53	0.025	ug/L	0.50		106	80-120		
Perfluorohexanoic acid (PFHxA)		0.49	0.050	ug/L	0.5		99	80-120		
Perfluorooctanesulfonate (PFOS)		0.50	0.015	ug/L	0.49		99	80-120		
Perfluorooctanoic acid (PFOA)		0.48	0.035	ug/L	0.5		96	80-120		
Perfluoropentanoic acid (PFPeA)		0.51	0.050	ug/L	0.5		101	80-120		

LCS Dup (B9F0037-BSD1) **Prepared: 06/04/19 18:59 Analyzed: 06/04/19 18:59**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.50	0.050	ug/L	0.50		100	80-120	9	20
Perfluorobutanoic acid (PFBA)		0.51	0.050	ug/L	0.5		101	80-120	0.1	20
Perfluorohexanesulfonate (PFHxS)		0.52	0.025	ug/L	0.50		105	80-120	1	20

FINAL REPORT

Report ID: 06192019 94030

Authorized by:

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Paul Moyer, Environmental Laboratory Manager
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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-02057 MPCA Freeway-Kraemers Mine 2019 MDH
Collector ID: None	Generated: 06/19/19 9:40

Results were produced by Minnesota Department of Health, except where noted.

Batch B9F0037 - PFCs Preparation

LCS Dup (B9F0037-BSD1) **Prepared: 06/04/19 18:59 Analyzed: 06/04/19 18:59**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorohexanoic acid (PFHxA)		0.54	0.050	ug/L	0.5		108	80-120	9	20
Perfluorooctanesulfonate (PFOS)		0.52	0.015	ug/L	0.49		104	80-120	5	20
Perfluorooctanoic acid (PFOA)		0.50	0.035	ug/L	0.5		100	80-120	3	20
Perfluoropentanoic acid (PFPeA)		0.52	0.050	ug/L	0.5		104	80-120	2	20

Matrix Spike (B9F0037-MS1) Source: 19E2061-07 **Prepared: 06/04/19 15:56 Analyzed: 06/04/19 15:56**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.54	0.050	ug/L	0.50	<	108	70-130		
Perfluorobutanoic acid (PFBA)		1.4	0.050	ug/L	0.5	0.82	107	70-130		
Perfluorohexanesulfonate (PFHxS)		0.53	0.025	ug/L	0.50	<	106	70-130		
Perfluorohexanoic acid (PFHxA)		0.52	0.050	ug/L	0.5	<	103	70-130		
Perfluorooctanesulfonate (PFOS)		0.52	0.015	ug/L	0.49	<	105	70-130		
Perfluorooctanoic acid (PFOA)		0.49	0.035	ug/L	0.5	<	98	70-130		
Perfluoropentanoic acid (PFPeA)		0.53	0.050	ug/L	0.5	<	102	70-130		

Matrix Spike Dup (B9F0037-MSD1) Source: 19E2061-07 **Prepared: 06/04/19 16:05 Analyzed: 06/04/19 16:05**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.51	0.050	ug/L	0.50	<	102	70-130	6	20
Perfluorobutanoic acid (PFBA)		1.3	0.050	ug/L	0.5	0.82	101	70-130	2	20
Perfluorohexanesulfonate (PFHxS)		0.51	0.025	ug/L	0.50	<	102	70-130	4	20
Perfluorohexanoic acid (PFHxA)		0.50	0.050	ug/L	0.5	<	100	70-130	3	20
Perfluorooctanesulfonate (PFOS)		0.50	0.015	ug/L	0.49	<	101	70-130	4	20
Perfluorooctanoic acid (PFOA)		0.51	0.035	ug/L	0.5	<	103	70-130	5	20
Perfluoropentanoic acid (PFPeA)		0.53	0.050	ug/L	0.5	<	101	70-130	0.8	20

Authorized by:

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
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651-201-5300

Final Report
Quality Control

Data Qualifiers and Definitions

Q9	Insufficient sample received to meet method quality control requirements.
J	Analyte was present between the method detection limit and reporting limit and should be considered an estimated value.
D2	Sample required dilution due to high concentration of target analyte(s). Reporting limit has been raised.
Dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
%REC	Percent Recovery

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Protecting, maintaining and improving the health of all Minnesotans

Report Date: 6/19/19
Client Name: QW - MPCA - Closed Landfill Assessment
Project Code: QW
Project Name: Closed Landfill Assessment

Work Order Number: 19E2198

Report To: QW - MPCA - Closed Landfill Assessment
Mark Umholtz
520 Lafayette Rd.
Saint Paul, MN 55155

The MDH Public Health Laboratory performs chemical, bacteriological and radiological analyses of environmental samples including water, waste water, sediment, air, soil and hazardous material. The laboratory provides testing services in accordance with standard operating procedures referencing approved methodology as defined in Standard Methods for the Examination of Water and Wastewater, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods: EPA SW-846, and 40 Code of Federal Regulation (CFR) parts 136, 141, and 261. In cases where analytes of interest do not have corresponding EPA approved methodology, the MDH Public Health Laboratory uses in-house methods that have undergone rigorous validation and documentation.

The results within this report are in compliance with the terms and conditions stated in the standard operating procedures, reference methodologies, and quality assurance project plan; unless otherwise narrated in the attached report.

Release of the data contained in this report has been authorized by laboratory management and is verified with the following signature affirmation. Thank you for using the MDH Public Health Laboratory.

Sincerely,

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Summary of Samples Received

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 06/19/19 9:37

Work Order Comment: Samples were received in proper condition unless otherwise specified in the receiving comments.

Field ID	MDH Sample Number	Matrix	Date & Time Collected	Date & Time Received	Receipt °C
Trip Blank 5	19E2198-01	QC-BLANK	05/28/19 8:00	05/30/19 10:19	4.1
834657	19E2198-02	Wtr-Ground	05/28/19 10:00	05/30/19 10:19	4.1
834656	19E2198-03	Wtr-Ground	05/28/19 12:00	05/30/19 10:19	4.1
834655	19E2198-04	Wtr-Ground	05/28/19 14:00	05/30/19 10:19	4.1

Field ID	MDH Sample Number	Receiving Comments
834657	19E2198-02	(MW-13)
834656	19E2198-03	(MW-12)
834655	19E2198-04	(MW-11)

Authorized by:

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

Minnesota Pollution Control Agency

Chain-of-Custody Form revison 2013.0909

Work Order Number: 19E2198 | COC Type: Standard | Page
Turnaround Time: Standard | COC ID:

PROJECT/CLIENT INFO			LABORATORY	
Facility Code:	MN SW-057	Program Code (MDH Lab Only): QW	Lab Name:	Minnesota Department of Health
Project Name:	19-01567 MPCA Freeway Landfill 2019 MDH	Project Task Code: PRJ07786	Address:	601 Robert Street N.
Project Manager:	Mark Umholtz 651-757-2308			St. Paul MN 55155
Potential Hazard?	If yes, add information to Sampler Comments Section		Phone No:	651-201-5058

SAMPLE DETAILS

SAMPLE TYPE CODES
Sample=Routine Sample
S-IVP=Integrated Vertical Profile Sample
S-CWOP=Composite Sample
QC-FB=Field Blank Sample
QC-FR=Field Replicate Sample
QC-TB=Trip Blank Sample

LAB MATRIX CODES
DW=Drinking Water
NW=Non-potable Water
SD=Soil/Solid
WP=Wipe
AR=Air
BL=Biological Material
OT=Other
TS=Tissue

FIELD MATRIX CODES
Wtr-Ground=Groundwater
Wtr-Surf=Surface Water
QC-BLANK=Artificial Blank Water
Leachate=Leachate Sample

ANALYSIS REQUESTED

Location Identifier	Sample Type	Date	Time	Start Depth, in meters	End Depth, in meters	Grab (G) or Composite (C) Sample	Lab Matrix Code	Field Matrix Code	AIS	Sampler Comments (filter volume, special handling, etc.)	# of Cont	PRESERV.	ANALYSIS	VOCs EPA 8260D	PFAS by MDH555	1,4 Dioxane				Lab Sample No.	#
												HCl		None	None						
TripBlank5	QC-TB	5/28/19	0800			G	NW	QC-BLANK	N		3			X						-01	1
834657	Sample	5/28/19	1000			G	NW	Wtr-Ground	N	(MW-13)	5			X	X	X				-02	2
834656	Sample	5/28/19	1200			G	NW	Wtr-Ground	N	(MW-12)	5			X	X	X				-03	3
834655	Sample	5/28/19	1400			G	NW	Wtr-Ground	N	(MW-11)	5			X	X	X				-04	4
									N												5
									N												6
									N												7
									N												8
									N												9
									N												10

DVA 5/29/19

Sampled By: David Anderson | Sampler's Signature: David Anderson | Phone #:

Receiving Comments:

Relinquished By/Affiliation	Date/Time	Accepted By/ Affiliation	Date/Time
(Sampler) David Anderson / Pace Analytical	5/29/19 1300	MDH	5-30-19 1019

DEPARTMENT OF HEALTH

Sample Condition Upon Receipt

Minnesota Department of Health Public Health Laboratory

Data Entry Worksheet

19E2198

Parcel Information

Date & time of receipt: MAY 30'19 10:19

Courier: ☒ Walk-in ☐ FedEx ☐ Spee-Dee ☐ UPS ☐ USPS ☐ Other courier _____

Tracking # _____

After hours drop-off: ☐ Refrigerator (207) (186) ( ) ☐ Freezer (185) ( ) ☐ Unrefrigerated

Parcel: ☒ Plastic cooler ☐ Styrofoam/cardboard cooler ☐ Cardboard box ☐ Envelope ☐ Plastic can ☐ None ☐ Other _____ Info: _____

Custody seals present: ☒ No; ☐ Yes, If "Yes" Custody seals intact: ☐ Yes; ☐ No _____

Custody seal # _____ **Evidentiary samples identified:** ☒ No; ☐ Yes

Packaging & Temperature Information

Packing material: ☐ Bubble wrap ☐ Styrofoam ☐ Paper ☐ None ☐ Other _____

Cooling material: ☐ Wet ice (loose) ☒ Wet ice pack #(9) ☐ Gel pack #( ) ☐ Dry ice ☐ None ☐ Other _____

Condition of cooling material: ☒ Solid ☐ Partially frozen ☐ Liquid; Liquid temperature: _____ °C ☐ N/A

Representative sample temperature: 4.1 °C **IR thermometer instrument used:** B10

Samples received without evidence of freezing: ☒ Yes; ☐ No _____

Initials of person receiving parcel: NB

Chain of Custody, Sample Container & Analysis Information

Chain of custody received with sample containers: ☒ Yes; ☐ No

Chain of custody type: ☒ Standard ☐ Civil ☐ Criminal ☐ Priority/Emergency ☐ Unknown

All sample containers are unique to a sample point listed on the chain of custody: ☒ Yes; ☐ No _____

All sample containers have been collected prior to the expiration date listed on container label:

☒ Yes; ☐ No; ☐ Unknown _____

All sample containers received intact: ☒ Yes; ☐ No _____

All sample containers are appropriate for requested analysis: ☒ Yes; ☐ No; ☐ Unknown _____

All analysis have been received within the specified holding time for analysis: ☒ Yes; ☐ No ☐ Unknown _____

Rad Chem. request received: ☐ Yes; ☒ No, If "Yes" sample survey results: ☐ < 0.5 mrem/hr ☐ ≥ 0.5 mrem/hr

Rad Chem. meter calibration date verified: ☐ Yes; ☒ No

Sample submission details are entered in the Environmental Laboratory LIMS.

Initials of person logging in the work order request into LIMS: _____

DOC-84
Revision: 5

Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Case Narrative

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name: MN SW-057
Collected by: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 06/19/2019 9:36

Except where noted in this report, no additional comments are needed for this Work Order.

Authorized by:

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 06/19/19 9:37

MDH Sample Number: 19E2198-01

Location ID: Trip Blank 5
Field Name: None
Sampling Point: None
QA Type: Trip Blank

Collect Date: 05/28/19
Collect Time: 8:00
Matrix: QC-BLANK

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Surrogate: 1,2-Dichlorobenzene-d4		*100*	*70-130*	%	*1*	*B9F0130*	*06/07/19 13:56*	*06/07/19 13:56*	*EPA 8260D*
Surrogate: 4-Bromofluorobenzene		*104*	*70-130*	%	*1*	*B9F0130*	*06/07/19 13:56*	*06/07/19 13:56*	*EPA 8260D*
Surrogate: Methyl tertiary butyl ether-d3		*98*	*70-130*	%	*1*	*B9F0130*	*06/07/19 13:56*	*06/07/19 13:56*	*EPA 8260D*
1,1,1,2-Tetrachloroethane		<	1.0	ug/L	1	B9F0130	06/07/19 13:56	06/07/19 13:56	EPA 8260D
1,1,1-Trichloroethane		<	1.0	ug/L	1	B9F0130	06/07/19 13:56	06/07/19 13:56	EPA 8260D
1,1,2,2-Tetrachloroethane		<	0.50	ug/L	1	B9F0130	06/07/19 13:56	06/07/19 13:56	EPA 8260D
1,1,2-Trichloroethane		<	0.50	ug/L	1	B9F0130	06/07/19 13:56	06/07/19 13:56	EPA 8260D
1,1,2-Trichlorotrifluoroethane		<	1.0	ug/L	1	B9F0130	06/07/19 13:56	06/07/19 13:56	EPA 8260D
1,1-Dichloroethane		<	1.0	ug/L	1	B9F0130	06/07/19 13:56	06/07/19 13:56	EPA 8260D
1,1-Dichloroethene		<	1.0	ug/L	1	B9F0130	06/07/19 13:56	06/07/19 13:56	EPA 8260D
1,1-Dichloropropene		<	1.0	ug/L	1	B9F0130	06/07/19 13:56	06/07/19 13:56	EPA 8260D
1,2,3-Trichlorobenzene		<	1.0	ug/L	1	B9F0130	06/07/19 13:56	06/07/19 13:56	EPA 8260D
1,2,3-Trichloropropane		<	0.20	ug/L	1	B9F0130	06/07/19 13:56	06/07/19 13:56	EPA 8260D
1,2,4-Trichlorobenzene		<	1.0	ug/L	1	B9F0130	06/07/19 13:56	06/07/19 13:56	EPA 8260D
1,2,4-Trimethylbenzene		<	1.0	ug/L	1	B9F0130	06/07/19 13:56	06/07/19 13:56	EPA 8260D
1,2-Dibromo-3-chloropropane (DBCP)		<	1.0	ug/L	1	B9F0130	06/07/19 13:56	06/07/19 13:56	EPA 8260D
1,2-Dibromoethane (EDB)		<	0.50	ug/L	1	B9F0130	06/07/19 13:56	06/07/19 13:56	EPA 8260D
1,2-Dichlorobenzene		<	1.0	ug/L	1	B9F0130	06/07/19 13:56	06/07/19 13:56	EPA 8260D
1,2-Dichloroethane		<	0.20	ug/L	1	B9F0130	06/07/19 13:56	06/07/19 13:56	EPA 8260D
1,2-Dichloropropane		<	1.0	ug/L	1	B9F0130	06/07/19 13:56	06/07/19 13:56	EPA 8260D
1,3,5-Trimethylbenzene		<	1.0	ug/L	1	B9F0130	06/07/19 13:56	06/07/19 13:56	EPA 8260D
1,3-Dichlorobenzene		<	1.0	ug/L	1	B9F0130	06/07/19 13:56	06/07/19 13:56	EPA 8260D
1,3-Dichloropropane		<	1.0	ug/L	1	B9F0130	06/07/19 13:56	06/07/19 13:56	EPA 8260D
1,4-Dichlorobenzene		<	1.0	ug/L	1	B9F0130	06/07/19 13:56	06/07/19 13:56	EPA 8260D
2,2-Dichloropropane		<	1.0	ug/L	1	B9F0130	06/07/19 13:56	06/07/19 13:56	EPA 8260D

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 06/19/19 9:37

MDH Sample Number: 19E2198-01

Location ID: Trip Blank 5
Field Name: None
Sampling Point: None
QA Type: Trip Blank

Collect Date: 05/28/19
Collect Time: 8:00
Matrix: QC-BLANK

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
2-Chlorotoluene		<	1.0	ug/L	1	B9F0130	06/07/19 13:56	06/07/19 13:56	EPA 8260D
4-Chlorotoluene		<	1.0	ug/L	1	B9F0130	06/07/19 13:56	06/07/19 13:56	EPA 8260D
Acetone		<	20	ug/L	1	B9F0130	06/07/19 13:56	06/07/19 13:56	EPA 8260D
Allyl chloride		<	1.0	ug/L	1	B9F0130	06/07/19 13:56	06/07/19 13:56	EPA 8260D
Benzene		<	0.50	ug/L	1	B9F0130	06/07/19 13:56	06/07/19 13:56	EPA 8260D
Bromobenzene		<	1.0	ug/L	1	B9F0130	06/07/19 13:56	06/07/19 13:56	EPA 8260D
Bromochloromethane		<	1.0	ug/L	1	B9F0130	06/07/19 13:56	06/07/19 13:56	EPA 8260D
Bromodichloromethane		<	1.0	ug/L	1	B9F0130	06/07/19 13:56	06/07/19 13:56	EPA 8260D
Bromoform		<	1.0	ug/L	1	B9F0130	06/07/19 13:56	06/07/19 13:56	EPA 8260D
Bromomethane		<	2.0	ug/L	1	B9F0130	06/07/19 13:56	06/07/19 13:56	EPA 8260D
Carbon tetrachloride		<	0.20	ug/L	1	B9F0130	06/07/19 13:56	06/07/19 13:56	EPA 8260D
Chlorobenzene		<	1.0	ug/L	1	B9F0130	06/07/19 13:56	06/07/19 13:56	EPA 8260D
Chlorodibromomethane		<	0.50	ug/L	1	B9F0130	06/07/19 13:56	06/07/19 13:56	EPA 8260D
Chloroethane		<	1.0	ug/L	1	B9F0130	06/07/19 13:56	06/07/19 13:56	EPA 8260D
Chloroform		<	1.0	ug/L	1	B9F0130	06/07/19 13:56	06/07/19 13:56	EPA 8260D
Chloromethane		<	1.0	ug/L	1	B9F0130	06/07/19 13:56	06/07/19 13:56	EPA 8260D
cis-1,2-Dichloroethene		<	1.0	ug/L	1	B9F0130	06/07/19 13:56	06/07/19 13:56	EPA 8260D
cis-1,3-Dichloropropene		<	0.50	ug/L	1	B9F0130	06/07/19 13:56	06/07/19 13:56	EPA 8260D
Dibromomethane		<	1.0	ug/L	1	B9F0130	06/07/19 13:56	06/07/19 13:56	EPA 8260D
Dichlorodifluoromethane		<	1.0	ug/L	1	B9F0130	06/07/19 13:56	06/07/19 13:56	EPA 8260D
Dichlorofluoromethane		<	1.0	ug/L	1	B9F0130	06/07/19 13:56	06/07/19 13:56	EPA 8260D
Ethyl ether		<	1.0	ug/L	1	B9F0130	06/07/19 13:56	06/07/19 13:56	EPA 8260D
Ethylbenzene		<	1.0	ug/L	1	B9F0130	06/07/19 13:56	06/07/19 13:56	EPA 8260D
Hexachlorobutadiene		<	0.50	ug/L	1	B9F0130	06/07/19 13:56	06/07/19 13:56	EPA 8260D
Isopropylbenzene		<	1.0	ug/L	1	B9F0130	06/07/19 13:56	06/07/19 13:56	EPA 8260D
Methyl ethyl ketone (MEK)		<	10	ug/L	1	B9F0130	06/07/19 13:56	06/07/19 13:56	EPA 8260D
Methyl isobutyl ketone (MIBK)		<	5.0	ug/L	1	B9F0130	06/07/19 13:56	06/07/19 13:56	EPA 8260D

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 06/19/19 9:37

MDH Sample Number: 19E2198-01

Location ID: Trip Blank 5
Field Name: None
Sampling Point: None
QA Type: Trip Blank

Collect Date: 05/28/19
Collect Time: 8:00
Matrix: QC-BLANK

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Methyl tertiary butyl ether (MTBE)		<	2.0	ug/L	1	B9F0130	06/07/19 13:56	06/07/19 13:56	EPA 8260D
Methylene chloride		<	1.0	ug/L	1	B9F0130	06/07/19 13:56	06/07/19 13:56	EPA 8260D
Naphthalene		<	1.0	ug/L	1	B9F0130	06/07/19 13:56	06/07/19 13:56	EPA 8260D
n-Butylbenzene		<	1.0	ug/L	1	B9F0130	06/07/19 13:56	06/07/19 13:56	EPA 8260D
n-Propylbenzene		<	1.0	ug/L	1	B9F0130	06/07/19 13:56	06/07/19 13:56	EPA 8260D
o-Xylene		<	1.0	ug/L	1	B9F0130	06/07/19 13:56	06/07/19 13:56	EPA 8260D
p&m-Xylene		<	1.0	ug/L	1	B9F0130	06/07/19 13:56	06/07/19 13:56	EPA 8260D
p-Isopropyltoluene		<	1.0	ug/L	1	B9F0130	06/07/19 13:56	06/07/19 13:56	EPA 8260D
sec-Butylbenzene		<	1.0	ug/L	1	B9F0130	06/07/19 13:56	06/07/19 13:56	EPA 8260D
Styrene		<	1.0	ug/L	1	B9F0130	06/07/19 13:56	06/07/19 13:56	EPA 8260D
tert-Butylbenzene		<	1.0	ug/L	1	B9F0130	06/07/19 13:56	06/07/19 13:56	EPA 8260D
Tetrachloroethene		<	1.0	ug/L	1	B9F0130	06/07/19 13:56	06/07/19 13:56	EPA 8260D
Tetrahydrofuran (THF)		<	10	ug/L	1	B9F0130	06/07/19 13:56	06/07/19 13:56	EPA 8260D
Toluene		<	1.0	ug/L	1	B9F0130	06/07/19 13:56	06/07/19 13:56	EPA 8260D
trans-1,2-Dichloroethene		<	1.0	ug/L	1	B9F0130	06/07/19 13:56	06/07/19 13:56	EPA 8260D
trans-1,3-Dichloropropene		<	0.50	ug/L	1	B9F0130	06/07/19 13:56	06/07/19 13:56	EPA 8260D
Trichloroethene (TCE)		<	0.10	ug/L	1	B9F0130	06/07/19 13:56	06/07/19 13:56	EPA 8260D
Trichlorofluoromethane		<	1.0	ug/L	1	B9F0130	06/07/19 13:56	06/07/19 13:56	EPA 8260D
Vinyl chloride		<	0.050	ug/L	1	B9F0130	06/07/19 13:56	06/07/19 13:56	EPA 8260D

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 06/19/19 9:37

MDH Sample Number: 19E2198-02

Location ID: 834657
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 05/28/19
Collect Time: 10:00
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: (MW-13)

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Surrogate: 1,2-Dichlorobenzene-d4		*100*	*70-130*	%	*1*	*B9F0130*	*06/07/19 14:52*	*06/07/19 14:52*	*EPA 8260D*
Surrogate: 4-Bromofluorobenzene		*101*	*70-130*	%	*1*	*B9F0130*	*06/07/19 14:52*	*06/07/19 14:52*	*EPA 8260D*
Surrogate: Methyl tertiary butyl ether-d3		*99*	*70-130*	%	*1*	*B9F0130*	*06/07/19 14:52*	*06/07/19 14:52*	*EPA 8260D*
1,1,1,2-Tetrachloroethane		<	1.0	ug/L	1	B9F0130	06/07/19 14:52	06/07/19 14:52	EPA 8260D
1,1,1-Trichloroethane		<	1.0	ug/L	1	B9F0130	06/07/19 14:52	06/07/19 14:52	EPA 8260D
1,1,2,2-Tetrachloroethane		<	0.50	ug/L	1	B9F0130	06/07/19 14:52	06/07/19 14:52	EPA 8260D
1,1,2-Trichloroethane		<	0.50	ug/L	1	B9F0130	06/07/19 14:52	06/07/19 14:52	EPA 8260D
1,1,2-Trichlorotrifluoroethane		<	1.0	ug/L	1	B9F0130	06/07/19 14:52	06/07/19 14:52	EPA 8260D
1,1-Dichloroethane		<	1.0	ug/L	1	B9F0130	06/07/19 14:52	06/07/19 14:52	EPA 8260D
1,1-Dichloroethene		<	1.0	ug/L	1	B9F0130	06/07/19 14:52	06/07/19 14:52	EPA 8260D
1,1-Dichloropropene		<	1.0	ug/L	1	B9F0130	06/07/19 14:52	06/07/19 14:52	EPA 8260D
1,2,3-Trichlorobenzene		<	1.0	ug/L	1	B9F0130	06/07/19 14:52	06/07/19 14:52	EPA 8260D
1,2,3-Trichloropropane		<	0.20	ug/L	1	B9F0130	06/07/19 14:52	06/07/19 14:52	EPA 8260D
1,2,4-Trichlorobenzene		<	1.0	ug/L	1	B9F0130	06/07/19 14:52	06/07/19 14:52	EPA 8260D
1,2,4-Trimethylbenzene		<	1.0	ug/L	1	B9F0130	06/07/19 14:52	06/07/19 14:52	EPA 8260D
1,2-Dibromo-3-chloropropane (DBCP)		<	1.0	ug/L	1	B9F0130	06/07/19 14:52	06/07/19 14:52	EPA 8260D
1,2-Dibromoethane (EDB)		<	0.50	ug/L	1	B9F0130	06/07/19 14:52	06/07/19 14:52	EPA 8260D
1,2-Dichlorobenzene		<	1.0	ug/L	1	B9F0130	06/07/19 14:52	06/07/19 14:52	EPA 8260D
1,2-Dichloroethane		<	0.20	ug/L	1	B9F0130	06/07/19 14:52	06/07/19 14:52	EPA 8260D
1,2-Dichloropropane		<	1.0	ug/L	1	B9F0130	06/07/19 14:52	06/07/19 14:52	EPA 8260D
1,3,5-Trimethylbenzene		<	1.0	ug/L	1	B9F0130	06/07/19 14:52	06/07/19 14:52	EPA 8260D
1,3-Dichlorobenzene		<	1.0	ug/L	1	B9F0130	06/07/19 14:52	06/07/19 14:52	EPA 8260D
1,3-Dichloropropane		<	1.0	ug/L	1	B9F0130	06/07/19 14:52	06/07/19 14:52	EPA 8260D
1,4-Dichlorobenzene		<	1.0	ug/L	1	B9F0130	06/07/19 14:52	06/07/19 14:52	EPA 8260D
2,2-Dichloropropane		<	1.0	ug/L	1	B9F0130	06/07/19 14:52	06/07/19 14:52	EPA 8260D
2-Chlorotoluene		<	1.0	ug/L	1	B9F0130	06/07/19 14:52	06/07/19 14:52	EPA 8260D

FINAL REPORT

Report ID: 06192019 93716

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 06/19/19 9:37

MDH Sample Number: 19E2198-02

Location ID: 834657
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 05/28/19
Collect Time: 10:00
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: (MW-13)

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
4-Chlorotoluene		<	1.0	ug/L	1	B9F0130	06/07/19 14:52	06/07/19 14:52	EPA 8260D
Acetone		<	20	ug/L	1	B9F0130	06/07/19 14:52	06/07/19 14:52	EPA 8260D
Allyl chloride		<	1.0	ug/L	1	B9F0130	06/07/19 14:52	06/07/19 14:52	EPA 8260D
Benzene		<	0.50	ug/L	1	B9F0130	06/07/19 14:52	06/07/19 14:52	EPA 8260D
Bromobenzene		<	1.0	ug/L	1	B9F0130	06/07/19 14:52	06/07/19 14:52	EPA 8260D
Bromochloromethane		<	1.0	ug/L	1	B9F0130	06/07/19 14:52	06/07/19 14:52	EPA 8260D
Bromodichloromethane		<	1.0	ug/L	1	B9F0130	06/07/19 14:52	06/07/19 14:52	EPA 8260D
Bromoform		<	1.0	ug/L	1	B9F0130	06/07/19 14:52	06/07/19 14:52	EPA 8260D
Bromomethane		<	2.0	ug/L	1	B9F0130	06/07/19 14:52	06/07/19 14:52	EPA 8260D
Carbon tetrachloride		<	0.20	ug/L	1	B9F0130	06/07/19 14:52	06/07/19 14:52	EPA 8260D
Chlorobenzene		<	1.0	ug/L	1	B9F0130	06/07/19 14:52	06/07/19 14:52	EPA 8260D
Chlorodibromomethane		<	0.50	ug/L	1	B9F0130	06/07/19 14:52	06/07/19 14:52	EPA 8260D
Chloroethane		<	1.0	ug/L	1	B9F0130	06/07/19 14:52	06/07/19 14:52	EPA 8260D
Chloroform		<	1.0	ug/L	1	B9F0130	06/07/19 14:52	06/07/19 14:52	EPA 8260D
Chloromethane		<	1.0	ug/L	1	B9F0130	06/07/19 14:52	06/07/19 14:52	EPA 8260D
cis-1,2-Dichloroethene		<	1.0	ug/L	1	B9F0130	06/07/19 14:52	06/07/19 14:52	EPA 8260D
cis-1,3-Dichloropropene		<	0.50	ug/L	1	B9F0130	06/07/19 14:52	06/07/19 14:52	EPA 8260D
Dibromomethane		<	1.0	ug/L	1	B9F0130	06/07/19 14:52	06/07/19 14:52	EPA 8260D
Dichlorodifluoromethane		<	1.0	ug/L	1	B9F0130	06/07/19 14:52	06/07/19 14:52	EPA 8260D
Dichlorofluoromethane		<	1.0	ug/L	1	B9F0130	06/07/19 14:52	06/07/19 14:52	EPA 8260D
Ethyl ether		<	1.0	ug/L	1	B9F0130	06/07/19 14:52	06/07/19 14:52	EPA 8260D
Ethylbenzene		<	1.0	ug/L	1	B9F0130	06/07/19 14:52	06/07/19 14:52	EPA 8260D
Hexachlorobutadiene		<	0.50	ug/L	1	B9F0130	06/07/19 14:52	06/07/19 14:52	EPA 8260D
Isopropylbenzene		<	1.0	ug/L	1	B9F0130	06/07/19 14:52	06/07/19 14:52	EPA 8260D
Methyl ethyl ketone (MEK)		<	10	ug/L	1	B9F0130	06/07/19 14:52	06/07/19 14:52	EPA 8260D
Methyl isobutyl ketone (MIBK)		<	5.0	ug/L	1	B9F0130	06/07/19 14:52	06/07/19 14:52	EPA 8260D
Methyl tertiary butyl ether (MTBE)		<	2.0	ug/L	1	B9F0130	06/07/19 14:52	06/07/19 14:52	EPA 8260D

FINAL REPORT

Report ID: 06192019 93716

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 06/19/19 9:37

MDH Sample Number: 19E2198-02

Location ID: 834657
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 05/28/19
Collect Time: 10:00
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: (MW-13)

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Methylene chloride		<	1.0	ug/L	1	B9F0130	06/07/19 14:52	06/07/19 14:52	EPA 8260D
Naphthalene		<	1.0	ug/L	1	B9F0130	06/07/19 14:52	06/07/19 14:52	EPA 8260D
n-Butylbenzene		<	1.0	ug/L	1	B9F0130	06/07/19 14:52	06/07/19 14:52	EPA 8260D
n-Propylbenzene		<	1.0	ug/L	1	B9F0130	06/07/19 14:52	06/07/19 14:52	EPA 8260D
o-Xylene		<	1.0	ug/L	1	B9F0130	06/07/19 14:52	06/07/19 14:52	EPA 8260D
p&m-Xylene		<	1.0	ug/L	1	B9F0130	06/07/19 14:52	06/07/19 14:52	EPA 8260D
p-Isopropyltoluene		<	1.0	ug/L	1	B9F0130	06/07/19 14:52	06/07/19 14:52	EPA 8260D
sec-Butylbenzene		<	1.0	ug/L	1	B9F0130	06/07/19 14:52	06/07/19 14:52	EPA 8260D
Styrene		<	1.0	ug/L	1	B9F0130	06/07/19 14:52	06/07/19 14:52	EPA 8260D
tert-Butylbenzene		<	1.0	ug/L	1	B9F0130	06/07/19 14:52	06/07/19 14:52	EPA 8260D
Tetrachloroethene		<	1.0	ug/L	1	B9F0130	06/07/19 14:52	06/07/19 14:52	EPA 8260D
Tetrahydrofuran (THF)		<	10	ug/L	1	B9F0130	06/07/19 14:52	06/07/19 14:52	EPA 8260D
Toluene		<	1.0	ug/L	1	B9F0130	06/07/19 14:52	06/07/19 14:52	EPA 8260D
trans-1,2-Dichloroethene		<	1.0	ug/L	1	B9F0130	06/07/19 14:52	06/07/19 14:52	EPA 8260D
trans-1,3-Dichloropropene		<	0.50	ug/L	1	B9F0130	06/07/19 14:52	06/07/19 14:52	EPA 8260D
Trichloroethene (TCE)		<	0.10	ug/L	1	B9F0130	06/07/19 14:52	06/07/19 14:52	EPA 8260D
Trichlorofluoromethane		<	1.0	ug/L	1	B9F0130	06/07/19 14:52	06/07/19 14:52	EPA 8260D
Vinyl chloride		<	0.050	ug/L	1	B9F0130	06/07/19 14:52	06/07/19 14:52	EPA 8260D

1,4-Dioxane

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
1,4-Dioxane	Q9	<	0.051	ug/L	1	B9F0117	06/09/19 08:00	06/09/19 20:55	EPA 522 Modified

PFC Expanded List

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorobutanesulfonate (PFBS)		<	0.050	ug/L	1	B9F0037	06/04/19 17:53	06/04/19 17:53	MDH 555
Perfluorobutanoic acid (PFBA)	J	**0.011**	0.050	ug/L	1	B9F0037	06/04/19 17:53	06/04/19 17:53	MDH 555

FINAL REPORT

Report ID: 06192019 93716

Authorized by:

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 06/19/19 9:37

MDH Sample Number: 19E2198-02

Location ID: 834657
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 05/28/19
Collect Time: 10:00
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: (MW-13)

Results were produced by the Minnesota Department of Health, except where noted.

PFC Expanded List - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorohexanesulfonate (PFHxS)	J	**0.005**	0.025	ug/L	1	B9F0037	06/04/19 17:53	06/04/19 17:53	MDH 555
Perfluorohexanoic acid (PFHxA)		<	0.050	ug/L	1	B9F0037	06/04/19 17:53	06/04/19 17:53	MDH 555
Perfluorooctanesulfonate (PFOS)		**0.10**	0.015	ug/L	1	B9F0037	06/04/19 17:53	06/04/19 17:53	MDH 555
Perfluorooctanoic acid (PFOA)		**0.052**	0.035	ug/L	1	B9F0037	06/04/19 17:53	06/04/19 17:53	MDH 555
Perfluoropentanoic acid (PFPeA)		<	0.050	ug/L	1	B9F0037	06/04/19 17:53	06/04/19 17:53	MDH 555

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Public Health Laboratory
Environmental Laboratory Section
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St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 06/19/19 9:37

MDH Sample Number: 19E2198-03

Location ID: 834656
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 05/28/19
Collect Time: 12:00
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: (MW-12)

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Surrogate: 1,2-Dichlorobenzene-d4		*99*	*70-130*	%	*1*	*B9F0130*	*06/07/19 15:19*	*06/07/19 15:19*	*EPA 8260D*
Surrogate: 4-Bromofluorobenzene		*101*	*70-130*	%	*1*	*B9F0130*	*06/07/19 15:19*	*06/07/19 15:19*	*EPA 8260D*
Surrogate: Methyl tertiary butyl ether-d3		*101*	*70-130*	%	*1*	*B9F0130*	*06/07/19 15:19*	*06/07/19 15:19*	*EPA 8260D*
1,1,1,2-Tetrachloroethane		<	1.0	ug/L	1	B9F0130	06/07/19 15:19	06/07/19 15:19	EPA 8260D
1,1,1-Trichloroethane		<	1.0	ug/L	1	B9F0130	06/07/19 15:19	06/07/19 15:19	EPA 8260D
1,1,2,2-Tetrachloroethane		<	0.50	ug/L	1	B9F0130	06/07/19 15:19	06/07/19 15:19	EPA 8260D
1,1,2-Trichloroethane		<	0.50	ug/L	1	B9F0130	06/07/19 15:19	06/07/19 15:19	EPA 8260D
1,1,2-Trichlorotrifluoroethane		<	1.0	ug/L	1	B9F0130	06/07/19 15:19	06/07/19 15:19	EPA 8260D
1,1-Dichloroethane		<	1.0	ug/L	1	B9F0130	06/07/19 15:19	06/07/19 15:19	EPA 8260D
1,1-Dichloroethene		<	1.0	ug/L	1	B9F0130	06/07/19 15:19	06/07/19 15:19	EPA 8260D
1,1-Dichloropropene		<	1.0	ug/L	1	B9F0130	06/07/19 15:19	06/07/19 15:19	EPA 8260D
1,2,3-Trichlorobenzene		<	1.0	ug/L	1	B9F0130	06/07/19 15:19	06/07/19 15:19	EPA 8260D
1,2,3-Trichloropropane		<	0.20	ug/L	1	B9F0130	06/07/19 15:19	06/07/19 15:19	EPA 8260D
1,2,4-Trichlorobenzene		<	1.0	ug/L	1	B9F0130	06/07/19 15:19	06/07/19 15:19	EPA 8260D
1,2,4-Trimethylbenzene		<	1.0	ug/L	1	B9F0130	06/07/19 15:19	06/07/19 15:19	EPA 8260D
1,2-Dibromo-3-chloropropane (DBCP)		<	1.0	ug/L	1	B9F0130	06/07/19 15:19	06/07/19 15:19	EPA 8260D
1,2-Dibromoethane (EDB)		<	0.50	ug/L	1	B9F0130	06/07/19 15:19	06/07/19 15:19	EPA 8260D
1,2-Dichlorobenzene		<	1.0	ug/L	1	B9F0130	06/07/19 15:19	06/07/19 15:19	EPA 8260D
1,2-Dichloroethane		<	0.20	ug/L	1	B9F0130	06/07/19 15:19	06/07/19 15:19	EPA 8260D
1,2-Dichloropropane		<	1.0	ug/L	1	B9F0130	06/07/19 15:19	06/07/19 15:19	EPA 8260D
1,3,5-Trimethylbenzene		<	1.0	ug/L	1	B9F0130	06/07/19 15:19	06/07/19 15:19	EPA 8260D
1,3-Dichlorobenzene		<	1.0	ug/L	1	B9F0130	06/07/19 15:19	06/07/19 15:19	EPA 8260D
1,3-Dichloropropane		<	1.0	ug/L	1	B9F0130	06/07/19 15:19	06/07/19 15:19	EPA 8260D
1,4-Dichlorobenzene		<	1.0	ug/L	1	B9F0130	06/07/19 15:19	06/07/19 15:19	EPA 8260D
2,2-Dichloropropane		<	1.0	ug/L	1	B9F0130	06/07/19 15:19	06/07/19 15:19	EPA 8260D
2-Chlorotoluene		<	1.0	ug/L	1	B9F0130	06/07/19 15:19	06/07/19 15:19	EPA 8260D

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Public Health Laboratory
Environmental Laboratory Section
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St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 06/19/19 9:37

MDH Sample Number: 19E2198-03

Location ID: 834656
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 05/28/19
Collect Time: 12:00
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: (MW-12)

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
4-Chlorotoluene		<	1.0	ug/L	1	B9F0130	06/07/19 15:19	06/07/19 15:19	EPA 8260D
Acetone		<	20	ug/L	1	B9F0130	06/07/19 15:19	06/07/19 15:19	EPA 8260D
Allyl chloride		<	1.0	ug/L	1	B9F0130	06/07/19 15:19	06/07/19 15:19	EPA 8260D
Benzene		<	0.50	ug/L	1	B9F0130	06/07/19 15:19	06/07/19 15:19	EPA 8260D
Bromobenzene		<	1.0	ug/L	1	B9F0130	06/07/19 15:19	06/07/19 15:19	EPA 8260D
Bromochloromethane		<	1.0	ug/L	1	B9F0130	06/07/19 15:19	06/07/19 15:19	EPA 8260D
Bromodichloromethane		<	1.0	ug/L	1	B9F0130	06/07/19 15:19	06/07/19 15:19	EPA 8260D
Bromoform		<	1.0	ug/L	1	B9F0130	06/07/19 15:19	06/07/19 15:19	EPA 8260D
Bromomethane		<	2.0	ug/L	1	B9F0130	06/07/19 15:19	06/07/19 15:19	EPA 8260D
Carbon tetrachloride		<	0.20	ug/L	1	B9F0130	06/07/19 15:19	06/07/19 15:19	EPA 8260D
Chlorobenzene		<	1.0	ug/L	1	B9F0130	06/07/19 15:19	06/07/19 15:19	EPA 8260D
Chlorodibromomethane		<	0.50	ug/L	1	B9F0130	06/07/19 15:19	06/07/19 15:19	EPA 8260D
Chloroethane		<	1.0	ug/L	1	B9F0130	06/07/19 15:19	06/07/19 15:19	EPA 8260D
Chloroform		<	1.0	ug/L	1	B9F0130	06/07/19 15:19	06/07/19 15:19	EPA 8260D
Chloromethane		<	1.0	ug/L	1	B9F0130	06/07/19 15:19	06/07/19 15:19	EPA 8260D
cis-1,2-Dichloroethene		<	1.0	ug/L	1	B9F0130	06/07/19 15:19	06/07/19 15:19	EPA 8260D
cis-1,3-Dichloropropene		<	0.50	ug/L	1	B9F0130	06/07/19 15:19	06/07/19 15:19	EPA 8260D
Dibromomethane		<	1.0	ug/L	1	B9F0130	06/07/19 15:19	06/07/19 15:19	EPA 8260D
Dichlorodifluoromethane		<	1.0	ug/L	1	B9F0130	06/07/19 15:19	06/07/19 15:19	EPA 8260D
Dichlorofluoromethane		<	1.0	ug/L	1	B9F0130	06/07/19 15:19	06/07/19 15:19	EPA 8260D
Ethyl ether		<	1.0	ug/L	1	B9F0130	06/07/19 15:19	06/07/19 15:19	EPA 8260D
Ethylbenzene		<	1.0	ug/L	1	B9F0130	06/07/19 15:19	06/07/19 15:19	EPA 8260D
Hexachlorobutadiene		<	0.50	ug/L	1	B9F0130	06/07/19 15:19	06/07/19 15:19	EPA 8260D
Isopropylbenzene		<	1.0	ug/L	1	B9F0130	06/07/19 15:19	06/07/19 15:19	EPA 8260D
Methyl ethyl ketone (MEK)		<	10	ug/L	1	B9F0130	06/07/19 15:19	06/07/19 15:19	EPA 8260D
Methyl isobutyl ketone (MIBK)		<	5.0	ug/L	1	B9F0130	06/07/19 15:19	06/07/19 15:19	EPA 8260D
Methyl tertiary butyl ether (MTBE)		<	2.0	ug/L	1	B9F0130	06/07/19 15:19	06/07/19 15:19	EPA 8260D

FINAL REPORT

Report ID: 06192019 93716

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 06/19/19 9:37

MDH Sample Number: 19E2198-03

Location ID: 834656
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 05/28/19
Collect Time: 12:00
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: (MW-12)

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Methylene chloride		<	1.0	ug/L	1	B9F0130	06/07/19 15:19	06/07/19 15:19	EPA 8260D
Naphthalene		<	1.0	ug/L	1	B9F0130	06/07/19 15:19	06/07/19 15:19	EPA 8260D
n-Butylbenzene		<	1.0	ug/L	1	B9F0130	06/07/19 15:19	06/07/19 15:19	EPA 8260D
n-Propylbenzene		<	1.0	ug/L	1	B9F0130	06/07/19 15:19	06/07/19 15:19	EPA 8260D
o-Xylene		<	1.0	ug/L	1	B9F0130	06/07/19 15:19	06/07/19 15:19	EPA 8260D
p&m-Xylene		<	1.0	ug/L	1	B9F0130	06/07/19 15:19	06/07/19 15:19	EPA 8260D
p-Isopropyltoluene		<	1.0	ug/L	1	B9F0130	06/07/19 15:19	06/07/19 15:19	EPA 8260D
sec-Butylbenzene		<	1.0	ug/L	1	B9F0130	06/07/19 15:19	06/07/19 15:19	EPA 8260D
Styrene		<	1.0	ug/L	1	B9F0130	06/07/19 15:19	06/07/19 15:19	EPA 8260D
tert-Butylbenzene		<	1.0	ug/L	1	B9F0130	06/07/19 15:19	06/07/19 15:19	EPA 8260D
Tetrachloroethene		<	1.0	ug/L	1	B9F0130	06/07/19 15:19	06/07/19 15:19	EPA 8260D
Tetrahydrofuran (THF)		<	10	ug/L	1	B9F0130	06/07/19 15:19	06/07/19 15:19	EPA 8260D
Toluene		<	1.0	ug/L	1	B9F0130	06/07/19 15:19	06/07/19 15:19	EPA 8260D
trans-1,2-Dichloroethene		<	1.0	ug/L	1	B9F0130	06/07/19 15:19	06/07/19 15:19	EPA 8260D
trans-1,3-Dichloropropene		<	0.50	ug/L	1	B9F0130	06/07/19 15:19	06/07/19 15:19	EPA 8260D
Trichloroethene (TCE)		<	0.10	ug/L	1	B9F0130	06/07/19 15:19	06/07/19 15:19	EPA 8260D
Trichlorofluoromethane		<	1.0	ug/L	1	B9F0130	06/07/19 15:19	06/07/19 15:19	EPA 8260D
Vinyl chloride		<	0.050	ug/L	1	B9F0130	06/07/19 15:19	06/07/19 15:19	EPA 8260D

1,4-Dioxane

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
1,4-Dioxane	Q9	<	0.053	ug/L	1	B9F0117	06/09/19 08:00	06/09/19 21:12	EPA 522 Modified

PFC Expanded List

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorobutanesulfonate (PFBS)		<	0.050	ug/L	1	B9F0037	06/04/19 18:01	06/04/19 18:01	MDH 555
Perfluorobutanoic acid (PFBA)	J	**0.023**	0.050	ug/L	1	B9F0037	06/04/19 18:01	06/04/19 18:01	MDH 555

FINAL REPORT

Report ID: 06192019 93716

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Environmental Laboratory Section
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St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 06/19/19 9:37

MDH Sample Number: 19E2198-03

Location ID: 834656
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 05/28/19
Collect Time: 12:00
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: (MW-12)

Results were produced by the Minnesota Department of Health, except where noted.

PFC Expanded List - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorohexanesulfonate (PFHxS)	J	**0.010**	0.025	ug/L	1	B9F0037	06/04/19 18:01	06/04/19 18:01	MDH 555
Perfluorohexanoic acid (PFHxA)		<	0.050	ug/L	1	B9F0037	06/04/19 18:01	06/04/19 18:01	MDH 555
Perfluorooctanesulfonate (PFOS)		**0.056**	0.015	ug/L	1	B9F0037	06/04/19 18:01	06/04/19 18:01	MDH 555
Perfluorooctanoic acid (PFOA)		**0.10**	0.035	ug/L	1	B9F0037	06/04/19 18:01	06/04/19 18:01	MDH 555
Perfluoropentanoic acid (PFPeA)		<	0.050	ug/L	1	B9F0037	06/04/19 18:01	06/04/19 18:01	MDH 555

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Public Health Laboratory, Minnesota Department of Health

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St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 06/19/19 9:37

MDH Sample Number: 19E2198-04

Location ID: 834655
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 05/28/19
Collect Time: 14:00
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: (MW-11)

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Surrogate: 1,2-Dichlorobenzene-d4		*102*	*70-130*	%	*1*	*B9F0130*	*06/07/19 17:39*	*06/07/19 17:39*	*EPA 8260D*
Surrogate: 4-Bromofluorobenzene		*104*	*70-130*	%	*1*	*B9F0130*	*06/07/19 17:39*	*06/07/19 17:39*	*EPA 8260D*
Surrogate: Methyl tertiary butyl ether-d3		*97*	*70-130*	%	*1*	*B9F0130*	*06/07/19 17:39*	*06/07/19 17:39*	*EPA 8260D*
1,1,1,2-Tetrachloroethane		<	1.0	ug/L	1	B9F0130	06/07/19 17:39	06/07/19 17:39	EPA 8260D
1,1,1-Trichloroethane		<	1.0	ug/L	1	B9F0130	06/07/19 17:39	06/07/19 17:39	EPA 8260D
1,1,2,2-Tetrachloroethane		<	0.50	ug/L	1	B9F0130	06/07/19 17:39	06/07/19 17:39	EPA 8260D
1,1,2-Trichloroethane		<	0.50	ug/L	1	B9F0130	06/07/19 17:39	06/07/19 17:39	EPA 8260D
1,1,2-Trichlorotrifluoroethane		<	1.0	ug/L	1	B9F0130	06/07/19 17:39	06/07/19 17:39	EPA 8260D
1,1-Dichloroethane		<	1.0	ug/L	1	B9F0130	06/07/19 17:39	06/07/19 17:39	EPA 8260D
1,1-Dichloroethene		<	1.0	ug/L	1	B9F0130	06/07/19 17:39	06/07/19 17:39	EPA 8260D
1,1-Dichloropropene		<	1.0	ug/L	1	B9F0130	06/07/19 17:39	06/07/19 17:39	EPA 8260D
1,2,3-Trichlorobenzene		<	1.0	ug/L	1	B9F0130	06/07/19 17:39	06/07/19 17:39	EPA 8260D
1,2,3-Trichloropropane		<	0.20	ug/L	1	B9F0130	06/07/19 17:39	06/07/19 17:39	EPA 8260D
1,2,4-Trichlorobenzene		<	1.0	ug/L	1	B9F0130	06/07/19 17:39	06/07/19 17:39	EPA 8260D
1,2,4-Trimethylbenzene		<	1.0	ug/L	1	B9F0130	06/07/19 17:39	06/07/19 17:39	EPA 8260D
1,2-Dibromo-3-chloropropane (DBCP)		<	1.0	ug/L	1	B9F0130	06/07/19 17:39	06/07/19 17:39	EPA 8260D
1,2-Dibromoethane (EDB)		<	0.50	ug/L	1	B9F0130	06/07/19 17:39	06/07/19 17:39	EPA 8260D
1,2-Dichlorobenzene		<	1.0	ug/L	1	B9F0130	06/07/19 17:39	06/07/19 17:39	EPA 8260D
1,2-Dichloroethane		<	0.20	ug/L	1	B9F0130	06/07/19 17:39	06/07/19 17:39	EPA 8260D
1,2-Dichloropropane		<	1.0	ug/L	1	B9F0130	06/07/19 17:39	06/07/19 17:39	EPA 8260D
1,3,5-Trimethylbenzene		<	1.0	ug/L	1	B9F0130	06/07/19 17:39	06/07/19 17:39	EPA 8260D
1,3-Dichlorobenzene		<	1.0	ug/L	1	B9F0130	06/07/19 17:39	06/07/19 17:39	EPA 8260D
1,3-Dichloropropane		<	1.0	ug/L	1	B9F0130	06/07/19 17:39	06/07/19 17:39	EPA 8260D
1,4-Dichlorobenzene		**1.0**	1.0	ug/L	1	B9F0130	06/07/19 17:39	06/07/19 17:39	EPA 8260D
2,2-Dichloropropane		<	1.0	ug/L	1	B9F0130	06/07/19 17:39	06/07/19 17:39	EPA 8260D
2-Chlorotoluene		<	1.0	ug/L	1	B9F0130	06/07/19 17:39	06/07/19 17:39	EPA 8260D

FINAL REPORT

Report ID: 06192019 93716

Authorized by:

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 06/19/19 9:37

MDH Sample Number: 19E2198-04

Location ID: 834655
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 05/28/19
Collect Time: 14:00
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: (MW-11)

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
4-Chlorotoluene		<	1.0	ug/L	1	B9F0130	06/07/19 17:39	06/07/19 17:39	EPA 8260D
Acetone		<	20	ug/L	1	B9F0130	06/07/19 17:39	06/07/19 17:39	EPA 8260D
Allyl chloride		<	1.0	ug/L	1	B9F0130	06/07/19 17:39	06/07/19 17:39	EPA 8260D
Benzene		<	0.50	ug/L	1	B9F0130	06/07/19 17:39	06/07/19 17:39	EPA 8260D
Bromobenzene		<	1.0	ug/L	1	B9F0130	06/07/19 17:39	06/07/19 17:39	EPA 8260D
Bromochloromethane		<	1.0	ug/L	1	B9F0130	06/07/19 17:39	06/07/19 17:39	EPA 8260D
Bromodichloromethane		<	1.0	ug/L	1	B9F0130	06/07/19 17:39	06/07/19 17:39	EPA 8260D
Bromoform		<	1.0	ug/L	1	B9F0130	06/07/19 17:39	06/07/19 17:39	EPA 8260D
Bromomethane		<	2.0	ug/L	1	B9F0130	06/07/19 17:39	06/07/19 17:39	EPA 8260D
Carbon tetrachloride		<	0.20	ug/L	1	B9F0130	06/07/19 17:39	06/07/19 17:39	EPA 8260D
Chlorobenzene		**1.5**	1.0	ug/L	1	B9F0130	06/07/19 17:39	06/07/19 17:39	EPA 8260D
Chlorodibromomethane		<	0.50	ug/L	1	B9F0130	06/07/19 17:39	06/07/19 17:39	EPA 8260D
Chloroethane		<	1.0	ug/L	1	B9F0130	06/07/19 17:39	06/07/19 17:39	EPA 8260D
Chloroform		<	1.0	ug/L	1	B9F0130	06/07/19 17:39	06/07/19 17:39	EPA 8260D
Chloromethane		<	1.0	ug/L	1	B9F0130	06/07/19 17:39	06/07/19 17:39	EPA 8260D
cis-1,2-Dichloroethene		<	1.0	ug/L	1	B9F0130	06/07/19 17:39	06/07/19 17:39	EPA 8260D
cis-1,3-Dichloropropene		<	0.50	ug/L	1	B9F0130	06/07/19 17:39	06/07/19 17:39	EPA 8260D
Dibromomethane		<	1.0	ug/L	1	B9F0130	06/07/19 17:39	06/07/19 17:39	EPA 8260D
Dichlorodifluoromethane		<	1.0	ug/L	1	B9F0130	06/07/19 17:39	06/07/19 17:39	EPA 8260D
Dichlorofluoromethane		<	1.0	ug/L	1	B9F0130	06/07/19 17:39	06/07/19 17:39	EPA 8260D
Ethyl ether		**2.9**	1.0	ug/L	1	B9F0130	06/07/19 17:39	06/07/19 17:39	EPA 8260D
Ethylbenzene		<	1.0	ug/L	1	B9F0130	06/07/19 17:39	06/07/19 17:39	EPA 8260D
Hexachlorobutadiene		<	0.50	ug/L	1	B9F0130	06/07/19 17:39	06/07/19 17:39	EPA 8260D
Isopropylbenzene		<	1.0	ug/L	1	B9F0130	06/07/19 17:39	06/07/19 17:39	EPA 8260D
Methyl ethyl ketone (MEK)		<	10	ug/L	1	B9F0130	06/07/19 17:39	06/07/19 17:39	EPA 8260D
Methyl isobutyl ketone (MIBK)		<	5.0	ug/L	1	B9F0130	06/07/19 17:39	06/07/19 17:39	EPA 8260D
Methyl tertiary butyl ether (MTBE)		<	2.0	ug/L	1	B9F0130	06/07/19 17:39	06/07/19 17:39	EPA 8260D

FINAL REPORT

Report ID: 06192019 93716

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
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St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 06/19/19 9:37

MDH Sample Number: 19E2198-04

Location ID: 834655
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 05/28/19
Collect Time: 14:00
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: (MW-11)

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Methylene chloride		<	1.0	ug/L	1	B9F0130	06/07/19 17:39	06/07/19 17:39	EPA 8260D
Naphthalene		<	1.0	ug/L	1	B9F0130	06/07/19 17:39	06/07/19 17:39	EPA 8260D
n-Butylbenzene		<	1.0	ug/L	1	B9F0130	06/07/19 17:39	06/07/19 17:39	EPA 8260D
n-Propylbenzene		<	1.0	ug/L	1	B9F0130	06/07/19 17:39	06/07/19 17:39	EPA 8260D
o-Xylene		<	1.0	ug/L	1	B9F0130	06/07/19 17:39	06/07/19 17:39	EPA 8260D
p&m-Xylene		<	1.0	ug/L	1	B9F0130	06/07/19 17:39	06/07/19 17:39	EPA 8260D
p-Isopropyltoluene		<	1.0	ug/L	1	B9F0130	06/07/19 17:39	06/07/19 17:39	EPA 8260D
sec-Butylbenzene		<	1.0	ug/L	1	B9F0130	06/07/19 17:39	06/07/19 17:39	EPA 8260D
Styrene		<	1.0	ug/L	1	B9F0130	06/07/19 17:39	06/07/19 17:39	EPA 8260D
tert-Butylbenzene		<	1.0	ug/L	1	B9F0130	06/07/19 17:39	06/07/19 17:39	EPA 8260D
Tetrachloroethene		<	1.0	ug/L	1	B9F0130	06/07/19 17:39	06/07/19 17:39	EPA 8260D
Tetrahydrofuran (THF)		<	10	ug/L	1	B9F0130	06/07/19 17:39	06/07/19 17:39	EPA 8260D
Toluene		<	1.0	ug/L	1	B9F0130	06/07/19 17:39	06/07/19 17:39	EPA 8260D
trans-1,2-Dichloroethene		<	1.0	ug/L	1	B9F0130	06/07/19 17:39	06/07/19 17:39	EPA 8260D
trans-1,3-Dichloropropene		<	0.50	ug/L	1	B9F0130	06/07/19 17:39	06/07/19 17:39	EPA 8260D
Trichloroethene (TCE)		<	0.10	ug/L	1	B9F0130	06/07/19 17:39	06/07/19 17:39	EPA 8260D
Trichlorofluoromethane		<	1.0	ug/L	1	B9F0130	06/07/19 17:39	06/07/19 17:39	EPA 8260D
Vinyl chloride		**0.050**	0.050	ug/L	1	B9F0130	06/07/19 17:39	06/07/19 17:39	EPA 8260D

1,4-Dioxane

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
1,4-Dioxane		**0.80**	0.050	ug/L	1	B9F0163	06/10/19 08:00	06/10/19 15:32	EPA 522 Modified

PFC Expanded List

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorobutanesulfonate (PFBS)		<	0.050	ug/L	1	B9F0037	06/04/19 18:10	06/04/19 18:10	MDH 555
Perfluorobutanoic acid (PFBA)	J	**0.017**	0.050	ug/L	1	B9F0037	06/04/19 18:10	06/04/19 18:10	MDH 555

FINAL REPORT

Report ID: 06192019 93716

Authorized by:

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St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 06/19/19 9:37

MDH Sample Number: 19E2198-04

Location ID: 834655
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 05/28/19
Collect Time: 14:00
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: (MW-11)

Results were produced by the Minnesota Department of Health, except where noted.

PFC Expanded List - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorohexanesulfonate (PFHxS)	J	**0.015**	0.025	ug/L	1	B9F0037	06/04/19 18:10	06/04/19 18:10	MDH 555
Perfluorohexanoic acid (PFHxA)	J	**0.015**	0.050	ug/L	1	B9F0037	06/04/19 18:10	06/04/19 18:10	MDH 555
Perfluorooctanesulfonate (PFOS)		**0.078**	0.015	ug/L	1	B9F0037	06/04/19 18:10	06/04/19 18:10	MDH 555
Perfluorooctanoic acid (PFOA)		**0.14**	0.035	ug/L	1	B9F0037	06/04/19 18:10	06/04/19 18:10	MDH 555
Perfluoropentanoic acid (PFPeA)	J	**0.006**	0.050	ug/L	1	B9F0037	06/04/19 18:10	06/04/19 18:10	MDH 555

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651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 06/19/19 9:37

Batch Summary

Samples in Batch: B9F0037 - PFCs Preparation

19E2198-02 19E2198-03 19E2198-04

Samples in Batch: B9F0117 - 1,4 Dioxane in Water SPE

19E2198-02 19E2198-03

Samples in Batch: B9F0130 - EPA 5030B Preparation

19E2198-01 19E2198-02 19E2198-03 19E2198-04

Samples in Batch: B9F0163 - 1,4 Dioxane in Water SPE

19E2198-04

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 06/19/19 9:37

Results were produced by Minnesota Department of Health, except where noted.

Batch B9F0130 - EPA 5030B Preparation

Blank (B9F0130-BLK1) **Prepared: 06/07/19 13:28 Analyzed: 06/07/19 13:28**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: 1,2-Dichlorobenzene-d4		*101*	*70-130*	*%*	*10*					
Surrogate: 4-Bromofluorobenzene		*103*	*70-130*	*%*	*10*					
Surrogate: Methyl tertiary butyl ether-d3		*99*	*70-130*	*%*	*10*					
1,1,1,2-Tetrachloroethane		<	1.0	ug/L						
1,1,1-Trichloroethane		<	1.0	ug/L						
1,1,2,2-Tetrachloroethane		<	0.50	ug/L						
1,1,2-Trichloroethane		<	0.50	ug/L						
1,1,2-Trichlorotrifluoroethane		<	1.0	ug/L						
1,1-Dichloroethane		<	1.0	ug/L						
1,1-Dichloroethene		<	1.0	ug/L						
1,1-Dichloropropene		<	1.0	ug/L						
1,2,3-Trichlorobenzene		<	1.0	ug/L						
1,2,3-Trichloropropane		<	0.20	ug/L						
1,2,4-Trichlorobenzene		<	1.0	ug/L						
1,2,4-Trimethylbenzene		<	1.0	ug/L						
1,2-Dibromo-3-chloropropane (DBCP)		<	1.0	ug/L						
1,2-Dibromoethane (EDB)		<	0.50	ug/L						
1,2-Dichlorobenzene		<	1.0	ug/L						
1,2-Dichloroethane		<	0.20	ug/L						
1,2-Dichloropropane		<	1.0	ug/L						
1,3,5-Trimethylbenzene		<	1.0	ug/L						
1,3-Dichlorobenzene		<	1.0	ug/L						
1,3-Dichloropropane		<	1.0	ug/L						
1,4-Dichlorobenzene		<	1.0	ug/L						
2,2-Dichloropropane		<	1.0	ug/L						
2-Chlorotoluene		<	1.0	ug/L						
4-Chlorotoluene		<	1.0	ug/L						
Acetone		<	20	ug/L						
Allyl chloride		<	1.0	ug/L						
Benzene		<	0.50	ug/L						
Bromobenzene		<	1.0	ug/L						
Bromochloromethane		<	1.0	ug/L						
Bromodichloromethane		<	1.0	ug/L						
Bromoform		<	1.0	ug/L						

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 06/19/19 9:37

Results were produced by Minnesota Department of Health, except where noted.

Batch B9F0130 - EPA 5030B Preparation

Blank (B9F0130-BLK1) **Prepared: 06/07/19 13:28 Analyzed: 06/07/19 13:28**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Bromomethane		<	2.0	ug/L						
Carbon tetrachloride		<	0.20	ug/L						
Chlorobenzene		<	1.0	ug/L						
Chlorodibromomethane		<	0.50	ug/L						
Chloroethane		<	1.0	ug/L						
Chloroform		<	1.0	ug/L						
Chloromethane		<	1.0	ug/L						
cis-1,2-Dichloroethene		<	1.0	ug/L						
cis-1,3-Dichloropropene		<	0.50	ug/L						
Dibromomethane		<	1.0	ug/L						
Dichlorodifluoromethane		<	1.0	ug/L						
Dichlorofluoromethane		<	1.0	ug/L						
Ethyl ether		<	1.0	ug/L						
Ethylbenzene		<	1.0	ug/L						
Hexachlorobutadiene		<	0.50	ug/L						
Isopropylbenzene		<	1.0	ug/L						
Methyl ethyl ketone (MEK)		<	10	ug/L						
Methyl isobutyl ketone (MIBK)		<	5.0	ug/L						
Methyl tertiary butyl ether (MTBE)		<	2.0	ug/L						
Methylene chloride		<	1.0	ug/L						
Naphthalene		<	1.0	ug/L						
n-Butylbenzene		<	1.0	ug/L						
n-Propylbenzene		<	1.0	ug/L						
o-Xylene		<	1.0	ug/L						
p&m-Xylene		<	1.0	ug/L						
p-Isopropyltoluene		<	1.0	ug/L						
sec-Butylbenzene		<	1.0	ug/L						
Styrene		<	1.0	ug/L						
tert-Butylbenzene		<	1.0	ug/L						
Tetrachloroethene		<	1.0	ug/L						
Tetrahydrofuran (THF)		<	10	ug/L						
Toluene		<	1.0	ug/L						
trans-1,2-Dichloroethene		<	1.0	ug/L						
trans-1,3-Dichloropropene		<	0.50	ug/L						
Trichloroethene (TCE)		<	0.10	ug/L						

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Environmental Laboratory Section
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651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 06/19/19 9:37

Results were produced by Minnesota Department of Health, except where noted.

Batch B9F0130 - EPA 5030B Preparation

Blank (B9F0130-BLK1) **Prepared: 06/07/19 13:28 Analyzed: 06/07/19 13:28**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Trichlorofluoromethane		<	1.0	ug/L						
Vinyl chloride		<	0.050	ug/L						

LCS (B9F0130-BS1) **Prepared: 06/07/19 11:09 Analyzed: 06/07/19 11:09**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: 1,2-Dichlorobenzene-d4		*98*	*70-130*	*%*	*10*					
Surrogate: 4-Bromofluorobenzene		*101*	*70-130*	*%*	*10*					
Surrogate: Methyl tertiary butyl ether-d3		*96*	*70-130*	*%*	*10*					
1,1,1,2-Tetrachloroethane		9.8	1.0	ug/L	10		98	70-130		
1,1,1-Trichloroethane		10	1.0	ug/L	10		100	70-130		
1,1,2,2-Tetrachloroethane		9.7	0.50	ug/L	10		97	70-130		
1,1,2-Trichloroethane		9.5	0.50	ug/L	10		95	70-130		
1,1,2-Trichlorotrifluoroethane		10	1.0	ug/L	10		105	70-130		
1,1-Dichloroethane		10	1.0	ug/L	10		100	70-130		
1,1-Dichloroethene		10	1.0	ug/L	10		102	70-130		
1,1-Dichloropropene		10	1.0	ug/L	10		103	70-130		
1,2,3-Trichlorobenzene		9.8	1.0	ug/L	10		98	70-130		
1,2,3-Trichloropropane		9.5	0.20	ug/L	10		95	70-130		
1,2,4-Trichlorobenzene		9.9	1.0	ug/L	10		99	70-130		
1,2,4-Trimethylbenzene		11	1.0	ug/L	10		107	70-130		
1,2-Dibromo-3-chloropropane (DBCP)		10	1.0	ug/L	10		101	70-130		
1,2-Dibromoethane (EDB)		10	0.50	ug/L	10		101	70-130		
1,2-Dichlorobenzene		9.6	1.0	ug/L	10		96	70-130		
1,2-Dichloroethane		9.2	0.20	ug/L	10		92	70-130		
1,2-Dichloropropane		9.6	1.0	ug/L	10		96	70-130		
1,3,5-Trimethylbenzene		10	1.0	ug/L	10		105	70-130		
1,3-Dichlorobenzene		10	1.0	ug/L	10		100	70-130		
1,3-Dichloropropane		9.7	1.0	ug/L	10		97	70-130		
1,4-Dichlorobenzene		10	1.0	ug/L	10		101	70-130		
2,2-Dichloropropane		11	1.0	ug/L	10		107	70-130		
2-Chlorotoluene		10	1.0	ug/L	10		104	70-130		
4-Chlorotoluene		10	1.0	ug/L	10		102	70-130		
Acetone		100	20	ug/L	100		104	70-130		

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 06/19/19 9:37

Results were produced by Minnesota Department of Health, except where noted.

Batch B9F0130 - EPA 5030B Preparation

LCS (B9F0130-BS1) **Prepared: 06/07/19 11:09 Analyzed: 06/07/19 11:09**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Allyl chloride		10	1.0	ug/L	10		100	70-130		
Benzene		10	0.50	ug/L	10		100	70-130		
Bromobenzene		9.6	1.0	ug/L	10		96	70-130		
Bromochloromethane		9.9	1.0	ug/L	10		99	70-130		
Bromodichloromethane		9.8	1.0	ug/L	10		98	70-130		
Bromoform		11	1.0	ug/L	10		108	70-130		
Bromomethane		9.2	2.0	ug/L	10		92	70-130		
Carbon tetrachloride		10	0.20	ug/L	10		101	70-130		
Chlorobenzene		10	1.0	ug/L	10		100	70-130		
Chlorodibromomethane		10	0.50	ug/L	10		103	70-130		
Chloroethane		9.9	1.0	ug/L	10		99	70-130		
Chloroform		10	1.0	ug/L	10		100	70-130		
Chloromethane		9.2	1.0	ug/L	10		92	70-130		
cis-1,2-Dichloroethene		9.8	1.0	ug/L	10		98	70-130		
cis-1,3-Dichloropropene		9.7	0.50	ug/L	10		97	70-130		
Dibromomethane		9.4	1.0	ug/L	10		94	70-130		
Dichlorodifluoromethane		9.8	1.0	ug/L	10		98	70-130		
Dichlorofluoromethane		10	1.0	ug/L	10		100	70-130		
Ethyl ether		9.6	1.0	ug/L	10		96	70-130		
Ethylbenzene		10	1.0	ug/L	10		102	70-130		
Hexachlorobutadiene		11	0.50	ug/L	10		107	70-130		
Isopropylbenzene		11	1.0	ug/L	10		107	70-130		
Methyl ethyl ketone (MEK)		52	10	ug/L	50		105	70-130		
Methyl isobutyl ketone (MIBK)		54	5.0	ug/L	50		108	70-130		
Methyl tertiary butyl ether (MTBE)		9.6	2.0	ug/L	10		96	70-130		
Methylene chloride		9.6	1.0	ug/L	10		96	70-130		
Naphthalene		10	1.0	ug/L	10		100	70-130		
n-Butylbenzene		11	1.0	ug/L	10		105	70-130		
n-Propylbenzene		10	1.0	ug/L	10		105	70-130		
o-Xylene		10	1.0	ug/L	10		103	70-130		
p&m-Xylene		11	1.0	ug/L	10		106	70-130		
p-Isopropyltoluene		11	1.0	ug/L	10		106	70-130		
sec-Butylbenzene		11	1.0	ug/L	10		106	70-130		
Styrene		10	1.0	ug/L	10		104	70-130		
tert-Butylbenzene		11	1.0	ug/L	10		106	70-130		

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 06/19/19 9:37

Results were produced by Minnesota Department of Health, except where noted.

Batch B9F0130 - EPA 5030B Preparation

LCS (B9F0130-BS1) **Prepared: 06/07/19 11:09 Analyzed: 06/07/19 11:09**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Tetrachloroethene		10	1.0	ug/L	10		101	70-130		
Tetrahydrofuran (THF)		96	10	ug/L	100		96	70-130		
Toluene		10	1.0	ug/L	10		102	70-130		
trans-1,2-Dichloroethene		10	1.0	ug/L	10		102	70-130		
trans-1,3-Dichloropropene		10	0.50	ug/L	10		101	70-130		
Trichloroethene (TCE)		10	0.10	ug/L	10		101	70-130		
Trichlorofluoromethane		10	1.0	ug/L	10		102	70-130		
Vinyl chloride		9.4	0.050	ug/L	10		94	70-130		

LCS Dup (B9F0130-BSD1) **Prepared: 06/07/19 11:37 Analyzed: 06/07/19 11:37**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: 1,2-Dichlorobenzene-d4		*99*	*70-130*	*%*	*10*					
Surrogate: 4-Bromofluorobenzene		*100*	*70-130*	*%*	*10*					
Surrogate: Methyl tertiary butyl ether-d3		*96*	*70-130*	*%*	*10*					
1,1,1,2-Tetrachloroethane		9.9	1.0	ug/L	10		99	70-130	0.7	30
1,1,1-Trichloroethane		11	1.0	ug/L	10		106	70-130	6	30
1,1,2,2-Tetrachloroethane		9.4	0.50	ug/L	10		94	70-130	3	30
1,1,2-Trichloroethane		9.6	0.50	ug/L	10		96	70-130	0.8	30
1,1,2-Trichlorotrifluoroethane		11	1.0	ug/L	10		108	70-130	3	30
1,1-Dichloroethane		10	1.0	ug/L	10		104	70-130	4	30
1,1-Dichloroethene		11	1.0	ug/L	10		109	70-130	6	30
1,1-Dichloropropene		11	1.0	ug/L	10		108	70-130	4	30
1,2,3-Trichlorobenzene		9.6	1.0	ug/L	10		96	70-130	2	30
1,2,3-Trichloropropane		9.3	0.20	ug/L	10		93	70-130	3	30
1,2,4-Trichlorobenzene		10	1.0	ug/L	10		101	70-130	2	30
1,2,4-Trimethylbenzene		11	1.0	ug/L	10		109	70-130	2	30
1,2-Dibromo-3-chloropropane (DBCP)		10	1.0	ug/L	10		101	70-130	0.2	30
1,2-Dibromoethane (EDB)		10	0.50	ug/L	10		100	70-130	1	30
1,2-Dichlorobenzene		9.7	1.0	ug/L	10		97	70-130	0.5	30
1,2-Dichloroethane		9.3	0.20	ug/L	10		93	70-130	2	30
1,2-Dichloropropane		9.9	1.0	ug/L	10		99	70-130	2	30
1,3,5-Trimethylbenzene		11	1.0	ug/L	10		106	70-130	1	30
1,3-Dichlorobenzene		10	1.0	ug/L	10		101	70-130	1	30

FINAL REPORT

Report ID: 06192019 93716

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Paul Moyer, Environmental Laboratory Manager
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651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 06/19/19 9:37

Results were produced by Minnesota Department of Health, except where noted.

Batch B9F0130 - EPA 5030B Preparation

LCS Dup (B9F0130-BSD1) **Prepared: 06/07/19 11:37 Analyzed: 06/07/19 11:37**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,3-Dichloropropane		9.7	1.0	ug/L	10		97	70-130	0.4	30
1,4-Dichlorobenzene		10	1.0	ug/L	10		100	70-130	0.5	30
2,2-Dichloropropane		11	1.0	ug/L	10		111	70-130	4	30
2-Chlorotoluene		10	1.0	ug/L	10		105	70-130	1	30
4-Chlorotoluene		10	1.0	ug/L	10		104	70-130	1	30
Acetone		100	20	ug/L	100		103	70-130	0.5	30
Allyl chloride		10	1.0	ug/L	10		102	70-130	2	30
Benzene		10	0.50	ug/L	10		104	70-130	5	30
Bromobenzene		9.8	1.0	ug/L	10		98	70-130	2	30
Bromochloromethane		10	1.0	ug/L	10		103	70-130	4	30
Bromodichloromethane		10	1.0	ug/L	10		101	70-130	2	30
Bromoform		11	1.0	ug/L	10		106	70-130	1	30
Bromomethane		10	2.0	ug/L	10		102	70-130	10	30
Carbon tetrachloride		11	0.20	ug/L	10		107	70-130	5	30
Chlorobenzene		10	1.0	ug/L	10		101	70-130	0.7	30
Chlorodibromomethane		10	0.50	ug/L	10		101	70-130	2	30
Chloroethane		10	1.0	ug/L	10		104	70-130	5	30
Chloroform		10	1.0	ug/L	10		103	70-130	2	30
Chloromethane		9.6	1.0	ug/L	10		96	70-130	5	30
cis-1,2-Dichloroethene		10	1.0	ug/L	10		102	70-130	4	30
cis-1,3-Dichloropropene		10	0.50	ug/L	10		100	70-130	3	30
Dibromomethane		9.5	1.0	ug/L	10		95	70-130	1	30
Dichlorodifluoromethane		10	1.0	ug/L	10		105	70-130	6	30
Dichlorofluoromethane		11	1.0	ug/L	10		106	70-130	6	30
Ethyl ether		10	1.0	ug/L	10		100	70-130	4	30
Ethylbenzene		10	1.0	ug/L	10		104	70-130	2	30
Hexachlorobutadiene		11	0.50	ug/L	10		110	70-130	3	30
Isopropylbenzene		11	1.0	ug/L	10		109	70-130	2	30
Methyl ethyl ketone (MEK)		52	10	ug/L	50		104	70-130	1	30
Methyl isobutyl ketone (MIBK)		53	5.0	ug/L	50		106	70-130	2	30
Methyl tertiary butyl ether (MTBE)		9.8	2.0	ug/L	10		98	70-130	2	30
Methylene chloride		9.7	1.0	ug/L	10		97	70-130	1	30
Naphthalene		10	1.0	ug/L	10		100	70-130	0.2	30
n-Butylbenzene		11	1.0	ug/L	10		107	70-130	1	30
n-Propylbenzene		11	1.0	ug/L	10		109	70-130	4	30

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651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 06/19/19 9:37

Results were produced by Minnesota Department of Health, except where noted.

Batch B9F0130 - EPA 5030B Preparation

LCS Dup (B9F0130-BSD1) **Prepared: 06/07/19 11:37 Analyzed: 06/07/19 11:37**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
o-Xylene		10	1.0	ug/L	10		104	70-130	0.8	30
p&m-Xylene		11	1.0	ug/L	10		107	70-130	2	30
p-Isopropyltoluene		11	1.0	ug/L	10		110	70-130	4	30
sec-Butylbenzene		11	1.0	ug/L	10		109	70-130	3	30
Styrene		11	1.0	ug/L	10		106	70-130	2	30
tert-Butylbenzene		11	1.0	ug/L	10		108	70-130	2	30
Tetrachloroethene		10	1.0	ug/L	10		103	70-130	1	30
Tetrahydrofuran (THF)		97	10	ug/L	100		97	70-130	0.6	30
Toluene		11	1.0	ug/L	10		106	70-130	4	30
trans-1,2-Dichloroethene		11	1.0	ug/L	10		106	70-130	4	30
trans-1,3-Dichloropropene		9.9	0.50	ug/L	10		99	70-130	2	30
Trichloroethene (TCE)		11	0.10	ug/L	10		105	70-130	4	30
Trichlorofluoromethane		11	1.0	ug/L	10		107	70-130	6	30
Vinyl chloride		10	0.050	ug/L	10		100	70-130	6	30

Duplicate (B9F0130-DUP1) Source: 19E2198-03 **Prepared: 06/07/19 15:47 Analyzed: 06/07/19 15:47**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: 1,2-Dichlorobenzene-d4		*98*	*70-130*	*%*	*10*					
Surrogate: 4-Bromofluorobenzene		*103*	*70-130*	*%*	*10*					
Surrogate: Methyl tertiary butyl ether-d3		*100*	*70-130*	*%*	*10*					
1,1,1,2-Tetrachloroethane		<	1.0	ug/L		<				30
1,1,1-Trichloroethane		<	1.0	ug/L		<				30
1,1,2,2-Tetrachloroethane		<	0.50	ug/L		<				30
1,1,2-Trichloroethane		<	0.50	ug/L		<				30
1,1,2-Trichlorotrifluoroethane		<	1.0	ug/L		<				30
1,1-Dichloroethane		<	1.0	ug/L		<				30
1,1-Dichloroethene		<	1.0	ug/L		<				30
1,1-Dichloropropene		<	1.0	ug/L		<				30
1,2,3-Trichlorobenzene		<	1.0	ug/L		<				30
1,2,3-Trichloropropane		<	0.20	ug/L		<				30
1,2,4-Trichlorobenzene		<	1.0	ug/L		<				30
1,2,4-Trimethylbenzene		<	1.0	ug/L		<				30
1,2-Dibromo-3-chloropropane (DBCP)		<	1.0	ug/L		<				30

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 06/19/19 9:37

Results were produced by Minnesota Department of Health, except where noted.

Batch B9F0130 - EPA 5030B Preparation

Duplicate (B9F0130-DUP1) Source: 19E2198-03 **Prepared: 06/07/19 15:47 Analyzed: 06/07/19 15:47**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,2-Dibromoethane (EDB)		<	0.50	ug/L		<				30
1,2-Dichlorobenzene		<	1.0	ug/L		<				30
1,2-Dichloroethane		<	0.20	ug/L		<				30
1,2-Dichloropropane		<	1.0	ug/L		<				30
1,3,5-Trimethylbenzene		<	1.0	ug/L		<				30
1,3-Dichlorobenzene		<	1.0	ug/L		<				30
1,3-Dichloropropane		<	1.0	ug/L		<				30
1,4-Dichlorobenzene		0.29	1.0	ug/L		<			7	30
2,2-Dichloropropane		<	1.0	ug/L		<				30
2-Chlorotoluene		<	1.0	ug/L		<				30
4-Chlorotoluene		<	1.0	ug/L		<				30
Acetone		<	20	ug/L		<				30
Allyl chloride		<	1.0	ug/L		<				30
Benzene		0.11	0.50	ug/L		<			0	30
Bromobenzene		<	1.0	ug/L		<				30
Bromochloromethane		<	1.0	ug/L		<				30
Bromodichloromethane		<	1.0	ug/L		<				30
Bromoform		<	1.0	ug/L		<				30
Bromomethane		<	2.0	ug/L		<				30
Carbon tetrachloride		<	0.20	ug/L		<				30
Chlorobenzene		<	1.0	ug/L		<				30
Chlorodibromomethane		<	0.50	ug/L		<				30
Chloroethane		<	1.0	ug/L		<				30
Chloroform		<	1.0	ug/L		<				30
Chloromethane		<	1.0	ug/L		<				30
cis-1,2-Dichloroethene		<	1.0	ug/L		<				30
cis-1,3-Dichloropropene		<	0.50	ug/L		<				30
Dibromomethane		<	1.0	ug/L		<				30
Dichlorodifluoromethane		<	1.0	ug/L		<				30
Dichlorofluoromethane		<	1.0	ug/L		<				30
Ethyl ether		<	1.0	ug/L		<				30
Ethylbenzene		<	1.0	ug/L		<				30
Hexachlorobutadiene		<	0.50	ug/L		<				30
Isopropylbenzene		<	1.0	ug/L		<				30
Methyl ethyl ketone (MEK)		<	10	ug/L		<				30

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 06/19/19 9:37

Results were produced by Minnesota Department of Health, except where noted.

Batch B9F0130 - EPA 5030B Preparation

Duplicate (B9F0130-DUP1) Source: 19E2198-03 **Prepared: 06/07/19 15:47 Analyzed: 06/07/19 15:47**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Methyl isobutyl ketone (MIBK)		<	5.0	ug/L		<				30
Methyl tertiary butyl ether (MTBE)		<	2.0	ug/L		<				30
Methylene chloride		<	1.0	ug/L		<				30
Naphthalene		<	1.0	ug/L		<				30
n-Butylbenzene		<	1.0	ug/L		<				30
n-Propylbenzene		<	1.0	ug/L		<				30
o-Xylene		<	1.0	ug/L		<				30
p&m-Xylene		<	1.0	ug/L		<				30
p-Isopropyltoluene		<	1.0	ug/L		<				30
sec-Butylbenzene		<	1.0	ug/L		<				30
Styrene		<	1.0	ug/L		<				30
tert-Butylbenzene		<	1.0	ug/L		<				30
Tetrachloroethene		<	1.0	ug/L		<				30
Tetrahydrofuran (THF)		<	10	ug/L		<				30
Toluene		<	1.0	ug/L		<				30
trans-1,2-Dichloroethene		<	1.0	ug/L		<				30
trans-1,3-Dichloropropene		<	0.50	ug/L		<				30
Trichloroethene (TCE)		0.060	0.10	ug/L		<			15	30
Trichlorofluoromethane		<	1.0	ug/L		<				30
Vinyl chloride		<	0.050	ug/L		<				30

Matrix Spike (B9F0130-MS1) Source: 19E2198-02 **Prepared: 06/07/19 12:05 Analyzed: 06/07/19 12:05**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: 1,2-Dichlorobenzene-d4		*98*	*70-130*	*%*	*10*					
Surrogate: 4-Bromofluorobenzene		*102*	*70-130*	*%*	*10*					
Surrogate: Methyl tertiary butyl ether-d3		*96*	*70-130*	*%*	*10*					
1,1,1,2-Tetrachloroethane		10	1.0	ug/L	10	<	100	70-130		
1,1,1-Trichloroethane		11	1.0	ug/L	10	<	108	70-130		
1,1,2,2-Tetrachloroethane		9.5	0.50	ug/L	10	<	95	70-130		
1,1,2-Trichloroethane		9.6	0.50	ug/L	10	<	96	70-130		
1,1,2-Trichlorotrifluoroethane		11	1.0	ug/L	10	<	115	70-130		
1,1-Dichloroethane		11	1.0	ug/L	10	<	105	70-130		
1,1-Dichloroethene		11	1.0	ug/L	10	<	109	70-130		
1,1-Dichloropropene		11	1.0	ug/L	10	<	110	70-130		

FINAL REPORT

Report ID: 06192019 93716

Authorized by:

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 06/19/19 9:37

Results were produced by Minnesota Department of Health, except where noted.

Batch B9F0130 - EPA 5030B Preparation

Matrix Spike (B9F0130-MS1) Source: 19E2198-02 **Prepared: 06/07/19 12:05 Analyzed: 06/07/19 12:05**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,2,3-Trichlorobenzene		10	1.0	ug/L	10	<	100	70-130		
1,2,3-Trichloropropane		9.1	0.20	ug/L	10	<	91	70-130		
1,2,4-Trichlorobenzene		10	1.0	ug/L	10	<	102	70-130		
1,2,4-Trimethylbenzene		11	1.0	ug/L	10	<	110	70-130		
1,2-Dibromo-3-chloropropane (DBCP)		9.7	1.0	ug/L	10	<	97	70-130		
1,2-Dibromoethane (EDB)		10	0.50	ug/L	10	<	101	70-130		
1,2-Dichlorobenzene		10	1.0	ug/L	10	<	100	70-130		
1,2-Dichloroethane		9.4	0.20	ug/L	10	<	94	70-130		
1,2-Dichloropropane		10	1.0	ug/L	10	<	100	70-130		
1,3,5-Trimethylbenzene		11	1.0	ug/L	10	<	109	70-130		
1,3-Dichlorobenzene		10	1.0	ug/L	10	<	102	70-130		
1,3-Dichloropropane		9.7	1.0	ug/L	10	<	97	70-130		
1,4-Dichlorobenzene		11	1.0	ug/L	10	<	104	70-130		
2,2-Dichloropropane		12	1.0	ug/L	10	<	116	70-130		
2-Chlorotoluene		11	1.0	ug/L	10	<	107	70-130		
4-Chlorotoluene		11	1.0	ug/L	10	<	107	70-130		
Acetone		98	20	ug/L	100	<	98	70-130		
Allyl chloride		10	1.0	ug/L	10	<	101	70-130		
Benzene		11	0.50	ug/L	10	<	107	70-130		
Bromobenzene		9.9	1.0	ug/L	10	<	99	70-130		
Bromochloromethane		10	1.0	ug/L	10	<	102	70-130		
Bromodichloromethane		10	1.0	ug/L	10	<	101	70-130		
Bromoform		10	1.0	ug/L	10	<	100	70-130		
Bromomethane		10	2.0	ug/L	10	<	105	70-130		
Carbon tetrachloride		11	0.20	ug/L	10	<	109	70-130		
Chlorobenzene		11	1.0	ug/L	10	<	104	70-130		
Chlorodibromomethane		10	0.50	ug/L	10	<	100	70-130		
Chloroethane		11	1.0	ug/L	10	<	108	70-130		
Chloroform		10	1.0	ug/L	10	<	104	70-130		
Chloromethane		9.9	1.0	ug/L	10	<	99	70-130		
cis-1,2-Dichloroethene		10	1.0	ug/L	10	<	104	70-130		
cis-1,3-Dichloropropene		9.8	0.50	ug/L	10	<	98	70-130		
Dibromomethane		9.5	1.0	ug/L	10	<	95	70-130		
Dichlorodifluoromethane		11	1.0	ug/L	10	<	109	70-130		
Dichlorofluoromethane		11	1.0	ug/L	10	<	110	70-130		

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Paul Moyer, Environmental Laboratory Manager
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St. Paul, MN 55164-0899
651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 06/19/19 9:37

Results were produced by Minnesota Department of Health, except where noted.

Batch B9F0130 - EPA 5030B Preparation

Matrix Spike (B9F0130-MS1) Source: 19E2198-02 **Prepared: 06/07/19 12:05 Analyzed: 06/07/19 12:05**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Ethyl ether		10	1.0	ug/L	10	<	101	70-130		
Ethylbenzene		11	1.0	ug/L	10	<	108	70-130		
Hexachlorobutadiene		11	0.50	ug/L	10	<	115	70-130		
Isopropylbenzene		12	1.0	ug/L	10	<	115	70-130		
Methyl ethyl ketone (MEK)		50	10	ug/L	50	<	100	70-130		
Methyl isobutyl ketone (MIBK)		53	5.0	ug/L	50	<	107	70-130		
Methyl tertiary butyl ether (MTBE)		9.7	2.0	ug/L	10	<	97	70-130		
Methylene chloride		10	1.0	ug/L	10	<	101	70-130		
Naphthalene		10	1.0	ug/L	10	<	102	70-130		
n-Butylbenzene		11	1.0	ug/L	10	<	112	70-130		
n-Propylbenzene		11	1.0	ug/L	10	<	110	70-130		
o-Xylene		11	1.0	ug/L	10	<	109	70-130		
p&m-Xylene		11	1.0	ug/L	10	<	114	70-130		
p-Isopropyltoluene		11	1.0	ug/L	10	<	114	70-130		
sec-Butylbenzene		12	1.0	ug/L	10	<	116	70-130		
Styrene		11	1.0	ug/L	10	<	109	70-130		
tert-Butylbenzene		11	1.0	ug/L	10	<	112	70-130		
Tetrachloroethene		11	1.0	ug/L	10	<	110	70-130		
Tetrahydrofuran (THF)		91	10	ug/L	100	<	91	70-130		
Toluene		11	1.0	ug/L	10	<	109	70-130		
trans-1,2-Dichloroethene		11	1.0	ug/L	10	<	106	70-130		
trans-1,3-Dichloropropene		9.7	0.50	ug/L	10	<	97	70-130		
Trichloroethene (TCE)		11	0.10	ug/L	10	<	108	70-130		
Trichlorofluoromethane		11	1.0	ug/L	10	<	111	70-130		
Vinyl chloride		10	0.050	ug/L	10	<	104	70-130		

Authorized by:

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 06/19/19 9:37

Results were produced by Minnesota Department of Health, except where noted.

Batch B9F0117 - 1,4 Dioxane in Water SPE

Blank (B9F0117-BLK1) **Prepared: 06/09/19 08:00 Analyzed: 06/09/19 14:52**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,4-Dioxane	Q9	<	0.050	ug/L						

LCS (B9F0117-BS1) **Prepared: 06/09/19 08:00 Analyzed: 06/09/19 15:08**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,4-Dioxane	Q9	0.22	0.052	ug/L	0.20		105	80-120		

LCS Dup (B9F0117-BSD1) **Prepared: 06/09/19 08:00 Analyzed: 06/09/19 15:25**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,4-Dioxane	Q9	0.23	0.051	ug/L	0.20		112	80-120	6	20

Batch B9F0163 - 1,4 Dioxane in Water SPE

Blank (B9F0163-BLK1) **Prepared: 06/10/19 08:00 Analyzed: 06/10/19 14:58**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,4-Dioxane		<	0.053	ug/L						

LCS (B9F0163-BS1) **Prepared: 06/10/19 08:00 Analyzed: 06/10/19 15:15**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,4-Dioxane		0.21	0.051	ug/L	0.20		104	80-120		

Duplicate (B9F0163-DUP1) Source: 19E2257-01 **Prepared: 06/10/19 08:00 Analyzed: 06/10/19 16:05**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,4-Dioxane		<	0.050	ug/L		<				30

Matrix Spike (B9F0163-MS1) Source: 19E2257-04 **Prepared: 06/10/19 08:00 Analyzed: 06/10/19 16:38**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,4-Dioxane		0.73	0.051	ug/L	0.45	0.29	96	70-130		

Authorized by:

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Paul Moyer, Environmental Laboratory Manager
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651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 06/19/19 9:37

Results were produced by Minnesota Department of Health, except where noted.

Batch B9F0037 - PFCs Preparation

Blank (B9F0037-BLK1) **Prepared: 06/04/19 15:40 Analyzed: 06/04/19 15:40**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		<	0.050	ug/L						
Perfluorobutanoic acid (PFBA)		<	0.050	ug/L						
Perfluorohexanesulfonate (PFHxS)		<	0.025	ug/L						
Perfluorohexanoic acid (PFHxA)		<	0.050	ug/L						
Perfluorooctanesulfonate (PFOS)		<	0.015	ug/L						
Perfluorooctanoic acid (PFOA)		<	0.035	ug/L						
Perfluoropentanoic acid (PFPeA)		<	0.050	ug/L						

Blank (B9F0037-BLK2) **Prepared: 06/04/19 19:08 Analyzed: 06/04/19 19:08**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		<	0.050	ug/L						
Perfluorobutanoic acid (PFBA)		<	0.050	ug/L						
Perfluorohexanesulfonate (PFHxS)		<	0.025	ug/L						
Perfluorohexanoic acid (PFHxA)		<	0.050	ug/L						
Perfluorooctanesulfonate (PFOS)		<	0.015	ug/L						
Perfluorooctanoic acid (PFOA)		<	0.035	ug/L						
Perfluoropentanoic acid (PFPeA)		<	0.050	ug/L						

LCS (B9F0037-BS1) **Prepared: 06/04/19 15:31 Analyzed: 06/04/19 15:31**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.55	0.050	ug/L	0.50		110	80-120		
Perfluorobutanoic acid (PFBA)		0.51	0.050	ug/L	0.5		101	80-120		
Perfluorohexanesulfonate (PFHxS)		0.53	0.025	ug/L	0.50		106	80-120		
Perfluorohexanoic acid (PFHxA)		0.49	0.050	ug/L	0.5		99	80-120		
Perfluorooctanesulfonate (PFOS)		0.50	0.015	ug/L	0.49		99	80-120		
Perfluorooctanoic acid (PFOA)		0.48	0.035	ug/L	0.5		96	80-120		
Perfluoropentanoic acid (PFPeA)		0.51	0.050	ug/L	0.5		101	80-120		

LCS Dup (B9F0037-BSD1) **Prepared: 06/04/19 18:59 Analyzed: 06/04/19 18:59**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.50	0.050	ug/L	0.50		100	80-120	9	20
Perfluorobutanoic acid (PFBA)		0.51	0.050	ug/L	0.5		101	80-120	0.1	20
Perfluorohexanesulfonate (PFHxS)		0.52	0.025	ug/L	0.50		105	80-120	1	20

FINAL REPORT

Report ID: 06192019 93716

Authorized by:

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651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 06/19/19 9:37

Results were produced by Minnesota Department of Health, except where noted.

Batch B9F0037 - PFCs Preparation

LCS Dup (B9F0037-BSD1) **Prepared: 06/04/19 18:59 Analyzed: 06/04/19 18:59**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorohexanoic acid (PFHxA)		0.54	0.050	ug/L	0.5		108	80-120	9	20
Perfluorooctanesulfonate (PFOS)		0.52	0.015	ug/L	0.49		104	80-120	5	20
Perfluorooctanoic acid (PFOA)		0.50	0.035	ug/L	0.5		100	80-120	3	20
Perfluoropentanoic acid (PFPeA)		0.52	0.050	ug/L	0.5		104	80-120	2	20

Matrix Spike (B9F0037-MS1) Source: 19E2061-07 **Prepared: 06/04/19 15:56 Analyzed: 06/04/19 15:56**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.54	0.050	ug/L	0.50	<	108	70-130		
Perfluorobutanoic acid (PFBA)		1.4	0.050	ug/L	0.5	0.82	107	70-130		
Perfluorohexanesulfonate (PFHxS)		0.53	0.025	ug/L	0.50	<	106	70-130		
Perfluorohexanoic acid (PFHxA)		0.52	0.050	ug/L	0.5	<	103	70-130		
Perfluorooctanesulfonate (PFOS)		0.52	0.015	ug/L	0.49	<	105	70-130		
Perfluorooctanoic acid (PFOA)		0.49	0.035	ug/L	0.5	<	98	70-130		
Perfluoropentanoic acid (PFPeA)		0.53	0.050	ug/L	0.5	<	102	70-130		

Matrix Spike Dup (B9F0037-MSD1) Source: 19E2061-07 **Prepared: 06/04/19 16:05 Analyzed: 06/04/19 16:05**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.51	0.050	ug/L	0.50	<	102	70-130	6	20
Perfluorobutanoic acid (PFBA)		1.3	0.050	ug/L	0.5	0.82	101	70-130	2	20
Perfluorohexanesulfonate (PFHxS)		0.51	0.025	ug/L	0.50	<	102	70-130	4	20
Perfluorohexanoic acid (PFHxA)		0.50	0.050	ug/L	0.5	<	100	70-130	3	20
Perfluorooctanesulfonate (PFOS)		0.50	0.015	ug/L	0.49	<	101	70-130	4	20
Perfluorooctanoic acid (PFOA)		0.51	0.035	ug/L	0.5	<	103	70-130	5	20
Perfluoropentanoic acid (PFPeA)		0.53	0.050	ug/L	0.5	<	101	70-130	0.8	20

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Final Report
Quality Control

Data Qualifiers and Definitions

Q9	Insufficient sample received to meet method quality control requirements.
J	Analyte was present between the method detection limit and reporting limit and should be considered an estimated value.
Dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
%REC	Percent Recovery

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

Protecting, maintaining and improving the health of all Minnesotans

Report Date: 6/20/19
Client Name: QW - MPCA - Closed Landfill Assessment
Project Code: QW
Project Name: Closed Landfill Assessment

Work Order Number: 19F0098

Report To: QW - MPCA - Closed Landfill Assessment
Mark Umholtz
520 Lafayette Rd.
Saint Paul, MN 55155

The MDH Public Health Laboratory performs chemical, bacteriological and radiological analyses of environmental samples including water, waste water, sediment, air, soil and hazardous material. The laboratory provides testing services in accordance with standard operating procedures referencing approved methodology as defined in Standard Methods for the Examination of Water and Wastewater, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods: EPA SW-846, and 40 Code of Federal Regulation (CFR) parts 136, 141, and 261. In cases where analytes of interest do not have corresponding EPA approved methodology, the MDH Public Health Laboratory uses in-house methods that have undergone rigorous validation and documentation.

The results within this report are in compliance with the terms and conditions stated in the standard operating procedures, reference methodologies, and quality assurance project plan; unless otherwise narrated in the attached report.

Release of the data contained in this report has been authorized by laboratory management and is verified with the following signature affirmation. Thank you for using the MDH Public Health Laboratory.

Sincerely,

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
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St. Paul, MN 55164-0899
651-201-5300

Final Report
Summary of Samples Received

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 06/20/19 9:19

Work Order Comment: The parent sample for QC-FR SP-06 is SP-05 per M. Umholtz. -CCS 06/05/19

Field ID	MDH Sample Number	Matrix	Date & Time Collected	Date & Time Received	Receipt °C
834659	19F0098-01	Wtr-Ground	06/03/19 10:00	06/04/19 9:48	3.0
837777	19F0098-02	Wtr-Ground	06/03/19 12:15	06/04/19 9:48	3.0
837776	19F0098-03	Wtr-Ground	06/03/19 13:15	06/04/19 9:48	3.0
FB-3	19F0098-04	QC-BLANK	06/03/19 13:50	06/04/19 9:48	3.0
603282	19F0098-05	Wtr-Ground	06/03/19 15:30	06/04/19 9:48	3.0
M-3	19F0098-06	Wtr-Ground	06/03/19 15:35	06/04/19 9:48	3.0

Field ID	MDH Sample Number	Receiving Comments
834659	19F0098-01	(MW-9) Strong Odor
837777	19F0098-02	(MW-9D)
837776	19F0098-03	(MW-10D)
FB-3	19F0098-04	(Field Blank 3)
603282	19F0098-05	(MW-97-2) / Parent sample for QC-FR -CCS
M-3	19F0098-06	(Duplicate 3)

Authorized by:

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

Minnesota Pollution Control Agency

Chain-of-Custody Form revision 2013.0909

Work Order Number: 19F0098 | COC Type: Standard | Page

Turnaround Time: Standard | COC ID:

PROJECT/CLIENT INFO

Facility Code: MN SW-057 | Program Code (MDH Lab Only): QW

Project Name: 19-01567 MPCA Freeway Landfill 2019 MDH | Project Task Code: PRJ07786

Project Manager: Mark Umholtz | 651-757-2308

Potential Hazard? If yes, add information to Sampler Comments Section

LABORATORY

Lab Name: Minnesota Department of Health

Address: 601 Robert Street N.

St. Paul | MN | 55155

Phone No: 651-201-5058

SAMPLE DETAILS

SAMPLE TYPE CODES
Sample=Routine Sample
S-IVP=Integrated Vertical Profile Sample
S-CWOP=Composite Sample
QC-FB=Field Blank Sample
QC-FR=Field Replicate Sample
QC-TB=Trip Blank Sample

LAB MATRIX CODES
DW=Drinking Water
NW=Non-potable Water
SD=Soil/Solid
WP=Wipe
AR=Air
BL=Biological Material
OT=Other
TS=Tissue

FIELD MATRIX CODES
Wtr-Ground=Groundwater
Wtr-Surf=Surface Water
QC-BLANK=Artificial Blank Water
Leachate=Leachate Sample

ANALYSIS REQUESTED

Location Identifier	Sample Type	Date	Time	Start Depth, in meters	End Depth, in meters	Grab (G) or Composite (C) Sample	Lab Matrix Code	Field Matrix Code	AIS	Sampler Comments (filter volume, special handling, etc.)	# of Cont	PRESERV.	ANALYSIS	VOCs EPA 8260D	PFAS by MDH1555	1,4 Dioxane				Lab Sample No.	#
												HCl		None	None						
834659	Sample	6/3/19	1000			G	NW	Wtr-Ground	N	CMW-9 strong odor	5		6/3/19	X	X	X				-01	1
837777	Sample	6/3/19	1215			G	NW	Wtr-Ground	N	(MW-9D)	5			X	X	X				-02	2
837776	Sample	6/3/19	1315			G	NW	Wtr-Ground	N	(MW-10D)	5			X	X	X				-03	3
FB-3	QC-FB	6/3/19	1350			G	NW	QC-BLANK	N	(Field Blank 3)	5			X	X	X				-04	4
603282	Sample	6/3/19	1530			G	NW	Wtr-Ground	N	(MW-97-2)	5			X	X	X				-05	5
M-3	QC-FR	6/3/19	1535			G	NW	Wtr-Ground	N	(Duplicate 3)	5			X	X	X				-06	6
									N												7
									N												8
									N												9
									N												10

DTA 6/3/19

Sampled By: David Anderson | Sampler's Signature: David Anderson | Phone #:

Receiving Comments:

Relinquished By/Affiliation	Date/Time	Accepted By/ Affiliation	Date/Time
(Sampler) David Anderson / Pace Analytical	6/3/19 / 1630	MDH	6-4-19 / 9:48

DEPARTMENT OF HEALTH

Sample Condition Upon Receipt

Minnesota Department of Health Public Health Laboratory

Data Entry Worksheet

19F0098

Parcel Information

Date & time of receipt: JUN 4'19 9:48

Courier: ☒ Walk-in ☐ FedEx ☐ Spee-Dee ☐ UPS ☐ USPS ☐ Other courier _____

Tracking # _____

After hours drop-off: ☐ Refrigerator (207) (186) ( ) ☐ Freezer (185) ( ) ☐ Unrefrigerated

Parcel: ☒ Plastic cooler ☐ Styrofoam/cardboard cooler ☐ Cardboard box ☐ Envelope ☐ Plastic can

☐ None ☐ Other _____ Info: _____

Custody seals present: ☒ No; ☐ Yes, If "Yes" Custody seals intact: ☐ Yes; ☐ No _____

Custody seal # _____ **Evidentiary samples identified:** ☒ No; ☐ Yes

Packaging & Temperature Information

Packing material: ☐ Bubble wrap ☐ Styrofoam ☐ Paper ☒ None ☐ Other _____

Cooling material: ☐ Wet ice (loose) ☒ Wet ice pack #(4) ☐ Gel pack #( ) ☐ Dry ice ☐ None

☐ Other _____

Condition of cooling material: ☐ Solid ☒ Partially frozen ☐ Liquid; Liquid temperature: _____ °C ☐ N/A

Representative sample temperature: 3.0 °C **IR thermometer instrument used:** #10

Samples received without evidence of freezing: ☒ Yes; ☐ No _____

Initials of person receiving parcel: TD

Chain of Custody, Sample Container & Analysis Information

Chain of custody received with sample containers: ☒ Yes; ☐ No

Chain of custody type: ☒ Standard ☐ Civil ☐ Criminal ☐ Priority/Emergency ☐ Unknown

All sample containers are unique to a sample point listed on the chain of custody: ☒ Yes; ☐ No

_____

All sample containers have been collected prior to the expiration date listed on container label:

☒ Yes; ☐ No; ☐ Unknown _____

All sample containers received intact: ☒ Yes; ☐ No _____

All sample containers are appropriate for requested analysis: ☒ Yes; ☐ No; ☐ Unknown

_____

All analysis have been received within the specified holding time for analysis: ☒ Yes; ☐ No ☐ Unknown

_____

Rad Chem. request received: ☐ Yes; ☒ No, If "Yes" sample survey results: ☐ < 0.5 mrem/hr ☐ ≥ 0.5 mrem/hr

Rad Chem. meter calibration date verified: ☐ Yes; ☒ No

Sample submission details are entered in the Environmental Laboratory LIMS.

Initials of person logging in the work order request into LIMS: TB

DOC-84
Revision: 5

Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Case Narrative

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name: MN SW-057
Collected by: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 06/20/2019 9:19

Except where noted in this report, no additional comments are needed for this Work Order.

Authorized by:

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 06/20/19 9:19

MDH Sample Number: 19F0098-01

Location ID: 834659
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 06/03/19
Collect Time: 10:00
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: (MW-9) Strong Odor

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Surrogate: 1,2-Dichlorobenzene-d4		*102*	*70-130*	%	*1*	*B9F0130*	*06/07/19 22:17*	*06/07/19 22:17*	*EPA 8260D*
Surrogate: 4-Bromofluorobenzene		*105*	*70-130*	%	*1*	*B9F0130*	*06/07/19 22:17*	*06/07/19 22:17*	*EPA 8260D*
Surrogate: Methyl tertiary butyl ether-d3		*96*	*70-130*	%	*1*	*B9F0130*	*06/07/19 22:17*	*06/07/19 22:17*	*EPA 8260D*
1,1,1,2-Tetrachloroethane		<	1.0	ug/L	1	B9F0130	06/07/19 22:17	06/07/19 22:17	EPA 8260D
1,1,1-Trichloroethane		<	1.0	ug/L	1	B9F0130	06/07/19 22:17	06/07/19 22:17	EPA 8260D
1,1,2,2-Tetrachloroethane		<	0.50	ug/L	1	B9F0130	06/07/19 22:17	06/07/19 22:17	EPA 8260D
1,1,2-Trichloroethane		<	0.50	ug/L	1	B9F0130	06/07/19 22:17	06/07/19 22:17	EPA 8260D
1,1,2-Trichlorotrifluoroethane		<	1.0	ug/L	1	B9F0130	06/07/19 22:17	06/07/19 22:17	EPA 8260D
1,1-Dichloroethane		<	1.0	ug/L	1	B9F0130	06/07/19 22:17	06/07/19 22:17	EPA 8260D
1,1-Dichloroethene		<	1.0	ug/L	1	B9F0130	06/07/19 22:17	06/07/19 22:17	EPA 8260D
1,1-Dichloropropene		<	1.0	ug/L	1	B9F0130	06/07/19 22:17	06/07/19 22:17	EPA 8260D
1,2,3-Trichlorobenzene		<	1.0	ug/L	1	B9F0130	06/07/19 22:17	06/07/19 22:17	EPA 8260D
1,2,3-Trichloropropane		<	0.20	ug/L	1	B9F0130	06/07/19 22:17	06/07/19 22:17	EPA 8260D
1,2,4-Trichlorobenzene		<	1.0	ug/L	1	B9F0130	06/07/19 22:17	06/07/19 22:17	EPA 8260D
1,2,4-Trimethylbenzene		**14**	1.0	ug/L	1	B9F0130	06/07/19 22:17	06/07/19 22:17	EPA 8260D
1,2-Dibromo-3-chloropropane (DBCP)		<	1.0	ug/L	1	B9F0130	06/07/19 22:17	06/07/19 22:17	EPA 8260D
1,2-Dibromoethane (EDB)		<	0.50	ug/L	1	B9F0130	06/07/19 22:17	06/07/19 22:17	EPA 8260D
1,2-Dichlorobenzene		<	1.0	ug/L	1	B9F0130	06/07/19 22:17	06/07/19 22:17	EPA 8260D
1,2-Dichloroethane		<	0.20	ug/L	1	B9F0130	06/07/19 22:17	06/07/19 22:17	EPA 8260D
1,2-Dichloropropane		<	1.0	ug/L	1	B9F0130	06/07/19 22:17	06/07/19 22:17	EPA 8260D
1,3,5-Trimethylbenzene		**2.1**	1.0	ug/L	1	B9F0130	06/07/19 22:17	06/07/19 22:17	EPA 8260D
1,3-Dichlorobenzene		<	1.0	ug/L	1	B9F0130	06/07/19 22:17	06/07/19 22:17	EPA 8260D
1,3-Dichloropropane		<	1.0	ug/L	1	B9F0130	06/07/19 22:17	06/07/19 22:17	EPA 8260D
1,4-Dichlorobenzene		**2.4**	1.0	ug/L	1	B9F0130	06/07/19 22:17	06/07/19 22:17	EPA 8260D
2,2-Dichloropropane		<	1.0	ug/L	1	B9F0130	06/07/19 22:17	06/07/19 22:17	EPA 8260D

FINAL REPORT

Report ID: 06202019 91932

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 06/20/19 9:19

MDH Sample Number: 19F0098-01

Location ID: 834659
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 06/03/19
Collect Time: 10:00
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: (MW-9) Strong Odor

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
2-Chlorotoluene		<	1.0	ug/L	1	B9F0130	06/07/19 22:17	06/07/19 22:17	EPA 8260D
4-Chlorotoluene		<	1.0	ug/L	1	B9F0130	06/07/19 22:17	06/07/19 22:17	EPA 8260D
Acetone		**150**	20	ug/L	1	B9F0130	06/07/19 22:17	06/07/19 22:17	EPA 8260D
Allyl chloride		<	1.0	ug/L	1	B9F0130	06/07/19 22:17	06/07/19 22:17	EPA 8260D
Benzene		**11**	0.50	ug/L	1	B9F0130	06/07/19 22:17	06/07/19 22:17	EPA 8260D
Bromobenzene		<	1.0	ug/L	1	B9F0130	06/07/19 22:17	06/07/19 22:17	EPA 8260D
Bromochloromethane		<	1.0	ug/L	1	B9F0130	06/07/19 22:17	06/07/19 22:17	EPA 8260D
Bromodichloromethane		<	1.0	ug/L	1	B9F0130	06/07/19 22:17	06/07/19 22:17	EPA 8260D
Bromoform		<	1.0	ug/L	1	B9F0130	06/07/19 22:17	06/07/19 22:17	EPA 8260D
Bromomethane		<	2.0	ug/L	1	B9F0130	06/07/19 22:17	06/07/19 22:17	EPA 8260D
Carbon tetrachloride		<	0.20	ug/L	1	B9F0130	06/07/19 22:17	06/07/19 22:17	EPA 8260D
Chlorobenzene		**5.4**	1.0	ug/L	1	B9F0130	06/07/19 22:17	06/07/19 22:17	EPA 8260D
Chlorodibromomethane		<	0.50	ug/L	1	B9F0130	06/07/19 22:17	06/07/19 22:17	EPA 8260D
Chloroethane		**2.1**	1.0	ug/L	1	B9F0130	06/07/19 22:17	06/07/19 22:17	EPA 8260D
Chloroform		<	1.0	ug/L	1	B9F0130	06/07/19 22:17	06/07/19 22:17	EPA 8260D
Chloromethane		<	1.0	ug/L	1	B9F0130	06/07/19 22:17	06/07/19 22:17	EPA 8260D
cis-1,2-Dichloroethene		<	1.0	ug/L	1	B9F0130	06/07/19 22:17	06/07/19 22:17	EPA 8260D
cis-1,3-Dichloropropene		<	0.50	ug/L	1	B9F0130	06/07/19 22:17	06/07/19 22:17	EPA 8260D
Dibromomethane		<	1.0	ug/L	1	B9F0130	06/07/19 22:17	06/07/19 22:17	EPA 8260D
Dichlorodifluoromethane		<	1.0	ug/L	1	B9F0130	06/07/19 22:17	06/07/19 22:17	EPA 8260D
Dichlorofluoromethane		**1.7**	1.0	ug/L	1	B9F0130	06/07/19 22:17	06/07/19 22:17	EPA 8260D
Ethyl ether		**21**	1.0	ug/L	1	B9F0130	06/07/19 22:17	06/07/19 22:17	EPA 8260D
Ethylbenzene		**2.4**	1.0	ug/L	1	B9F0130	06/07/19 22:17	06/07/19 22:17	EPA 8260D
Hexachlorobutadiene		<	0.50	ug/L	1	B9F0130	06/07/19 22:17	06/07/19 22:17	EPA 8260D
Isopropylbenzene		**2.9**	1.0	ug/L	1	B9F0130	06/07/19 22:17	06/07/19 22:17	EPA 8260D
Methyl ethyl ketone (MEK)		**49**	10	ug/L	1	B9F0130	06/07/19 22:17	06/07/19 22:17	EPA 8260D
Methyl isobutyl ketone (MIBK)		<	5.0	ug/L	1	B9F0130	06/07/19 22:17	06/07/19 22:17	EPA 8260D

FINAL REPORT

Report ID: 06202019 91932

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 06/20/19 9:19

MDH Sample Number: 19F0098-01

Location ID: 834659
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 06/03/19
Collect Time: 10:00
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: (MW-9) Strong Odor

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Methyl tertiary butyl ether (MTBE)		<	2.0	ug/L	1	B9F0130	06/07/19 22:17	06/07/19 22:17	EPA 8260D
Methylene chloride		<	1.0	ug/L	1	B9F0130	06/07/19 22:17	06/07/19 22:17	EPA 8260D
n-Butylbenzene		<	1.0	ug/L	1	B9F0130	06/07/19 22:17	06/07/19 22:17	EPA 8260D
n-Propylbenzene		**2.6**	1.0	ug/L	1	B9F0130	06/07/19 22:17	06/07/19 22:17	EPA 8260D
o-Xylene		**3.4**	1.0	ug/L	1	B9F0130	06/07/19 22:17	06/07/19 22:17	EPA 8260D
p&m-Xylene		**16**	1.0	ug/L	1	B9F0130	06/07/19 22:17	06/07/19 22:17	EPA 8260D
p-Isopropyltoluene		**1.7**	1.0	ug/L	1	B9F0130	06/07/19 22:17	06/07/19 22:17	EPA 8260D
sec-Butylbenzene		<	1.0	ug/L	1	B9F0130	06/07/19 22:17	06/07/19 22:17	EPA 8260D
Styrene		<	1.0	ug/L	1	B9F0130	06/07/19 22:17	06/07/19 22:17	EPA 8260D
tert-Butylbenzene		<	1.0	ug/L	1	B9F0130	06/07/19 22:17	06/07/19 22:17	EPA 8260D
Tetrachloroethene		<	1.0	ug/L	1	B9F0130	06/07/19 22:17	06/07/19 22:17	EPA 8260D
Tetrahydrofuran (THF)		**17**	10	ug/L	1	B9F0130	06/07/19 22:17	06/07/19 22:17	EPA 8260D
Toluene		**1.2**	1.0	ug/L	1	B9F0130	06/07/19 22:17	06/07/19 22:17	EPA 8260D
trans-1,2-Dichloroethene		<	1.0	ug/L	1	B9F0130	06/07/19 22:17	06/07/19 22:17	EPA 8260D
trans-1,3-Dichloropropene		<	0.50	ug/L	1	B9F0130	06/07/19 22:17	06/07/19 22:17	EPA 8260D
Trichloroethene (TCE)		<	0.10	ug/L	1	B9F0130	06/07/19 22:17	06/07/19 22:17	EPA 8260D
Trichlorofluoromethane		<	1.0	ug/L	1	B9F0130	06/07/19 22:17	06/07/19 22:17	EPA 8260D
Vinyl chloride		<	0.050	ug/L	1	B9F0130	06/07/19 22:17	06/07/19 22:17	EPA 8260D

1,4-Dioxane

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
1,4-Dioxane		**2.1**	0.051	ug/L	1	B9F0164	06/10/19 08:00	06/17/19 12:53	EPA 522 Modified

PFC Expanded List

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorobutanesulfonate (PFBS)	J	**0.010**	0.050	ug/L	1	B9F0100	06/06/19 14:49	06/06/19 14:49	MDH 555

FINAL REPORT

Report ID: 06202019 91932

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 06/20/19 9:19

MDH Sample Number: 19F0098-01

Location ID: 834659
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 06/03/19
Collect Time: 10:00
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: (MW-9) Strong Odor

Results were produced by the Minnesota Department of Health, except where noted.

PFC Expanded List - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorohexanesulfonate (PFHxS)		**0.11**	0.025	ug/L	1	B9F0100	06/06/19 14:49	06/06/19 14:49	MDH 555
Perfluorooctanesulfonate (PFOS)		**0.10**	0.015	ug/L	1	B9F0100	06/06/19 14:49	06/06/19 14:49	MDH 555
Perfluorooctanoic acid (PFOA)		**0.30**	0.035	ug/L	1	B9F0100	06/06/19 14:49	06/06/19 14:49	MDH 555

Authorized by:

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 06/20/19 9:19

MDH Sample Number: 19F0098-01RE1

Location ID: 834659
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 06/03/19
Collect Time: 10:00
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: (MW-9) Strong Odor

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Surrogate: 1,2-Dichlorobenzene-d4		*99*	*70-130*	%	*1*	*B9F0193*	*06/11/19 18:53*	*06/11/19 18:53*	*EPA 8260D*
Surrogate: 4-Bromofluorobenzene		*100*	*70-130*	%	*1*	*B9F0193*	*06/11/19 18:53*	*06/11/19 18:53*	*EPA 8260D*
Surrogate: Methyl tertiary butyl ether-d3		*96*	*70-130*	%	*1*	*B9F0193*	*06/11/19 18:53*	*06/11/19 18:53*	*EPA 8260D*
Naphthalene	D2	**93**	10	ug/L	1	B9F0193	06/11/19 18:53	06/11/19 18:53	EPA 8260D

PFC Expanded List

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorobutanoic acid (PFBA)	D1, J	**0.063**	0.25	ug/L	5	B9F0167	06/10/19 12:05	06/10/19 12:05	MDH 555
Perfluorohexanoic acid (PFHxA)	D1, J	**0.043**	0.25	ug/L	5	B9F0167	06/10/19 12:05	06/10/19 12:05	MDH 555
Perfluoropentanoic acid (PFPeA)	D1	<	0.25	ug/L	5	B9F0167	06/10/19 12:05	06/10/19 12:05	MDH 555

FINAL REPORT

Report ID: 06202019 91932

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 06/20/19 9:19

MDH Sample Number: 19F0098-02

Location ID: 837777
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 06/03/19
Collect Time: 12:15
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: (MW-9D)

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Surrogate: 1,2-Dichlorobenzene-d4		*102*	*70-130*	%	*1*	*B9F0193*	*06/11/19 19:20*	*06/11/19 19:20*	*EPA 8260D*
Surrogate: 4-Bromofluorobenzene		*101*	*70-130*	%	*1*	*B9F0193*	*06/11/19 19:20*	*06/11/19 19:20*	*EPA 8260D*
Surrogate: Methyl tertiary butyl ether-d3		*98*	*70-130*	%	*1*	*B9F0193*	*06/11/19 19:20*	*06/11/19 19:20*	*EPA 8260D*
1,1,1,2-Tetrachloroethane		<	1.0	ug/L	1	B9F0193	06/11/19 19:20	06/11/19 19:20	EPA 8260D
1,1,1-Trichloroethane		<	1.0	ug/L	1	B9F0193	06/11/19 19:20	06/11/19 19:20	EPA 8260D
1,1,2,2-Tetrachloroethane		<	0.50	ug/L	1	B9F0193	06/11/19 19:20	06/11/19 19:20	EPA 8260D
1,1,2-Trichloroethane		<	0.50	ug/L	1	B9F0193	06/11/19 19:20	06/11/19 19:20	EPA 8260D
1,1,2-Trichlorotrifluoroethane		<	1.0	ug/L	1	B9F0193	06/11/19 19:20	06/11/19 19:20	EPA 8260D
1,1-Dichloroethane		<	1.0	ug/L	1	B9F0193	06/11/19 19:20	06/11/19 19:20	EPA 8260D
1,1-Dichloroethene		<	1.0	ug/L	1	B9F0193	06/11/19 19:20	06/11/19 19:20	EPA 8260D
1,1-Dichloropropene		<	1.0	ug/L	1	B9F0193	06/11/19 19:20	06/11/19 19:20	EPA 8260D
1,2,3-Trichlorobenzene		<	1.0	ug/L	1	B9F0193	06/11/19 19:20	06/11/19 19:20	EPA 8260D
1,2,3-Trichloropropane		<	0.20	ug/L	1	B9F0193	06/11/19 19:20	06/11/19 19:20	EPA 8260D
1,2,4-Trichlorobenzene		<	1.0	ug/L	1	B9F0193	06/11/19 19:20	06/11/19 19:20	EPA 8260D
1,2,4-Trimethylbenzene		<	1.0	ug/L	1	B9F0193	06/11/19 19:20	06/11/19 19:20	EPA 8260D
1,2-Dibromo-3-chloropropane (DBCP)		<	1.0	ug/L	1	B9F0193	06/11/19 19:20	06/11/19 19:20	EPA 8260D
1,2-Dibromoethane (EDB)		<	0.50	ug/L	1	B9F0193	06/11/19 19:20	06/11/19 19:20	EPA 8260D
1,2-Dichlorobenzene		<	1.0	ug/L	1	B9F0193	06/11/19 19:20	06/11/19 19:20	EPA 8260D
1,2-Dichloroethane		<	0.20	ug/L	1	B9F0193	06/11/19 19:20	06/11/19 19:20	EPA 8260D
1,2-Dichloropropane		<	1.0	ug/L	1	B9F0193	06/11/19 19:20	06/11/19 19:20	EPA 8260D
1,3,5-Trimethylbenzene		<	1.0	ug/L	1	B9F0193	06/11/19 19:20	06/11/19 19:20	EPA 8260D
1,3-Dichlorobenzene		<	1.0	ug/L	1	B9F0193	06/11/19 19:20	06/11/19 19:20	EPA 8260D
1,3-Dichloropropane		<	1.0	ug/L	1	B9F0193	06/11/19 19:20	06/11/19 19:20	EPA 8260D
1,4-Dichlorobenzene		<	1.0	ug/L	1	B9F0193	06/11/19 19:20	06/11/19 19:20	EPA 8260D
2,2-Dichloropropane		<	1.0	ug/L	1	B9F0193	06/11/19 19:20	06/11/19 19:20	EPA 8260D
2-Chlorotoluene		<	1.0	ug/L	1	B9F0193	06/11/19 19:20	06/11/19 19:20	EPA 8260D

FINAL REPORT

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Public Health Laboratory, Minnesota Department of Health

Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
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St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 06/20/19 9:19

MDH Sample Number: 19F0098-02

Location ID: 837777
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 06/03/19
Collect Time: 12:15
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: (MW-9D)

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
4-Chlorotoluene		<	1.0	ug/L	1	B9F0193	06/11/19 19:20	06/11/19 19:20	EPA 8260D
Acetone		<	20	ug/L	1	B9F0193	06/11/19 19:20	06/11/19 19:20	EPA 8260D
Allyl chloride		<	1.0	ug/L	1	B9F0193	06/11/19 19:20	06/11/19 19:20	EPA 8260D
Benzene		<	0.50	ug/L	1	B9F0193	06/11/19 19:20	06/11/19 19:20	EPA 8260D
Bromobenzene		<	1.0	ug/L	1	B9F0193	06/11/19 19:20	06/11/19 19:20	EPA 8260D
Bromochloromethane		<	1.0	ug/L	1	B9F0193	06/11/19 19:20	06/11/19 19:20	EPA 8260D
Bromodichloromethane		<	1.0	ug/L	1	B9F0193	06/11/19 19:20	06/11/19 19:20	EPA 8260D
Bromoform		<	1.0	ug/L	1	B9F0193	06/11/19 19:20	06/11/19 19:20	EPA 8260D
Bromomethane		<	2.0	ug/L	1	B9F0193	06/11/19 19:20	06/11/19 19:20	EPA 8260D
Carbon tetrachloride		<	0.20	ug/L	1	B9F0193	06/11/19 19:20	06/11/19 19:20	EPA 8260D
Chlorobenzene		**1.3**	1.0	ug/L	1	B9F0193	06/11/19 19:20	06/11/19 19:20	EPA 8260D
Chlorodibromomethane		<	0.50	ug/L	1	B9F0193	06/11/19 19:20	06/11/19 19:20	EPA 8260D
Chloroethane		<	1.0	ug/L	1	B9F0193	06/11/19 19:20	06/11/19 19:20	EPA 8260D
Chloroform		<	1.0	ug/L	1	B9F0193	06/11/19 19:20	06/11/19 19:20	EPA 8260D
Chloromethane		<	1.0	ug/L	1	B9F0193	06/11/19 19:20	06/11/19 19:20	EPA 8260D
cis-1,2-Dichloroethene		<	1.0	ug/L	1	B9F0193	06/11/19 19:20	06/11/19 19:20	EPA 8260D
cis-1,3-Dichloropropene		<	0.50	ug/L	1	B9F0193	06/11/19 19:20	06/11/19 19:20	EPA 8260D
Dibromomethane		<	1.0	ug/L	1	B9F0193	06/11/19 19:20	06/11/19 19:20	EPA 8260D
Dichlorodifluoromethane		<	1.0	ug/L	1	B9F0193	06/11/19 19:20	06/11/19 19:20	EPA 8260D
Dichlorofluoromethane		<	1.0	ug/L	1	B9F0193	06/11/19 19:20	06/11/19 19:20	EPA 8260D
Ethyl ether		**16**	1.0	ug/L	1	B9F0193	06/11/19 19:20	06/11/19 19:20	EPA 8260D
Ethylbenzene		<	1.0	ug/L	1	B9F0193	06/11/19 19:20	06/11/19 19:20	EPA 8260D
Hexachlorobutadiene		<	0.50	ug/L	1	B9F0193	06/11/19 19:20	06/11/19 19:20	EPA 8260D
Isopropylbenzene		<	1.0	ug/L	1	B9F0193	06/11/19 19:20	06/11/19 19:20	EPA 8260D
Methyl ethyl ketone (MEK)		<	10	ug/L	1	B9F0193	06/11/19 19:20	06/11/19 19:20	EPA 8260D
Methyl isobutyl ketone (MIBK)		<	5.0	ug/L	1	B9F0193	06/11/19 19:20	06/11/19 19:20	EPA 8260D
Methyl tertiary butyl ether (MTBE)		<	2.0	ug/L	1	B9F0193	06/11/19 19:20	06/11/19 19:20	EPA 8260D

FINAL REPORT

Report ID: 06202019 91932

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 06/20/19 9:19

MDH Sample Number: 19F0098-02

Location ID: 837777
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 06/03/19
Collect Time: 12:15
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: (MW-9D)

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Methylene chloride		<	1.0	ug/L	1	B9F0193	06/11/19 19:20	06/11/19 19:20	EPA 8260D
Naphthalene		<	1.0	ug/L	1	B9F0193	06/11/19 19:20	06/11/19 19:20	EPA 8260D
n-Butylbenzene		<	1.0	ug/L	1	B9F0193	06/11/19 19:20	06/11/19 19:20	EPA 8260D
n-Propylbenzene		<	1.0	ug/L	1	B9F0193	06/11/19 19:20	06/11/19 19:20	EPA 8260D
o-Xylene		<	1.0	ug/L	1	B9F0193	06/11/19 19:20	06/11/19 19:20	EPA 8260D
p&m-Xylene		<	1.0	ug/L	1	B9F0193	06/11/19 19:20	06/11/19 19:20	EPA 8260D
p-Isopropyltoluene		<	1.0	ug/L	1	B9F0193	06/11/19 19:20	06/11/19 19:20	EPA 8260D
sec-Butylbenzene		<	1.0	ug/L	1	B9F0193	06/11/19 19:20	06/11/19 19:20	EPA 8260D
Styrene		<	1.0	ug/L	1	B9F0193	06/11/19 19:20	06/11/19 19:20	EPA 8260D
tert-Butylbenzene		<	1.0	ug/L	1	B9F0193	06/11/19 19:20	06/11/19 19:20	EPA 8260D
Tetrachloroethene		<	1.0	ug/L	1	B9F0193	06/11/19 19:20	06/11/19 19:20	EPA 8260D
Tetrahydrofuran (THF)		**18**	10	ug/L	1	B9F0193	06/11/19 19:20	06/11/19 19:20	EPA 8260D
Toluene		<	1.0	ug/L	1	B9F0193	06/11/19 19:20	06/11/19 19:20	EPA 8260D
trans-1,2-Dichloroethene		<	1.0	ug/L	1	B9F0193	06/11/19 19:20	06/11/19 19:20	EPA 8260D
trans-1,3-Dichloropropene		<	0.50	ug/L	1	B9F0193	06/11/19 19:20	06/11/19 19:20	EPA 8260D
Trichloroethene (TCE)		<	0.10	ug/L	1	B9F0193	06/11/19 19:20	06/11/19 19:20	EPA 8260D
Trichlorofluoromethane		<	1.0	ug/L	1	B9F0193	06/11/19 19:20	06/11/19 19:20	EPA 8260D
Vinyl chloride		<	0.050	ug/L	1	B9F0193	06/11/19 19:20	06/11/19 19:20	EPA 8260D

PFC Expanded List

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorobutanesulfonate (PFBS)	J	**0.020**	0.050	ug/L	1	B9F0100	06/06/19 14:57	06/06/19 14:57	MDH 555
Perfluorobutanoic acid (PFBA)		**0.60**	0.050	ug/L	1	B9F0100	06/06/19 14:57	06/06/19 14:57	MDH 555
Perfluorohexanesulfonate (PFHxS)		**0.063**	0.025	ug/L	1	B9F0100	06/06/19 14:57	06/06/19 14:57	MDH 555
Perfluorohexanoic acid (PFHxA)		**0.11**	0.050	ug/L	1	B9F0100	06/06/19 14:57	06/06/19 14:57	MDH 555
Perfluorooctanesulfonate (PFOS)		**0.13**	0.015	ug/L	1	B9F0100	06/06/19 14:57	06/06/19 14:57	MDH 555
Perfluorooctanoic acid (PFOA)		**0.32**	0.035	ug/L	1	B9F0100	06/06/19 14:57	06/06/19 14:57	MDH 555

FINAL REPORT

Report ID: 06202019 91932

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Minnesota Department of Health
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Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 06/20/19 9:19

MDH Sample Number: 19F0098-02

Location ID: 837777
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 06/03/19
Collect Time: 12:15
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: (MW-9D)

Results were produced by the Minnesota Department of Health, except where noted.

PFC Expanded List - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluoropentanoic acid (PFPeA)		**0.081**	0.050	ug/L	1	B9F0100	06/06/19 14:57	06/06/19 14:57	MDH 555

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Public Health Laboratory, Minnesota Department of Health

Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 06/20/19 9:19

MDH Sample Number: 19F0098-02RE1

Location ID: 837777
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 06/03/19
Collect Time: 12:15
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: (MW-9D)

Results were produced by the Minnesota Department of Health, except where noted.

1,4-Dioxane

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
1,4-Dioxane	D2	**35**	0.21	ug/L	4	B9F0164	06/10/19 08:00	06/18/19 10:25	EPA 522 Modified

FINAL REPORT

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Public Health Laboratory, Minnesota Department of Health

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Environmental Laboratory Section
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St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 06/20/19 9:19

MDH Sample Number: 19F0098-03

Location ID: 837776
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 06/03/19
Collect Time: 13:15
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: (MW-10D)

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Surrogate: 1,2-Dichlorobenzene-d4		*102*	*70-130*	%	*1*	*B9F0193*	*06/11/19 19:48*	*06/11/19 19:48*	*EPA 8260D*
Surrogate: 4-Bromofluorobenzene		*100*	*70-130*	%	*1*	*B9F0193*	*06/11/19 19:48*	*06/11/19 19:48*	*EPA 8260D*
Surrogate: Methyl tertiary butyl ether-d3		*97*	*70-130*	%	*1*	*B9F0193*	*06/11/19 19:48*	*06/11/19 19:48*	*EPA 8260D*
1,1,1,2-Tetrachloroethane		<	1.0	ug/L	1	B9F0193	06/11/19 19:48	06/11/19 19:48	EPA 8260D
1,1,1-Trichloroethane		<	1.0	ug/L	1	B9F0193	06/11/19 19:48	06/11/19 19:48	EPA 8260D
1,1,2,2-Tetrachloroethane		<	0.50	ug/L	1	B9F0193	06/11/19 19:48	06/11/19 19:48	EPA 8260D
1,1,2-Trichloroethane		<	0.50	ug/L	1	B9F0193	06/11/19 19:48	06/11/19 19:48	EPA 8260D
1,1,2-Trichlorotrifluoroethane		<	1.0	ug/L	1	B9F0193	06/11/19 19:48	06/11/19 19:48	EPA 8260D
1,1-Dichloroethane		<	1.0	ug/L	1	B9F0193	06/11/19 19:48	06/11/19 19:48	EPA 8260D
1,1-Dichloroethene		<	1.0	ug/L	1	B9F0193	06/11/19 19:48	06/11/19 19:48	EPA 8260D
1,1-Dichloropropene		<	1.0	ug/L	1	B9F0193	06/11/19 19:48	06/11/19 19:48	EPA 8260D
1,2,3-Trichlorobenzene		<	1.0	ug/L	1	B9F0193	06/11/19 19:48	06/11/19 19:48	EPA 8260D
1,2,3-Trichloropropane		<	0.20	ug/L	1	B9F0193	06/11/19 19:48	06/11/19 19:48	EPA 8260D
1,2,4-Trichlorobenzene		<	1.0	ug/L	1	B9F0193	06/11/19 19:48	06/11/19 19:48	EPA 8260D
1,2,4-Trimethylbenzene		<	1.0	ug/L	1	B9F0193	06/11/19 19:48	06/11/19 19:48	EPA 8260D
1,2-Dibromo-3-chloropropane (DBCP)		<	1.0	ug/L	1	B9F0193	06/11/19 19:48	06/11/19 19:48	EPA 8260D
1,2-Dibromoethane (EDB)		<	0.50	ug/L	1	B9F0193	06/11/19 19:48	06/11/19 19:48	EPA 8260D
1,2-Dichlorobenzene		<	1.0	ug/L	1	B9F0193	06/11/19 19:48	06/11/19 19:48	EPA 8260D
1,2-Dichloroethane		<	0.20	ug/L	1	B9F0193	06/11/19 19:48	06/11/19 19:48	EPA 8260D
1,2-Dichloropropane		<	1.0	ug/L	1	B9F0193	06/11/19 19:48	06/11/19 19:48	EPA 8260D
1,3,5-Trimethylbenzene		<	1.0	ug/L	1	B9F0193	06/11/19 19:48	06/11/19 19:48	EPA 8260D
1,3-Dichlorobenzene		<	1.0	ug/L	1	B9F0193	06/11/19 19:48	06/11/19 19:48	EPA 8260D
1,3-Dichloropropane		<	1.0	ug/L	1	B9F0193	06/11/19 19:48	06/11/19 19:48	EPA 8260D
1,4-Dichlorobenzene		<	1.0	ug/L	1	B9F0193	06/11/19 19:48	06/11/19 19:48	EPA 8260D
2,2-Dichloropropane		<	1.0	ug/L	1	B9F0193	06/11/19 19:48	06/11/19 19:48	EPA 8260D
2-Chlorotoluene		<	1.0	ug/L	1	B9F0193	06/11/19 19:48	06/11/19 19:48	EPA 8260D

FINAL REPORT

Report ID: 06202019 91932

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 06/20/19 9:19

MDH Sample Number: 19F0098-03

Location ID: 837776
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 06/03/19
Collect Time: 13:15
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: (MW-10D)

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
4-Chlorotoluene		<	1.0	ug/L	1	B9F0193	06/11/19 19:48	06/11/19 19:48	EPA 8260D
Acetone		<	20	ug/L	1	B9F0193	06/11/19 19:48	06/11/19 19:48	EPA 8260D
Allyl chloride		<	1.0	ug/L	1	B9F0193	06/11/19 19:48	06/11/19 19:48	EPA 8260D
Benzene		<	0.50	ug/L	1	B9F0193	06/11/19 19:48	06/11/19 19:48	EPA 8260D
Bromobenzene		<	1.0	ug/L	1	B9F0193	06/11/19 19:48	06/11/19 19:48	EPA 8260D
Bromochloromethane		<	1.0	ug/L	1	B9F0193	06/11/19 19:48	06/11/19 19:48	EPA 8260D
Bromodichloromethane		<	1.0	ug/L	1	B9F0193	06/11/19 19:48	06/11/19 19:48	EPA 8260D
Bromoform		<	1.0	ug/L	1	B9F0193	06/11/19 19:48	06/11/19 19:48	EPA 8260D
Bromomethane		<	2.0	ug/L	1	B9F0193	06/11/19 19:48	06/11/19 19:48	EPA 8260D
Carbon tetrachloride		<	0.20	ug/L	1	B9F0193	06/11/19 19:48	06/11/19 19:48	EPA 8260D
Chlorobenzene		<	1.0	ug/L	1	B9F0193	06/11/19 19:48	06/11/19 19:48	EPA 8260D
Chlorodibromomethane		<	0.50	ug/L	1	B9F0193	06/11/19 19:48	06/11/19 19:48	EPA 8260D
Chloroethane		<	1.0	ug/L	1	B9F0193	06/11/19 19:48	06/11/19 19:48	EPA 8260D
Chloroform		<	1.0	ug/L	1	B9F0193	06/11/19 19:48	06/11/19 19:48	EPA 8260D
Chloromethane		<	1.0	ug/L	1	B9F0193	06/11/19 19:48	06/11/19 19:48	EPA 8260D
cis-1,2-Dichloroethene		<	1.0	ug/L	1	B9F0193	06/11/19 19:48	06/11/19 19:48	EPA 8260D
cis-1,3-Dichloropropene		<	0.50	ug/L	1	B9F0193	06/11/19 19:48	06/11/19 19:48	EPA 8260D
Dibromomethane		<	1.0	ug/L	1	B9F0193	06/11/19 19:48	06/11/19 19:48	EPA 8260D
Dichlorodifluoromethane		<	1.0	ug/L	1	B9F0193	06/11/19 19:48	06/11/19 19:48	EPA 8260D
Dichlorofluoromethane		<	1.0	ug/L	1	B9F0193	06/11/19 19:48	06/11/19 19:48	EPA 8260D
Ethyl ether		**10**	1.0	ug/L	1	B9F0193	06/11/19 19:48	06/11/19 19:48	EPA 8260D
Ethylbenzene		<	1.0	ug/L	1	B9F0193	06/11/19 19:48	06/11/19 19:48	EPA 8260D
Hexachlorobutadiene		<	0.50	ug/L	1	B9F0193	06/11/19 19:48	06/11/19 19:48	EPA 8260D
Isopropylbenzene		<	1.0	ug/L	1	B9F0193	06/11/19 19:48	06/11/19 19:48	EPA 8260D
Methyl ethyl ketone (MEK)		<	10	ug/L	1	B9F0193	06/11/19 19:48	06/11/19 19:48	EPA 8260D
Methyl isobutyl ketone (MIBK)		<	5.0	ug/L	1	B9F0193	06/11/19 19:48	06/11/19 19:48	EPA 8260D
Methyl tertiary butyl ether (MTBE)		<	2.0	ug/L	1	B9F0193	06/11/19 19:48	06/11/19 19:48	EPA 8260D

FINAL REPORT

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Environmental Laboratory Section
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St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 06/20/19 9:19

MDH Sample Number: 19F0098-03

Location ID: 837776
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 06/03/19
Collect Time: 13:15
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: (MW-10D)

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Methylene chloride		<	1.0	ug/L	1	B9F0193	06/11/19 19:48	06/11/19 19:48	EPA 8260D
Naphthalene		<	1.0	ug/L	1	B9F0193	06/11/19 19:48	06/11/19 19:48	EPA 8260D
n-Butylbenzene		<	1.0	ug/L	1	B9F0193	06/11/19 19:48	06/11/19 19:48	EPA 8260D
n-Propylbenzene		<	1.0	ug/L	1	B9F0193	06/11/19 19:48	06/11/19 19:48	EPA 8260D
o-Xylene		<	1.0	ug/L	1	B9F0193	06/11/19 19:48	06/11/19 19:48	EPA 8260D
p&m-Xylene		<	1.0	ug/L	1	B9F0193	06/11/19 19:48	06/11/19 19:48	EPA 8260D
p-Isopropyltoluene		<	1.0	ug/L	1	B9F0193	06/11/19 19:48	06/11/19 19:48	EPA 8260D
sec-Butylbenzene		<	1.0	ug/L	1	B9F0193	06/11/19 19:48	06/11/19 19:48	EPA 8260D
Styrene		<	1.0	ug/L	1	B9F0193	06/11/19 19:48	06/11/19 19:48	EPA 8260D
tert-Butylbenzene		<	1.0	ug/L	1	B9F0193	06/11/19 19:48	06/11/19 19:48	EPA 8260D
Tetrachloroethene		<	1.0	ug/L	1	B9F0193	06/11/19 19:48	06/11/19 19:48	EPA 8260D
Tetrahydrofuran (THF)		**13**	10	ug/L	1	B9F0193	06/11/19 19:48	06/11/19 19:48	EPA 8260D
Toluene		<	1.0	ug/L	1	B9F0193	06/11/19 19:48	06/11/19 19:48	EPA 8260D
trans-1,2-Dichloroethene		<	1.0	ug/L	1	B9F0193	06/11/19 19:48	06/11/19 19:48	EPA 8260D
trans-1,3-Dichloropropene		<	0.50	ug/L	1	B9F0193	06/11/19 19:48	06/11/19 19:48	EPA 8260D
Trichloroethene (TCE)		<	0.10	ug/L	1	B9F0193	06/11/19 19:48	06/11/19 19:48	EPA 8260D
Trichlorofluoromethane		<	1.0	ug/L	1	B9F0193	06/11/19 19:48	06/11/19 19:48	EPA 8260D
Vinyl chloride		<	0.050	ug/L	1	B9F0193	06/11/19 19:48	06/11/19 19:48	EPA 8260D

PFC Expanded List

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorobutanesulfonate (PFBS)	J	**0.010**	0.050	ug/L	1	B9F0100	06/06/19 15:06	06/06/19 15:06	MDH 555
Perfluorobutanoic acid (PFBA)		**0.51**	0.050	ug/L	1	B9F0100	06/06/19 15:06	06/06/19 15:06	MDH 555
Perfluorohexanesulfonate (PFHxS)		**0.033**	0.025	ug/L	1	B9F0100	06/06/19 15:06	06/06/19 15:06	MDH 555
Perfluorohexanoic acid (PFHxA)		**0.084**	0.050	ug/L	1	B9F0100	06/06/19 15:06	06/06/19 15:06	MDH 555
Perfluorooctanesulfonate (PFOS)		**0.073**	0.015	ug/L	1	B9F0100	06/06/19 15:06	06/06/19 15:06	MDH 555
Perfluorooctanoic acid (PFOA)		**0.58**	0.035	ug/L	1	B9F0100	06/06/19 15:06	06/06/19 15:06	MDH 555

FINAL REPORT

Report ID: 06202019 91932

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Public Health Laboratory
Environmental Laboratory Section
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St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 06/20/19 9:19

MDH Sample Number: 19F0098-03

Location ID: 837776
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 06/03/19
Collect Time: 13:15
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: (MW-10D)

Results were produced by the Minnesota Department of Health, except where noted.

PFC Expanded List - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluoropentanoic acid (PFPeA)		**0.072**	0.050	ug/L	1	B9F0100	06/06/19 15:06	06/06/19 15:06	MDH 555

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St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 06/20/19 9:19

MDH Sample Number: 19F0098-03RE1

Location ID: 837776
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 06/03/19
Collect Time: 13:15
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: (MW-10D)

Results were produced by the Minnesota Department of Health, except where noted.

1,4-Dioxane

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
1,4-Dioxane	D2	**27**	0.20	ug/L	4	B9F0164	06/10/19 08:00	06/18/19 10:42	EPA 522 Modified

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Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 06/20/19 9:19

MDH Sample Number: 19F0098-04

Location ID: FB-3
Field Name: None
Sampling Point: None
QA Type: Field Blank

Collect Date: 06/03/19
Collect Time: 13:50
Matrix: QC-BLANK

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: (Field Blank 3)

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Surrogate: 1,2-Dichlorobenzene-d4		*100*	*70-130*	%	*1*	*B9F0193*	*06/11/19 20:16*	*06/11/19 20:16*	*EPA 8260D*
Surrogate: 4-Bromofluorobenzene		*100*	*70-130*	%	*1*	*B9F0193*	*06/11/19 20:16*	*06/11/19 20:16*	*EPA 8260D*
Surrogate: Methyl tertiary butyl ether-d3		*97*	*70-130*	%	*1*	*B9F0193*	*06/11/19 20:16*	*06/11/19 20:16*	*EPA 8260D*
1,1,1,2-Tetrachloroethane		<	1.0	ug/L	1	B9F0193	06/11/19 20:16	06/11/19 20:16	EPA 8260D
1,1,1-Trichloroethane		<	1.0	ug/L	1	B9F0193	06/11/19 20:16	06/11/19 20:16	EPA 8260D
1,1,2,2-Tetrachloroethane		<	0.50	ug/L	1	B9F0193	06/11/19 20:16	06/11/19 20:16	EPA 8260D
1,1,2-Trichloroethane		<	0.50	ug/L	1	B9F0193	06/11/19 20:16	06/11/19 20:16	EPA 8260D
1,1,2-Trichlorotrifluoroethane		<	1.0	ug/L	1	B9F0193	06/11/19 20:16	06/11/19 20:16	EPA 8260D
1,1-Dichloroethane		<	1.0	ug/L	1	B9F0193	06/11/19 20:16	06/11/19 20:16	EPA 8260D
1,1-Dichloroethene		<	1.0	ug/L	1	B9F0193	06/11/19 20:16	06/11/19 20:16	EPA 8260D
1,1-Dichloropropene		<	1.0	ug/L	1	B9F0193	06/11/19 20:16	06/11/19 20:16	EPA 8260D
1,2,3-Trichlorobenzene		<	1.0	ug/L	1	B9F0193	06/11/19 20:16	06/11/19 20:16	EPA 8260D
1,2,3-Trichloropropane		<	0.20	ug/L	1	B9F0193	06/11/19 20:16	06/11/19 20:16	EPA 8260D
1,2,4-Trichlorobenzene		<	1.0	ug/L	1	B9F0193	06/11/19 20:16	06/11/19 20:16	EPA 8260D
1,2,4-Trimethylbenzene		<	1.0	ug/L	1	B9F0193	06/11/19 20:16	06/11/19 20:16	EPA 8260D
1,2-Dibromo-3-chloropropane (DBCP)		<	1.0	ug/L	1	B9F0193	06/11/19 20:16	06/11/19 20:16	EPA 8260D
1,2-Dibromoethane (EDB)		<	0.50	ug/L	1	B9F0193	06/11/19 20:16	06/11/19 20:16	EPA 8260D
1,2-Dichlorobenzene		<	1.0	ug/L	1	B9F0193	06/11/19 20:16	06/11/19 20:16	EPA 8260D
1,2-Dichloroethane		<	0.20	ug/L	1	B9F0193	06/11/19 20:16	06/11/19 20:16	EPA 8260D
1,2-Dichloropropane		<	1.0	ug/L	1	B9F0193	06/11/19 20:16	06/11/19 20:16	EPA 8260D
1,3,5-Trimethylbenzene		<	1.0	ug/L	1	B9F0193	06/11/19 20:16	06/11/19 20:16	EPA 8260D
1,3-Dichlorobenzene		<	1.0	ug/L	1	B9F0193	06/11/19 20:16	06/11/19 20:16	EPA 8260D
1,3-Dichloropropane		<	1.0	ug/L	1	B9F0193	06/11/19 20:16	06/11/19 20:16	EPA 8260D
1,4-Dichlorobenzene		<	1.0	ug/L	1	B9F0193	06/11/19 20:16	06/11/19 20:16	EPA 8260D
2,2-Dichloropropane		<	1.0	ug/L	1	B9F0193	06/11/19 20:16	06/11/19 20:16	EPA 8260D
2-Chlorotoluene		<	1.0	ug/L	1	B9F0193	06/11/19 20:16	06/11/19 20:16	EPA 8260D

FINAL REPORT

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Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 06/20/19 9:19

MDH Sample Number: 19F0098-04

Location ID: FB-3
Field Name: None
Sampling Point: None
QA Type: Field Blank

Collect Date: 06/03/19
Collect Time: 13:50
Matrix: QC-BLANK

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: (Field Blank 3)

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
4-Chlorotoluene		<	1.0	ug/L	1	B9F0193	06/11/19 20:16	06/11/19 20:16	EPA 8260D
Acetone		<	20	ug/L	1	B9F0193	06/11/19 20:16	06/11/19 20:16	EPA 8260D
Allyl chloride		<	1.0	ug/L	1	B9F0193	06/11/19 20:16	06/11/19 20:16	EPA 8260D
Benzene		<	0.50	ug/L	1	B9F0193	06/11/19 20:16	06/11/19 20:16	EPA 8260D
Bromobenzene		<	1.0	ug/L	1	B9F0193	06/11/19 20:16	06/11/19 20:16	EPA 8260D
Bromochloromethane		<	1.0	ug/L	1	B9F0193	06/11/19 20:16	06/11/19 20:16	EPA 8260D
Bromodichloromethane		<	1.0	ug/L	1	B9F0193	06/11/19 20:16	06/11/19 20:16	EPA 8260D
Bromoform		<	1.0	ug/L	1	B9F0193	06/11/19 20:16	06/11/19 20:16	EPA 8260D
Bromomethane		<	2.0	ug/L	1	B9F0193	06/11/19 20:16	06/11/19 20:16	EPA 8260D
Carbon tetrachloride		<	0.20	ug/L	1	B9F0193	06/11/19 20:16	06/11/19 20:16	EPA 8260D
Chlorobenzene		<	1.0	ug/L	1	B9F0193	06/11/19 20:16	06/11/19 20:16	EPA 8260D
Chlorodibromomethane		<	0.50	ug/L	1	B9F0193	06/11/19 20:16	06/11/19 20:16	EPA 8260D
Chloroethane		<	1.0	ug/L	1	B9F0193	06/11/19 20:16	06/11/19 20:16	EPA 8260D
Chloroform		**3.1**	1.0	ug/L	1	B9F0193	06/11/19 20:16	06/11/19 20:16	EPA 8260D
Chloromethane		<	1.0	ug/L	1	B9F0193	06/11/19 20:16	06/11/19 20:16	EPA 8260D
cis-1,2-Dichloroethene		<	1.0	ug/L	1	B9F0193	06/11/19 20:16	06/11/19 20:16	EPA 8260D
cis-1,3-Dichloropropene		<	0.50	ug/L	1	B9F0193	06/11/19 20:16	06/11/19 20:16	EPA 8260D
Dibromomethane		<	1.0	ug/L	1	B9F0193	06/11/19 20:16	06/11/19 20:16	EPA 8260D
Dichlorodifluoromethane		<	1.0	ug/L	1	B9F0193	06/11/19 20:16	06/11/19 20:16	EPA 8260D
Dichlorofluoromethane		<	1.0	ug/L	1	B9F0193	06/11/19 20:16	06/11/19 20:16	EPA 8260D
Ethyl ether		<	1.0	ug/L	1	B9F0193	06/11/19 20:16	06/11/19 20:16	EPA 8260D
Ethylbenzene		<	1.0	ug/L	1	B9F0193	06/11/19 20:16	06/11/19 20:16	EPA 8260D
Hexachlorobutadiene		<	0.50	ug/L	1	B9F0193	06/11/19 20:16	06/11/19 20:16	EPA 8260D
Isopropylbenzene		<	1.0	ug/L	1	B9F0193	06/11/19 20:16	06/11/19 20:16	EPA 8260D
Methyl ethyl ketone (MEK)		<	10	ug/L	1	B9F0193	06/11/19 20:16	06/11/19 20:16	EPA 8260D
Methyl isobutyl ketone (MIBK)		<	5.0	ug/L	1	B9F0193	06/11/19 20:16	06/11/19 20:16	EPA 8260D
Methyl tertiary butyl ether (MTBE)		<	2.0	ug/L	1	B9F0193	06/11/19 20:16	06/11/19 20:16	EPA 8260D

FINAL REPORT

Report ID: 06202019 91932

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 06/20/19 9:19

MDH Sample Number: 19F0098-04

Location ID: FB-3
Field Name: None
Sampling Point: None
QA Type: Field Blank

Collect Date: 06/03/19
Collect Time: 13:50
Matrix: QC-BLANK

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: (Field Blank 3)

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Methylene chloride		**2.7**	1.0	ug/L	1	B9F0193	06/11/19 20:16	06/11/19 20:16	EPA 8260D
Naphthalene		<	1.0	ug/L	1	B9F0193	06/11/19 20:16	06/11/19 20:16	EPA 8260D
n-Butylbenzene		<	1.0	ug/L	1	B9F0193	06/11/19 20:16	06/11/19 20:16	EPA 8260D
n-Propylbenzene		<	1.0	ug/L	1	B9F0193	06/11/19 20:16	06/11/19 20:16	EPA 8260D
o-Xylene		<	1.0	ug/L	1	B9F0193	06/11/19 20:16	06/11/19 20:16	EPA 8260D
p&m-Xylene		<	1.0	ug/L	1	B9F0193	06/11/19 20:16	06/11/19 20:16	EPA 8260D
p-Isopropyltoluene		<	1.0	ug/L	1	B9F0193	06/11/19 20:16	06/11/19 20:16	EPA 8260D
sec-Butylbenzene		<	1.0	ug/L	1	B9F0193	06/11/19 20:16	06/11/19 20:16	EPA 8260D
Styrene		<	1.0	ug/L	1	B9F0193	06/11/19 20:16	06/11/19 20:16	EPA 8260D
tert-Butylbenzene		<	1.0	ug/L	1	B9F0193	06/11/19 20:16	06/11/19 20:16	EPA 8260D
Tetrachloroethene		<	1.0	ug/L	1	B9F0193	06/11/19 20:16	06/11/19 20:16	EPA 8260D
Tetrahydrofuran (THF)		<	10	ug/L	1	B9F0193	06/11/19 20:16	06/11/19 20:16	EPA 8260D
Toluene		<	1.0	ug/L	1	B9F0193	06/11/19 20:16	06/11/19 20:16	EPA 8260D
trans-1,2-Dichloroethene		<	1.0	ug/L	1	B9F0193	06/11/19 20:16	06/11/19 20:16	EPA 8260D
trans-1,3-Dichloropropene		<	0.50	ug/L	1	B9F0193	06/11/19 20:16	06/11/19 20:16	EPA 8260D
Trichloroethene (TCE)		<	0.10	ug/L	1	B9F0193	06/11/19 20:16	06/11/19 20:16	EPA 8260D
Trichlorofluoromethane		<	1.0	ug/L	1	B9F0193	06/11/19 20:16	06/11/19 20:16	EPA 8260D
Vinyl chloride		<	0.050	ug/L	1	B9F0193	06/11/19 20:16	06/11/19 20:16	EPA 8260D

1,4-Dioxane

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
1,4-Dioxane		**0.078**	0.050	ug/L	1	B9F0164	06/10/19 08:00	06/17/19 13:43	EPA 522 Modified

PFC Expanded List

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorobutanesulfonate (PFBS)		<	0.050	ug/L	1	B9F0100	06/06/19 15:14	06/06/19 15:14	MDH 555
Perfluorobutanoic acid (PFBA)		<	0.050	ug/L	1	B9F0100	06/06/19 15:14	06/06/19 15:14	MDH 555

FINAL REPORT

Report ID: 06202019 91932

Authorized by:

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
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St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 06/20/19 9:19

MDH Sample Number: 19F0098-04

Location ID: FB-3
Field Name: None
Sampling Point: None
QA Type: Field Blank

Collect Date: 06/03/19
Collect Time: 13:50
Matrix: QC-BLANK

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: (Field Blank 3)

Results were produced by the Minnesota Department of Health, except where noted.

PFC Expanded List - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorohexanesulfonate (PFHxS)		<	0.025	ug/L	1	B9F0100	06/06/19 15:14	06/06/19 15:14	MDH 555
Perfluorohexanoic acid (PFHxA)		<	0.050	ug/L	1	B9F0100	06/06/19 15:14	06/06/19 15:14	MDH 555
Perfluorooctanesulfonate (PFOS)		<	0.015	ug/L	1	B9F0100	06/06/19 15:14	06/06/19 15:14	MDH 555
Perfluorooctanoic acid (PFOA)		<	0.035	ug/L	1	B9F0100	06/06/19 15:14	06/06/19 15:14	MDH 555
Perfluoropentanoic acid (PFPeA)		<	0.050	ug/L	1	B9F0100	06/06/19 15:14	06/06/19 15:14	MDH 555

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St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 06/20/19 9:19

MDH Sample Number: 19F0098-05

Location ID: 603282
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 06/03/19
Collect Time: 15:30
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: (MW-97-2) / Parent sample for QC-FR -CCS

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Surrogate: 1,2-Dichlorobenzene-d4		*101*	*70-130*	%	*1*	*B9F0193*	*06/11/19 20:44*	*06/11/19 20:44*	*EPA 8260D*
Surrogate: 4-Bromofluorobenzene		*101*	*70-130*	%	*1*	*B9F0193*	*06/11/19 20:44*	*06/11/19 20:44*	*EPA 8260D*
Surrogate: Methyl tertiary butyl ether-d3		*97*	*70-130*	%	*1*	*B9F0193*	*06/11/19 20:44*	*06/11/19 20:44*	*EPA 8260D*
1,1,1,2-Tetrachloroethane		<	1.0	ug/L	1	B9F0193	06/11/19 20:44	06/11/19 20:44	EPA 8260D
1,1,1-Trichloroethane		<	1.0	ug/L	1	B9F0193	06/11/19 20:44	06/11/19 20:44	EPA 8260D
1,1,2,2-Tetrachloroethane		<	0.50	ug/L	1	B9F0193	06/11/19 20:44	06/11/19 20:44	EPA 8260D
1,1,2-Trichloroethane		<	0.50	ug/L	1	B9F0193	06/11/19 20:44	06/11/19 20:44	EPA 8260D
1,1,2-Trichlorotrifluoroethane		<	1.0	ug/L	1	B9F0193	06/11/19 20:44	06/11/19 20:44	EPA 8260D
1,1-Dichloroethane		<	1.0	ug/L	1	B9F0193	06/11/19 20:44	06/11/19 20:44	EPA 8260D
1,1-Dichloroethene		<	1.0	ug/L	1	B9F0193	06/11/19 20:44	06/11/19 20:44	EPA 8260D
1,1-Dichloropropene		<	1.0	ug/L	1	B9F0193	06/11/19 20:44	06/11/19 20:44	EPA 8260D
1,2,3-Trichlorobenzene		<	1.0	ug/L	1	B9F0193	06/11/19 20:44	06/11/19 20:44	EPA 8260D
1,2,3-Trichloropropane		<	0.20	ug/L	1	B9F0193	06/11/19 20:44	06/11/19 20:44	EPA 8260D
1,2,4-Trichlorobenzene		<	1.0	ug/L	1	B9F0193	06/11/19 20:44	06/11/19 20:44	EPA 8260D
1,2,4-Trimethylbenzene		<	1.0	ug/L	1	B9F0193	06/11/19 20:44	06/11/19 20:44	EPA 8260D
1,2-Dibromo-3-chloropropane (DBCP)		<	1.0	ug/L	1	B9F0193	06/11/19 20:44	06/11/19 20:44	EPA 8260D
1,2-Dibromoethane (EDB)		<	0.50	ug/L	1	B9F0193	06/11/19 20:44	06/11/19 20:44	EPA 8260D
1,2-Dichlorobenzene		<	1.0	ug/L	1	B9F0193	06/11/19 20:44	06/11/19 20:44	EPA 8260D
1,2-Dichloroethane		<	0.20	ug/L	1	B9F0193	06/11/19 20:44	06/11/19 20:44	EPA 8260D
1,2-Dichloropropane		<	1.0	ug/L	1	B9F0193	06/11/19 20:44	06/11/19 20:44	EPA 8260D
1,3,5-Trimethylbenzene		<	1.0	ug/L	1	B9F0193	06/11/19 20:44	06/11/19 20:44	EPA 8260D
1,3-Dichlorobenzene		<	1.0	ug/L	1	B9F0193	06/11/19 20:44	06/11/19 20:44	EPA 8260D
1,3-Dichloropropane		<	1.0	ug/L	1	B9F0193	06/11/19 20:44	06/11/19 20:44	EPA 8260D
1,4-Dichlorobenzene		<	1.0	ug/L	1	B9F0193	06/11/19 20:44	06/11/19 20:44	EPA 8260D
2,2-Dichloropropane		<	1.0	ug/L	1	B9F0193	06/11/19 20:44	06/11/19 20:44	EPA 8260D
2-Chlorotoluene		<	1.0	ug/L	1	B9F0193	06/11/19 20:44	06/11/19 20:44	EPA 8260D

FINAL REPORT

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Public Health Laboratory, Minnesota Department of Health

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Public Health Laboratory
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St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 06/20/19 9:19

MDH Sample Number: 19F0098-05

Location ID: 603282
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 06/03/19
Collect Time: 15:30
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: (MW-97-2) / Parent sample for QC-FR -CCS

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
4-Chlorotoluene		<	1.0	ug/L	1	B9F0193	06/11/19 20:44	06/11/19 20:44	EPA 8260D
Acetone		<	20	ug/L	1	B9F0193	06/11/19 20:44	06/11/19 20:44	EPA 8260D
Allyl chloride		<	1.0	ug/L	1	B9F0193	06/11/19 20:44	06/11/19 20:44	EPA 8260D
Benzene		<	0.50	ug/L	1	B9F0193	06/11/19 20:44	06/11/19 20:44	EPA 8260D
Bromobenzene		<	1.0	ug/L	1	B9F0193	06/11/19 20:44	06/11/19 20:44	EPA 8260D
Bromochloromethane		<	1.0	ug/L	1	B9F0193	06/11/19 20:44	06/11/19 20:44	EPA 8260D
Bromodichloromethane		<	1.0	ug/L	1	B9F0193	06/11/19 20:44	06/11/19 20:44	EPA 8260D
Bromoform		<	1.0	ug/L	1	B9F0193	06/11/19 20:44	06/11/19 20:44	EPA 8260D
Bromomethane		<	2.0	ug/L	1	B9F0193	06/11/19 20:44	06/11/19 20:44	EPA 8260D
Carbon tetrachloride		<	0.20	ug/L	1	B9F0193	06/11/19 20:44	06/11/19 20:44	EPA 8260D
Chlorobenzene		<	1.0	ug/L	1	B9F0193	06/11/19 20:44	06/11/19 20:44	EPA 8260D
Chlorodibromomethane		<	0.50	ug/L	1	B9F0193	06/11/19 20:44	06/11/19 20:44	EPA 8260D
Chloroethane		<	1.0	ug/L	1	B9F0193	06/11/19 20:44	06/11/19 20:44	EPA 8260D
Chloroform		<	1.0	ug/L	1	B9F0193	06/11/19 20:44	06/11/19 20:44	EPA 8260D
Chloromethane		<	1.0	ug/L	1	B9F0193	06/11/19 20:44	06/11/19 20:44	EPA 8260D
cis-1,2-Dichloroethene		<	1.0	ug/L	1	B9F0193	06/11/19 20:44	06/11/19 20:44	EPA 8260D
cis-1,3-Dichloropropene		<	0.50	ug/L	1	B9F0193	06/11/19 20:44	06/11/19 20:44	EPA 8260D
Dibromomethane		<	1.0	ug/L	1	B9F0193	06/11/19 20:44	06/11/19 20:44	EPA 8260D
Dichlorodifluoromethane		<	1.0	ug/L	1	B9F0193	06/11/19 20:44	06/11/19 20:44	EPA 8260D
Dichlorofluoromethane		<	1.0	ug/L	1	B9F0193	06/11/19 20:44	06/11/19 20:44	EPA 8260D
Ethyl ether		<	1.0	ug/L	1	B9F0193	06/11/19 20:44	06/11/19 20:44	EPA 8260D
Ethylbenzene		<	1.0	ug/L	1	B9F0193	06/11/19 20:44	06/11/19 20:44	EPA 8260D
Hexachlorobutadiene		<	0.50	ug/L	1	B9F0193	06/11/19 20:44	06/11/19 20:44	EPA 8260D
Isopropylbenzene		<	1.0	ug/L	1	B9F0193	06/11/19 20:44	06/11/19 20:44	EPA 8260D
Methyl ethyl ketone (MEK)		<	10	ug/L	1	B9F0193	06/11/19 20:44	06/11/19 20:44	EPA 8260D
Methyl isobutyl ketone (MIBK)		<	5.0	ug/L	1	B9F0193	06/11/19 20:44	06/11/19 20:44	EPA 8260D
Methyl tertiary butyl ether (MTBE)		<	2.0	ug/L	1	B9F0193	06/11/19 20:44	06/11/19 20:44	EPA 8260D

FINAL REPORT

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651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 06/20/19 9:19

MDH Sample Number: 19F0098-05

Location ID: 603282
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 06/03/19
Collect Time: 15:30
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: (MW-97-2) / Parent sample for QC-FR -CCS

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Methylene chloride		<	1.0	ug/L	1	B9F0193	06/11/19 20:44	06/11/19 20:44	EPA 8260D
Naphthalene		<	1.0	ug/L	1	B9F0193	06/11/19 20:44	06/11/19 20:44	EPA 8260D
n-Butylbenzene		<	1.0	ug/L	1	B9F0193	06/11/19 20:44	06/11/19 20:44	EPA 8260D
n-Propylbenzene		<	1.0	ug/L	1	B9F0193	06/11/19 20:44	06/11/19 20:44	EPA 8260D
o-Xylene		<	1.0	ug/L	1	B9F0193	06/11/19 20:44	06/11/19 20:44	EPA 8260D
p&m-Xylene		<	1.0	ug/L	1	B9F0193	06/11/19 20:44	06/11/19 20:44	EPA 8260D
p-Isopropyltoluene		<	1.0	ug/L	1	B9F0193	06/11/19 20:44	06/11/19 20:44	EPA 8260D
sec-Butylbenzene		<	1.0	ug/L	1	B9F0193	06/11/19 20:44	06/11/19 20:44	EPA 8260D
Styrene		<	1.0	ug/L	1	B9F0193	06/11/19 20:44	06/11/19 20:44	EPA 8260D
tert-Butylbenzene		<	1.0	ug/L	1	B9F0193	06/11/19 20:44	06/11/19 20:44	EPA 8260D
Tetrachloroethene		<	1.0	ug/L	1	B9F0193	06/11/19 20:44	06/11/19 20:44	EPA 8260D
Tetrahydrofuran (THF)		<	10	ug/L	1	B9F0193	06/11/19 20:44	06/11/19 20:44	EPA 8260D
Toluene		<	1.0	ug/L	1	B9F0193	06/11/19 20:44	06/11/19 20:44	EPA 8260D
trans-1,2-Dichloroethene		<	1.0	ug/L	1	B9F0193	06/11/19 20:44	06/11/19 20:44	EPA 8260D
trans-1,3-Dichloropropene		<	0.50	ug/L	1	B9F0193	06/11/19 20:44	06/11/19 20:44	EPA 8260D
Trichloroethene (TCE)		<	0.10	ug/L	1	B9F0193	06/11/19 20:44	06/11/19 20:44	EPA 8260D
Trichlorofluoromethane		<	1.0	ug/L	1	B9F0193	06/11/19 20:44	06/11/19 20:44	EPA 8260D
Vinyl chloride		<	0.050	ug/L	1	B9F0193	06/11/19 20:44	06/11/19 20:44	EPA 8260D

1,4-Dioxane

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
1,4-Dioxane		**0.12**	0.049	ug/L	1	B9F0164	06/10/19 08:00	06/17/19 14:00	EPA 522 Modified

PFC Expanded List

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorobutanesulfonate (PFBS)		<	0.050	ug/L	1	B9F0100	06/06/19 15:22	06/06/19 15:22	MDH 555
Perfluorohexanesulfonate (PFHxS)		<	0.025	ug/L	1	B9F0100	06/06/19 15:22	06/06/19 15:22	MDH 555

FINAL REPORT

Report ID: 06202019 91932

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Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 06/20/19 9:19

MDH Sample Number: 19F0098-05

Location ID: 603282
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 06/03/19
Collect Time: 15:30
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: (MW-97-2) / Parent sample for QC-FR -CCS

Results were produced by the Minnesota Department of Health, except where noted.

PFC Expanded List - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorohexanoic acid (PFHxA)	J	**0.008**	0.050	ug/L	1	B9F0100	06/06/19 15:22	06/06/19 15:22	MDH 555
Perfluorooctanesulfonate (PFOS)		<	0.015	ug/L	1	B9F0100	06/06/19 15:22	06/06/19 15:22	MDH 555
Perfluorooctanoic acid (PFOA)	J	**0.009**	0.035	ug/L	1	B9F0100	06/06/19 15:22	06/06/19 15:22	MDH 555
Perfluoropentanoic acid (PFPeA)	J	**0.006**	0.050	ug/L	1	B9F0100	06/06/19 15:22	06/06/19 15:22	MDH 555

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 06/20/19 9:19

MDH Sample Number: 19F0098-05RE1

Location ID: 603282
Field Name: None
Sampling Point: None
QA Type: None

Collect Date: 06/03/19
Collect Time: 15:30
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: (MW-97-2) / Parent sample for QC-FR -CCS

Results were produced by the Minnesota Department of Health, except where noted.

PFC Expanded List

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorobutanoic acid (PFBA)	D1	<	0.25	ug/L	5	B9F0167	06/10/19 12:13	06/10/19 12:13	MDH 555

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Public Health Laboratory, Minnesota Department of Health

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651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 06/20/19 9:19

MDH Sample Number: 19F0098-06

Location ID: M-3
Field Name: None
Sampling Point: None
QA Type: Field Dup/Rep

Collect Date: 06/03/19
Collect Time: 15:35
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: (Duplicate 3)

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Surrogate: 1,2-Dichlorobenzene-d4		*101*	*70-130*	%	*1*	*B9F0193*	*06/11/19 21:11*	*06/11/19 21:11*	*EPA 8260D*
Surrogate: 4-Bromofluorobenzene		*101*	*70-130*	%	*1*	*B9F0193*	*06/11/19 21:11*	*06/11/19 21:11*	*EPA 8260D*
Surrogate: Methyl tertiary butyl ether-d3		*97*	*70-130*	%	*1*	*B9F0193*	*06/11/19 21:11*	*06/11/19 21:11*	*EPA 8260D*
1,1,1,2-Tetrachloroethane		<	1.0	ug/L	1	B9F0193	06/11/19 21:11	06/11/19 21:11	EPA 8260D
1,1,1-Trichloroethane		<	1.0	ug/L	1	B9F0193	06/11/19 21:11	06/11/19 21:11	EPA 8260D
1,1,2,2-Tetrachloroethane		<	0.50	ug/L	1	B9F0193	06/11/19 21:11	06/11/19 21:11	EPA 8260D
1,1,2-Trichloroethane		<	0.50	ug/L	1	B9F0193	06/11/19 21:11	06/11/19 21:11	EPA 8260D
1,1,2-Trichlorotrifluoroethane		<	1.0	ug/L	1	B9F0193	06/11/19 21:11	06/11/19 21:11	EPA 8260D
1,1-Dichloroethane		<	1.0	ug/L	1	B9F0193	06/11/19 21:11	06/11/19 21:11	EPA 8260D
1,1-Dichloroethene		<	1.0	ug/L	1	B9F0193	06/11/19 21:11	06/11/19 21:11	EPA 8260D
1,1-Dichloropropene		<	1.0	ug/L	1	B9F0193	06/11/19 21:11	06/11/19 21:11	EPA 8260D
1,2,3-Trichlorobenzene		<	1.0	ug/L	1	B9F0193	06/11/19 21:11	06/11/19 21:11	EPA 8260D
1,2,3-Trichloropropane		<	0.20	ug/L	1	B9F0193	06/11/19 21:11	06/11/19 21:11	EPA 8260D
1,2,4-Trichlorobenzene		<	1.0	ug/L	1	B9F0193	06/11/19 21:11	06/11/19 21:11	EPA 8260D
1,2,4-Trimethylbenzene		<	1.0	ug/L	1	B9F0193	06/11/19 21:11	06/11/19 21:11	EPA 8260D
1,2-Dibromo-3-chloropropane (DBCP)		<	1.0	ug/L	1	B9F0193	06/11/19 21:11	06/11/19 21:11	EPA 8260D
1,2-Dibromoethane (EDB)		<	0.50	ug/L	1	B9F0193	06/11/19 21:11	06/11/19 21:11	EPA 8260D
1,2-Dichlorobenzene		<	1.0	ug/L	1	B9F0193	06/11/19 21:11	06/11/19 21:11	EPA 8260D
1,2-Dichloroethane		<	0.20	ug/L	1	B9F0193	06/11/19 21:11	06/11/19 21:11	EPA 8260D
1,2-Dichloropropane		<	1.0	ug/L	1	B9F0193	06/11/19 21:11	06/11/19 21:11	EPA 8260D
1,3,5-Trimethylbenzene		<	1.0	ug/L	1	B9F0193	06/11/19 21:11	06/11/19 21:11	EPA 8260D
1,3-Dichlorobenzene		<	1.0	ug/L	1	B9F0193	06/11/19 21:11	06/11/19 21:11	EPA 8260D
1,3-Dichloropropane		<	1.0	ug/L	1	B9F0193	06/11/19 21:11	06/11/19 21:11	EPA 8260D
1,4-Dichlorobenzene		<	1.0	ug/L	1	B9F0193	06/11/19 21:11	06/11/19 21:11	EPA 8260D
2,2-Dichloropropane		<	1.0	ug/L	1	B9F0193	06/11/19 21:11	06/11/19 21:11	EPA 8260D
2-Chlorotoluene		<	1.0	ug/L	1	B9F0193	06/11/19 21:11	06/11/19 21:11	EPA 8260D

FINAL REPORT

Report ID: 06202019 91932

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Public Health Laboratory
Environmental Laboratory Section
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St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 06/20/19 9:19

MDH Sample Number: 19F0098-06

Location ID: M-3
Field Name: None
Sampling Point: None
QA Type: Field Dup/Rep

Collect Date: 06/03/19
Collect Time: 15:35
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: (Duplicate 3)

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
4-Chlorotoluene		<	1.0	ug/L	1	B9F0193	06/11/19 21:11	06/11/19 21:11	EPA 8260D
Acetone		<	20	ug/L	1	B9F0193	06/11/19 21:11	06/11/19 21:11	EPA 8260D
Allyl chloride		<	1.0	ug/L	1	B9F0193	06/11/19 21:11	06/11/19 21:11	EPA 8260D
Benzene		<	0.50	ug/L	1	B9F0193	06/11/19 21:11	06/11/19 21:11	EPA 8260D
Bromobenzene		<	1.0	ug/L	1	B9F0193	06/11/19 21:11	06/11/19 21:11	EPA 8260D
Bromochloromethane		<	1.0	ug/L	1	B9F0193	06/11/19 21:11	06/11/19 21:11	EPA 8260D
Bromodichloromethane		<	1.0	ug/L	1	B9F0193	06/11/19 21:11	06/11/19 21:11	EPA 8260D
Bromoform		<	1.0	ug/L	1	B9F0193	06/11/19 21:11	06/11/19 21:11	EPA 8260D
Bromomethane		<	2.0	ug/L	1	B9F0193	06/11/19 21:11	06/11/19 21:11	EPA 8260D
Carbon tetrachloride		<	0.20	ug/L	1	B9F0193	06/11/19 21:11	06/11/19 21:11	EPA 8260D
Chlorobenzene		<	1.0	ug/L	1	B9F0193	06/11/19 21:11	06/11/19 21:11	EPA 8260D
Chlorodibromomethane		<	0.50	ug/L	1	B9F0193	06/11/19 21:11	06/11/19 21:11	EPA 8260D
Chloroethane		<	1.0	ug/L	1	B9F0193	06/11/19 21:11	06/11/19 21:11	EPA 8260D
Chloroform		<	1.0	ug/L	1	B9F0193	06/11/19 21:11	06/11/19 21:11	EPA 8260D
Chloromethane		<	1.0	ug/L	1	B9F0193	06/11/19 21:11	06/11/19 21:11	EPA 8260D
cis-1,2-Dichloroethene		<	1.0	ug/L	1	B9F0193	06/11/19 21:11	06/11/19 21:11	EPA 8260D
cis-1,3-Dichloropropene		<	0.50	ug/L	1	B9F0193	06/11/19 21:11	06/11/19 21:11	EPA 8260D
Dibromomethane		<	1.0	ug/L	1	B9F0193	06/11/19 21:11	06/11/19 21:11	EPA 8260D
Dichlorodifluoromethane		<	1.0	ug/L	1	B9F0193	06/11/19 21:11	06/11/19 21:11	EPA 8260D
Dichlorofluoromethane		<	1.0	ug/L	1	B9F0193	06/11/19 21:11	06/11/19 21:11	EPA 8260D
Ethyl ether		<	1.0	ug/L	1	B9F0193	06/11/19 21:11	06/11/19 21:11	EPA 8260D
Ethylbenzene		<	1.0	ug/L	1	B9F0193	06/11/19 21:11	06/11/19 21:11	EPA 8260D
Hexachlorobutadiene		<	0.50	ug/L	1	B9F0193	06/11/19 21:11	06/11/19 21:11	EPA 8260D
Isopropylbenzene		<	1.0	ug/L	1	B9F0193	06/11/19 21:11	06/11/19 21:11	EPA 8260D
Methyl ethyl ketone (MEK)		<	10	ug/L	1	B9F0193	06/11/19 21:11	06/11/19 21:11	EPA 8260D
Methyl isobutyl ketone (MIBK)		<	5.0	ug/L	1	B9F0193	06/11/19 21:11	06/11/19 21:11	EPA 8260D
Methyl tertiary butyl ether (MTBE)		<	2.0	ug/L	1	B9F0193	06/11/19 21:11	06/11/19 21:11	EPA 8260D

FINAL REPORT

Report ID: 06202019 91932

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
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St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 06/20/19 9:19

MDH Sample Number: 19F0098-06

Location ID: M-3
Field Name: None
Sampling Point: None
QA Type: Field Dup/Rep

Collect Date: 06/03/19
Collect Time: 15:35
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: (Duplicate 3)

Results were produced by the Minnesota Department of Health, except where noted.

VOCs by GCMS - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Methylene chloride		<	1.0	ug/L	1	B9F0193	06/11/19 21:11	06/11/19 21:11	EPA 8260D
Naphthalene		<	1.0	ug/L	1	B9F0193	06/11/19 21:11	06/11/19 21:11	EPA 8260D
n-Butylbenzene		<	1.0	ug/L	1	B9F0193	06/11/19 21:11	06/11/19 21:11	EPA 8260D
n-Propylbenzene		<	1.0	ug/L	1	B9F0193	06/11/19 21:11	06/11/19 21:11	EPA 8260D
o-Xylene		<	1.0	ug/L	1	B9F0193	06/11/19 21:11	06/11/19 21:11	EPA 8260D
p&m-Xylene		<	1.0	ug/L	1	B9F0193	06/11/19 21:11	06/11/19 21:11	EPA 8260D
p-Isopropyltoluene		<	1.0	ug/L	1	B9F0193	06/11/19 21:11	06/11/19 21:11	EPA 8260D
sec-Butylbenzene		<	1.0	ug/L	1	B9F0193	06/11/19 21:11	06/11/19 21:11	EPA 8260D
Styrene		<	1.0	ug/L	1	B9F0193	06/11/19 21:11	06/11/19 21:11	EPA 8260D
tert-Butylbenzene		<	1.0	ug/L	1	B9F0193	06/11/19 21:11	06/11/19 21:11	EPA 8260D
Tetrachloroethene		<	1.0	ug/L	1	B9F0193	06/11/19 21:11	06/11/19 21:11	EPA 8260D
Tetrahydrofuran (THF)		<	10	ug/L	1	B9F0193	06/11/19 21:11	06/11/19 21:11	EPA 8260D
Toluene		<	1.0	ug/L	1	B9F0193	06/11/19 21:11	06/11/19 21:11	EPA 8260D
trans-1,2-Dichloroethene		<	1.0	ug/L	1	B9F0193	06/11/19 21:11	06/11/19 21:11	EPA 8260D
trans-1,3-Dichloropropene		<	0.50	ug/L	1	B9F0193	06/11/19 21:11	06/11/19 21:11	EPA 8260D
Trichloroethene (TCE)		<	0.10	ug/L	1	B9F0193	06/11/19 21:11	06/11/19 21:11	EPA 8260D
Trichlorofluoromethane		<	1.0	ug/L	1	B9F0193	06/11/19 21:11	06/11/19 21:11	EPA 8260D
Vinyl chloride		<	0.050	ug/L	1	B9F0193	06/11/19 21:11	06/11/19 21:11	EPA 8260D

1,4-Dioxane

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
1,4-Dioxane		**0.15**	0.049	ug/L	1	B9F0164	06/10/19 08:00	06/17/19 14:17	EPA 522 Modified

PFC Expanded List

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorobutanesulfonate (PFBS)		<	0.050	ug/L	1	B9F0100	06/06/19 15:31	06/06/19 15:31	MDH 555
Perfluorobutanoic acid (PFBA)	J	**0.032**	0.050	ug/L	1	B9F0100	06/06/19 15:31	06/06/19 15:31	MDH 555

FINAL REPORT

Report ID: 06202019 91932

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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St. Paul, MN 55164-0899
651-201-5300

Final Report
Analytical Results

Program Code: QW
Program Name: Closed Landfill Assessment
Collected By: David Anderson
Collector ID: None

Project ID: PRJ07786
Facility Name/ID: MN SW-057
City: 19-01567 MPCA Freeway Landfill 2019 MDH
Generated: 06/20/19 9:19

MDH Sample Number: 19F0098-06

Location ID: M-3
Field Name: None
Sampling Point: None
QA Type: Field Dup/Rep

Collect Date: 06/03/19
Collect Time: 15:35
Matrix: Wtr-Ground

Field Residual Chlorine Result: None
Field Fluoride Result: None
Field pH Result: None
Field PO_4 Result: None

Receiving Comments: (Duplicate 3)

Results were produced by the Minnesota Department of Health, except where noted.

PFC Expanded List - Continued

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Perfluorohexanesulfonate (PFHxS)		<	0.025	ug/L	1	B9F0100	06/06/19 15:31	06/06/19 15:31	MDH 555
Perfluorohexanoic acid (PFHxA)	J	**0.009**	0.050	ug/L	1	B9F0100	06/06/19 15:31	06/06/19 15:31	MDH 555
Perfluorooctanesulfonate (PFOS)		<	0.015	ug/L	1	B9F0100	06/06/19 15:31	06/06/19 15:31	MDH 555
Perfluorooctanoic acid (PFOA)		<	0.035	ug/L	1	B9F0100	06/06/19 15:31	06/06/19 15:31	MDH 555
Perfluoropentanoic acid (PFPeA)	J	**0.006**	0.050	ug/L	1	B9F0100	06/06/19 15:31	06/06/19 15:31	MDH 555

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Public Health Laboratory, Minnesota Department of Health

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651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 06/20/19 9:19

Batch Summary

Samples in Batch: B9F0100 - PFCs Preparation

19F0098-01 19F0098-02 19F0098-03 19F0098-04 19F0098-05 19F0098-06

Samples in Batch: B9F0130 - EPA 5030B Preparation

19F0098-01

Samples in Batch: B9F0164 - 1,4 Dioxane in Water SPE

19F0098-01 19F0098-02RE1 19F0098-03RE1 19F0098-04 19F0098-05 19F0098-06

Samples in Batch: B9F0167 - PFCs Preparation

19F0098-01RE1 19F0098-05RE1

Samples in Batch: B9F0193 - EPA 5030B Preparation

19F0098-01RE1 19F0098-02 19F0098-03 19F0098-04 19F0098-05 19F0098-06

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Public Health Laboratory, Minnesota Department of Health

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Public Health Laboratory
Environmental Laboratory Section
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St. Paul, MN 55164-0899
651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 06/20/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9F0130 - EPA 5030B Preparation

Blank (B9F0130-BLK1) **Prepared: 06/07/19 13:28 Analyzed: 06/07/19 13:28**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: 1,2-Dichlorobenzene-d4		*101*	*70-130*	*%*	*10*					
Surrogate: 4-Bromofluorobenzene		*103*	*70-130*	*%*	*10*					
Surrogate: Methyl tertiary butyl ether-d3		*99*	*70-130*	*%*	*10*					
1,1,1,2-Tetrachloroethane		<	1.0	ug/L						
1,1,1-Trichloroethane		<	1.0	ug/L						
1,1,2,2-Tetrachloroethane		<	0.50	ug/L						
1,1,2-Trichloroethane		<	0.50	ug/L						
1,1,2-Trichlorotrifluoroethane		<	1.0	ug/L						
1,1-Dichloroethane		<	1.0	ug/L						
1,1-Dichloroethene		<	1.0	ug/L						
1,1-Dichloropropene		<	1.0	ug/L						
1,2,3-Trichlorobenzene		<	1.0	ug/L						
1,2,3-Trichloropropane		<	0.20	ug/L						
1,2,4-Trichlorobenzene		<	1.0	ug/L						
1,2,4-Trimethylbenzene		<	1.0	ug/L						
1,2-Dibromo-3-chloropropane (DBCP)		<	1.0	ug/L						
1,2-Dibromoethane (EDB)		<	0.50	ug/L						
1,2-Dichlorobenzene		<	1.0	ug/L						
1,2-Dichloroethane		<	0.20	ug/L						
1,2-Dichloropropane		<	1.0	ug/L						
1,3,5-Trimethylbenzene		<	1.0	ug/L						
1,3-Dichlorobenzene		<	1.0	ug/L						
1,3-Dichloropropane		<	1.0	ug/L						
1,4-Dichlorobenzene		<	1.0	ug/L						
2,2-Dichloropropane		<	1.0	ug/L						
2-Chlorotoluene		<	1.0	ug/L						
4-Chlorotoluene		<	1.0	ug/L						
Acetone		<	20	ug/L						
Allyl chloride		<	1.0	ug/L						
Benzene		<	0.50	ug/L						
Bromobenzene		<	1.0	ug/L						
Bromochloromethane		<	1.0	ug/L						
Bromodichloromethane		<	1.0	ug/L						
Bromoform		<	1.0	ug/L						

Authorized by:

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 06/20/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9F0130 - EPA 5030B Preparation

Blank (B9F0130-BLK1) **Prepared: 06/07/19 13:28 Analyzed: 06/07/19 13:28**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Bromomethane		<	2.0	ug/L						
Carbon tetrachloride		<	0.20	ug/L						
Chlorobenzene		<	1.0	ug/L						
Chlorodibromomethane		<	0.50	ug/L						
Chloroethane		<	1.0	ug/L						
Chloroform		<	1.0	ug/L						
Chloromethane		<	1.0	ug/L						
cis-1,2-Dichloroethene		<	1.0	ug/L						
cis-1,3-Dichloropropene		<	0.50	ug/L						
Dibromomethane		<	1.0	ug/L						
Dichlorodifluoromethane		<	1.0	ug/L						
Dichlorofluoromethane		<	1.0	ug/L						
Ethyl ether		<	1.0	ug/L						
Ethylbenzene		<	1.0	ug/L						
Hexachlorobutadiene		<	0.50	ug/L						
Isopropylbenzene		<	1.0	ug/L						
Methyl ethyl ketone (MEK)		<	10	ug/L						
Methyl isobutyl ketone (MIBK)		<	5.0	ug/L						
Methyl tertiary butyl ether (MTBE)		<	2.0	ug/L						
Methylene chloride		<	1.0	ug/L						
Naphthalene		<	1.0	ug/L						
n-Butylbenzene		<	1.0	ug/L						
n-Propylbenzene		<	1.0	ug/L						
o-Xylene		<	1.0	ug/L						
p&m-Xylene		<	1.0	ug/L						
p-Isopropyltoluene		<	1.0	ug/L						
sec-Butylbenzene		<	1.0	ug/L						
Styrene		<	1.0	ug/L						
tert-Butylbenzene		<	1.0	ug/L						
Tetrachloroethene		<	1.0	ug/L						
Tetrahydrofuran (THF)		<	10	ug/L						
Toluene		<	1.0	ug/L						
trans-1,2-Dichloroethene		<	1.0	ug/L						
trans-1,3-Dichloropropene		<	0.50	ug/L						
Trichloroethene (TCE)		<	0.10	ug/L						

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651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 06/20/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9F0130 - EPA 5030B Preparation

Blank (B9F0130-BLK1) **Prepared: 06/07/19 13:28 Analyzed: 06/07/19 13:28**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Trichlorofluoromethane		<	1.0	ug/L						
Vinyl chloride		<	0.050	ug/L						

LCS (B9F0130-BS1) **Prepared: 06/07/19 11:09 Analyzed: 06/07/19 11:09**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: 1,2-Dichlorobenzene-d4		*98*	*70-130*	*%*	*10*					
Surrogate: 4-Bromofluorobenzene		*101*	*70-130*	*%*	*10*					
Surrogate: Methyl tertiary butyl ether-d3		*96*	*70-130*	*%*	*10*					
1,1,1,2-Tetrachloroethane		9.8	1.0	ug/L	10		98	70-130		
1,1,1-Trichloroethane		10	1.0	ug/L	10		100	70-130		
1,1,2,2-Tetrachloroethane		9.7	0.50	ug/L	10		97	70-130		
1,1,2-Trichloroethane		9.5	0.50	ug/L	10		95	70-130		
1,1,2-Trichlorotrifluoroethane		10	1.0	ug/L	10		105	70-130		
1,1-Dichloroethane		10	1.0	ug/L	10		100	70-130		
1,1-Dichloroethene		10	1.0	ug/L	10		102	70-130		
1,1-Dichloropropene		10	1.0	ug/L	10		103	70-130		
1,2,3-Trichlorobenzene		9.8	1.0	ug/L	10		98	70-130		
1,2,3-Trichloropropane		9.5	0.20	ug/L	10		95	70-130		
1,2,4-Trichlorobenzene		9.9	1.0	ug/L	10		99	70-130		
1,2,4-Trimethylbenzene		11	1.0	ug/L	10		107	70-130		
1,2-Dibromo-3-chloropropane (DBCP)		10	1.0	ug/L	10		101	70-130		
1,2-Dibromoethane (EDB)		10	0.50	ug/L	10		101	70-130		
1,2-Dichlorobenzene		9.6	1.0	ug/L	10		96	70-130		
1,2-Dichloroethane		9.2	0.20	ug/L	10		92	70-130		
1,2-Dichloropropane		9.6	1.0	ug/L	10		96	70-130		
1,3,5-Trimethylbenzene		10	1.0	ug/L	10		105	70-130		
1,3-Dichlorobenzene		10	1.0	ug/L	10		100	70-130		
1,3-Dichloropropane		9.7	1.0	ug/L	10		97	70-130		
1,4-Dichlorobenzene		10	1.0	ug/L	10		101	70-130		
2,2-Dichloropropane		11	1.0	ug/L	10		107	70-130		
2-Chlorotoluene		10	1.0	ug/L	10		104	70-130		
4-Chlorotoluene		10	1.0	ug/L	10		102	70-130		
Acetone		100	20	ug/L	100		104	70-130		

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 06/20/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9F0130 - EPA 5030B Preparation

LCS (B9F0130-BS1) **Prepared: 06/07/19 11:09 Analyzed: 06/07/19 11:09**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Allyl chloride		10	1.0	ug/L	10		100	70-130		
Benzene		10	0.50	ug/L	10		100	70-130		
Bromobenzene		9.6	1.0	ug/L	10		96	70-130		
Bromochloromethane		9.9	1.0	ug/L	10		99	70-130		
Bromodichloromethane		9.8	1.0	ug/L	10		98	70-130		
Bromoform		11	1.0	ug/L	10		108	70-130		
Bromomethane		9.2	2.0	ug/L	10		92	70-130		
Carbon tetrachloride		10	0.20	ug/L	10		101	70-130		
Chlorobenzene		10	1.0	ug/L	10		100	70-130		
Chlorodibromomethane		10	0.50	ug/L	10		103	70-130		
Chloroethane		9.9	1.0	ug/L	10		99	70-130		
Chloroform		10	1.0	ug/L	10		100	70-130		
Chloromethane		9.2	1.0	ug/L	10		92	70-130		
cis-1,2-Dichloroethene		9.8	1.0	ug/L	10		98	70-130		
cis-1,3-Dichloropropene		9.7	0.50	ug/L	10		97	70-130		
Dibromomethane		9.4	1.0	ug/L	10		94	70-130		
Dichlorodifluoromethane		9.8	1.0	ug/L	10		98	70-130		
Dichlorofluoromethane		10	1.0	ug/L	10		100	70-130		
Ethyl ether		9.6	1.0	ug/L	10		96	70-130		
Ethylbenzene		10	1.0	ug/L	10		102	70-130		
Hexachlorobutadiene		11	0.50	ug/L	10		107	70-130		
Isopropylbenzene		11	1.0	ug/L	10		107	70-130		
Methyl ethyl ketone (MEK)		52	10	ug/L	50		105	70-130		
Methyl isobutyl ketone (MIBK)		54	5.0	ug/L	50		108	70-130		
Methyl tertiary butyl ether (MTBE)		9.6	2.0	ug/L	10		96	70-130		
Methylene chloride		9.6	1.0	ug/L	10		96	70-130		
Naphthalene		10	1.0	ug/L	10		100	70-130		
n-Butylbenzene		11	1.0	ug/L	10		105	70-130		
n-Propylbenzene		10	1.0	ug/L	10		105	70-130		
o-Xylene		10	1.0	ug/L	10		103	70-130		
p&m-Xylene		11	1.0	ug/L	10		106	70-130		
p-Isopropyltoluene		11	1.0	ug/L	10		106	70-130		
sec-Butylbenzene		11	1.0	ug/L	10		106	70-130		
Styrene		10	1.0	ug/L	10		104	70-130		
tert-Butylbenzene		11	1.0	ug/L	10		106	70-130		

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 06/20/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9F0130 - EPA 5030B Preparation

LCS (B9F0130-BS1) **Prepared: 06/07/19 11:09 Analyzed: 06/07/19 11:09**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Tetrachloroethene		10	1.0	ug/L	10		101	70-130		
Tetrahydrofuran (THF)		96	10	ug/L	100		96	70-130		
Toluene		10	1.0	ug/L	10		102	70-130		
trans-1,2-Dichloroethene		10	1.0	ug/L	10		102	70-130		
trans-1,3-Dichloropropene		10	0.50	ug/L	10		101	70-130		
Trichloroethene (TCE)		10	0.10	ug/L	10		101	70-130		
Trichlorofluoromethane		10	1.0	ug/L	10		102	70-130		
Vinyl chloride		9.4	0.050	ug/L	10		94	70-130		

LCS Dup (B9F0130-BSD1) **Prepared: 06/07/19 11:37 Analyzed: 06/07/19 11:37**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: 1,2-Dichlorobenzene-d4		*99*	*70-130*	*%*	*10*					
Surrogate: 4-Bromofluorobenzene		*100*	*70-130*	*%*	*10*					
Surrogate: Methyl tertiary butyl ether-d3		*96*	*70-130*	*%*	*10*					
1,1,1,2-Tetrachloroethane		9.9	1.0	ug/L	10		99	70-130	0.7	30
1,1,1-Trichloroethane		11	1.0	ug/L	10		106	70-130	6	30
1,1,2,2-Tetrachloroethane		9.4	0.50	ug/L	10		94	70-130	3	30
1,1,2-Trichloroethane		9.6	0.50	ug/L	10		96	70-130	0.8	30
1,1,2-Trichlorotrifluoroethane		11	1.0	ug/L	10		108	70-130	3	30
1,1-Dichloroethane		10	1.0	ug/L	10		104	70-130	4	30
1,1-Dichloroethene		11	1.0	ug/L	10		109	70-130	6	30
1,1-Dichloropropene		11	1.0	ug/L	10		108	70-130	4	30
1,2,3-Trichlorobenzene		9.6	1.0	ug/L	10		96	70-130	2	30
1,2,3-Trichloropropane		9.3	0.20	ug/L	10		93	70-130	3	30
1,2,4-Trichlorobenzene		10	1.0	ug/L	10		101	70-130	2	30
1,2,4-Trimethylbenzene		11	1.0	ug/L	10		109	70-130	2	30
1,2-Dibromo-3-chloropropane (DBCP)		10	1.0	ug/L	10		101	70-130	0.2	30
1,2-Dibromoethane (EDB)		10	0.50	ug/L	10		100	70-130	1	30
1,2-Dichlorobenzene		9.7	1.0	ug/L	10		97	70-130	0.5	30
1,2-Dichloroethane		9.3	0.20	ug/L	10		93	70-130	2	30
1,2-Dichloropropane		9.9	1.0	ug/L	10		99	70-130	2	30
1,3,5-Trimethylbenzene		11	1.0	ug/L	10		106	70-130	1	30
1,3-Dichlorobenzene		10	1.0	ug/L	10		101	70-130	1	30

FINAL REPORT

Report ID: 06202019 91932

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 06/20/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9F0130 - EPA 5030B Preparation

LCS Dup (B9F0130-BSD1) **Prepared: 06/07/19 11:37 Analyzed: 06/07/19 11:37**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,3-Dichloropropane		9.7	1.0	ug/L	10		97	70-130	0.4	30
1,4-Dichlorobenzene		10	1.0	ug/L	10		100	70-130	0.5	30
2,2-Dichloropropane		11	1.0	ug/L	10		111	70-130	4	30
2-Chlorotoluene		10	1.0	ug/L	10		105	70-130	1	30
4-Chlorotoluene		10	1.0	ug/L	10		104	70-130	1	30
Acetone		100	20	ug/L	100		103	70-130	0.5	30
Allyl chloride		10	1.0	ug/L	10		102	70-130	2	30
Benzene		10	0.50	ug/L	10		104	70-130	5	30
Bromobenzene		9.8	1.0	ug/L	10		98	70-130	2	30
Bromochloromethane		10	1.0	ug/L	10		103	70-130	4	30
Bromodichloromethane		10	1.0	ug/L	10		101	70-130	2	30
Bromoform		11	1.0	ug/L	10		106	70-130	1	30
Bromomethane		10	2.0	ug/L	10		102	70-130	10	30
Carbon tetrachloride		11	0.20	ug/L	10		107	70-130	5	30
Chlorobenzene		10	1.0	ug/L	10		101	70-130	0.7	30
Chlorodibromomethane		10	0.50	ug/L	10		101	70-130	2	30
Chloroethane		10	1.0	ug/L	10		104	70-130	5	30
Chloroform		10	1.0	ug/L	10		103	70-130	2	30
Chloromethane		9.6	1.0	ug/L	10		96	70-130	5	30
cis-1,2-Dichloroethene		10	1.0	ug/L	10		102	70-130	4	30
cis-1,3-Dichloropropene		10	0.50	ug/L	10		100	70-130	3	30
Dibromomethane		9.5	1.0	ug/L	10		95	70-130	1	30
Dichlorodifluoromethane		10	1.0	ug/L	10		105	70-130	6	30
Dichlorofluoromethane		11	1.0	ug/L	10		106	70-130	6	30
Ethyl ether		10	1.0	ug/L	10		100	70-130	4	30
Ethylbenzene		10	1.0	ug/L	10		104	70-130	2	30
Hexachlorobutadiene		11	0.50	ug/L	10		110	70-130	3	30
Isopropylbenzene		11	1.0	ug/L	10		109	70-130	2	30
Methyl ethyl ketone (MEK)		52	10	ug/L	50		104	70-130	1	30
Methyl isobutyl ketone (MIBK)		53	5.0	ug/L	50		106	70-130	2	30
Methyl tertiary butyl ether (MTBE)		9.8	2.0	ug/L	10		98	70-130	2	30
Methylene chloride		9.7	1.0	ug/L	10		97	70-130	1	30
Naphthalene		10	1.0	ug/L	10		100	70-130	0.2	30
n-Butylbenzene		11	1.0	ug/L	10		107	70-130	1	30
n-Propylbenzene		11	1.0	ug/L	10		109	70-130	4	30

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 06/20/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9F0130 - EPA 5030B Preparation

LCS Dup (B9F0130-BSD1) **Prepared: 06/07/19 11:37 Analyzed: 06/07/19 11:37**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
o-Xylene		10	1.0	ug/L	10		104	70-130	0.8	30
p&m-Xylene		11	1.0	ug/L	10		107	70-130	2	30
p-Isopropyltoluene		11	1.0	ug/L	10		110	70-130	4	30
sec-Butylbenzene		11	1.0	ug/L	10		109	70-130	3	30
Styrene		11	1.0	ug/L	10		106	70-130	2	30
tert-Butylbenzene		11	1.0	ug/L	10		108	70-130	2	30
Tetrachloroethene		10	1.0	ug/L	10		103	70-130	1	30
Tetrahydrofuran (THF)		97	10	ug/L	100		97	70-130	0.6	30
Toluene		11	1.0	ug/L	10		106	70-130	4	30
trans-1,2-Dichloroethene		11	1.0	ug/L	10		106	70-130	4	30
trans-1,3-Dichloropropene		9.9	0.50	ug/L	10		99	70-130	2	30
Trichloroethene (TCE)		11	0.10	ug/L	10		105	70-130	4	30
Trichlorofluoromethane		11	1.0	ug/L	10		107	70-130	6	30
Vinyl chloride		10	0.050	ug/L	10		100	70-130	6	30

Duplicate (B9F0130-DUP1) Source: 19E2198-03 **Prepared: 06/07/19 15:47 Analyzed: 06/07/19 15:47**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: 1,2-Dichlorobenzene-d4		*98*	*70-130*	*%*	*10*					
Surrogate: 4-Bromofluorobenzene		*103*	*70-130*	*%*	*10*					
Surrogate: Methyl tertiary butyl ether-d3		*100*	*70-130*	*%*	*10*					
1,1,1,2-Tetrachloroethane		<	1.0	ug/L		<				30
1,1,1-Trichloroethane		<	1.0	ug/L		<				30
1,1,2,2-Tetrachloroethane		<	0.50	ug/L		<				30
1,1,2-Trichloroethane		<	0.50	ug/L		<				30
1,1,2-Trichlorotrifluoroethane		<	1.0	ug/L		<				30
1,1-Dichloroethane		<	1.0	ug/L		<				30
1,1-Dichloroethene		<	1.0	ug/L		<				30
1,1-Dichloropropene		<	1.0	ug/L		<				30
1,2,3-Trichlorobenzene		<	1.0	ug/L		<				30
1,2,3-Trichloropropane		<	0.20	ug/L		<				30
1,2,4-Trichlorobenzene		<	1.0	ug/L		<				30
1,2,4-Trimethylbenzene		<	1.0	ug/L		<				30
1,2-Dibromo-3-chloropropane (DBCP)		<	1.0	ug/L		<				30

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 06/20/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9F0130 - EPA 5030B Preparation

Duplicate (B9F0130-DUP1) Source: 19E2198-03 **Prepared: 06/07/19 15:47 Analyzed: 06/07/19 15:47**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,2-Dibromoethane (EDB)		<	0.50	ug/L		<				30
1,2-Dichlorobenzene		<	1.0	ug/L		<				30
1,2-Dichloroethane		<	0.20	ug/L		<				30
1,2-Dichloropropane		<	1.0	ug/L		<				30
1,3,5-Trimethylbenzene		<	1.0	ug/L		<				30
1,3-Dichlorobenzene		<	1.0	ug/L		<				30
1,3-Dichloropropane		<	1.0	ug/L		<				30
1,4-Dichlorobenzene		0.29	1.0	ug/L		<			7	30
2,2-Dichloropropane		<	1.0	ug/L		<				30
2-Chlorotoluene		<	1.0	ug/L		<				30
4-Chlorotoluene		<	1.0	ug/L		<				30
Acetone		<	20	ug/L		<				30
Allyl chloride		<	1.0	ug/L		<				30
Benzene		0.11	0.50	ug/L		<			0	30
Bromobenzene		<	1.0	ug/L		<				30
Bromochloromethane		<	1.0	ug/L		<				30
Bromodichloromethane		<	1.0	ug/L		<				30
Bromoform		<	1.0	ug/L		<				30
Bromomethane		<	2.0	ug/L		<				30
Carbon tetrachloride		<	0.20	ug/L		<				30
Chlorobenzene		<	1.0	ug/L		<				30
Chlorodibromomethane		<	0.50	ug/L		<				30
Chloroethane		<	1.0	ug/L		<				30
Chloroform		<	1.0	ug/L		<				30
Chloromethane		<	1.0	ug/L		<				30
cis-1,2-Dichloroethene		<	1.0	ug/L		<				30
cis-1,3-Dichloropropene		<	0.50	ug/L		<				30
Dibromomethane		<	1.0	ug/L		<				30
Dichlorodifluoromethane		<	1.0	ug/L		<				30
Dichlorofluoromethane		<	1.0	ug/L		<				30
Ethyl ether		<	1.0	ug/L		<				30
Ethylbenzene		<	1.0	ug/L		<				30
Hexachlorobutadiene		<	0.50	ug/L		<				30
Isopropylbenzene		<	1.0	ug/L		<				30
Methyl ethyl ketone (MEK)		<	10	ug/L		<				30

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651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 06/20/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9F0130 - EPA 5030B Preparation

Duplicate (B9F0130-DUP1) Source: 19E2198-03 **Prepared: 06/07/19 15:47 Analyzed: 06/07/19 15:47**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Methyl isobutyl ketone (MIBK)		<	5.0	ug/L		<				30
Methyl tertiary butyl ether (MTBE)		<	2.0	ug/L		<				30
Methylene chloride		<	1.0	ug/L		<				30
Naphthalene		<	1.0	ug/L		<				30
n-Butylbenzene		<	1.0	ug/L		<				30
n-Propylbenzene		<	1.0	ug/L		<				30
o-Xylene		<	1.0	ug/L		<				30
p&m-Xylene		<	1.0	ug/L		<				30
p-Isopropyltoluene		<	1.0	ug/L		<				30
sec-Butylbenzene		<	1.0	ug/L		<				30
Styrene		<	1.0	ug/L		<				30
tert-Butylbenzene		<	1.0	ug/L		<				30
Tetrachloroethene		<	1.0	ug/L		<				30
Tetrahydrofuran (THF)		<	10	ug/L		<				30
Toluene		<	1.0	ug/L		<				30
trans-1,2-Dichloroethene		<	1.0	ug/L		<				30
trans-1,3-Dichloropropene		<	0.50	ug/L		<				30
Trichloroethene (TCE)		0.060	0.10	ug/L		<			15	30
Trichlorofluoromethane		<	1.0	ug/L		<				30
Vinyl chloride		<	0.050	ug/L		<				30

Matrix Spike (B9F0130-MS1) Source: 19E2198-02 **Prepared: 06/07/19 12:05 Analyzed: 06/07/19 12:05**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: 1,2-Dichlorobenzene-d4		*98*	*70-130*	*%*	*10*					
Surrogate: 4-Bromofluorobenzene		*102*	*70-130*	*%*	*10*					
Surrogate: Methyl tertiary butyl ether-d3		*96*	*70-130*	*%*	*10*					
1,1,1,2-Tetrachloroethane		10	1.0	ug/L	10	<	100	70-130		
1,1,1-Trichloroethane		11	1.0	ug/L	10	<	108	70-130		
1,1,2,2-Tetrachloroethane		9.5	0.50	ug/L	10	<	95	70-130		
1,1,2-Trichloroethane		9.6	0.50	ug/L	10	<	96	70-130		
1,1,2-Trichlorotrifluoroethane		11	1.0	ug/L	10	<	115	70-130		
1,1-Dichloroethane		11	1.0	ug/L	10	<	105	70-130		
1,1-Dichloroethene		11	1.0	ug/L	10	<	109	70-130		
1,1-Dichloropropene		11	1.0	ug/L	10	<	110	70-130		

FINAL REPORT

Report ID: 06202019 91932

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651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 06/20/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9F0130 - EPA 5030B Preparation

Matrix Spike (B9F0130-MS1) Source: 19E2198-02 **Prepared: 06/07/19 12:05 Analyzed: 06/07/19 12:05**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,2,3-Trichlorobenzene		10	1.0	ug/L	10	<	100	70-130		
1,2,3-Trichloropropane		9.1	0.20	ug/L	10	<	91	70-130		
1,2,4-Trichlorobenzene		10	1.0	ug/L	10	<	102	70-130		
1,2,4-Trimethylbenzene		11	1.0	ug/L	10	<	110	70-130		
1,2-Dibromo-3-chloropropane (DBCP)		9.7	1.0	ug/L	10	<	97	70-130		
1,2-Dibromoethane (EDB)		10	0.50	ug/L	10	<	101	70-130		
1,2-Dichlorobenzene		10	1.0	ug/L	10	<	100	70-130		
1,2-Dichloroethane		9.4	0.20	ug/L	10	<	94	70-130		
1,2-Dichloropropane		10	1.0	ug/L	10	<	100	70-130		
1,3,5-Trimethylbenzene		11	1.0	ug/L	10	<	109	70-130		
1,3-Dichlorobenzene		10	1.0	ug/L	10	<	102	70-130		
1,3-Dichloropropane		9.7	1.0	ug/L	10	<	97	70-130		
1,4-Dichlorobenzene		11	1.0	ug/L	10	<	104	70-130		
2,2-Dichloropropane		12	1.0	ug/L	10	<	116	70-130		
2-Chlorotoluene		11	1.0	ug/L	10	<	107	70-130		
4-Chlorotoluene		11	1.0	ug/L	10	<	107	70-130		
Acetone		98	20	ug/L	100	<	98	70-130		
Allyl chloride		10	1.0	ug/L	10	<	101	70-130		
Benzene		11	0.50	ug/L	10	<	107	70-130		
Bromobenzene		9.9	1.0	ug/L	10	<	99	70-130		
Bromochloromethane		10	1.0	ug/L	10	<	102	70-130		
Bromodichloromethane		10	1.0	ug/L	10	<	101	70-130		
Bromoform		10	1.0	ug/L	10	<	100	70-130		
Bromomethane		10	2.0	ug/L	10	<	105	70-130		
Carbon tetrachloride		11	0.20	ug/L	10	<	109	70-130		
Chlorobenzene		11	1.0	ug/L	10	<	104	70-130		
Chlorodibromomethane		10	0.50	ug/L	10	<	100	70-130		
Chloroethane		11	1.0	ug/L	10	<	108	70-130		
Chloroform		10	1.0	ug/L	10	<	104	70-130		
Chloromethane		9.9	1.0	ug/L	10	<	99	70-130		
cis-1,2-Dichloroethene		10	1.0	ug/L	10	<	104	70-130		
cis-1,3-Dichloropropene		9.8	0.50	ug/L	10	<	98	70-130		
Dibromomethane		9.5	1.0	ug/L	10	<	95	70-130		
Dichlorodifluoromethane		11	1.0	ug/L	10	<	109	70-130		
Dichlorofluoromethane		11	1.0	ug/L	10	<	110	70-130		

FINAL REPORT

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 06/20/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9F0130 - EPA 5030B Preparation

Matrix Spike (B9F0130-MS1) Source: 19E2198-02 **Prepared: 06/07/19 12:05 Analyzed: 06/07/19 12:05**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Ethyl ether		10	1.0	ug/L	10	<	101	70-130		
Ethylbenzene		11	1.0	ug/L	10	<	108	70-130		
Hexachlorobutadiene		11	0.50	ug/L	10	<	115	70-130		
Isopropylbenzene		12	1.0	ug/L	10	<	115	70-130		
Methyl ethyl ketone (MEK)		50	10	ug/L	50	<	100	70-130		
Methyl isobutyl ketone (MIBK)		53	5.0	ug/L	50	<	107	70-130		
Methyl tertiary butyl ether (MTBE)		9.7	2.0	ug/L	10	<	97	70-130		
Methylene chloride		10	1.0	ug/L	10	<	101	70-130		
Naphthalene		10	1.0	ug/L	10	<	102	70-130		
n-Butylbenzene		11	1.0	ug/L	10	<	112	70-130		
n-Propylbenzene		11	1.0	ug/L	10	<	110	70-130		
o-Xylene		11	1.0	ug/L	10	<	109	70-130		
p&m-Xylene		11	1.0	ug/L	10	<	114	70-130		
p-Isopropyltoluene		11	1.0	ug/L	10	<	114	70-130		
sec-Butylbenzene		12	1.0	ug/L	10	<	116	70-130		
Styrene		11	1.0	ug/L	10	<	109	70-130		
tert-Butylbenzene		11	1.0	ug/L	10	<	112	70-130		
Tetrachloroethene		11	1.0	ug/L	10	<	110	70-130		
Tetrahydrofuran (THF)		91	10	ug/L	100	<	91	70-130		
Toluene		11	1.0	ug/L	10	<	109	70-130		
trans-1,2-Dichloroethene		11	1.0	ug/L	10	<	106	70-130		
trans-1,3-Dichloropropene		9.7	0.50	ug/L	10	<	97	70-130		
Trichloroethene (TCE)		11	0.10	ug/L	10	<	108	70-130		
Trichlorofluoromethane		11	1.0	ug/L	10	<	111	70-130		
Vinyl chloride		10	0.050	ug/L	10	<	104	70-130		

Batch B9F0193 - EPA 5030B Preparation

Blank (B9F0193-BLK1) **Prepared: 06/11/19 14:16 Analyzed: 06/11/19 14:16**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: 1,2-Dichlorobenzene-d4		*98*	*70-130*	*%*	*10*					
Surrogate: 4-Bromofluorobenzene		*100*	*70-130*	*%*	*10*					
Surrogate: Methyl tertiary butyl ether-d3		*97*	*70-130*	*%*	*10*					
1,1,1,2-Tetrachloroethane		<	1.0	ug/L						

FINAL REPORT

Report ID: 06202019 91932

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 06/20/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9F0193 - EPA 5030B Preparation

Blank (B9F0193-BLK1) **Prepared: 06/11/19 14:16 Analyzed: 06/11/19 14:16**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,1,1-Trichloroethane		<	1.0	ug/L						
1,1,2,2-Tetrachloroethane		<	0.50	ug/L						
1,1,2-Trichloroethane		<	0.50	ug/L						
1,1,2-Trichlorotrifluoroethane		<	1.0	ug/L						
1,1-Dichloroethane		<	1.0	ug/L						
1,1-Dichloroethene		<	1.0	ug/L						
1,1-Dichloropropene		<	1.0	ug/L						
1,2,3-Trichlorobenzene		<	1.0	ug/L						
1,2,3-Trichloropropane		<	0.20	ug/L						
1,2,4-Trichlorobenzene		<	1.0	ug/L						
1,2,4-Trimethylbenzene		<	1.0	ug/L						
1,2-Dibromo-3-chloropropane (DBCP)		<	1.0	ug/L						
1,2-Dibromoethane (EDB)		<	0.50	ug/L						
1,2-Dichlorobenzene		<	1.0	ug/L						
1,2-Dichloroethane		<	0.20	ug/L						
1,2-Dichloropropane		<	1.0	ug/L						
1,3,5-Trimethylbenzene		<	1.0	ug/L						
1,3-Dichlorobenzene		<	1.0	ug/L						
1,3-Dichloropropane		<	1.0	ug/L						
1,4-Dichlorobenzene		<	1.0	ug/L						
2,2-Dichloropropane		<	1.0	ug/L						
2-Chlorotoluene		<	1.0	ug/L						
4-Chlorotoluene		<	1.0	ug/L						
Acetone		<	20	ug/L						
Allyl chloride		<	1.0	ug/L						
Benzene		<	0.50	ug/L						
Bromobenzene		<	1.0	ug/L						
Bromochloromethane		<	1.0	ug/L						
Bromodichloromethane		<	1.0	ug/L						
Bromoform		<	1.0	ug/L						
Bromomethane		<	2.0	ug/L						
Carbon tetrachloride		<	0.20	ug/L						
Chlorobenzene		<	1.0	ug/L						
Chlorodibromomethane		<	0.50	ug/L						
Chloroethane		<	1.0	ug/L						

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 06/20/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9F0193 - EPA 5030B Preparation

Blank (B9F0193-BLK1) **Prepared: 06/11/19 14:16 Analyzed: 06/11/19 14:16**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Chloroform		<	1.0	ug/L						
Chloromethane		<	1.0	ug/L						
cis-1,2-Dichloroethene		<	1.0	ug/L						
cis-1,3-Dichloropropene		<	0.50	ug/L						
Dibromomethane		<	1.0	ug/L						
Dichlorodifluoromethane		<	1.0	ug/L						
Dichlorofluoromethane		<	1.0	ug/L						
Ethyl ether		<	1.0	ug/L						
Ethylbenzene		<	1.0	ug/L						
Hexachlorobutadiene		<	0.50	ug/L						
Isopropylbenzene		<	1.0	ug/L						
Methyl ethyl ketone (MEK)		<	10	ug/L						
Methyl isobutyl ketone (MIBK)		<	5.0	ug/L						
Methyl tertiary butyl ether (MTBE)		<	2.0	ug/L						
Methylene chloride		<	1.0	ug/L						
Naphthalene		<	1.0	ug/L						
n-Butylbenzene		<	1.0	ug/L						
n-Propylbenzene		<	1.0	ug/L						
o-Xylene		<	1.0	ug/L						
p&m-Xylene		<	1.0	ug/L						
p-Isopropyltoluene		<	1.0	ug/L						
sec-Butylbenzene		<	1.0	ug/L						
Styrene		<	1.0	ug/L						
tert-Butylbenzene		<	1.0	ug/L						
Tetrachloroethene		<	1.0	ug/L						
Tetrahydrofuran (THF)		<	10	ug/L						
Toluene		<	1.0	ug/L						
trans-1,2-Dichloroethene		<	1.0	ug/L						
trans-1,3-Dichloropropene		<	0.50	ug/L						
Trichloroethene (TCE)		<	0.10	ug/L						
Trichlorofluoromethane		<	1.0	ug/L						
Vinyl chloride		<	0.050	ug/L						

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 06/20/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9F0193 - EPA 5030B Preparation

LCS (B9F0193-BS1) **Prepared: 06/11/19 11:57 Analyzed: 06/11/19 11:57**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: 1,2-Dichlorobenzene-d4		*98*	*70-130*	*%*	*10*					
Surrogate: 4-Bromofluorobenzene		*100*	*70-130*	*%*	*10*					
Surrogate: Methyl tertiary butyl ether-d3		*98*	*70-130*	*%*	*10*					
1,1,1,2-Tetrachloroethane		9.9	1.0	ug/L	10		99	70-130		
1,1,1-Trichloroethane		10	1.0	ug/L	10		104	70-130		
1,1,2,2-Tetrachloroethane		9.3	0.50	ug/L	10		93	70-130		
1,1,2-Trichloroethane		9.6	0.50	ug/L	10		96	70-130		
1,1,2-Trichlorotrifluoroethane		11	1.0	ug/L	10		109	70-130		
1,1-Dichloroethane		10	1.0	ug/L	10		104	70-130		
1,1-Dichloroethene		11	1.0	ug/L	10		107	70-130		
1,1-Dichloropropene		11	1.0	ug/L	10		107	70-130		
1,2,3-Trichlorobenzene		9.3	1.0	ug/L	10		93	70-130		
1,2,3-Trichloropropane		8.9	0.20	ug/L	10		89	70-130		
1,2,4-Trichlorobenzene		9.7	1.0	ug/L	10		97	70-130		
1,2,4-Trimethylbenzene		11	1.0	ug/L	10		106	70-130		
1,2-Dibromo-3-chloropropane (DBCP)		9.4	1.0	ug/L	10		94	70-130		
1,2-Dibromoethane (EDB)		9.8	0.50	ug/L	10		98	70-130		
1,2-Dichlorobenzene		9.6	1.0	ug/L	10		96	70-130		
1,2-Dichloroethane		9.4	0.20	ug/L	10		94	70-130		
1,2-Dichloropropane		9.9	1.0	ug/L	10		99	70-130		
1,3,5-Trimethylbenzene		10	1.0	ug/L	10		103	70-130		
1,3-Dichlorobenzene		9.8	1.0	ug/L	10		98	70-130		
1,3-Dichloropropane		10	1.0	ug/L	10		100	70-130		
1,4-Dichlorobenzene		9.8	1.0	ug/L	10		98	70-130		
2,2-Dichloropropane		11	1.0	ug/L	10		113	70-130		
2-Chlorotoluene		10	1.0	ug/L	10		102	70-130		
4-Chlorotoluene		10	1.0	ug/L	10		102	70-130		
Acetone		98	20	ug/L	100		98	70-130		
Allyl chloride		11	1.0	ug/L	10		105	70-130		
Benzene		10	0.50	ug/L	10		104	70-130		
Bromobenzene		9.6	1.0	ug/L	10		96	70-130		
Bromochloromethane		10	1.0	ug/L	10		101	70-130		
Bromodichloromethane		10	1.0	ug/L	10		100	70-130		
Bromoform		10	1.0	ug/L	10		100	70-130		

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Paul Moyer, Environmental Laboratory Manager
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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
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St. Paul, MN 55164-0899
651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 06/20/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9F0193 - EPA 5030B Preparation

LCS (B9F0193-BS1) **Prepared: 06/11/19 11:57 Analyzed: 06/11/19 11:57**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Bromomethane		8.5	2.0	ug/L	10		85	70-130		
Carbon tetrachloride		10	0.20	ug/L	10		103	70-130		
Chlorobenzene		10	1.0	ug/L	10		102	70-130		
Chlorodibromomethane		9.8	0.50	ug/L	10		98	70-130		
Chloroethane		10	1.0	ug/L	10		101	70-130		
Chloroform		10	1.0	ug/L	10		103	70-130		
Chloromethane		9.3	1.0	ug/L	10		93	70-130		
cis-1,2-Dichloroethene		10	1.0	ug/L	10		103	70-130		
cis-1,3-Dichloropropene		10	0.50	ug/L	10		101	70-130		
Dibromomethane		9.4	1.0	ug/L	10		94	70-130		
Dichlorodifluoromethane		9.2	1.0	ug/L	10		92	70-130		
Dichlorofluoromethane		11	1.0	ug/L	10		107	70-130		
Ethyl ether		10	1.0	ug/L	10		101	70-130		
Ethylbenzene		10	1.0	ug/L	10		103	70-130		
Hexachlorobutadiene		10	0.50	ug/L	10		104	70-130		
Isopropylbenzene		11	1.0	ug/L	10		109	70-130		
Methyl ethyl ketone (MEK)		50	10	ug/L	50		100	70-130		
Methyl isobutyl ketone (MIBK)		52	5.0	ug/L	50		104	70-130		
Methyl tertiary butyl ether (MTBE)		9.9	2.0	ug/L	10		99	70-130		
Methylene chloride		10	1.0	ug/L	10		100	70-130		
Naphthalene		9.8	1.0	ug/L	10		98	70-130		
n-Butylbenzene		11	1.0	ug/L	10		105	70-130		
n-Propylbenzene		10	1.0	ug/L	10		105	70-130		
o-Xylene		10	1.0	ug/L	10		104	70-130		
p&m-Xylene		11	1.0	ug/L	10		107	70-130		
p-Isopropyltoluene		11	1.0	ug/L	10		107	70-130		
sec-Butylbenzene		11	1.0	ug/L	10		107	70-130		
Styrene		11	1.0	ug/L	10		107	70-130		
tert-Butylbenzene		10	1.0	ug/L	10		104	70-130		
Tetrachloroethene		10	1.0	ug/L	10		100	70-130		
Tetrahydrofuran (THF)		93	10	ug/L	100		93	70-130		
Toluene		10	1.0	ug/L	10		104	70-130		
trans-1,2-Dichloroethene		10	1.0	ug/L	10		104	70-130		
trans-1,3-Dichloropropene		10	0.50	ug/L	10		101	70-130		
Trichloroethene (TCE)		10	0.10	ug/L	10		104	70-130		

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 06/20/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9F0193 - EPA 5030B Preparation

LCS (B9F0193-BS1) **Prepared: 06/11/19 11:57 Analyzed: 06/11/19 11:57**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Trichlorofluoromethane		10	1.0	ug/L	10		102	70-130		
Vinyl chloride		9.4	0.050	ug/L	10		94	70-130		

LCS Dup (B9F0193-BSD1) **Prepared: 06/11/19 12:25 Analyzed: 06/11/19 12:25**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: 1,2-Dichlorobenzene-d4		*100*	*70-130*	*%*	*10*					
Surrogate: 4-Bromofluorobenzene		*100*	*70-130*	*%*	*10*					
Surrogate: Methyl tertiary butyl ether-d3		*98*	*70-130*	*%*	*10*					
1,1,1,2-Tetrachloroethane		9.9	1.0	ug/L	10		99	70-130	0.6	30
1,1,1-Trichloroethane		11	1.0	ug/L	10		108	70-130	4	30
1,1,2,2-Tetrachloroethane		9.4	0.50	ug/L	10		94	70-130	1	30
1,1,2-Trichloroethane		9.6	0.50	ug/L	10		96	70-130	0.4	30
1,1,2-Trichlorotrifluoroethane		11	1.0	ug/L	10		114	70-130	5	30
1,1-Dichloroethane		11	1.0	ug/L	10		109	70-130	4	30
1,1-Dichloroethene		11	1.0	ug/L	10		110	70-130	3	30
1,1-Dichloropropene		11	1.0	ug/L	10		111	70-130	4	30
1,2,3-Trichlorobenzene		9.6	1.0	ug/L	10		96	70-130	3	30
1,2,3-Trichloropropane		9.1	0.20	ug/L	10		91	70-130	2	30
1,2,4-Trichlorobenzene		9.8	1.0	ug/L	10		98	70-130	1	30
1,2,4-Trimethylbenzene		11	1.0	ug/L	10		108	70-130	3	30
1,2-Dibromo-3-chloropropane (DBCP)		9.7	1.0	ug/L	10		97	70-130	3	30
1,2-Dibromoethane (EDB)		9.7	0.50	ug/L	10		97	70-130	0.7	30
1,2-Dichlorobenzene		9.8	1.0	ug/L	10		98	70-130	3	30
1,2-Dichloroethane		9.7	0.20	ug/L	10		97	70-130	3	30
1,2-Dichloropropane		10	1.0	ug/L	10		102	70-130	3	30
1,3,5-Trimethylbenzene		11	1.0	ug/L	10		106	70-130	2	30
1,3-Dichlorobenzene		9.8	1.0	ug/L	10		98	70-130	0.3	30
1,3-Dichloropropane		9.7	1.0	ug/L	10		97	70-130	3	30
1,4-Dichlorobenzene		10	1.0	ug/L	10		102	70-130	4	30
2,2-Dichloropropane		12	1.0	ug/L	10		116	70-130	3	30
2-Chlorotoluene		10	1.0	ug/L	10		105	70-130	2	30
4-Chlorotoluene		10	1.0	ug/L	10		104	70-130	2	30
Acetone		97	20	ug/L	100		97	70-130	2	30

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Paul Moyer, Environmental Laboratory Manager
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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 06/20/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9F0193 - EPA 5030B Preparation

LCS Dup (B9F0193-BSD1) **Prepared: 06/11/19 12:25 Analyzed: 06/11/19 12:25**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Allyl chloride		11	1.0	ug/L	10		106	70-130	0.6	30
Benzene		11	0.50	ug/L	10		107	70-130	3	30
Bromobenzene		9.8	1.0	ug/L	10		98	70-130	2	30
Bromochloromethane		10	1.0	ug/L	10		103	70-130	2	30
Bromodichloromethane		10	1.0	ug/L	10		102	70-130	2	30
Bromoform		9.8	1.0	ug/L	10		98	70-130	2	30
Bromomethane		8.7	2.0	ug/L	10		87	70-130	2	30
Carbon tetrachloride		11	0.20	ug/L	10		109	70-130	6	30
Chlorobenzene		10	1.0	ug/L	10		101	70-130	0.9	30
Chlorodibromomethane		9.5	0.50	ug/L	10		95	70-130	3	30
Chloroethane		10	1.0	ug/L	10		102	70-130	1	30
Chloroform		11	1.0	ug/L	10		105	70-130	3	30
Chloromethane		9.1	1.0	ug/L	10		91	70-130	1	30
cis-1,2-Dichloroethene		10	1.0	ug/L	10		104	70-130	1	30
cis-1,3-Dichloropropene		10	0.50	ug/L	10		100	70-130	1	30
Dibromomethane		9.6	1.0	ug/L	10		96	70-130	2	30
Dichlorodifluoromethane		9.4	1.0	ug/L	10		94	70-130	2	30
Dichlorofluoromethane		11	1.0	ug/L	10		109	70-130	2	30
Ethyl ether		10	1.0	ug/L	10		100	70-130	1	30
Ethylbenzene		10	1.0	ug/L	10		104	70-130	0.6	30
Hexachlorobutadiene		11	0.50	ug/L	10		106	70-130	3	30
Isopropylbenzene		11	1.0	ug/L	10		109	70-130	0.2	30
Methyl ethyl ketone (MEK)		50	10	ug/L	50		101	70-130	0.1	30
Methyl isobutyl ketone (MIBK)		51	5.0	ug/L	50		102	70-130	2	30
Methyl tertiary butyl ether (MTBE)		10	2.0	ug/L	10		101	70-130	2	30
Methylene chloride		10	1.0	ug/L	10		101	70-130	1	30
Naphthalene		9.8	1.0	ug/L	10		98	70-130	0.9	30
n-Butylbenzene		11	1.0	ug/L	10		109	70-130	3	30
n-Propylbenzene		11	1.0	ug/L	10		108	70-130	3	30
o-Xylene		11	1.0	ug/L	10		106	70-130	1	30
p&m-Xylene		11	1.0	ug/L	10		106	70-130	2	30
p-Isopropyltoluene		11	1.0	ug/L	10		111	70-130	4	30
sec-Butylbenzene		11	1.0	ug/L	10		111	70-130	4	30
Styrene		11	1.0	ug/L	10		106	70-130	0.6	30
tert-Butylbenzene		11	1.0	ug/L	10		109	70-130	4	30

FINAL REPORT

Report ID: 06202019 91932

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651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 06/20/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9F0193 - EPA 5030B Preparation

LCS Dup (B9F0193-BSD1) **Prepared: 06/11/19 12:25 Analyzed: 06/11/19 12:25**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Tetrachloroethene		10	1.0	ug/L	10		104	70-130	3	30
Tetrahydrofuran (THF)		93	10	ug/L	100		93	70-130	0.1	30
Toluene		10	1.0	ug/L	10		104	70-130	0.2	30
trans-1,2-Dichloroethene		11	1.0	ug/L	10		107	70-130	2	30
trans-1,3-Dichloropropene		10	0.50	ug/L	10		100	70-130	0.6	30
Trichloroethene (TCE)		11	0.10	ug/L	10		106	70-130	2	30
Trichlorofluoromethane		11	1.0	ug/L	10		105	70-130	3	30
Vinyl chloride		9.4	0.050	ug/L	10		94	70-130	0.1	30

Duplicate (B9F0193-DUP1) Source: 19F0332-02 **Prepared: 06/11/19 15:39 Analyzed: 06/11/19 15:39**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: 1,2-Dichlorobenzene-d4		*100*	*70-130*	*%*	*10*					
Surrogate: 4-Bromofluorobenzene		*100*	*70-130*	*%*	*10*					
Surrogate: Methyl tertiary butyl ether-d3		*98*	*70-130*	*%*	*10*					
1,1,1,2-Tetrachloroethane		<	1.0	ug/L		<				30
1,1,1-Trichloroethane		<	1.0	ug/L		<				30
1,1,2,2-Tetrachloroethane		<	0.50	ug/L		<				30
1,1,2-Trichloroethane		<	0.50	ug/L		<				30
1,1,2-Trichlorotrifluoroethane		<	1.0	ug/L		<				30
1,1-Dichloroethane		<	1.0	ug/L		<				30
1,1-Dichloroethene		<	1.0	ug/L		<				30
1,1-Dichloropropene		<	1.0	ug/L		<				30
1,2,3-Trichlorobenzene		<	1.0	ug/L		<				30
1,2,3-Trichloropropane		<	0.20	ug/L		<				30
1,2,4-Trichlorobenzene		<	1.0	ug/L		<				30
1,2,4-Trimethylbenzene		<	1.0	ug/L		<				30
1,2-Dibromo-3-chloropropane (DBCP)		<	1.0	ug/L		<				30
1,2-Dibromoethane (EDB)		<	0.50	ug/L		<				30
1,2-Dichlorobenzene		<	1.0	ug/L		<				30
1,2-Dichloroethane		<	0.20	ug/L		<				30
1,2-Dichloropropane		<	1.0	ug/L		<				30
1,3,5-Trimethylbenzene		<	1.0	ug/L		<				30
1,3-Dichlorobenzene		<	1.0	ug/L		<				30

FINAL REPORT

Report ID: 06202019 91932

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 06/20/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9F0193 - EPA 5030B Preparation

Duplicate (B9F0193-DUP1) Source: 19F0332-02 **Prepared: 06/11/19 15:39 Analyzed: 06/11/19 15:39**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,3-Dichloropropane		<	1.0	ug/L		<				30
1,4-Dichlorobenzene		<	1.0	ug/L		<				30
2,2-Dichloropropane		<	1.0	ug/L		<				30
2-Chlorotoluene		<	1.0	ug/L		<				30
4-Chlorotoluene		<	1.0	ug/L		<				30
Acetone		<	20	ug/L		<				30
Allyl chloride		<	1.0	ug/L		<				30
Benzene		<	0.50	ug/L		<				30
Bromobenzene		<	1.0	ug/L		<				30
Bromochloromethane		<	1.0	ug/L		<				30
Bromodichloromethane		<	1.0	ug/L		<				30
Bromoform		<	1.0	ug/L		<				30
Bromomethane		<	2.0	ug/L		<				30
Carbon tetrachloride		<	0.20	ug/L		<				30
Chlorobenzene		<	1.0	ug/L		<				30
Chlorodibromomethane		<	0.50	ug/L		<				30
Chloroethane		<	1.0	ug/L		<				30
Chloroform		<	1.0	ug/L		<				30
Chloromethane		<	1.0	ug/L		<				30
cis-1,2-Dichloroethene		<	1.0	ug/L		<				30
cis-1,3-Dichloropropene		<	0.50	ug/L		<				30
Dibromomethane		<	1.0	ug/L		<				30
Dichlorodifluoromethane		<	1.0	ug/L		<				30
Dichlorofluoromethane		<	1.0	ug/L		<				30
Ethyl ether		<	1.0	ug/L		<				30
Ethylbenzene		<	1.0	ug/L		<				30
Hexachlorobutadiene		<	0.50	ug/L		<				30
Isopropylbenzene		<	1.0	ug/L		<				30
Methyl ethyl ketone (MEK)		<	10	ug/L		<				30
Methyl isobutyl ketone (MIBK)		<	5.0	ug/L		<				30
Methyl tertiary butyl ether (MTBE)		<	2.0	ug/L		<				30
Methylene chloride		<	1.0	ug/L		<				30
Naphthalene		<	1.0	ug/L		<				30
n-Butylbenzene		<	1.0	ug/L		<				30
n-Propylbenzene		<	1.0	ug/L		<				30

FINAL REPORT

Report ID: 06202019 91932

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 06/20/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9F0193 - EPA 5030B Preparation

Duplicate (B9F0193-DUP1) Source: 19F0332-02 **Prepared: 06/11/19 15:39 Analyzed: 06/11/19 15:39**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
o-Xylene		<	1.0	ug/L		<				30
p&m-Xylene		<	1.0	ug/L		<				30
p-Isopropyltoluene		<	1.0	ug/L		<				30
sec-Butylbenzene		<	1.0	ug/L		<				30
Styrene		<	1.0	ug/L		<				30
tert-Butylbenzene		<	1.0	ug/L		<				30
Tetrachloroethene		<	1.0	ug/L		<				30
Tetrahydrofuran (THF)		<	10	ug/L		<				30
Toluene		<	1.0	ug/L		<				30
trans-1,2-Dichloroethene		<	1.0	ug/L		<				30
trans-1,3-Dichloropropene		<	0.50	ug/L		<				30
Trichloroethene (TCE)		<	0.10	ug/L		<				30
Trichlorofluoromethane		<	1.0	ug/L		<				30
Vinyl chloride		<	0.050	ug/L		<				30

Matrix Spike (B9F0193-MS1) Source: 19F0332-01 **Prepared: 06/11/19 12:53 Analyzed: 06/11/19 12:53**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: 1,2-Dichlorobenzene-d4		*98*	*70-130*	*%*	*10*					
Surrogate: 4-Bromofluorobenzene		*100*	*70-130*	*%*	*10*					
Surrogate: Methyl tertiary butyl ether-d3		*98*	*70-130*	*%*	*10*					
1,1,1,2-Tetrachloroethane		10	1.0	ug/L	10	<	104	70-130		
1,1,1-Trichloroethane		11	1.0	ug/L	10	<	114	70-130		
1,1,2,2-Tetrachloroethane		9.8	0.50	ug/L	10	<	98	70-130		
1,1,2-Trichloroethane		9.9	0.50	ug/L	10	<	99	70-130		
1,1,2-Trichlorotrifluoroethane		12	1.0	ug/L	10	<	118	70-130		
1,1-Dichloroethane		11	1.0	ug/L	10	<	112	70-130		
1,1-Dichloroethene		12	1.0	ug/L	10	<	118	70-130		
1,1-Dichloropropene		12	1.0	ug/L	10	<	117	70-130		
1,2,3-Trichlorobenzene		11	1.0	ug/L	10	<	105	70-130		
1,2,3-Trichloropropane		9.6	0.20	ug/L	10	<	96	70-130		
1,2,4-Trichlorobenzene		11	1.0	ug/L	10	<	106	70-130		
1,2,4-Trimethylbenzene		11	1.0	ug/L	10	<	114	70-130		
1,2-Dibromo-3-chloropropane (DBCP)		10	1.0	ug/L	10	<	100	70-130		

Authorized by:

Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

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Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 06/20/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9F0193 - EPA 5030B Preparation

Matrix Spike (B9F0193-MS1) Source: 19F0332-01 **Prepared: 06/11/19 12:53 Analyzed: 06/11/19 12:53**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,2-Dibromoethane (EDB)		10	0.50	ug/L	10	<	103	70-130		
1,2-Dichlorobenzene		10	1.0	ug/L	10	<	104	70-130		
1,2-Dichloroethane		10	0.20	ug/L	10	<	101	70-130		
1,2-Dichloropropane		10	1.0	ug/L	10	<	104	70-130		
1,3,5-Trimethylbenzene		11	1.0	ug/L	10	<	114	70-130		
1,3-Dichlorobenzene		11	1.0	ug/L	10	<	105	70-130		
1,3-Dichloropropane		10	1.0	ug/L	10	<	103	70-130		
1,4-Dichlorobenzene		11	1.0	ug/L	10	<	108	70-130		
2,2-Dichloropropane		12	1.0	ug/L	10	<	123	70-130		
2-Chlorotoluene		11	1.0	ug/L	10	<	113	70-130		
4-Chlorotoluene		11	1.0	ug/L	10	<	112	70-130		
Acetone		96	20	ug/L	100	<	96	70-130		
Allyl chloride		9.7	1.0	ug/L	10	<	97	70-130		
Benzene		11	0.50	ug/L	10	<	111	70-130		
Bromobenzene		10	1.0	ug/L	10	<	102	70-130		
Bromochloromethane		11	1.0	ug/L	10	<	109	70-130		
Bromodichloromethane		11	1.0	ug/L	10	<	108	70-130		
Bromoform		10	1.0	ug/L	10	<	103	70-130		
Bromomethane		9.2	2.0	ug/L	10	<	92	70-130		
Carbon tetrachloride		12	0.20	ug/L	10	<	117	70-130		
Chlorobenzene		11	1.0	ug/L	10	<	108	70-130		
Chlorodibromomethane		10	0.50	ug/L	10	<	105	70-130		
Chloroethane		11	1.0	ug/L	10	<	112	70-130		
Chloroform		11	1.0	ug/L	10	<	110	70-130		
Chloromethane		9.8	1.0	ug/L	10	<	98	70-130		
cis-1,2-Dichloroethene		11	1.0	ug/L	10	<	109	70-130		
cis-1,3-Dichloropropene		8.9	0.50	ug/L	10	<	89	70-130		
Dibromomethane		10	1.0	ug/L	10	<	101	70-130		
Dichlorodifluoromethane		10	1.0	ug/L	10	<	100	70-130		
Dichlorofluoromethane		12	1.0	ug/L	10	<	115	70-130		
Ethyl ether		11	1.0	ug/L	10	<	106	70-130		
Ethylbenzene		11	1.0	ug/L	10	<	112	70-130		
Hexachlorobutadiene		12	0.50	ug/L	10	<	120	70-130		
Isopropylbenzene		12	1.0	ug/L	10	<	118	70-130		
Methyl ethyl ketone (MEK)		51	10	ug/L	50	<	102	70-130		

FINAL REPORT

Report ID: 06202019 91932

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651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 06/20/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9F0193 - EPA 5030B Preparation

Matrix Spike (B9F0193-MS1) Source: 19F0332-01 **Prepared: 06/11/19 12:53 Analyzed: 06/11/19 12:53**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Methyl isobutyl ketone (MIBK)		55	5.0	ug/L	50	<	109	70-130		
Methyl tertiary butyl ether (MTBE)		10	2.0	ug/L	10	<	103	70-130		
Methylene chloride		10	1.0	ug/L	10	<	105	70-130		
Naphthalene		10	1.0	ug/L	10	<	104	70-130		
n-Butylbenzene		12	1.0	ug/L	10	<	118	70-130		
n-Propylbenzene		12	1.0	ug/L	10	<	116	70-130		
o-Xylene		11	1.0	ug/L	10	<	112	70-130		
p&m-Xylene		12	1.0	ug/L	10	<	116	70-130		
p-Isopropyltoluene		12	1.0	ug/L	10	<	118	70-130		
sec-Butylbenzene		12	1.0	ug/L	10	<	120	70-130		
Styrene		11	1.0	ug/L	10	<	108	70-130		
tert-Butylbenzene		12	1.0	ug/L	10	<	116	70-130		
Tetrachloroethene		12	1.0	ug/L	10	<	115	70-130		
Tetrahydrofuran (THF)		94	10	ug/L	100	<	94	70-130		
Toluene		11	1.0	ug/L	10	<	112	70-130		
trans-1,2-Dichloroethene		11	1.0	ug/L	10	<	113	70-130		
trans-1,3-Dichloropropene		8.6	0.50	ug/L	10	<	86	70-130		
Trichloroethene (TCE)		11	0.10	ug/L	10	<	114	70-130		
Trichlorofluoromethane		11	1.0	ug/L	10	<	113	70-130		
Vinyl chloride		10	0.050	ug/L	10	<	104	70-130		

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 06/20/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9F0164 - 1,4 Dioxane in Water SPE

Blank (B9F0164-BLK1) — **Prepared: 06/10/19 08:00 Analyzed: 06/17/19 11:47**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,4-Dioxane		<	0.050	ug/L						

LCS (B9F0164-BS1) — **Prepared: 06/10/19 08:00 Analyzed: 06/17/19 12:04**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,4-Dioxane		0.22	0.052	ug/L	0.20		107	80-120		

Duplicate (B9F0164-DUP2) — Source: 19F0032-08RE1 — **Prepared: 06/10/19 08:00 Analyzed: 06/18/19 10:09**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,4-Dioxane	D2	13	0.20	ug/L		12			8	30

Matrix Spike (B9F0164-MS1) — Source: 19F0227-07 — **Prepared: 06/10/19 08:00 Analyzed: 06/17/19 16:45**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,4-Dioxane		0.73	0.051	ug/L	0.45	0.17	122	70-130		

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Public Health Laboratory, Minnesota Department of Health

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651-201-5300

Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 06/20/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9F0100 - PFCs Preparation

Blank (B9F0100-BLK1) **Prepared: 06/06/19 14:16 Analyzed: 06/06/19 14:16**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		<	0.050	ug/L						
Perfluorobutanoic acid (PFBA)		<	0.050	ug/L						
Perfluorohexanesulfonate (PFHxS)		<	0.025	ug/L						
Perfluorohexanoic acid (PFHxA)		<	0.050	ug/L						
Perfluorooctanesulfonate (PFOS)		<	0.015	ug/L						
Perfluorooctanoic acid (PFOA)		<	0.035	ug/L						
Perfluoropentanoic acid (PFPeA)		<	0.050	ug/L						

Blank (B9F0100-BLK2) **Prepared: 06/06/19 17:19 Analyzed: 06/06/19 17:19**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		<	0.050	ug/L						
Perfluorobutanoic acid (PFBA)		<	0.050	ug/L						
Perfluorohexanesulfonate (PFHxS)		<	0.025	ug/L						
Perfluorohexanoic acid (PFHxA)		<	0.050	ug/L						
Perfluorooctanesulfonate (PFOS)		<	0.015	ug/L						
Perfluorooctanoic acid (PFOA)		<	0.035	ug/L						
Perfluoropentanoic acid (PFPeA)		<	0.050	ug/L						

LCS (B9F0100-BS1) **Prepared: 06/06/19 14:07 Analyzed: 06/06/19 14:07**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.51	0.050	ug/L	0.50		102	80-120		
Perfluorobutanoic acid (PFBA)		0.51	0.050	ug/L	0.5		102	80-120		
Perfluorohexanesulfonate (PFHxS)		0.48	0.025	ug/L	0.50		95	80-120		
Perfluorohexanoic acid (PFHxA)		0.52	0.050	ug/L	0.5		104	80-120		
Perfluorooctanesulfonate (PFOS)		0.52	0.015	ug/L	0.49		105	80-120		
Perfluorooctanoic acid (PFOA)		0.53	0.035	ug/L	0.5		106	80-120		
Perfluoropentanoic acid (PFPeA)		0.49	0.050	ug/L	0.5		98	80-120		

LCS Dup (B9F0100-BSD1) **Prepared: 06/06/19 17:11 Analyzed: 06/06/19 17:11**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.50	0.050	ug/L	0.50		99	80-120	3	20
Perfluorobutanoic acid (PFBA)		0.52	0.050	ug/L	0.5		103	80-120	1	20
Perfluorohexanesulfonate (PFHxS)		0.50	0.025	ug/L	0.50		101	80-120	6	20

FINAL REPORT

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 06/20/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9F0100 - PFCs Preparation

LCS Dup (B9F0100-BSD1) **Prepared: 06/06/19 17:11 Analyzed: 06/06/19 17:11**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorohexanoic acid (PFHxA)		0.50	0.050	ug/L	0.5		99	80-120	5	20
Perfluorooctanesulfonate (PFOS)		0.53	0.015	ug/L	0.49		106	80-120	0.8	20
Perfluorooctanoic acid (PFOA)		0.53	0.035	ug/L	0.5		106	80-120	0.4	20
Perfluoropentanoic acid (PFPeA)		0.50	0.050	ug/L	0.5		101	80-120	3	20

Matrix Spike (B9F0100-MS1) Source: 19F0051-02 **Prepared: 06/06/19 14:32 Analyzed: 06/06/19 14:32**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.51	0.050	ug/L	0.50	<	102	70-130		
Perfluorobutanoic acid (PFBA)		0.53	0.050	ug/L	0.5	<	105	70-130		
Perfluorohexanesulfonate (PFHxS)		0.50	0.025	ug/L	0.50	<	99	70-130		
Perfluorohexanoic acid (PFHxA)		0.49	0.050	ug/L	0.5	<	98	70-130		
Perfluorooctanesulfonate (PFOS)		0.51	0.015	ug/L	0.49	<	102	70-130		
Perfluorooctanoic acid (PFOA)		0.54	0.035	ug/L	0.5	<	107	70-130		
Perfluoropentanoic acid (PFPeA)		0.51	0.050	ug/L	0.5	<	102	70-130		

Matrix Spike Dup (B9F0100-MSD1) Source: 19F0051-02 **Prepared: 06/06/19 14:41 Analyzed: 06/06/19 14:41**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.53	0.050	ug/L	0.50	<	106	70-130	4	20
Perfluorobutanoic acid (PFBA)		0.52	0.050	ug/L	0.5	<	104	70-130	1	20
Perfluorohexanesulfonate (PFHxS)		0.49	0.025	ug/L	0.50	<	97	70-130	2	20
Perfluorohexanoic acid (PFHxA)		0.54	0.050	ug/L	0.5	<	109	70-130	10	20
Perfluorooctanesulfonate (PFOS)		0.52	0.015	ug/L	0.49	<	104	70-130	2	20
Perfluorooctanoic acid (PFOA)		0.52	0.035	ug/L	0.5	<	103	70-130	4	20
Perfluoropentanoic acid (PFPeA)		0.51	0.050	ug/L	0.5	<	101	70-130	1	20

Batch B9F0167 - PFCs Preparation

Blank (B9F0167-BLK1) **Prepared: 06/10/19 10:58 Analyzed: 06/10/19 10:58**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		<	0.050	ug/L						
Perfluorobutanoic acid (PFBA)		<	0.050	ug/L						
Perfluorohexanesulfonate (PFHxS)		<	0.025	ug/L						
Perfluorohexanoic acid (PFHxA)		<	0.050	ug/L						

FINAL REPORT

Report ID: 06202019 91932

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 06/20/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9F0167 - PFCs Preparation

Blank (B9F0167-BLK1) **Prepared: 06/10/19 10:58 Analyzed: 06/10/19 10:58**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorooctanesulfonate (PFOS)		<	0.015	ug/L						
Perfluorooctanoic acid (PFOA)		<	0.035	ug/L						
Perfluoropentanoic acid (PFPeA)		<	0.050	ug/L						

Blank (B9F0167-BLK2) **Prepared: 06/10/19 14:18 Analyzed: 06/10/19 14:18**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		<	0.050	ug/L						
Perfluorobutanoic acid (PFBA)		<	0.050	ug/L						
Perfluorohexanesulfonate (PFHxS)		<	0.025	ug/L						
Perfluorohexanoic acid (PFHxA)		<	0.050	ug/L						
Perfluorooctanesulfonate (PFOS)		<	0.015	ug/L						
Perfluorooctanoic acid (PFOA)		<	0.035	ug/L						
Perfluoropentanoic acid (PFPeA)		<	0.050	ug/L						

LCS (B9F0167-BS1) **Prepared: 06/10/19 10:50 Analyzed: 06/10/19 10:50**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.51	0.050	ug/L	0.50		101	80-120		
Perfluorobutanoic acid (PFBA)		0.49	0.050	ug/L	0.5		98	80-120		
Perfluorohexanesulfonate (PFHxS)		0.51	0.025	ug/L	0.50		103	80-120		
Perfluorohexanoic acid (PFHxA)		0.48	0.050	ug/L	0.5		96	80-120		
Perfluorooctanesulfonate (PFOS)		0.51	0.015	ug/L	0.49		102	80-120		
Perfluorooctanoic acid (PFOA)		0.50	0.035	ug/L	0.5		99	80-120		
Perfluoropentanoic acid (PFPeA)		0.49	0.050	ug/L	0.5		97	80-120		

LCS Dup (B9F0167-BSD1) **Prepared: 06/10/19 14:09 Analyzed: 06/10/19 14:09**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.53	0.050	ug/L	0.50		106	80-120	5	20
Perfluorobutanoic acid (PFBA)		0.50	0.050	ug/L	0.5		100	80-120	2	20
Perfluorohexanesulfonate (PFHxS)		0.52	0.025	ug/L	0.50		105	80-120	2	20
Perfluorohexanoic acid (PFHxA)		0.51	0.050	ug/L	0.5		101	80-120	5	20
Perfluorooctanesulfonate (PFOS)		0.52	0.015	ug/L	0.49		104	80-120	2	20
Perfluorooctanoic acid (PFOA)		0.49	0.035	ug/L	0.5		98	80-120	1	20
Perfluoropentanoic acid (PFPeA)		0.50	0.050	ug/L	0.5		100	80-120	3	20

FINAL REPORT

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Final Report
Quality Control

Program Code: QW	Project ID: PRJ07786
Program Name: Closed Landfill Assessment	Facility Name/ID: MN SW-057
Collected By: David Anderson	City: 19-01567 MPCA Freeway Landfill 2019 MDH
Collector ID: None	Generated: 06/20/19 9:19

Results were produced by Minnesota Department of Health, except where noted.

Batch B9F0167 - PFCs Preparation

Matrix Spike (B9F0167-MS1) Source: 19F0324-01 **Prepared: 06/10/19 12:30 Analyzed: 06/10/19 12:30**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.53	0.050	ug/L	0.50	<	105	70-130		
Perfluorobutanoic acid (PFBA)		0.51	0.050	ug/L	0.5	<	102	70-130		
Perfluorohexanesulfonate (PFHxS)		0.51	0.025	ug/L	0.50	<	103	70-130		
Perfluorohexanoic acid (PFHxA)		0.49	0.050	ug/L	0.5	<	98	70-130		
Perfluorooctanesulfonate (PFOS)		0.51	0.015	ug/L	0.49	<	101	70-130		
Perfluorooctanoic acid (PFOA)		0.50	0.035	ug/L	0.5	<	101	70-130		
Perfluoropentanoic acid (PFPeA)		0.50	0.050	ug/L	0.5	<	101	70-130		

Matrix Spike Dup (B9F0167-MSD1) Source: 19F0324-01 **Prepared: 06/10/19 12:38 Analyzed: 06/10/19 12:38**

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Perfluorobutanesulfonate (PFBS)		0.51	0.050	ug/L	0.50	<	101	70-130	3	20
Perfluorobutanoic acid (PFBA)		0.49	0.050	ug/L	0.5	<	98	70-130	4	20
Perfluorohexanesulfonate (PFHxS)		0.53	0.025	ug/L	0.50	<	106	70-130	3	20
Perfluorohexanoic acid (PFHxA)		0.48	0.050	ug/L	0.5	<	95	70-130	2	20
Perfluorooctanesulfonate (PFOS)		0.52	0.015	ug/L	0.49	<	103	70-130	2	20
Perfluorooctanoic acid (PFOA)		0.48	0.035	ug/L	0.5	<	96	70-130	5	20
Perfluoropentanoic acid (PFPeA)		0.50	0.050	ug/L	0.5	<	100	70-130	0.6	20

Authorized by:

The results in this report apply only to the samples analyzed.
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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

Minnesota Department of Health
Public Health Laboratory
Environmental Laboratory Section
601 Robert St. N., P.O. Box 64899
St. Paul, MN 55164-0899
651-201-5300

Final Report
Quality Control

Data Qualifiers and Definitions

J	Analyte was present between the method detection limit and reporting limit and should be considered an estimated value.
D2	Sample required dilution due to high concentration of target analyte(s). Reporting limit has been raised.
D1	Sample required dilution due to matrix. Reporting limit has been raised.
Dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
%REC	Percent Recovery

Authorized by:

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Paul Moyer, Environmental Laboratory Manager
Public Health Laboratory, Minnesota Department of Health

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

April 17, 2019

Mr. Brad Jacobson
Pace Analytical Services, LLC..
1700 Elm Street
Suite 200
Minneapolis, MN 55414

RE: Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468315

Dear Mr. Jacobson:
Enclosed are the analytical results for sample(s) received by the laboratory on March 26, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Some analyses have been subcontracted outside of the Pace Network. The subcontracted laboratory report has been attached.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jennifer Anderson
jennifer.anderson@pacelabs.com
(612)607-6436
Project Manager

Enclosures

cc: Tom Halverson, Pace Analytical Field Services
Chris Pelosi, Pace Analytical Services - Field Services

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Pace Analytical Services, LLC
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CERTIFICATIONS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468315

Minnesota Certification IDs

1700 Elm Street SE, Minneapolis, MN 55414-2485
A2LA Certification #: 2926.01
Alabama Certification #: 40770
Alaska Contaminated Sites Certification #: 17-009
Alaska DW Certification #: MN00064
Arizona Certification #: AZ0014
Arkansas DW Certification #: MN00064
Arkansas WW Certification #: 88-0680
California Certification #: 2929
CNMI Saipan Certification #: MP0003
Colorado Certification #: MN00064
Connecticut Certification #: PH-0256
EPA Region 8+Wyoming DW Certification #: via MN 027-053-137
Florida Certification #: E87605
Georgia Certification #: 959
Guam EPA Certification #: MN00064
Hawaii Certification #: MN00064
Idaho Certification #: MN00064
Illinois Certification #: 200011
Indiana Certification #: C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky DW Certification #: 90062
Kentucky WW Certification #: 90062
Louisiana DEQ Certification #: 03086
Louisiana DW Certification #: MN00064
Maine Certification #: MN00064
Maryland Certification #: 322
Massachusetts Certification #: M-MN064
Michigan Certification #: 9909
Minnesota Certification #: 027-053-137
Minnesota Dept of Ag Certifcation #: via MN 027-053-137
Minnesota Petrofund Certification #: 1240
Mississippi Certification #: MN00064
Missouri Certification #: 10100
Montana Certification #: CERT0092
Nebraska Certification #: NE-OS-18-06
Nevada Certification #: MN00064
New Hampshire Certification #: 2081
New Jersey Certification #: MN002
New York Certification #: 11647
North Carolina DW Certification #: 27700
North Carolina WW Certification #: 530
North Dakota Certification #: R-036
Ohio DW Certification #: 41244
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Primary Certification #: MN300001
Oregon Secondary Certification #: MN200001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification #: MN00064
South Carolina Certification #:74003001
Tennessee Certification #: TN02818
Texas Certification #: T104704192
Utah Certification #: MN00064
Vermont Certification #: VT-027053137
Virginia Certification #: 460163
Washington Certification #: C486
West Virginia DEP Certification #: 382
West Virginia DW Certification #: 9952 C
Wisconsin Certification #: 999407970
Wyoming UST Certification #: via A2LA 2926.01

Virginia Minnesota Certification ID's

315 Chestnut Street, Virginia, MN 55792
Alaska Certification UST-107
Montana Certificate #CERT0103
Minnesota Dept of Health Certification #: 027-137-445
North Dakota Certification: # R-203
Wisconsin DNR Certification # : 998027470
WA Department of Ecology Lab ID# C1007

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Florida: Cert E871149 SEKS WET
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221

REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468315

Pennsylvania Certification IDs

KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

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SAMPLE SUMMARY

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468315

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10468315001	**Field Blank 1**	Water	03/26/19 10:10	03/26/19 17:05
10468315002	**603281**	Water	03/26/19 11:30	03/26/19 17:05
10468315003	**603287**	Water	03/26/19 13:50	03/26/19 17:05
10468315004	**603288**	Water	03/26/19 15:30	03/26/19 17:05
10468315005	**603289**	Water	03/26/19 16:30	03/26/19 17:05

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SAMPLE ANALYTE COUNT

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468315

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10468315001	**Field Blank 1**	EPA 8082A	RAG	11	PASI-M
		EPA 200.7	IP	9	PASI-M
		EPA 200.8	RJS	12	PASI-M
		EPA 8270D	AT1	38	PASI-M
		EPA 900.0	CLA	2	PASI-PA
		EPA 300.0	KEO	1	PASI-M
		SM 3500-Cr B Modified	JFP	1	PASI-M
		EPA 350.1 rev. 2 (1993)	DMB	1	PASI-V
		SM 4500-CN-E	DCL	1	PASI-M
10468315002	**603281**	EPA 8082A	RAG	11	PASI-M
		EPA 200.7	IP	9	PASI-M
		EPA 200.8	RJS	12	PASI-M
		EPA 8270D	AT1	38	PASI-M
			CLJ	16	PASI-V
		EPA 900.0	CLA	2	PASI-PA
		EPA 300.0	KEO	1	PASI-M
		SM 3500-Cr B Modified	JFP	1	PASI-M
		EPA 350.1	CLJ	1	PASI-V
		EPA 350.1 rev. 2 (1993)	DMB	1	PASI-V
		SM 4500-CN-E	DCL	1	PASI-M
10468315003	**603287**	EPA 8082A	RAG	11	PASI-M
		EPA 200.7	IP	9	PASI-M
		EPA 200.8	RJS	12	PASI-M
		EPA 8270D	AT1	38	PASI-M
			CLJ	16	PASI-V
		EPA 900.0	CLA	2	PASI-PA
		EPA 300.0	KEO	1	PASI-M
		SM 3500-Cr B Modified	JFP	1	PASI-M
		EPA 350.1	CLJ	1	PASI-V
		EPA 350.1 rev. 2 (1993)	DMB	1	PASI-V
		SM 4500-CN-E	DCL	1	PASI-M
10468315004	**603288**	EPA 8082A	RAG	11	PASI-M
		EPA 200.7	IP	9	PASI-M
		EPA 200.8	RJS	12	PASI-M
		EPA 8270D	AT1	38	PASI-M
			CLJ	16	PASI-V
		EPA 900.0	CLA	2	PASI-PA

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SAMPLE ANALYTE COUNT

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468315

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 300.0	KEO	1	PASI-M
		SM 3500-Cr B Modified	JFP	1	PASI-M
		EPA 350.1	CLJ	1	PASI-V
		EPA 350.1 rev. 2 (1993)	DMB	1	PASI-V
		SM 4500-CN-E	DCL	1	PASI-M
10468315005	**603289**	EPA 8082A	RAG	11	PASI-M
		EPA 200.7	IP	9	PASI-M
		EPA 200.8	RJS	12	PASI-M
		EPA 8270D	AT1	38	PASI-M
			CLJ	15	PASI-V
		EPA 900.0	CLA	2	PASI-PA
		EPA 300.0	KEO	1	PASI-M
		SM 3500-Cr B Modified	JFP	1	PASI-M
		EPA 350.1	CLJ	1	PASI-V
		EPA 350.1 rev. 2 (1993)	DMB	1	PASI-V
		SM 4500-CN-E	DCL	1	PASI-M

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468315

Sample: Field Blank 1 **Lab ID: 10468315001** Collected: 03/26/19 10:10 Received: 03/26/19 17:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA Mod. 3510C							
PCB-1016 (Aroclor 1016)	ND	ug/L	0.098	1	03/27/19 10:59	03/29/19 09:09	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/L	0.098	1	03/27/19 10:59	03/29/19 09:09	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/L	0.098	1	03/27/19 10:59	03/29/19 09:09	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/L	0.098	1	03/27/19 10:59	03/29/19 09:09	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/L	0.098	1	03/27/19 10:59	03/29/19 09:09	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/L	0.098	1	03/27/19 10:59	03/29/19 09:09	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/L	0.098	1	03/27/19 10:59	03/29/19 09:09	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/L	0.098	1	03/27/19 10:59	03/29/19 09:09	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/L	0.098	1	03/27/19 10:59	03/29/19 09:09	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	62	%.	30-125	1	03/27/19 10:59	03/29/19 09:09	877-09-8	
Decachlorobiphenyl (S)	66	%.	30-125	1	03/27/19 10:59	03/29/19 09:09	2051-24-3	
200.7 MET ICP, Dissolved	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Aluminum, Dissolved	ND	ug/L	200	1	03/27/19 07:40	04/01/19 13:01	7429-90-5	
Barium, Dissolved	ND	ug/L	10.0	1	03/27/19 07:40	04/01/19 13:01	7440-39-3	
Copper, Dissolved	ND	ug/L	10.0	1	03/27/19 07:40	04/01/19 13:01	7440-50-8	
Manganese, Dissolved	ND	ug/L	5.0	1	03/27/19 07:40	04/01/19 13:01	7439-96-5	
Nickel, Dissolved	ND	ug/L	20.0	1	03/27/19 07:40	04/01/19 13:01	7440-02-0	
Silver, Dissolved	ND	ug/L	10.0	1	03/27/19 07:40	04/01/19 13:01	7440-22-4	
Tin, Dissolved	ND	ug/L	75.0	1	03/27/19 07:40	04/01/19 13:01	7440-31-5	
Total Hardness by 2340B, Dissolved	ND	ug/L	3300	1	03/27/19 07:40	04/01/19 13:01		
Zinc, Dissolved	ND	ug/L	20.0	1	03/27/19 07:40	04/01/19 13:01	7440-66-6	
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Dissolved	ND	ug/L	0.50	1	03/27/19 07:40	04/02/19 10:24	7440-36-0	
Arsenic, Dissolved	ND	ug/L	0.50	1	03/27/19 07:40	04/02/19 10:24	7440-38-2	
Beryllium, Dissolved	ND	ug/L	0.20	1	03/27/19 07:40	04/02/19 10:24	7440-41-7	
Boron, Dissolved	ND	ug/L	10.0	1	03/27/19 07:40	04/02/19 10:24	7440-42-8	
Cadmium, Dissolved	ND	ug/L	0.080	1	03/27/19 07:40	04/02/19 10:24	7440-43-9	
Chromium, Dissolved	ND	ug/L	0.50	1	03/27/19 07:40	04/02/19 10:24	7440-47-3	
Cobalt, Dissolved	ND	ug/L	0.50	1	03/27/19 07:40	04/02/19 10:24	7440-48-4	
Lead, Dissolved	ND	ug/L	0.10	1	03/27/19 07:40	04/02/19 10:24	7439-92-1	
Selenium, Dissolved	ND	ug/L	0.50	1	03/27/19 07:40	04/02/19 10:24	7782-49-2	
Thallium, Dissolved	ND	ug/L	0.10	1	03/27/19 07:40	04/02/19 10:24	7440-28-0	
Uranium-238, Dissolved	ND	ug/L	0.50	1	03/27/19 07:40	04/02/19 10:24	7440-61-1	
Vanadium, Dissolved	ND	ug/L	1.0	1	03/27/19 07:40	04/02/19 10:24	7440-62-2	
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
Acenaphthene	ND	ug/L	10.3	1	03/26/19 18:40	03/28/19 18:00	83-32-9	
Anthracene	ND	ug/L	10.3	1	03/26/19 18:40	03/28/19 18:00	120-12-7	
Benzo(a)pyrene	ND	ug/L	10.3	1	03/26/19 18:40	03/28/19 18:00	50-32-8	
Benzoic acid	ND	ug/L	51.3	1	03/26/19 18:40	03/28/19 18:00	65-85-0	
4-Bromophenylphenyl ether	ND	ug/L	10.3	1	03/26/19 18:40	03/28/19 18:00	101-55-3	
Butylbenzylphthalate	ND	ug/L	10.3	1	03/26/19 18:40	03/28/19 18:00	85-68-7	
bis(2-Chloroethyl) ether	ND	ug/L	10.3	1	03/26/19 18:40	03/28/19 18:00	111-44-4	

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468315

Sample: Field Blank 1 **Lab ID: 10468315001** Collected: 03/26/19 10:10 Received: 03/26/19 17:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
2-Chlorophenol	ND	ug/L	10.3	1	03/26/19 18:40	03/28/19 18:00	95-57-8	
3,3'-Dichlorobenzidine	ND	ug/L	51.3	1	03/26/19 18:40	03/28/19 18:00	91-94-1	
2,4-Dichlorophenol	ND	ug/L	10.3	1	03/26/19 18:40	03/28/19 18:00	120-83-2	
Diethylphthalate	ND	ug/L	10.3	1	03/26/19 18:40	03/28/19 18:00	84-66-2	
2,4-Dimethylphenol	ND	ug/L	10.3	1	03/26/19 18:40	03/28/19 18:00	105-67-9	
Dimethylphthalate	ND	ug/L	10.3	1	03/26/19 18:40	03/28/19 18:00	131-11-3	
Di-n-butylphthalate	ND	ug/L	10.3	1	03/26/19 18:40	03/28/19 18:00	84-74-2	
2,4-Dinitrophenol	ND	ug/L	10.3	1	03/26/19 18:40	03/28/19 18:00	51-28-5	
Di-n-octylphthalate	ND	ug/L	10.3	1	03/26/19 18:40	03/28/19 18:00	117-84-0	
bis(2-Ethylhexyl)phthalate	ND	ug/L	10.3	1	03/26/19 18:40	03/28/19 18:00	117-81-7	
Fluoranthene	ND	ug/L	10.3	1	03/26/19 18:40	03/28/19 18:00	206-44-0	
Fluorene	ND	ug/L	10.3	1	03/26/19 18:40	03/28/19 18:00	86-73-7	
Hexachlorobenzene	ND	ug/L	10.3	1	03/26/19 18:40	03/28/19 18:00	118-74-1	
Hexachlorocyclopentadiene	ND	ug/L	51.3	1	03/26/19 18:40	03/28/19 18:00	77-47-4	
Hexachloroethane	ND	ug/L	10.3	1	03/26/19 18:40	03/28/19 18:00	67-72-1	
Isophorone	ND	ug/L	10.3	1	03/26/19 18:40	03/28/19 18:00	78-59-1	
2-Methylnaphthalene	ND	ug/L	10.3	1	03/26/19 18:40	03/28/19 18:00	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/L	10.3	1	03/26/19 18:40	03/28/19 18:00	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/L	20.5	1	03/26/19 18:40	03/28/19 18:00		
N-Nitrosodimethylamine	ND	ug/L	10.3	1	03/26/19 18:40	03/28/19 18:00	62-75-9	
Pentachlorophenol	ND	ug/L	20.5	1	03/26/19 18:40	03/28/19 18:00	87-86-5	
Phenanthrene	ND	ug/L	10.3	1	03/26/19 18:40	03/28/19 18:00	85-01-8	
Phenol	ND	ug/L	10.3	1	03/26/19 18:40	03/28/19 18:00	108-95-2	
Pyrene	ND	ug/L	10.3	1	03/26/19 18:40	03/28/19 18:00	129-00-0	
2,4,6-Trichlorophenol	ND	ug/L	10.3	1	03/26/19 18:40	03/28/19 18:00	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	73	%.	55-125	1	03/26/19 18:40	03/28/19 18:00	4165-60-0	
2-Fluorobiphenyl (S)	70	%.	52-125	1	03/26/19 18:40	03/28/19 18:00	321-60-8	
p-Terphenyl-d14 (S)	81	%.	57-125	1	03/26/19 18:40	03/28/19 18:00	1718-51-0	
Phenol-d6 (S)	69	%.	30-125	1	03/26/19 18:40	03/28/19 18:00	13127-88-3	
2-Fluorophenol (S)	66	%.	30-125	1	03/26/19 18:40	03/28/19 18:00	367-12-4	
2,4,6-Tribromophenol (S)	85	%.	52-125	1	03/26/19 18:40	03/28/19 18:00	118-79-6	
300.0 IC Anions	Analytical Method: EPA 300.0							
Chloride	ND	mg/L	1.2	1		03/28/19 03:20	16887-00-6	
Chromium, Hexavalent	Analytical Method: SM 3500-Cr B Modified							
Chromium, Hexavalent	ND	mg/L	0.010	1		03/27/19 08:40		
350.1 Ammonia, Distilled	Analytical Method: EPA 350.1 rev. 2 (1993) Preparation Method: EPA 350.1 rev. 2 (1993)							
Nitrogen, Ammonia	ND	mg/L	0.11	1	04/02/19 10:00	04/03/19 10:59	7664-41-7	
SM4500CN-E Cyanide	Analytical Method: SM 4500-CN-E Preparation Method: SM 4500-CN-E							
Cyanide	ND	ug/L	20.0	1	04/02/19 10:26	04/02/19 13:02	57-12-5	

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(612)607-1700

ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468315

Sample: 603281 **Lab ID: 10468315002** Collected: 03/26/19 11:30 Received: 03/26/19 17:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA Mod. 3510C							
PCB-1016 (Aroclor 1016)	ND	ug/L	0.098	1	03/27/19 10:59	03/29/19 09:24	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/L	0.098	1	03/27/19 10:59	03/29/19 09:24	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/L	0.098	1	03/27/19 10:59	03/29/19 09:24	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/L	0.098	1	03/27/19 10:59	03/29/19 09:24	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/L	0.098	1	03/27/19 10:59	03/29/19 09:24	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/L	0.098	1	03/27/19 10:59	03/29/19 09:24	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/L	0.098	1	03/27/19 10:59	03/29/19 09:24	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/L	0.098	1	03/27/19 10:59	03/29/19 09:24	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/L	0.098	1	03/27/19 10:59	03/29/19 09:24	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	26	%.	30-125	1	03/27/19 10:59	03/29/19 09:24	877-09-8	S0
Decachlorobiphenyl (S)	55	%.	30-125	1	03/27/19 10:59	03/29/19 09:24	2051-24-3	
200.7 MET ICP, Dissolved	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Aluminum, Dissolved	ND	ug/L	200	1	03/27/19 07:40	04/01/19 13:03	7429-90-5	
Barium, Dissolved	**28.6**	ug/L	10.0	1	03/27/19 07:40	04/01/19 13:03	7440-39-3	
Copper, Dissolved	ND	ug/L	10.0	1	03/27/19 07:40	04/01/19 13:03	7440-50-8	
Manganese, Dissolved	**75.2**	ug/L	5.0	1	03/27/19 07:40	04/01/19 13:03	7439-96-5	
Nickel, Dissolved	ND	ug/L	20.0	1	03/27/19 07:40	04/01/19 13:03	7440-02-0	
Silver, Dissolved	ND	ug/L	10.0	1	03/27/19 07:40	04/01/19 13:03	7440-22-4	
Tin, Dissolved	ND	ug/L	75.0	1	03/27/19 07:40	04/01/19 13:03	7440-31-5	
Total Hardness by 2340B, Dissolved	**801000**	ug/L	3300	1	03/27/19 07:40	04/01/19 13:03		
Zinc, Dissolved	ND	ug/L	20.0	1	03/27/19 07:40	04/01/19 13:03	7440-66-6	
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Dissolved	ND	ug/L	0.50	1	03/27/19 07:40	04/02/19 10:28	7440-36-0	
Arsenic, Dissolved	ND	ug/L	0.50	1	03/27/19 07:40	04/02/19 10:28	7440-38-2	
Beryllium, Dissolved	**0.24**	ug/L	0.20	1	03/27/19 07:40	04/02/19 10:28	7440-41-7	
Boron, Dissolved	**30100**	ug/L	2000	200	03/27/19 07:40	04/03/19 08:28	7440-42-8	M6
Cadmium, Dissolved	ND	ug/L	0.080	1	03/27/19 07:40	04/02/19 10:28	7440-43-9	
Chromium, Dissolved	ND	ug/L	0.50	1	03/27/19 07:40	04/02/19 10:28	7440-47-3	
Cobalt, Dissolved	ND	ug/L	0.50	1	03/27/19 07:40	04/02/19 10:28	7440-48-4	
Lead, Dissolved	ND	ug/L	0.10	1	03/27/19 07:40	04/02/19 10:28	7439-92-1	
Selenium, Dissolved	**22.9**	ug/L	0.50	1	03/27/19 07:40	04/02/19 10:28	7782-49-2	
Thallium, Dissolved	**0.42**	ug/L	0.10	1	03/27/19 07:40	04/02/19 10:28	7440-28-0	
Uranium-238, Dissolved	**12.7**	ug/L	0.50	1	03/27/19 07:40	04/02/19 10:28	7440-61-1	
Vanadium, Dissolved	ND	ug/L	1.0	1	03/27/19 07:40	04/02/19 10:28	7440-62-2	
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
Acenaphthene	ND	ug/L	10.5	1	03/26/19 18:40	03/28/19 18:25	83-32-9	
Anthracene	ND	ug/L	10.5	1	03/26/19 18:40	03/28/19 18:25	120-12-7	
Benzo(a)pyrene	ND	ug/L	10.5	1	03/26/19 18:40	03/28/19 18:25	50-32-8	
Benzoic acid	ND	ug/L	52.6	1	03/26/19 18:40	03/28/19 18:25	65-85-0	
4-Bromophenylphenyl ether	ND	ug/L	10.5	1	03/26/19 18:40	03/28/19 18:25	101-55-3	
Butylbenzylphthalate	ND	ug/L	10.5	1	03/26/19 18:40	03/28/19 18:25	85-68-7	
bis(2-Chloroethyl) ether	ND	ug/L	10.5	1	03/26/19 18:40	03/28/19 18:25	111-44-4	

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468315

Sample: 603281 **Lab ID: 10468315002** Collected: 03/26/19 11:30 Received: 03/26/19 17:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
2-Chlorophenol	ND	ug/L	10.5	1	03/26/19 18:40	03/28/19 18:25	95-57-8	
3,3'-Dichlorobenzidine	ND	ug/L	52.6	1	03/26/19 18:40	03/28/19 18:25	91-94-1	
2,4-Dichlorophenol	ND	ug/L	10.5	1	03/26/19 18:40	03/28/19 18:25	120-83-2	
Diethylphthalate	ND	ug/L	10.5	1	03/26/19 18:40	03/28/19 18:25	84-66-2	
2,4-Dimethylphenol	ND	ug/L	10.5	1	03/26/19 18:40	03/28/19 18:25	105-67-9	
Dimethylphthalate	ND	ug/L	10.5	1	03/26/19 18:40	03/28/19 18:25	131-11-3	
Di-n-butylphthalate	ND	ug/L	10.5	1	03/26/19 18:40	03/28/19 18:25	84-74-2	
2,4-Dinitrophenol	ND	ug/L	10.5	1	03/26/19 18:40	03/28/19 18:25	51-28-5	
Di-n-octylphthalate	ND	ug/L	10.5	1	03/26/19 18:40	03/28/19 18:25	117-84-0	
bis(2-Ethylhexyl)phthalate	ND	ug/L	10.5	1	03/26/19 18:40	03/28/19 18:25	117-81-7	
Fluoranthene	ND	ug/L	10.5	1	03/26/19 18:40	03/28/19 18:25	206-44-0	
Fluorene	ND	ug/L	10.5	1	03/26/19 18:40	03/28/19 18:25	86-73-7	
Hexachlorobenzene	ND	ug/L	10.5	1	03/26/19 18:40	03/28/19 18:25	118-74-1	
Hexachlorocyclopentadiene	ND	ug/L	52.6	1	03/26/19 18:40	03/28/19 18:25	77-47-4	
Hexachloroethane	ND	ug/L	10.5	1	03/26/19 18:40	03/28/19 18:25	67-72-1	
Isophorone	ND	ug/L	10.5	1	03/26/19 18:40	03/28/19 18:25	78-59-1	
2-Methylnaphthalene	ND	ug/L	10.5	1	03/26/19 18:40	03/28/19 18:25	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/L	10.5	1	03/26/19 18:40	03/28/19 18:25	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/L	21.1	1	03/26/19 18:40	03/28/19 18:25		
N-Nitrosodimethylamine	ND	ug/L	10.5	1	03/26/19 18:40	03/28/19 18:25	62-75-9	
Pentachlorophenol	ND	ug/L	21.1	1	03/26/19 18:40	03/28/19 18:25	87-86-5	
Phenanthrene	ND	ug/L	10.5	1	03/26/19 18:40	03/28/19 18:25	85-01-8	
Phenol	ND	ug/L	10.5	1	03/26/19 18:40	03/28/19 18:25	108-95-2	
Pyrene	ND	ug/L	10.5	1	03/26/19 18:40	03/28/19 18:25	129-00-0	
2,4,6-Trichlorophenol	ND	ug/L	10.5	1	03/26/19 18:40	03/28/19 18:25	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	78	%.	55-125	1	03/26/19 18:40	03/28/19 18:25	4165-60-0	
2-Fluorobiphenyl (S)	76	%.	52-125	1	03/26/19 18:40	03/28/19 18:25	321-60-8	
p-Terphenyl-d14 (S)	82	%.	57-125	1	03/26/19 18:40	03/28/19 18:25	1718-51-0	
Phenol-d6 (S)	75	%.	30-125	1	03/26/19 18:40	03/28/19 18:25	13127-88-3	
2-Fluorophenol (S)	72	%.	30-125	1	03/26/19 18:40	03/28/19 18:25	367-12-4	
2,4,6-Tribromophenol (S)	87	%.	52-125	1	03/26/19 18:40	03/28/19 18:25	118-79-6	
Field Data	Analytical Method:							
Field pH	**6.8**	Std. Units		1		03/26/19 11:30		
Field Temperature	**10.0**	deg C		1		03/26/19 11:30		
Collected Date	**03/26/19**			1		04/17/19 14:22		
Collected Time	**1130**			1		04/17/19 14:22		
Field Specific Conductance	**1810**	umhos/cm		1		04/17/19 14:22		
Oxygen, Dissolved	**1.1**	mg/L		1		04/17/19 14:22	7782-44-7	
REDOX	**80**	mV		1		04/17/19 14:22		
Turbidity	**54.7**	NTU		1		04/17/19 14:22		
Apparent Color	**slightly cloudy**			1		04/17/19 14:22		
Odor	**No**			1		04/17/19 14:22		
Well Locked	**Yes**			1		04/17/19 14:22		

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468315

Sample: 603281 **Lab ID: 10468315002** Collected: 03/26/19 11:30 Received: 03/26/19 17:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:							
Purge Method	**Peristaltic pump**			1		04/17/19 14:22		
Total Well Depth	**32.91**	feet		1		04/17/19 14:22		
Depth of Water	**18.74**			1		04/17/19 14:22		
Well Volume Purged	**6.0**			1		04/17/19 14:22		
Purge Rate	**0.3**			1		04/17/19 14:22		
300.0 IC Anions	Analytical Method: EPA 300.0							
Chloride	**81.6**	mg/L	6.0	5		03/28/19 07:12	16887-00-6	
Chromium, Hexavalent	Analytical Method: SM 3500-Cr B Modified							
Chromium, Hexavalent	ND	mg/L	0.010	1		03/27/19 08:40		
350.1 Ammonia, Unionized	Analytical Method: EPA 350.1							
Nitrogen, Ammonia (Unionized)	ND	mg/L	0.010	1		04/17/19 14:24		
350.1 Ammonia, Distilled	Analytical Method: EPA 350.1 rev. 2 (1993) Preparation Method: EPA 350.1 rev. 2 (1993)							
Nitrogen, Ammonia	ND	mg/L	0.11	1	04/02/19 10:00	04/03/19 11:00	7664-41-7	
SM4500CN-E Cyanide	Analytical Method: SM 4500-CN-E Preparation Method: SM 4500-CN-E							
Cyanide	ND	ug/L	20.0	1	04/08/19 09:52	04/08/19 13:13	57-12-5	

Sample: 603287 **Lab ID: 10468315003** Collected: 03/26/19 13:50 Received: 03/26/19 17:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA Mod. 3510C							
PCB-1016 (Aroclor 1016)	ND	ug/L	0.10	1	03/27/19 10:59	03/29/19 09:39	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/L	0.10	1	03/27/19 10:59	03/29/19 09:39	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/L	0.10	1	03/27/19 10:59	03/29/19 09:39	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/L	0.10	1	03/27/19 10:59	03/29/19 09:39	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/L	0.10	1	03/27/19 10:59	03/29/19 09:39	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/L	0.10	1	03/27/19 10:59	03/29/19 09:39	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/L	0.10	1	03/27/19 10:59	03/29/19 09:39	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/L	0.10	1	03/27/19 10:59	03/29/19 09:39	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/L	0.10	1	03/27/19 10:59	03/29/19 09:39	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	56	%.	30-125	1	03/27/19 10:59	03/29/19 09:39	877-09-8	
Decachlorobiphenyl (S)	73	%.	30-125	1	03/27/19 10:59	03/29/19 09:39	2051-24-3	
200.7 MET ICP, Dissolved	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Aluminum, Dissolved	ND	ug/L	200	1	03/27/19 07:40	04/01/19 13:05	7429-90-5	
Barium, Dissolved	**266**	ug/L	10.0	1	03/27/19 07:40	04/01/19 13:05	7440-39-3	
Copper, Dissolved	ND	ug/L	10.0	1	03/27/19 07:40	04/01/19 13:05	7440-50-8	
Manganese, Dissolved	**1150**	ug/L	5.0	1	03/27/19 07:40	04/01/19 13:05	7439-96-5	

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468315

Sample: 603287 **Lab ID: 10468315003** Collected: 03/26/19 13:50 Received: 03/26/19 17:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 MET ICP, Dissolved	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Nickel, Dissolved	ND	ug/L	20.0	1	03/27/19 07:40	04/01/19 13:05	7440-02-0	
Silver, Dissolved	ND	ug/L	10.0	1	03/27/19 07:40	04/01/19 13:05	7440-22-4	
Tin, Dissolved	ND	ug/L	75.0	1	03/27/19 07:40	04/01/19 13:05	7440-31-5	
Total Hardness by 2340B, Dissolved	**679000**	ug/L	3300	1	03/27/19 07:40	04/01/19 13:05		
Zinc, Dissolved	ND	ug/L	20.0	1	03/27/19 07:40	04/01/19 13:05	7440-66-6	
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Dissolved	ND	ug/L	0.50	1	03/27/19 07:40	04/02/19 11:04	7440-36-0	
Arsenic, Dissolved	**2.6**	ug/L	0.50	1	03/27/19 07:40	04/02/19 11:04	7440-38-2	
Beryllium, Dissolved	ND	ug/L	0.20	1	03/27/19 07:40	04/02/19 11:04	7440-41-7	
Boron, Dissolved	**526**	ug/L	50.0	5	03/27/19 07:40	04/03/19 08:19	7440-42-8	
Cadmium, Dissolved	ND	ug/L	0.080	1	03/27/19 07:40	04/02/19 11:04	7440-43-9	
Chromium, Dissolved	ND	ug/L	0.50	1	03/27/19 07:40	04/02/19 11:04	7440-47-3	
Cobalt, Dissolved	**4.8**	ug/L	0.50	1	03/27/19 07:40	04/02/19 11:04	7440-48-4	
Lead, Dissolved	ND	ug/L	0.10	1	03/27/19 07:40	04/02/19 11:04	7439-92-1	
Selenium, Dissolved	ND	ug/L	0.50	1	03/27/19 07:40	04/02/19 11:04	7782-49-2	
Thallium, Dissolved	**0.28**	ug/L	0.10	1	03/27/19 07:40	04/02/19 11:04	7440-28-0	
Uranium-238, Dissolved	**2.4**	ug/L	0.50	1	03/27/19 07:40	04/02/19 11:04	7440-61-1	
Vanadium, Dissolved	ND	ug/L	1.0	1	03/27/19 07:40	04/02/19 11:04	7440-62-2	
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
Acenaphthene	ND	ug/L	10.0	1	03/26/19 18:40	03/28/19 18:49	83-32-9	
Anthracene	ND	ug/L	10.0	1	03/26/19 18:40	03/28/19 18:49	120-12-7	
Benzo(a)pyrene	ND	ug/L	10.0	1	03/26/19 18:40	03/28/19 18:49	50-32-8	
Benzoic acid	ND	ug/L	50.0	1	03/26/19 18:40	03/28/19 18:49	65-85-0	
4-Bromophenylphenyl ether	ND	ug/L	10.0	1	03/26/19 18:40	03/28/19 18:49	101-55-3	
Butylbenzylphthalate	ND	ug/L	10.0	1	03/26/19 18:40	03/28/19 18:49	85-68-7	
bis(2-Chloroethyl) ether	ND	ug/L	10.0	1	03/26/19 18:40	03/28/19 18:49	111-44-4	
2-Chlorophenol	ND	ug/L	10.0	1	03/26/19 18:40	03/28/19 18:49	95-57-8	
3,3'-Dichlorobenzidine	ND	ug/L	50.0	1	03/26/19 18:40	03/28/19 18:49	91-94-1	
2,4-Dichlorophenol	ND	ug/L	10.0	1	03/26/19 18:40	03/28/19 18:49	120-83-2	
Diethylphthalate	ND	ug/L	10.0	1	03/26/19 18:40	03/28/19 18:49	84-66-2	
2,4-Dimethylphenol	ND	ug/L	10.0	1	03/26/19 18:40	03/28/19 18:49	105-67-9	
Dimethylphthalate	ND	ug/L	10.0	1	03/26/19 18:40	03/28/19 18:49	131-11-3	
Di-n-butylphthalate	ND	ug/L	10.0	1	03/26/19 18:40	03/28/19 18:49	84-74-2	
2,4-Dinitrophenol	ND	ug/L	10.0	1	03/26/19 18:40	03/28/19 18:49	51-28-5	
Di-n-octylphthalate	ND	ug/L	10.0	1	03/26/19 18:40	03/28/19 18:49	117-84-0	
bis(2-Ethylhexyl)phthalate	ND	ug/L	10.0	1	03/26/19 18:40	03/28/19 18:49	117-81-7	
Fluoranthene	ND	ug/L	10.0	1	03/26/19 18:40	03/28/19 18:49	206-44-0	
Fluorene	ND	ug/L	10.0	1	03/26/19 18:40	03/28/19 18:49	86-73-7	
Hexachlorobenzene	ND	ug/L	10.0	1	03/26/19 18:40	03/28/19 18:49	118-74-1	
Hexachlorocyclopentadiene	ND	ug/L	50.0	1	03/26/19 18:40	03/28/19 18:49	77-47-4	
Hexachloroethane	ND	ug/L	10.0	1	03/26/19 18:40	03/28/19 18:49	67-72-1	
Isophorone	ND	ug/L	10.0	1	03/26/19 18:40	03/28/19 18:49	78-59-1	
2-Methylnaphthalene	ND	ug/L	10.0	1	03/26/19 18:40	03/28/19 18:49	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/L	10.0	1	03/26/19 18:40	03/28/19 18:49	95-48-7	

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468315

Sample: 603287 **Lab ID: 10468315003** Collected: 03/26/19 13:50 Received: 03/26/19 17:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
3&4-Methylphenol(m&p Cresol)	ND	ug/L	20.0	1	03/26/19 18:40	03/28/19 18:49		
N-Nitrosodimethylamine	ND	ug/L	10.0	1	03/26/19 18:40	03/28/19 18:49	62-75-9	
Pentachlorophenol	ND	ug/L	20.0	1	03/26/19 18:40	03/28/19 18:49	87-86-5	
Phenanthrene	ND	ug/L	10.0	1	03/26/19 18:40	03/28/19 18:49	85-01-8	
Phenol	ND	ug/L	10.0	1	03/26/19 18:40	03/28/19 18:49	108-95-2	
Pyrene	ND	ug/L	10.0	1	03/26/19 18:40	03/28/19 18:49	129-00-0	
2,4,6-Trichlorophenol	ND	ug/L	10.0	1	03/26/19 18:40	03/28/19 18:49	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	76	%.	55-125	1	03/26/19 18:40	03/28/19 18:49	4165-60-0	
2-Fluorobiphenyl (S)	77	%.	52-125	1	03/26/19 18:40	03/28/19 18:49	321-60-8	
p-Terphenyl-d14 (S)	80	%.	57-125	1	03/26/19 18:40	03/28/19 18:49	1718-51-0	
Phenol-d6 (S)	74	%.	30-125	1	03/26/19 18:40	03/28/19 18:49	13127-88-3	
2-Fluorophenol (S)	71	%.	30-125	1	03/26/19 18:40	03/28/19 18:49	367-12-4	
2,4,6-Tribromophenol (S)	90	%.	52-125	1	03/26/19 18:40	03/28/19 18:49	118-79-6	
Field Data	Analytical Method:							
Field pH	**6.7**	Std. Units		1		03/26/19 13:50		
Field Temperature	**11.5**	deg C		1		03/26/19 13:50		
Collected Date	**03/26/19**			1		03/26/19 13:50		
Collected Time	**1350**			1		03/26/19 13:50		
Field Specific Conductance	**1850**	umhos/cm		1		03/26/19 13:50		
Oxygen, Dissolved	**1.5**	mg/L		1		03/26/19 13:50	7782-44-7	
REDOX	**-29**	mV		1		03/26/19 13:50		
Turbidity	**19.5**	NTU		1		03/26/19 13:50		
Apparent Color	**clear**			1		03/26/19 13:50		
Odor	**No**			1		03/26/19 13:50		
Well Locked	**Yes**			1		03/26/19 13:50		
Purge Method	**Whale pump**			1		03/26/19 13:50		
Total Well Depth	**29.53**	feet		1		03/26/19 13:50		
Depth of Water	**11.27**			1		03/26/19 13:50		
Well Volume Purged	**81.0**			1		03/26/19 13:50		
Purge Rate	**1.0**			1		03/26/19 13:50		
300.0 IC Anions	Analytical Method: EPA 300.0							
Chloride	**279**	mg/L	6.0	5		03/28/19 07:29	16887-00-6	
Chromium, Hexavalent	Analytical Method: SM 3500-Cr B Modified							
Chromium, Hexavalent	ND	mg/L	0.010	1		03/27/19 08:40		
350.1 Ammonia, Unionized	Analytical Method: EPA 350.1							
Nitrogen, Ammonia (Unionized)	ND	mg/L	0.010	1		04/17/19 14:26		
350.1 Ammonia, Distilled	Analytical Method: EPA 350.1 rev. 2 (1993) Preparation Method: EPA 350.1 rev. 2 (1993)							
Nitrogen, Ammonia	**0.81**	mg/L	0.11	1	04/02/19 10:00	04/03/19 11:02	7664-41-7	

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468315

Sample: 603287 **Lab ID: 10468315003** Collected: 03/26/19 13:50 Received: 03/26/19 17:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
SM4500CN-E Cyanide	Analytical Method: SM 4500-CN-E Preparation Method: SM 4500-CN-E							
Cyanide	ND	ug/L	20.0	1	04/08/19 09:52	04/08/19 13:17	57-12-5	

Sample: 603288 **Lab ID: 10468315004** Collected: 03/26/19 15:30 Received: 03/26/19 17:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA Mod. 3510C							
PCB-1016 (Aroclor 1016)	ND	ug/L	0.098	1	03/27/19 10:59	03/29/19 09:54	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/L	0.098	1	03/27/19 10:59	03/29/19 09:54	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/L	0.098	1	03/27/19 10:59	03/29/19 09:54	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/L	0.098	1	03/27/19 10:59	03/29/19 09:54	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/L	0.098	1	03/27/19 10:59	03/29/19 09:54	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/L	0.098	1	03/27/19 10:59	03/29/19 09:54	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/L	0.098	1	03/27/19 10:59	03/29/19 09:54	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/L	0.098	1	03/27/19 10:59	03/29/19 09:54	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/L	0.098	1	03/27/19 10:59	03/29/19 09:54	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	47	%.	30-125	1	03/27/19 10:59	03/29/19 09:54	877-09-8	
Decachlorobiphenyl (S)	69	%.	30-125	1	03/27/19 10:59	03/29/19 09:54	2051-24-3	
200.7 MET ICP, Dissolved	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Aluminum, Dissolved	ND	ug/L	200	1	03/27/19 07:40	04/01/19 13:10	7429-90-5	
Barium, Dissolved	**122**	ug/L	10.0	1	03/27/19 07:40	04/01/19 13:10	7440-39-3	
Copper, Dissolved	ND	ug/L	10.0	1	03/27/19 07:40	04/01/19 13:10	7440-50-8	
Manganese, Dissolved	**1490**	ug/L	5.0	1	03/27/19 07:40	04/01/19 13:10	7439-96-5	
Nickel, Dissolved	ND	ug/L	20.0	1	03/27/19 07:40	04/01/19 13:10	7440-02-0	
Silver, Dissolved	ND	ug/L	10.0	1	03/27/19 07:40	04/01/19 13:10	7440-22-4	
Tin, Dissolved	ND	ug/L	75.0	1	03/27/19 07:40	04/01/19 13:10	7440-31-5	
Total Hardness by 2340B, Dissolved	**772000**	ug/L	3300	1	03/27/19 07:40	04/01/19 13:10		
Zinc, Dissolved	ND	ug/L	20.0	1	03/27/19 07:40	04/01/19 13:10	7440-66-6	
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Dissolved	ND	ug/L	0.50	1	03/27/19 07:40	04/02/19 11:12	7440-36-0	
Arsenic, Dissolved	ND	ug/L	0.50	1	03/27/19 07:40	04/02/19 11:12	7440-38-2	
Beryllium, Dissolved	ND	ug/L	0.20	1	03/27/19 07:40	04/02/19 11:12	7440-41-7	
Boron, Dissolved	**901**	ug/L	50.0	5	03/27/19 07:40	04/03/19 08:24	7440-42-8	
Cadmium, Dissolved	ND	ug/L	0.080	1	03/27/19 07:40	04/02/19 11:12	7440-43-9	
Chromium, Dissolved	ND	ug/L	0.50	1	03/27/19 07:40	04/02/19 11:12	7440-47-3	
Cobalt, Dissolved	**6.3**	ug/L	0.50	1	03/27/19 07:40	04/02/19 11:12	7440-48-4	
Lead, Dissolved	ND	ug/L	0.10	1	03/27/19 07:40	04/02/19 11:12	7439-92-1	
Selenium, Dissolved	ND	ug/L	0.50	1	03/27/19 07:40	04/02/19 11:12	7782-49-2	
Thallium, Dissolved	**1.2**	ug/L	0.10	1	03/27/19 07:40	04/02/19 11:12	7440-28-0	
Uranium-238, Dissolved	**6.9**	ug/L	0.50	1	03/27/19 07:40	04/02/19 11:12	7440-61-1	
Vanadium, Dissolved	ND	ug/L	1.0	1	03/27/19 07:40	04/02/19 11:12	7440-62-2	

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468315

Sample: 603288 **Lab ID: 10468315004** Collected: 03/26/19 15:30 Received: 03/26/19 17:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
Acenaphthene	ND	ug/L	9.7	1	03/26/19 18:40	03/28/19 19:14	83-32-9	
Anthracene	ND	ug/L	9.7	1	03/26/19 18:40	03/28/19 19:14	120-12-7	
Benzo(a)pyrene	ND	ug/L	9.7	1	03/26/19 18:40	03/28/19 19:14	50-32-8	
Benzoic acid	ND	ug/L	48.5	1	03/26/19 18:40	03/28/19 19:14	65-85-0	
4-Bromophenylphenyl ether	ND	ug/L	9.7	1	03/26/19 18:40	03/28/19 19:14	101-55-3	
Butylbenzylphthalate	ND	ug/L	9.7	1	03/26/19 18:40	03/28/19 19:14	85-68-7	
bis(2-Chloroethyl) ether	ND	ug/L	9.7	1	03/26/19 18:40	03/28/19 19:14	111-44-4	
2-Chlorophenol	ND	ug/L	9.7	1	03/26/19 18:40	03/28/19 19:14	95-57-8	
3,3'-Dichlorobenzidine	ND	ug/L	48.5	1	03/26/19 18:40	03/28/19 19:14	91-94-1	
2,4-Dichlorophenol	ND	ug/L	9.7	1	03/26/19 18:40	03/28/19 19:14	120-83-2	
Diethylphthalate	ND	ug/L	9.7	1	03/26/19 18:40	03/28/19 19:14	84-66-2	
2,4-Dimethylphenol	ND	ug/L	9.7	1	03/26/19 18:40	03/28/19 19:14	105-67-9	
Dimethylphthalate	ND	ug/L	9.7	1	03/26/19 18:40	03/28/19 19:14	131-11-3	
Di-n-butylphthalate	ND	ug/L	9.7	1	03/26/19 18:40	03/28/19 19:14	84-74-2	
2,4-Dinitrophenol	ND	ug/L	9.7	1	03/26/19 18:40	03/28/19 19:14	51-28-5	
Di-n-octylphthalate	ND	ug/L	9.7	1	03/26/19 18:40	03/28/19 19:14	117-84-0	
bis(2-Ethylhexyl)phthalate	ND	ug/L	9.7	1	03/26/19 18:40	03/28/19 19:14	117-81-7	
Fluoranthene	ND	ug/L	9.7	1	03/26/19 18:40	03/28/19 19:14	206-44-0	
Fluorene	ND	ug/L	9.7	1	03/26/19 18:40	03/28/19 19:14	86-73-7	
Hexachlorobenzene	ND	ug/L	9.7	1	03/26/19 18:40	03/28/19 19:14	118-74-1	
Hexachlorocyclopentadiene	ND	ug/L	48.5	1	03/26/19 18:40	03/28/19 19:14	77-47-4	
Hexachloroethane	ND	ug/L	9.7	1	03/26/19 18:40	03/28/19 19:14	67-72-1	
Isophorone	ND	ug/L	9.7	1	03/26/19 18:40	03/28/19 19:14	78-59-1	
2-Methylnaphthalene	ND	ug/L	9.7	1	03/26/19 18:40	03/28/19 19:14	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/L	9.7	1	03/26/19 18:40	03/28/19 19:14	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/L	19.4	1	03/26/19 18:40	03/28/19 19:14		
N-Nitrosodimethylamine	ND	ug/L	9.7	1	03/26/19 18:40	03/28/19 19:14	62-75-9	
Pentachlorophenol	ND	ug/L	19.4	1	03/26/19 18:40	03/28/19 19:14	87-86-5	
Phenanthrene	ND	ug/L	9.7	1	03/26/19 18:40	03/28/19 19:14	85-01-8	
Phenol	ND	ug/L	9.7	1	03/26/19 18:40	03/28/19 19:14	108-95-2	
Pyrene	ND	ug/L	9.7	1	03/26/19 18:40	03/28/19 19:14	129-00-0	
2,4,6-Trichlorophenol	ND	ug/L	9.7	1	03/26/19 18:40	03/28/19 19:14	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	79	%.	55-125	1	03/26/19 18:40	03/28/19 19:14	4165-60-0	
2-Fluorobiphenyl (S)	78	%.	52-125	1	03/26/19 18:40	03/28/19 19:14	321-60-8	
p-Terphenyl-d14 (S)	83	%.	57-125	1	03/26/19 18:40	03/28/19 19:14	1718-51-0	
Phenol-d6 (S)	75	%.	30-125	1	03/26/19 18:40	03/28/19 19:14	13127-88-3	
2-Fluorophenol (S)	71	%.	30-125	1	03/26/19 18:40	03/28/19 19:14	367-12-4	
2,4,6-Tribromophenol (S)	90	%.	52-125	1	03/26/19 18:40	03/28/19 19:14	118-79-6	
Field Data	Analytical Method:							
Collected Date	**03/26/19**			1		03/26/19 15:30		
Collected Time	**1530**			1		03/26/19 15:30		
Field Specific Conductance	**2030**	umhos/cm		1		03/26/19 15:30		
Oxygen, Dissolved	**1.0**	mg/L		1		03/26/19 15:30	7782-44-7	
REDOX	**52**	mV		1		03/26/19 15:30		
Turbidity	**52.4**	NTU		1		03/26/19 15:30		

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468315

Sample: 603288 **Lab ID: 10468315004** Collected: 03/26/19 15:30 Received: 03/26/19 17:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:							
Apparent Color	**clear**			1		03/26/19 15:30		
Odor	**No**			1		03/26/19 15:30		
Well Locked	**Yes**			1		03/26/19 15:30		
Purge Method	**Whale pump**			1		03/26/19 15:30		
Total Well Depth	**28.54**	feet		1		03/26/19 15:30		
Depth of Water	**11.38**			1		03/26/19 15:30		
Well Volume Purged	**78.0**			1		03/26/19 15:30		
Purge Rate	**1.0**			1		03/26/19 15:30		
Field pH	**6.5**	Std. Units		1		03/26/19 15:30		
Field Temperature	**10.5**	deg C		1		03/26/19 15:30		
300.0 IC Anions	Analytical Method: EPA 300.0							
Chloride	**272**	mg/L	6.0	5		03/28/19 07:47	16887-00-6	
Chromium, Hexavalent	Analytical Method: SM 3500-Cr B Modified							
Chromium, Hexavalent	ND	mg/L	0.010	1		03/27/19 08:40		M3
350.1 Ammonia, Unionized	Analytical Method: EPA 350.1							
Nitrogen, Ammonia (Unionized)	ND	mg/L	0.010	1		04/17/19 14:33		
350.1 Ammonia, Distilled	Analytical Method: EPA 350.1 rev. 2 (1993) Preparation Method: EPA 350.1 rev. 2 (1993)							
Nitrogen, Ammonia	**0.32**	mg/L	0.11	1	04/02/19 10:00	04/03/19 11:03	7664-41-7	
SM4500CN-E Cyanide	Analytical Method: SM 4500-CN-E Preparation Method: SM 4500-CN-E							
Cyanide	ND	ug/L	20.0	1	04/08/19 09:52	04/08/19 13:17	57-12-5	

Sample: 603289 **Lab ID: 10468315005** Collected: 03/26/19 16:30 Received: 03/26/19 17:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA Mod. 3510C							
PCB-1016 (Aroclor 1016)	ND	ug/L	0.10	1	03/27/19 10:59	03/29/19 10:10	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/L	0.10	1	03/27/19 10:59	03/29/19 10:10	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/L	0.10	1	03/27/19 10:59	03/29/19 10:10	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/L	0.10	1	03/27/19 10:59	03/29/19 10:10	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/L	0.10	1	03/27/19 10:59	03/29/19 10:10	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/L	0.10	1	03/27/19 10:59	03/29/19 10:10	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/L	0.10	1	03/27/19 10:59	03/29/19 10:10	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/L	0.10	1	03/27/19 10:59	03/29/19 10:10	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/L	0.10	1	03/27/19 10:59	03/29/19 10:10	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	74	%.	30-125	1	03/27/19 10:59	03/29/19 10:10	877-09-8	
Decachlorobiphenyl (S)	88	%.	30-125	1	03/27/19 10:59	03/29/19 10:10	2051-24-3	

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468315

Sample: 603289 **Lab ID: 10468315005** Collected: 03/26/19 16:30 Received: 03/26/19 17:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 MET ICP, Dissolved	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Aluminum, Dissolved	ND	ug/L	200	1	03/27/19 07:40	04/01/19 13:11	7429-90-5	
Barium, Dissolved	**130**	ug/L	10.0	1	03/27/19 07:40	04/01/19 13:11	7440-39-3	
Copper, Dissolved	ND	ug/L	10.0	1	03/27/19 07:40	04/01/19 13:11	7440-50-8	
Manganese, Dissolved	**1760**	ug/L	5.0	1	03/27/19 07:40	04/01/19 13:11	7439-96-5	
Nickel, Dissolved	ND	ug/L	20.0	1	03/27/19 07:40	04/01/19 13:11	7440-02-0	
Silver, Dissolved	ND	ug/L	10.0	1	03/27/19 07:40	04/01/19 13:11	7440-22-4	
Tin, Dissolved	ND	ug/L	75.0	1	03/27/19 07:40	04/01/19 13:11	7440-31-5	
Total Hardness by 2340B, Dissolved	**958000**	ug/L	3300	1	03/27/19 07:40	04/01/19 13:11		
Zinc, Dissolved	ND	ug/L	20.0	1	03/27/19 07:40	04/01/19 13:11	7440-66-6	
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Dissolved	ND	ug/L	0.50	1	03/27/19 07:40	04/02/19 12:01	7440-36-0	
Arsenic, Dissolved	ND	ug/L	0.50	1	03/27/19 07:40	04/02/19 12:01	7440-38-2	
Beryllium, Dissolved	ND	ug/L	0.20	1	03/27/19 07:40	04/02/19 12:01	7440-41-7	
Boron, Dissolved	**13900**	ug/L	1000	100	03/27/19 07:40	04/03/19 08:45	7440-42-8	
Cadmium, Dissolved	ND	ug/L	0.080	1	03/27/19 07:40	04/02/19 12:01	7440-43-9	
Chromium, Dissolved	**0.60**	ug/L	0.50	1	03/27/19 07:40	04/02/19 12:01	7440-47-3	
Cobalt, Dissolved	**9.6**	ug/L	0.50	1	03/27/19 07:40	04/02/19 12:01	7440-48-4	
Lead, Dissolved	ND	ug/L	0.10	1	03/27/19 07:40	04/02/19 12:01	7439-92-1	
Selenium, Dissolved	ND	ug/L	0.50	1	03/27/19 07:40	04/02/19 12:01	7782-49-2	
Thallium, Dissolved	**4.0**	ug/L	0.10	1	03/27/19 07:40	04/02/19 12:01	7440-28-0	
Uranium-238, Dissolved	**5.0**	ug/L	0.50	1	03/27/19 07:40	04/02/19 12:01	7440-61-1	
Vanadium, Dissolved	ND	ug/L	1.0	1	03/27/19 07:40	04/02/19 12:01	7440-62-2	
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
Acenaphthene	ND	ug/L	9.8	1	03/26/19 18:40	03/28/19 19:38	83-32-9	
Anthracene	ND	ug/L	9.8	1	03/26/19 18:40	03/28/19 19:38	120-12-7	
Benzo(a)pyrene	ND	ug/L	9.8	1	03/26/19 18:40	03/28/19 19:38	50-32-8	
Benzoic acid	ND	ug/L	49.0	1	03/26/19 18:40	03/28/19 19:38	65-85-0	
4-Bromophenylphenyl ether	ND	ug/L	9.8	1	03/26/19 18:40	03/28/19 19:38	101-55-3	
Butylbenzylphthalate	ND	ug/L	9.8	1	03/26/19 18:40	03/28/19 19:38	85-68-7	
bis(2-Chloroethyl) ether	ND	ug/L	9.8	1	03/26/19 18:40	03/28/19 19:38	111-44-4	
2-Chlorophenol	ND	ug/L	9.8	1	03/26/19 18:40	03/28/19 19:38	95-57-8	
3,3'-Dichlorobenzidine	ND	ug/L	49.0	1	03/26/19 18:40	03/28/19 19:38	91-94-1	
2,4-Dichlorophenol	ND	ug/L	9.8	1	03/26/19 18:40	03/28/19 19:38	120-83-2	
Diethylphthalate	ND	ug/L	9.8	1	03/26/19 18:40	03/28/19 19:38	84-66-2	
2,4-Dimethylphenol	ND	ug/L	9.8	1	03/26/19 18:40	03/28/19 19:38	105-67-9	
Dimethylphthalate	ND	ug/L	9.8	1	03/26/19 18:40	03/28/19 19:38	131-11-3	
Di-n-butylphthalate	ND	ug/L	9.8	1	03/26/19 18:40	03/28/19 19:38	84-74-2	
2,4-Dinitrophenol	ND	ug/L	9.8	1	03/26/19 18:40	03/28/19 19:38	51-28-5	
Di-n-octylphthalate	ND	ug/L	9.8	1	03/26/19 18:40	03/28/19 19:38	117-84-0	
bis(2-Ethylhexyl)phthalate	ND	ug/L	9.8	1	03/26/19 18:40	03/28/19 19:38	117-81-7	
Fluoranthene	ND	ug/L	9.8	1	03/26/19 18:40	03/28/19 19:38	206-44-0	
Fluorene	ND	ug/L	9.8	1	03/26/19 18:40	03/28/19 19:38	86-73-7	
Hexachlorobenzene	ND	ug/L	9.8	1	03/26/19 18:40	03/28/19 19:38	118-74-1	
Hexachlorocyclopentadiene	ND	ug/L	49.0	1	03/26/19 18:40	03/28/19 19:38	77-47-4	

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468315

Sample: 603289 **Lab ID: 10468315005** Collected: 03/26/19 16:30 Received: 03/26/19 17:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
Hexachloroethane	ND	ug/L	9.8	1	03/26/19 18:40	03/28/19 19:38	67-72-1	
Isophorone	ND	ug/L	9.8	1	03/26/19 18:40	03/28/19 19:38	78-59-1	
2-Methylnaphthalene	ND	ug/L	9.8	1	03/26/19 18:40	03/28/19 19:38	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/L	9.8	1	03/26/19 18:40	03/28/19 19:38	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/L	19.6	1	03/26/19 18:40	03/28/19 19:38		
N-Nitrosodimethylamine	ND	ug/L	9.8	1	03/26/19 18:40	03/28/19 19:38	62-75-9	
Pentachlorophenol	ND	ug/L	19.6	1	03/26/19 18:40	03/28/19 19:38	87-86-5	
Phenanthrene	ND	ug/L	9.8	1	03/26/19 18:40	03/28/19 19:38	85-01-8	
Phenol	ND	ug/L	9.8	1	03/26/19 18:40	03/28/19 19:38	108-95-2	
Pyrene	ND	ug/L	9.8	1	03/26/19 18:40	03/28/19 19:38	129-00-0	
2,4,6-Trichlorophenol	ND	ug/L	9.8	1	03/26/19 18:40	03/28/19 19:38	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	80	%.	55-125	1	03/26/19 18:40	03/28/19 19:38	4165-60-0	
2-Fluorobiphenyl (S)	80	%.	52-125	1	03/26/19 18:40	03/28/19 19:38	321-60-8	
p-Terphenyl-d14 (S)	80	%.	57-125	1	03/26/19 18:40	03/28/19 19:38	1718-51-0	
Phenol-d6 (S)	77	%.	30-125	1	03/26/19 18:40	03/28/19 19:38	13127-88-3	
2-Fluorophenol (S)	71	%.	30-125	1	03/26/19 18:40	03/28/19 19:38	367-12-4	
2,4,6-Tribromophenol (S)	90	%.	52-125	1	03/26/19 18:40	03/28/19 19:38	118-79-6	
Field Data	Analytical Method:							
Collected Date	**03/26/19**			1		03/26/19 16:30		
Collected Time	**1630**			1		03/26/19 16:30		
Field Specific Conductance	**2700**	umhos/cm		1		03/26/19 16:30		
Oxygen, Dissolved	**0.9**	mg/L		1		03/26/19 16:30	7782-44-7	
REDOX	**3**	mV		1		03/26/19 16:30		
Apparent Color	**slightly cloudy**			1		03/26/19 16:30		
Odor	**No**			1		03/26/19 16:30		
Well Locked	**Yes**			1		03/26/19 16:30		
Purge Method	**Whale pump**			1		03/26/19 16:30		
Total Well Depth	**30.30**	feet		1		03/26/19 16:30		
Depth of Water	**20.98**			1		03/26/19 16:30		
Well Volume Purged	**42.0**			1		03/26/19 16:30		
Purge Rate	**1.0**			1		03/26/19 16:30		
Field pH	**6.9**	Std. Units		1		03/26/19 16:30		
Field Temperature	**13.0**	deg C		1		03/26/19 16:30		
300.0 IC Anions	Analytical Method: EPA 300.0							
Chloride	**291**	mg/L	6.0	5		03/28/19 08:05	16887-00-6	
Chromium, Hexavalent	Analytical Method: SM 3500-Cr B Modified							
Chromium, Hexavalent	ND	mg/L	0.010	1		03/27/19 08:40		
350.1 Ammonia, Unionized	Analytical Method: EPA 350.1							
Nitrogen, Ammonia (Unionized)	ND	mg/L	0.010	1		04/17/19 14:35		

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468315

Sample: 603289 **Lab ID: 10468315005** Collected: 03/26/19 16:30 Received: 03/26/19 17:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
350.1 Ammonia, Distilled	Analytical Method: EPA 350.1 rev. 2 (1993) Preparation Method: EPA 350.1 rev. 2 (1993)							
Nitrogen, Ammonia	**5.3**	mg/L	0.11	1	04/02/19 10:00	04/03/19 11:04	7664-41-7	
SM4500CN-E Cyanide	Analytical Method: SM 4500-CN-E Preparation Method: SM 4500-CN-E							
Cyanide	ND	ug/L	20.0	1	04/08/19 09:52	04/08/19 13:21	57-12-5	

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468315

QC Batch: 595875 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 MET Dissolved
Associated Lab Samples: 10468315001, 10468315002, 10468315003, 10468315004, 10468315005

METHOD BLANK: 3221700 Matrix: Water
Associated Lab Samples: 10468315001, 10468315002, 10468315003, 10468315004, 10468315005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum, Dissolved	ug/L	ND	200	04/01/19 12:58	
Barium, Dissolved	ug/L	ND	10.0	04/01/19 12:58	
Copper, Dissolved	ug/L	ND	10.0	04/01/19 12:58	
Manganese, Dissolved	ug/L	ND	5.0	04/01/19 12:58	
Nickel, Dissolved	ug/L	ND	20.0	04/01/19 12:58	
Silver, Dissolved	ug/L	ND	10.0	04/01/19 12:58	
Tin, Dissolved	ug/L	ND	75.0	04/01/19 12:58	
Zinc, Dissolved	ug/L	ND	20.0	04/01/19 12:58	

LABORATORY CONTROL SAMPLE: 3221701

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum, Dissolved	ug/L	20000	21900	110	85-115	
Barium, Dissolved	ug/L	1000	1060	106	85-115	
Copper, Dissolved	ug/L	1000	1000	100	85-115	
Manganese, Dissolved	ug/L	1000	1100	110	85-115	
Nickel, Dissolved	ug/L	1000	1040	104	85-115	
Silver, Dissolved	ug/L	500	527	105	85-115	
Tin, Dissolved	ug/L	1000	1050	105	85-115	
Zinc, Dissolved	ug/L	1000	1060	106	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3221702 3221703

Parameter	Units	10468315003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum, Dissolved	ug/L	ND	20000	20000	22800	22400	114	112	70-130	2	20	
Barium, Dissolved	ug/L	266	1000	1000	1310	1330	104	106	70-130	2	20	
Copper, Dissolved	ug/L	ND	1000	1000	1060	1060	106	106	70-130	0	20	
Manganese, Dissolved	ug/L	1150	1000	1000	2190	2200	104	105	70-130	1	20	
Nickel, Dissolved	ug/L	ND	1000	1000	1020	1020	102	101	70-130	0	20	
Silver, Dissolved	ug/L	ND	500	500	557	555	111	111	70-130	0	20	
Tin, Dissolved	ug/L	ND	1000	1000	1040	1030	104	103	70-130	1	20	
Zinc, Dissolved	ug/L	ND	1000	1000	1010	1010	101	101	70-130	0	20	

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468315

QC Batch: 595880 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET Dissolved
Associated Lab Samples: 10468315001, 10468315002, 10468315003, 10468315004, 10468315005

METHOD BLANK: 3221728 Matrix: Water
Associated Lab Samples: 10468315001, 10468315002, 10468315003, 10468315004, 10468315005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony, Dissolved	ug/L	ND	0.50	04/02/19 10:11	
Arsenic, Dissolved	ug/L	ND	0.50	04/02/19 10:11	
Beryllium, Dissolved	ug/L	ND	0.20	04/02/19 10:11	
Boron, Dissolved	ug/L	ND	10.0	04/02/19 10:11	
Cadmium, Dissolved	ug/L	ND	0.080	04/02/19 10:11	
Chromium, Dissolved	ug/L	ND	0.50	04/02/19 10:11	
Cobalt, Dissolved	ug/L	ND	0.50	04/02/19 10:11	
Lead, Dissolved	ug/L	ND	0.10	04/02/19 10:11	
Selenium, Dissolved	ug/L	ND	0.50	04/02/19 10:11	
Thallium, Dissolved	ug/L	ND	0.10	04/02/19 10:11	
Uranium-238, Dissolved	ug/L	ND	0.50	04/02/19 10:11	
Vanadium, Dissolved	ug/L	ND	1.0	04/02/19 10:11	

LABORATORY CONTROL SAMPLE: 3221729

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony, Dissolved	ug/L	100	103	103	85-115	
Arsenic, Dissolved	ug/L	100	96.6	97	85-115	
Beryllium, Dissolved	ug/L	100	99.9	100	85-115	
Boron, Dissolved	ug/L	100	102	102	85-115	
Cadmium, Dissolved	ug/L	100	103	103	85-115	
Chromium, Dissolved	ug/L	100	99.9	100	85-115	
Cobalt, Dissolved	ug/L	100	99.6	100	85-115	
Lead, Dissolved	ug/L	100	102	102	85-115	
Selenium, Dissolved	ug/L	100	101	101	85-115	
Thallium, Dissolved	ug/L	100	98.3	98	85-115	
Uranium-238, Dissolved	ug/L	100	99.6	100	85-115	
Vanadium, Dissolved	ug/L	100	99.1	99	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3221730 3221731

Parameter	Units	10468315002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony, Dissolved	ug/L	ND	100	100	103	105	103	105	70-130	2	20	
Arsenic, Dissolved	ug/L	ND	100	100	101	102	100	102	70-130	2	20	
Beryllium, Dissolved	ug/L	0.24	100	100	97.0	95.1	97	95	70-130	2	20	
Boron, Dissolved	ug/L	30100	100	100	29900	30800	-160	680	70-130	3	20	M6
Cadmium, Dissolved	ug/L	ND	100	100	96.5	99.7	96	100	70-130	3	20	

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468315

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3221730 3221731

Parameter	Units	10468315002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Dissolved	ug/L	ND	100	100	97.9	102	98	102	70-130	4	20	
Cobalt, Dissolved	ug/L	ND	100	100	102	104	101	103	70-130	2	20	
Lead, Dissolved	ug/L	ND	100	100	96.0	98.9	96	99	70-130	3	20	
Selenium, Dissolved	ug/L	22.9	100	100	119	122	96	99	70-130	3	20	
Thallium, Dissolved	ug/L	0.42	100	100	94.2	98.0	94	98	70-130	4	20	
Uranium-238, Dissolved	ug/L	12.7	100	100	111	115	99	103	70-130	4	20	
Vanadium, Dissolved	ug/L	ND	100	100	99.8	102	100	102	70-130	3	20	

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468315

QC Batch: 596030 Analysis Method: EPA 8082A
QC Batch Method: EPA Mod. 3510C Analysis Description: 8082A GCS PCB
Associated Lab Samples: 10468315001, 10468315002, 10468315003, 10468315004, 10468315005

METHOD BLANK: 3222399 Matrix: Water
Associated Lab Samples: 10468315001, 10468315002, 10468315003, 10468315004, 10468315005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
PCB-1016 (Aroclor 1016)	ug/L	ND	0.10	03/29/19 08:35	
PCB-1221 (Aroclor 1221)	ug/L	ND	0.10	03/29/19 08:35	
PCB-1232 (Aroclor 1232)	ug/L	ND	0.10	03/29/19 08:35	
PCB-1242 (Aroclor 1242)	ug/L	ND	0.10	03/29/19 08:35	
PCB-1248 (Aroclor 1248)	ug/L	ND	0.10	03/29/19 08:35	
PCB-1254 (Aroclor 1254)	ug/L	ND	0.10	03/29/19 08:35	
PCB-1260 (Aroclor 1260)	ug/L	ND	0.10	03/29/19 08:35	
PCB-1262 (Aroclor 1262)	ug/L	ND	0.10	03/29/19 08:35	
PCB-1268 (Aroclor 1268)	ug/L	ND	0.10	03/29/19 08:35	
Decachlorobiphenyl (S)	%.	64	30-125	03/29/19 08:35	
Tetrachloro-m-xylene (S)	%.	62	30-125	03/29/19 08:35	

LABORATORY CONTROL SAMPLE & LCSD: 3222400 3222401

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
PCB-1016 (Aroclor 1016)	ug/L	2	1.7	1.7	86	85	45-125	1	20	
PCB-1260 (Aroclor 1260)	ug/L	2	1.8	1.9	92	94	49-125	2	20	
Decachlorobiphenyl (S)	%.				100	100	30-125			
Tetrachloro-m-xylene (S)	%.				74	79	30-125			

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468315

QC Batch: 595833 Analysis Method: EPA 8270D
QC Batch Method: EPA 3520 Analysis Description: 8270D Water MSSV
Associated Lab Samples: 10468315001, 10468315002, 10468315003, 10468315004, 10468315005

METHOD BLANK: 3221099 Matrix: Water
Associated Lab Samples: 10468315001, 10468315002, 10468315003, 10468315004, 10468315005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
2,4,6-Trichlorophenol	ug/L	ND	10.0	03/28/19 15:33	
2,4-Dichlorophenol	ug/L	ND	10.0	03/28/19 15:33	
2,4-Dimethylphenol	ug/L	ND	10.0	03/28/19 15:33	
2,4-Dinitrophenol	ug/L	ND	10.0	03/28/19 15:33	
2-Chlorophenol	ug/L	ND	10.0	03/28/19 15:33	
2-Methylnaphthalene	ug/L	ND	10.0	03/28/19 15:33	
2-Methylphenol(o-Cresol)	ug/L	ND	10.0	03/28/19 15:33	
3&4-Methylphenol(m&p Cresol)	ug/L	ND	20.0	03/28/19 15:33	
3,3'-Dichlorobenzidine	ug/L	ND	50.0	03/28/19 15:33	
4-Bromophenylphenyl ether	ug/L	ND	10.0	03/28/19 15:33	
Acenaphthene	ug/L	ND	10.0	03/28/19 15:33	
Anthracene	ug/L	ND	10.0	03/28/19 15:33	
Benzo(a)pyrene	ug/L	ND	10.0	03/28/19 15:33	
Benzoic acid	ug/L	ND	50.0	03/28/19 15:33	
bis(2-Chloroethyl) ether	ug/L	ND	10.0	03/28/19 15:33	
bis(2-Ethylhexyl)phthalate	ug/L	ND	10.0	03/28/19 15:33	
Butylbenzylphthalate	ug/L	ND	10.0	03/28/19 15:33	
Di-n-butylphthalate	ug/L	ND	10.0	03/28/19 15:33	
Di-n-octylphthalate	ug/L	ND	10.0	03/28/19 15:33	
Diethylphthalate	ug/L	ND	10.0	03/28/19 15:33	
Dimethylphthalate	ug/L	ND	10.0	03/28/19 15:33	
Fluoranthene	ug/L	ND	10.0	03/28/19 15:33	
Fluorene	ug/L	ND	10.0	03/28/19 15:33	
Hexachlorobenzene	ug/L	ND	10.0	03/28/19 15:33	
Hexachlorocyclopentadiene	ug/L	ND	50.0	03/28/19 15:33	
Hexachloroethane	ug/L	ND	10.0	03/28/19 15:33	
Isophorone	ug/L	ND	10.0	03/28/19 15:33	
N-Nitrosodimethylamine	ug/L	ND	10.0	03/28/19 15:33	
Pentachlorophenol	ug/L	ND	20.0	03/28/19 15:33	
Phenanthrene	ug/L	ND	10.0	03/28/19 15:33	
Phenol	ug/L	ND	10.0	03/28/19 15:33	
Pyrene	ug/L	ND	10.0	03/28/19 15:33	
2,4,6-Tribromophenol (S)	%.	86	52-125	03/28/19 15:33	
2-Fluorobiphenyl (S)	%.	69	52-125	03/28/19 15:33	
2-Fluorophenol (S)	%.	70	30-125	03/28/19 15:33	
Nitrobenzene-d5 (S)	%.	77	55-125	03/28/19 15:33	
p-Terphenyl-d14 (S)	%.	84	57-125	03/28/19 15:33	
Phenol-d6 (S)	%.	74	30-125	03/28/19 15:33	

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(612)607-1700

QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468315

LABORATORY CONTROL SAMPLE & LCSD: 3221100 3221101

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
2,4,6-Trichlorophenol	ug/L	50	42.7	40.9	85	82	60-125	4	20	
2,4-Dichlorophenol	ug/L	50	40.4	39.3	81	79	56-125	3	20	
2,4-Dimethylphenol	ug/L	50	40.4	37.2	81	74	33-125	8	20	
2,4-Dinitrophenol	ug/L	50	38.6	38.3	77	77	32-125	1	20	
2-Chlorophenol	ug/L	50	34.9	38.3	70	77	52-125	9	20	
2-Methylnaphthalene	ug/L	50	40.0	38.1	80	76	52-125	5	20	
2-Methylphenol(o-Cresol)	ug/L	50	37.8	37.6	76	75	55-125	0	20	
3&4-Methylphenol(m&p Cresol)	ug/L	50	38.2	37.6	76	75	57-125	2	20	
3,3'-Dichlorobenzidine	ug/L	50	27.1J	38.6J	54	77	39-150		20	
4-Bromophenylphenyl ether	ug/L	50	44.3	43.3	89	87	61-125	2	20	
Acenaphthene	ug/L	50	42.9	42.7	86	85	59-125	1	20	
Anthracene	ug/L	50	45.2	44.3	90	89	64-125	2	20	
Benzo(a)pyrene	ug/L	50	42.6	41.2	85	82	63-125	3	20	
Benzoic acid	ug/L	50	44.3J	38.9J	89	78	30-125		20	
bis(2-Chloroethyl) ether	ug/L	50	35.7	38.1	71	76	49-125	6	20	
bis(2-Ethylhexyl)phthalate	ug/L	50	42.0	41.4	84	83	68-125	2	20	
Butylbenzylphthalate	ug/L	50	42.5	41.4	85	83	67-125	3	20	
Di-n-butylphthalate	ug/L	50	44.9	44.6	90	89	67-125	1	20	
Di-n-octylphthalate	ug/L	50	42.0	41.6	84	83	67-125	1	20	
Diethylphthalate	ug/L	50	43.6	43.5	87	87	64-125	0	20	
Dimethylphthalate	ug/L	50	43.8	43.3	88	87	65-125	1	20	
Fluoranthene	ug/L	50	45.2	44.0	90	88	64-125	3	20	
Fluorene	ug/L	50	42.7	43.0	85	86	63-125	1	20	
Hexachlorobenzene	ug/L	50	47.7	45.6	95	91	61-125	4	20	
Hexachlorocyclopentadiene	ug/L	50	26.1J	26.5J	52	53	30-125		20	
Hexachloroethane	ug/L	50	32.8	36.4	66	73	30-125	10	20	
Isophorone	ug/L	50	43.2	41.5	86	83	59-125	4	20	
N-Nitrosodimethylamine	ug/L	50	36.1	38.6	72	77	43-125	7	20	
Pentachlorophenol	ug/L	50	43.0	41.5	86	83	35-125	3	20	
Phenanthrene	ug/L	50	44.9	43.7	90	87	65-125	3	20	
Phenol	ug/L	50	36.7	38.1	73	76	54-125	4	20	
Pyrene	ug/L	50	42.2	42.1	84	84	65-125	0	20	
2,4,6-Tribromophenol (S)	%.				90	91	52-125			
2-Fluorobiphenyl (S)	%.				80	78	52-125			
2-Fluorophenol (S)	%.				67	75	30-125			
Nitrobenzene-d5 (S)	%.				77	77	55-125			
p-Terphenyl-d14 (S)	%.				80	79	57-125			
Phenol-d6 (S)	%.				71	76	30-125			

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468315

QC Batch: 596056 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 10468315001, 10468315002, 10468315003, 10468315004, 10468315005

METHOD BLANK: 3222530 Matrix: Water
Associated Lab Samples: 10468315001, 10468315002, 10468315003, 10468315004, 10468315005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.2	03/27/19 20:05	

LABORATORY CONTROL SAMPLE: 3222531

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	12.5	12.5	100	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3222532 3222533

Parameter	Units	10468314001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	2.8	12.5	12.5	13.9	13.8	88	88	90-110	0	20	M1

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3222534 3222535

Parameter	Units	10468314010 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	3.3	12.5	12.5	14.5	14.4	90	89	90-110	0	20	M1

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468315

QC Batch: 595966 Analysis Method: SM 3500-Cr B Modified
QC Batch Method: SM 3500-Cr B Modified Analysis Description: Chromium, Hexavalent by 3500
Associated Lab Samples: 10468315001, 10468315002, 10468315003, 10468315004, 10468315005

METHOD BLANK: 3222211 Matrix: Water
Associated Lab Samples: 10468315001, 10468315002, 10468315003, 10468315004, 10468315005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium, Hexavalent	mg/L	ND	0.010	03/27/19 08:40	

LABORATORY CONTROL SAMPLE: 3222212

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/L	0.2	0.19	94	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3222213 3222214

Parameter	Units	10468315004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Hexavalent	mg/L	ND	0.2	0.2	0.15	0.14	73	67	85-115	8	20	M3

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468315

QC Batch: 163578 Analysis Method: EPA 350.1 rev. 2 (1993)
QC Batch Method: EPA 350.1 rev. 2 (1993) Analysis Description: 350.1 Ammonia Distilled
Associated Lab Samples: 10468315001, 10468315002, 10468315003, 10468315004, 10468315005

METHOD BLANK: 644687 Matrix: Water
Associated Lab Samples: 10468315001, 10468315002, 10468315003, 10468315004, 10468315005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, Ammonia	mg/L	ND	0.11	04/03/19 08:35	

LABORATORY CONTROL SAMPLE: 644688

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Ammonia	mg/L	5	5.1	102	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 644689 644690

Parameter	Units	12123082002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, Ammonia	mg/L	<0.11	5	5	5.2	5.0	103	101	90-110	2	10	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 644691 644692

Parameter	Units	10468606003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, Ammonia	mg/L	6.3	5	5	11.2	11.4	97	101	90-110	2	10	

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468315

QC Batch: 597012 Analysis Method: SM 4500-CN-E
QC Batch Method: SM 4500-CN-E Analysis Description: SM4500CN-E Cyanide
Associated Lab Samples: 10468315001

METHOD BLANK: 3228391 Matrix: Water
Associated Lab Samples: 10468315001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cyanide	ug/L	ND	20.0	04/02/19 12:32	

LABORATORY CONTROL SAMPLE: 3228392

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cyanide	ug/L	250	257	103	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3228393 3228394

Parameter	Units	10468350001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cyanide	ug/L	ND	250	250	74.4	58.8	25	19	80-120	23	30	M1

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3228395 3228396

Parameter	Units	10468351001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cyanide	ug/L	ND	250	250	233	231	87	86	80-120	1	30	

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468315

QC Batch: 598088 Analysis Method: SM 4500-CN-E
QC Batch Method: SM 4500-CN-E Analysis Description: SM4500CN-E Cyanide
Associated Lab Samples: 10468315002, 10468315003, 10468315004, 10468315005

METHOD BLANK: 3234106 Matrix: Water
Associated Lab Samples: 10468315002, 10468315003, 10468315004, 10468315005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cyanide	ug/L	ND	20.0	04/08/19 13:09	

LABORATORY CONTROL SAMPLE: 3234107

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cyanide	ug/L	250	249	100	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3234108 3234109

Parameter	Units	10468668002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cyanide	ug/L	ND	250	250	209	226	76	83	80-120	8	30	M1

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3234110 3234111

Parameter	Units	10468315002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cyanide	ug/L	ND	250	250	232	229	88	87	80-120	1	30	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468315

Sample: Field Blank 1 **Lab ID: 10468315001** Collected: 03/26/19 10:10 Received: 03/26/19 17:05 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 900.0	**-0.464 ± 0.923 (2.83) C:NA T:NA**	pCi/L	04/05/19 09:50	12587-46-1	
Gross Beta	EPA 900.0	**0.672 ± 1.97 (4.68) C:NA T:NA**	pCi/L	04/05/19 09:50	12587-47-2	

Sample: 603281 **Lab ID: 10468315002** Collected: 03/26/19 11:30 Received: 03/26/19 17:05 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 900.0	**13.2 ± 4.16 (3.82) C:NA T:NA**	pCi/L	04/04/19 19:59	12587-46-1	
Gross Beta	EPA 900.0	**26.1 ± 5.63 (4.10) C:NA T:NA**	pCi/L	04/04/19 19:59	12587-47-2	

Sample: 603287 **Lab ID: 10468315003** Collected: 03/26/19 13:50 Received: 03/26/19 17:05 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 900.0	**8.95 ± 2.91 (2.69) C:NA T:NA**	pCi/L	04/04/19 19:59	12587-46-1	
Gross Beta	EPA 900.0	**5.25 ± 2.12 (3.20) C:NA T:NA**	pCi/L	04/04/19 19:59	12587-47-2	

Sample: 603288 **Lab ID: 10468315004** Collected: 03/26/19 15:30 Received: 03/26/19 17:05 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 900.0	**16.1 ± 4.62 (3.64) C:NA T:NA**	pCi/L	04/04/19 19:59	12587-46-1	
Gross Beta	EPA 900.0	**6.42 ± 2.73 (4.19) C:NA T:NA**	pCi/L	04/04/19 19:59	12587-47-2	

Sample: 603289 **Lab ID: 10468315005** Collected: 03/26/19 16:30 Received: 03/26/19 17:05 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 900.0	**13.6 ± 4.68 (4.83) C:NA T:NA**	pCi/L	04/04/19 19:59	12587-46-1	
Gross Beta	EPA 900.0	**28.8 ± 6.21 (4.48) C:NA T:NA**	pCi/L	04/04/19 19:59	12587-47-2	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468315

QC Batch: 336317 Analysis Method: EPA 900.0
QC Batch Method: EPA 900.0 Analysis Description: 900.0 Gross Alpha/Beta
Associated Lab Samples: 10468315001, 10468315002, 10468315003, 10468315004, 10468315005

METHOD BLANK: 1636866 Matrix: Water
Associated Lab Samples: 10468315001, 10468315002, 10468315003, 10468315004, 10468315005

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Gross Alpha	0.675 ± 0.768 (1.53) C:NA T:NA	pCi/L	04/05/19 07:54	
Gross Beta	0.808 ± 0.941 (2.00) C:NA T:NA	pCi/L	04/05/19 07:54	

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QUALIFIERS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468315

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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TNI - The NELAC Institute.

LABORATORIES

PASI-M	Pace Analytical Services - Minneapolis
PASI-PA	Pace Analytical Services - Greensburg
PASI-V	Pace Analytical Services - Virginia

WORKORDER QUALIFIERS

WO: 10468315

[1] Samples were received outside of the recommended temperature range of 0-6 degrees Celsius. The samples were received from the field on ice.

BATCH QUALIFIERS

Batch: 596327

[M5] A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

Batch: 596452

[M5] A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

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QUALIFIERS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468315

ANALYTE QUALIFIERS

M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
M3	Matrix spike recovery was outside laboratory control limits due to matrix interferences.
M6	Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.
S0	Surrogate recovery outside laboratory control limits.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468315

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10468315001	**Field Blank 1**	EPA Mod. 3510C	596030	EPA 8082A	596452
10468315002	**603281**	EPA Mod. 3510C	596030	EPA 8082A	596452
10468315003	**603287**	EPA Mod. 3510C	596030	EPA 8082A	596452
10468315004	**603288**	EPA Mod. 3510C	596030	EPA 8082A	596452
10468315005	**603289**	EPA Mod. 3510C	596030	EPA 8082A	596452
10468315001	**Field Blank 1**	EPA 200.7	595875	EPA 200.7	596209
10468315002	**603281**	EPA 200.7	595875	EPA 200.7	596209
10468315003	**603287**	EPA 200.7	595875	EPA 200.7	596209
10468315004	**603288**	EPA 200.7	595875	EPA 200.7	596209
10468315005	**603289**	EPA 200.7	595875	EPA 200.7	596209
10468315001	**Field Blank 1**	EPA 200.8	595880	EPA 200.8	596949
10468315002	**603281**	EPA 200.8	595880	EPA 200.8	596949
10468315003	**603287**	EPA 200.8	595880	EPA 200.8	596949
10468315004	**603288**	EPA 200.8	595880	EPA 200.8	596949
10468315005	**603289**	EPA 200.8	595880	EPA 200.8	596949
10468315001	**Field Blank 1**	EPA 3520	595833	EPA 8270D	596327
10468315002	**603281**	EPA 3520	595833	EPA 8270D	596327
10468315003	**603287**	EPA 3520	595833	EPA 8270D	596327
10468315004	**603288**	EPA 3520	595833	EPA 8270D	596327
10468315005	**603289**	EPA 3520	595833	EPA 8270D	596327
10468315002	**603281**				
10468315003	**603287**				
10468315004	**603288**				
10468315005	**603289**				
10468315001	**Field Blank 1**	EPA 900.0	336317		
10468315002	**603281**	EPA 900.0	336317		
10468315003	**603287**	EPA 900.0	336317		
10468315004	**603288**	EPA 900.0	336317		
10468315005	**603289**	EPA 900.0	336317		
10468315001	**Field Blank 1**	EPA 300.0	596056		
10468315002	**603281**	EPA 300.0	596056		
10468315003	**603287**	EPA 300.0	596056		
10468315004	**603288**	EPA 300.0	596056		
10468315005	**603289**	EPA 300.0	596056		
10468315001	**Field Blank 1**	SM 3500-Cr B Modified	595966		
10468315002	**603281**	SM 3500-Cr B Modified	595966		
10468315003	**603287**	SM 3500-Cr B Modified	595966		
10468315004	**603288**	SM 3500-Cr B Modified	595966		
10468315005	**603289**	SM 3500-Cr B Modified	595966		
10468315002	**603281**	EPA 350.1			
10468315003	**603287**	EPA 350.1			
10468315004	**603288**	EPA 350.1			
10468315005	**603289**	EPA 350.1			
10468315001	**Field Blank 1**	EPA 350.1 rev. 2 (1993)	163578	EPA 350.1 rev. 2 (1993)	163646

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468315

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10468315002	**603281**	EPA 350.1 rev. 2 (1993)	163578	EPA 350.1 rev. 2 (1993)	163646
10468315003	**603287**	EPA 350.1 rev. 2 (1993)	163578	EPA 350.1 rev. 2 (1993)	163646
10468315004	**603288**	EPA 350.1 rev. 2 (1993)	163578	EPA 350.1 rev. 2 (1993)	163646
10468315005	**603289**	EPA 350.1 rev. 2 (1993)	163578	EPA 350.1 rev. 2 (1993)	163646
10468315001	**Field Blank 1**	SM 4500-CN-E	597012	SM 4500-CN-E	597101
10468315002	**603281**	SM 4500-CN-E	598088	SM 4500-CN-E	598190
10468315003	**603287**	SM 4500-CN-E	598088	SM 4500-CN-E	598190
10468315004	**603288**	SM 4500-CN-E	598088	SM 4500-CN-E	598190
10468315005	**603289**	SM 4500-CN-E	598088	SM 4500-CN-E	598190

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WO#: 10468315

10468315

Minnesota Pollution Control Agency

Chain-of-Custody Form revised 2013.0909

Work Order Number

Turnaround Time

Page: 1 of 1

FOR LAB USE ONLY

Lab Work Order Sticker

PROJECT/CLIENT INFO

Facility Code: MNSW-057 Program Code (MDH Lab Only):

Project Name: 19-01567 MPCA Freeway Landfill 2019 Waters Project Task Code: PRJ07786

Project Manager: Brad Jacobson 612-607-6375 EPIC PROFILE #: 38716 Line 2

Potential Hazard? If yes, add information to Sampler Comments Section

LABORATORY

Lab Name: Pace Analytical - Minneapolis, MN

Address: 1700 SE Elm Street

Minneapolis MN 55414

Phone No: 612-607-6400

SAMPLE DETAILS

SAMPLE TYPE CODES
Sample=Routine Sample
S-IVP=Integrated Vertical Profile Sample
S-CWOP=Composite Sample
QC-FB=Field Blank Sample
QC-FR=Field Replicate Sample
QC-TB=Trip Blank Sample

LAB MATRIX CODES
DW=Drinking Water
NW=Non-potable Water
SD=Soil/Solid
WP=Wipe
AR=Air
BL=Biological Material
OT=Other
TS=Tissue

FIELD MATRIX CODES
Wtr-Ground=Groundwater
Wtr-Surf=Surface Water
QC-BLANK=Artificial Blank Water
Leachate=Leachate Sample

ANALYSIS REQUESTED

Location Identifier	Sample Type	Date	Time	Start Depth, in meters	End Depth, in meters	Grab (G) or Composite (C) Sample	Lab Matrix Code	Field Matrix Code	AIS	Sampler Comments (filter volume, special handling, etc.)	# of Cont	ANALYSIS / PRESERV.	Field Parameters: SWL, Temp, pH, DO, Cond, Eh, Turbidity / None	Metals 200.7 / 200.8 / Gross Alpha/Beta - QAPP Table 3a / HNO3	300.0 / HexCr - QAPP Table 3a / None	Ammonia/ Unionized NH3 - QAPP Table 3a / H2SO4	Total Cyanide / Free Cyanide - QAPP Table 3a / NaOH	8270 SVOC, 8082, MDA1, MDA2 - QAPP Table 3a / None	Lab Sample No.	#
FieldBlank	QC-FB	3/26/19	1010			G	NW	QC-BLANK	N		14		X	X	X	X	X	X	01	1
603281	Sample	3/26/19	1130			G	NW	Wtr-Ground	N		14		X	X	X	X	X	X	02	2
603287	Sample	3/26/19	1350			G	NW	Wtr-Ground	N		14		X	X	X	X	X	X	03	3
603288	Sample	3/26/19	1530			G	NW	Wtr-Ground	N		14		X	X	X	X	X	X	04	4
603289	Sample	3/26/19	1630			G	NW	Wtr-Ground	N		14		X	X	X	X	X	X	05	5
									N											6
									N											7
									N											8
				DVA 3/26/19					N											9
									N											10

Sampled By: David Anderson / Chris Pelasi

Sampler's Signature: David Anderson / Chris Pelasi

Phone #:

Receiving Comments:

Relinquished By/Affiliation	Date/Time	Accepted By/ Affiliation	Date/Time
(Sampler) David Anderson / Pace Analytical	3/26/19 1650	Eric Price	3/26/19 1705

T=8.4, 6.8, 9.7 °C
13.3, 9.6

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 06Feb2019 Page 1 of 1
	Document No.: F-MN-L-213-rev.25	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt **Client Name:** FSD **Project #:** WO#: 10468315

PM: JMA Due Date: 04/10/19

CLIENT: PASI-MNFLD

Courier: ☐Fed Ex ☐UPS ☐USPS ☐Client ☑Pace ☐SpeeDee ☐Commercial See Exception ☐

Tracking Number:

Custody Seal on Cooler/Box Present? ☑Yes ☐No **Seals Intact?** ☑Yes ☐No **Biological Tissue Frozen?** ☐Yes ☐No ☑N/A

Packing Material: ☐Bubble Wrap ☑Bubble Bags ☐None ☐Other: **Temp Blank?** ☑Yes ☐No

Thermometer: ☐G87A9155100842 ☑G87A9170600254 **Type of Ice:** ☑Wet ☐Blue ☐None ☐Dry ☐Melted

Note: Each West Virginia Sample must have temp taken (no temp blanks)

Temp should be above freezing to 6°C **Cooler Temp Read w/temp blank:** 8.4, 6.8, 9.7, 13.3, 9.6 °C

Correction Factor: True **Cooler Temp Corrected w/temp blank:** 8.4, 6.8, 9.7, 13.3, 9.6 °C

Average Corrected Temp (no temp blank only): °C See Exceptions ☐

USDA Regulated Soil: (☑N/A, water sample/Other:) **Date/Initials of Person Examining Contents:** EMK 3/26/19

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA. MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐Yes ☐No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐Yes ☐No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present and Filled Out?	☑Yes	☐No		1.
Chain of Custody Relinquished?	☑Yes	☐No		2.
Sampler Name and/or Signature on COC?	☑Yes	☐No	☐N/A	3.
Samples Arrived within Hold Time?	☑Yes	☐No		4.
Short Hold Time Analysis (<72 hr)?	☑Yes	☐No		5. ☐Fecal Coliform ☐HPC ☐Total Coliform/E coli ☐BOD/cBOD ☑Hex Chrome ☐Turbidity ☐Nitrate ☐Nitrite ☐Orthophos ☐Other
Rush Turn Around Time Requested?	☐Yes	☑No		6.
Sufficient Volume?	☑Yes	☐No		7.
Correct Containers Used?	☑Yes	☐No		8.
-Pace Containers Used?	☑Yes	☐No		
Containers Intact?	☑Yes	☐No		9.
Field Filtered Volume Received for Dissolved Tests? JMA 3/27/19	☑Yes	☐No	☑N/A	10. Is sediment visible in the dissolved container? ☐Yes ☐No
Is sufficient information available to reconcile the samples to the COC?	☑Yes	☐No		11. If no, write ID/ Date/Time on Container Below: See Exception ☐
Matrix: ☑Water ☐Soil ☐Oil ☐Other				
All containers needing acid/base preservation have been checked?	☑Yes	☐No	☐N/A	12. Sample # EMK 3/26 1-5
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>12 Cyanide)	☑Yes	☐No	☐N/A	☑NaOH 2/2 ☑HNO_3 2/2 ☑H_2SO_4 1/1 ☐Zinc Acetate
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin/PFAS	☐Yes	☐No	☑N/A	Positive for Res. Chlorine? ☐Yes ☑No See Exception ☐
Headspace in VOA Vials (greater than 6mm)?	☐Yes	☐No	☑N/A	13. See Exception ☐
Trip Blank Present?	☐Yes	☐No	☑N/A	14.
Trip Blank Custody Seals Present?	☐Yes	☐No	☑N/A	Pace Trip Blank Lot # (If purchased):

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐Yes ☐No

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: Date: 03/27/2019

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers).

Labeled by:

During sample triage, this form is to be placed in each cooler that arrives above 6.0 degrees Celsius

SCUR Exceptions:

Workorder #:

Out of Temp Sample IDs	Container Type	# of Containers

PM Notified? ☐Yes ☐No

If yes, indicate who was contacted/date/time.
If no, indicate reason why.
Same day, On ice

Multiple Cooler Project? ☑Yes ☐No
If you answered yes, fill out information to the left.

No Temp Blank

Read Temp	Corrected Temp	Average Temp

Other Issues

Issue Type: Sample ID	Container Type	# of Containers

Tracking Number	

pH Adjustment Log for Preserved Samples

Sample ID	Type of Preserv.	pH Upon Receipt	Date Adjusted	Time Adjusted	Amount Added (mL)	Lot # Added	pH After	In Compliance after addition?	Initials
								☐Yes ☐No	
								☐Yes ☐No	
								☐Yes ☐No	
								☐Yes ☐No	

WO#: 12122937

PM: CLJ Due Date: 04/17/19
CLIENT: PACE MPLS

Chain of Custody

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN
Cert. Needed: ☐ Yes ☐ ...

Workorder: 10468315 **Workorder Name:** 19-01567 MPCA Freeway LF 19 WT **Owner Received Date:** 3/26/2019 **Results Requested By:** 4/17/2019

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6436	Pace Analytical Virginia MN 315 Chestnut Street Virginia, MN 55792 Phone (218)742-1042

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: H2SO4	Preserved Containers: BP3S	Preserved Containers	Preserved Containers	Preserved Containers	Preserved Containers	Requested Analysis: 350.1 Ammonia	Requested Analysis: Unionized Ammonia	Requested Analysis	Requested Analysis	Requested Analysis	Requested Analysis	Requested Analysis	Requested Analysis	Requested Analysis	Requested Analysis	Requested Analysis	LAB USE ONLY
1	Field Blank 1	PS	3/26/2019 10:10	10468315001	Water	1						X	X										
2	603281	PS	3/26/2019 11:30	10468315002	Water	1						X	X										
3	603287	PS	3/26/2019 13:50	10468315003	Water	1						X	X										
4	603288	PS	3/26/2019 15:30	10468315004	Water	1						X	X										
5	603289	PS	3/26/2019 16:30	10468315005	Water	1						X	X										

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature] Pace	3/27/19 1605	[signature]	3/27/19 1900
2	[signature] 3/27/19	2320	[signature]	3/28/19 07:36
3				

Comments

Cooler Temperature on Receipt 0.2 °C | Custody Seal (Y) or N | Received on Ice (Y) or N | Samples Intact (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.*

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 15Mar2016 Page 1 of 1
	Document No.: F-VM-C-001-Rev.10	Issuing Authority: Pace Virginia, Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Pace MN

Project #: WO# : 12122937

12122937

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☒ Pace ☐ Other: _____

Tracking Number: _____

Custody Seal on Cooler/Box Present? ☒ Yes ☐ No Seals Intact? ☒ Yes ☐ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☑ Bubble Wrap ☐ Bubble Bags ☐ None ☐ Other: _____ Temp Blank? ☑ Yes ☐ No

Thermometer Used: ☑ 140792808 Type of Ice: ☐ Wet ☐ Blue ☐ None ☒ Samples on ice, cooling process has begun

Cooler Temp Read °C: ~0.1 Cooler Temp Corrected °C: 0.2 Biological Tissue Frozen? ☐ Yes ☐ No ☒ NA

Temp should be above freezing to 6°C Correction Factor: 0.3 Date and Initials of Person Examining Contents: 3/27/19 AC

Comments: RH 3/28/19

Chain of Custody Present?	☑ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☑ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☑ Yes	☐ No	☐ N/A	3.
Sampler Name and Signature on COC?	☐ Yes	☑ No	☐ N/A	4.
Samples Arrived within Hold Time?	☑ Yes	☐ No	☐ N/A	5. If Fecal: ☐ <8 hours ☐ >8, <24 hours ☐ >24 hours
Short Hold Time Analysis (<72 hr)?	☐ Yes	☑ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☑ No	☐ N/A	7.
Sufficient Volume?	☑ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☑ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☑ Yes	☐ No	☐ N/A	
Containers Intact?	☑ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☑ N/A	11. Note if sediment is visible in the dissolved containers.
Sample Labels Match COC?	☑ Yes	☐ No	☐ N/A	12.
-Includes Date/Time/ID/Analysis Matrix: WT				
All containers needing acid/base preservation will be checked and documented in the pH logbook.	☑ Yes	☐ No	☐ N/A	See pH log for results and additional preservation documentation
Headspace in Methyl Mercury Container	☐ Yes	☐ No	☑ N/A	13.
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☑ N/A	14.
Trip Blank Present?	☐ Yes	☐ No	☑ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☑ N/A	
Pace Trip Blank Lot # (if purchased): _____				

CLIENT NOTIFICATION/RESOLUTION Field Data Required? ☐ Yes ☐ No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

FECAL WAIVER ON FILE Y N TEMPERATURE WAIVER ON FILE Y N

Project Manager Review: Carrie Jean Date: 3/28/19

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Chain of Custody

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN
Cert. Needed: ☐ Yes ☐ No

Pace Analytical®
www.pacelabs.com

Workorder: 10468315 **Workorder Name:** 19-01567 MPCA Freeway LF 19 WT **Owner Received Date:** 3/26/2019 **Results Requested By:** 4/17/2019

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6436	Pace Analytical Pittsburgh 1638 Roseytown Road Suites 2,3 & 4 Greensburg, PA 15601 Phone (724)850-5600

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: HNO3 BP1N	Gross Alpha/Beta	LAB USE ONLY
1	Field Blank 1	PS	3/26/2019 10:10	10468315001	Water	1	X	001
2	603281	PS	3/26/2019 11:30	10468315002	Water	1	X	002
3	603287	PS	3/26/2019 13:50	10468315003	Water	1	X	003
4	603288	PS	3/26/2019 15:30	10468315004	Water	1	X	004
5	603289	PS	3/26/2019 16:30	10468315005	Water	1	X	005

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature]	3/27/19 1300	[signature]	3-28-19 0830
2				
3				

Comments

Cooler Temperature on Receipt NA °C | Custody Seal (Y) or N | Received on Ice Y or (N) | Samples Intact (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.*

WO# : 30286431

30286431

Pittsburgh Lab Sample Condition Upon Receipt

Pace Analytical

Client Name: Pace MN Project # 30286431

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Label MJ
LIMS Login MJ

Tracking #: 460580199737

Custody Seal on Cooler/Box Present: ☑ yes ☐ no MDS3-28-19 Seals intact: ☑ yes ☐ no

Thermometer Used NA Type of Ice: Wet Blue None

Cooler Temperature Observed Temp — °C Correction Factor: — °C Final Temp: — °C

Temp should be above freezing to 6°C

pH paper Lot# 160D29981 Date and Initials of person examining contents: MDS3-28-19

Comments:	Yes	No	N/A	
Chain of Custody Present:	✓			1.
Chain of Custody Filled Out:	✓			2.
Chain of Custody Relinquished:	✓			3.
Sampler Name & Signature on COC:		✓		4.
Sample Labels match COC: -Includes date/time/ID Matrix: WT	✓			5.
Samples Arrived within Hold Time:	✓			6.
Short Hold Time Analysis (<72hr remaining):		✓		7.
Rush Turn Around Time Requested:		✓		8.
Sufficient Volume:	✓			9.
Correct Containers Used: -Pace Containers Used:	✓ ✓			10.
Containers Intact:	✓			11.
Orthophosphate field filtered			✓	12.
Hex Cr Aqueous Compliance/NPDES sample field filtered			✓	13.
Organic Samples checked for dechlorination:			✓	14.
Filtered volume received for Dissolved tests			✓	15.
All containers have been checked for preservation. All containers needing preservation are found to be in compliance with EPA recommendation.	✓ ✓			16. pH<2
exceptions: VOA, coliform, TOC, O&G, Phenolics				Initial when completed MDS Date/time of preservation
				Lot # of added preservative
Headspace in VOA Vials (>6mm):			✓	17.
Trip Blank Present: Trip Blank Custody Seals Present			✓ ✓	18.
Rad Samples Screened < 0.5 mrem/hr	✓			Initial when completed: MDS Date: 3-28-19

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

☐ **A check in this box indicates that additional information has been stored in ereports.**

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

***PM review** is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

10-Apr-2019

Jennifer Anderson
Pace Analytical Services, LLC
1700 Elm Street
Suite 200
Minneapolis, MN 55414

Re: **10468315** Work Order: **19031541**

Dear Jennifer,

ALS Environmental received 5 samples on 28-Mar-2019 09:00 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental - Holland and for only the analyses requested.

Sample results are compliant with industry accepted practices and Quality Control results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 11.

If you have any questions regarding this report, please feel free to contact me:

ADDRESS: 3352 128th Avenue, Holland, MI, USA
PHONE: +1 (616) 399-6070 FAX: +1 (616) 399-6185

Sincerely,

Electronically approved by: Chad Whelton

Chad Whelton
Project Manager

Client: Pace Analytical Services, LLC
Project: 10468315
Work Order: **19031541**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
19031541-01	Field Blank 1	Water		3/26/2019 10:10	3/28/2019 09:00	☐
19031541-02	603281	Water		3/26/2019 11:30	3/28/2019 09:00	☐
19031541-03	603287	Water		3/26/2019 13:50	3/28/2019 09:00	☐
19031541-04	603288	Water		3/26/2019 15:30	3/28/2019 09:00	☐
19031541-05	603289	Water		3/26/2019 16:30	3/28/2019 09:00	☐

Client: Pace Analytical Services, LLC
Project: 10468315
WorkOrder: **19031541**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
**	Estimated Value
a	Analyte is non-accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
Hr	BOD/CBOD - Sample was reset outside Hold Time, value should be considered estimated.
J	Analyte is present at an estimated concentration between the MDL and Report Limit
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and Reporting Limit, sample results may exhibit background or reagent contamination at the observed level.

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

Units Reported	Description
µg/L	Micrograms per Liter

ALS Group, USA

Date: *10-Apr-19*

Client:	Pace Analytical Services, LLC		
Project:	10468315	**Work Order:**	19031541
Sample ID:	Field Blank 1	**Lab ID:**	19031541-01
Collection Date:	3/26/2019 10:10 AM	**Matrix:**	WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
CYANIDE, FREE			**SW9014**			Analyst: **RZM**
Cyanide, Free	ND		20	µg/L	1	4/5/2019 02:10 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Pace Analytical Services, LLC
Project: 10468315 **Work Order:** 19031541
Sample ID: 603281 **Lab ID:** 19031541-02
Collection Date: 3/26/2019 11:30 AM **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
CYANIDE, FREE			**SW9014**			Analyst: **RZM**
Cyanide, Free	ND		20	µg/L	1	4/5/2019 02:10 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Pace Analytical Services, LLC
Project: 10468315 **Work Order:** 19031541
Sample ID: 603287 **Lab ID:** 19031541-03
Collection Date: 3/26/2019 01:50 PM **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
CYANIDE, FREE			**SW9014**			Analyst: **RZM**
Cyanide, Free	ND		20	µg/L	1	4/5/2019 02:10 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Pace Analytical Services, LLC
Project: 10468315 **Work Order:** 19031541
Sample ID: 603288 **Lab ID:** 19031541-04
Collection Date: 3/26/2019 03:30 PM **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
CYANIDE, FREE			**SW9014**			Analyst: **RZM**
Cyanide, Free	**23**		**20**	**µg/L**	1	4/5/2019 02:10 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *10-Apr-19*

Client:	Pace Analytical Services, LLC		
Project:	10468315	**Work Order:**	19031541
Sample ID:	603289	**Lab ID:**	19031541-05
Collection Date:	3/26/2019 04:30 PM	**Matrix:**	WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
CYANIDE, FREE			**SW9014**			Analyst: **RZM**
Cyanide, Free	**37**		**20**	**µg/L**	1	4/5/2019 02:10 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

QC BATCH REPORT

Batch ID: **R257895** Instrument ID **WETCHEM** Method: **SW9014**

MBLK Sample ID: **MB-R257895-R257895** Units: **µg/L** Analysis Date: **4/5/2019 02:10 PM**

Client ID: Run ID: **WETCHEM_190405G** SeqNo: **5593578** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Free	ND	20								

LCS Sample ID: **LCS-R257895-R257895** Units: **µg/L** Analysis Date: **4/5/2019 02:10 PM**

Client ID: Run ID: **WETCHEM_190405G** SeqNo: **5593579** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Free	272.1	20	250	0	109	81-119	0			

MS Sample ID: **19031541-01A MS** Units: **µg/L** Analysis Date: **4/5/2019 02:10 PM**

Client ID: **Field Blank 1** Run ID: **WETCHEM_190405G** SeqNo: **5593581** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Free	256.1	20	250	-9.96	106	81-119	0			

MSD Sample ID: **19031541-01A MSD** Units: **µg/L** Analysis Date: **4/5/2019 02:10 PM**

Client ID: **Field Blank 1** Run ID: **WETCHEM_190405G** SeqNo: **5593582** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Free	251.7	20	250	-9.96	105	81-119	256.1	1.72	20	

The following samples were analyzed in this batch:

19031541-01A	19031541-02A	19031541-03A
19031541-04A	19031541-05A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

14031591

Chain of Custody

Pace Analytical
www.pacelabs.com

Workorder: 10468315 **Workorder Name:** 19-01567 MPCA Freeway LF 19 WT **Results Requested By:** 4/17/2019

Report / Invoice To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6436 Email: jennifer.anderson@pacelabs.com	ALS 3352 128th Avenue Holland, MI 49424 P.O. 10468315

State of Sample Origin: MN

Item	Sample ID	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Other BP3A	Requested Analysis: Free Cyanide	LAB USE ONLY
1	Field Blank 1	3/26/2019 10:10	10468315001	Water	1	X	
2	603281	3/26/2019 11:30	10468315002	Water		X	
3	603287	3/26/2019 13:50	10468315003	Water		X	
4	603288	3/26/2019 15:30	10468315004	Water		X	
5	603289	3/26/2019 16:30	10468315005	Water		X	

Comments

Transfers	Released By	Date/Time	Received By	Date/Time
1	Jennifer Pace	3/27/19 1430		3/28/19 0800
2				
3				

Cooler Temperature on Receipt 2.2 °C SR2 | **Custody Seal** Y or N | **Received on Ice** Y or N | **Samples Intact** Y or N

ALS Group, USA

Sample Receipt Checklist

Client Name: **PACE_MN** Date/Time Received: **28-Mar-19 09:00**

Work Order: **19031541** Received by: **DS**

Checklist completed by Diane Shaw (eSignature) 28-Mar-19 (Date) Reviewed by: Chad Whelton (eSignature) 28-Mar-19 (Date)

Matrices: Water

Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Sample(s) received on ice?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	2.2/2.2 c	SR2	
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	3/28/2019 9:55:03 AM		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

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Madison, WI 53718
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April 12, 2019

Jennifer Anderson
Pace Analytical
1700 Elm Street, Suite 200
Minneapolis, MN 55414

RE: MPCA Freeway LF Water - MN

Enclosed are the analytical results for the samples received by the laboratory on 03/28/2019.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. These results are in compliance with the 2009 NELAC Standards and the appropriate agencies listed below, unless otherwise noted in the case narrative. This analytical report should be reproduced in its entirety.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jessica Esser

Project Manager

Certification List			Expires
DODELAP	DOD ELAP Accreditation (A2LA)	3269.01	03/31/2020
ILEPA	Illinois Secondary NELAP Accreditation	004366	04/30/2019
KDHE	Kansas Secondary NELAP Accreditation	E-10384	04/30/2019
LELAP	Louisiana Primary NELAP Accreditation	04165	06/30/2019
NCDEQ	North Carolina Dept. of Environmental Quality Accreditation	688	12/31/2019
NJDEP	New Jersey Secondary NELAP Accreditation	WI004	06/30/2019
ODEQ	Oklahoma Department of Environmental Quality Accreditation	2018-087	08/31/2019
TCEQ	Texas Secondary NELAP Accreditation	T104704504-16-7	11/30/2019
WDNR	Wisconsin Certification under NR 149	113289110	08/31/2019

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1700 Elm Street, Suite 200	Project Number: 10468315
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Field Blank 1	A191316-01	Water	03/26/2019	03/28/2019
603281	A191316-02	Water	03/26/2019	03/28/2019
603287	A191316-03	Water	03/26/2019	03/28/2019
603288	A191316-04	Water	03/26/2019	03/28/2019
603289	A191316-05	Water	03/26/2019	03/28/2019

CASE NARRATIVE

Sample Receipt Information:
5 samples were received on 03/28/2019. Samples were received at 1.4 degrees Celsius. Samples were received in acceptable condition.

Please see the chain of custody (COC) document at the end of this report for additional information.

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1700 Elm Street, Suite 200	Project Number: 10468315
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Field Blank 1

A191316-01 (Water)

Date Sampled
03/26/2019 10:10

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Pace Analytical - Madison								
Base Neutral Pesticides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A904126**			
Acetochlor	ND	0.50	ug/L	1	04/01/2019	04/02/2019 22:57	EPA 8270D	
Alachlor	ND	0.50	ug/L	1	04/01/2019	04/02/2019 22:57	EPA 8270D	
Atrazine	ND	0.50	ug/L	1	04/01/2019	04/02/2019 22:57	EPA 8270D	
Chlorpyrifos	ND	0.50	ug/L	1	04/01/2019	04/02/2019 22:57	EPA 8270D	
Cyanazine	ND	0.20	ug/L	1	04/01/2019	04/02/2019 22:57	EPA 8270D	
Desethylatrazine	ND	0.50	ug/L	1	04/01/2019	04/02/2019 22:57	EPA 8270D	
Deisopropylatrazine	ND	0.50	ug/L	1	04/01/2019	04/02/2019 22:57	EPA 8270D	
Dimethenamid	ND	0.50	ug/L	1	04/01/2019	04/02/2019 22:57	EPA 8270D	
EPTC	ND	0.50	ug/L	1	04/01/2019	04/02/2019 22:57	EPA 8270D	
Ethalfluralin	ND	0.50	ug/L	1	04/01/2019	04/02/2019 22:57	EPA 8270D	
Fonofos	ND	0.50	ug/L	1	04/01/2019	04/02/2019 22:57	EPA 8270D	
Metolachlor	ND	0.50	ug/L	1	04/01/2019	04/02/2019 22:57	EPA 8270D	
Metribuzin	ND	0.50	ug/L	1	04/01/2019	04/02/2019 22:57	EPA 8270D	
Pendimethalin	ND	0.50	ug/L	1	04/01/2019	04/02/2019 22:57	EPA 8270D	
Phorate	ND	0.30	ug/L	1	04/01/2019	04/02/2019 22:57	EPA 8270D	
Prometon	ND	0.50	ug/L	1	04/01/2019	04/02/2019 22:57	EPA 8270D	
Propachlor	ND	0.50	ug/L	1	04/01/2019	04/02/2019 22:57	EPA 8270D	
Propazine	ND	0.50	ug/L	1	04/01/2019	04/02/2019 22:57	EPA 8270D	
Simazine	ND	0.50	ug/L	1	04/01/2019	04/02/2019 22:57	EPA 8270D	
Terbufos	ND	0.20	ug/L	1	04/01/2019	04/02/2019 22:57	EPA 8270D	
Triallate	ND	0.50	ug/L	1	04/01/2019	04/02/2019 22:57	EPA 8270D	
Trifluralin	ND	0.50	ug/L	1	04/01/2019	04/02/2019 22:57	EPA 8270D	
Surrogate: Atrazine-d5		*83.6 %*		*56.9-123*	*04/01/2019*	*04/02/2019 22:57*	*EPA 8270D*	
Surrogate: Parathion-d10		*210 %*		*23.8-169*	*04/01/2019*	*04/02/2019 22:57*	*EPA 8270D*	*S*
Surrogate: Triphenyl phosphate		*89.9 %*		*50.5-178*	*04/01/2019*	*04/02/2019 22:57*	*EPA 8270D*	
Acid Herbicides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A904136**			
2,4-D	ND	0.50	ug/L	1	04/02/2019	04/04/2019 02:13	EPA 8151A	
2,4-DB	ND	0.50	ug/L	1	04/02/2019	04/04/2019 02:13	EPA 8151A	
2,4,5-T	ND	0.50	ug/L	1	04/02/2019	04/04/2019 02:13	EPA 8151A	
2,4,5-TP (Silvex)	ND	0.50	ug/L	1	04/02/2019	04/04/2019 02:13	EPA 8151A	
Bentazon	ND	0.50	ug/L	1	04/02/2019	04/04/2019 02:13	EPA 8151A	
Dicamba	ND	0.50	ug/L	1	04/02/2019	04/04/2019 02:13	EPA 8151A	
MCPA	ND	0.30	ug/L	1	04/02/2019	04/04/2019 02:13	EPA 8151A	
Picloram	ND	0.50	ug/L	1	04/02/2019	04/04/2019 02:13	EPA 8151A	
Triclopyr	ND	0.50	ug/L	1	04/02/2019	04/04/2019 02:13	EPA 8151A	
Surrogate: 2,4-D-d5		*74.3 %*		*44.2-121*	*04/02/2019*	*04/04/2019 02:13*	*EPA 8151A*	

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1700 Elm Street, Suite 200	Project Number: 10468315
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

603281

A191316-02 (Water)

Date Sampled
03/26/2019 11:30

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Base Neutral Pesticides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A904126**			
Acetochlor	ND	0.50	ug/L	1	04/01/2019	04/02/2019 23:25	EPA 8270D	
Alachlor	ND	0.50	ug/L	1	04/01/2019	04/02/2019 23:25	EPA 8270D	
Atrazine	ND	0.50	ug/L	1	04/01/2019	04/02/2019 23:25	EPA 8270D	
Chlorpyrifos	ND	0.50	ug/L	1	04/01/2019	04/02/2019 23:25	EPA 8270D	
Cyanazine	ND	0.20	ug/L	1	04/01/2019	04/02/2019 23:25	EPA 8270D	
Desethylatrazine	ND	0.50	ug/L	1	04/01/2019	04/02/2019 23:25	EPA 8270D	
Deisopropylatrazine	ND	0.50	ug/L	1	04/01/2019	04/02/2019 23:25	EPA 8270D	
Dimethenamid	ND	0.50	ug/L	1	04/01/2019	04/02/2019 23:25	EPA 8270D	
EPTC	ND	0.50	ug/L	1	04/01/2019	04/02/2019 23:25	EPA 8270D	
Ethalfluralin	ND	0.50	ug/L	1	04/01/2019	04/02/2019 23:25	EPA 8270D	
Fonofos	ND	0.50	ug/L	1	04/01/2019	04/02/2019 23:25	EPA 8270D	
Metolachlor	ND	0.50	ug/L	1	04/01/2019	04/02/2019 23:25	EPA 8270D	
Metribuzin	ND	0.50	ug/L	1	04/01/2019	04/02/2019 23:25	EPA 8270D	
Pendimethalin	ND	0.50	ug/L	1	04/01/2019	04/02/2019 23:25	EPA 8270D	
Phorate	ND	0.30	ug/L	1	04/01/2019	04/02/2019 23:25	EPA 8270D	
Prometon	ND	0.50	ug/L	1	04/01/2019	04/02/2019 23:25	EPA 8270D	
Propachlor	ND	0.50	ug/L	1	04/01/2019	04/02/2019 23:25	EPA 8270D	
Propazine	ND	0.50	ug/L	1	04/01/2019	04/02/2019 23:25	EPA 8270D	
Simazine	ND	0.50	ug/L	1	04/01/2019	04/02/2019 23:25	EPA 8270D	
Terbufos	ND	0.20	ug/L	1	04/01/2019	04/02/2019 23:25	EPA 8270D	
Triallate	ND	0.50	ug/L	1	04/01/2019	04/02/2019 23:25	EPA 8270D	
Trifluralin	ND	0.50	ug/L	1	04/01/2019	04/02/2019 23:25	EPA 8270D	
Surrogate: Atrazine-d5		*82.5 %*		*56.9-123*	*04/01/2019*	*04/02/2019 23:25*	*EPA 8270D*	
Surrogate: Parathion-d10		*139 %*		*23.8-169*	*04/01/2019*	*04/02/2019 23:25*	*EPA 8270D*	
Surrogate: Triphenyl phosphate		*90.8 %*		*50.5-178*	*04/01/2019*	*04/02/2019 23:25*	*EPA 8270D*	
Acid Herbicides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A904136**			
2,4-D	ND	0.50	ug/L	1	04/02/2019	04/04/2019 02:48	EPA 8151A	
2,4-DB	ND	0.50	ug/L	1	04/02/2019	04/04/2019 02:48	EPA 8151A	
2,4,5-T	ND	0.50	ug/L	1	04/02/2019	04/04/2019 02:48	EPA 8151A	
2,4,5-TP (Silvex)	ND	0.50	ug/L	1	04/02/2019	04/04/2019 02:48	EPA 8151A	
Bentazon	ND	0.50	ug/L	1	04/02/2019	04/04/2019 02:48	EPA 8151A	
Dicamba	ND	0.50	ug/L	1	04/02/2019	04/04/2019 02:48	EPA 8151A	
MCPA	ND	0.30	ug/L	1	04/02/2019	04/04/2019 02:48	EPA 8151A	
Picloram	ND	0.50	ug/L	1	04/02/2019	04/04/2019 02:48	EPA 8151A	
Triclopyr	ND	0.50	ug/L	1	04/02/2019	04/04/2019 02:48	EPA 8151A	
Surrogate: 2,4-D-d5		*84.0 %*		*44.2-121*	*04/02/2019*	*04/04/2019 02:48*	*EPA 8151A*	

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1700 Elm Street, Suite 200	Project Number: 10468315
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

603287

A191316-03 (Water)

Date Sampled
03/26/2019 13:50

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Base Neutral Pesticides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A904126**			
Acetochlor	ND	0.50	ug/L	1	04/01/2019	04/02/2019 23:53	EPA 8270D	
Alachlor	ND	0.50	ug/L	1	04/01/2019	04/02/2019 23:53	EPA 8270D	
Atrazine	ND	0.50	ug/L	1	04/01/2019	04/02/2019 23:53	EPA 8270D	
Chlorpyrifos	ND	0.50	ug/L	1	04/01/2019	04/02/2019 23:53	EPA 8270D	
Cyanazine	ND	0.20	ug/L	1	04/01/2019	04/02/2019 23:53	EPA 8270D	
Desethylatrazine	ND	0.50	ug/L	1	04/01/2019	04/02/2019 23:53	EPA 8270D	
Deisopropylatrazine	ND	0.50	ug/L	1	04/01/2019	04/02/2019 23:53	EPA 8270D	
Dimethenamid	ND	0.50	ug/L	1	04/01/2019	04/02/2019 23:53	EPA 8270D	
EPTC	ND	0.50	ug/L	1	04/01/2019	04/02/2019 23:53	EPA 8270D	
Ethalfluralin	ND	0.50	ug/L	1	04/01/2019	04/02/2019 23:53	EPA 8270D	
Fonofos	ND	0.50	ug/L	1	04/01/2019	04/02/2019 23:53	EPA 8270D	
Metolachlor	ND	0.50	ug/L	1	04/01/2019	04/02/2019 23:53	EPA 8270D	
Metribuzin	ND	0.50	ug/L	1	04/01/2019	04/02/2019 23:53	EPA 8270D	
Pendimethalin	ND	0.50	ug/L	1	04/01/2019	04/02/2019 23:53	EPA 8270D	
Phorate	ND	0.30	ug/L	1	04/01/2019	04/02/2019 23:53	EPA 8270D	
Prometon	ND	0.50	ug/L	1	04/01/2019	04/02/2019 23:53	EPA 8270D	
Propachlor	ND	0.50	ug/L	1	04/01/2019	04/02/2019 23:53	EPA 8270D	
Propazine	ND	0.50	ug/L	1	04/01/2019	04/02/2019 23:53	EPA 8270D	
Simazine	ND	0.50	ug/L	1	04/01/2019	04/02/2019 23:53	EPA 8270D	
Terbufos	ND	0.20	ug/L	1	04/01/2019	04/02/2019 23:53	EPA 8270D	
Triallate	ND	0.50	ug/L	1	04/01/2019	04/02/2019 23:53	EPA 8270D	
Trifluralin	ND	0.50	ug/L	1	04/01/2019	04/02/2019 23:53	EPA 8270D	
Surrogate: Atrazine-d5		*96.8 %*		*56.9-123*	*04/01/2019*	*04/02/2019 23:53*	*EPA 8270D*	
Surrogate: Parathion-d10		*90.3 %*		*23.8-169*	*04/01/2019*	*04/02/2019 23:53*	*EPA 8270D*	
Surrogate: Triphenyl phosphate		*101 %*		*50.5-178*	*04/01/2019*	*04/02/2019 23:53*	*EPA 8270D*	
Acid Herbicides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A904136**			
2,4-D	ND	0.50	ug/L	1	04/02/2019	04/04/2019 03:24	EPA 8151A	
2,4-DB	ND	0.50	ug/L	1	04/02/2019	04/04/2019 03:24	EPA 8151A	
2,4,5-T	ND	0.50	ug/L	1	04/02/2019	04/04/2019 03:24	EPA 8151A	
2,4,5-TP (Silvex)	ND	0.50	ug/L	1	04/02/2019	04/04/2019 03:24	EPA 8151A	
Bentazon	ND	0.50	ug/L	1	04/02/2019	04/04/2019 03:24	EPA 8151A	
Dicamba	ND	0.50	ug/L	1	04/02/2019	04/04/2019 03:24	EPA 8151A	
MCPA	ND	0.30	ug/L	1	04/02/2019	04/04/2019 03:24	EPA 8151A	
Picloram	ND	0.50	ug/L	1	04/02/2019	04/04/2019 03:24	EPA 8151A	
Triclopyr	ND	0.50	ug/L	1	04/02/2019	04/04/2019 03:24	EPA 8151A	
Surrogate: 2,4-D-d5		*77.2 %*		*44.2-121*	*04/02/2019*	*04/04/2019 03:24*	*EPA 8151A*	

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1700 Elm Street, Suite 200	Project Number: 10468315
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

603288

A191316-04 (Water)

Date Sampled
03/26/2019 15:30

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Base Neutral Pesticides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A904126**			
Acetochlor	ND	0.50	ug/L	1	04/01/2019	04/03/2019 00:21	EPA 8270D	
Alachlor	ND	0.50	ug/L	1	04/01/2019	04/03/2019 00:21	EPA 8270D	
Atrazine	ND	0.50	ug/L	1	04/01/2019	04/03/2019 00:21	EPA 8270D	
Chlorpyrifos	ND	0.50	ug/L	1	04/01/2019	04/03/2019 00:21	EPA 8270D	
Cyanazine	ND	0.20	ug/L	1	04/01/2019	04/03/2019 00:21	EPA 8270D	
Desethylatrazine	ND	0.50	ug/L	1	04/01/2019	04/03/2019 00:21	EPA 8270D	
Deisopropylatrazine	ND	0.50	ug/L	1	04/01/2019	04/03/2019 00:21	EPA 8270D	
Dimethenamid	ND	0.50	ug/L	1	04/01/2019	04/03/2019 00:21	EPA 8270D	
EPTC	ND	0.50	ug/L	1	04/01/2019	04/03/2019 00:21	EPA 8270D	
Ethalfluralin	ND	0.50	ug/L	1	04/01/2019	04/03/2019 00:21	EPA 8270D	
Fonofos	ND	0.50	ug/L	1	04/01/2019	04/03/2019 00:21	EPA 8270D	
Metolachlor	ND	0.50	ug/L	1	04/01/2019	04/03/2019 00:21	EPA 8270D	
Metribuzin	ND	0.50	ug/L	1	04/01/2019	04/03/2019 00:21	EPA 8270D	
Pendimethalin	ND	0.50	ug/L	1	04/01/2019	04/03/2019 00:21	EPA 8270D	
Phorate	ND	0.30	ug/L	1	04/01/2019	04/03/2019 00:21	EPA 8270D	
Prometon	ND	0.50	ug/L	1	04/01/2019	04/03/2019 00:21	EPA 8270D	
Propachlor	ND	0.50	ug/L	1	04/01/2019	04/03/2019 00:21	EPA 8270D	
Propazine	ND	0.50	ug/L	1	04/01/2019	04/03/2019 00:21	EPA 8270D	
Simazine	ND	0.50	ug/L	1	04/01/2019	04/03/2019 00:21	EPA 8270D	
Terbufos	ND	0.20	ug/L	1	04/01/2019	04/03/2019 00:21	EPA 8270D	
Triallate	ND	0.50	ug/L	1	04/01/2019	04/03/2019 00:21	EPA 8270D	
Trifluralin	ND	0.50	ug/L	1	04/01/2019	04/03/2019 00:21	EPA 8270D	
Surrogate: Atrazine-d5		*83.9 %*		*56.9-123*	*04/01/2019*	*04/03/2019 00:21*	*EPA 8270D*	
Surrogate: Parathion-d10		*76.9 %*		*23.8-169*	*04/01/2019*	*04/03/2019 00:21*	*EPA 8270D*	
Surrogate: Triphenyl phosphate		*96.7 %*		*50.5-178*	*04/01/2019*	*04/03/2019 00:21*	*EPA 8270D*	
Acid Herbicides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A904136**			
2,4-D	ND	0.50	ug/L	1	04/02/2019	04/04/2019 03:59	EPA 8151A	
2,4-DB	ND	0.50	ug/L	1	04/02/2019	04/04/2019 03:59	EPA 8151A	
2,4,5-T	ND	0.50	ug/L	1	04/02/2019	04/04/2019 03:59	EPA 8151A	
2,4,5-TP (Silvex)	ND	0.50	ug/L	1	04/02/2019	04/04/2019 03:59	EPA 8151A	
Bentazon	ND	0.50	ug/L	1	04/02/2019	04/04/2019 03:59	EPA 8151A	
Dicamba	ND	0.50	ug/L	1	04/02/2019	04/04/2019 03:59	EPA 8151A	
MCPA	ND	0.30	ug/L	1	04/02/2019	04/04/2019 03:59	EPA 8151A	
Picloram	ND	0.50	ug/L	1	04/02/2019	04/04/2019 03:59	EPA 8151A	
Triclopyr	ND	0.50	ug/L	1	04/02/2019	04/04/2019 03:59	EPA 8151A	
Surrogate: 2,4-D-d5		*82.2 %*		*44.2-121*	*04/02/2019*	*04/04/2019 03:59*	*EPA 8151A*	

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1700 Elm Street, Suite 200	Project Number: 10468315
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

603289

A191316-05 (Water)

Date Sampled
03/26/2019 16:30

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Base Neutral Pesticides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A904126**			
Acetochlor	ND	0.50	ug/L	1	04/01/2019	04/03/2019 00:49	EPA 8270D	
Alachlor	ND	0.50	ug/L	1	04/01/2019	04/03/2019 00:49	EPA 8270D	
Atrazine	ND	0.50	ug/L	1	04/01/2019	04/03/2019 00:49	EPA 8270D	
Chlorpyrifos	ND	0.50	ug/L	1	04/01/2019	04/03/2019 00:49	EPA 8270D	
Cyanazine	ND	0.20	ug/L	1	04/01/2019	04/03/2019 00:49	EPA 8270D	
Desethylatrazine	ND	0.50	ug/L	1	04/01/2019	04/03/2019 00:49	EPA 8270D	
Deisopropylatrazine	ND	0.50	ug/L	1	04/01/2019	04/03/2019 00:49	EPA 8270D	
Dimethenamid	ND	0.50	ug/L	1	04/01/2019	04/03/2019 00:49	EPA 8270D	
EPTC	ND	0.50	ug/L	1	04/01/2019	04/03/2019 00:49	EPA 8270D	
Ethalfluralin	ND	0.50	ug/L	1	04/01/2019	04/03/2019 00:49	EPA 8270D	
Fonofos	ND	0.50	ug/L	1	04/01/2019	04/03/2019 00:49	EPA 8270D	
Metolachlor	ND	0.50	ug/L	1	04/01/2019	04/03/2019 00:49	EPA 8270D	
Metribuzin	ND	0.50	ug/L	1	04/01/2019	04/03/2019 00:49	EPA 8270D	
Pendimethalin	ND	0.50	ug/L	1	04/01/2019	04/03/2019 00:49	EPA 8270D	
Phorate	ND	0.30	ug/L	1	04/01/2019	04/03/2019 00:49	EPA 8270D	
Prometon	ND	0.50	ug/L	1	04/01/2019	04/03/2019 00:49	EPA 8270D	
Propachlor	ND	0.50	ug/L	1	04/01/2019	04/03/2019 00:49	EPA 8270D	
Propazine	ND	0.50	ug/L	1	04/01/2019	04/03/2019 00:49	EPA 8270D	
Simazine	ND	0.50	ug/L	1	04/01/2019	04/03/2019 00:49	EPA 8270D	
Terbufos	ND	0.20	ug/L	1	04/01/2019	04/03/2019 00:49	EPA 8270D	
Triallate	ND	0.50	ug/L	1	04/01/2019	04/03/2019 00:49	EPA 8270D	
Trifluralin	ND	0.50	ug/L	1	04/01/2019	04/03/2019 00:49	EPA 8270D	
Surrogate: Atrazine-d5		*88.6 %*		*56.9-123*	*04/01/2019*	*04/03/2019 00:49*	*EPA 8270D*	
Surrogate: Parathion-d10		*94.4 %*		*23.8-169*	*04/01/2019*	*04/03/2019 00:49*	*EPA 8270D*	
Surrogate: Triphenyl phosphate		*105 %*		*50.5-178*	*04/01/2019*	*04/03/2019 00:49*	*EPA 8270D*	
Acid Herbicides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A904136**			
2,4-D	ND	0.50	ug/L	1	04/02/2019	04/04/2019 04:34	EPA 8151A	
2,4-DB	ND	0.50	ug/L	1	04/02/2019	04/04/2019 04:34	EPA 8151A	
2,4,5-T	ND	0.50	ug/L	1	04/02/2019	04/04/2019 04:34	EPA 8151A	
2,4,5-TP (Silvex)	ND	0.50	ug/L	1	04/02/2019	04/04/2019 04:34	EPA 8151A	
Bentazon	ND	0.50	ug/L	1	04/02/2019	04/04/2019 04:34	EPA 8151A	
Dicamba	ND	0.50	ug/L	1	04/02/2019	04/04/2019 04:34	EPA 8151A	
MCPA	ND	0.30	ug/L	1	04/02/2019	04/04/2019 04:34	EPA 8151A	
Picloram	ND	0.50	ug/L	1	04/02/2019	04/04/2019 04:34	EPA 8151A	
Triclopyr	ND	0.50	ug/L	1	04/02/2019	04/04/2019 04:34	EPA 8151A	
Surrogate: 2,4-D-d5		*72.6 %*		*44.2-121*	*04/02/2019*	*04/04/2019 04:34*	*EPA 8151A*	

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1700 Elm Street, Suite 200	Project Number: 10468315
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Base Neutral Pesticides by Gas Chromatography/Mass Spectrometry - Quality Control

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A904126 - EPA 3510C										
Blank (A904126-BLK1)				Prepared: 04/01/2019 Analyzed: 04/02/2019 22:29						
Acetochlor	ND	0.50	ug/L							
Alachlor	ND	0.50	ug/L							
Atrazine	ND	0.50	ug/L							
Chlorpyrifos	ND	0.50	ug/L							
Cyanazine	ND	0.20	ug/L							
Desethylatrazine	ND	0.50	ug/L							
Deisopropylatrazine	ND	0.50	ug/L							
Dimethenamid	ND	0.50	ug/L							
EPTC	ND	0.50	ug/L							
Ethalfluralin	ND	0.50	ug/L							
Fonofos	ND	0.50	ug/L							
Metolachlor	ND	0.50	ug/L							
Metribuzin	ND	0.50	ug/L							
Pendimethalin	ND	0.50	ug/L							
Phorate	ND	0.30	ug/L							
Prometon	ND	0.50	ug/L							
Propachlor	ND	0.50	ug/L							
Propazine	ND	0.50	ug/L							
Simazine	ND	0.50	ug/L							
Terbufos	ND	0.20	ug/L							
Triallate	ND	0.50	ug/L							
Trifluralin	ND	0.50	ug/L							
Surrogate: Atrazine-d5	*0.431*		*ug/L*	*0.5000*		*86.2*	*56.9-123*			
Surrogate: Parathion-d10	*0.432*		*ug/L*	*0.5000*		*86.3*	*23.8-169*			
Surrogate: Triphenyl phosphate	*0.424*		*ug/L*	*0.5000*		*84.9*	*50.5-178*			
LCS (A904126-BS1)				Prepared: 04/01/2019 Analyzed: 04/03/2019 02:42						
Acetochlor	0.818	0.50	ug/L	1.000		81.8	67.8-122			
Alachlor	0.845	0.50	ug/L	1.000		84.5	68.6-119			
Atrazine	0.827	0.50	ug/L	1.000		82.7	68.6-115			
Chlorpyrifos	0.833	0.50	ug/L	1.000		83.3	63.1-120			
Cyanazine	0.892	0.20	ug/L	1.000		89.2	55.3-143			
Desethylatrazine	0.827	0.50	ug/L	1.000		82.7	67.8-115			
Deisopropylatrazine	0.669	0.50	ug/L	1.000		66.9	50.1-100			
Dimethenamid	0.845	0.50	ug/L	1.000		84.5	70.3-121			
EPTC	0.673	0.50	ug/L	1.000		67.3	50.4-101			
Ethalfluralin	0.846	0.50	ug/L	1.000		84.6	42.6-121			
Fonofos	0.981	0.50	ug/L	1.000		98.1	56.6-119			
Metolachlor	0.851	0.50	ug/L	1.000		85.1	71.3-128			
Metribuzin	0.826	0.50	ug/L	1.000		82.6	64.9-120			
Pendimethalin	0.774	0.50	ug/L	1.000		77.4	60.9-128			
Phorate	0.674	0.30	ug/L	1.000		67.4	37.3-112			
Prometon	0.836	0.50	ug/L	1.000		83.6	67.1-120			
Propachlor	0.999	0.50	ug/L	1.000		99.9	66.2-127			
Propazine	0.928	0.50	ug/L	1.000		92.8	68.2-118			
Simazine	0.848	0.50	ug/L	1.000		84.8	67.2-117			

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1700 Elm Street, Suite 200	Project Number: 10468315
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Base Neutral Pesticides by Gas Chromatography/Mass Spectrometry - Quality Control

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A904126 - EPA 3510C										
LCS (A904126-BS1)				Prepared: 04/01/2019 Analyzed: 04/03/2019 02:42						
Terbufos	0.637	0.20	ug/L	1.000		63.7	34.3-111			
Triallate	1.01	0.50	ug/L	1.000		101	53-121			
Trifluralin	0.675	0.50	ug/L	1.000		67.5	45.9-116			
Surrogate: Atrazine-d5	*0.443*		*ug/L*	*0.5000*		*88.6*	*56.9-123*			
Surrogate: Parathion-d10	*0.534*		*ug/L*	*0.5000*		*107*	*23.8-169*			
Surrogate: Triphenyl phosphate	*0.478*		*ug/L*	*0.5000*		*95.6*	*50.5-178*			
Matrix Spike (A904126-MS1)		**Source: A191315-01**		Prepared: 04/01/2019 Analyzed: 04/03/2019 01:45						
Acetochlor	0.812	0.50	ug/L	1.000	ND	81.2	66.8-131			
Alachlor	0.816	0.50	ug/L	1.000	ND	81.6	68.2-133			
Atrazine	0.829	0.50	ug/L	1.000	ND	82.9	70-119			
Chlorpyrifos	0.846	0.50	ug/L	1.000	ND	84.6	64.9-131			
Cyanazine	0.878	0.20	ug/L	1.000	ND	87.8	62.6-155			
Desethylatrazine	0.841	0.50	ug/L	1.000	ND	84.1	63.2-129			
Deisopropylatrazine	0.613	0.50	ug/L	1.000	ND	61.3	43-119			
Dimethenamid	0.816	0.50	ug/L	1.000	ND	81.6	71-132			
EPTC	0.644	0.50	ug/L	1.000	ND	64.4	50-110			
Ethalfluralin	0.719	0.50	ug/L	1.000	ND	71.9	42.9-140			
Fonofos	0.772	0.50	ug/L	1.000	ND	77.2	52.1-124			
Metolachlor	0.846	0.50	ug/L	1.000	ND	84.6	50.8-155			
Metribuzin	0.812	0.50	ug/L	1.000	ND	81.2	66.7-131			
Pendimethalin	0.787	0.50	ug/L	1.000	ND	78.7	61.2-152			
Phorate	0.704	0.30	ug/L	1.000	ND	70.4	42-122			
Prometon	0.811	0.50	ug/L	1.000	ND	81.1	64.1-135			
Propachlor	0.774	0.50	ug/L	1.000	ND	77.4	61.4-137			
Propazine	0.891	0.50	ug/L	1.000	ND	89.1	68.2-126			
Simazine	0.789	0.50	ug/L	1.000	ND	78.9	68.4-122			
Terbufos	0.720	0.20	ug/L	1.000	ND	72.0	43.5-119			
Triallate	0.781	0.50	ug/L	1.000	ND	78.1	58.4-122			
Trifluralin	0.682	0.50	ug/L	1.000	ND	68.2	51-132			
Surrogate: Atrazine-d5	*0.409*		*ug/L*	*0.5000*		*81.8*	*56.9-123*			
Surrogate: Parathion-d10	*0.408*		*ug/L*	*0.5000*		*81.7*	*23.8-169*			
Surrogate: Triphenyl phosphate	*0.484*		*ug/L*	*0.5000*		*96.7*	*50.5-178*			
Matrix Spike Dup (A904126-MSD1)		**Source: A191315-01**		Prepared: 04/01/2019 Analyzed: 04/03/2019 02:13						
Acetochlor	0.774	0.50	ug/L	1.010	ND	76.6	66.8-131	4.77	20	
Alachlor	0.799	0.50	ug/L	1.010	ND	79.1	68.2-133	2.19	20	
Atrazine	0.788	0.50	ug/L	1.010	ND	78.0	70-119	5.04	20	
Chlorpyrifos	0.821	0.50	ug/L	1.010	ND	81.3	64.9-131	3.00	20	
Cyanazine	0.917	0.20	ug/L	1.010	ND	90.7	62.6-155	4.34	20	
Desethylatrazine	0.845	0.50	ug/L	1.010	ND	83.7	63.2-129	0.445	20	
Deisopropylatrazine	0.692	0.50	ug/L	1.010	ND	68.5	43-119	12.1	20	
Dimethenamid	0.800	0.50	ug/L	1.010	ND	79.2	71-132	1.95	20	
EPTC	0.692	0.50	ug/L	1.010	ND	68.5	50-110	7.24	20	
Ethalfluralin	0.831	0.50	ug/L	1.010	ND	82.3	42.9-140	14.4	20	
Fonofos	0.862	0.50	ug/L	1.010	ND	85.3	52.1-124	11.0	20	

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Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Base Neutral Pesticides by Gas Chromatography/Mass Spectrometry - Quality Control

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A904126 - EPA 3510C										
Matrix Spike Dup (A904126-MSD1)	**Source: A191315-01**			Prepared: 04/01/2019 Analyzed: 04/03/2019 02:13						
Metolachlor	0.840	0.50	ug/L	1.010	ND	83.2	50.8-155	0.688	20	
Metribuzin	0.814	0.50	ug/L	1.010	ND	80.6	66.7-131	0.368	20	
Pendimethalin	0.778	0.50	ug/L	1.010	ND	77.1	61.2-152	1.10	20	
Phorate	0.689	0.30	ug/L	1.010	ND	68.2	42-122	2.09	20	
Prometon	0.799	0.50	ug/L	1.010	ND	79.1	64.1-135	1.52	20	
Propachlor	0.926	0.50	ug/L	1.010	ND	91.7	61.4-137	17.9	20	
Propazine	0.882	0.50	ug/L	1.010	ND	87.4	68.2-126	1.02	20	
Simazine	0.832	0.50	ug/L	1.010	ND	82.4	68.4-122	5.30	20	
Terbufos	0.659	0.20	ug/L	1.010	ND	65.2	43.5-119	8.81	20	
Triallate	0.856	0.50	ug/L	1.010	ND	84.8	58.4-122	9.17	20	
Trifluralin	0.737	0.50	ug/L	1.010	ND	72.9	51-132	7.66	20	
Surrogate: Atrazine-d5	*0.425*		*ug/L*	*0.5051*		*84.1*	*56.9-123*			
Surrogate: Parathion-d10	*0.479*		*ug/L*	*0.5051*		*94.8*	*23.8-169*			
Surrogate: Triphenyl phosphate	*0.487*		*ug/L*	*0.5051*		*96.4*	*50.5-178*			

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Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Acid Herbicides by Gas Chromatography/Mass Spectrometry - Quality Control

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A904136 - EPA 3510C										
Blank (A904136-BLK1)				Prepared: 04/02/2019 Analyzed: 04/03/2019 17:57						
2,4-D	ND	0.50	ug/L							
2,4-DB	ND	0.50	ug/L							
2,4,5-T	ND	0.50	ug/L							
2,4,5-TP (Silvex)	ND	0.50	ug/L							
Bentazon	ND	0.50	ug/L							
Dicamba	ND	0.50	ug/L							
MCPA	ND	0.30	ug/L							
Picloram	ND	0.50	ug/L							
Triclopyr	ND	0.50	ug/L							
Surrogate: 2,4-D-d5	*1.62*		*ug/L*	*2.006*		*80.6*	*44.2-121*			
LCS (A904136-BS1)				Prepared: 04/02/2019 Analyzed: 04/03/2019 17:21						
2,4-D	2.15	0.50	ug/L	2.000		107	64.6-148			
2,4-DB	2.13	0.50	ug/L	2.000		107	66.7-143			
2,4,5-T	2.12	0.50	ug/L	2.000		106	63.4-133			
2,4,5-TP (Silvex)	2.08	0.50	ug/L	2.000		104	63-145			
Bentazon	1.08	0.50	ug/L	1.000		108	52.5-139			
Dicamba	1.89	0.50	ug/L	2.000		94.4	55.4-143			
MCPA	2.11	0.30	ug/L	2.000		105	33.5-143			
Picloram	0.936	0.50	ug/L	1.000		93.6	47.9-113			
Triclopyr	2.07	0.50	ug/L	2.000		103	65.1-141			
Surrogate: 2,4-D-d5	*1.60*		*ug/L*	*2.006*		*79.6*	*44.2-121*			
Matrix Spike (A904136-MS1)		**Source: A191315-01**		Prepared: 04/02/2019 Analyzed: 04/03/2019 21:31						
2,4-D	2.20	0.50	ug/L	2.105	ND	104	44.6-158			
2,4-DB	2.13	0.50	ug/L	2.105	ND	101	64.7-136			
2,4,5-T	2.19	0.50	ug/L	2.105	ND	104	54.1-129			
2,4,5-TP (Silvex)	2.13	0.50	ug/L	2.105	ND	101	55.3-147			
Bentazon	1.09	0.50	ug/L	1.053	ND	103	35.5-160			
Dicamba	2.00	0.50	ug/L	2.105	ND	94.8	45.2-150			
MCPA	2.14	0.30	ug/L	2.105	ND	101	33.6-149			
Picloram	0.977	0.50	ug/L	1.053	ND	92.8	32.6-139			
Triclopyr	2.17	0.50	ug/L	2.105	ND	103	56.8-143			
Surrogate: 2,4-D-d5	*1.81*		*ug/L*	*2.112*		*85.7*	*44.2-121*			
Matrix Spike Dup (A904136-MSD1)		**Source: A191315-01**		Prepared: 04/02/2019 Analyzed: 04/03/2019 22:06						
2,4-D	2.72	0.50	ug/L	2.151	ND	126	44.6-158	21.2	20	X
2,4-DB	2.34	0.50	ug/L	2.151	ND	109	64.7-136	9.22	20	
2,4,5-T	2.48	0.50	ug/L	2.151	ND	116	54.1-129	12.6	20	
2,4,5-TP (Silvex)	2.50	0.50	ug/L	2.151	ND	116	55.3-147	15.9	20	
Bentazon	1.31	0.50	ug/L	1.075	ND	122	35.5-160	18.9	20	
Dicamba	2.21	0.50	ug/L	2.151	ND	103	45.2-150	10.3	20	
MCPA	2.45	0.30	ug/L	2.151	ND	114	33.6-149	13.8	20	
Picloram	1.09	0.50	ug/L	1.075	ND	102	32.6-139	11.4	20	
Triclopyr	2.49	0.50	ug/L	2.151	ND	116	56.8-143	14.0	20	
Surrogate: 2,4-D-d5	*1.97*		*ug/L*	*2.157*		*91.4*	*44.2-121*			

Pace Analytical®
ECCS Mobile Lab Services

2525 Advance Road
Madison, WI 53718
608.221.8700 Phone
608.221.4889 Fax

Pace Analytical	Project: MPCA Freeway LF Water - MN
1700 Elm Street, Suite 200	Project Number: 10468315
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Notes and Definitions

X	Precision for the matrix spike duplicate, laboratory control sample duplicate or lab duplicate was outside of control limits.
S	Surrogate recovery was outside of laboratory control limits due to an apparent matrix effect.
ND	Analyte NOT DETECTED at or above the reporting limit or limit of detection (if listed).
NR	Not Reported
dry	Sample results reported on a dry weight basis. If the word 'dry' does not appear after the units, results are reported on an as-is basis.
RPD	Relative Percent Difference

Chain of Custody

A191316

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☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN
Cert. Needed: ☐ Yes ☐ No

Workorder: 10468315 **Workorder Name:** 19-01567 MPCA Freeway LF 19 WT **Owner Received Date:** 3/26/2019 **Results Requested By:** 4/17/2019

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6436	Pace Analytical Madison 2525 Advance Road Madison, WI 53718 Phone (608)221-8700

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved AG1U	MDA List 1	MDA List 2	LAB USE ONLY
1	Field Blank 1	PS	3/26/2019 10:10	10468315001	Water	4	X	X	01
2	603281	PS	3/26/2019 11:30	10468315002	Water	4	X	X	02
3	603287	PS	3/26/2019 13:50	10468315003	Water	4	X	X	03
4	603288	PS	3/26/2019 15:30	10468315004	Water	4	X	X	04
5	603289	PS	3/26/2019 16:30	10468315005	Water	4	X	X	05

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature]	3/26/19 1200	[signature]	3/28/19
2				1035
3				

Comments: Need MPCA Equis EDD and Barr Equis 5 EDD

Cooler Temperature on Receipt 1.4° °C | **Custody Seal** (Y) or N | **Received on Ice** (Y) or N | **Samples Intact** (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.*

1601422774 exp 7/13/19

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

April 17, 2019

Mr. Brad Jacobson
Pace Analytical Services, LLC..
1700 Elm Street
Suite 200
Minneapolis, MN 55414

RE: Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468460

Dear Mr. Jacobson:
Enclosed are the analytical results for sample(s) received by the laboratory on March 27, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Some analyses have been subcontracted outside of the Pace Network. The subcontracted laboratory report has been attached.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jennifer Anderson
jennifer.anderson@pacelabs.com
(612)607-6436
Project Manager

Enclosures

cc: Tom Halverson, Pace Analytical Field Services
Chris Pelosi, Pace Analytical Services - Field Services

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Minneapolis, MN 55414
(612)607-1700

CERTIFICATIONS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468460

Minnesota Certification IDs

1700 Elm Street SE, Minneapolis, MN 55414-2485
A2LA Certification #: 2926.01
Alabama Certification #: 40770
Alaska Contaminated Sites Certification #: 17-009
Alaska DW Certification #: MN00064
Arizona Certification #: AZ0014
Arkansas DW Certification #: MN00064
Arkansas WW Certification #: 88-0680
California Certification #: 2929
CNMI Saipan Certification #: MP0003
Colorado Certification #: MN00064
Connecticut Certification #: PH-0256
EPA Region 8+Wyoming DW Certification #: via MN 027-053-137
Florida Certification #: E87605
Georgia Certification #: 959
Guam EPA Certification #: MN00064
Hawaii Certification #: MN00064
Idaho Certification #: MN00064
Illinois Certification #: 200011
Indiana Certification #: C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky DW Certification #: 90062
Kentucky WW Certification #: 90062
Louisiana DEQ Certification #: 03086
Louisiana DW Certification #: MN00064
Maine Certification #: MN00064
Maryland Certification #: 322
Massachusetts Certification #: M-MN064
Michigan Certification #: 9909
Minnesota Certification #: 027-053-137
Minnesota Dept of Ag Certifcation #: via MN 027-053-137
Minnesota Petrofund Certification #: 1240
Mississippi Certification #: MN00064
Missouri Certification #: 10100
Montana Certification #: CERT0092
Nebraska Certification #: NE-OS-18-06
Nevada Certification #: MN00064
New Hampshire Certification #: 2081
New Jersey Certification #: MN002
New York Certification #: 11647
North Carolina DW Certification #: 27700
North Carolina WW Certification #: 530
North Dakota Certification #: R-036
Ohio DW Certification #: 41244
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Primary Certification #: MN300001
Oregon Secondary Certification #: MN200001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification #: MN00064
South Carolina Certification #:74003001
Tennessee Certification #: TN02818
Texas Certification #: T104704192
Utah Certification #: MN00064
Vermont Certification #: VT-027053137
Virginia Certification #: 460163
Washington Certification #: C486
West Virginia DEP Certification #: 382
West Virginia DW Certification #: 9952 C
Wisconsin Certification #: 999407970
Wyoming UST Certification #: via A2LA 2926.01

Virginia Minnesota Certification ID's

315 Chestnut Street, Virginia, MN 55792
Alaska Certification UST-107
Montana Certificate #CERT0103
Minnesota Dept of Health Certification #: 027-137-445
North Dakota Certification: # R-203
Wisconsin DNR Certification # : 998027470
WA Department of Ecology Lab ID# C1007

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Florida: Cert E871149 SEKS WET
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221

REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468460

Pennsylvania Certification IDs

KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

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SAMPLE SUMMARY

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468460

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10468460001	**813766**	Water	03/27/19 10:40	03/27/19 16:17
10468460002	**813741**	Water	03/27/19 11:40	03/27/19 16:17
10468460003	**M-1**	Water	03/27/19 11:42	03/27/19 16:17
10468460004	**813768**	Water	03/27/19 12:40	03/27/19 16:17
10468460005	**813767**	Water	03/27/19 13:40	03/27/19 16:17
10468460006	**813765**	Water	03/27/19 15:40	03/27/19 16:17

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SAMPLE ANALYTE COUNT

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468460

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10468460001	**813766**	EPA 8082A	RAG	11	PASI-M
		EPA 200.7	IP	9	PASI-M
		EPA 200.8	RJS	12	PASI-M
		EPA 8270D	STB	38	PASI-M
			CLJ	16	PASI-V
		EPA 900.0	NEG	2	PASI-PA
		EPA 300.0	KEO	1	PASI-M
		SM 3500-Cr B Modified	JFP	1	PASI-M
		EPA 350.1	CLJ	1	PASI-V
		EPA 350.1 rev. 2 (1993)	DMB	1	PASI-V
		SM 4500-CN-E	DCL	1	PASI-M
10468460002	**813741**	EPA 8082A	RAG	11	PASI-M
		EPA 200.7	IP	9	PASI-M
		EPA 200.8	RJS	12	PASI-M
		EPA 8270D	STB	38	PASI-M
			CLJ	16	PASI-V
		EPA 900.0	NEG	2	PASI-PA
		EPA 300.0	KEO	1	PASI-M
		SM 3500-Cr B Modified	JFP	1	PASI-M
		EPA 350.1	CLJ	1	PASI-V
		EPA 350.1 rev. 2 (1993)	DMB	1	PASI-V
		SM 4500-CN-E	DCL	1	PASI-M
10468460003	**M-1**	EPA 8082A	RAG	11	PASI-M
		EPA 200.7	IP	9	PASI-M
		EPA 200.8	RJS	12	PASI-M
		EPA 8270D	STB	38	PASI-M
		EPA 900.0	NEG	2	PASI-PA
		EPA 300.0	KEO	1	PASI-M
		SM 3500-Cr B Modified	JFP	1	PASI-M
		EPA 350.1 rev. 2 (1993)	DMB	1	PASI-V
		SM 4500-CN-E	DCL	1	PASI-M
10468460004	**813768**	EPA 8082A	RAG	11	PASI-M
		EPA 200.7	IP	9	PASI-M
		EPA 200.8	RJS	12	PASI-M
		EPA 8270D	STB	38	PASI-M
			CLJ	16	PASI-V
		EPA 900.0	NEG	2	PASI-PA

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SAMPLE ANALYTE COUNT

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468460

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 300.0	KEO	1	PASI-M
		SM 3500-Cr B Modified	JFP	1	PASI-M
		EPA 350.1	CLJ	1	PASI-V
		EPA 350.1 rev. 2 (1993)	DMB	1	PASI-V
		SM 4500-CN-E	DCL	1	PASI-M
10468460005	**813767**	EPA 8082A	RAG	11	PASI-M
		EPA 200.7	IP	9	PASI-M
		EPA 200.8	RJS	12	PASI-M
		EPA 8270D	STB	38	PASI-M
			CLJ	16	PASI-V
		EPA 900.0	NEG	2	PASI-PA
		EPA 300.0	KEO	1	PASI-M
		SM 3500-Cr B Modified	JFP	1	PASI-M
		EPA 350.1	CLJ	1	PASI-V
		EPA 350.1 rev. 2 (1993)	DMB	1	PASI-V
		SM 4500-CN-E	DCL	1	PASI-M
10468460006	**813765**	EPA 8082A	RAG	11	PASI-M
		EPA 200.7	IP	9	PASI-M
		EPA 200.8	RJS	12	PASI-M
		EPA 8270D	STB	38	PASI-M
			CLJ	16	PASI-V
		EPA 900.0	NEG	2	PASI-PA
		EPA 300.0	KEO	1	PASI-M
		SM 3500-Cr B Modified	JFP	1	PASI-M
		EPA 350.1	CLJ	1	PASI-V
		EPA 350.1 rev. 2 (1993)	DMB	1	PASI-V
		SM 4500-CN-E	DCL	1	PASI-M

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(612)607-1700

ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468460

Sample: 813766 **Lab ID: 10468460001** Collected: 03/27/19 10:40 Received: 03/27/19 16:17 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA Mod. 3510C							
PCB-1016 (Aroclor 1016)	ND	ug/L	0.098	1	03/28/19 16:19	04/01/19 13:02	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/L	0.098	1	03/28/19 16:19	04/01/19 13:02	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/L	0.098	1	03/28/19 16:19	04/01/19 13:02	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/L	0.098	1	03/28/19 16:19	04/01/19 13:02	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/L	0.098	1	03/28/19 16:19	04/01/19 13:02	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/L	0.098	1	03/28/19 16:19	04/01/19 13:02	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/L	0.098	1	03/28/19 16:19	04/01/19 13:02	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/L	0.098	1	03/28/19 16:19	04/01/19 13:02	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/L	0.098	1	03/28/19 16:19	04/01/19 13:02	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	31	%.	30-125	1	03/28/19 16:19	04/01/19 13:02	877-09-8	
Decachlorobiphenyl (S)	32	%.	30-125	1	03/28/19 16:19	04/01/19 13:02	2051-24-3	
200.7 MET ICP, Dissolved	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Aluminum, Dissolved	ND	ug/L	200	1	03/28/19 05:53	04/01/19 12:40	7429-90-5	
Barium, Dissolved	**662**	ug/L	10.0	1	03/28/19 05:53	04/01/19 12:40	7440-39-3	
Copper, Dissolved	ND	ug/L	10.0	1	03/28/19 05:53	04/01/19 12:40	7440-50-8	
Manganese, Dissolved	**539**	ug/L	5.0	1	03/28/19 05:53	04/01/19 12:40	7439-96-5	
Nickel, Dissolved	ND	ug/L	20.0	1	03/28/19 05:53	04/01/19 12:40	7440-02-0	
Silver, Dissolved	ND	ug/L	10.0	1	03/28/19 05:53	04/01/19 12:40	7440-22-4	
Tin, Dissolved	ND	ug/L	75.0	1	03/28/19 05:53	04/01/19 12:40	7440-31-5	
Total Hardness by 2340B, Dissolved	**782000**	ug/L	3300	1	03/28/19 05:53	04/01/19 12:40		
Zinc, Dissolved	ND	ug/L	20.0	1	03/28/19 05:53	04/01/19 12:40	7440-66-6	
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Dissolved	ND	ug/L	0.50	1	03/28/19 05:53	04/15/19 19:14	7440-36-0	
Arsenic, Dissolved	**9.6**	ug/L	0.50	1	03/28/19 05:53	04/15/19 19:14	7440-38-2	
Beryllium, Dissolved	ND	ug/L	0.20	1	03/28/19 05:53	04/15/19 19:14	7440-41-7	
Boron, Dissolved	**1200**	ug/L	100	10	03/28/19 05:53	04/16/19 13:36	7440-42-8	
Cadmium, Dissolved	ND	ug/L	0.080	1	03/28/19 05:53	04/15/19 19:14	7440-43-9	
Chromium, Dissolved	**0.61**	ug/L	0.50	1	03/28/19 05:53	04/15/19 19:14	7440-47-3	
Cobalt, Dissolved	**4.5**	ug/L	0.50	1	03/28/19 05:53	04/15/19 19:14	7440-48-4	
Lead, Dissolved	**0.15**	ug/L	0.10	1	03/28/19 05:53	04/15/19 19:14	7439-92-1	
Selenium, Dissolved	ND	ug/L	0.50	1	03/28/19 05:53	04/15/19 19:14	7782-49-2	
Thallium, Dissolved	ND	ug/L	0.10	1	03/28/19 05:53	04/15/19 19:14	7440-28-0	
Uranium-238, Dissolved	**1.2**	ug/L	0.50	1	03/28/19 05:53	04/15/19 19:14	7440-61-1	
Vanadium, Dissolved	**2.1**	ug/L	1.0	1	03/28/19 05:53	04/15/19 19:14	7440-62-2	
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
Acenaphthene	ND	ug/L	9.9	1	03/28/19 16:02	04/02/19 14:43	83-32-9	
Anthracene	ND	ug/L	9.9	1	03/28/19 16:02	04/02/19 14:43	120-12-7	
Benzo(a)pyrene	ND	ug/L	9.9	1	03/28/19 16:02	04/02/19 14:43	50-32-8	
Benzoic acid	ND	ug/L	49.3	1	03/28/19 16:02	04/02/19 14:43	65-85-0	
4-Bromophenylphenyl ether	ND	ug/L	9.9	1	03/28/19 16:02	04/02/19 14:43	101-55-3	
Butylbenzylphthalate	ND	ug/L	9.9	1	03/28/19 16:02	04/02/19 14:43	85-68-7	
bis(2-Chloroethyl) ether	ND	ug/L	9.9	1	03/28/19 16:02	04/02/19 14:43	111-44-4	

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468460

Sample: 813766 **Lab ID: 10468460001** Collected: 03/27/19 10:40 Received: 03/27/19 16:17 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
2-Chlorophenol	ND	ug/L	9.9	1	03/28/19 16:02	04/02/19 14:43	95-57-8	
3,3'-Dichlorobenzidine	ND	ug/L	49.3	1	03/28/19 16:02	04/02/19 14:43	91-94-1	
2,4-Dichlorophenol	ND	ug/L	9.9	1	03/28/19 16:02	04/02/19 14:43	120-83-2	
Diethylphthalate	ND	ug/L	9.9	1	03/28/19 16:02	04/02/19 14:43	84-66-2	
2,4-Dimethylphenol	ND	ug/L	9.9	1	03/28/19 16:02	04/02/19 14:43	105-67-9	
Dimethylphthalate	ND	ug/L	9.9	1	03/28/19 16:02	04/02/19 14:43	131-11-3	
Di-n-butylphthalate	ND	ug/L	9.9	1	03/28/19 16:02	04/02/19 14:43	84-74-2	
2,4-Dinitrophenol	ND	ug/L	9.9	1	03/28/19 16:02	04/02/19 14:43	51-28-5	
Di-n-octylphthalate	ND	ug/L	9.9	1	03/28/19 16:02	04/02/19 14:43	117-84-0	
bis(2-Ethylhexyl)phthalate	ND	ug/L	9.9	1	03/28/19 16:02	04/02/19 14:43	117-81-7	
Fluoranthene	ND	ug/L	9.9	1	03/28/19 16:02	04/02/19 14:43	206-44-0	
Fluorene	ND	ug/L	9.9	1	03/28/19 16:02	04/02/19 14:43	86-73-7	
Hexachlorobenzene	ND	ug/L	9.9	1	03/28/19 16:02	04/02/19 14:43	118-74-1	
Hexachlorocyclopentadiene	ND	ug/L	49.3	1	03/28/19 16:02	04/02/19 14:43	77-47-4	
Hexachloroethane	ND	ug/L	9.9	1	03/28/19 16:02	04/02/19 14:43	67-72-1	
Isophorone	ND	ug/L	9.9	1	03/28/19 16:02	04/02/19 14:43	78-59-1	
2-Methylnaphthalene	ND	ug/L	9.9	1	03/28/19 16:02	04/02/19 14:43	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/L	9.9	1	03/28/19 16:02	04/02/19 14:43	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/L	19.7	1	03/28/19 16:02	04/02/19 14:43		
N-Nitrosodimethylamine	ND	ug/L	9.9	1	03/28/19 16:02	04/02/19 14:43	62-75-9	
Pentachlorophenol	ND	ug/L	19.7	1	03/28/19 16:02	04/02/19 14:43	87-86-5	
Phenanthrene	ND	ug/L	9.9	1	03/28/19 16:02	04/02/19 14:43	85-01-8	
Phenol	ND	ug/L	9.9	1	03/28/19 16:02	04/02/19 14:43	108-95-2	
Pyrene	ND	ug/L	9.9	1	03/28/19 16:02	04/02/19 14:43	129-00-0	
2,4,6-Trichlorophenol	ND	ug/L	9.9	1	03/28/19 16:02	04/02/19 14:43	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	75	%.	55-125	1	03/28/19 16:02	04/02/19 14:43	4165-60-0	
2-Fluorobiphenyl (S)	78	%.	52-125	1	03/28/19 16:02	04/02/19 14:43	321-60-8	
p-Terphenyl-d14 (S)	78	%.	57-125	1	03/28/19 16:02	04/02/19 14:43	1718-51-0	
Phenol-d6 (S)	76	%.	30-125	1	03/28/19 16:02	04/02/19 14:43	13127-88-3	
2-Fluorophenol (S)	70	%.	30-125	1	03/28/19 16:02	04/02/19 14:43	367-12-4	
2,4,6-Tribromophenol (S)	96	%.	52-125	1	03/28/19 16:02	04/02/19 14:43	118-79-6	
Field Data	Analytical Method:							
Collected Date	**03/27/19**			1		03/27/19 10:40		
Collected Time	**1040**			1		03/27/19 10:40		
Field Specific Conductance	**1950**	umhos/cm		1		03/27/19 10:40		
Oxygen, Dissolved	**1.4**	mg/L		1		03/27/19 10:40	7782-44-7	
REDOX	**-54**	mV		1		03/27/19 10:40		
Turbidity	**91.0**	NTU		1		03/27/19 10:40		
Apparent Color	**slightly cloudy**			1		03/27/19 10:40		
Odor	**Yes**			1		03/27/19 10:40		
Well Locked	**Yes**			1		03/27/19 10:40		
Purge Method	**Disposable bailer**			1		03/27/19 10:40		
Total Well Depth	**39.24**	feet		1		03/27/19 10:40		

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468460

Sample: 813766 **Lab ID: 10468460001** Collected: 03/27/19 10:40 Received: 03/27/19 16:17 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:							
Depth of Water	**31.45**			1		03/27/19 10:40		
Well Volume Purged	**3.9**			1		03/27/19 10:40		
Purge Rate	**NA**			1		03/27/19 10:40		
Field pH	**6.4**	Std. Units		1		03/27/19 10:40		
Field Temperature	**11.5**	deg C		1		03/27/19 10:40		
300.0 IC Anions	Analytical Method: EPA 300.0							
Chloride	**74.8**	mg/L	1.2	1		03/28/19 19:05	16887-00-6	M1
Chromium, Hexavalent	Analytical Method: SM 3500-Cr B Modified							
Chromium, Hexavalent	ND	mg/L	0.010	1		03/28/19 11:10		FS,H5, M1
350.1 Ammonia, Unionized	Analytical Method: EPA 350.1							
Nitrogen, Ammonia (Unionized)	ND	mg/L	0.010	1		04/17/19 14:41		
350.1 Ammonia, Distilled	Analytical Method: EPA 350.1 rev. 2 (1993) Preparation Method: EPA 350.1 rev. 2 (1993)							
Nitrogen, Ammonia	**12.7**	mg/L	0.22	2	04/02/19 10:00	04/03/19 10:41	7664-41-7	
SM4500CN-E Cyanide	Analytical Method: SM 4500-CN-E Preparation Method: SM 4500-CN-E							
Cyanide	ND	ug/L	20.0	1	04/08/19 09:52	04/08/19 13:30	57-12-5	

Sample: 813741 **Lab ID: 10468460002** Collected: 03/27/19 11:40 Received: 03/27/19 16:17 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA Mod. 3510C							
PCB-1016 (Aroclor 1016)	ND	ug/L	0.098	1	03/28/19 16:19	04/01/19 13:17	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/L	0.098	1	03/28/19 16:19	04/01/19 13:17	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/L	0.098	1	03/28/19 16:19	04/01/19 13:17	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/L	0.098	1	03/28/19 16:19	04/01/19 13:17	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/L	0.098	1	03/28/19 16:19	04/01/19 13:17	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/L	0.098	1	03/28/19 16:19	04/01/19 13:17	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/L	0.098	1	03/28/19 16:19	04/01/19 13:17	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/L	0.098	1	03/28/19 16:19	04/01/19 13:17	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/L	0.098	1	03/28/19 16:19	04/01/19 13:17	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	70	%.	30-125	1	03/28/19 16:19	04/01/19 13:17	877-09-8	
Decachlorobiphenyl (S)	50	%.	30-125	1	03/28/19 16:19	04/01/19 13:17	2051-24-3	
200.7 MET ICP, Dissolved	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Aluminum, Dissolved	ND	ug/L	200	1	03/28/19 05:53	04/01/19 12:45	7429-90-5	
Barium, Dissolved	**2620**	ug/L	10.0	1	03/28/19 05:53	04/01/19 12:45	7440-39-3	
Copper, Dissolved	ND	ug/L	10.0	1	03/28/19 05:53	04/01/19 12:45	7440-50-8	
Manganese, Dissolved	**91.3**	ug/L	5.0	1	03/28/19 05:53	04/01/19 12:45	7439-96-5	

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468460

Sample: 813741 **Lab ID: 10468460002** Collected: 03/27/19 11:40 Received: 03/27/19 16:17 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 MET ICP, Dissolved	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Nickel, Dissolved	**26.6**	ug/L	20.0	1	03/28/19 05:53	04/01/19 12:45	7440-02-0	
Silver, Dissolved	ND	ug/L	10.0	1	03/28/19 05:53	04/01/19 12:45	7440-22-4	
Tin, Dissolved	ND	ug/L	75.0	1	03/28/19 05:53	04/01/19 12:45	7440-31-5	
Total Hardness by 2340B, Dissolved	**726000**	ug/L	3300	1	03/28/19 05:53	04/01/19 12:45		
Zinc, Dissolved	ND	ug/L	20.0	1	03/28/19 05:53	04/01/19 12:45	7440-66-6	
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Dissolved	ND	ug/L	0.50	1	03/28/19 05:53	04/15/19 19:19	7440-36-0	
Arsenic, Dissolved	**16.1**	ug/L	0.50	1	03/28/19 05:53	04/15/19 19:19	7440-38-2	
Beryllium, Dissolved	ND	ug/L	0.20	1	03/28/19 05:53	04/15/19 19:19	7440-41-7	
Boron, Dissolved	**5460**	ug/L	1000	100	03/28/19 05:53	04/16/19 14:00	7440-42-8	M1,P6
Cadmium, Dissolved	ND	ug/L	0.080	1	03/28/19 05:53	04/15/19 19:19	7440-43-9	
Chromium, Dissolved	**0.54**	ug/L	0.50	1	03/28/19 05:53	04/15/19 19:19	7440-47-3	
Cobalt, Dissolved	**8.6**	ug/L	0.50	1	03/28/19 05:53	04/15/19 19:19	7440-48-4	
Lead, Dissolved	ND	ug/L	0.10	1	03/28/19 05:53	04/15/19 19:19	7439-92-1	
Selenium, Dissolved	ND	ug/L	0.50	1	03/28/19 05:53	04/15/19 19:19	7782-49-2	
Thallium, Dissolved	**0.31**	ug/L	0.10	1	03/28/19 05:53	04/15/19 19:19	7440-28-0	
Uranium-238, Dissolved	ND	ug/L	0.50	1	03/28/19 05:53	04/15/19 19:19	7440-61-1	
Vanadium, Dissolved	ND	ug/L	1.0	1	03/28/19 05:53	04/15/19 19:19	7440-62-2	
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
Acenaphthene	ND	ug/L	10.0	1	03/28/19 16:02	04/02/19 15:08	83-32-9	
Anthracene	ND	ug/L	10.0	1	03/28/19 16:02	04/02/19 15:08	120-12-7	
Benzo(a)pyrene	ND	ug/L	10.0	1	03/28/19 16:02	04/02/19 15:08	50-32-8	
Benzoic acid	ND	ug/L	50.0	1	03/28/19 16:02	04/02/19 15:08	65-85-0	
4-Bromophenylphenyl ether	ND	ug/L	10.0	1	03/28/19 16:02	04/02/19 15:08	101-55-3	
Butylbenzylphthalate	ND	ug/L	10.0	1	03/28/19 16:02	04/02/19 15:08	85-68-7	
bis(2-Chloroethyl) ether	ND	ug/L	10.0	1	03/28/19 16:02	04/02/19 15:08	111-44-4	
2-Chlorophenol	ND	ug/L	10.0	1	03/28/19 16:02	04/02/19 15:08	95-57-8	
3,3'-Dichlorobenzidine	ND	ug/L	50.0	1	03/28/19 16:02	04/02/19 15:08	91-94-1	
2,4-Dichlorophenol	ND	ug/L	10.0	1	03/28/19 16:02	04/02/19 15:08	120-83-2	
Diethylphthalate	ND	ug/L	10.0	1	03/28/19 16:02	04/02/19 15:08	84-66-2	
2,4-Dimethylphenol	ND	ug/L	10.0	1	03/28/19 16:02	04/02/19 15:08	105-67-9	
Dimethylphthalate	ND	ug/L	10.0	1	03/28/19 16:02	04/02/19 15:08	131-11-3	
Di-n-butylphthalate	ND	ug/L	10.0	1	03/28/19 16:02	04/02/19 15:08	84-74-2	
2,4-Dinitrophenol	ND	ug/L	10.0	1	03/28/19 16:02	04/02/19 15:08	51-28-5	
Di-n-octylphthalate	ND	ug/L	10.0	1	03/28/19 16:02	04/02/19 15:08	117-84-0	
bis(2-Ethylhexyl)phthalate	ND	ug/L	10.0	1	03/28/19 16:02	04/02/19 15:08	117-81-7	
Fluoranthene	ND	ug/L	10.0	1	03/28/19 16:02	04/02/19 15:08	206-44-0	
Fluorene	ND	ug/L	10.0	1	03/28/19 16:02	04/02/19 15:08	86-73-7	
Hexachlorobenzene	ND	ug/L	10.0	1	03/28/19 16:02	04/02/19 15:08	118-74-1	
Hexachlorocyclopentadiene	ND	ug/L	50.0	1	03/28/19 16:02	04/02/19 15:08	77-47-4	
Hexachloroethane	ND	ug/L	10.0	1	03/28/19 16:02	04/02/19 15:08	67-72-1	
Isophorone	ND	ug/L	10.0	1	03/28/19 16:02	04/02/19 15:08	78-59-1	
2-Methylnaphthalene	ND	ug/L	10.0	1	03/28/19 16:02	04/02/19 15:08	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/L	10.0	1	03/28/19 16:02	04/02/19 15:08	95-48-7	

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468460

Sample: 813741 **Lab ID: 10468460002** Collected: 03/27/19 11:40 Received: 03/27/19 16:17 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
3&4-Methylphenol(m&p Cresol)	ND	ug/L	20.0	1	03/28/19 16:02	04/02/19 15:08		
N-Nitrosodimethylamine	ND	ug/L	10.0	1	03/28/19 16:02	04/02/19 15:08	62-75-9	
Pentachlorophenol	ND	ug/L	20.0	1	03/28/19 16:02	04/02/19 15:08	87-86-5	
Phenanthrene	ND	ug/L	10.0	1	03/28/19 16:02	04/02/19 15:08	85-01-8	
Phenol	ND	ug/L	10.0	1	03/28/19 16:02	04/02/19 15:08	108-95-2	
Pyrene	ND	ug/L	10.0	1	03/28/19 16:02	04/02/19 15:08	129-00-0	
2,4,6-Trichlorophenol	ND	ug/L	10.0	1	03/28/19 16:02	04/02/19 15:08	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	77	%.	55-125	1	03/28/19 16:02	04/02/19 15:08	4165-60-0	
2-Fluorobiphenyl (S)	80	%.	52-125	1	03/28/19 16:02	04/02/19 15:08	321-60-8	
p-Terphenyl-d14 (S)	86	%.	57-125	1	03/28/19 16:02	04/02/19 15:08	1718-51-0	
Phenol-d6 (S)	76	%.	30-125	1	03/28/19 16:02	04/02/19 15:08	13127-88-3	
2-Fluorophenol (S)	70	%.	30-125	1	03/28/19 16:02	04/02/19 15:08	367-12-4	
2,4,6-Tribromophenol (S)	99	%.	52-125	1	03/28/19 16:02	04/02/19 15:08	118-79-6	
Field Data	Analytical Method:							
Collected Date	**03/27/19**			1		03/27/19 11:40		
Collected Time	**1140**			1		03/27/19 11:40		
Field Specific Conductance	**1950**	umhos/cm		1		03/27/19 11:40		
Oxygen, Dissolved	**0.5**	mg/L		1		03/27/19 11:40	7782-44-7	
REDOX	**-43**	mV		1		03/27/19 11:40		
Turbidity	**31.8**	NTU		1		03/27/19 11:40		
Apparent Color	**clear**			1		03/27/19 11:40		
Odor	**No**			1		03/27/19 11:40		
Well Locked	**Yes**			1		03/27/19 11:40		
Purge Method	**Whale pump**			1		03/27/19 11:40		
Total Well Depth	**47.45**	feet		1		03/27/19 11:40		
Depth of Water	**37.43**			1		03/27/19 11:40		
Well Volume Purged	**6.0**			1		03/27/19 11:40		
Purge Rate	**0.5**			1		03/27/19 11:40		
Field pH	**6.5**	Std. Units		1		03/27/19 11:40		
Field Temperature	**11.5**	deg C		1		03/27/19 11:40		
300.0 IC Anions	Analytical Method: EPA 300.0							
Chloride	**134**	mg/L	6.0	5		03/29/19 04:38	16887-00-6	M1
Chromium, Hexavalent	Analytical Method: SM 3500-Cr B Modified							
Chromium, Hexavalent	ND	mg/L	0.010	1		03/28/19 11:10		FS
350.1 Ammonia, Unionized	Analytical Method: EPA 350.1							
Nitrogen, Ammonia (Unionized)	ND	mg/L	0.010	1		04/17/19 14:43		
350.1 Ammonia, Distilled	Analytical Method: EPA 350.1 rev. 2 (1993) Preparation Method: EPA 350.1 rev. 2 (1993)							
Nitrogen, Ammonia	**9.4**	mg/L	0.11	1	04/02/19 10:00	04/03/19 08:42	7664-41-7	

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468460

Sample: 813741 **Lab ID: 10468460002** Collected: 03/27/19 11:40 Received: 03/27/19 16:17 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
SM4500CN-E Cyanide	Analytical Method: SM 4500-CN-E Preparation Method: SM 4500-CN-E							
Cyanide	ND	ug/L	20.0	1	04/08/19 09:52	04/08/19 13:30	57-12-5	

Sample: M-1 **Lab ID: 10468460003** Collected: 03/27/19 11:42 Received: 03/27/19 16:17 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA Mod. 3510C							
PCB-1016 (Aroclor 1016)	ND	ug/L	0.097	1	03/28/19 16:19	04/01/19 13:32	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/L	0.097	1	03/28/19 16:19	04/01/19 13:32	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/L	0.097	1	03/28/19 16:19	04/01/19 13:32	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/L	0.097	1	03/28/19 16:19	04/01/19 13:32	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/L	0.097	1	03/28/19 16:19	04/01/19 13:32	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/L	0.097	1	03/28/19 16:19	04/01/19 13:32	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/L	0.097	1	03/28/19 16:19	04/01/19 13:32	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/L	0.097	1	03/28/19 16:19	04/01/19 13:32	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/L	0.097	1	03/28/19 16:19	04/01/19 13:32	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	63	%.	30-125	1	03/28/19 16:19	04/01/19 13:32	877-09-8	
Decachlorobiphenyl (S)	43	%.	30-125	1	03/28/19 16:19	04/01/19 13:32	2051-24-3	
200.7 MET ICP, Dissolved	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Aluminum, Dissolved	ND	ug/L	200	1	03/28/19 05:53	04/01/19 12:46	7429-90-5	
Barium, Dissolved	**2610**	ug/L	10.0	1	03/28/19 05:53	04/01/19 12:46	7440-39-3	
Copper, Dissolved	ND	ug/L	10.0	1	03/28/19 05:53	04/01/19 12:46	7440-50-8	
Manganese, Dissolved	**89.9**	ug/L	5.0	1	03/28/19 05:53	04/01/19 12:46	7439-96-5	
Nickel, Dissolved	**27.1**	ug/L	20.0	1	03/28/19 05:53	04/01/19 12:46	7440-02-0	
Silver, Dissolved	ND	ug/L	10.0	1	03/28/19 05:53	04/01/19 12:46	7440-22-4	
Tin, Dissolved	ND	ug/L	75.0	1	03/28/19 05:53	04/01/19 12:46	7440-31-5	
Total Hardness by 2340B, Dissolved	**732000**	ug/L	3300	1	03/28/19 05:53	04/01/19 12:46		
Zinc, Dissolved	ND	ug/L	20.0	1	03/28/19 05:53	04/01/19 12:46	7440-66-6	
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Dissolved	ND	ug/L	0.50	1	03/28/19 05:53	04/15/19 20:00	7440-36-0	
Arsenic, Dissolved	**15.7**	ug/L	0.50	1	03/28/19 05:53	04/15/19 20:00	7440-38-2	
Beryllium, Dissolved	ND	ug/L	0.20	1	03/28/19 05:53	04/15/19 20:00	7440-41-7	
Boron, Dissolved	**5300**	ug/L	1000	100	03/28/19 05:53	04/16/19 14:09	7440-42-8	
Cadmium, Dissolved	ND	ug/L	0.080	1	03/28/19 05:53	04/15/19 20:00	7440-43-9	
Chromium, Dissolved	ND	ug/L	0.50	1	03/28/19 05:53	04/15/19 20:00	7440-47-3	
Cobalt, Dissolved	**8.7**	ug/L	0.50	1	03/28/19 05:53	04/15/19 20:00	7440-48-4	
Lead, Dissolved	ND	ug/L	0.10	1	03/28/19 05:53	04/15/19 20:00	7439-92-1	
Selenium, Dissolved	ND	ug/L	0.50	1	03/28/19 05:53	04/15/19 20:00	7782-49-2	
Thallium, Dissolved	**0.57**	ug/L	0.10	1	03/28/19 05:53	04/15/19 20:00	7440-28-0	
Uranium-238, Dissolved	ND	ug/L	0.50	1	03/28/19 05:53	04/15/19 20:00	7440-61-1	
Vanadium, Dissolved	ND	ug/L	1.0	1	03/28/19 05:53	04/15/19 20:00	7440-62-2	

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468460

Sample: M-1 **Lab ID: 10468460003** Collected: 03/27/19 11:42 Received: 03/27/19 16:17 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
Acenaphthene	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 15:32	83-32-9	
Anthracene	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 15:32	120-12-7	
Benzo(a)pyrene	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 15:32	50-32-8	
Benzoic acid	ND	ug/L	49.0	1	03/28/19 16:02	04/02/19 15:32	65-85-0	
4-Bromophenylphenyl ether	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 15:32	101-55-3	
Butylbenzylphthalate	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 15:32	85-68-7	
bis(2-Chloroethyl) ether	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 15:32	111-44-4	
2-Chlorophenol	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 15:32	95-57-8	
3,3'-Dichlorobenzidine	ND	ug/L	49.0	1	03/28/19 16:02	04/02/19 15:32	91-94-1	
2,4-Dichlorophenol	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 15:32	120-83-2	
Diethylphthalate	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 15:32	84-66-2	
2,4-Dimethylphenol	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 15:32	105-67-9	
Dimethylphthalate	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 15:32	131-11-3	
Di-n-butylphthalate	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 15:32	84-74-2	
2,4-Dinitrophenol	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 15:32	51-28-5	
Di-n-octylphthalate	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 15:32	117-84-0	
bis(2-Ethylhexyl)phthalate	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 15:32	117-81-7	
Fluoranthene	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 15:32	206-44-0	
Fluorene	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 15:32	86-73-7	
Hexachlorobenzene	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 15:32	118-74-1	
Hexachlorocyclopentadiene	ND	ug/L	49.0	1	03/28/19 16:02	04/02/19 15:32	77-47-4	
Hexachloroethane	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 15:32	67-72-1	
Isophorone	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 15:32	78-59-1	
2-Methylnaphthalene	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 15:32	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 15:32	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/L	19.6	1	03/28/19 16:02	04/02/19 15:32		
N-Nitrosodimethylamine	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 15:32	62-75-9	
Pentachlorophenol	ND	ug/L	19.6	1	03/28/19 16:02	04/02/19 15:32	87-86-5	
Phenanthrene	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 15:32	85-01-8	
Phenol	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 15:32	108-95-2	
Pyrene	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 15:32	129-00-0	
2,4,6-Trichlorophenol	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 15:32	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	78	%.	55-125	1	03/28/19 16:02	04/02/19 15:32	4165-60-0	
2-Fluorobiphenyl (S)	81	%.	52-125	1	03/28/19 16:02	04/02/19 15:32	321-60-8	
p-Terphenyl-d14 (S)	82	%.	57-125	1	03/28/19 16:02	04/02/19 15:32	1718-51-0	
Phenol-d6 (S)	76	%.	30-125	1	03/28/19 16:02	04/02/19 15:32	13127-88-3	
2-Fluorophenol (S)	71	%.	30-125	1	03/28/19 16:02	04/02/19 15:32	367-12-4	
2,4,6-Tribromophenol (S)	96	%.	52-125	1	03/28/19 16:02	04/02/19 15:32	118-79-6	
300.0 IC Anions	Analytical Method: EPA 300.0							
Chloride	**134**	mg/L	6.0	5		03/29/19 05:42	16887-00-6	
Chromium, Hexavalent	Analytical Method: SM 3500-Cr B Modified							
Chromium, Hexavalent	**0.012**	mg/L	0.010	1		03/28/19 11:10		FS

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468460

Sample: M-1 **Lab ID: 10468460003** Collected: 03/27/19 11:42 Received: 03/27/19 16:17 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
350.1 Ammonia, Distilled	Analytical Method: EPA 350.1 rev. 2 (1993) Preparation Method: EPA 350.1 rev. 2 (1993)							
Nitrogen, Ammonia	**9.6**	mg/L	0.11	1	04/02/19 10:00	04/03/19 08:44	7664-41-7	
SM4500CN-E Cyanide	Analytical Method: SM 4500-CN-E Preparation Method: SM 4500-CN-E							
Cyanide	ND	ug/L	20.0	1	04/08/19 09:52	04/08/19 13:34	57-12-5	

Sample: 813768 **Lab ID: 10468460004** Collected: 03/27/19 12:40 Received: 03/27/19 16:17 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA Mod. 3510C							
PCB-1016 (Aroclor 1016)	ND	ug/L	0.098	1	03/28/19 16:19	04/01/19 13:47	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/L	0.098	1	03/28/19 16:19	04/01/19 13:47	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/L	0.098	1	03/28/19 16:19	04/01/19 13:47	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/L	0.098	1	03/28/19 16:19	04/01/19 13:47	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/L	0.098	1	03/28/19 16:19	04/01/19 13:47	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/L	0.098	1	03/28/19 16:19	04/01/19 13:47	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/L	0.098	1	03/28/19 16:19	04/01/19 13:47	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/L	0.098	1	03/28/19 16:19	04/01/19 13:47	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/L	0.098	1	03/28/19 16:19	04/01/19 13:47	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	43	%.	30-125	1	03/28/19 16:19	04/01/19 13:47	877-09-8	
Decachlorobiphenyl (S)	36	%.	30-125	1	03/28/19 16:19	04/01/19 13:47	2051-24-3	
200.7 MET ICP, Dissolved	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Aluminum, Dissolved	ND	ug/L	200	1	03/28/19 05:53	04/01/19 12:48	7429-90-5	
Barium, Dissolved	**993**	ug/L	10.0	1	03/28/19 05:53	04/01/19 12:48	7440-39-3	
Copper, Dissolved	ND	ug/L	10.0	1	03/28/19 05:53	04/01/19 12:48	7440-50-8	
Manganese, Dissolved	**452**	ug/L	5.0	1	03/28/19 05:53	04/01/19 12:48	7439-96-5	
Nickel, Dissolved	ND	ug/L	20.0	1	03/28/19 05:53	04/01/19 12:48	7440-02-0	
Silver, Dissolved	ND	ug/L	10.0	1	03/28/19 05:53	04/01/19 12:48	7440-22-4	
Tin, Dissolved	ND	ug/L	75.0	1	03/28/19 05:53	04/01/19 12:48	7440-31-5	
Total Hardness by 2340B, Dissolved	**794000**	ug/L	3300	1	03/28/19 05:53	04/01/19 12:48		
Zinc, Dissolved	ND	ug/L	20.0	1	03/28/19 05:53	04/01/19 12:48	7440-66-6	
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Dissolved	ND	ug/L	0.50	1	03/28/19 05:53	04/15/19 20:04	7440-36-0	
Arsenic, Dissolved	**0.73**	ug/L	0.50	1	03/28/19 05:53	04/15/19 20:04	7440-38-2	
Beryllium, Dissolved	ND	ug/L	0.20	1	03/28/19 05:53	04/15/19 20:04	7440-41-7	
Boron, Dissolved	**2590**	ug/L	100	10	03/28/19 05:53	04/16/19 13:41	7440-42-8	
Cadmium, Dissolved	ND	ug/L	0.080	1	03/28/19 05:53	04/15/19 20:04	7440-43-9	
Chromium, Dissolved	**3.5**	ug/L	0.50	1	03/28/19 05:53	04/15/19 20:04	7440-47-3	
Cobalt, Dissolved	**0.86**	ug/L	0.50	1	03/28/19 05:53	04/15/19 20:04	7440-48-4	
Lead, Dissolved	ND	ug/L	0.10	1	03/28/19 05:53	04/15/19 20:04	7439-92-1	
Selenium, Dissolved	ND	ug/L	0.50	1	03/28/19 05:53	04/15/19 20:04	7782-49-2	

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468460

Sample: 813768 **Lab ID: 10468460004** Collected: 03/27/19 12:40 Received: 03/27/19 16:17 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Thallium, Dissolved	ND	ug/L	0.10	1	03/28/19 05:53	04/15/19 20:04	7440-28-0	
Uranium-238, Dissolved	ND	ug/L	0.50	1	03/28/19 05:53	04/15/19 20:04	7440-61-1	
Vanadium, Dissolved	**1.3**	ug/L	1.0	1	03/28/19 05:53	04/15/19 20:04	7440-62-2	
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
Acenaphthene	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 15:56	83-32-9	
Anthracene	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 15:56	120-12-7	
Benzo(a)pyrene	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 15:56	50-32-8	
Benzoic acid	ND	ug/L	49.0	1	03/28/19 16:02	04/02/19 15:56	65-85-0	
4-Bromophenylphenyl ether	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 15:56	101-55-3	
Butylbenzylphthalate	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 15:56	85-68-7	
bis(2-Chloroethyl) ether	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 15:56	111-44-4	
2-Chlorophenol	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 15:56	95-57-8	
3,3'-Dichlorobenzidine	ND	ug/L	49.0	1	03/28/19 16:02	04/02/19 15:56	91-94-1	
2,4-Dichlorophenol	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 15:56	120-83-2	
Diethylphthalate	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 15:56	84-66-2	
2,4-Dimethylphenol	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 15:56	105-67-9	
Dimethylphthalate	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 15:56	131-11-3	
Di-n-butylphthalate	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 15:56	84-74-2	
2,4-Dinitrophenol	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 15:56	51-28-5	
Di-n-octylphthalate	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 15:56	117-84-0	
bis(2-Ethylhexyl)phthalate	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 15:56	117-81-7	
Fluoranthene	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 15:56	206-44-0	
Fluorene	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 15:56	86-73-7	
Hexachlorobenzene	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 15:56	118-74-1	
Hexachlorocyclopentadiene	ND	ug/L	49.0	1	03/28/19 16:02	04/02/19 15:56	77-47-4	
Hexachloroethane	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 15:56	67-72-1	
Isophorone	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 15:56	78-59-1	
2-Methylnaphthalene	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 15:56	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 15:56	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/L	19.6	1	03/28/19 16:02	04/02/19 15:56		
N-Nitrosodimethylamine	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 15:56	62-75-9	
Pentachlorophenol	ND	ug/L	19.6	1	03/28/19 16:02	04/02/19 15:56	87-86-5	
Phenanthrene	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 15:56	85-01-8	
Phenol	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 15:56	108-95-2	
Pyrene	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 15:56	129-00-0	
2,4,6-Trichlorophenol	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 15:56	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	81	%.	55-125	1	03/28/19 16:02	04/02/19 15:56	4165-60-0	
2-Fluorobiphenyl (S)	82	%.	52-125	1	03/28/19 16:02	04/02/19 15:56	321-60-8	
p-Terphenyl-d14 (S)	84	%.	57-125	1	03/28/19 16:02	04/02/19 15:56	1718-51-0	
Phenol-d6 (S)	81	%.	30-125	1	03/28/19 16:02	04/02/19 15:56	13127-88-3	
2-Fluorophenol (S)	73	%.	30-125	1	03/28/19 16:02	04/02/19 15:56	367-12-4	
2,4,6-Tribromophenol (S)	96	%.	52-125	1	03/28/19 16:02	04/02/19 15:56	118-79-6	

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468460

Sample: 813768 **Lab ID: 10468460004** Collected: 03/27/19 12:40 Received: 03/27/19 16:17 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:							
Field pH	**6.3**	Std. Units		1		03/27/19 12:40		
Field Temperature	**11.5**	deg C		1		03/27/19 12:40		
Collected Date	**03/27/19**			1		03/27/19 12:40		
Collected Time	**1240**			1		03/27/19 12:40		
Field Specific Conductance	**1920**	umhos/cm		1		03/27/19 12:40		
Oxygen, Dissolved	**1.2**	mg/L		1		03/27/19 12:40	7782-44-7	
REDOX	**-82**	mV		1		03/27/19 12:40		
Turbidity	**3.5**	NTU		1		03/27/19 12:40		
Apparent Color	**clear**			1		03/27/19 12:40		
Odor	**No**			1		03/27/19 12:40		
Well Locked	**Yes**			1		03/27/19 12:40		
Purge Method	**Whale pump**			1		03/27/19 12:40		
Total Well Depth	**39.77**	feet		1		03/27/19 12:40		
Depth of Water	**18.41**			1		03/27/19 12:40		
Well Volume Purged	**10.5**			1		03/27/19 12:40		
Purge Rate	**0.5**			1		03/27/19 12:40		
300.0 IC Anions	Analytical Method: EPA 300.0							
Chloride	**26.9**	mg/L	1.2	1		03/28/19 21:37	16887-00-6	
Chromium, Hexavalent	Analytical Method: SM 3500-Cr B Modified							
Chromium, Hexavalent	**0.022**	mg/L	0.010	1		03/28/19 11:10		FS
350.1 Ammonia, Unionized	Analytical Method: EPA 350.1							
Nitrogen, Ammonia (Unionized)	**0.013**	mg/L	0.010	1		04/17/19 14:46		
350.1 Ammonia, Distilled	Analytical Method: EPA 350.1 rev. 2 (1993) Preparation Method: EPA 350.1 rev. 2 (1993)							
Nitrogen, Ammonia	**31.4**	mg/L	1.1	10	04/02/19 10:00	04/03/19 10:42	7664-41-7	
SM4500CN-E Cyanide	Analytical Method: SM 4500-CN-E Preparation Method: SM 4500-CN-E							
Cyanide	**29.2**	ug/L	20.0	1	04/08/19 09:52	04/08/19 13:34	57-12-5	

Sample: 813767 **Lab ID: 10468460005** Collected: 03/27/19 13:40 Received: 03/27/19 16:17 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA Mod. 3510C							
PCB-1016 (Aroclor 1016)	ND	ug/L	0.097	1	03/28/19 16:19	04/01/19 14:03	12674-11-2	
PCB-1221 (Aroclor 1221)	**0.10**	ug/L	0.097	1	03/28/19 16:19	04/01/19 14:03	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/L	0.097	1	03/28/19 16:19	04/01/19 14:03	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/L	0.097	1	03/28/19 16:19	04/01/19 14:03	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/L	0.097	1	03/28/19 16:19	04/01/19 14:03	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/L	0.097	1	03/28/19 16:19	04/01/19 14:03	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/L	0.097	1	03/28/19 16:19	04/01/19 14:03	11096-82-5	

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468460

Sample: 813767 **Lab ID: 10468460005** Collected: 03/27/19 13:40 Received: 03/27/19 16:17 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA Mod. 3510C							
PCB-1262 (Aroclor 1262)	ND	ug/L	0.097	1	03/28/19 16:19	04/01/19 14:03	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/L	0.097	1	03/28/19 16:19	04/01/19 14:03	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	31	%.	30-125	1	03/28/19 16:19	04/01/19 14:03	877-09-8	
Decachlorobiphenyl (S)	18	%.	30-125	1	03/28/19 16:19	04/01/19 14:03	2051-24-3	S0
200.7 MET ICP, Dissolved	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Aluminum, Dissolved	ND	ug/L	200	1	03/28/19 05:53	04/01/19 12:50	7429-90-5	
Barium, Dissolved	**694**	ug/L	10.0	1	03/28/19 05:53	04/01/19 12:50	7440-39-3	
Copper, Dissolved	ND	ug/L	10.0	1	03/28/19 05:53	04/01/19 12:50	7440-50-8	
Manganese, Dissolved	**220**	ug/L	5.0	1	03/28/19 05:53	04/01/19 12:50	7439-96-5	
Nickel, Dissolved	ND	ug/L	20.0	1	03/28/19 05:53	04/01/19 12:50	7440-02-0	
Silver, Dissolved	ND	ug/L	10.0	1	03/28/19 05:53	04/01/19 12:50	7440-22-4	
Tin, Dissolved	ND	ug/L	75.0	1	03/28/19 05:53	04/01/19 12:50	7440-31-5	
Total Hardness by 2340B, Dissolved	**816000**	ug/L	3300	1	03/28/19 05:53	04/01/19 12:50		
Zinc, Dissolved	ND	ug/L	20.0	1	03/28/19 05:53	04/01/19 12:50	7440-66-6	
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Dissolved	ND	ug/L	0.50	1	03/28/19 05:53	04/15/19 19:55	7440-36-0	
Arsenic, Dissolved	**3.9**	ug/L	0.50	1	03/28/19 05:53	04/15/19 19:55	7440-38-2	
Beryllium, Dissolved	ND	ug/L	0.20	1	03/28/19 05:53	04/15/19 19:55	7440-41-7	
Boron, Dissolved	**5040**	ug/L	1000	100	03/28/19 05:53	04/16/19 14:14	7440-42-8	
Cadmium, Dissolved	ND	ug/L	0.080	1	03/28/19 05:53	04/15/19 19:55	7440-43-9	
Chromium, Dissolved	**1.3**	ug/L	0.50	1	03/28/19 05:53	04/15/19 19:55	7440-47-3	
Cobalt, Dissolved	**0.86**	ug/L	0.50	1	03/28/19 05:53	04/15/19 19:55	7440-48-4	
Lead, Dissolved	ND	ug/L	0.10	1	03/28/19 05:53	04/15/19 19:55	7439-92-1	
Selenium, Dissolved	ND	ug/L	0.50	1	03/28/19 05:53	04/15/19 19:55	7782-49-2	
Thallium, Dissolved	ND	ug/L	0.10	1	03/28/19 05:53	04/15/19 19:55	7440-28-0	
Uranium-238, Dissolved	ND	ug/L	0.50	1	03/28/19 05:53	04/15/19 19:55	7440-61-1	
Vanadium, Dissolved	**1.3**	ug/L	1.0	1	03/28/19 05:53	04/15/19 19:55	7440-62-2	
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
Acenaphthene	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 16:21	83-32-9	
Anthracene	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 16:21	120-12-7	
Benzo(a)pyrene	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 16:21	50-32-8	
Benzoic acid	ND	ug/L	49.0	1	03/28/19 16:02	04/02/19 16:21	65-85-0	
4-Bromophenylphenyl ether	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 16:21	101-55-3	
Butylbenzylphthalate	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 16:21	85-68-7	
bis(2-Chloroethyl) ether	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 16:21	111-44-4	
2-Chlorophenol	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 16:21	95-57-8	
3,3'-Dichlorobenzidine	ND	ug/L	49.0	1	03/28/19 16:02	04/02/19 16:21	91-94-1	
2,4-Dichlorophenol	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 16:21	120-83-2	
Diethylphthalate	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 16:21	84-66-2	
2,4-Dimethylphenol	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 16:21	105-67-9	
Dimethylphthalate	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 16:21	131-11-3	
Di-n-butylphthalate	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 16:21	84-74-2	

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468460

Sample: 813767 **Lab ID: 10468460005** Collected: 03/27/19 13:40 Received: 03/27/19 16:17 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
2,4-Dinitrophenol	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 16:21	51-28-5	
Di-n-octylphthalate	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 16:21	117-84-0	
bis(2-Ethylhexyl)phthalate	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 16:21	117-81-7	
Fluoranthene	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 16:21	206-44-0	
Fluorene	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 16:21	86-73-7	
Hexachlorobenzene	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 16:21	118-74-1	
Hexachlorocyclopentadiene	ND	ug/L	49.0	1	03/28/19 16:02	04/02/19 16:21	77-47-4	
Hexachloroethane	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 16:21	67-72-1	
Isophorone	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 16:21	78-59-1	
2-Methylnaphthalene	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 16:21	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 16:21	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/L	19.6	1	03/28/19 16:02	04/02/19 16:21		
N-Nitrosodimethylamine	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 16:21	62-75-9	
Pentachlorophenol	ND	ug/L	19.6	1	03/28/19 16:02	04/02/19 16:21	87-86-5	
Phenanthrene	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 16:21	85-01-8	
Phenol	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 16:21	108-95-2	
Pyrene	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 16:21	129-00-0	
2,4,6-Trichlorophenol	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 16:21	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	81	%.	55-125	1	03/28/19 16:02	04/02/19 16:21	4165-60-0	
2-Fluorobiphenyl (S)	82	%.	52-125	1	03/28/19 16:02	04/02/19 16:21	321-60-8	
p-Terphenyl-d14 (S)	84	%.	57-125	1	03/28/19 16:02	04/02/19 16:21	1718-51-0	
Phenol-d6 (S)	79	%.	30-125	1	03/28/19 16:02	04/02/19 16:21	13127-88-3	
2-Fluorophenol (S)	73	%.	30-125	1	03/28/19 16:02	04/02/19 16:21	367-12-4	
2,4,6-Tribromophenol (S)	97	%.	52-125	1	03/28/19 16:02	04/02/19 16:21	118-79-6	
Field Data	Analytical Method:							
Field pH	**6.4**	Std. Units		1		03/27/19 13:40		
Field Temperature	**12.0**	deg C		1		03/27/19 13:40		
Collected Date	**03/27/19**			1		03/27/19 13:40		
Collected Time	**1340**			1		03/27/19 13:40		
Field Specific Conductance	**2270**	umhos/cm		1		03/27/19 13:40		
Oxygen, Dissolved	**1.0**	mg/L		1		03/27/19 13:40	7782-44-7	
REDOX	**-61**	mV		1		03/27/19 13:40		
Turbidity	**7.5**	NTU		1		03/27/19 13:40		
Apparent Color	**clear**			1		03/27/19 13:40		
Odor	**No**			1		03/27/19 13:40		
Well Locked	**Yes**			1		03/27/19 13:40		
Purge Method	**Whale pump**			1		03/27/19 13:40		
Total Well Depth	**38.73**	feet		1		03/27/19 13:40		
Depth of Water	**29.75**			1		03/27/19 13:40		
Well Volume Purged	**4.5**			1		03/27/19 13:40		
Purge Rate	**0.5**			1		03/27/19 13:40		
300.0 IC Anions	Analytical Method: EPA 300.0							
Chloride	**112**	mg/L	2.4	2		03/29/19 06:00	16887-00-6	

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468460

Sample: 813767 **Lab ID: 10468460005** Collected: 03/27/19 13:40 Received: 03/27/19 16:17 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Chromium, Hexavalent	Analytical Method: SM 3500-Cr B Modified							
Chromium, Hexavalent	**0.023**	mg/L	0.010	1		03/28/19 11:11		FS
350.1 Ammonia, Unionized	Analytical Method: EPA 350.1							
Nitrogen, Ammonia (Unionized)	**0.017**	mg/L	0.010	1		04/17/19 14:51		
350.1 Ammonia, Distilled	Analytical Method: EPA 350.1 rev. 2 (1993) Preparation Method: EPA 350.1 rev. 2 (1993)							
Nitrogen, Ammonia	**30.8**	mg/L	1.1	10	04/02/19 10:00	04/03/19 10:43	7664-41-7	
SM4500CN-E Cyanide	Analytical Method: SM 4500-CN-E Preparation Method: SM 4500-CN-E							
Cyanide	ND	ug/L	20.0	1	04/08/19 09:52	04/08/19 13:35	57-12-5	

Sample: 813765 **Lab ID: 10468460006** Collected: 03/27/19 15:40 Received: 03/27/19 16:17 Matrix: Water

Comments: • Upon receipt at the laboratory, 5 mls of nitric acid were added to the sample to meet the sample preservation requirement of pH <2 for radiochemistry analysis.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA Mod. 3510C							
PCB-1016 (Aroclor 1016)	ND	ug/L	1.0	1	03/28/19 16:19	04/01/19 14:18	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/L	1.0	1	03/28/19 16:19	04/01/19 14:18	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/L	1.0	1	03/28/19 16:19	04/01/19 14:18	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/L	1.0	1	03/28/19 16:19	04/01/19 14:18	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/L	1.0	1	03/28/19 16:19	04/01/19 14:18	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/L	1.0	1	03/28/19 16:19	04/01/19 14:18	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/L	1.0	1	03/28/19 16:19	04/01/19 14:18	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/L	1.0	1	03/28/19 16:19	04/01/19 14:18	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/L	1.0	1	03/28/19 16:19	04/01/19 14:18	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	76	%.	30-125	1	03/28/19 16:19	04/01/19 14:18	877-09-8	
Decachlorobiphenyl (S)	87	%.	30-125	1	03/28/19 16:19	04/01/19 14:18	2051-24-3	
200.7 MET ICP, Dissolved	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Aluminum, Dissolved	ND	ug/L	200	1	03/28/19 05:53	04/01/19 12:51	7429-90-5	
Barium, Dissolved	**713**	ug/L	10.0	1	03/28/19 05:53	04/01/19 12:51	7440-39-3	
Copper, Dissolved	ND	ug/L	10.0	1	03/28/19 05:53	04/01/19 12:51	7440-50-8	
Manganese, Dissolved	**318**	ug/L	5.0	1	03/28/19 05:53	04/01/19 12:51	7439-96-5	
Nickel, Dissolved	ND	ug/L	20.0	1	03/28/19 05:53	04/01/19 12:51	7440-02-0	
Silver, Dissolved	ND	ug/L	10.0	1	03/28/19 05:53	04/01/19 12:51	7440-22-4	
Tin, Dissolved	ND	ug/L	75.0	1	03/28/19 05:53	04/01/19 12:51	7440-31-5	
Total Hardness by 2340B, Dissolved	**1190000**	ug/L	3300	1	03/28/19 05:53	04/01/19 12:51		
Zinc, Dissolved	ND	ug/L	20.0	1	03/28/19 05:53	04/01/19 12:51	7440-66-6	
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Dissolved	ND	ug/L	2.5	5	03/28/19 05:53	04/15/19 19:05	7440-36-0	D3

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468460

Sample: 813765 **Lab ID: 10468460006** Collected: 03/27/19 15:40 Received: 03/27/19 16:17 Matrix: Water

Comments: • Upon receipt at the laboratory, 5 mls of nitric acid were added to the sample to meet the sample preservation requirement of pH <2 for radiochemistry analysis.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Arsenic, Dissolved	**5.0**	ug/L	2.5	5	03/28/19 05:53	04/15/19 19:05	7440-38-2	
Beryllium, Dissolved	ND	ug/L	1.0	5	03/28/19 05:53	04/15/19 19:05	7440-41-7	D3
Boron, Dissolved	**2260**	ug/L	250	25	03/28/19 05:53	04/16/19 13:32	7440-42-8	
Cadmium, Dissolved	ND	ug/L	0.40	5	03/28/19 05:53	04/15/19 19:05	7440-43-9	D3
Chromium, Dissolved	**7.9**	ug/L	2.5	5	03/28/19 05:53	04/15/19 19:05	7440-47-3	
Cobalt, Dissolved	**11.8**	ug/L	2.5	5	03/28/19 05:53	04/15/19 19:05	7440-48-4	
Lead, Dissolved	ND	ug/L	0.50	5	03/28/19 05:53	04/15/19 19:05	7439-92-1	D3
Selenium, Dissolved	ND	ug/L	2.5	5	03/28/19 05:53	04/15/19 19:05	7782-49-2	D3
Thallium, Dissolved	ND	ug/L	0.50	5	03/28/19 05:53	04/15/19 19:05	7440-28-0	D3
Uranium-238, Dissolved	ND	ug/L	2.5	5	03/28/19 05:53	04/15/19 19:05	7440-61-1	D3
Vanadium, Dissolved	**5.6**	ug/L	5.0	5	03/28/19 05:53	04/15/19 19:05	7440-62-2	
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
Acenaphthene	ND	ug/L	49.0	5	03/28/19 16:02	04/02/19 18:22	83-32-9	
Anthracene	ND	ug/L	49.0	5	03/28/19 16:02	04/02/19 18:22	120-12-7	
Benzo(a)pyrene	ND	ug/L	49.0	5	03/28/19 16:02	04/02/19 18:22	50-32-8	
Benzoic acid	ND	ug/L	245	5	03/28/19 16:02	04/02/19 18:22	65-85-0	
4-Bromophenylphenyl ether	ND	ug/L	49.0	5	03/28/19 16:02	04/02/19 18:22	101-55-3	
Butylbenzylphthalate	ND	ug/L	49.0	5	03/28/19 16:02	04/02/19 18:22	85-68-7	
bis(2-Chloroethyl) ether	ND	ug/L	49.0	5	03/28/19 16:02	04/02/19 18:22	111-44-4	
2-Chlorophenol	ND	ug/L	49.0	5	03/28/19 16:02	04/02/19 18:22	95-57-8	
3,3'-Dichlorobenzidine	ND	ug/L	245	5	03/28/19 16:02	04/02/19 18:22	91-94-1	
2,4-Dichlorophenol	ND	ug/L	49.0	5	03/28/19 16:02	04/02/19 18:22	120-83-2	
Diethylphthalate	ND	ug/L	49.0	5	03/28/19 16:02	04/02/19 18:22	84-66-2	
2,4-Dimethylphenol	ND	ug/L	49.0	5	03/28/19 16:02	04/02/19 18:22	105-67-9	
Dimethylphthalate	ND	ug/L	49.0	5	03/28/19 16:02	04/02/19 18:22	131-11-3	
Di-n-butylphthalate	ND	ug/L	49.0	5	03/28/19 16:02	04/02/19 18:22	84-74-2	
2,4-Dinitrophenol	ND	ug/L	49.0	5	03/28/19 16:02	04/02/19 18:22	51-28-5	
Di-n-octylphthalate	ND	ug/L	49.0	5	03/28/19 16:02	04/02/19 18:22	117-84-0	
bis(2-Ethylhexyl)phthalate	ND	ug/L	49.0	5	03/28/19 16:02	04/02/19 18:22	117-81-7	
Fluoranthene	ND	ug/L	49.0	5	03/28/19 16:02	04/02/19 18:22	206-44-0	
Fluorene	ND	ug/L	49.0	5	03/28/19 16:02	04/02/19 18:22	86-73-7	
Hexachlorobenzene	ND	ug/L	49.0	5	03/28/19 16:02	04/02/19 18:22	118-74-1	
Hexachlorocyclopentadiene	ND	ug/L	245	5	03/28/19 16:02	04/02/19 18:22	77-47-4	
Hexachloroethane	ND	ug/L	49.0	5	03/28/19 16:02	04/02/19 18:22	67-72-1	
Isophorone	ND	ug/L	49.0	5	03/28/19 16:02	04/02/19 18:22	78-59-1	
2-Methylnaphthalene	ND	ug/L	49.0	5	03/28/19 16:02	04/02/19 18:22	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/L	49.0	5	03/28/19 16:02	04/02/19 18:22	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/L	98.0	5	03/28/19 16:02	04/02/19 18:22		
N-Nitrosodimethylamine	ND	ug/L	49.0	5	03/28/19 16:02	04/02/19 18:22	62-75-9	
Pentachlorophenol	ND	ug/L	98.0	5	03/28/19 16:02	04/02/19 18:22	87-86-5	
Phenanthrene	ND	ug/L	49.0	5	03/28/19 16:02	04/02/19 18:22	85-01-8	
Phenol	ND	ug/L	49.0	5	03/28/19 16:02	04/02/19 18:22	108-95-2	
Pyrene	ND	ug/L	49.0	5	03/28/19 16:02	04/02/19 18:22	129-00-0	
2,4,6-Trichlorophenol	ND	ug/L	49.0	5	03/28/19 16:02	04/02/19 18:22	88-06-2	

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468460

Sample: 813765 **Lab ID: 10468460006** Collected: 03/27/19 15:40 Received: 03/27/19 16:17 Matrix: Water

Comments: • Upon receipt at the laboratory, 5 mls of nitric acid were added to the sample to meet the sample preservation requirement of pH <2 for radiochemistry analysis.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
Surrogates								
Nitrobenzene-d5 (S)	91	%.	55-125	5	03/28/19 16:02	04/02/19 18:22	4165-60-0	D3
2-Fluorobiphenyl (S)	89	%.	52-125	5	03/28/19 16:02	04/02/19 18:22	321-60-8	
p-Terphenyl-d14 (S)	74	%.	57-125	5	03/28/19 16:02	04/02/19 18:22	1718-51-0	
Phenol-d6 (S)	78	%.	30-125	5	03/28/19 16:02	04/02/19 18:22	13127-88-3	
2-Fluorophenol (S)	77	%.	30-125	5	03/28/19 16:02	04/02/19 18:22	367-12-4	
2,4,6-Tribromophenol (S)	91	%.	52-125	5	03/28/19 16:02	04/02/19 18:22	118-79-6	
Field Data	Analytical Method:							
Collected Date	**03/27/19**			1		03/27/19 15:40		
Collected Time	**1540**			1		03/27/19 15:40		
Field Specific Conductance	**6960**	umhos/cm		1		03/27/19 15:40		
Oxygen, Dissolved	**0.8**	mg/L		1		03/27/19 15:40	7782-44-7	
REDOX	**-137**	mV		1		03/27/19 15:40		
Turbidity	**57.5**	NTU		1		03/27/19 15:40		
Apparent Color	**gray**			1		03/27/19 15:40		
Odor	**Yes**			1		03/27/19 15:40		
Well Locked	**Yes**			1		03/27/19 15:40		
Purge Method	**Whale pump**			1		03/27/19 15:40		
Total Well Depth	**44.19**	feet		1		03/27/19 15:40		
Depth of Water	**29.00**			1		03/27/19 15:40		
Well Volume Purged	**7.5**			1		03/27/19 15:40		
Purge Rate	**0.5**			1		03/27/19 15:40		
Field pH	**6.9**	Std. Units		1		03/27/19 15:40		
Field Temperature	**12.0**	deg C		1		03/27/19 15:40		
300.0 IC Anions	Analytical Method: EPA 300.0							
Chloride	**1040**	mg/L	24.0	20		03/29/19 03:45	16887-00-6	
Chromium, Hexavalent	Analytical Method: SM 3500-Cr B Modified							
Chromium, Hexavalent	ND	mg/L	0.010	1		03/28/19 11:11		FS
350.1 Ammonia, Unionized	Analytical Method: EPA 350.1							
Nitrogen, Ammonia (Unionized)	**0.51**	mg/L	0.010	1		04/17/19 14:53		
350.1 Ammonia, Distilled	Analytical Method: EPA 350.1 rev. 2 (1993) Preparation Method: EPA 350.1 rev. 2 (1993)							
Nitrogen, Ammonia	**296**	mg/L	5.5	10	04/02/19 10:00	04/03/19 10:45	7664-41-7	
SM4500CN-E Cyanide	Analytical Method: SM 4500-CN-E Preparation Method: SM 4500-CN-E							
Cyanide	ND	ug/L	20.0	1	04/08/19 09:52	04/08/19 13:35	57-12-5	

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468460

QC Batch: 596133 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 MET Dissolved
Associated Lab Samples: 10468460001, 10468460002, 10468460003, 10468460004, 10468460005, 10468460006

METHOD BLANK: 3223063 Matrix: Water
Associated Lab Samples: 10468460001, 10468460002, 10468460003, 10468460004, 10468460005, 10468460006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum, Dissolved	ug/L	ND	200	04/01/19 12:36	
Barium, Dissolved	ug/L	ND	10.0	04/01/19 12:36	
Copper, Dissolved	ug/L	ND	10.0	04/01/19 12:36	
Manganese, Dissolved	ug/L	ND	5.0	04/01/19 12:36	
Nickel, Dissolved	ug/L	ND	20.0	04/01/19 12:36	
Silver, Dissolved	ug/L	ND	10.0	04/01/19 12:36	
Tin, Dissolved	ug/L	ND	75.0	04/01/19 12:36	
Zinc, Dissolved	ug/L	ND	20.0	04/01/19 12:36	

LABORATORY CONTROL SAMPLE: 3223064

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum, Dissolved	ug/L	20000	21200	106	85-115	
Barium, Dissolved	ug/L	1000	1020	102	85-115	
Copper, Dissolved	ug/L	1000	977	98	85-115	
Manganese, Dissolved	ug/L	1000	1020	102	85-115	
Nickel, Dissolved	ug/L	1000	1010	101	85-115	
Silver, Dissolved	ug/L	500	515	103	85-115	
Tin, Dissolved	ug/L	1000	1040	104	85-115	
Zinc, Dissolved	ug/L	1000	1030	103	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3223065 3223066

Parameter	Units	10468460001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum, Dissolved	ug/L	ND	20000	20000	22100	22000	111	110	70-130	1	20	
Barium, Dissolved	ug/L	662	1000	1000	1720	1690	106	103	70-130	2	20	
Copper, Dissolved	ug/L	ND	1000	1000	1040	1030	104	103	70-130	1	20	
Manganese, Dissolved	ug/L	539	1000	1000	1580	1580	104	104	70-130	0	20	
Nickel, Dissolved	ug/L	ND	1000	1000	1000	992	99	99	70-130	1	20	
Silver, Dissolved	ug/L	ND	500	500	546	541	109	108	70-130	1	20	
Tin, Dissolved	ug/L	ND	1000	1000	1030	1020	103	102	70-130	1	20	
Zinc, Dissolved	ug/L	ND	1000	1000	991	981	99	98	70-130	1	20	

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468460

QC Batch: 596137 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET Dissolved
Associated Lab Samples: 10468460001, 10468460002, 10468460003, 10468460004, 10468460005, 10468460006

METHOD BLANK: 3223085 Matrix: Water
Associated Lab Samples: 10468460001, 10468460002, 10468460003, 10468460004, 10468460005, 10468460006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony, Dissolved	ug/L	ND	0.50	04/15/19 19:01	
Arsenic, Dissolved	ug/L	ND	0.50	04/15/19 19:01	
Beryllium, Dissolved	ug/L	ND	0.20	04/15/19 19:01	
Boron, Dissolved	ug/L	ND	10.0	04/15/19 19:01	
Cadmium, Dissolved	ug/L	ND	0.080	04/15/19 19:01	
Chromium, Dissolved	ug/L	ND	0.50	04/15/19 19:01	
Cobalt, Dissolved	ug/L	ND	0.50	04/15/19 19:01	
Lead, Dissolved	ug/L	ND	0.10	04/15/19 19:01	
Selenium, Dissolved	ug/L	ND	0.50	04/15/19 19:01	
Thallium, Dissolved	ug/L	ND	0.10	04/15/19 19:01	
Uranium-238, Dissolved	ug/L	ND	0.50	04/15/19 19:01	
Vanadium, Dissolved	ug/L	ND	1.0	04/15/19 19:01	

LABORATORY CONTROL SAMPLE: 3223086

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony, Dissolved	ug/L	100	99.1	99	85-115	
Arsenic, Dissolved	ug/L	100	95.5	96	85-115	
Beryllium, Dissolved	ug/L	100	98.5	98	85-115	
Boron, Dissolved	ug/L	100	106	106	85-115	
Cadmium, Dissolved	ug/L	100	97.8	98	85-115	
Chromium, Dissolved	ug/L	100	99.8	100	85-115	
Cobalt, Dissolved	ug/L	100	98.5	98	85-115	
Lead, Dissolved	ug/L	100	103	103	85-115	
Selenium, Dissolved	ug/L	100	98.2	98	85-115	
Thallium, Dissolved	ug/L	100	96.8	97	85-115	
Uranium-238, Dissolved	ug/L	100	103	103	85-115	
Vanadium, Dissolved	ug/L	100	98.5	98	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3223087 3223088

Parameter	Units	10468460002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony, Dissolved	ug/L	ND	100	100	97.8	96.4	98	96	70-130	2	20	
Arsenic, Dissolved	ug/L	16.1	100	100	113	110	97	94	70-130	3	20	
Beryllium, Dissolved	ug/L	ND	100	100	94.0	90.7	94	91	70-130	4	20	
Boron, Dissolved	ug/L	5460	100	100	5650	5600	186	136	70-130	1	20	CH,E, M1,P6

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468460

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3223087 3223088

Parameter	Units	10468460002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cadmium, Dissolved	ug/L	ND	100	100	93.0	89.7	93	90	70-130	4	20	
Chromium, Dissolved	ug/L	0.54	100	100	99.6	96.0	99	95	70-130	4	20	
Cobalt, Dissolved	ug/L	8.6	100	100	109	107	101	98	70-130	2	20	
Lead, Dissolved	ug/L	ND	100	100	96.7	92.8	97	93	70-130	4	20	
Selenium, Dissolved	ug/L	ND	100	100	94.3	90.4	94	90	70-130	4	20	
Thallium, Dissolved	ug/L	0.31	100	100	92.9	89.4	93	89	70-130	4	20	
Uranium-238, Dissolved	ug/L	ND	100	100	105	101	104	100	70-130	4	20	
Vanadium, Dissolved	ug/L	ND	100	100	102	97.8	102	97	70-130	4	20	

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468460

QC Batch: 596214 Analysis Method: EPA 8082A
QC Batch Method: EPA Mod. 3510C Analysis Description: 8082A GCS PCB
Associated Lab Samples: 10468460001, 10468460002, 10468460003, 10468460004, 10468460005, 10468460006

METHOD BLANK: 3223517 Matrix: Water
Associated Lab Samples: 10468460001, 10468460002, 10468460003, 10468460004, 10468460005, 10468460006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
PCB-1016 (Aroclor 1016)	ug/L	ND	0.10	04/01/19 12:31	
PCB-1221 (Aroclor 1221)	ug/L	ND	0.10	04/01/19 12:31	
PCB-1232 (Aroclor 1232)	ug/L	ND	0.10	04/01/19 12:31	
PCB-1242 (Aroclor 1242)	ug/L	ND	0.10	04/01/19 12:31	
PCB-1248 (Aroclor 1248)	ug/L	ND	0.10	04/01/19 12:31	
PCB-1254 (Aroclor 1254)	ug/L	ND	0.10	04/01/19 12:31	
PCB-1260 (Aroclor 1260)	ug/L	ND	0.10	04/01/19 12:31	
PCB-1262 (Aroclor 1262)	ug/L	ND	0.10	04/01/19 12:31	
PCB-1268 (Aroclor 1268)	ug/L	ND	0.10	04/01/19 12:31	
Decachlorobiphenyl (S)	%.	92	30-125	04/01/19 12:31	
Tetrachloro-m-xylene (S)	%.	81	30-125	04/01/19 12:31	

LABORATORY CONTROL SAMPLE & LCSD: 3223518 3223519

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
PCB-1016 (Aroclor 1016)	ug/L	2	1.6	1.6	81	81	45-125	0	20	
PCB-1260 (Aroclor 1260)	ug/L	2	1.9	1.8	97	92	49-125	5	20	
Decachlorobiphenyl (S)	%.				102	95	30-125			
Tetrachloro-m-xylene (S)	%.				58	61	30-125			

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468460

QC Batch: 596311 Analysis Method: EPA 8270D
QC Batch Method: EPA 3520 Analysis Description: 8270D Water MSSV
Associated Lab Samples: 10468460001, 10468460002, 10468460003, 10468460004, 10468460005, 10468460006

METHOD BLANK: 3223890 Matrix: Water
Associated Lab Samples: 10468460001, 10468460002, 10468460003, 10468460004, 10468460005, 10468460006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
2,4,6-Trichlorophenol	ug/L	ND	10.0	04/02/19 13:06	
2,4-Dichlorophenol	ug/L	ND	10.0	04/02/19 13:06	
2,4-Dimethylphenol	ug/L	ND	10.0	04/02/19 13:06	
2,4-Dinitrophenol	ug/L	ND	10.0	04/02/19 13:06	
2-Chlorophenol	ug/L	ND	10.0	04/02/19 13:06	
2-Methylnaphthalene	ug/L	ND	10.0	04/02/19 13:06	
2-Methylphenol(o-Cresol)	ug/L	ND	10.0	04/02/19 13:06	
3&4-Methylphenol(m&p Cresol)	ug/L	ND	20.0	04/02/19 13:06	
3,3'-Dichlorobenzidine	ug/L	ND	50.0	04/02/19 13:06	
4-Bromophenylphenyl ether	ug/L	ND	10.0	04/02/19 13:06	
Acenaphthene	ug/L	ND	10.0	04/02/19 13:06	
Anthracene	ug/L	ND	10.0	04/02/19 13:06	
Benzo(a)pyrene	ug/L	ND	10.0	04/02/19 13:06	
Benzoic acid	ug/L	ND	50.0	04/02/19 13:06	
bis(2-Chloroethyl) ether	ug/L	ND	10.0	04/02/19 13:06	
bis(2-Ethylhexyl)phthalate	ug/L	ND	10.0	04/02/19 13:06	
Butylbenzylphthalate	ug/L	ND	10.0	04/02/19 13:06	
Di-n-butylphthalate	ug/L	ND	10.0	04/02/19 13:06	
Di-n-octylphthalate	ug/L	ND	10.0	04/02/19 13:06	
Diethylphthalate	ug/L	ND	10.0	04/02/19 13:06	
Dimethylphthalate	ug/L	ND	10.0	04/02/19 13:06	
Fluoranthene	ug/L	ND	10.0	04/02/19 13:06	
Fluorene	ug/L	ND	10.0	04/02/19 13:06	
Hexachlorobenzene	ug/L	ND	10.0	04/02/19 13:06	
Hexachlorocyclopentadiene	ug/L	ND	50.0	04/02/19 13:06	
Hexachloroethane	ug/L	ND	10.0	04/02/19 13:06	
Isophorone	ug/L	ND	10.0	04/02/19 13:06	
N-Nitrosodimethylamine	ug/L	ND	10.0	04/02/19 13:06	
Pentachlorophenol	ug/L	ND	20.0	04/02/19 13:06	
Phenanthrene	ug/L	ND	10.0	04/02/19 13:06	
Phenol	ug/L	ND	10.0	04/02/19 13:06	
Pyrene	ug/L	ND	10.0	04/02/19 13:06	
2,4,6-Tribromophenol (S)	%.	88	52-125	04/02/19 13:06	
2-Fluorobiphenyl (S)	%.	73	52-125	04/02/19 13:06	
2-Fluorophenol (S)	%.	69	30-125	04/02/19 13:06	
Nitrobenzene-d5 (S)	%.	74	55-125	04/02/19 13:06	
p-Terphenyl-d14 (S)	%.	86	57-125	04/02/19 13:06	
Phenol-d6 (S)	%.	73	30-125	04/02/19 13:06	

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468460

LABORATORY CONTROL SAMPLE & LCSD: 3223891 3223892

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
2,4,6-Trichlorophenol	ug/L	50	42.7	42.8	85	86	60-125	0	20	
2,4-Dichlorophenol	ug/L	50	39.2	37.7	78	75	56-125	4	20	
2,4-Dimethylphenol	ug/L	50	33.1	32.5	66	65	33-125	2	20	
2,4-Dinitrophenol	ug/L	50	31.8	32.7	64	65	32-125	3	20	
2-Chlorophenol	ug/L	50	37.6	35.1	75	70	52-125	7	20	
2-Methylnaphthalene	ug/L	50	39.0	38.3	78	77	52-125	2	20	
2-Methylphenol(o-Cresol)	ug/L	50	36.9	34.4	74	69	55-125	7	20	
3&4-Methylphenol(m&p Cresol)	ug/L	50	37.5	35.1	75	70	57-125	7	20	
3,3'-Dichlorobenzidine	ug/L	50	44J	44J	88	88	39-150		20	
4-Bromophenylphenyl ether	ug/L	50	46.4	45.7	93	91	61-125	1	20	
Acenaphthene	ug/L	50	43.0	43.0	86	86	59-125	0	20	
Anthracene	ug/L	50	47.3	46.5	95	93	64-125	2	20	
Benzo(a)pyrene	ug/L	50	43.9	43.8	88	88	63-125	0	20	
Benzoic acid	ug/L	50	33.5J	26.9J	67	54	30-125		20	
bis(2-Chloroethyl) ether	ug/L	50	37.3	35.1	75	70	49-125	6	20	
bis(2-Ethylhexyl)phthalate	ug/L	50	45.6	46.2	91	92	68-125	1	20	
Butylbenzylphthalate	ug/L	50	46.1	45.6	92	91	67-125	1	20	
Di-n-butylphthalate	ug/L	50	49.3	47.7	99	95	67-125	3	20	
Di-n-octylphthalate	ug/L	50	46.0	46.4	92	93	67-125	1	20	
Diethylphthalate	ug/L	50	47.3	46.0	95	92	64-125	3	20	
Dimethylphthalate	ug/L	50	46.9	45.5	94	91	65-125	3	20	
Fluoranthene	ug/L	50	47.3	47.2	95	94	64-125	0	20	
Fluorene	ug/L	50	45.3	44.8	91	90	63-125	1	20	
Hexachlorobenzene	ug/L	50	48.4	49.2	97	98	61-125	2	20	
Hexachlorocyclopentadiene	ug/L	50	21.3J	ND	43	40	30-125		20	
Hexachloroethane	ug/L	50	34.5	32.3	69	65	30-125	6	20	
Isophorone	ug/L	50	41.4	40.7	83	81	59-125	2	20	
N-Nitrosodimethylamine	ug/L	50	38.6	35.5	77	71	43-125	8	20	
Pentachlorophenol	ug/L	50	43.3	41.7	87	83	35-125	4	20	
Phenanthrene	ug/L	50	46.4	46.2	93	92	65-125	0	20	
Phenol	ug/L	50	37.7	34.9	75	70	54-125	8	20	
Pyrene	ug/L	50	44.5	44.2	89	88	65-125	1	20	
2,4,6-Tribromophenol (S)	%.				96	95	52-125			
2-Fluorobiphenyl (S)	%.				79	78	52-125			
2-Fluorophenol (S)	%.				72	68	30-125			
Nitrobenzene-d5 (S)	%.				77	73	55-125			
p-Terphenyl-d14 (S)	%.				85	84	57-125			
Phenol-d6 (S)	%.				74	69	30-125			

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468460

QC Batch: 596271 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 10468460001, 10468460002, 10468460003, 10468460004, 10468460005, 10468460006

METHOD BLANK: 3223718 Matrix: Water
Associated Lab Samples: 10468460001, 10468460002, 10468460003, 10468460004, 10468460005, 10468460006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.2	03/28/19 16:38	

LABORATORY CONTROL SAMPLE: 3223719

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	12.5	12.9	103	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3223720 3223721

Parameter	Units	10468460001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	74.8	62.5	62.5	128	129	86	86	90-110	0	20	M1

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3223722 3223723

Parameter	Units	10468460002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	134	62.5	62.5	191	188	90	86	90-110	1	20	M1

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Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468460

QC Batch: 596221 Analysis Method: SM 3500-Cr B Modified
QC Batch Method: SM 3500-Cr B Modified Analysis Description: Chromium, Hexavalent by 3500
Associated Lab Samples: 10468460001, 10468460002, 10468460003, 10468460004, 10468460005, 10468460006

METHOD BLANK: 3223534 Matrix: Water
Associated Lab Samples: 10468460001, 10468460002, 10468460003, 10468460004, 10468460005, 10468460006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium, Hexavalent	mg/L	ND	0.010	03/28/19 11:10	FS

LABORATORY CONTROL SAMPLE: 3223535

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/L	0.2	0.19	96	90-110	FS

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3223536 3223537

Parameter	Units	10468460001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Hexavalent	mg/L	ND	0.2	0.2	0.11	0.13	49	60	85-115	17	20	FS,H5, M1

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468460

QC Batch: 163578 Analysis Method: EPA 350.1 rev. 2 (1993)
QC Batch Method: EPA 350.1 rev. 2 (1993) Analysis Description: 350.1 Ammonia Distilled
Associated Lab Samples: 10468460001, 10468460002, 10468460003, 10468460004, 10468460005, 10468460006

METHOD BLANK: 644687 Matrix: Water
Associated Lab Samples: 10468460001, 10468460002, 10468460003, 10468460004, 10468460005, 10468460006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, Ammonia	mg/L	ND	0.11	04/03/19 08:35	

LABORATORY CONTROL SAMPLE: 644688

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Ammonia	mg/L	5	5.1	102	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 644689 644690

Parameter	Units	12123082002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, Ammonia	mg/L	<0.11	5	5	5.2	5.0	103	101	90-110	2	10	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 644691 644692

Parameter	Units	10468606003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, Ammonia	mg/L	6.3	5	5	11.2	11.4	97	101	90-110	2	10	

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468460

QC Batch: 598088 Analysis Method: SM 4500-CN-E
QC Batch Method: SM 4500-CN-E Analysis Description: SM4500CN-E Cyanide
Associated Lab Samples: 10468460001, 10468460002, 10468460003, 10468460004, 10468460005, 10468460006

METHOD BLANK: 3234106 Matrix: Water
Associated Lab Samples: 10468460001, 10468460002, 10468460003, 10468460004, 10468460005, 10468460006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cyanide	ug/L	ND	20.0	04/08/19 13:09	

LABORATORY CONTROL SAMPLE: 3234107

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cyanide	ug/L	250	249	100	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3234108 3234109

Parameter	Units	10468668002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cyanide	ug/L	ND	250	250	209	226	76	83	80-120	8	30	M1

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3234110 3234111

Parameter	Units	10468315002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cyanide	ug/L	ND	250	250	232	229	88	87	80-120	1	30	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468460

Sample: 813766 **Lab ID: 10468460001** Collected: 03/27/19 10:40 Received: 03/27/19 16:17 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 900.0	**7.46 ± 3.33 (4.50) C:NA T:NA**	pCi/L	04/02/19 19:35	12587-46-1	
Gross Beta	EPA 900.0	**34.9 ± 7.68 (6.19) C:NA T:NA**	pCi/L	04/02/19 19:35	12587-47-2	

Sample: 813741 **Lab ID: 10468460002** Collected: 03/27/19 11:40 Received: 03/27/19 16:17 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 900.0	**20.9 ± 6.20 (5.42) C:NA T:NA**	pCi/L	04/02/19 18:07	12587-46-1	
Gross Beta	EPA 900.0	**24.8 ± 5.91 (5.15) C:NA T:NA**	pCi/L	04/02/19 18:07	12587-47-2	

Sample: M-1 **Lab ID: 10468460003** Collected: 03/27/19 11:42 Received: 03/27/19 16:17 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 900.0	**20.4 ± 6.59 (4.82) C:NA T:NA**	pCi/L	04/03/19 08:21	12587-46-1	
Gross Beta	EPA 900.0	**36.6 ± 8.36 (6.20) C:NA T:NA**	pCi/L	04/03/19 08:21	12587-47-2	

Sample: 813768 **Lab ID: 10468460004** Collected: 03/27/19 12:40 Received: 03/27/19 16:17 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 900.0	**8.97 ± 4.34 (5.36) C:NA T:NA**	pCi/L	04/03/19 08:21	12587-46-1	
Gross Beta	EPA 900.0	**31.0 ± 7.52 (6.82) C:NA T:NA**	pCi/L	04/03/19 08:21	12587-47-2	

Sample: 813767 **Lab ID: 10468460005** Collected: 03/27/19 13:40 Received: 03/27/19 16:17 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 900.0	**5.83 ± 3.81 (5.70) C:NA T:NA**	pCi/L	04/03/19 08:22	12587-46-1	
Gross Beta	EPA 900.0	**32.6 ± 7.93 (7.11) C:NA T:NA**	pCi/L	04/03/19 08:22	12587-47-2	

REPORT OF LABORATORY ANALYSIS

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(612)607-1700

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468460

Sample: 813765 **Lab ID: 10468460006** Collected: 03/27/19 15:40 Received: 03/27/19 16:17 Matrix: Water
PWS: Site ID: Sample Type:

Comments: • Upon receipt at the laboratory, 5 mls of nitric acid were added to the sample to meet the sample preservation requirement of pH <2 for radiochemistry analysis.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 900.0	**12.4 ± 12.7 (23.8) C:NA T:NA**	pCi/L	04/03/19 08:22	12587-46-1	
Gross Beta	EPA 900.0	**238 ± 49.6 (27.8) C:NA T:NA**	pCi/L	04/03/19 08:22	12587-47-2	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468460

QC Batch: 336388 Analysis Method: EPA 900.0
QC Batch Method: EPA 900.0 Analysis Description: 900.0 Gross Alpha/Beta
Associated Lab Samples: 10468460001, 10468460002, 10468460003, 10468460004, 10468460005, 10468460006

METHOD BLANK: 1637116 Matrix: Water
Associated Lab Samples: 10468460001, 10468460002, 10468460003, 10468460004, 10468460005, 10468460006

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Gross Alpha	0.490 ± 0.775 (1.71) C:NA T:NA	pCi/L	04/03/19 08:03	
Gross Beta	-0.139 ± 0.741 (1.85) C:NA T:NA	pCi/L	04/03/19 08:03	

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QUALIFIERS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468460

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-M	Pace Analytical Services - Minneapolis
PASI-PA	Pace Analytical Services - Greensburg
PASI-V	Pace Analytical Services - Virginia

WORKORDER QUALIFIERS

WO: 10468460

[1] Samples were received outside of the recommended temperature range of 0-6 degrees Celsius. The samples were received from the field on ice.

BATCH QUALIFIERS

Batch: 596776

[M5] A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

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QUALIFIERS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468460

ANALYTE QUALIFIERS

CH	The continuing calibration for this compound is outside of Pace Analytical acceptance limits. The results may be biased high.
D3	Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
E	Analyte concentration exceeded the calibration range. The reported result is estimated.
FS	The sample was filtered in the laboratory prior to analysis.
H5	Reanalysis conducted in excess of EPA method holding time. Results confirm original analysis performed in hold time.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
P6	Matrix spike recovery was outside laboratory control limits due to a parent sample concentration notably higher than the spike level.
S0	Surrogate recovery outside laboratory control limits.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468460

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10468460001	**813766**	EPA Mod. 3510C	596214	EPA 8082A	596776
10468460002	**813741**	EPA Mod. 3510C	596214	EPA 8082A	596776
10468460003	**M-1**	EPA Mod. 3510C	596214	EPA 8082A	596776
10468460004	**813768**	EPA Mod. 3510C	596214	EPA 8082A	596776
10468460005	**813767**	EPA Mod. 3510C	596214	EPA 8082A	596776
10468460006	**813765**	EPA Mod. 3510C	596214	EPA 8082A	596776
10468460001	**813766**	EPA 200.7	596133	EPA 200.7	596268
10468460002	**813741**	EPA 200.7	596133	EPA 200.7	596268
10468460003	**M-1**	EPA 200.7	596133	EPA 200.7	596268
10468460004	**813768**	EPA 200.7	596133	EPA 200.7	596268
10468460005	**813767**	EPA 200.7	596133	EPA 200.7	596268
10468460006	**813765**	EPA 200.7	596133	EPA 200.7	596268
10468460001	**813766**	EPA 200.8	596137	EPA 200.8	596845
10468460002	**813741**	EPA 200.8	596137	EPA 200.8	596845
10468460003	**M-1**	EPA 200.8	596137	EPA 200.8	596845
10468460004	**813768**	EPA 200.8	596137	EPA 200.8	596845
10468460005	**813767**	EPA 200.8	596137	EPA 200.8	596845
10468460006	**813765**	EPA 200.8	596137	EPA 200.8	596845
10468460001	**813766**	EPA 3520	596311	EPA 8270D	596901
10468460002	**813741**	EPA 3520	596311	EPA 8270D	596901
10468460003	**M-1**	EPA 3520	596311	EPA 8270D	596901
10468460004	**813768**	EPA 3520	596311	EPA 8270D	596901
10468460005	**813767**	EPA 3520	596311	EPA 8270D	596901
10468460006	**813765**	EPA 3520	596311	EPA 8270D	596901
10468460001	**813766**				
10468460002	**813741**				
10468460004	**813768**				
10468460005	**813767**				
10468460006	**813765**				
10468460001	**813766**	EPA 900.0	336388		
10468460002	**813741**	EPA 900.0	336388		
10468460003	**M-1**	EPA 900.0	336388		
10468460004	**813768**	EPA 900.0	336388		
10468460005	**813767**	EPA 900.0	336388		
10468460006	**813765**	EPA 900.0	336388		
10468460001	**813766**	EPA 300.0	596271		
10468460002	**813741**	EPA 300.0	596271		
10468460003	**M-1**	EPA 300.0	596271		
10468460004	**813768**	EPA 300.0	596271		
10468460005	**813767**	EPA 300.0	596271		
10468460006	**813765**	EPA 300.0	596271		
10468460001	**813766**	SM 3500-Cr B Modified	596221		
10468460002	**813741**	SM 3500-Cr B Modified	596221		
10468460003	**M-1**	SM 3500-Cr B Modified	596221		
10468460004	**813768**	SM 3500-Cr B Modified	596221		

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468460

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10468460005	**813767**	SM 3500-Cr B Modified	596221		
10468460006	**813765**	SM 3500-Cr B Modified	596221		
10468460001	**813766**	EPA 350.1			
10468460002	**813741**	EPA 350.1			
10468460004	**813768**	EPA 350.1			
10468460005	**813767**	EPA 350.1			
10468460006	**813765**	EPA 350.1			
10468460001	**813766**	EPA 350.1 rev. 2 (1993)	163578	EPA 350.1 rev. 2 (1993)	163646
10468460002	**813741**	EPA 350.1 rev. 2 (1993)	163578	EPA 350.1 rev. 2 (1993)	163646
10468460003	**M-1**	EPA 350.1 rev. 2 (1993)	163578	EPA 350.1 rev. 2 (1993)	163646
10468460004	**813768**	EPA 350.1 rev. 2 (1993)	163578	EPA 350.1 rev. 2 (1993)	163646
10468460005	**813767**	EPA 350.1 rev. 2 (1993)	163578	EPA 350.1 rev. 2 (1993)	163646
10468460006	**813765**	EPA 350.1 rev. 2 (1993)	163578	EPA 350.1 rev. 2 (1993)	163646
10468460001	**813766**	SM 4500-CN-E	598088	SM 4500-CN-E	598190
10468460002	**813741**	SM 4500-CN-E	598088	SM 4500-CN-E	598190
10468460003	**M-1**	SM 4500-CN-E	598088	SM 4500-CN-E	598190
10468460004	**813768**	SM 4500-CN-E	598088	SM 4500-CN-E	598190
10468460005	**813767**	SM 4500-CN-E	598088	SM 4500-CN-E	598190
10468460006	**813765**	SM 4500-CN-E	598088	SM 4500-CN-E	598190

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Minnesota Pollution Control Agency

Chain-of-Custody Form revision 2013.0909

Work Order Number: | COC Type: | Page: 1 of 1

Turnaround Time: | COC ID:

FOR LAB USE ONLY

PROJECT/CLIENT INFO

Facility Code: MNSW-057 | Program Code (MDH Lab Only):

Project Name: 19-01567 MPCA Freeway Landfill 2019 Waters | Project Task Code: PRJ07786

Project Manager: Brad Jacobson | 612-607-6375 | EPIC PROFILE #: 38716 Line 2

Potential Hazard? If yes, add information to Sampler Comments Section

LABORATORY

Lab Name: Pace Analytical - Minneapolis, MN

Address: 1700 SE Elm Street

Minneapolis | MN | 55414

Phone No: 612-607-6400

Lab Work Order Sticker

SAMPLE DETAILS

SAMPLE TYPE CODES
Sample=Routine Sample
S-IVP=Integrated Vertical Profile Sample
S-CWOP=Composite Sample
QC-FB=Field Blank Sample
QC-FR=Field Replicate Sample
QC-TB=Trip Blank Sample

LAB MATRIX CODES
DW=Drinking Water
NW=Non-potable Water
SD=Soil/Solid
WP=Wipe
AR=Air
BL=Biological Material
OT=Other
TS=Tissue

FIELD MATRIX CODES
Wtr-Ground=Groundwater
Wtr-Surf=Surface Water
QC-BLANK=Artificial Blank Water
Leachate=Leachate Sample

ANALYSIS REQUESTED

Location Identifier	Sample Type	Date	Time	Start Depth, in meters	End Depth, in meters	Grab (G) or Composite (C) Sample	Lab Matrix Code	Field Matrix Code	AIS	Sampler Comments (filter volume, special handling, etc.)	# of Cont	ANALYSIS	Field Parameters: SWL, Temp, pH, DO, Cond, Eh, Turbidity	Metals 200.7 / 200.8 / Gross Alpha/Beta - QAPP Table 3a	300.0 / HexCr - QAPP Table 3a	Ammonia/ Unionized NH3 - QAPP Table 3a	Total Cyanide / Free Cyanide - QAPP Table 3a	8270 SVOC, 8082, MDA1, MDA2 - QAPP Table 3a	Lab Sample No.	#
										PRESERV.		None	HNO3	None	H2SO4	NaOH	None		
813766	Sample	3/27/19	1040			G	NW	Wtr-Ground	N		14		X	X	X	X	X	X		1
813741	Sample	3/27/19	1140			G	NW	Wtr-Ground	N		14		X	X	X	X	X	X		2
M-1	QC-FR	3/27/19	1142			G	NW	Wtr-Ground	N		14		X	X	X	X	X	X		3
813768	Sample	3/27/19	1240			G	NW	Wtr-Ground	N		14		X	X	X	X	X	X		4
813767	Sample	3/27/19	1340			G	NW	Wtr-Ground	N		14		X	X	X	X	X	X		5
813765	Sample	3/27/19	1540			G	NW	Wtr-Ground	N		14		X	X	X	X	X	X		6
									N											
									N	DTA 3/27/19										
									N											
									N											

WO#: 10468460

10468460

Sampled By: David Anderson / Chris Pelosi

Sampler's Signature: David Anderson / Chris Pelosi

Phone #:

Receiving Comments:

Relinquished By/Affiliation	Date/Time	Accepted By/ Affiliation	Date/Time
(Sampler) David Anderson / Pace Analytical	3/27/19/1600	Chris Pelosi	3/27/19
			16:17

T= 5.9, 4.3, 5.7, 5.7, 6.2, 10.0

Pace Analytical	Document Name: **Sample Condition Upon Receipt Form**	Document Revised: 06Feb2019 Page 1 of 1
	Document No.: **F-MN-L-213-rev.25**	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt **Client Name:** Pasi, Field **Project #:** WO#: 10468460

PM: JMA Due Date: 04/03/19

CLIENT: PASI-MNFLD

Courier: ☐Fed Ex ☐UPS ☐USPS ☐Client ☒Pace ☐SpeeDee ☐Commercial **See Exception** ☐

Tracking Number: _____

Custody Seal on Cooler/Box Present? ☐Yes ☒No **Seals Intact?** ☐Yes ☒No **Biological Tissue Frozen?** ☐Yes ☐No ☒N/A

Packing Material: ☒Bubble Wrap ☒Bubble Bags ☐None ☐Other:_____ **Temp Blank?** ☒Yes ☐No

Thermometer: ☐G87A9155100842 ☒G87A9170600254 **Type of Ice:** ☒Wet ☐Blue ☐None ☐Dry ☐Melted

Note: Each West Virginia Sample must have temp taken (no temp blanks)

Temp should be above freezing to 6°C **Cooler Temp Read w/temp blank:** 5.9, 4.3, 5.7, 5.7, 6.2, 10.0 °C

Correction Factor: True **Cooler Temp Corrected w/temp blank:** 5.9, 4.3, 5.7, 5.7, 6.2, 10.0 °C

Average Corrected Temp (no temp blank only): _____ °C **See Exceptions** ☐

USDA Regulated Soil: (☒ N/A, water sample/Other:_____)

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA. MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐Yes ☐No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐Yes ☐No

Date/Initials of Person Examining Contents: CLJ 3/27/19

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present and Filled Out?	☒Yes	☐No		1.
Chain of Custody Relinquished?	☒Yes	☐No		2.
Sampler Name and/or Signature on COC?	☒Yes	☐No	☐N/A	3.
Samples Arrived within Hold Time?	☒Yes	☐No		4.
Short Hold Time Analysis (<72 hr)?	☒Yes	☐No		5. ☐Fecal Coliform ☐HPC ☐Total Coliform/E coli ☐BOD/cBOD ☒Hex Chrome ☐Turbidity ☐Nitrate ☐Nitrite ☐Orthophos ☐Other_____
Rush Turn Around Time Requested?	☐Yes	☒No		6.
Sufficient Volume?	☒Yes	☐No		7.
Correct Containers Used?	☒Yes	☐No		8.
-Pace Containers Used?	☒Yes	☐No		
Containers Intact?	☒Yes	☐No		9.
Field Filtered Volume Received for Dissolved Tests?	☒Yes	☐No	☐N/A	10. Is sediment visible in the dissolved container? ☐Yes ☐No
Is sufficient information available to reconcile the samples to the COC?	☒Yes	☐No		11. **If no, write ID/ Date/Time on Container Below:** **See Exception** ☐
Matrix: ☒Water ☐Soil ☐Oil ☐Other_____				
All containers needing acid/base preservation have been checked?	☒Yes	☐No	☐N/A	12. Sample # 1-6 2/2 ☒NaOH 1/ ☒HNO_3 1/1 ☒H_2SO_4 ☐Zinc Acetate
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>12 Cyanide)	☒Yes	☐No	☐N/A	
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin/PFAS	☐Yes	☐No	☒N/A	Positive for Res. Chlorine? ☐Yes ☐No **See Exception** ☐
Headspace in VOA Vials (greater than 6mm)?	☐Yes	☐No	☒N/A	13. **See Exception** ☐
Trip Blank Present?	☐Yes	☐No	☒N/A	14.
Trip Blank Custody Seals Present?	☐Yes	☐No	☒N/A	Pace Trip Blank Lot # (if purchased):_____

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐Yes ☐No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

Project Manager Review: _____ **Date:** 03/28/2019

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DENR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers).

Labeled by: _____

WO# : 12123002

12123002

Chain of Custody

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN

Cert. Needed: ☐ Yes ☐

Workorder: 10468460 **Workorder Name:** 19-01567 MPCA Freeway LF 19 WT **Owner Received Date:** 3/27/2019 **Results Requested By:** 4/17/2019

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6436	Pace Analytical Virginia MN 315 Chestnut Street Virginia, MN 55792 Phone (218)742-1042

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: H2SO4 BP3S						Requested Analysis: 350.1 Ammonia	Unionized Ammonia											LAB USE ONLY
1	813766	PS	3/27/2019 10:40	10468460001	Water	1						X	X											
2	813741	PS	3/27/2019 11:40	10468460002	Water	1						X	X											
3	M-1	PS	3/27/2019 11:42	10468460003	Water	1						X	X											
4	813768	PS	3/27/2019 12:40	10468460004	Water	1						X	X											
5	813767	PS	3/27/2019 13:40	10468460005	Water	1						X	X											
6	813765	PS	3/27/2019 15:40	10468460006	Water	1						X	X											

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature]	3/28/19 1655	[signature] 3/28/19	1845
2	[signature] 3/28/19	2330	[signature] 3/29/19	08:00
3				

Comments

Cooler Temperature on Receipt 1.3 °C | Custody Seal (Y) or N | Received on Ice (Y) or N | Samples Intact (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.*

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 15Mar2016 Page 1 of 1
	Document No.: F-VM-C-001-Rev.10	Issuing Authority: Pace Virginia, Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Pace MN

Project #:

WO#: 12123002

PM: CLJ Due Date: 04/18/19

CLIENT: PACE MPLS

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☒ Pace ☐ Other:

Tracking Number:

Custody Seal on Cooler/Box Present? ☒ Yes ☐ No Seals Intact? ☑ Yes ☐ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☒ Bubble Wrap ☐ Bubble Bags ☐ None ☐ Other: Temp Blank? ☒ Yes ☐ No

Thermometer Used: ☒ 140792808 Type of Ice: ☐ Wet ☐ Blue ☐ None ☑ Samples on ice, cooling process has begun

Cooler Temp Read °C: 1.0 Cooler Temp Corrected °C: 1.3 Biological Tissue Frozen? ☐ Yes ☐ No ☒ NA

Temp should be above freezing to 6°C Correction Factor: Date and Initials of Person Examining Contents: 3/28/19 DL

Comments: RH 3/29/19

Chain of Custody Present?	☑ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☑ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☑ Yes	☐ No	☐ N/A	3.
Sampler Name and Signature on COC?	☐ Yes	☑ No	☐ N/A	4.
Samples Arrived within Hold Time?	☑ Yes	☐ No	☐ N/A	5. If Fecal: ☐ <8 hours ☐ >8, <24 hours ☐ >24 hours
Short Hold Time Analysis (<72 hr)?	☐ Yes	☑ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☑ No	☐ N/A	7.
Sufficient Volume?	☑ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☑ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☑ Yes	☐ No	☐ N/A	
Containers Intact?	☑ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☑ N/A	11. Note if sediment is visible in the dissolved containers.
Sample Labels Match COC?	☑ Yes	☐ No	☐ N/A	12.
-Includes Date/Time/ID/Analysis Matrix: WT				
All containers needing acid/base preservation will be checked and documented in the pH logbook.	☑ Yes	☐ No	☐ N/A	See pH log for results and additional preservation documentation
Headspace in Methyl Mercury Container	☐ Yes	☐ No	☑ N/A	13.
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☑ N/A	14.
Trip Blank Present?	☐ Yes	☐ No	☑ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☑ N/A	
Pace Trip Blank Lot # (if purchased):				

CLIENT NOTIFICATION/RESOLUTION Field Data Required? ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

FECAL WAIVER ON FILE Y N TEMPERATURE WAIVER ON FILE Y N

Project Manager Review: Date: 3/29/19

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers).

Chain of Custody

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN
Cert. Needed: ☐ Yes ☐ No

Pace Analytical® www.pacelabs.com

Workorder: 10468460 **Workorder Name:** 19-01567 MPCA Freeway LF 19 WT **Owner Received Date:** 3/27/2019 **Results Requested By:** 4/17/2019

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6436	Pace Analytical Pittsburgh 1638 Roseytown Road Suites 2,3 & 4 Greensburg, PA 15601 Phone (724)850-5600

Requested Analysis

WO# : 30286816

30286816

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: HNO3	Preserved Containers: BP1N	Gross Alpha/Beta	LAB USE ONLY
1	813766	PS	3/27/2019 10:40	10468460001	Water	1		X	001
2	813741	PS	3/27/2019 11:40	10468460002	Water	1		X	002
3	M-1	PS	3/27/2019 11:42	10468460003	Water	1		X	003
4	813768	PS	3/27/2019 12:40	10468460004	Water	1		X	004
5	813767	PS	3/27/2019 13:40	10468460005	Water	1		X	005
6	813765	PS	3/27/2019 15:40	10468460006	Water	1		X	006

Transfers	Released By	Date/Time	Received By	Date/Time
1	Edmund Place	3/28/19 1525	Emily F	3/29-19 0945
2				
3				

Comments

Cooler Temperature on Receipt N/A °C | **Custody Seal** (Y) or N | **Received on Ice** Y or (N) | **Samples Intact** (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.*

Pittsburgh Lab Sample Condition Upon Receipt

Pace Analytical

Client Name: Pace MN

Project # 30286816

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Label ET
LIMS Login ET

Tracking #: 4638 0195 6067

Custody Seal on Cooler/Box Present: ☑ yes ☐ no Seals intact: ☑ yes ☐ no

Thermometer Used N/A Type of Ice: Wet Blue (None)

Cooler Temperature Observed Temp — °C Correction Factor: — °C Final Temp: — °C

Temp should be above freezing to 6°C

pH paper Lot# 10129781

Date and Initials of person examining contents: ET 3-29-19

Comments:	Yes	No	N/A	
Chain of Custody Present:	✓			1.
Chain of Custody Filled Out:	✓			2.
Chain of Custody Relinquished:	✓			3.
Sampler Name & Signature on COC:		✓		4.
Sample Labels match COC: -Includes date/time/ID Matrix: WT	✓			5.
Samples Arrived within Hold Time:	✓			6.
Short Hold Time Analysis (<72hr remaining):		✓		7.
Rush Turn Around Time Requested:		✓		8.
Sufficient Volume:	✓			9.
Correct Containers Used: -Pace Containers Used:	✓			10.
Containers Intact:	✓			11.
Orthophosphate field filtered			✓	12.
Hex Cr Aqueous Compliance/NPDES sample field filtered			✓	13.
Organic Samples checked for dechlorination:			✓	14.
Filtered volume received for Dissolved tests			✓	15.
All containers have been checked for preservation. All containers needing preservation are found to be in compliance with EPA recommendation. exceptions: VOA, coliform, TOC, O&G, Phenolics	✓			16. added 5.0mL of HNO3 to Sample 813705
		✓		
Headspace in VOA Vials (>6mm):			✓	17.
Trip Blank Present:		✓		18.
Trip Blank Custody Seals Present			✓	
Rad Samples Screened < 0.5 mrem/hr	✓			Initial when completed: ET Date: 3-29-19

Initial when completed ET Date/time of preservation 3-29-19 2213

Lot # of added preservative DLC1-0236

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

☐ **A check in this box indicates that additional information has been stored in ereports.**

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

***PM review** is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

12-Apr-2019

Jennifer Anderson
Pace Analytical Services, LLC
1700 Elm Street
Suite 200
Minneapolis, MN 55414

Re: **10468460** Work Order: **19031664**

Dear Jennifer,

ALS Environmental received 6 samples on 29-Mar-2019 09:30 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental - Holland and for only the analyses requested.

Sample results are compliant with industry accepted practices and Quality Control results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 13.

If you have any questions regarding this report, please feel free to contact me:

ADDRESS: 3352 128th Avenue, Holland, MI, USA
PHONE: +1 (616) 399-6070 FAX: +1 (616) 399-6185

Sincerely,

Electronically approved by: Chad Whelton

Chad Whelton
Project Manager

ALS Group, USA

Date: 12-Apr-19

Client: Pace Analytical Services, LLC
Project: 10468460
Work Order: **19031664**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
19031664-01	813766	Water		3/27/2019 10:40	3/29/2019 09:30	☐
19031664-02	813741	Water		3/27/2019 11:40	3/29/2019 09:30	☐
19031664-03	M-1	Water		3/27/2019 11:42	3/29/2019 09:30	☐
19031664-04	813768	Water		3/27/2019 12:40	3/29/2019 09:30	☐
19031664-05	813767	Water		3/27/2019 13:40	3/29/2019 09:30	☐
19031664-06	813765	Water		3/27/2019 15:40	3/29/2019 09:30	☐

Client: Pace Analytical Services, LLC
Project: 10468460
WorkOrder: **19031664**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
**	Estimated Value
a	Analyte is non-accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
Hr	BOD/CBOD - Sample was reset outside Hold Time, value should be considered estimated.
J	Analyte is present at an estimated concentration between the MDL and Report Limit
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and Reporting Limit, sample results may exhibit background or reagent contamination at the observed level.

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

Units Reported	Description
µg/L	Micrograms per Liter

ALS Group, USA

Date: *12-Apr-19*

Client:	Pace Analytical Services, LLC		
Project:	10468460	**Work Order:**	19031664
Sample ID:	813766	**Lab ID:**	19031664-01
Collection Date:	3/27/2019 10:40 AM	**Matrix:**	WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
CYANIDE, FREE			**SW9014**			Analyst: **RZM**
Cyanide, Free	ND		20	µg/L	1	4/5/2019 02:10 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Pace Analytical Services, LLC
Project: 10468460 **Work Order:** 19031664
Sample ID: 813741 **Lab ID:** 19031664-02
Collection Date: 3/27/2019 11:40 AM **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
CYANIDE, FREE			**SW9014**			Analyst: **RZM**
Cyanide, Free	ND		20	µg/L	1	4/5/2019 02:10 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Pace Analytical Services, LLC
Project: 10468460 **Work Order:** 19031664
Sample ID: M-1 **Lab ID:** 19031664-03
Collection Date: 3/27/2019 11:42 AM **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
CYANIDE, FREE			**SW9014**			Analyst: **RZM**
Cyanide, Free	ND		20	µg/L	1	4/5/2019 02:10 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Pace Analytical Services, LLC
Project: 10468460 **Work Order:** 19031664
Sample ID: 813768 **Lab ID:** 19031664-04
Collection Date: 3/27/2019 12:40 PM **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
CYANIDE, FREE			**SW9014**			Analyst: **RZM**
Cyanide, Free	ND		20	µg/L	1	4/8/2019 10:30 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Pace Analytical Services, LLC
Project: 10468460 **Work Order:** 19031664
Sample ID: 813767 **Lab ID:** 19031664-05
Collection Date: 3/27/2019 01:40 PM **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
CYANIDE, FREE			**SW9014**			Analyst: **RZM**
Cyanide, Free	ND		20	µg/L	1	4/8/2019 10:30 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Pace Analytical Services, LLC
Project: 10468460 **Work Order:** 19031664
Sample ID: 813765 **Lab ID:** 19031664-06
Collection Date: 3/27/2019 03:40 PM **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
CYANIDE, FREE			**SW9014**			Analyst: **RZM**
Cyanide, Free	ND		20	µg/L	1	4/8/2019 10:30 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

QC BATCH REPORT

Batch ID: **R257895** Instrument ID **WETCHEM** Method: **SW9014**

MBLK Sample ID: **MB-R257895-R257895** Units: **µg/L** Analysis Date: **4/5/2019 02:10 PM**

Client ID: Run ID: **WETCHEM_190405G** SeqNo: **5593578** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Free	ND	20								

LCS Sample ID: **LCS-R257895-R257895** Units: **µg/L** Analysis Date: **4/5/2019 02:10 PM**

Client ID: Run ID: **WETCHEM_190405G** SeqNo: **5593579** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Free	272.1	20	250	0	109	81-119	0			

MS Sample ID: **19031541-01A MS** Units: **µg/L** Analysis Date: **4/5/2019 02:10 PM**

Client ID: Run ID: **WETCHEM_190405G** SeqNo: **5593581** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Free	256.1	20	250	-9.96	106	81-119	0			

MSD Sample ID: **19031541-01A MSD** Units: **µg/L** Analysis Date: **4/5/2019 02:10 PM**

Client ID: Run ID: **WETCHEM_190405G** SeqNo: **5593582** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Free	251.7	20	250	-9.96	105	81-119	256.1	1.72	20	

The following samples were analyzed in this batch:

19031664-01A	19031664-02A	19031664-03A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Pace Analytical Services, LLC
Work Order: 19031664
Project: 10468460

QC BATCH REPORT

Batch ID: **R258103** Instrument ID **WETCHEM** Method: **SW9014**

MBLK Sample ID: **MB-R258103-R258103** Units: **µg/L** Analysis Date: **4/8/2019 10:30 AM**
Client ID: Run ID: **WETCHEM_190408Q** SeqNo: **5596554** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Free	ND	20								

LCS Sample ID: **LCS-R258103-R258103** Units: **µg/L** Analysis Date: **4/8/2019 10:30 AM**
Client ID: Run ID: **WETCHEM_190408Q** SeqNo: **5596555** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Free	264.9	20	250	0	106	81-119	0			

MS Sample ID: **1904010-01A MS** Units: **µg/L** Analysis Date: **4/8/2019 10:30 AM**
Client ID: Run ID: **WETCHEM_190408Q** SeqNo: **5596560** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Free	264.9	20	250	-6.48	109	81-119	0			

MSD Sample ID: **1904010-01A MSD** Units: **µg/L** Analysis Date: **4/8/2019 10:30 AM**
Client ID: Run ID: **WETCHEM_190408Q** SeqNo: **5596561** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Free	247.2	20	250	-6.48	101	81-119	264.9	6.91	20	

The following samples were analyzed in this batch:

19031664-04A	19031664-05A	19031664-06A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

140316664

Chain of Custody

Pace Analytical®
www.pacelabs.com

Workorder: 10468460 **Workorder Name:** 19-01567 MPCA Freeway LF 19 WT **Results Requested By:** 4/17/2019

Report / Invoice To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6436 Email: jennifer.anderson@pacelabs.com	ALS 3352 128th Avenue Holland, MI 49424 P.O. 10468460

State of Sample Origin: MN

Item	Sample ID	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Other BP3A	Requested Analysis: Free Cyanide	LAB USE ONLY
1	813766	3/27/2019 10:40	10468460001	Water	1	X	
2	813741	3/27/2019 11:40	10468460002	Water	1	X	
3	M-1	3/27/2019 11:42	10468460003	Water	1	X	
4	813768	3/27/2019 12:40	10468460004	Water	1	X	
5	813767	3/27/2019 13:40	10468460005	Water	1	X	
6	813765	3/27/2019 15:40	10468460006	Water	1	X	

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature]	3/28/19 1440	[signature]	3/29/19 0930
2				
3				

Comments

Cooler Temperature on Receipt 2.2 °C SR2 **Custody Seal** Y or N **Received on Ice** Y or N **Samples Intact** Y or N

ALS Group, USA

Sample Receipt Checklist

Client Name: **PACE_MN** Date/Time Received: **29-Mar-19 09:30**

Work Order: **19031664** Received by: **DS**

Checklist completed by Diane Shaw (eSignature) 29-Mar-19 (Date) Reviewed by: Chad Whelton (eSignature) 31-Mar-19 (Date)

Matrices: Water
Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Sample(s) received on ice?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	2.2/2.2 c	SR2	
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	3/29/2019 11:18:49 AM		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

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2525 Advance Road
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608.221.8700 Phone
608.221.4889 Fax

April 16, 2019

Jennifer Anderson
Pace Analytical
1700 Elm Street, Suite 200
Minneapolis, MN 55414

RE: MPCA Freeway LF Water - MN

Enclosed are the analytical results for the samples received by the laboratory on 03/29/2019.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. These results are in compliance with the 2009 NELAC Standards and the appropriate agencies listed below, unless otherwise noted in the case narrative. This analytical report should be reproduced in its entirety.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jessica Esser

Project Manager

Certification List			Expires
DODELAP	DOD ELAP Accreditation (A2LA)	3269.01	03/31/2020
ILEPA	Illinois Secondary NELAP Accreditation	004366	04/30/2019
KDHE	Kansas Secondary NELAP Accreditation	E-10384	04/30/2019
LELAP	Louisiana Primary NELAP Accreditation	04165	06/30/2019
NCDEQ	North Carolina Dept. of Environmental Quality Accreditation	688	12/31/2019
NJDEP	New Jersey Secondary NELAP Accreditation	WI004	06/30/2019
ODEQ	Oklahoma Department of Environmental Quality Accreditation	2018-087	08/31/2019
TCEQ	Texas Secondary NELAP Accreditation	T104704504-16-7	11/30/2019
WDNR	Wisconsin Certification under NR 149	113289110	08/31/2019

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Pace Analytical	Project: MPCA Freeway LF Water - MN
1700 Elm Street, Suite 200	Project Number: 10468460
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
813766	A191321-01	Water	03/27/2019	03/29/2019
813741	A191321-02	Water	03/27/2019	03/29/2019
M-1	A191321-03	Water	03/27/2019	03/29/2019
813768	A191321-04	Water	03/27/2019	03/29/2019
813767	A191321-05	Water	03/27/2019	03/29/2019
813765	A191321-06	Water	03/27/2019	03/29/2019

CASE NARRATIVE

Sample Receipt Information:
6 samples were received on 03/29/2019. Samples were received at 2.4 degrees Celsius. Samples were received in acceptable condition.

Please see the chain of custody (COC) document at the end of this report for additional information.

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Pace Analytical	Project: MPCA Freeway LF Water - MN
1700 Elm Street, Suite 200	Project Number: 10468460
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

813766

A191321-01 (Water)

Date Sampled
03/27/2019 10:40

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Base Neutral Pesticides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A904126**			
Acetochlor	ND	0.50	ug/L	1	04/01/2019	04/03/2019 06:54	EPA 8270D	
Alachlor	ND	0.50	ug/L	1	04/01/2019	04/03/2019 06:54	EPA 8270D	
Atrazine	ND	0.50	ug/L	1	04/01/2019	04/03/2019 06:54	EPA 8270D	
Chlorpyrifos	ND	0.50	ug/L	1	04/01/2019	04/03/2019 06:54	EPA 8270D	
Cyanazine	ND	0.20	ug/L	1	04/01/2019	04/03/2019 06:54	EPA 8270D	
Desethylatrazine	ND	0.50	ug/L	1	04/01/2019	04/03/2019 06:54	EPA 8270D	
Deisopropylatrazine	ND	0.50	ug/L	1	04/01/2019	04/03/2019 06:54	EPA 8270D	
Dimethenamid	ND	0.50	ug/L	1	04/01/2019	04/03/2019 06:54	EPA 8270D	
EPTC	ND	0.50	ug/L	1	04/01/2019	04/03/2019 06:54	EPA 8270D	
Ethalfluralin	ND	0.50	ug/L	1	04/01/2019	04/03/2019 06:54	EPA 8270D	
Fonofos	ND	0.50	ug/L	1	04/01/2019	04/03/2019 06:54	EPA 8270D	
Metolachlor	ND	0.50	ug/L	1	04/01/2019	04/03/2019 06:54	EPA 8270D	
Metribuzin	ND	0.50	ug/L	1	04/01/2019	04/03/2019 06:54	EPA 8270D	
Pendimethalin	ND	0.50	ug/L	1	04/01/2019	04/03/2019 06:54	EPA 8270D	
Phorate	ND	0.30	ug/L	1	04/01/2019	04/03/2019 06:54	EPA 8270D	
Prometon	ND	0.50	ug/L	1	04/01/2019	04/03/2019 06:54	EPA 8270D	
Propachlor	ND	0.50	ug/L	1	04/01/2019	04/03/2019 06:54	EPA 8270D	
Propazine	ND	0.50	ug/L	1	04/01/2019	04/03/2019 06:54	EPA 8270D	
Simazine	ND	0.50	ug/L	1	04/01/2019	04/03/2019 06:54	EPA 8270D	
Terbufos	ND	0.20	ug/L	1	04/01/2019	04/03/2019 06:54	EPA 8270D	
Triallate	ND	0.50	ug/L	1	04/01/2019	04/03/2019 06:54	EPA 8270D	
Trifluralin	ND	0.50	ug/L	1	04/01/2019	04/03/2019 06:54	EPA 8270D	
Surrogate: Atrazine-d5		*79.0 %*		*56.9-123*	*04/01/2019*	*04/03/2019 06:54*	*EPA 8270D*	
Surrogate: Parathion-d10		*109 %*		*23.8-169*	*04/01/2019*	*04/03/2019 06:54*	*EPA 8270D*	
Surrogate: Triphenyl phosphate		*110 %*		*50.5-178*	*04/01/2019*	*04/03/2019 06:54*	*EPA 8270D*	
Acid Herbicides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A904142**			
2,4-D	ND	0.50	ug/L	1	04/03/2019	04/07/2019 01:48	EPA 8151A	
2,4-DB	ND	0.50	ug/L	1	04/03/2019	04/07/2019 01:48	EPA 8151A	
2,4,5-T	ND	0.50	ug/L	1	04/03/2019	04/07/2019 01:48	EPA 8151A	
2,4,5-TP (Silvex)	ND	0.50	ug/L	1	04/03/2019	04/07/2019 01:48	EPA 8151A	
Bentazon	ND	0.50	ug/L	1	04/03/2019	04/07/2019 01:48	EPA 8151A	
Dicamba	ND	0.50	ug/L	1	04/03/2019	04/07/2019 01:48	EPA 8151A	
MCPA	ND	0.30	ug/L	1	04/03/2019	04/07/2019 01:48	EPA 8151A	
Picloram	ND	0.50	ug/L	1	04/03/2019	04/07/2019 01:48	EPA 8151A	
Triclopyr	ND	0.50	ug/L	1	04/03/2019	04/07/2019 01:48	EPA 8151A	
Surrogate: 2,4-D-d5		*82.4 %*		*44.2-121*	*04/03/2019*	*04/07/2019 01:48*	*EPA 8151A*	

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1700 Elm Street, Suite 200	Project Number: 10468460
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

813741

A191321-02 (Water)

Date Sampled
03/27/2019 11:40

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Base Neutral Pesticides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A904126**			
Acetochlor	ND	0.50	ug/L	1	04/01/2019	04/03/2019 04:34	EPA 8270D	
Alachlor	ND	0.50	ug/L	1	04/01/2019	04/03/2019 04:34	EPA 8270D	
Atrazine	ND	0.50	ug/L	1	04/01/2019	04/03/2019 04:34	EPA 8270D	
Chlorpyrifos	ND	0.50	ug/L	1	04/01/2019	04/03/2019 04:34	EPA 8270D	
Cyanazine	ND	0.20	ug/L	1	04/01/2019	04/03/2019 04:34	EPA 8270D	
Desethylatrazine	ND	0.50	ug/L	1	04/01/2019	04/03/2019 04:34	EPA 8270D	
Deisopropylatrazine	ND	0.50	ug/L	1	04/01/2019	04/03/2019 04:34	EPA 8270D	
Dimethenamid	ND	0.50	ug/L	1	04/01/2019	04/03/2019 04:34	EPA 8270D	
EPTC	ND	0.50	ug/L	1	04/01/2019	04/03/2019 04:34	EPA 8270D	
Ethalfluralin	ND	0.50	ug/L	1	04/01/2019	04/03/2019 04:34	EPA 8270D	
Fonofos	ND	0.50	ug/L	1	04/01/2019	04/03/2019 04:34	EPA 8270D	
Metolachlor	ND	0.50	ug/L	1	04/01/2019	04/03/2019 04:34	EPA 8270D	
Metribuzin	ND	0.50	ug/L	1	04/01/2019	04/03/2019 04:34	EPA 8270D	
Pendimethalin	ND	0.50	ug/L	1	04/01/2019	04/03/2019 04:34	EPA 8270D	
Phorate	ND	0.30	ug/L	1	04/01/2019	04/03/2019 04:34	EPA 8270D	
Prometon	ND	0.50	ug/L	1	04/01/2019	04/03/2019 04:34	EPA 8270D	
Propachlor	ND	0.50	ug/L	1	04/01/2019	04/03/2019 04:34	EPA 8270D	
Propazine	ND	0.50	ug/L	1	04/01/2019	04/03/2019 04:34	EPA 8270D	
Simazine	ND	0.50	ug/L	1	04/01/2019	04/03/2019 04:34	EPA 8270D	
Terbufos	ND	0.20	ug/L	1	04/01/2019	04/03/2019 04:34	EPA 8270D	
Triallate	ND	0.50	ug/L	1	04/01/2019	04/03/2019 04:34	EPA 8270D	
Trifluralin	ND	0.50	ug/L	1	04/01/2019	04/03/2019 04:34	EPA 8270D	
Surrogate: Atrazine-d5		*85.3 %*		*56.9-123*	*04/01/2019*	*04/03/2019 04:34*	*EPA 8270D*	
Surrogate: Parathion-d10		*94.6 %*		*23.8-169*	*04/01/2019*	*04/03/2019 04:34*	*EPA 8270D*	
Surrogate: Triphenyl phosphate		*101 %*		*50.5-178*	*04/01/2019*	*04/03/2019 04:34*	*EPA 8270D*	
Acid Herbicides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A904142**			
2,4-D	ND	0.50	ug/L	1	04/03/2019	04/07/2019 01:24	EPA 8151A	
2,4-DB	ND	0.50	ug/L	1	04/03/2019	04/07/2019 01:24	EPA 8151A	
2,4,5-T	ND	0.50	ug/L	1	04/03/2019	04/07/2019 01:24	EPA 8151A	
2,4,5-TP (Silvex)	ND	0.50	ug/L	1	04/03/2019	04/07/2019 01:24	EPA 8151A	
Bentazon	ND	0.50	ug/L	1	04/03/2019	04/07/2019 01:24	EPA 8151A	
Dicamba	ND	0.50	ug/L	1	04/03/2019	04/07/2019 01:24	EPA 8151A	
MCPA	ND	0.30	ug/L	1	04/03/2019	04/07/2019 01:24	EPA 8151A	
Picloram	ND	0.50	ug/L	1	04/03/2019	04/07/2019 01:24	EPA 8151A	
Triclopyr	ND	0.50	ug/L	1	04/03/2019	04/07/2019 01:24	EPA 8151A	
Surrogate: 2,4-D-d5		*83.3 %*		*44.2-121*	*04/03/2019*	*04/07/2019 01:24*	*EPA 8151A*	

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1700 Elm Street, Suite 200	Project Number: 10468460
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

M-1

A191321-03 (Water)

Date Sampled
03/27/2019 11:42

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Base Neutral Pesticides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A904126**			
Acetochlor	ND	0.50	ug/L	1	04/01/2019	04/03/2019 05:02	EPA 8270D	
Alachlor	ND	0.50	ug/L	1	04/01/2019	04/03/2019 05:02	EPA 8270D	
Atrazine	ND	0.50	ug/L	1	04/01/2019	04/03/2019 05:02	EPA 8270D	
Chlorpyrifos	ND	0.50	ug/L	1	04/01/2019	04/03/2019 05:02	EPA 8270D	
Cyanazine	ND	0.20	ug/L	1	04/01/2019	04/03/2019 05:02	EPA 8270D	
Desethylatrazine	ND	0.50	ug/L	1	04/01/2019	04/03/2019 05:02	EPA 8270D	
Deisopropylatrazine	ND	0.50	ug/L	1	04/01/2019	04/03/2019 05:02	EPA 8270D	
Dimethenamid	ND	0.50	ug/L	1	04/01/2019	04/03/2019 05:02	EPA 8270D	
EPTC	ND	0.50	ug/L	1	04/01/2019	04/03/2019 05:02	EPA 8270D	
Ethalfluralin	ND	0.50	ug/L	1	04/01/2019	04/03/2019 05:02	EPA 8270D	
Fonofos	ND	0.50	ug/L	1	04/01/2019	04/03/2019 05:02	EPA 8270D	
Metolachlor	ND	0.50	ug/L	1	04/01/2019	04/03/2019 05:02	EPA 8270D	
Metribuzin	ND	0.50	ug/L	1	04/01/2019	04/03/2019 05:02	EPA 8270D	
Pendimethalin	ND	0.50	ug/L	1	04/01/2019	04/03/2019 05:02	EPA 8270D	
Phorate	ND	0.30	ug/L	1	04/01/2019	04/03/2019 05:02	EPA 8270D	
Prometon	ND	0.50	ug/L	1	04/01/2019	04/03/2019 05:02	EPA 8270D	
Propachlor	ND	0.50	ug/L	1	04/01/2019	04/03/2019 05:02	EPA 8270D	
Propazine	ND	0.50	ug/L	1	04/01/2019	04/03/2019 05:02	EPA 8270D	
Simazine	ND	0.50	ug/L	1	04/01/2019	04/03/2019 05:02	EPA 8270D	
Terbufos	ND	0.20	ug/L	1	04/01/2019	04/03/2019 05:02	EPA 8270D	
Triallate	ND	0.50	ug/L	1	04/01/2019	04/03/2019 05:02	EPA 8270D	
Trifluralin	ND	0.50	ug/L	1	04/01/2019	04/03/2019 05:02	EPA 8270D	
Surrogate: Atrazine-d5		*108 %*		*56.9-123*	*04/01/2019*	*04/03/2019 05:02*	*EPA 8270D*	
Surrogate: Parathion-d10		*100 %*		*23.8-169*	*04/01/2019*	*04/03/2019 05:02*	*EPA 8270D*	
Surrogate: Triphenyl phosphate		*151 %*		*50.5-178*	*04/01/2019*	*04/03/2019 05:02*	*EPA 8270D*	
Acid Herbicides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A904142**			
2,4-D	ND	0.50	ug/L	1	04/03/2019	04/07/2019 01:59	EPA 8151A	
2,4-DB	ND	0.50	ug/L	1	04/03/2019	04/07/2019 01:59	EPA 8151A	
2,4,5-T	ND	0.50	ug/L	1	04/03/2019	04/07/2019 01:59	EPA 8151A	
2,4,5-TP (Silvex)	ND	0.50	ug/L	1	04/03/2019	04/07/2019 01:59	EPA 8151A	
Bentazon	ND	0.50	ug/L	1	04/03/2019	04/07/2019 01:59	EPA 8151A	
Dicamba	ND	0.50	ug/L	1	04/03/2019	04/07/2019 01:59	EPA 8151A	
MCPA	ND	0.30	ug/L	1	04/03/2019	04/07/2019 01:59	EPA 8151A	
Picloram	ND	0.50	ug/L	1	04/03/2019	04/07/2019 01:59	EPA 8151A	
Triclopyr	ND	0.50	ug/L	1	04/03/2019	04/07/2019 01:59	EPA 8151A	
Surrogate: 2,4-D-d5		*80.3 %*		*44.2-121*	*04/03/2019*	*04/07/2019 01:59*	*EPA 8151A*	

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1700 Elm Street, Suite 200	Project Number: 10468460
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

813768

A191321-04 (Water)

Date Sampled
03/27/2019 12:40

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Base Neutral Pesticides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A904126**			
Acetochlor	ND	0.50	ug/L	1	04/01/2019	04/03/2019 05:30	EPA 8270D	
Alachlor	ND	0.50	ug/L	1	04/01/2019	04/03/2019 05:30	EPA 8270D	
Atrazine	ND	0.50	ug/L	1	04/01/2019	04/03/2019 05:30	EPA 8270D	
Chlorpyrifos	ND	0.50	ug/L	1	04/01/2019	04/03/2019 05:30	EPA 8270D	
Cyanazine	ND	0.20	ug/L	1	04/01/2019	04/03/2019 05:30	EPA 8270D	
Desethylatrazine	ND	0.50	ug/L	1	04/01/2019	04/03/2019 05:30	EPA 8270D	
Deisopropylatrazine	ND	0.50	ug/L	1	04/01/2019	04/03/2019 05:30	EPA 8270D	
Dimethenamid	ND	0.50	ug/L	1	04/01/2019	04/03/2019 05:30	EPA 8270D	
EPTC	ND	0.50	ug/L	1	04/01/2019	04/03/2019 05:30	EPA 8270D	
Ethalfluralin	ND	0.50	ug/L	1	04/01/2019	04/03/2019 05:30	EPA 8270D	
Fonofos	ND	0.50	ug/L	1	04/01/2019	04/03/2019 05:30	EPA 8270D	
Metolachlor	ND	0.50	ug/L	1	04/01/2019	04/03/2019 05:30	EPA 8270D	
Metribuzin	ND	0.50	ug/L	1	04/01/2019	04/03/2019 05:30	EPA 8270D	
Pendimethalin	ND	0.50	ug/L	1	04/01/2019	04/03/2019 05:30	EPA 8270D	
Phorate	ND	0.30	ug/L	1	04/01/2019	04/03/2019 05:30	EPA 8270D	
Prometon	ND	0.50	ug/L	1	04/01/2019	04/03/2019 05:30	EPA 8270D	
Propachlor	ND	0.50	ug/L	1	04/01/2019	04/03/2019 05:30	EPA 8270D	
Propazine	ND	0.50	ug/L	1	04/01/2019	04/03/2019 05:30	EPA 8270D	
Simazine	ND	0.50	ug/L	1	04/01/2019	04/03/2019 05:30	EPA 8270D	
Terbufos	ND	0.20	ug/L	1	04/01/2019	04/03/2019 05:30	EPA 8270D	
Triallate	ND	0.50	ug/L	1	04/01/2019	04/03/2019 05:30	EPA 8270D	
Trifluralin	ND	0.50	ug/L	1	04/01/2019	04/03/2019 05:30	EPA 8270D	
Surrogate: Atrazine-d5		*90.0 %*		*56.9-123*	*04/01/2019*	*04/03/2019 05:30*	*EPA 8270D*	
Surrogate: Parathion-d10		*110 %*		*23.8-169*	*04/01/2019*	*04/03/2019 05:30*	*EPA 8270D*	
Surrogate: Triphenyl phosphate		*117 %*		*50.5-178*	*04/01/2019*	*04/03/2019 05:30*	*EPA 8270D*	
Acid Herbicides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A904142**			
2,4-D	ND	0.50	ug/L	1	04/03/2019	04/07/2019 05:21	EPA 8151A	
2,4-DB	ND	0.50	ug/L	1	04/03/2019	04/07/2019 05:21	EPA 8151A	
2,4,5-T	ND	0.50	ug/L	1	04/03/2019	04/07/2019 05:21	EPA 8151A	
2,4,5-TP (Silvex)	ND	0.50	ug/L	1	04/03/2019	04/07/2019 05:21	EPA 8151A	
Bentazon	ND	0.50	ug/L	1	04/03/2019	04/07/2019 05:21	EPA 8151A	
Dicamba	ND	0.50	ug/L	1	04/03/2019	04/07/2019 05:21	EPA 8151A	
MCPA	ND	0.30	ug/L	1	04/03/2019	04/07/2019 05:21	EPA 8151A	
Picloram	ND	0.50	ug/L	1	04/03/2019	04/07/2019 05:21	EPA 8151A	
Triclopyr	ND	0.50	ug/L	1	04/03/2019	04/07/2019 05:21	EPA 8151A	
Surrogate: 2,4-D-d5		*92.3 %*		*44.2-121*	*04/03/2019*	*04/07/2019 05:21*	*EPA 8151A*	

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1700 Elm Street, Suite 200	Project Number: 10468460
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

813767

A191321-05 (Water)

Date Sampled
03/27/2019 13:40

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Base Neutral Pesticides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A904126**			
Acetochlor	ND	0.50	ug/L	1	04/01/2019	04/03/2019 05:58	EPA 8270D	
Alachlor	ND	0.50	ug/L	1	04/01/2019	04/03/2019 05:58	EPA 8270D	
Atrazine	ND	0.50	ug/L	1	04/01/2019	04/03/2019 05:58	EPA 8270D	
Chlorpyrifos	ND	0.50	ug/L	1	04/01/2019	04/03/2019 05:58	EPA 8270D	
Cyanazine	ND	0.20	ug/L	1	04/01/2019	04/03/2019 05:58	EPA 8270D	
Desethylatrazine	ND	0.50	ug/L	1	04/01/2019	04/03/2019 05:58	EPA 8270D	
Deisopropylatrazine	ND	0.50	ug/L	1	04/01/2019	04/03/2019 05:58	EPA 8270D	
Dimethenamid	ND	0.50	ug/L	1	04/01/2019	04/03/2019 05:58	EPA 8270D	
EPTC	ND	0.50	ug/L	1	04/01/2019	04/03/2019 05:58	EPA 8270D	
Ethalfluralin	ND	0.50	ug/L	1	04/01/2019	04/03/2019 05:58	EPA 8270D	
Fonofos	ND	0.50	ug/L	1	04/01/2019	04/03/2019 05:58	EPA 8270D	
Metolachlor	ND	0.50	ug/L	1	04/01/2019	04/03/2019 05:58	EPA 8270D	
Metribuzin	ND	0.50	ug/L	1	04/01/2019	04/03/2019 05:58	EPA 8270D	
Pendimethalin	ND	0.50	ug/L	1	04/01/2019	04/03/2019 05:58	EPA 8270D	
Phorate	ND	0.30	ug/L	1	04/01/2019	04/03/2019 05:58	EPA 8270D	
Prometon	ND	0.50	ug/L	1	04/01/2019	04/03/2019 05:58	EPA 8270D	
Propachlor	ND	0.50	ug/L	1	04/01/2019	04/03/2019 05:58	EPA 8270D	
Propazine	ND	0.50	ug/L	1	04/01/2019	04/03/2019 05:58	EPA 8270D	
Simazine	ND	0.50	ug/L	1	04/01/2019	04/03/2019 05:58	EPA 8270D	
Terbufos	ND	0.20	ug/L	1	04/01/2019	04/03/2019 05:58	EPA 8270D	
Triallate	ND	0.50	ug/L	1	04/01/2019	04/03/2019 05:58	EPA 8270D	
Trifluralin	ND	0.50	ug/L	1	04/01/2019	04/03/2019 05:58	EPA 8270D	
Surrogate: Atrazine-d5		*92.6 %*		*56.9-123*	*04/01/2019*	*04/03/2019 05:58*	*EPA 8270D*	
Surrogate: Parathion-d10		*107 %*		*23.8-169*	*04/01/2019*	*04/03/2019 05:58*	*EPA 8270D*	
Surrogate: Triphenyl phosphate		*154 %*		*50.5-178*	*04/01/2019*	*04/03/2019 05:58*	*EPA 8270D*	
Acid Herbicides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A904142**			
2,4-D	ND	0.50	ug/L	1	04/03/2019	04/07/2019 05:57	EPA 8151A	
2,4-DB	ND	0.50	ug/L	1	04/03/2019	04/07/2019 05:57	EPA 8151A	
2,4,5-T	ND	0.50	ug/L	1	04/03/2019	04/07/2019 05:57	EPA 8151A	
2,4,5-TP (Silvex)	ND	0.50	ug/L	1	04/03/2019	04/07/2019 05:57	EPA 8151A	
Bentazon	ND	0.50	ug/L	1	04/03/2019	04/07/2019 05:57	EPA 8151A	
Dicamba	ND	0.50	ug/L	1	04/03/2019	04/07/2019 05:57	EPA 8151A	
MCPA	ND	0.30	ug/L	1	04/03/2019	04/07/2019 05:57	EPA 8151A	
Picloram	ND	0.50	ug/L	1	04/03/2019	04/07/2019 05:57	EPA 8151A	
Triclopyr	ND	0.50	ug/L	1	04/03/2019	04/07/2019 05:57	EPA 8151A	
Surrogate: 2,4-D-d5		*87.7 %*		*44.2-121*	*04/03/2019*	*04/07/2019 05:57*	*EPA 8151A*	

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1700 Elm Street, Suite 200	Project Number: 10468460
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

813765

A191321-06 (Water)

Date Sampled
03/27/2019 15:40

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Base Neutral Pesticides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A904126**			
Acetochlor	ND	0.50	ug/L	1	04/01/2019	04/03/2019 06:26	EPA 8270D	
Alachlor	ND	0.50	ug/L	1	04/01/2019	04/03/2019 06:26	EPA 8270D	
Atrazine	ND	0.50	ug/L	1	04/01/2019	04/03/2019 06:26	EPA 8270D	
Chlorpyrifos	ND	0.50	ug/L	1	04/01/2019	04/03/2019 06:26	EPA 8270D	
Cyanazine	ND	0.20	ug/L	1	04/01/2019	04/03/2019 06:26	EPA 8270D	
Desethylatrazine	ND	0.50	ug/L	1	04/01/2019	04/03/2019 06:26	EPA 8270D	
Deisopropylatrazine	ND	0.50	ug/L	1	04/01/2019	04/03/2019 06:26	EPA 8270D	
Dimethenamid	ND	0.50	ug/L	1	04/01/2019	04/03/2019 06:26	EPA 8270D	
EPTC	ND	0.50	ug/L	1	04/01/2019	04/03/2019 06:26	EPA 8270D	
Ethalfluralin	ND	0.50	ug/L	1	04/01/2019	04/03/2019 06:26	EPA 8270D	
Fonofos	ND	0.50	ug/L	1	04/01/2019	04/03/2019 06:26	EPA 8270D	
Metolachlor	ND	0.50	ug/L	1	04/01/2019	04/03/2019 06:26	EPA 8270D	
Metribuzin	ND	0.50	ug/L	1	04/01/2019	04/03/2019 06:26	EPA 8270D	
Pendimethalin	ND	0.50	ug/L	1	04/01/2019	04/03/2019 06:26	EPA 8270D	
Phorate	ND	0.30	ug/L	1	04/01/2019	04/03/2019 06:26	EPA 8270D	
Prometon	ND	0.50	ug/L	1	04/01/2019	04/03/2019 06:26	EPA 8270D	
Propachlor	ND	0.50	ug/L	1	04/01/2019	04/03/2019 06:26	EPA 8270D	
Propazine	ND	0.50	ug/L	1	04/01/2019	04/03/2019 06:26	EPA 8270D	
Simazine	ND	0.50	ug/L	1	04/01/2019	04/03/2019 06:26	EPA 8270D	
Terbufos	ND	0.20	ug/L	1	04/01/2019	04/03/2019 06:26	EPA 8270D	
Triallate	ND	0.50	ug/L	1	04/01/2019	04/03/2019 06:26	EPA 8270D	
Trifluralin	ND	0.50	ug/L	1	04/01/2019	04/03/2019 06:26	EPA 8270D	
Surrogate: Atrazine-d5		*88.7 %*		*56.9-123*	*04/01/2019*	*04/03/2019 06:26*	*EPA 8270D*	
Surrogate: Parathion-d10		*174 %*		*23.8-169*	*04/01/2019*	*04/03/2019 06:26*	*EPA 8270D*	*S*
Surrogate: Triphenyl phosphate		*162 %*		*50.5-178*	*04/01/2019*	*04/03/2019 06:26*	*EPA 8270D*	
Acid Herbicides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A904142**			
2,4-D	ND	0.50	ug/L	1	04/03/2019	04/07/2019 06:32	EPA 8151A	
2,4-DB	ND	0.50	ug/L	1	04/03/2019	04/07/2019 06:32	EPA 8151A	
2,4,5-T	ND	0.50	ug/L	1	04/03/2019	04/07/2019 06:32	EPA 8151A	
2,4,5-TP (Silvex)	ND	0.50	ug/L	1	04/03/2019	04/07/2019 06:32	EPA 8151A	
Bentazon	ND	0.50	ug/L	1	04/03/2019	04/07/2019 06:32	EPA 8151A	
Dicamba	ND	0.50	ug/L	1	04/03/2019	04/07/2019 06:32	EPA 8151A	
MCPA	ND	0.30	ug/L	1	04/03/2019	04/07/2019 06:32	EPA 8151A	
Picloram	ND	0.50	ug/L	1	04/03/2019	04/07/2019 06:32	EPA 8151A	
Triclopyr	ND	0.50	ug/L	1	04/03/2019	04/07/2019 06:32	EPA 8151A	
Surrogate: 2,4-D-d5		*168 %*		*44.2-121*	*04/03/2019*	*04/07/2019 06:32*	*EPA 8151A*	*S*

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1700 Elm Street, Suite 200	Project Number: 10468460
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Base Neutral Pesticides by Gas Chromatography/Mass Spectrometry - Quality Control

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A904126 - EPA 3510C										
Blank (A904126-BLK1)				Prepared: 04/01/2019 Analyzed: 04/02/2019 22:29						
Acetochlor	ND	0.50	ug/L							
Alachlor	ND	0.50	ug/L							
Atrazine	ND	0.50	ug/L							
Chlorpyrifos	ND	0.50	ug/L							
Cyanazine	ND	0.20	ug/L							
Desethylatrazine	ND	0.50	ug/L							
Deisopropylatrazine	ND	0.50	ug/L							
Dimethenamid	ND	0.50	ug/L							
EPTC	ND	0.50	ug/L							
Ethalfluralin	ND	0.50	ug/L							
Fonofos	ND	0.50	ug/L							
Metolachlor	ND	0.50	ug/L							
Metribuzin	ND	0.50	ug/L							
Pendimethalin	ND	0.50	ug/L							
Phorate	ND	0.30	ug/L							
Prometon	ND	0.50	ug/L							
Propachlor	ND	0.50	ug/L							
Propazine	ND	0.50	ug/L							
Simazine	ND	0.50	ug/L							
Terbufos	ND	0.20	ug/L							
Triallate	ND	0.50	ug/L							
Trifluralin	ND	0.50	ug/L							
Surrogate: Atrazine-d5	*0.431*		*ug/L*	*0.5000*		*86.2*	*56.9-123*			
Surrogate: Parathion-d10	*0.432*		*ug/L*	*0.5000*		*86.3*	*23.8-169*			
Surrogate: Triphenyl phosphate	*0.424*		*ug/L*	*0.5000*		*84.9*	*50.5-178*			
LCS (A904126-BS1)				Prepared: 04/01/2019 Analyzed: 04/03/2019 02:42						
Acetochlor	0.818	0.50	ug/L	1.000		81.8	67.8-122			
Alachlor	0.845	0.50	ug/L	1.000		84.5	68.6-119			
Atrazine	0.827	0.50	ug/L	1.000		82.7	68.6-115			
Chlorpyrifos	0.833	0.50	ug/L	1.000		83.3	63.1-120			
Cyanazine	0.892	0.20	ug/L	1.000		89.2	55.3-143			
Desethylatrazine	0.827	0.50	ug/L	1.000		82.7	67.8-115			
Deisopropylatrazine	0.669	0.50	ug/L	1.000		66.9	50.1-100			
Dimethenamid	0.845	0.50	ug/L	1.000		84.5	70.3-121			
EPTC	0.673	0.50	ug/L	1.000		67.3	50.4-101			
Ethalfluralin	0.846	0.50	ug/L	1.000		84.6	42.6-121			
Fonofos	0.981	0.50	ug/L	1.000		98.1	56.6-119			
Metolachlor	0.851	0.50	ug/L	1.000		85.1	71.3-128			
Metribuzin	0.826	0.50	ug/L	1.000		82.6	64.9-120			
Pendimethalin	0.774	0.50	ug/L	1.000		77.4	60.9-128			
Phorate	0.674	0.30	ug/L	1.000		67.4	37.3-112			
Prometon	0.836	0.50	ug/L	1.000		83.6	67.1-120			
Propachlor	0.999	0.50	ug/L	1.000		99.9	66.2-127			
Propazine	0.928	0.50	ug/L	1.000		92.8	68.2-118			
Simazine	0.848	0.50	ug/L	1.000		84.8	67.2-117			

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Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Base Neutral Pesticides by Gas Chromatography/Mass Spectrometry - Quality Control

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A904126 - EPA 3510C										
LCS (A904126-BS1)				Prepared: 04/01/2019 Analyzed: 04/03/2019 02:42						
Terbufos	0.637	0.20	ug/L	1.000		63.7	34.3-111			
Triallate	1.01	0.50	ug/L	1.000		101	53-121			
Trifluralin	0.675	0.50	ug/L	1.000		67.5	45.9-116			
Surrogate: Atrazine-d5	*0.443*		*ug/L*	*0.5000*		*88.6*	*56.9-123*			
Surrogate: Parathion-d10	*0.534*		*ug/L*	*0.5000*		*107*	*23.8-169*			
Surrogate: Triphenyl phosphate	*0.478*		*ug/L*	*0.5000*		*95.6*	*50.5-178*			
Matrix Spike (A904126-MS1)		**Source: A191315-01**		Prepared: 04/01/2019 Analyzed: 04/03/2019 01:45						
Acetochlor	0.812	0.50	ug/L	1.000	ND	81.2	66.8-131			
Alachlor	0.816	0.50	ug/L	1.000	ND	81.6	68.2-133			
Atrazine	0.829	0.50	ug/L	1.000	ND	82.9	70-119			
Chlorpyrifos	0.846	0.50	ug/L	1.000	ND	84.6	64.9-131			
Cyanazine	0.878	0.20	ug/L	1.000	ND	87.8	62.6-155			
Desethylatrazine	0.841	0.50	ug/L	1.000	ND	84.1	63.2-129			
Deisopropylatrazine	0.613	0.50	ug/L	1.000	ND	61.3	43-119			
Dimethenamid	0.816	0.50	ug/L	1.000	ND	81.6	71-132			
EPTC	0.644	0.50	ug/L	1.000	ND	64.4	50-110			
Ethalfluralin	0.719	0.50	ug/L	1.000	ND	71.9	42.9-140			
Fonofos	0.772	0.50	ug/L	1.000	ND	77.2	52.1-124			
Metolachlor	0.846	0.50	ug/L	1.000	ND	84.6	50.8-155			
Metribuzin	0.812	0.50	ug/L	1.000	ND	81.2	66.7-131			
Pendimethalin	0.787	0.50	ug/L	1.000	ND	78.7	61.2-152			
Phorate	0.704	0.30	ug/L	1.000	ND	70.4	42-122			
Prometon	0.811	0.50	ug/L	1.000	ND	81.1	64.1-135			
Propachlor	0.774	0.50	ug/L	1.000	ND	77.4	61.4-137			
Propazine	0.891	0.50	ug/L	1.000	ND	89.1	68.2-126			
Simazine	0.789	0.50	ug/L	1.000	ND	78.9	68.4-122			
Terbufos	0.720	0.20	ug/L	1.000	ND	72.0	43.5-119			
Triallate	0.781	0.50	ug/L	1.000	ND	78.1	58.4-122			
Trifluralin	0.682	0.50	ug/L	1.000	ND	68.2	51-132			
Surrogate: Atrazine-d5	*0.409*		*ug/L*	*0.5000*		*81.8*	*56.9-123*			
Surrogate: Parathion-d10	*0.408*		*ug/L*	*0.5000*		*81.7*	*23.8-169*			
Surrogate: Triphenyl phosphate	*0.484*		*ug/L*	*0.5000*		*96.7*	*50.5-178*			
Matrix Spike Dup (A904126-MSD1)		**Source: A191315-01**		Prepared: 04/01/2019 Analyzed: 04/03/2019 02:13						
Acetochlor	0.774	0.50	ug/L	1.010	ND	76.6	66.8-131	4.77	20	
Alachlor	0.799	0.50	ug/L	1.010	ND	79.1	68.2-133	2.19	20	
Atrazine	0.788	0.50	ug/L	1.010	ND	78.0	70-119	5.04	20	
Chlorpyrifos	0.821	0.50	ug/L	1.010	ND	81.3	64.9-131	3.00	20	
Cyanazine	0.917	0.20	ug/L	1.010	ND	90.7	62.6-155	4.34	20	
Desethylatrazine	0.845	0.50	ug/L	1.010	ND	83.7	63.2-129	0.445	20	
Deisopropylatrazine	0.692	0.50	ug/L	1.010	ND	68.5	43-119	12.1	20	
Dimethenamid	0.800	0.50	ug/L	1.010	ND	79.2	71-132	1.95	20	
EPTC	0.692	0.50	ug/L	1.010	ND	68.5	50-110	7.24	20	
Ethalfluralin	0.831	0.50	ug/L	1.010	ND	82.3	42.9-140	14.4	20	
Fonofos	0.862	0.50	ug/L	1.010	ND	85.3	52.1-124	11.0	20	

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Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Base Neutral Pesticides by Gas Chromatography/Mass Spectrometry - Quality Control

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A904126 - EPA 3510C										
Matrix Spike Dup (A904126-MSD1)	**Source: A191315-01**			Prepared: 04/01/2019 Analyzed: 04/03/2019 02:13						
Metolachlor	0.840	0.50	ug/L	1.010	ND	83.2	50.8-155	0.688	20	
Metribuzin	0.814	0.50	ug/L	1.010	ND	80.6	66.7-131	0.368	20	
Pendimethalin	0.778	0.50	ug/L	1.010	ND	77.1	61.2-152	1.10	20	
Phorate	0.689	0.30	ug/L	1.010	ND	68.2	42-122	2.09	20	
Prometon	0.799	0.50	ug/L	1.010	ND	79.1	64.1-135	1.52	20	
Propachlor	0.926	0.50	ug/L	1.010	ND	91.7	61.4-137	17.9	20	
Propazine	0.882	0.50	ug/L	1.010	ND	87.4	68.2-126	1.02	20	
Simazine	0.832	0.50	ug/L	1.010	ND	82.4	68.4-122	5.30	20	
Terbufos	0.659	0.20	ug/L	1.010	ND	65.2	43.5-119	8.81	20	
Triallate	0.856	0.50	ug/L	1.010	ND	84.8	58.4-122	9.17	20	
Trifluralin	0.737	0.50	ug/L	1.010	ND	72.9	51-132	7.66	20	
Surrogate: Atrazine-d5	*0.425*		*ug/L*	*0.5051*		*84.1*	*56.9-123*			
Surrogate: Parathion-d10	*0.479*		*ug/L*	*0.5051*		*94.8*	*23.8-169*			
Surrogate: Triphenyl phosphate	*0.487*		*ug/L*	*0.5051*		*96.4*	*50.5-178*			

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Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Acid Herbicides by Gas Chromatography/Mass Spectrometry - Quality Control

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A904142 - EPA 3510C										
Blank (A904142-BLK1)				Prepared: 04/03/2019 Analyzed: 04/06/2019 23:26						
2,4-D	ND	0.50	ug/L							
2,4-DB	ND	0.50	ug/L							
2,4,5-T	ND	0.50	ug/L							
2,4,5-TP (Silvex)	ND	0.50	ug/L							
Bentazon	ND	0.50	ug/L							
Dicamba	ND	0.50	ug/L							
MCPA	ND	0.30	ug/L							
Picloram	ND	0.50	ug/L							
Triclopyr	ND	0.50	ug/L							
Surrogate: 2,4-D-d5	*1.51*		*ug/L*	*2.006*		*75.1*	*44.2-121*			
LCS (A904142-BS1)				Prepared: 04/03/2019 Analyzed: 04/07/2019 00:01						
2,4-D	1.90	0.50	ug/L	2.000		95.1	64.6-148			
2,4-DB	1.80	0.50	ug/L	2.000		89.9	66.7-143			
2,4,5-T	1.80	0.50	ug/L	2.000		90.1	63.4-133			
2,4,5-TP (Silvex)	1.68	0.50	ug/L	2.000		84.1	63-145			
Bentazon	0.679	0.50	ug/L	1.000		67.9	52.5-139			
Dicamba	1.61	0.50	ug/L	2.000		80.6	55.4-143			
MCPA	1.45	0.30	ug/L	2.000		72.4	33.5-143			
Picloram	0.740	0.50	ug/L	1.000		74.0	47.9-113			
Triclopyr	1.62	0.50	ug/L	2.000		80.9	65.1-141			
Surrogate: 2,4-D-d5	*1.60*		*ug/L*	*2.006*		*79.6*	*44.2-121*			
LCS Dup (A904142-BSD1)				Prepared: 04/03/2019 Analyzed: 04/07/2019 00:37						
2,4-D	1.73	0.50	ug/L	2.000		86.4	64.6-148	9.56	20	
2,4-DB	1.63	0.50	ug/L	2.000		81.6	66.7-143	9.67	20	
2,4,5-T	1.67	0.50	ug/L	2.000		83.5	63.4-133	7.57	20	
2,4,5-TP (Silvex)	1.59	0.50	ug/L	2.000		79.3	63-145	5.92	20	
Bentazon	0.656	0.50	ug/L	1.000		65.6	52.5-139	3.52	20	
Dicamba	1.64	0.50	ug/L	2.000		81.8	55.4-143	1.47	20	
MCPA	1.45	0.30	ug/L	2.000		72.4	33.5-143	0.0138	20	
Picloram	0.714	0.50	ug/L	1.000		71.4	47.9-113	3.60	20	
Triclopyr	1.56	0.50	ug/L	2.000		77.9	65.1-141	3.79	20	
Surrogate: 2,4-D-d5	*1.47*		*ug/L*	*2.006*		*73.2*	*44.2-121*			

Pace Analytical®
ECCS Mobile Lab Services

2525 Advance Road
Madison, WI 53718
608.221.8700 Phone
608.221.4889 Fax

Pace Analytical	Project: MPCA Freeway LF Water - MN
1700 Elm Street, Suite 200	Project Number: 10468460
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Notes and Definitions

S	Surrogate recovery was outside of laboratory control limits due to an apparent matrix effect.
ND	Analyte NOT DETECTED at or above the reporting limit or limit of detection (if listed).
NR	Not Reported
dry	Sample results reported on a dry weight basis. If the word 'dry' does not appear after the units, results are reported on an as-is basis.
RPD	Relative Percent Difference

Chain of Custody

A191321

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☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN
Cert. Needed: ☐ Yes ☐ No

Workorder: 10468460 **Workorder Name:** 19-01567 MPCA Freeway LF 19 WT **Owner Received Date:** 3/27/2019 **Results Requested By:** 4/17/2019

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6436	Pace Analytical Madison 2525 Advance Road Madison, WI 53718 Phone (608)221-8700

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved AG1U	MDA List 1	MDA List 2	LAB USE ONLY
1	813766	PS	3/27/2019 10:40	10468460001	Water	4	X	X	01
2	813741	PS	3/27/2019 11:40	10468460002	Water	4	X	X	02
3	M-1	PS	3/27/2019 11:42	10468460003	Water	4	X	X	03
4	813768	PS	3/27/2019 12:40	10468460004	Water	4	X	X	04
5	813767	PS	3/27/2019 13:40	10468460005	Water	4	X	X	05
6	813765	PS	3/27/2019 15:40	10468460006	Water	4	X	X	06

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature]	3/28/19 1650	[signature]	3/29/19 11:06
2				
3	2.4°C			

Comments: Need MPCA Equis EDD and Barr Equis 5 EDD

Cooler Temperature on Receipt ~~2.2~~ 2.4 °C IR **Custody Seal** (Y) or N **Received on Ice** (Y) or N **Samples Intact** (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.*

160142274 exp 7/13/19

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

April 18, 2019

Mr. Brad Jacobson
Pace Analytical Services, LLC..
1700 Elm Street
Suite 200
Minneapolis, MN 55414

RE: Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468606

Dear Mr. Jacobson:
Enclosed are the analytical results for sample(s) received by the laboratory on March 28, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Some analyses have been subcontracted outside of the Pace Network. The subcontracted laboratory report has been attached.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jennifer Anderson
jennifer.anderson@pacelabs.com
(612)607-6436
Project Manager

Enclosures

cc: Tom Halverson, Pace Analytical Field Services
Chris Pelosi, Pace Analytical Services - Field Services

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Minneapolis, MN 55414
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CERTIFICATIONS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468606

Minnesota Certification IDs

1700 Elm Street SE, Minneapolis, MN 55414-2485
A2LA Certification #: 2926.01
Alabama Certification #: 40770
Alaska Contaminated Sites Certification #: 17-009
Alaska DW Certification #: MN00064
Arizona Certification #: AZ0014
Arkansas DW Certification #: MN00064
Arkansas WW Certification #: 88-0680
California Certification #: 2929
CNMI Saipan Certification #: MP0003
Colorado Certification #: MN00064
Connecticut Certification #: PH-0256
EPA Region 8+Wyoming DW Certification #: via MN 027-053-137
Florida Certification #: E87605
Georgia Certification #: 959
Guam EPA Certification #: MN00064
Hawaii Certification #: MN00064
Idaho Certification #: MN00064
Illinois Certification #: 200011
Indiana Certification #: C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky DW Certification #: 90062
Kentucky WW Certification #: 90062
Louisiana DEQ Certification #: 03086
Louisiana DW Certification #: MN00064
Maine Certification #: MN00064
Maryland Certification #: 322
Massachusetts Certification #: M-MN064
Michigan Certification #: 9909
Minnesota Certification #: 027-053-137
Minnesota Dept of Ag Certifcation #: via MN 027-053-137
Minnesota Petrofund Certification #: 1240
Mississippi Certification #: MN00064
Missouri Certification #: 10100
Montana Certification #: CERT0092
Nebraska Certification #: NE-OS-18-06
Nevada Certification #: MN00064
New Hampshire Certification #: 2081
New Jersey Certification #: MN002
New York Certification #: 11647
North Carolina DW Certification #: 27700
North Carolina WW Certification #: 530
North Dakota Certification #: R-036
Ohio DW Certification #: 41244
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Primary Certification #: MN300001
Oregon Secondary Certification #: MN200001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification #: MN00064
South Carolina Certification #:74003001
Tennessee Certification #: TN02818
Texas Certification #: T104704192
Utah Certification #: MN00064
Vermont Certification #: VT-027053137
Virginia Certification #: 460163
Washington Certification #: C486
West Virginia DEP Certification #: 382
West Virginia DW Certification #: 9952 C
Wisconsin Certification #: 999407970
Wyoming UST Certification #: via A2LA 2926.01

Virginia Minnesota Certification ID's

315 Chestnut Street, Virginia, MN 55792
Alaska Certification UST-107
Montana Certificate #CERT0103
Minnesota Dept of Health Certification #: 027-137-445
North Dakota Certification: # R-203
Wisconsin DNR Certification # : 998027470
WA Department of Ecology Lab ID# C1007

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Florida: Cert E871149 SEKS WET
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221

REPORT OF LABORATORY ANALYSIS

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Minneapolis, MN 55414
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CERTIFICATIONS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468606

Pennsylvania Certification IDs

KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

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SAMPLE SUMMARY

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468606

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10468606001	**462520**	Water	03/28/19 11:25	03/28/19 14:55
10468606002	**240818**	Water	03/28/19 11:00	03/28/19 14:55
10468606003	**462523**	Water	03/28/19 12:30	03/28/19 14:55
10468606004	**434011**	Water	03/28/19 14:20	03/28/19 14:55

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SAMPLE ANALYTE COUNT

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468606

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10468606001	**462520**	EPA 8082A	RAG	11	PASI-M
		EPA 200.7	IP	9	PASI-M
		EPA 200.8	RJS	12	PASI-M
		EPA 8270D	STB	38	PASI-M
			CLJ	16	PASI-V
		EPA 900.0	NEG	2	PASI-PA
		EPA 300.0	KEO	1	PASI-M
		SM 3500-Cr B Modified	JFP	1	PASI-M
		EPA 350.1	CLJ	1	PASI-V
		EPA 350.1 rev. 2 (1993)	DMB	1	PASI-V
		SM 4500-CN-E	DCL	1	PASI-M
10468606002	**240818**	EPA 8082A	RAG	11	PASI-M
		EPA 200.7	IP	9	PASI-M
		EPA 200.8	RJS	12	PASI-M
		EPA 8270D	STB	38	PASI-M
			CLJ	16	PASI-V
		EPA 900.0	NEG	2	PASI-PA
		EPA 300.0	KEO	1	PASI-M
		SM 3500-Cr B Modified	JFP	1	PASI-M
		EPA 350.1	CLJ	1	PASI-V
		EPA 350.1 rev. 2 (1993)	DMB	1	PASI-V
		SM 4500-CN-E	DCL	1	PASI-M
10468606003	**462523**	EPA 8082A	RAG	11	PASI-M
		EPA 200.7	IP	9	PASI-M
		EPA 200.8	RJS	12	PASI-M
		EPA 8270D	STB	38	PASI-M
			CLJ	16	PASI-V
		EPA 900.0	NEG	2	PASI-PA
		EPA 300.0	KEO	1	PASI-M
		SM 3500-Cr B Modified	JFP	1	PASI-M
		EPA 350.1	CLJ	1	PASI-V
		EPA 350.1 rev. 2 (1993)	DMB	1	PASI-V
		SM 4500-CN-E	DCL	1	PASI-M
10468606004	**434011**	EPA 8082A	RAG	11	PASI-M
		EPA 200.7	IP	9	PASI-M
		EPA 200.8	RJS	12	PASI-M
		EPA 8270D	STB	38	PASI-M

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468606

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
			CLJ	16	PASI-V
		EPA 900.0	NEG	2	PASI-PA
		EPA 300.0	KEO	1	PASI-M
		SM 3500-Cr B Modified	JFP	1	PASI-M
		EPA 350.1	CLJ	1	PASI-V
		EPA 350.1 rev. 2 (1993)	DMB	1	PASI-V
		SM 4500-CN-E	DCL	1	PASI-M

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468606

Sample: 462520 **Lab ID: 10468606001** Collected: 03/28/19 11:25 Received: 03/28/19 14:55 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA Mod. 3510C							
PCB-1016 (Aroclor 1016)	ND	ug/L	0.10	1	03/28/19 16:19	04/01/19 14:48	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/L	0.10	1	03/28/19 16:19	04/01/19 14:48	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/L	0.10	1	03/28/19 16:19	04/01/19 14:48	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/L	0.10	1	03/28/19 16:19	04/01/19 14:48	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/L	0.10	1	03/28/19 16:19	04/01/19 14:48	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/L	0.10	1	03/28/19 16:19	04/01/19 14:48	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/L	0.10	1	03/28/19 16:19	04/01/19 14:48	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/L	0.10	1	03/28/19 16:19	04/01/19 14:48	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/L	0.10	1	03/28/19 16:19	04/01/19 14:48	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	55	%.	30-125	1	03/28/19 16:19	04/01/19 14:48	877-09-8	
Decachlorobiphenyl (S)	69	%.	30-125	1	03/28/19 16:19	04/01/19 14:48	2051-24-3	
200.7 MET ICP, Dissolved	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Aluminum, Dissolved	ND	ug/L	200	1	03/29/19 11:33	04/01/19 15:09	7429-90-5	
Barium, Dissolved	**206**	ug/L	10.0	1	03/29/19 11:33	04/01/19 15:09	7440-39-3	
Copper, Dissolved	ND	ug/L	10.0	1	03/29/19 11:33	04/01/19 15:09	7440-50-8	
Manganese, Dissolved	**51.8**	ug/L	5.0	1	03/29/19 11:33	04/01/19 15:09	7439-96-5	
Nickel, Dissolved	ND	ug/L	20.0	1	03/29/19 11:33	04/01/19 15:09	7440-02-0	
Silver, Dissolved	ND	ug/L	10.0	1	03/29/19 11:33	04/01/19 15:09	7440-22-4	
Tin, Dissolved	ND	ug/L	75.0	1	03/29/19 11:33	04/01/19 15:09	7440-31-5	
Total Hardness by 2340B, Dissolved	**258000**	ug/L	3300	1	03/29/19 11:33	04/01/19 15:09		
Zinc, Dissolved	ND	ug/L	20.0	1	03/29/19 11:33	04/01/19 15:09	7440-66-6	
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Dissolved	ND	ug/L	0.50	1	03/29/19 11:53	04/17/19 00:33	7440-36-0	
Arsenic, Dissolved	ND	ug/L	0.50	1	03/29/19 11:53	04/17/19 00:33	7440-38-2	
Beryllium, Dissolved	ND	ug/L	0.20	1	03/29/19 11:53	04/17/19 00:33	7440-41-7	
Boron, Dissolved	**35.4**	ug/L	10.0	1	03/29/19 11:53	04/17/19 00:33	7440-42-8	
Cadmium, Dissolved	ND	ug/L	0.080	1	03/29/19 11:53	04/17/19 00:33	7440-43-9	
Chromium, Dissolved	ND	ug/L	0.50	1	03/29/19 11:53	04/17/19 00:33	7440-47-3	
Cobalt, Dissolved	ND	ug/L	0.50	1	03/29/19 11:53	04/17/19 00:33	7440-48-4	
Lead, Dissolved	ND	ug/L	0.10	1	03/29/19 11:53	04/17/19 00:33	7439-92-1	
Selenium, Dissolved	ND	ug/L	0.50	1	03/29/19 11:53	04/17/19 00:33	7782-49-2	
Thallium, Dissolved	ND	ug/L	0.10	1	03/29/19 11:53	04/17/19 00:33	7440-28-0	
Uranium-238, Dissolved	ND	ug/L	0.50	1	03/29/19 11:53	04/17/19 00:33	7440-61-1	
Vanadium, Dissolved	ND	ug/L	1.0	1	03/29/19 11:53	04/17/19 00:33	7440-62-2	
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
Acenaphthene	ND	ug/L	9.5	1	03/28/19 16:02	04/02/19 16:45	83-32-9	
Anthracene	ND	ug/L	9.5	1	03/28/19 16:02	04/02/19 16:45	120-12-7	
Benzo(a)pyrene	ND	ug/L	9.5	1	03/28/19 16:02	04/02/19 16:45	50-32-8	
Benzoic acid	ND	ug/L	47.4	1	03/28/19 16:02	04/02/19 16:45	65-85-0	
4-Bromophenylphenyl ether	ND	ug/L	9.5	1	03/28/19 16:02	04/02/19 16:45	101-55-3	
Butylbenzylphthalate	ND	ug/L	9.5	1	03/28/19 16:02	04/02/19 16:45	85-68-7	
bis(2-Chloroethyl) ether	ND	ug/L	9.5	1	03/28/19 16:02	04/02/19 16:45	111-44-4	

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1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468606

Sample: 462520 **Lab ID: 10468606001** Collected: 03/28/19 11:25 Received: 03/28/19 14:55 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
2-Chlorophenol	ND	ug/L	9.5	1	03/28/19 16:02	04/02/19 16:45	95-57-8	
3,3'-Dichlorobenzidine	ND	ug/L	47.4	1	03/28/19 16:02	04/02/19 16:45	91-94-1	
2,4-Dichlorophenol	ND	ug/L	9.5	1	03/28/19 16:02	04/02/19 16:45	120-83-2	
Diethylphthalate	ND	ug/L	9.5	1	03/28/19 16:02	04/02/19 16:45	84-66-2	
2,4-Dimethylphenol	ND	ug/L	9.5	1	03/28/19 16:02	04/02/19 16:45	105-67-9	
Dimethylphthalate	ND	ug/L	9.5	1	03/28/19 16:02	04/02/19 16:45	131-11-3	
Di-n-butylphthalate	ND	ug/L	9.5	1	03/28/19 16:02	04/02/19 16:45	84-74-2	
2,4-Dinitrophenol	ND	ug/L	9.5	1	03/28/19 16:02	04/02/19 16:45	51-28-5	
Di-n-octylphthalate	ND	ug/L	9.5	1	03/28/19 16:02	04/02/19 16:45	117-84-0	
bis(2-Ethylhexyl)phthalate	ND	ug/L	9.5	1	03/28/19 16:02	04/02/19 16:45	117-81-7	
Fluoranthene	ND	ug/L	9.5	1	03/28/19 16:02	04/02/19 16:45	206-44-0	
Fluorene	ND	ug/L	9.5	1	03/28/19 16:02	04/02/19 16:45	86-73-7	
Hexachlorobenzene	ND	ug/L	9.5	1	03/28/19 16:02	04/02/19 16:45	118-74-1	
Hexachlorocyclopentadiene	ND	ug/L	47.4	1	03/28/19 16:02	04/02/19 16:45	77-47-4	
Hexachloroethane	ND	ug/L	9.5	1	03/28/19 16:02	04/02/19 16:45	67-72-1	
Isophorone	ND	ug/L	9.5	1	03/28/19 16:02	04/02/19 16:45	78-59-1	
2-Methylnaphthalene	ND	ug/L	9.5	1	03/28/19 16:02	04/02/19 16:45	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/L	9.5	1	03/28/19 16:02	04/02/19 16:45	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/L	19.0	1	03/28/19 16:02	04/02/19 16:45		
N-Nitrosodimethylamine	ND	ug/L	9.5	1	03/28/19 16:02	04/02/19 16:45	62-75-9	
Pentachlorophenol	ND	ug/L	19.0	1	03/28/19 16:02	04/02/19 16:45	87-86-5	
Phenanthrene	ND	ug/L	9.5	1	03/28/19 16:02	04/02/19 16:45	85-01-8	
Phenol	ND	ug/L	9.5	1	03/28/19 16:02	04/02/19 16:45	108-95-2	
Pyrene	ND	ug/L	9.5	1	03/28/19 16:02	04/02/19 16:45	129-00-0	
2,4,6-Trichlorophenol	ND	ug/L	9.5	1	03/28/19 16:02	04/02/19 16:45	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	81	%.	55-125	1	03/28/19 16:02	04/02/19 16:45	4165-60-0	
2-Fluorobiphenyl (S)	77	%.	52-125	1	03/28/19 16:02	04/02/19 16:45	321-60-8	
p-Terphenyl-d14 (S)	89	%.	57-125	1	03/28/19 16:02	04/02/19 16:45	1718-51-0	
Phenol-d6 (S)	75	%.	30-125	1	03/28/19 16:02	04/02/19 16:45	13127-88-3	
2-Fluorophenol (S)	73	%.	30-125	1	03/28/19 16:02	04/02/19 16:45	367-12-4	
2,4,6-Tribromophenol (S)	92	%.	52-125	1	03/28/19 16:02	04/02/19 16:45	118-79-6	
Field Data	Analytical Method:							
Well Locked	**Yes**			1		03/28/19 11:25		
Purge Method	**Grundfos Redi-Flo**			1		03/28/19 11:25		
Total Well Depth	**207.0**	feet		1		03/28/19 11:25		
Depth of Water	**42.49**			1		03/28/19 11:25		
Well Volume Purged	**325.5**			1		03/28/19 11:25		
Purge Rate	**3.5**			1		03/28/19 11:25		
Collected Date	**03/28/19**			1		03/28/19 11:25		
Collected Time	**1125**			1		03/28/19 11:25		
Field pH	**7.5**	Std. Units		1		03/28/19 11:25		
Field Temperature	**10.5**	deg C		1		03/28/19 11:25		
Field Specific Conductance	**230**	umhos/cm		1		03/28/19 11:25		
Oxygen, Dissolved	**0.5**	mg/L		1		03/28/19 11:25	7782-44-7	

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468606

Sample: 462520 **Lab ID: 10468606001** Collected: 03/28/19 11:25 Received: 03/28/19 14:55 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:							
REDOX	**-94**	mV		1		03/28/19 11:25		
Turbidity	**6.0**	NTU		1		03/28/19 11:25		
Apparent Color	**Clear**			1		03/28/19 11:25		
Odor	**No**			1		03/28/19 11:25		
300.0 IC Anions	Analytical Method: EPA 300.0							
Chloride	ND	mg/L	1.2	1		04/02/19 07:24	16887-00-6	
Chromium, Hexavalent	Analytical Method: SM 3500-Cr B Modified							
Chromium, Hexavalent	ND	mg/L	0.010	1		03/28/19 16:56		
350.1 Ammonia, Unionized	Analytical Method: EPA 350.1							
Nitrogen, Ammonia (Unionized)	ND	mg/L	0.010	1		04/05/19 09:15		
350.1 Ammonia, Distilled	Analytical Method: EPA 350.1 rev. 2 (1993) Preparation Method: EPA 350.1 rev. 2 (1993)							
Nitrogen, Ammonia	**0.21**	mg/L	0.11	1	04/02/19 10:00	04/03/19 10:46	7664-41-7	
SM4500CN-E Cyanide	Analytical Method: SM 4500-CN-E Preparation Method: SM 4500-CN-E							
Cyanide	ND	ug/L	20.0	1	04/10/19 09:16	04/11/19 09:25	57-12-5	

Sample: 240818 **Lab ID: 10468606002** Collected: 03/28/19 11:00 Received: 03/28/19 14:55 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA Mod. 3510C							
PCB-1016 (Aroclor 1016)	ND	ug/L	0.095	1	03/28/19 16:19	04/01/19 15:03	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/L	0.095	1	03/28/19 16:19	04/01/19 15:03	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/L	0.095	1	03/28/19 16:19	04/01/19 15:03	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/L	0.095	1	03/28/19 16:19	04/01/19 15:03	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/L	0.095	1	03/28/19 16:19	04/01/19 15:03	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/L	0.095	1	03/28/19 16:19	04/01/19 15:03	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/L	0.095	1	03/28/19 16:19	04/01/19 15:03	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/L	0.095	1	03/28/19 16:19	04/01/19 15:03	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/L	0.095	1	03/28/19 16:19	04/01/19 15:03	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	50	%.	30-125	1	03/28/19 16:19	04/01/19 15:03	877-09-8	
Decachlorobiphenyl (S)	65	%.	30-125	1	03/28/19 16:19	04/01/19 15:03	2051-24-3	
200.7 MET ICP, Dissolved	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Aluminum, Dissolved	ND	ug/L	200	1	03/29/19 11:33	04/01/19 15:14	7429-90-5	
Barium, Dissolved	**204**	ug/L	10.0	1	03/29/19 11:33	04/01/19 15:14	7440-39-3	
Copper, Dissolved	ND	ug/L	10.0	1	03/29/19 11:33	04/01/19 15:14	7440-50-8	
Manganese, Dissolved	**1530**	ug/L	5.0	1	03/29/19 11:33	04/01/19 15:14	7439-96-5	
Nickel, Dissolved	ND	ug/L	20.0	1	03/29/19 11:33	04/01/19 15:14	7440-02-0	
Silver, Dissolved	ND	ug/L	10.0	1	03/29/19 11:33	04/01/19 15:14	7440-22-4	

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468606

Sample: 240818 **Lab ID: 10468606002** Collected: 03/28/19 11:00 Received: 03/28/19 14:55 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 MET ICP, Dissolved	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Tin, Dissolved	ND	ug/L	75.0	1	03/29/19 11:33	04/01/19 15:14	7440-31-5	
Total Hardness by 2340B, Dissolved	**790000**	ug/L	3300	1	03/29/19 11:33	04/01/19 15:14		
Zinc, Dissolved	ND	ug/L	20.0	1	03/29/19 11:33	04/01/19 15:14	7440-66-6	
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Dissolved	**0.50**	ug/L	0.50	1	03/29/19 11:53	04/17/19 00:46	7440-36-0	
Arsenic, Dissolved	**0.82**	ug/L	0.50	1	03/29/19 11:53	04/17/19 00:46	7440-38-2	
Beryllium, Dissolved	ND	ug/L	0.20	1	03/29/19 11:53	04/17/19 00:46	7440-41-7	
Boron, Dissolved	**42.0**	ug/L	10.0	1	03/29/19 11:53	04/17/19 13:27	7440-42-8	
Cadmium, Dissolved	ND	ug/L	0.080	1	03/29/19 11:53	04/17/19 00:46	7440-43-9	
Chromium, Dissolved	ND	ug/L	0.50	1	03/29/19 11:53	04/17/19 00:46	7440-47-3	
Cobalt, Dissolved	**1.6**	ug/L	0.50	1	03/29/19 11:53	04/17/19 00:46	7440-48-4	
Lead, Dissolved	ND	ug/L	0.10	1	03/29/19 11:53	04/17/19 00:46	7439-92-1	
Selenium, Dissolved	ND	ug/L	0.50	1	03/29/19 11:53	04/17/19 00:46	7782-49-2	
Thallium, Dissolved	ND	ug/L	0.10	1	03/29/19 11:53	04/17/19 00:46	7440-28-0	
Uranium-238, Dissolved	**4.4**	ug/L	0.50	1	03/29/19 11:53	04/17/19 00:46	7440-61-1	
Vanadium, Dissolved	ND	ug/L	1.0	1	03/29/19 11:53	04/17/19 00:46	7440-62-2	
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
Acenaphthene	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 17:10	83-32-9	
Anthracene	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 17:10	120-12-7	
Benzo(a)pyrene	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 17:10	50-32-8	
Benzoic acid	ND	ug/L	49.0	1	03/28/19 16:02	04/02/19 17:10	65-85-0	
4-Bromophenylphenyl ether	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 17:10	101-55-3	
Butylbenzylphthalate	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 17:10	85-68-7	
bis(2-Chloroethyl) ether	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 17:10	111-44-4	
2-Chlorophenol	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 17:10	95-57-8	
3,3'-Dichlorobenzidine	ND	ug/L	49.0	1	03/28/19 16:02	04/02/19 17:10	91-94-1	
2,4-Dichlorophenol	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 17:10	120-83-2	
Diethylphthalate	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 17:10	84-66-2	
2,4-Dimethylphenol	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 17:10	105-67-9	
Dimethylphthalate	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 17:10	131-11-3	
Di-n-butylphthalate	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 17:10	84-74-2	
2,4-Dinitrophenol	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 17:10	51-28-5	
Di-n-octylphthalate	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 17:10	117-84-0	
bis(2-Ethylhexyl)phthalate	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 17:10	117-81-7	
Fluoranthene	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 17:10	206-44-0	
Fluorene	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 17:10	86-73-7	
Hexachlorobenzene	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 17:10	118-74-1	
Hexachlorocyclopentadiene	ND	ug/L	49.0	1	03/28/19 16:02	04/02/19 17:10	77-47-4	
Hexachloroethane	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 17:10	67-72-1	
Isophorone	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 17:10	78-59-1	
2-Methylnaphthalene	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 17:10	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 17:10	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/L	19.6	1	03/28/19 16:02	04/02/19 17:10		
N-Nitrosodimethylamine	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 17:10	62-75-9	

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468606

Sample: 240818 **Lab ID: 10468606002** Collected: 03/28/19 11:00 Received: 03/28/19 14:55 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
Pentachlorophenol	ND	ug/L	19.6	1	03/28/19 16:02	04/02/19 17:10	87-86-5	
Phenanthrene	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 17:10	85-01-8	
Phenol	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 17:10	108-95-2	
Pyrene	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 17:10	129-00-0	
2,4,6-Trichlorophenol	ND	ug/L	9.8	1	03/28/19 16:02	04/02/19 17:10	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	73	%.	55-125	1	03/28/19 16:02	04/02/19 17:10	4165-60-0	
2-Fluorobiphenyl (S)	72	%.	52-125	1	03/28/19 16:02	04/02/19 17:10	321-60-8	
p-Terphenyl-d14 (S)	79	%.	57-125	1	03/28/19 16:02	04/02/19 17:10	1718-51-0	
Phenol-d6 (S)	68	%.	30-125	1	03/28/19 16:02	04/02/19 17:10	13127-88-3	
2-Fluorophenol (S)	67	%.	30-125	1	03/28/19 16:02	04/02/19 17:10	367-12-4	
2,4,6-Tribromophenol (S)	91	%.	52-125	1	03/28/19 16:02	04/02/19 17:10	118-79-6	
Field Data	Analytical Method:							
Well Locked	**No**			1		03/28/19 11:00		
Purge Method	**Peristaltic pump**			1		03/28/19 11:00		
Total Well Depth	**16.79**	feet		1		03/28/19 11:00		
Depth of Water	**8.93**			1		03/28/19 11:00		
Well Volume Purged	**4.2**			1		03/28/19 11:00		
Purge Rate	**0.2**			1		03/28/19 11:00		
Collected Date	**03/28/19**			1		03/28/19 11:00		
Collected Time	**1100**			1		03/28/19 11:00		
Field pH	**6.2**	Std. Units		1		03/28/19 11:00		
Field Temperature	**6.0**	deg C		1		03/28/19 11:00		
Field Specific Conductance	**1570**	umhos/cm		1		03/28/19 11:00		
Oxygen, Dissolved	**0.7**	mg/L		1		03/28/19 11:00	7782-44-7	
REDOX	**-6**	mV		1		03/28/19 11:00		
Turbidity	**7.3**	NTU		1		03/28/19 11:00		
Apparent Color	**Clear**			1		03/28/19 11:00		
Odor	**No**			1		03/28/19 11:00		
300.0 IC Anions	Analytical Method: EPA 300.0							
Chloride	**12.7**	mg/L	1.2	1		04/02/19 07:54	16887-00-6	
Chromium, Hexavalent	Analytical Method: SM 3500-Cr B Modified							
Chromium, Hexavalent	**0.14**	mg/L	0.010	1		03/28/19 16:56		FS
350.1 Ammonia, Unionized	Analytical Method: EPA 350.1							
Nitrogen, Ammonia (Unionized)	ND	mg/L	0.010	1		04/05/19 09:15		
350.1 Ammonia, Distilled	Analytical Method: EPA 350.1 rev. 2 (1993) Preparation Method: EPA 350.1 rev. 2 (1993)							
Nitrogen, Ammonia	**0.47**	mg/L	0.11	1	04/02/19 10:00	04/03/19 10:47	7664-41-7	
SM4500CN-E Cyanide	Analytical Method: SM 4500-CN-E Preparation Method: SM 4500-CN-E							
Cyanide	ND	ug/L	20.0	1	04/10/19 09:16	04/11/19 09:29	57-12-5	

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468606

Sample: 462523 **Lab ID: 10468606003** Collected: 03/28/19 12:30 Received: 03/28/19 14:55 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA Mod. 3510C							
PCB-1016 (Aroclor 1016)	ND	ug/L	0.096	1	03/28/19 16:19	04/01/19 15:19	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/L	0.096	1	03/28/19 16:19	04/01/19 15:19	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/L	0.096	1	03/28/19 16:19	04/01/19 15:19	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/L	0.096	1	03/28/19 16:19	04/01/19 15:19	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/L	0.096	1	03/28/19 16:19	04/01/19 15:19	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/L	0.096	1	03/28/19 16:19	04/01/19 15:19	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/L	0.096	1	03/28/19 16:19	04/01/19 15:19	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/L	0.096	1	03/28/19 16:19	04/01/19 15:19	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/L	0.096	1	03/28/19 16:19	04/01/19 15:19	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	64	%.	30-125	1	03/28/19 16:19	04/01/19 15:19	877-09-8	
Decachlorobiphenyl (S)	35	%.	30-125	1	03/28/19 16:19	04/01/19 15:19	2051-24-3	
200.7 MET ICP, Dissolved	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Aluminum, Dissolved	ND	ug/L	200	1	03/29/19 11:33	04/01/19 15:16	7429-90-5	
Barium, Dissolved	**278**	ug/L	10.0	1	03/29/19 11:33	04/01/19 15:16	7440-39-3	
Copper, Dissolved	ND	ug/L	10.0	1	03/29/19 11:33	04/01/19 15:16	7440-50-8	
Manganese, Dissolved	**994**	ug/L	5.0	1	03/29/19 11:33	04/01/19 15:16	7439-96-5	
Nickel, Dissolved	ND	ug/L	20.0	1	03/29/19 11:33	04/01/19 15:16	7440-02-0	
Silver, Dissolved	ND	ug/L	10.0	1	03/29/19 11:33	04/01/19 15:16	7440-22-4	
Tin, Dissolved	ND	ug/L	75.0	1	03/29/19 11:33	04/01/19 15:16	7440-31-5	
Total Hardness by 2340B, Dissolved	**518000**	ug/L	3300	1	03/29/19 11:33	04/01/19 15:16		
Zinc, Dissolved	ND	ug/L	20.0	1	03/29/19 11:33	04/01/19 15:16	7440-66-6	
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Dissolved	ND	ug/L	0.50	1	03/29/19 11:53	04/17/19 00:37	7440-36-0	
Arsenic, Dissolved	**4.2**	ug/L	0.50	1	03/29/19 11:53	04/17/19 00:37	7440-38-2	
Beryllium, Dissolved	ND	ug/L	0.20	1	03/29/19 11:53	04/17/19 00:37	7440-41-7	
Boron, Dissolved	**671**	ug/L	10.0	1	03/29/19 11:53	04/17/19 00:37	7440-42-8	
Cadmium, Dissolved	ND	ug/L	0.080	1	03/29/19 11:53	04/17/19 00:37	7440-43-9	
Chromium, Dissolved	ND	ug/L	0.50	1	03/29/19 11:53	04/17/19 00:37	7440-47-3	
Cobalt, Dissolved	**6.4**	ug/L	0.50	1	03/29/19 11:53	04/17/19 00:37	7440-48-4	
Lead, Dissolved	ND	ug/L	0.10	1	03/29/19 11:53	04/17/19 00:37	7439-92-1	
Selenium, Dissolved	ND	ug/L	0.50	1	03/29/19 11:53	04/17/19 00:37	7782-49-2	
Thallium, Dissolved	**0.77**	ug/L	0.10	1	03/29/19 11:53	04/17/19 00:37	7440-28-0	
Uranium-238, Dissolved	**0.52**	ug/L	0.50	1	03/29/19 11:53	04/17/19 00:37	7440-61-1	
Vanadium, Dissolved	ND	ug/L	1.0	1	03/29/19 11:53	04/17/19 00:37	7440-62-2	
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
Acenaphthene	ND	ug/L	9.9	1	03/28/19 16:02	04/02/19 17:34	83-32-9	
Anthracene	ND	ug/L	9.9	1	03/28/19 16:02	04/02/19 17:34	120-12-7	
Benzo(a)pyrene	ND	ug/L	9.9	1	03/28/19 16:02	04/02/19 17:34	50-32-8	
Benzoic acid	ND	ug/L	49.3	1	03/28/19 16:02	04/02/19 17:34	65-85-0	
4-Bromophenylphenyl ether	ND	ug/L	9.9	1	03/28/19 16:02	04/02/19 17:34	101-55-3	
Butylbenzylphthalate	ND	ug/L	9.9	1	03/28/19 16:02	04/02/19 17:34	85-68-7	
bis(2-Chloroethyl) ether	ND	ug/L	9.9	1	03/28/19 16:02	04/02/19 17:34	111-44-4	

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468606

Sample: 462523 **Lab ID: 10468606003** Collected: 03/28/19 12:30 Received: 03/28/19 14:55 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
2-Chlorophenol	ND	ug/L	9.9	1	03/28/19 16:02	04/02/19 17:34	95-57-8	
3,3'-Dichlorobenzidine	ND	ug/L	49.3	1	03/28/19 16:02	04/02/19 17:34	91-94-1	
2,4-Dichlorophenol	ND	ug/L	9.9	1	03/28/19 16:02	04/02/19 17:34	120-83-2	
Diethylphthalate	ND	ug/L	9.9	1	03/28/19 16:02	04/02/19 17:34	84-66-2	
2,4-Dimethylphenol	ND	ug/L	9.9	1	03/28/19 16:02	04/02/19 17:34	105-67-9	
Dimethylphthalate	ND	ug/L	9.9	1	03/28/19 16:02	04/02/19 17:34	131-11-3	
Di-n-butylphthalate	ND	ug/L	9.9	1	03/28/19 16:02	04/02/19 17:34	84-74-2	
2,4-Dinitrophenol	ND	ug/L	9.9	1	03/28/19 16:02	04/02/19 17:34	51-28-5	
Di-n-octylphthalate	ND	ug/L	9.9	1	03/28/19 16:02	04/02/19 17:34	117-84-0	
bis(2-Ethylhexyl)phthalate	ND	ug/L	9.9	1	03/28/19 16:02	04/02/19 17:34	117-81-7	
Fluoranthene	ND	ug/L	9.9	1	03/28/19 16:02	04/02/19 17:34	206-44-0	
Fluorene	ND	ug/L	9.9	1	03/28/19 16:02	04/02/19 17:34	86-73-7	
Hexachlorobenzene	ND	ug/L	9.9	1	03/28/19 16:02	04/02/19 17:34	118-74-1	
Hexachlorocyclopentadiene	ND	ug/L	49.3	1	03/28/19 16:02	04/02/19 17:34	77-47-4	
Hexachloroethane	ND	ug/L	9.9	1	03/28/19 16:02	04/02/19 17:34	67-72-1	
Isophorone	ND	ug/L	9.9	1	03/28/19 16:02	04/02/19 17:34	78-59-1	
2-Methylnaphthalene	ND	ug/L	9.9	1	03/28/19 16:02	04/02/19 17:34	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/L	9.9	1	03/28/19 16:02	04/02/19 17:34	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/L	19.7	1	03/28/19 16:02	04/02/19 17:34		
N-Nitrosodimethylamine	ND	ug/L	9.9	1	03/28/19 16:02	04/02/19 17:34	62-75-9	
Pentachlorophenol	ND	ug/L	19.7	1	03/28/19 16:02	04/02/19 17:34	87-86-5	
Phenanthrene	ND	ug/L	9.9	1	03/28/19 16:02	04/02/19 17:34	85-01-8	
Phenol	ND	ug/L	9.9	1	03/28/19 16:02	04/02/19 17:34	108-95-2	
Pyrene	ND	ug/L	9.9	1	03/28/19 16:02	04/02/19 17:34	129-00-0	
2,4,6-Trichlorophenol	ND	ug/L	9.9	1	03/28/19 16:02	04/02/19 17:34	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	74	%.	55-125	1	03/28/19 16:02	04/02/19 17:34	4165-60-0	
2-Fluorobiphenyl (S)	76	%.	52-125	1	03/28/19 16:02	04/02/19 17:34	321-60-8	
p-Terphenyl-d14 (S)	83	%.	57-125	1	03/28/19 16:02	04/02/19 17:34	1718-51-0	
Phenol-d6 (S)	74	%.	30-125	1	03/28/19 16:02	04/02/19 17:34	13127-88-3	
2-Fluorophenol (S)	70	%.	30-125	1	03/28/19 16:02	04/02/19 17:34	367-12-4	
2,4,6-Tribromophenol (S)	97	%.	52-125	1	03/28/19 16:02	04/02/19 17:34	118-79-6	
Field Data	Analytical Method:							
Collected Date	**03/28/19**			1		03/28/19 12:30		
Collected Time	**1230**			1		03/28/19 12:30		
Field pH	**7.0**	Std. Units		1		03/28/19 12:30		
Field Temperature	**11.5**	deg C		1		03/28/19 12:30		
Field Specific Conductance	**1370**	umhos/cm		1		03/28/19 12:30		
Oxygen, Dissolved	**0.2**	mg/L		1		03/28/19 12:30	7782-44-7	
REDOX	**-82**	mV		1		03/28/19 12:30		
Turbidity	**5.2**	NTU		1		03/28/19 12:30		
Apparent Color	**Clear**			1		03/28/19 12:30		
Odor	**No**			1		03/28/19 12:30		
Well Locked	**Yes**			1		03/28/19 12:30		
Purge Method	**Grundfos Redi-Flo**			1		03/28/19 12:30		

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(612)607-1700

ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468606

Sample: 462523 **Lab ID: 10468606003** Collected: 03/28/19 12:30 Received: 03/28/19 14:55 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:							
Total Well Depth	**86.17**	feet		1		03/28/19 12:30		
Depth of Water	**55.52**			1		03/28/19 12:30		
Well Volume Purged	**60.0**			1		03/28/19 12:30		
Purge Rate	**2.0**			1		03/28/19 12:30		
300.0 IC Anions	Analytical Method: EPA 300.0							
Chloride	**137**	mg/L	2.4	2		04/02/19 12:18	16887-00-6	
Chromium, Hexavalent	Analytical Method: SM 3500-Cr B Modified							
Chromium, Hexavalent	ND	mg/L	0.010	1		03/28/19 16:56		
350.1 Ammonia, Unionized	Analytical Method: EPA 350.1							
Nitrogen, Ammonia (Unionized)	**0.013**	mg/L	0.010	1		04/05/19 09:16		
350.1 Ammonia, Distilled	Analytical Method: EPA 350.1 rev. 2 (1993) Preparation Method: EPA 350.1 rev. 2 (1993)							
Nitrogen, Ammonia	**6.3**	mg/L	0.22	2	04/02/19 10:00	04/03/19 10:48	7664-41-7	
SM4500CN-E Cyanide	Analytical Method: SM 4500-CN-E Preparation Method: SM 4500-CN-E							
Cyanide	ND	ug/L	20.0	1	04/10/19 09:16	04/11/19 09:30	57-12-5	

Sample: 434011 **Lab ID: 10468606004** Collected: 03/28/19 14:20 Received: 03/28/19 14:55 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA Mod. 3510C							
PCB-1016 (Aroclor 1016)	ND	ug/L	0.098	1	03/28/19 16:19	04/01/19 15:34	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/L	0.098	1	03/28/19 16:19	04/01/19 15:34	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/L	0.098	1	03/28/19 16:19	04/01/19 15:34	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/L	0.098	1	03/28/19 16:19	04/01/19 15:34	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/L	0.098	1	03/28/19 16:19	04/01/19 15:34	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/L	0.098	1	03/28/19 16:19	04/01/19 15:34	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/L	0.098	1	03/28/19 16:19	04/01/19 15:34	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/L	0.098	1	03/28/19 16:19	04/01/19 15:34	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/L	0.098	1	03/28/19 16:19	04/01/19 15:34	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	66	%.	30-125	1	03/28/19 16:19	04/01/19 15:34	877-09-8	
Decachlorobiphenyl (S)	35	%.	30-125	1	03/28/19 16:19	04/01/19 15:34	2051-24-3	
200.7 MET ICP, Dissolved	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Aluminum, Dissolved	ND	ug/L	200	1	03/29/19 11:33	04/01/19 15:17	7429-90-5	
Barium, Dissolved	**559**	ug/L	10.0	1	03/29/19 11:33	04/01/19 15:17	7440-39-3	
Copper, Dissolved	ND	ug/L	10.0	1	03/29/19 11:33	04/01/19 15:17	7440-50-8	
Manganese, Dissolved	**390**	ug/L	5.0	1	03/29/19 11:33	04/01/19 15:17	7439-96-5	
Nickel, Dissolved	ND	ug/L	20.0	1	03/29/19 11:33	04/01/19 15:17	7440-02-0	
Silver, Dissolved	ND	ug/L	10.0	1	03/29/19 11:33	04/01/19 15:17	7440-22-4	

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468606

Sample: 434011 **Lab ID: 10468606004** Collected: 03/28/19 14:20 Received: 03/28/19 14:55 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 MET ICP, Dissolved	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Tin, Dissolved	ND	ug/L	75.0	1	03/29/19 11:33	04/01/19 15:17	7440-31-5	
Total Hardness by 2340B, Dissolved	**524000**	ug/L	3300	1	03/29/19 11:33	04/01/19 15:17		
Zinc, Dissolved	ND	ug/L	20.0	1	03/29/19 11:33	04/01/19 15:17	7440-66-6	
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Dissolved	ND	ug/L	0.50	1	03/29/19 11:53	04/17/19 00:42	7440-36-0	
Arsenic, Dissolved	**4.7**	ug/L	0.50	1	03/29/19 11:53	04/17/19 00:42	7440-38-2	
Beryllium, Dissolved	ND	ug/L	0.20	1	03/29/19 11:53	04/17/19 00:42	7440-41-7	
Boron, Dissolved	**386**	ug/L	10.0	1	03/29/19 11:53	04/17/19 00:42	7440-42-8	
Cadmium, Dissolved	ND	ug/L	0.080	1	03/29/19 11:53	04/17/19 00:42	7440-43-9	
Chromium, Dissolved	ND	ug/L	0.50	1	03/29/19 11:53	04/17/19 00:42	7440-47-3	
Cobalt, Dissolved	**6.0**	ug/L	0.50	1	03/29/19 11:53	04/17/19 00:42	7440-48-4	
Lead, Dissolved	ND	ug/L	0.10	1	03/29/19 11:53	04/17/19 00:42	7439-92-1	
Selenium, Dissolved	ND	ug/L	0.50	1	03/29/19 11:53	04/17/19 00:42	7782-49-2	
Thallium, Dissolved	**0.20**	ug/L	0.10	1	03/29/19 11:53	04/17/19 00:42	7440-28-0	
Uranium-238, Dissolved	**0.99**	ug/L	0.50	1	03/29/19 11:53	04/17/19 00:42	7440-61-1	
Vanadium, Dissolved	ND	ug/L	1.0	1	03/29/19 11:53	04/17/19 00:42	7440-62-2	
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
Acenaphthene	ND	ug/L	10.1	1	03/28/19 16:02	04/02/19 17:58	83-32-9	
Anthracene	ND	ug/L	10.1	1	03/28/19 16:02	04/02/19 17:58	120-12-7	
Benzo(a)pyrene	ND	ug/L	10.1	1	03/28/19 16:02	04/02/19 17:58	50-32-8	
Benzoic acid	ND	ug/L	50.5	1	03/28/19 16:02	04/02/19 17:58	65-85-0	
4-Bromophenylphenyl ether	ND	ug/L	10.1	1	03/28/19 16:02	04/02/19 17:58	101-55-3	
Butylbenzylphthalate	ND	ug/L	10.1	1	03/28/19 16:02	04/02/19 17:58	85-68-7	
bis(2-Chloroethyl) ether	ND	ug/L	10.1	1	03/28/19 16:02	04/02/19 17:58	111-44-4	
2-Chlorophenol	ND	ug/L	10.1	1	03/28/19 16:02	04/02/19 17:58	95-57-8	
3,3'-Dichlorobenzidine	ND	ug/L	50.5	1	03/28/19 16:02	04/02/19 17:58	91-94-1	
2,4-Dichlorophenol	ND	ug/L	10.1	1	03/28/19 16:02	04/02/19 17:58	120-83-2	
Diethylphthalate	ND	ug/L	10.1	1	03/28/19 16:02	04/02/19 17:58	84-66-2	
2,4-Dimethylphenol	ND	ug/L	10.1	1	03/28/19 16:02	04/02/19 17:58	105-67-9	
Dimethylphthalate	ND	ug/L	10.1	1	03/28/19 16:02	04/02/19 17:58	131-11-3	
Di-n-butylphthalate	ND	ug/L	10.1	1	03/28/19 16:02	04/02/19 17:58	84-74-2	
2,4-Dinitrophenol	ND	ug/L	10.1	1	03/28/19 16:02	04/02/19 17:58	51-28-5	
Di-n-octylphthalate	ND	ug/L	10.1	1	03/28/19 16:02	04/02/19 17:58	117-84-0	
bis(2-Ethylhexyl)phthalate	ND	ug/L	10.1	1	03/28/19 16:02	04/02/19 17:58	117-81-7	
Fluoranthene	ND	ug/L	10.1	1	03/28/19 16:02	04/02/19 17:58	206-44-0	
Fluorene	ND	ug/L	10.1	1	03/28/19 16:02	04/02/19 17:58	86-73-7	
Hexachlorobenzene	ND	ug/L	10.1	1	03/28/19 16:02	04/02/19 17:58	118-74-1	
Hexachlorocyclopentadiene	ND	ug/L	50.5	1	03/28/19 16:02	04/02/19 17:58	77-47-4	
Hexachloroethane	ND	ug/L	10.1	1	03/28/19 16:02	04/02/19 17:58	67-72-1	
Isophorone	ND	ug/L	10.1	1	03/28/19 16:02	04/02/19 17:58	78-59-1	
2-Methylnaphthalene	ND	ug/L	10.1	1	03/28/19 16:02	04/02/19 17:58	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/L	10.1	1	03/28/19 16:02	04/02/19 17:58	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/L	20.2	1	03/28/19 16:02	04/02/19 17:58		
N-Nitrosodimethylamine	ND	ug/L	10.1	1	03/28/19 16:02	04/02/19 17:58	62-75-9	

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468606

Sample: 434011 **Lab ID: 10468606004** Collected: 03/28/19 14:20 Received: 03/28/19 14:55 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
Pentachlorophenol	ND	ug/L	20.2	1	03/28/19 16:02	04/02/19 17:58	87-86-5	
Phenanthrene	ND	ug/L	10.1	1	03/28/19 16:02	04/02/19 17:58	85-01-8	
Phenol	ND	ug/L	10.1	1	03/28/19 16:02	04/02/19 17:58	108-95-2	
Pyrene	ND	ug/L	10.1	1	03/28/19 16:02	04/02/19 17:58	129-00-0	
2,4,6-Trichlorophenol	ND	ug/L	10.1	1	03/28/19 16:02	04/02/19 17:58	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	82	%.	55-125	1	03/28/19 16:02	04/02/19 17:58	4165-60-0	
2-Fluorobiphenyl (S)	81	%.	52-125	1	03/28/19 16:02	04/02/19 17:58	321-60-8	
p-Terphenyl-d14 (S)	86	%.	57-125	1	03/28/19 16:02	04/02/19 17:58	1718-51-0	
Phenol-d6 (S)	80	%.	30-125	1	03/28/19 16:02	04/02/19 17:58	13127-88-3	
2-Fluorophenol (S)	77	%.	30-125	1	03/28/19 16:02	04/02/19 17:58	367-12-4	
2,4,6-Tribromophenol (S)	98	%.	52-125	1	03/28/19 16:02	04/02/19 17:58	118-79-6	
Field Data	Analytical Method:							
Well Locked	**Yes**			1		03/28/19 14:20		
Purge Method	**Grundfos Redi-Flo**			1		03/28/19 14:20		
Total Well Depth	**102.00**	feet		1		03/28/19 14:20		
Depth of Water	**67.35**			1		03/28/19 14:20		
Well Volume Purged	**72.0**			1		03/28/19 14:20		
Purge Rate	**1.5**			1		03/28/19 14:20		
Collected Date	**03/28/19**			1		03/28/19 14:20		
Collected Time	**1420**			1		03/28/19 14:20		
Field pH	**7.0**	Std. Units		1		03/28/19 14:20		
Field Temperature	**12.5**	deg C		1		03/28/19 14:20		
Field Specific Conductance	**1370**	umhos/cm		1		03/28/19 14:20		
Oxygen, Dissolved	**0.2**	mg/L		1		03/28/19 14:20	7782-44-7	
REDOX	**-94**	mV		1		03/28/19 14:20		
Turbidity	**10.5**	NTU		1		03/28/19 14:20		
Apparent Color	**Clear**			1		03/28/19 14:20		
Odor	**No**			1		03/28/19 14:20		
300.0 IC Anions	Analytical Method: EPA 300.0							
Chloride	**132**	mg/L	2.4	2		04/02/19 12:37	16887-00-6	
Chromium, Hexavalent	Analytical Method: SM 3500-Cr B Modified							
Chromium, Hexavalent	ND	mg/L	0.010	1		03/28/19 16:56		FS
350.1 Ammonia, Unionized	Analytical Method: EPA 350.1							
Nitrogen, Ammonia (Unionized)	**0.018**	mg/L	0.010	1		04/05/19 09:17		
350.1 Ammonia, Distilled	Analytical Method: EPA 350.1 rev. 2 (1993) Preparation Method: EPA 350.1 rev. 2 (1993)							
Nitrogen, Ammonia	**7.9**	mg/L	0.11	1	04/02/19 10:00	04/03/19 10:52	7664-41-7	
SM4500CN-E Cyanide	Analytical Method: SM 4500-CN-E Preparation Method: SM 4500-CN-E							
Cyanide	ND	ug/L	20.0	1	04/10/19 09:16	04/11/19 09:33	57-12-5	

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468606

QC Batch: 596392 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 MET Dissolved
Associated Lab Samples: 10468606001, 10468606002, 10468606003, 10468606004

METHOD BLANK: 3224427 Matrix: Water
Associated Lab Samples: 10468606001, 10468606002, 10468606003, 10468606004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum, Dissolved	ug/L	ND	200	04/01/19 14:57	
Barium, Dissolved	ug/L	ND	10.0	04/01/19 14:57	
Copper, Dissolved	ug/L	ND	10.0	04/01/19 14:57	
Manganese, Dissolved	ug/L	ND	5.0	04/01/19 14:57	
Nickel, Dissolved	ug/L	ND	20.0	04/01/19 14:57	
Silver, Dissolved	ug/L	ND	10.0	04/01/19 14:57	
Tin, Dissolved	ug/L	ND	75.0	04/01/19 14:57	
Zinc, Dissolved	ug/L	ND	20.0	04/01/19 14:57	

LABORATORY CONTROL SAMPLE: 3224428

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum, Dissolved	ug/L	20000	20900	105	85-115	
Barium, Dissolved	ug/L	1000	1020	102	85-115	
Copper, Dissolved	ug/L	1000	958	96	85-115	
Manganese, Dissolved	ug/L	1000	1020	102	85-115	
Nickel, Dissolved	ug/L	1000	990	99	85-115	
Silver, Dissolved	ug/L	500	506	101	85-115	
Tin, Dissolved	ug/L	1000	1010	101	85-115	
Zinc, Dissolved	ug/L	1000	1000	100	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3224430 3224431

Parameter	Units	10468606001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum, Dissolved	ug/L	ND	20000	20000	20900	21100	104	105	70-130	1	20	
Barium, Dissolved	ug/L	206	1000	1000	1200	1250	100	104	70-130	4	20	
Copper, Dissolved	ug/L	ND	1000	1000	968	979	97	98	70-130	1	20	
Manganese, Dissolved	ug/L	51.8	1000	1000	1050	1080	100	102	70-130	3	20	
Nickel, Dissolved	ug/L	ND	1000	1000	957	970	96	97	70-130	1	20	
Silver, Dissolved	ug/L	ND	500	500	510	515	102	103	70-130	1	20	
Tin, Dissolved	ug/L	ND	1000	1000	1010	1010	101	101	70-130	0	20	
Zinc, Dissolved	ug/L	ND	1000	1000	961	977	96	98	70-130	2	20	

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468606

QC Batch: 596399 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET Dissolved
Associated Lab Samples: 10468606001, 10468606002, 10468606003, 10468606004

METHOD BLANK: 3224472 Matrix: Water
Associated Lab Samples: 10468606001, 10468606002, 10468606003, 10468606004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony, Dissolved	ug/L	ND	0.50	04/17/19 00:29	
Arsenic, Dissolved	ug/L	ND	0.50	04/17/19 00:29	
Beryllium, Dissolved	ug/L	ND	0.20	04/17/19 00:29	
Boron, Dissolved	ug/L	ND	10.0	04/17/19 00:29	
Cadmium, Dissolved	ug/L	ND	0.080	04/17/19 00:29	
Chromium, Dissolved	ug/L	ND	0.50	04/17/19 00:29	
Cobalt, Dissolved	ug/L	ND	0.50	04/17/19 00:29	
Lead, Dissolved	ug/L	ND	0.10	04/17/19 00:29	
Selenium, Dissolved	ug/L	ND	0.50	04/17/19 00:29	
Thallium, Dissolved	ug/L	ND	0.10	04/17/19 00:29	
Uranium-238, Dissolved	ug/L	ND	0.50	04/17/19 00:29	
Vanadium, Dissolved	ug/L	ND	1.0	04/17/19 00:29	

LABORATORY CONTROL SAMPLE: 3224473

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony, Dissolved	ug/L	100	100	100	85-115	
Arsenic, Dissolved	ug/L	100	98.8	99	85-115	
Beryllium, Dissolved	ug/L	100	101	101	85-115	
Boron, Dissolved	ug/L	100	103	103	85-115	
Cadmium, Dissolved	ug/L	100	101	101	85-115	
Chromium, Dissolved	ug/L	100	101	101	85-115	
Cobalt, Dissolved	ug/L	100	99.6	100	85-115	
Lead, Dissolved	ug/L	100	99.3	99	85-115	
Selenium, Dissolved	ug/L	100	100	100	85-115	
Thallium, Dissolved	ug/L	100	95.8	96	85-115	
Uranium-238, Dissolved	ug/L	100	100	100	85-115	
Vanadium, Dissolved	ug/L	100	98.9	99	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3224474 3224475

Parameter	Units	10468606002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony, Dissolved	ug/L	0.50	100	100	101	103	100	102	70-130	2	20	
Arsenic, Dissolved	ug/L	0.82	100	100	101	104	101	103	70-130	3	20	
Beryllium, Dissolved	ug/L	ND	100	100	92.1	101	92	101	70-130	10	20	
Boron, Dissolved	ug/L	42.0	100	100	119	131	77	89	70-130	9	20	
Cadmium, Dissolved	ug/L	ND	100	100	97.2	98.1	97	98	70-130	1	20	

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468606

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3224474 3224475

Parameter	Units	10468606002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Dissolved	ug/L	ND	100	100	102	103	102	103	70-130	1	20	
Cobalt, Dissolved	ug/L	1.6	100	100	104	106	103	104	70-130	2	20	
Lead, Dissolved	ug/L	ND	100	100	94.1	96.2	94	96	70-130	2	20	
Selenium, Dissolved	ug/L	ND	100	100	96.7	98.6	97	99	70-130	2	20	
Thallium, Dissolved	ug/L	ND	100	100	93.5	95.7	94	96	70-130	2	20	
Uranium-238, Dissolved	ug/L	4.4	100	100	106	108	102	103	70-130	1	20	
Vanadium, Dissolved	ug/L	ND	100	100	102	104	102	103	70-130	2	20	

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468606

QC Batch: 596214 Analysis Method: EPA 8082A
QC Batch Method: EPA Mod. 3510C Analysis Description: 8082A GCS PCB
Associated Lab Samples: 10468606001, 10468606002, 10468606003, 10468606004

METHOD BLANK: 3223517 Matrix: Water
Associated Lab Samples: 10468606001, 10468606002, 10468606003, 10468606004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
PCB-1016 (Aroclor 1016)	ug/L	ND	0.10	04/01/19 12:31	
PCB-1221 (Aroclor 1221)	ug/L	ND	0.10	04/01/19 12:31	
PCB-1232 (Aroclor 1232)	ug/L	ND	0.10	04/01/19 12:31	
PCB-1242 (Aroclor 1242)	ug/L	ND	0.10	04/01/19 12:31	
PCB-1248 (Aroclor 1248)	ug/L	ND	0.10	04/01/19 12:31	
PCB-1254 (Aroclor 1254)	ug/L	ND	0.10	04/01/19 12:31	
PCB-1260 (Aroclor 1260)	ug/L	ND	0.10	04/01/19 12:31	
PCB-1262 (Aroclor 1262)	ug/L	ND	0.10	04/01/19 12:31	
PCB-1268 (Aroclor 1268)	ug/L	ND	0.10	04/01/19 12:31	
Decachlorobiphenyl (S)	%.	92	30-125	04/01/19 12:31	
Tetrachloro-m-xylene (S)	%.	81	30-125	04/01/19 12:31	

LABORATORY CONTROL SAMPLE & LCSD: 3223518 3223519

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
PCB-1016 (Aroclor 1016)	ug/L	2	1.6	1.6	81	81	45-125	0	20	
PCB-1260 (Aroclor 1260)	ug/L	2	1.9	1.8	97	92	49-125	5	20	
Decachlorobiphenyl (S)	%.				102	95	30-125			
Tetrachloro-m-xylene (S)	%.				58	61	30-125			

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468606

QC Batch: 596311 Analysis Method: EPA 8270D
QC Batch Method: EPA 3520 Analysis Description: 8270D Water MSSV
Associated Lab Samples: 10468606001, 10468606002, 10468606003, 10468606004

METHOD BLANK: 3223890 Matrix: Water
Associated Lab Samples: 10468606001, 10468606002, 10468606003, 10468606004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
2,4,6-Trichlorophenol	ug/L	ND	10.0	04/02/19 13:06	
2,4-Dichlorophenol	ug/L	ND	10.0	04/02/19 13:06	
2,4-Dimethylphenol	ug/L	ND	10.0	04/02/19 13:06	
2,4-Dinitrophenol	ug/L	ND	10.0	04/02/19 13:06	
2-Chlorophenol	ug/L	ND	10.0	04/02/19 13:06	
2-Methylnaphthalene	ug/L	ND	10.0	04/02/19 13:06	
2-Methylphenol(o-Cresol)	ug/L	ND	10.0	04/02/19 13:06	
3&4-Methylphenol(m&p Cresol)	ug/L	ND	20.0	04/02/19 13:06	
3,3'-Dichlorobenzidine	ug/L	ND	50.0	04/02/19 13:06	
4-Bromophenylphenyl ether	ug/L	ND	10.0	04/02/19 13:06	
Acenaphthene	ug/L	ND	10.0	04/02/19 13:06	
Anthracene	ug/L	ND	10.0	04/02/19 13:06	
Benzo(a)pyrene	ug/L	ND	10.0	04/02/19 13:06	
Benzoic acid	ug/L	ND	50.0	04/02/19 13:06	
bis(2-Chloroethyl) ether	ug/L	ND	10.0	04/02/19 13:06	
bis(2-Ethylhexyl)phthalate	ug/L	ND	10.0	04/02/19 13:06	
Butylbenzylphthalate	ug/L	ND	10.0	04/02/19 13:06	
Di-n-butylphthalate	ug/L	ND	10.0	04/02/19 13:06	
Di-n-octylphthalate	ug/L	ND	10.0	04/02/19 13:06	
Diethylphthalate	ug/L	ND	10.0	04/02/19 13:06	
Dimethylphthalate	ug/L	ND	10.0	04/02/19 13:06	
Fluoranthene	ug/L	ND	10.0	04/02/19 13:06	
Fluorene	ug/L	ND	10.0	04/02/19 13:06	
Hexachlorobenzene	ug/L	ND	10.0	04/02/19 13:06	
Hexachlorocyclopentadiene	ug/L	ND	50.0	04/02/19 13:06	
Hexachloroethane	ug/L	ND	10.0	04/02/19 13:06	
Isophorone	ug/L	ND	10.0	04/02/19 13:06	
N-Nitrosodimethylamine	ug/L	ND	10.0	04/02/19 13:06	
Pentachlorophenol	ug/L	ND	20.0	04/02/19 13:06	
Phenanthrene	ug/L	ND	10.0	04/02/19 13:06	
Phenol	ug/L	ND	10.0	04/02/19 13:06	
Pyrene	ug/L	ND	10.0	04/02/19 13:06	
2,4,6-Tribromophenol (S)	%.	88	52-125	04/02/19 13:06	
2-Fluorobiphenyl (S)	%.	73	52-125	04/02/19 13:06	
2-Fluorophenol (S)	%.	69	30-125	04/02/19 13:06	
Nitrobenzene-d5 (S)	%.	74	55-125	04/02/19 13:06	
p-Terphenyl-d14 (S)	%.	86	57-125	04/02/19 13:06	
Phenol-d6 (S)	%.	73	30-125	04/02/19 13:06	

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468606

LABORATORY CONTROL SAMPLE & LCSD: 3223891 3223892

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
2,4,6-Trichlorophenol	ug/L	50	42.7	42.8	85	86	60-125	0	20	
2,4-Dichlorophenol	ug/L	50	39.2	37.7	78	75	56-125	4	20	
2,4-Dimethylphenol	ug/L	50	33.1	32.5	66	65	33-125	2	20	
2,4-Dinitrophenol	ug/L	50	31.8	32.7	64	65	32-125	3	20	
2-Chlorophenol	ug/L	50	37.6	35.1	75	70	52-125	7	20	
2-Methylnaphthalene	ug/L	50	39.0	38.3	78	77	52-125	2	20	
2-Methylphenol(o-Cresol)	ug/L	50	36.9	34.4	74	69	55-125	7	20	
3&4-Methylphenol(m&p Cresol)	ug/L	50	37.5	35.1	75	70	57-125	7	20	
3,3'-Dichlorobenzidine	ug/L	50	44J	44J	88	88	39-150		20	
4-Bromophenylphenyl ether	ug/L	50	46.4	45.7	93	91	61-125	1	20	
Acenaphthene	ug/L	50	43.0	43.0	86	86	59-125	0	20	
Anthracene	ug/L	50	47.3	46.5	95	93	64-125	2	20	
Benzo(a)pyrene	ug/L	50	43.9	43.8	88	88	63-125	0	20	
Benzoic acid	ug/L	50	33.5J	26.9J	67	54	30-125		20	
bis(2-Chloroethyl) ether	ug/L	50	37.3	35.1	75	70	49-125	6	20	
bis(2-Ethylhexyl)phthalate	ug/L	50	45.6	46.2	91	92	68-125	1	20	
Butylbenzylphthalate	ug/L	50	46.1	45.6	92	91	67-125	1	20	
Di-n-butylphthalate	ug/L	50	49.3	47.7	99	95	67-125	3	20	
Di-n-octylphthalate	ug/L	50	46.0	46.4	92	93	67-125	1	20	
Diethylphthalate	ug/L	50	47.3	46.0	95	92	64-125	3	20	
Dimethylphthalate	ug/L	50	46.9	45.5	94	91	65-125	3	20	
Fluoranthene	ug/L	50	47.3	47.2	95	94	64-125	0	20	
Fluorene	ug/L	50	45.3	44.8	91	90	63-125	1	20	
Hexachlorobenzene	ug/L	50	48.4	49.2	97	98	61-125	2	20	
Hexachlorocyclopentadiene	ug/L	50	21.3J	ND	43	40	30-125		20	
Hexachloroethane	ug/L	50	34.5	32.3	69	65	30-125	6	20	
Isophorone	ug/L	50	41.4	40.7	83	81	59-125	2	20	
N-Nitrosodimethylamine	ug/L	50	38.6	35.5	77	71	43-125	8	20	
Pentachlorophenol	ug/L	50	43.3	41.7	87	83	35-125	4	20	
Phenanthrene	ug/L	50	46.4	46.2	93	92	65-125	0	20	
Phenol	ug/L	50	37.7	34.9	75	70	54-125	8	20	
Pyrene	ug/L	50	44.5	44.2	89	88	65-125	1	20	
2,4,6-Tribromophenol (S)	%.				96	95	52-125			
2-Fluorobiphenyl (S)	%.				79	78	52-125			
2-Fluorophenol (S)	%.				72	68	30-125			
Nitrobenzene-d5 (S)	%.				77	73	55-125			
p-Terphenyl-d14 (S)	%.				85	84	57-125			
Phenol-d6 (S)	%.				74	69	30-125			

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468606

QC Batch: 596900 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 10468606001, 10468606002, 10468606003, 10468606004

METHOD BLANK: 3227643 Matrix: Water
Associated Lab Samples: 10468606001, 10468606002, 10468606003, 10468606004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.2	04/02/19 03:39	

LABORATORY CONTROL SAMPLE: 3227644

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	12.5	12.7	102	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3227645 3227646

Parameter	Units	10468903001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	37.2	12.5	12.5	42.1	42.2	39	40	90-110	0	20	M1

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3227647 3227648

Parameter	Units	10468903002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	48.6	12.5	12.5	51.4	51.3	22	21	90-110	0	20	M1

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468606

QC Batch: 596221 Analysis Method: SM 3500-Cr B Modified
QC Batch Method: SM 3500-Cr B Modified Analysis Description: Chromium, Hexavalent by 3500
Associated Lab Samples: 10468606001, 10468606002, 10468606003, 10468606004

METHOD BLANK: 3223534 Matrix: Water
Associated Lab Samples: 10468606001, 10468606002, 10468606003, 10468606004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium, Hexavalent	mg/L	ND	0.010	03/28/19 11:10	FS

LABORATORY CONTROL SAMPLE: 3223535

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/L	0.2	0.19	96	90-110	FS

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3223536 3223537

Parameter	Units	10468460001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Hexavalent	mg/L	ND	0.2	0.2	0.11	0.13	49	60	85-115	17	20	FS,H5, M1

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468606

QC Batch: 163578 Analysis Method: EPA 350.1 rev. 2 (1993)
QC Batch Method: EPA 350.1 rev. 2 (1993) Analysis Description: 350.1 Ammonia Distilled
Associated Lab Samples: 10468606001, 10468606002, 10468606003, 10468606004

METHOD BLANK: 644687 Matrix: Water
Associated Lab Samples: 10468606001, 10468606002, 10468606003, 10468606004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, Ammonia	mg/L	ND	0.11	04/03/19 08:35	

LABORATORY CONTROL SAMPLE: 644688

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Ammonia	mg/L	5	5.1	102	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 644689 644690

Parameter	Units	12123082002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, Ammonia	mg/L	<0.11	5	5	5.2	5.0	103	101	90-110	2	10	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 644691 644692

Parameter	Units	10468606003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, Ammonia	mg/L	6.3	5	5	11.2	11.4	97	101	90-110	2	10	

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468606

QC Batch: 598592 Analysis Method: SM 4500-CN-E
QC Batch Method: SM 4500-CN-E Analysis Description: SM4500CN-E Cyanide
Associated Lab Samples: 10468606001, 10468606002, 10468606003, 10468606004

METHOD BLANK: 3236543 Matrix: Water
Associated Lab Samples: 10468606001, 10468606002, 10468606003, 10468606004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cyanide	ug/L	ND	20.0	04/11/19 09:22	

LABORATORY CONTROL SAMPLE: 3236544

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cyanide	ug/L	250	247	99	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3236545 3236546

Parameter	Units	10468606001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cyanide	ug/L	ND	250	250	251	243	100	97	80-120	3	30	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3236547 3236548

Parameter	Units	10468606002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cyanide	ug/L	ND	250	250	266	246	101	93	80-120	8	30	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468606

Sample: 462520 **Lab ID: 10468606001** Collected: 03/28/19 11:25 Received: 03/28/19 14:55 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 900.0	**7.14 ± 2.92 (2.93) C:NA T:NA**	pCi/L	04/03/19 08:02	12587-46-1	
Gross Beta	EPA 900.0	**2.61 ± 1.64 (2.76) C:NA T:NA**	pCi/L	04/03/19 08:02	12587-47-2	

Sample: 240818 **Lab ID: 10468606002** Collected: 03/28/19 11:00 Received: 03/28/19 14:55 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 900.0	**4.17 ± 2.01 (2.78) C:NA T:NA**	pCi/L	04/02/19 19:34	12587-46-1	
Gross Beta	EPA 900.0	**7.64 ± 2.46 (3.35) C:NA T:NA**	pCi/L	04/02/19 19:34	12587-47-2	

Sample: 462523 **Lab ID: 10468606003** Collected: 03/28/19 12:30 Received: 03/28/19 14:55 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 900.0	**5.89 ± 2.11 (2.29) C:NA T:NA**	pCi/L	04/02/19 19:34	12587-46-1	
Gross Beta	EPA 900.0	**8.82 ± 2.45 (2.90) C:NA T:NA**	pCi/L	04/02/19 19:34	12587-47-2	

Sample: 434011 **Lab ID: 10468606004** Collected: 03/28/19 14:20 Received: 03/28/19 14:55 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 900.0	**5.65 ± 2.09 (2.30) C:NA T:NA**	pCi/L	04/02/19 19:34	12587-46-1	
Gross Beta	EPA 900.0	**6.80 ± 2.20 (2.97) C:NA T:NA**	pCi/L	04/02/19 19:34	12587-47-2	

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL - RADIOCHEMISTRY

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468606

QC Batch: 336388 Analysis Method: EPA 900.0
QC Batch Method: EPA 900.0 Analysis Description: 900.0 Gross Alpha/Beta
Associated Lab Samples: 10468606001, 10468606002, 10468606003, 10468606004

METHOD BLANK: 1637116 Matrix: Water
Associated Lab Samples: 10468606001, 10468606002, 10468606003, 10468606004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Gross Alpha	0.490 ± 0.775 (1.71) C:NA T:NA	pCi/L	04/03/19 08:03	
Gross Beta	-0.139 ± 0.741 (1.85) C:NA T:NA	pCi/L	04/03/19 08:03	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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Minneapolis, MN 55414
(612)607-1700

QUALIFIERS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468606

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-M	Pace Analytical Services - Minneapolis
PASI-PA	Pace Analytical Services - Greensburg
PASI-V	Pace Analytical Services - Virginia

BATCH QUALIFIERS

Batch: 596776

[M5]	A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

ANALYTE QUALIFIERS

FS	The sample was filtered in the laboratory prior to analysis.
H5	Reanalysis conducted in excess of EPA method holding time. Results confirm original analysis performed in hold time.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

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1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468606

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10468606001	**462520**	EPA Mod. 3510C	596214	EPA 8082A	596776
10468606002	**240818**	EPA Mod. 3510C	596214	EPA 8082A	596776
10468606003	**462523**	EPA Mod. 3510C	596214	EPA 8082A	596776
10468606004	**434011**	EPA Mod. 3510C	596214	EPA 8082A	596776
10468606001	**462520**	EPA 200.7	596392	EPA 200.7	596765
10468606002	**240818**	EPA 200.7	596392	EPA 200.7	596765
10468606003	**462523**	EPA 200.7	596392	EPA 200.7	596765
10468606004	**434011**	EPA 200.7	596392	EPA 200.7	596765
10468606001	**462520**	EPA 200.8	596399	EPA 200.8	596862
10468606002	**240818**	EPA 200.8	596399	EPA 200.8	596862
10468606003	**462523**	EPA 200.8	596399	EPA 200.8	596862
10468606004	**434011**	EPA 200.8	596399	EPA 200.8	596862
10468606001	**462520**	EPA 3520	596311	EPA 8270D	596901
10468606002	**240818**	EPA 3520	596311	EPA 8270D	596901
10468606003	**462523**	EPA 3520	596311	EPA 8270D	596901
10468606004	**434011**	EPA 3520	596311	EPA 8270D	596901
10468606001	**462520**				
10468606002	**240818**				
10468606003	**462523**				
10468606004	**434011**				
10468606001	**462520**	EPA 900.0	336388		
10468606002	**240818**	EPA 900.0	336388		
10468606003	**462523**	EPA 900.0	336388		
10468606004	**434011**	EPA 900.0	336388		
10468606001	**462520**	EPA 300.0	596900		
10468606002	**240818**	EPA 300.0	596900		
10468606003	**462523**	EPA 300.0	596900		
10468606004	**434011**	EPA 300.0	596900		
10468606001	**462520**	SM 3500-Cr B Modified	596221		
10468606002	**240818**	SM 3500-Cr B Modified	596221		
10468606003	**462523**	SM 3500-Cr B Modified	596221		
10468606004	**434011**	SM 3500-Cr B Modified	596221		
10468606001	**462520**	EPA 350.1			
10468606002	**240818**	EPA 350.1			
10468606003	**462523**	EPA 350.1			
10468606004	**434011**	EPA 350.1			
10468606001	**462520**	EPA 350.1 rev. 2 (1993)	163578	EPA 350.1 rev. 2 (1993)	163646
10468606002	**240818**	EPA 350.1 rev. 2 (1993)	163578	EPA 350.1 rev. 2 (1993)	163646
10468606003	**462523**	EPA 350.1 rev. 2 (1993)	163578	EPA 350.1 rev. 2 (1993)	163646
10468606004	**434011**	EPA 350.1 rev. 2 (1993)	163578	EPA 350.1 rev. 2 (1993)	163646
10468606001	**462520**	SM 4500-CN-E	598592	SM 4500-CN-E	598682
10468606002	**240818**	SM 4500-CN-E	598592	SM 4500-CN-E	598682
10468606003	**462523**	SM 4500-CN-E	598592	SM 4500-CN-E	598682
10468606004	**434011**	SM 4500-CN-E	598592	SM 4500-CN-E	598682

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468606

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch

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Minnesota Pollution Control Agency

Chain-of-Custody Form revison 2013.0909

Work Order Number:

Turnaround Time:

Page: 1 of 1

WO# : 10468606

10468606

FOR LAB USE ONLY

PROJECT/CLIENT INFO

Facility Code:	MNSW-057	Program Code (MDH Lab Only):		Lab Na	
Project Name:	19-01567 MPCA Freeway Landfill 2019 Waters	Project Task Code:	PRJ07786	Addr	
Project Manager:	Brad Jacobson	612-607-6375	EPIC PROFILE #: 38716 Line 2	Minneapolis	MN
Potential Hazard?	If yes, add information to Sampler Comments Section			Phone No: 612-607-6400	

Lab Work Order Sticker

SAMPLE DETAILS

SAMPLE TYPE CODES
Sample=Routine Sample
S-IVP=Integrated Vertical Profile Sample
S-CWOP=Composite Sample
QC-FB=Field Blank Sample
QC-FR=Field Replicate Sample
QC-TB=Trip Blank Sample

LAB MATRIX CODES
DW=Drinking Water
NW=Non-potable Water
SD=Soil/Solid
WP=Wipe
AR=Air
BL=Biological Material
OT=Other
TS=Tissue

FIELD MATRIX CODES
Wtr-Ground=Groundwater
Wtr-Surf=Surface Water
QC-BLANK=Artificial Blank Water
Leachate=Leachate Sample

ANALYSIS REQUESTED

	PRESERV.	None	HNO3	None	H2SO4	NaOH	None	
	ANALYSIS	Field Parameters: SWL, Temp, pH, DO, Cond, Eh, Turbidity	Metals 200.7 / 200.8 / Gross Alpha/Beta - QAPP Table 3a	300.0 / HexCr - QAPP Table 3a	Ammonia/ Unionized NH3 - QAPP Table 3a	Total Cyanide / Free Cyanide - QAPP Table 3a	8270 SVOC, 8082, MDA1, MDA2 - QAPP Table 3a	

Location Identifier	Sample Type	Date	Time	Start Depth, in meters	End Depth, in meters	Grab (G) or Composite (C) Sample	Lab Matrix Code	Field Matrix Code	AIS	Sampler Comments (filter volume, special handling, etc.)	# of Cont	Lab Sample No.	#
462520	Sample	3/28/19	1125			G	NW	Wtr-Ground	N		14	W1	1
240818	Sample	3/25/19	1100			G	NW	Wtr-Ground	N		14	W2	2
462523	Sample	3/28/19	1230			G	NW	Wtr-Ground	N		14	W3	3
434011	Sample	3/28/19	1420			G	NW	Wtr-Ground	N		14	W4	4
									N				5
									N				6
									N				7
									N				8
									N				9
									N				10

DNA 3/28/19

Sampled By: David Anderson / Chris Pelosi

Sampler's Signature: David Anderson

Phone #:

Receiving Comments:

Relinquished By/Affiliation	Date/Time	Accepted By/ Affiliation	Date/Time
(Sampler) David Anderson / Pace Analytical	3/28/19/1455	[illegible]	3/28/19 1455

2.9°C
3.0°C
5.0°C
5.5°C

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 06Feb2019 Page 1 of 1
	Document No.: F-MN-L-213-rev.25	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt Client Name: MPCA Project #: **WO#: 10468606**

PM: JMA Due Date: 04/11/19

CLIENT: PASI-MNFLD

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☑ Client ☐ Pace ☐ SpeeDee ☐ Commercial See Exception ☐

Tracking Number:

Custody Seal on Cooler/Box Present? ☐ Yes ☑ No Seals Intact? ☐ Yes ☑ No Biological Tissue Frozen? ☐ Yes ☐ No ☑ N/A

Packing Material: ☑ Bubble Wrap ☑ Bubble Bags ☐ None ☑ Other: PB Temp Blank? ☑ Yes ☐ No

Thermometer: ☐ G87A9155100842 ☑ G87A9170600254 Type of Ice: ☑ Wet ☐ Blue ☐ None ☐ Dry ☐ Melted

Note: Each West Virginia Sample must have temp taken (no temp blanks)

Temp should be above freezing to 6°C Cooler Temp Read w/temp blank: 2.9, 3.0, 5.0, 5.5 °C

Average Corrected Temp (no temp blank only): °C See Exceptions ☐

Correction Factor: true Cooler Temp Corrected w/temp blank: 2.9, 3.0, 5.0, 5.5 °C

USDA Regulated Soil: (☑ N/A, water sample/Other:)

Date/Initials of Person Examining Contents: JJ 3/28/19

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐ Yes ☐ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☐ No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

		COMMENTS:
Chain of Custody Present and Filled Out?	☑ Yes ☐ No	1.
Chain of Custody Relinquished?	☑ Yes ☐ No	2.
Sampler Name and/or Signature on COC?	☑ Yes ☐ No ☐ N/A	3.
Samples Arrived within Hold Time?	☑ Yes ☐ No	4.
Short Hold Time Analysis (<72 hr)?	☑ Yes ☐ No	5. ☐ Fecal Coliform ☐ HPC ☐ Total Coliform/E coli ☐ BOD/cBOD ☑ Hex Chrome ☐ Turbidity ☐ Nitrate ☐ Nitrite ☐ Orthophos ☐ Other
Rush Turn Around Time Requested?	☐ Yes ☑ No	6.
Sufficient Volume?	☑ Yes ☐ No	7.
Correct Containers Used? -Pace Containers Used?	☑ Yes ☐ No ☑ Yes ☐ No	8.
Containers Intact?	☑ Yes ☐ No	9.
Field Filtered Volume Received for Dissolved Tests? JMA 3/28/19	☑ Yes ☐ No ☐ N/A	10. Is sediment visible in the dissolved container? ☐ Yes ☐ No
Is sufficient information available to reconcile the samples to the COC? Matrix: ☑ Water ☐ Soil ☐ Oil ☐ Other	☑ Yes ☐ No	11. If no, write ID/ Date/Time on Container Below: See Exception ☐
All containers needing acid/base preservation have been checked?	☑ Yes ☐ No ☐ N/A	12. Sample #
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>12 Cyanide) Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin/PFAS	☑ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☑ N/A	☑ NaOH 1-4 3/2 ☑ HNO_3 1-4 3/2 ☑ H_2SO_4 1-4 1/1 ☐ Zinc Acetate Positive for Res. Chlorine? ☐ Yes ☑ No See Exception ☐
Headspace in VOA Vials (greater than 6mm)?	☐ Yes ☐ No ☑ N/A	13. See Exception ☐
Trip Blank Present? Trip Blank Custody Seals Present?	☐ Yes ☐ No ☑ N/A ☐ Yes ☐ No ☑ N/A	14. Pace Trip Blank Lot # (if purchased):

CLIENT NOTIFICATION/RESOLUTION

Person Contacted: Date/Time: Field Data Required? ☐ Yes ☐ No

Comments/Resolution:

Project Manager Review: Date: 03/29/2019

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers).

Labeled by:

WO# : 12123040

12123040

Chain of Custody

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN

Cert. Needed: ☐ Yes ☐

Workorder: 10468606 **Workorder Name:** 19-01567 MPCA Freeway LF 19 WT **Owner Received Date:** 3/28/2019 **Results Requested By:** 4/18/2019

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6436	Pace Analytical Virginia MN 315 Chestnut Street Virginia, MN 55792 Phone (218)742-1042

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: H2SO4 BP3S						Requested Analysis: 350.1 Ammonia	Unionized Ammonia										LAB USE ONLY
1	462520	PS	3/28/2019 11:25	10468606001	Water	1						X	X										
2	240818	PS	3/28/2019 11:00	10468606002	Water	1						X	X										
3	462523	PS	3/28/2019 12:30	10468606003	Water	1						X	X										
4	434011	PS	3/28/2019 14:20	10468606004	Water	1						X	X										
5																							

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature]	3/29/19 1740	[signature] 3/29/19	1700
2	[signature] 3/29/19	2210	[signature] 4/1/19	08:00
3				

Comments

Cooler Temperature on Receipt 0.8 °C **Custody Seal** (Y) or N **Received on Ice** (Y) or N **Samples Intact** (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.*

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 15Mar2016 Page 1 of 1
	Document No.: F-VM-C-001-Rev.10	Issuing Authority: Pace Virginia, Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Pace MN

Project #: WO#: 12123040

PM: CLJ Due Date: 04/18/19

CLIENT: PACE MPLS

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☒ Pace ☐ Other:

Tracking Number:

Custody Seal on Cooler/Box Present? ☒ Yes ☐ No Seals Intact? ☒ Yes ☐ No Optional: Proj. Due Date: Proj. Name:

Packing Material: ☒ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other: Temp Blank? ☒ Yes ☐ No

Thermometer Used: ☒ 140792808 Type of Ice: ☐ Wet ☐ Blue ☐ None ☒ Samples on ice, cooling process has begun

Cooler Temp Read °C: 0.5 Cooler Temp Corrected °C: 0.8 Biological Tissue Frozen? ☐ Yes ☐ No ☒ NA

Temp should be above freezing to 6°C Correction Factor: 0.3 Date and Initials of Person Examining Contents: 3/29/19 DC

Comments: RM 4/1/19

Chain of Custody Present?	☒ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☒ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☒ Yes	☐ No	☐ N/A	3.
Sampler Name and Signature on COC?	☐ Yes	☒ No	☐ N/A	4.
Samples Arrived within Hold Time?	☒ Yes	☐ No	☐ N/A	5. If Fecal: ☐ <8 hours ☐ >8, <24 hours ☐ >24 hours
Short Hold Time Analysis (<72 hr)?	☐ Yes	☒ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☒ No	☐ N/A	7.
Sufficient Volume?	☒ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☒ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☒ Yes	☐ No	☐ N/A	
Containers Intact?	☒ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☒ N/A	11. Note if sediment is visible in the dissolved containers.
Sample Labels Match COC?	☒ Yes	☐ No	☐ N/A	12.
-Includes Date/Time/ID/Analysis Matrix: WT				
All containers needing acid/base preservation will be checked and documented in the pH logbook.	☒ Yes	☐ No	☐ N/A	See pH log for results and additional preservation documentation
Headspace in Methyl Mercury Container	☐ Yes	☐ No	☒ N/A	13.
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☒ N/A	14.
Trip Blank Present?	☐ Yes	☐ No	☒ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☒ N/A	
Pace Trip Blank Lot # (if purchased):				

CLIENT NOTIFICATION/RESOLUTION Field Data Required? ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

FECAL WAIVER ON FILE Y N TEMPERATURE WAIVER ON FILE Y N

Project Manager Review: Katie Richards Date: 4/1/2019

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Chain of Custody

Pace Analytical®
www.pacelabs.com

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN
Cert. Needed: ☐ Yes ☐ No

Workorder: 10468606 **Workorder Name:** 19-01567 MPCA Freeway LF 19 WT
Owner Received Date: 3/28/2019 **Results Requested By:** 4/18/2019

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6436	Pace Analytical Pittsburgh 1638 Roseytown Road Suites 2,3 & 4 Greensburg, PA 15601 Phone (724)850-5600

WO# : 30286883
30286883

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: HNO3 BP1N	Requested Analysis: Gross Alpha/Beta	LAB USE ONLY
1	462520	PS	3/28/2019 11:25	10468606001	Water	1	X	001
2	240818	PS	3/28/2019 11:00	10468606002	Water	1	X	002
3	462523	PS	3/28/2019 12:30	10468606003	Water	1	X	003
4	434011	PS	3/28/2019 14:20	10468606004	Water	1	X	004
5								

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature]	3/29/19 1345	[signature]	3/30/19 1000
2				
3				

Comments

Cooler Temperature on Receipt ___ °C | **Custody Seal** Y or (N) | **Received on Ice** Y or (N) | **Samples Intact** (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.*

Pittsburgh Lab Sample Condition Upon Receipt

Pace Analytical

Client Name: pace MN Project #: 30286883

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Label: BMH

Tracking #: 4638 0195 6332 LIMS Login: BMH

Custody Seal on Cooler/Box Present: ☐ yes ☑ no Seals Intact: ☐ yes ☐ no

Thermometer Used: N/A Type of Ice: Wet Blue (None)

Cooler Temperature Observed Temp: — °C Correction Factor: — °C Final Temp: — °C

Temp should be above freezing to 6°C

pH paper Lot#: 10D2981 Date and Initials of person examining contents: BMH 4/1/19

Comments:	Yes	No	N/A	
Chain of Custody Present:	✓			1.
Chain of Custody Filled Out:	✓			2.
Chain of Custody Relinquished:	✓			3.
Sampler Name & Signature on COC:		✓		4.
Sample Labels match COC:	✓			5.
-Includes date/time/ID Matrix: WT				
Samples Arrived within Hold Time:	✓			6.
Short Hold Time Analysis (<72hr remaining):		✓		7.
Rush Turn Around Time Requested:		✓		8.
Sufficient Volume:	✓			9.
Correct Containers Used:	✓			10.
-Pace Containers Used:	✓			
Containers Intact:	✓			11.
Orthophosphate field filtered			✓	12.
Hex Cr Aqueous Compliance/NPDES sample field filtered			✓	13.
Organic Samples checked for dechlorination:			✓	14.
Filtered volume received for Dissolved tests			✓	15.
All containers have been checked for preservation.	✓			16. pH<2
All containers needing preservation are found to be in compliance with EPA recommendation.	✓			
exceptions: VOA, coliform, TOC, O&G, Phenolics				Initial when completed: BMH Date/time of preservation
				Lot # of added preservative
Headspace in VOA Vials (>6mm):			✓	17.
Trip Blank Present:		✓		18.
Trip Blank Custody Seals Present			✓	
Rad Samples Screened < 0.5 mrem/hr	✓			Initial when completed: BMH Date: 4/1/19

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

☐ **A check in this box indicates that additional information has been stored in ereports.**

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

12-Apr-2019

Jennifer Anderson
Pace Analytical Services, LLC
1700 Elm Street
Suite 200
Minneapolis, MN 55414

Re: **10468606** Work Order: **1904010**

Dear Jennifer,

ALS Environmental received 4 samples on 30-Mar-2019 09:45 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental - Holland and for only the analyses requested.

Sample results are compliant with industry accepted practices and Quality Control results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 10.

If you have any questions regarding this report, please feel free to contact me:

ADDRESS: 3352 128th Avenue, Holland, MI, USA
PHONE: +1 (616) 399-6070 FAX: +1 (616) 399-6185

Sincerely,

Electronically approved by: Chad Whelton

Chad Whelton
Project Manager

ALS Group, USA

Date: 12-Apr-19

Client: Pace Analytical Services, LLC
Project: 10468606
Work Order: **1904010**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1904010-01	462520	Water		3/28/2019 11:25	3/30/2019 09:45	☐
1904010-02	240818	Water		3/28/2019 11:00	3/30/2019 09:45	☐
1904010-03	462523	Water		3/28/2019 12:30	3/30/2019 09:45	☐
1904010-04	434011	Water		3/28/2019 14:20	3/30/2019 09:45	☐

Client: Pace Analytical Services, LLC
Project: 10468606
WorkOrder: **1904010**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
**	Estimated Value
a	Analyte is non-accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
Hr	BOD/CBOD - Sample was reset outside Hold Time, value should be considered estimated.
J	Analyte is present at an estimated concentration between the MDL and Report Limit
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and Reporting Limit, sample results may exhibit background or reagent contamination at the observed level.

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

Units Reported	Description
µg/L	Micrograms per Liter

ALS Group, USA

Date: *12-Apr-19*

Client:	Pace Analytical Services, LLC		
Project:	10468606	**Work Order:**	1904010
Sample ID:	462520	**Lab ID:**	1904010-01
Collection Date:	3/28/2019 11:25 AM	**Matrix:**	WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
CYANIDE, FREE			**SW9014**			Analyst: **RZM**
Cyanide, Free	ND		20	µg/L	1	4/8/2019 10:30 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Pace Analytical Services, LLC
Project: 10468606 **Work Order:** 1904010
Sample ID: 240818 **Lab ID:** 1904010-02
Collection Date: 3/28/2019 11:00 AM **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
CYANIDE, FREE			**SW9014**			Analyst: **RZM**
Cyanide, Free	ND		20	µg/L	1	4/8/2019 10:30 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Pace Analytical Services, LLC
Project: 10468606 **Work Order:** 1904010
Sample ID: 462523 **Lab ID:** 1904010-03
Collection Date: 3/28/2019 12:30 PM **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
CYANIDE, FREE			**SW9014**			Analyst: **RZM**
Cyanide, Free	ND		20	µg/L	1	4/8/2019 10:30 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Pace Analytical Services, LLC
Project: 10468606 **Work Order:** 1904010
Sample ID: 434011 **Lab ID:** 1904010-04
Collection Date: 3/28/2019 02:20 PM **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
CYANIDE, FREE			**SW9014**			Analyst: **RZM**
Cyanide, Free	ND		20	µg/L	1	4/8/2019 10:30 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

QC BATCH REPORT

Batch ID: **R258103** Instrument ID **WETCHEM** Method: **SW9014**

MBLK Sample ID: **MB-R258103-R258103** Units: **µg/L** Analysis Date: **4/8/2019 10:30 AM**

Client ID: Run ID: **WETCHEM_190408Q** SeqNo: **5596554** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Free	ND	20								

LCS Sample ID: **LCS-R258103-R258103** Units: **µg/L** Analysis Date: **4/8/2019 10:30 AM**

Client ID: Run ID: **WETCHEM_190408Q** SeqNo: **5596555** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Free	264.9	20	250	0	106	81-119	0			

MS Sample ID: **1904010-01A MS** Units: **µg/L** Analysis Date: **4/8/2019 10:30 AM**

Client ID: **462520** Run ID: **WETCHEM_190408Q** SeqNo: **5596560** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Free	264.9	20	250	-6.48	109	81-119	0			

MSD Sample ID: **1904010-01A MSD** Units: **µg/L** Analysis Date: **4/8/2019 10:30 AM**

Client ID: **462520** Run ID: **WETCHEM_190408Q** SeqNo: **5596561** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Free	247.2	20	250	-6.48	101	81-119	264.9	6.91	20	

The following samples were analyzed in this batch:

1904010-01A 1904010-02A 1904010-03A
1904010-04A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

1403010

Chain of Custody

Pace Analytical®
www.pacelabs.com

Workorder: 10468606 **Workorder Name:** 19-01567 MPCA Freeway LF 19 WT **Results Requested By:** 4/18/2019

Report / Invoice To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6436 Email: jennifer.anderson@pacelabs.com	P.O. 10468606 ALS 3352 128th Avenue Holland, MI 49424

State of Sample Origin: MN

Item	Sample ID	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Other BP3A	Requested Analysis: Free Cyanide	LAB USE ONLY
1	462520	3/28/2019 11:25	10468606001	Water	1	X	
2	240818	3/28/2019 11:00	10468606002	Water	1	X	
3	462523	3/28/2019 12:30	10468606003	Water	1	X	
4	434011	3/28/2019 14:20	10468606004	Water	1	X	
5							

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature]	3/29/19 1455	[signature]	3/30/19 0945
2				
3				

Comments

Cooler Temperature on Receipt 2.4 °C SR2 | **Custody Seal** Y or N | **Received on Ice** Y or N | **Samples Intact** Y or N

Pace Analytical®
CUSTODY SEAL

SIGNATURE [signature]

DATE 3/30/19

ALS Group, USA

Sample Receipt Checklist

Client Name: **PACE_MN** Date/Time Received: **30-Mar-19 09:45**

Work Order: **1904010** Received by: **DS**

Checklist completed by Diane Shaw (eSignature) 01-Apr-19 (Date) Reviewed by: Chad Whelton (eSignature) 02-Apr-19 (Date)

Matrices: Water
Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Sample(s) received on ice?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	2.4/2.4 c	SR2	
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	4/1/2019 9:41:50 AM		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

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2525 Advance Road
Madison, WI 53718
608.221.8700 Phone
608.221.4889 Fax

April 15, 2019

Jennifer Anderson
Pace Analytical
1700 Elm Street, Suite 200
Minneapolis, MN 55414

RE: MPCA Freeway LF Water - MN

Enclosed are the analytical results for the samples received by the laboratory on 03/30/2019.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. These results are in compliance with the 2009 NELAC Standards and the appropriate agencies listed below, unless otherwise noted in the case narrative. This analytical report should be reproduced in its entirety.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jessica Esser

Project Manager

Certification List			Expires
DODELAP	DOD ELAP Accreditation (A2LA)	3269.01	03/31/2020
ILEPA	Illinois Secondary NELAP Accreditation	004366	04/30/2019
KDHE	Kansas Secondary NELAP Accreditation	E-10384	04/30/2019
LELAP	Louisiana Primary NELAP Accreditation	04165	06/30/2019
NCDEQ	North Carolina Dept. of Environmental Quality Accreditation	688	12/31/2019
NJDEP	New Jersey Secondary NELAP Accreditation	WI004	06/30/2019
ODEQ	Oklahoma Department of Environmental Quality Accreditation	2018-087	08/31/2019
TCEQ	Texas Secondary NELAP Accreditation	T104704504-16-7	11/30/2019
WDNR	Wisconsin Certification under NR 149	113289110	08/31/2019

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Pace Analytical	Project: MPCA Freeway LF Water - MN
1700 Elm Street, Suite 200	Project Number: 10468606
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
462520	A191325-01	Water	03/28/2019	03/30/2019
240818	A191325-02	Water	03/28/2019	03/30/2019
462523	A191325-03	Water	03/28/2019	03/30/2019
434011	A191325-04	Water	03/28/2019	03/30/2019

CASE NARRATIVE

Sample Receipt Information:
4 samples were received on 03/30/2019. Samples were received at 2.3 degrees Celsius. Samples were received in acceptable condition.

Please see the chain of custody (COC) document at the end of this report for additional information.

Laboratory Control Samples (LCS):
The E1 footnote on samples A191325-01 through A191325-04 indicates that there were quality control sample exceedances for terbufos. The LCS recovery was below acceptable limits. Please see the quality control section of the report for more information.

The LCS and LCS duplicate recoveries indicate a potential high bias for ethalfluralin, fonofos, propachlor and triallate for samples A191325-01 through A191325-04. Samples were less than the reporting limit for these analytes so no further action is required.

Continuing Calibration Verification (CCV):
CCV indicates a potential high bias for triallate and trifluralin for samples A191325-01 through A191325-04. Samples were less than the reporting limit for these analytes so no further action is required.

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Pace Analytical	Project: MPCA Freeway LF Water - MN
1700 Elm Street, Suite 200	Project Number: 10468606
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

462520

A191325-01 (Water)

Date Sampled
03/28/2019 11:25

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Base Neutral Pesticides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A904147**			
Acetochlor	ND	0.50	ug/L	1	04/04/2019	04/08/2019 19:33	EPA 8270D	
Alachlor	ND	0.50	ug/L	1	04/04/2019	04/08/2019 19:33	EPA 8270D	
Atrazine	ND	0.50	ug/L	1	04/04/2019	04/08/2019 19:33	EPA 8270D	
Chlorpyrifos	ND	0.50	ug/L	1	04/04/2019	04/08/2019 19:33	EPA 8270D	
Cyanazine	ND	0.20	ug/L	1	04/04/2019	04/08/2019 19:33	EPA 8270D	
Desethylatrazine	ND	0.50	ug/L	1	04/04/2019	04/08/2019 19:33	EPA 8270D	
Deisopropylatrazine	ND	0.50	ug/L	1	04/04/2019	04/08/2019 19:33	EPA 8270D	
Dimethenamid	ND	0.50	ug/L	1	04/04/2019	04/08/2019 19:33	EPA 8270D	
EPTC	ND	0.50	ug/L	1	04/04/2019	04/08/2019 19:33	EPA 8270D	
Ethalfluralin	ND	0.50	ug/L	1	04/04/2019	04/08/2019 19:33	EPA 8270D	
Fonofos	ND	0.50	ug/L	1	04/04/2019	04/08/2019 19:33	EPA 8270D	
Metolachlor	ND	0.50	ug/L	1	04/04/2019	04/08/2019 19:33	EPA 8270D	
Metribuzin	ND	0.50	ug/L	1	04/04/2019	04/08/2019 19:33	EPA 8270D	
Pendimethalin	ND	0.50	ug/L	1	04/04/2019	04/08/2019 19:33	EPA 8270D	
Phorate	ND	0.30	ug/L	1	04/04/2019	04/08/2019 19:33	EPA 8270D	
Prometon	ND	0.50	ug/L	1	04/04/2019	04/08/2019 19:33	EPA 8270D	
Propachlor	ND	0.50	ug/L	1	04/04/2019	04/08/2019 19:33	EPA 8270D	
Propazine	ND	0.50	ug/L	1	04/04/2019	04/08/2019 19:33	EPA 8270D	
Simazine	ND	0.50	ug/L	1	04/04/2019	04/08/2019 19:33	EPA 8270D	
Terbufos	ND	0.20	ug/L	1	04/04/2019	04/08/2019 19:33	EPA 8270D	E1
Triallate	ND	0.50	ug/L	1	04/04/2019	04/08/2019 19:33	EPA 8270D	
Trifluralin	ND	0.50	ug/L	1	04/04/2019	04/08/2019 19:33	EPA 8270D	
Surrogate: Atrazine-d5		*80.8 %*		*56.9-123*	*04/04/2019*	*04/08/2019 19:33*	*EPA 8270D*	
Surrogate: Parathion-d10		*121 %*		*23.8-169*	*04/04/2019*	*04/08/2019 19:33*	*EPA 8270D*	
Surrogate: Triphenyl phosphate		*69.0 %*		*50.5-178*	*04/04/2019*	*04/08/2019 19:33*	*EPA 8270D*	
Acid Herbicides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A904142**			
2,4-D	ND	0.50	ug/L	1	04/03/2019	04/07/2019 07:08	EPA 8151A	
2,4-DB	ND	0.50	ug/L	1	04/03/2019	04/07/2019 07:08	EPA 8151A	
2,4,5-T	ND	0.50	ug/L	1	04/03/2019	04/07/2019 07:08	EPA 8151A	
2,4,5-TP (Silvex)	ND	0.50	ug/L	1	04/03/2019	04/07/2019 07:08	EPA 8151A	
Bentazon	ND	0.50	ug/L	1	04/03/2019	04/07/2019 07:08	EPA 8151A	
Dicamba	ND	0.50	ug/L	1	04/03/2019	04/07/2019 07:08	EPA 8151A	
MCPA	ND	0.30	ug/L	1	04/03/2019	04/07/2019 07:08	EPA 8151A	
Picloram	ND	0.50	ug/L	1	04/03/2019	04/07/2019 07:08	EPA 8151A	
Triclopyr	ND	0.50	ug/L	1	04/03/2019	04/07/2019 07:08	EPA 8151A	
Surrogate: 2,4-D-d5		*79.6 %*		*44.2-121*	*04/03/2019*	*04/07/2019 07:08*	*EPA 8151A*	

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Pace Analytical	Project: MPCA Freeway LF Water - MN
1700 Elm Street, Suite 200	Project Number: 10468606
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

240818

A191325-02 (Water)

Date Sampled
03/28/2019 11:00

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Base Neutral Pesticides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A904147**			
Acetochlor	ND	0.50	ug/L	1	04/04/2019	04/08/2019 20:01	EPA 8270D	
Alachlor	ND	0.50	ug/L	1	04/04/2019	04/08/2019 20:01	EPA 8270D	
Atrazine	ND	0.50	ug/L	1	04/04/2019	04/08/2019 20:01	EPA 8270D	
Chlorpyrifos	ND	0.50	ug/L	1	04/04/2019	04/08/2019 20:01	EPA 8270D	
Cyanazine	ND	0.20	ug/L	1	04/04/2019	04/08/2019 20:01	EPA 8270D	
Desethylatrazine	ND	0.50	ug/L	1	04/04/2019	04/08/2019 20:01	EPA 8270D	
Deisopropylatrazine	ND	0.50	ug/L	1	04/04/2019	04/08/2019 20:01	EPA 8270D	
Dimethenamid	ND	0.50	ug/L	1	04/04/2019	04/08/2019 20:01	EPA 8270D	
EPTC	ND	0.50	ug/L	1	04/04/2019	04/08/2019 20:01	EPA 8270D	
Ethalfluralin	ND	0.50	ug/L	1	04/04/2019	04/08/2019 20:01	EPA 8270D	
Fonofos	ND	0.50	ug/L	1	04/04/2019	04/08/2019 20:01	EPA 8270D	
Metolachlor	ND	0.50	ug/L	1	04/04/2019	04/08/2019 20:01	EPA 8270D	
Metribuzin	ND	0.50	ug/L	1	04/04/2019	04/08/2019 20:01	EPA 8270D	
Pendimethalin	ND	0.50	ug/L	1	04/04/2019	04/08/2019 20:01	EPA 8270D	
Phorate	ND	0.30	ug/L	1	04/04/2019	04/08/2019 20:01	EPA 8270D	
Prometon	ND	0.50	ug/L	1	04/04/2019	04/08/2019 20:01	EPA 8270D	
Propachlor	ND	0.50	ug/L	1	04/04/2019	04/08/2019 20:01	EPA 8270D	
Propazine	ND	0.50	ug/L	1	04/04/2019	04/08/2019 20:01	EPA 8270D	
Simazine	ND	0.50	ug/L	1	04/04/2019	04/08/2019 20:01	EPA 8270D	
Terbufos	ND	0.20	ug/L	1	04/04/2019	04/08/2019 20:01	EPA 8270D	E1
Triallate	ND	0.50	ug/L	1	04/04/2019	04/08/2019 20:01	EPA 8270D	
Trifluralin	ND	0.50	ug/L	1	04/04/2019	04/08/2019 20:01	EPA 8270D	
Surrogate: Atrazine-d5		*91.9 %*		*56.9-123*	*04/04/2019*	*04/08/2019 20:01*	*EPA 8270D*	
Surrogate: Parathion-d10		*196 %*		*23.8-169*	*04/04/2019*	*04/08/2019 20:01*	*EPA 8270D*	*S*
Surrogate: Triphenyl phosphate		*95.0 %*		*50.5-178*	*04/04/2019*	*04/08/2019 20:01*	*EPA 8270D*	
Acid Herbicides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A904142**			
2,4-D	ND	0.50	ug/L	1	04/03/2019	04/12/2019 22:30	EPA 8151A	
2,4-DB	ND	0.50	ug/L	1	04/03/2019	04/12/2019 22:30	EPA 8151A	
2,4,5-T	ND	0.50	ug/L	1	04/03/2019	04/12/2019 22:30	EPA 8151A	
2,4,5-TP (Silvex)	ND	0.50	ug/L	1	04/03/2019	04/12/2019 22:30	EPA 8151A	
Bentazon	ND	0.50	ug/L	1	04/03/2019	04/12/2019 22:30	EPA 8151A	
Dicamba	ND	0.50	ug/L	1	04/03/2019	04/12/2019 22:30	EPA 8151A	
MCPA	ND	0.30	ug/L	1	04/03/2019	04/12/2019 22:30	EPA 8151A	
Picloram	ND	0.50	ug/L	1	04/03/2019	04/12/2019 22:30	EPA 8151A	
Triclopyr	ND	0.50	ug/L	1	04/03/2019	04/12/2019 22:30	EPA 8151A	
Surrogate: 2,4-D-d5		*73.7 %*		*44.2-121*	*04/03/2019*	*04/12/2019 22:30*	*EPA 8151A*	

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2525 Advance Road
Madison, WI 53718
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608.221.4889 Fax

Pace Analytical	Project: MPCA Freeway LF Water - MN
1700 Elm Street, Suite 200	Project Number: 10468606
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

462523

A191325-03 (Water)

Date Sampled
03/28/2019 12:30

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Base Neutral Pesticides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A904147**			
Acetochlor	ND	0.50	ug/L	1	04/04/2019	04/08/2019 20:29	EPA 8270D	
Alachlor	ND	0.50	ug/L	1	04/04/2019	04/08/2019 20:29	EPA 8270D	
Atrazine	ND	0.50	ug/L	1	04/04/2019	04/08/2019 20:29	EPA 8270D	
Chlorpyrifos	ND	0.50	ug/L	1	04/04/2019	04/08/2019 20:29	EPA 8270D	
Cyanazine	ND	0.20	ug/L	1	04/04/2019	04/08/2019 20:29	EPA 8270D	
Desethylatrazine	ND	0.50	ug/L	1	04/04/2019	04/08/2019 20:29	EPA 8270D	
Deisopropylatrazine	ND	0.50	ug/L	1	04/04/2019	04/08/2019 20:29	EPA 8270D	
Dimethenamid	ND	0.50	ug/L	1	04/04/2019	04/08/2019 20:29	EPA 8270D	
EPTC	ND	0.50	ug/L	1	04/04/2019	04/08/2019 20:29	EPA 8270D	
Ethalfluralin	ND	0.50	ug/L	1	04/04/2019	04/08/2019 20:29	EPA 8270D	
Fonofos	ND	0.50	ug/L	1	04/04/2019	04/08/2019 20:29	EPA 8270D	
Metolachlor	ND	0.50	ug/L	1	04/04/2019	04/08/2019 20:29	EPA 8270D	
Metribuzin	ND	0.50	ug/L	1	04/04/2019	04/08/2019 20:29	EPA 8270D	
Pendimethalin	ND	0.50	ug/L	1	04/04/2019	04/08/2019 20:29	EPA 8270D	
Phorate	ND	0.30	ug/L	1	04/04/2019	04/08/2019 20:29	EPA 8270D	
Prometon	ND	0.50	ug/L	1	04/04/2019	04/08/2019 20:29	EPA 8270D	
Propachlor	ND	0.50	ug/L	1	04/04/2019	04/08/2019 20:29	EPA 8270D	
Propazine	ND	0.50	ug/L	1	04/04/2019	04/08/2019 20:29	EPA 8270D	
Simazine	ND	0.50	ug/L	1	04/04/2019	04/08/2019 20:29	EPA 8270D	
Terbufos	ND	0.20	ug/L	1	04/04/2019	04/08/2019 20:29	EPA 8270D	E1
Triallate	ND	0.50	ug/L	1	04/04/2019	04/08/2019 20:29	EPA 8270D	
Trifluralin	ND	0.50	ug/L	1	04/04/2019	04/08/2019 20:29	EPA 8270D	
Surrogate: Atrazine-d5		*88.8 %*		*56.9-123*	*04/04/2019*	*04/08/2019 20:29*	*EPA 8270D*	
Surrogate: Parathion-d10		*117 %*		*23.8-169*	*04/04/2019*	*04/08/2019 20:29*	*EPA 8270D*	
Surrogate: Triphenyl phosphate		*98.1 %*		*50.5-178*	*04/04/2019*	*04/08/2019 20:29*	*EPA 8270D*	
Acid Herbicides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A904142**			
2,4-D	ND	0.50	ug/L	1	04/03/2019	04/07/2019 08:19	EPA 8151A	
2,4-DB	ND	0.50	ug/L	1	04/03/2019	04/07/2019 08:19	EPA 8151A	
2,4,5-T	ND	0.50	ug/L	1	04/03/2019	04/07/2019 08:19	EPA 8151A	
2,4,5-TP (Silvex)	ND	0.50	ug/L	1	04/03/2019	04/07/2019 08:19	EPA 8151A	
Bentazon	ND	0.50	ug/L	1	04/03/2019	04/07/2019 08:19	EPA 8151A	
Dicamba	ND	0.50	ug/L	1	04/03/2019	04/07/2019 08:19	EPA 8151A	
MCPA	ND	0.30	ug/L	1	04/03/2019	04/07/2019 08:19	EPA 8151A	
Picloram	ND	0.50	ug/L	1	04/03/2019	04/07/2019 08:19	EPA 8151A	
Triclopyr	ND	0.50	ug/L	1	04/03/2019	04/07/2019 08:19	EPA 8151A	
Surrogate: 2,4-D-d5		*81.2 %*		*44.2-121*	*04/03/2019*	*04/07/2019 08:19*	*EPA 8151A*	

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Pace Analytical	Project: MPCA Freeway LF Water - MN
1700 Elm Street, Suite 200	Project Number: 10468606
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

434011

A191325-04 (Water)

Date Sampled
03/28/2019 14:20

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Base Neutral Pesticides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A904147**			
Acetochlor	ND	0.50	ug/L	1	04/04/2019	04/08/2019 20:57	EPA 8270D	
Alachlor	ND	0.50	ug/L	1	04/04/2019	04/08/2019 20:57	EPA 8270D	
Atrazine	ND	0.50	ug/L	1	04/04/2019	04/08/2019 20:57	EPA 8270D	
Chlorpyrifos	ND	0.50	ug/L	1	04/04/2019	04/08/2019 20:57	EPA 8270D	
Cyanazine	ND	0.20	ug/L	1	04/04/2019	04/08/2019 20:57	EPA 8270D	
Desethylatrazine	ND	0.50	ug/L	1	04/04/2019	04/08/2019 20:57	EPA 8270D	
Deisopropylatrazine	ND	0.50	ug/L	1	04/04/2019	04/08/2019 20:57	EPA 8270D	
Dimethenamid	ND	0.50	ug/L	1	04/04/2019	04/08/2019 20:57	EPA 8270D	
EPTC	ND	0.50	ug/L	1	04/04/2019	04/08/2019 20:57	EPA 8270D	
Ethalfluralin	ND	0.50	ug/L	1	04/04/2019	04/08/2019 20:57	EPA 8270D	
Fonofos	ND	0.50	ug/L	1	04/04/2019	04/08/2019 20:57	EPA 8270D	
Metolachlor	ND	0.50	ug/L	1	04/04/2019	04/08/2019 20:57	EPA 8270D	
Metribuzin	ND	0.50	ug/L	1	04/04/2019	04/08/2019 20:57	EPA 8270D	
Pendimethalin	ND	0.50	ug/L	1	04/04/2019	04/08/2019 20:57	EPA 8270D	
Phorate	ND	0.30	ug/L	1	04/04/2019	04/08/2019 20:57	EPA 8270D	
Prometon	ND	0.50	ug/L	1	04/04/2019	04/08/2019 20:57	EPA 8270D	
Propachlor	ND	0.50	ug/L	1	04/04/2019	04/08/2019 20:57	EPA 8270D	
Propazine	ND	0.50	ug/L	1	04/04/2019	04/08/2019 20:57	EPA 8270D	
Simazine	ND	0.50	ug/L	1	04/04/2019	04/08/2019 20:57	EPA 8270D	
Terbufos	ND	0.20	ug/L	1	04/04/2019	04/08/2019 20:57	EPA 8270D	E1
Triallate	ND	0.50	ug/L	1	04/04/2019	04/08/2019 20:57	EPA 8270D	
Trifluralin	ND	0.50	ug/L	1	04/04/2019	04/08/2019 20:57	EPA 8270D	
Surrogate: Atrazine-d5		*97.3 %*		*56.9-123*	*04/04/2019*	*04/08/2019 20:57*	*EPA 8270D*	
Surrogate: Parathion-d10		*177 %*		*23.8-169*	*04/04/2019*	*04/08/2019 20:57*	*EPA 8270D*	*S*
Surrogate: Triphenyl phosphate		*100 %*		*50.5-178*	*04/04/2019*	*04/08/2019 20:57*	*EPA 8270D*	
Acid Herbicides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A904142**			
2,4-D	ND	0.50	ug/L	1	04/03/2019	04/12/2019 23:05	EPA 8151A	
2,4-DB	ND	0.50	ug/L	1	04/03/2019	04/12/2019 23:05	EPA 8151A	
2,4,5-T	ND	0.50	ug/L	1	04/03/2019	04/12/2019 23:05	EPA 8151A	
2,4,5-TP (Silvex)	ND	0.50	ug/L	1	04/03/2019	04/12/2019 23:05	EPA 8151A	
Bentazon	ND	0.50	ug/L	1	04/03/2019	04/12/2019 23:05	EPA 8151A	
Dicamba	ND	0.50	ug/L	1	04/03/2019	04/12/2019 23:05	EPA 8151A	
MCPA	ND	0.30	ug/L	1	04/03/2019	04/12/2019 23:05	EPA 8151A	
Picloram	ND	0.50	ug/L	1	04/03/2019	04/12/2019 23:05	EPA 8151A	
Triclopyr	ND	0.50	ug/L	1	04/03/2019	04/12/2019 23:05	EPA 8151A	
Surrogate: 2,4-D-d5		*86.1 %*		*44.2-121*	*04/03/2019*	*04/12/2019 23:05*	*EPA 8151A*	

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1700 Elm Street, Suite 200	Project Number: 10468606
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Base Neutral Pesticides by Gas Chromatography/Mass Spectrometry - Quality Control

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A904147 - EPA 3510C										
Blank (A904147-BLK1)				Prepared: 04/04/2019 Analyzed: 04/08/2019 18:08						
Acetochlor	ND	0.50	ug/L							
Alachlor	ND	0.50	ug/L							
Atrazine	ND	0.50	ug/L							
Chlorpyrifos	ND	0.50	ug/L							
Cyanazine	ND	0.20	ug/L							
Desethylatrazine	ND	0.50	ug/L							
Deisopropylatrazine	ND	0.50	ug/L							
Dimethenamid	ND	0.50	ug/L							
EPTC	ND	0.50	ug/L							
Ethalfluralin	ND	0.50	ug/L							
Fonofos	ND	0.50	ug/L							
Metolachlor	ND	0.50	ug/L							
Metribuzin	ND	0.50	ug/L							
Pendimethalin	ND	0.50	ug/L							
Phorate	ND	0.30	ug/L							
Prometon	ND	0.50	ug/L							
Propachlor	ND	0.50	ug/L							
Propazine	ND	0.50	ug/L							
Simazine	ND	0.50	ug/L							
Terbufos	ND	0.20	ug/L							
Triallate	ND	0.50	ug/L							
Trifluralin	ND	0.50	ug/L							
Surrogate: Atrazine-d5	*0.511*		*ug/L*	*0.5000*		*102*	*56.9-123*			
Surrogate: Parathion-d10	*1.07*		*ug/L*	*0.5000*		*215*	*23.8-169*			*S*
Surrogate: Triphenyl phosphate	*0.453*		*ug/L*	*0.5000*		*90.6*	*50.5-178*			
LCS (A904147-BS1)				Prepared: 04/04/2019 Analyzed: 04/08/2019 18:36						
Acetochlor	0.817	0.50	ug/L	1.000		81.7	67.8-122			
Alachlor	0.819	0.50	ug/L	1.000		81.9	68.6-119			
Atrazine	0.802	0.50	ug/L	1.000		80.2	68.6-115			
Chlorpyrifos	0.841	0.50	ug/L	1.000		84.1	63.1-120			
Cyanazine	0.832	0.20	ug/L	1.000		83.2	55.3-143			
Desethylatrazine	0.766	0.50	ug/L	1.000		76.6	67.8-115			
Deisopropylatrazine	0.594	0.50	ug/L	1.000		59.4	50.1-100			
Dimethenamid	0.795	0.50	ug/L	1.000		79.5	70.3-121			
EPTC	0.649	0.50	ug/L	1.000		64.9	50.4-101			
Ethalfluralin	1.87	0.50	ug/L	1.000		187	42.6-121			
Fonofos	1.62	0.50	ug/L	1.000		162	56.6-119			
Metolachlor	0.822	0.50	ug/L	1.000		82.2	71.3-128			
Metribuzin	0.760	0.50	ug/L	1.000		76.0	64.9-120			
Pendimethalin	0.841	0.50	ug/L	1.000		84.1	60.9-128			
Phorate	0.477	0.30	ug/L	1.000		47.7	37.3-112			
Prometon	0.799	0.50	ug/L	1.000		79.9	67.1-120			
Propachlor	1.92	0.50	ug/L	1.000		192	66.2-127			
Propazine	0.800	0.50	ug/L	1.000		80.0	68.2-118			
Simazine	0.800	0.50	ug/L	1.000		80.0	67.2-117			

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1700 Elm Street, Suite 200	Project Number: 10468606
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Base Neutral Pesticides by Gas Chromatography/Mass Spectrometry - Quality Control

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A904147 - EPA 3510C										
LCS (A904147-BS1)				Prepared: 04/04/2019 Analyzed: 04/08/2019 18:36						
Terbufos	0.283	0.20	ug/L	1.000		28.3	34.3-111			
Triallate	1.82	0.50	ug/L	1.000		182	53-121			
Trifluralin	0.759	0.50	ug/L	1.000		75.9	45.9-116			
Surrogate: Atrazine-d5	*0.447*		*ug/L*	*0.5000*		*89.4*	*56.9-123*			
Surrogate: Parathion-d10	*0.952*		*ug/L*	*0.5000*		*190*	*23.8-169*			*S*
Surrogate: Triphenyl phosphate	*0.418*		*ug/L*	*0.5000*		*83.5*	*50.5-178*			
LCS Dup (A904147-BSD1)				Prepared: 04/04/2019 Analyzed: 04/08/2019 19:04						
Acetochlor	0.885	0.50	ug/L	1.000		88.5	67.8-122	7.93	20	
Alachlor	0.867	0.50	ug/L	1.000		86.7	68.6-119	5.69	20	
Atrazine	0.846	0.50	ug/L	1.000		84.6	68.6-115	5.34	20	
Chlorpyrifos	0.897	0.50	ug/L	1.000		89.7	63.1-120	6.43	20	
Cyanazine	0.904	0.20	ug/L	1.000		90.4	55.3-143	8.21	20	
Desethylatrazine	0.822	0.50	ug/L	1.000		82.2	67.8-115	7.00	20	
Deisopropylatrazine	0.616	0.50	ug/L	1.000		61.6	50.1-100	3.55	20	
Dimethenamid	0.855	0.50	ug/L	1.000		85.5	70.3-121	7.20	20	
EPTC	0.742	0.50	ug/L	1.000		74.2	50.4-101	13.3	20	
Ethalfluralin	1.47	0.50	ug/L	1.000		147	42.6-121	24.0	20	X
Fonofos	1.35	0.50	ug/L	1.000		135	56.6-119	17.8	20	
Metolachlor	0.886	0.50	ug/L	1.000		88.6	71.3-128	7.43	20	
Metribuzin	0.789	0.50	ug/L	1.000		78.9	64.9-120	3.69	20	
Pendimethalin	0.888	0.50	ug/L	1.000		88.8	60.9-128	5.41	20	
Phorate	0.541	0.30	ug/L	1.000		54.1	37.3-112	12.7	20	
Prometon	0.831	0.50	ug/L	1.000		83.1	67.1-120	3.92	20	
Propachlor	1.63	0.50	ug/L	1.000		163	66.2-127	16.7	20	
Propazine	0.874	0.50	ug/L	1.000		87.4	68.2-118	8.91	20	
Simazine	0.883	0.50	ug/L	1.000		88.3	67.2-117	9.75	20	
Terbufos	0.366	0.20	ug/L	1.000		36.6	34.3-111	25.7	20	X
Triallate	1.57	0.50	ug/L	1.000		157	53-121	14.6	20	
Trifluralin	0.805	0.50	ug/L	1.000		80.5	45.9-116	5.95	20	
Surrogate: Atrazine-d5	*0.478*		*ug/L*	*0.5000*		*95.7*	*56.9-123*			
Surrogate: Parathion-d10	*0.842*		*ug/L*	*0.5000*		*168*	*23.8-169*			
Surrogate: Triphenyl phosphate	*0.410*		*ug/L*	*0.5000*		*82.1*	*50.5-178*			

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1700 Elm Street, Suite 200	Project Number: 10468606
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Acid Herbicides by Gas Chromatography/Mass Spectrometry - Quality Control

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A904142 - EPA 3510C										
Blank (A904142-BLK1)				Prepared: 04/03/2019 Analyzed: 04/06/2019 23:26						
2,4-D	ND	0.50	ug/L							
2,4-DB	ND	0.50	ug/L							
2,4,5-T	ND	0.50	ug/L							
2,4,5-TP (Silvex)	ND	0.50	ug/L							
Bentazon	ND	0.50	ug/L							
Dicamba	ND	0.50	ug/L							
MCPA	ND	0.30	ug/L							
Picloram	ND	0.50	ug/L							
Triclopyr	ND	0.50	ug/L							
Surrogate: 2,4-D-d5	*1.51*		*ug/L*	*2.006*		*75.1*	*44.2-121*			
LCS (A904142-BS1)				Prepared: 04/03/2019 Analyzed: 04/07/2019 00:01						
2,4-D	1.90	0.50	ug/L	2.000		95.1	64.6-148			
2,4-DB	1.80	0.50	ug/L	2.000		89.9	66.7-143			
2,4,5-T	1.80	0.50	ug/L	2.000		90.1	63.4-133			
2,4,5-TP (Silvex)	1.68	0.50	ug/L	2.000		84.1	63-145			
Bentazon	0.679	0.50	ug/L	1.000		67.9	52.5-139			
Dicamba	1.61	0.50	ug/L	2.000		80.6	55.4-143			
MCPA	1.45	0.30	ug/L	2.000		72.4	33.5-143			
Picloram	0.740	0.50	ug/L	1.000		74.0	47.9-113			
Triclopyr	1.62	0.50	ug/L	2.000		80.9	65.1-141			
Surrogate: 2,4-D-d5	*1.60*		*ug/L*	*2.006*		*79.6*	*44.2-121*			
LCS Dup (A904142-BSD1)				Prepared: 04/03/2019 Analyzed: 04/07/2019 00:37						
2,4-D	1.73	0.50	ug/L	2.000		86.4	64.6-148	9.56	20	
2,4-DB	1.63	0.50	ug/L	2.000		81.6	66.7-143	9.67	20	
2,4,5-T	1.67	0.50	ug/L	2.000		83.5	63.4-133	7.57	20	
2,4,5-TP (Silvex)	1.59	0.50	ug/L	2.000		79.3	63-145	5.92	20	
Bentazon	0.656	0.50	ug/L	1.000		65.6	52.5-139	3.52	20	
Dicamba	1.64	0.50	ug/L	2.000		81.8	55.4-143	1.47	20	
MCPA	1.45	0.30	ug/L	2.000		72.4	33.5-143	0.0138	20	
Picloram	0.714	0.50	ug/L	1.000		71.4	47.9-113	3.60	20	
Triclopyr	1.56	0.50	ug/L	2.000		77.9	65.1-141	3.79	20	
Surrogate: 2,4-D-d5	*1.47*		*ug/L*	*2.006*		*73.2*	*44.2-121*			

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Pace Analytical	Project: MPCA Freeway LF Water - MN
1700 Elm Street, Suite 200	Project Number: 10468606
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Notes and Definitions

X	Precision for the matrix spike duplicate, laboratory control sample duplicate or lab duplicate was outside of control limits.
S	Surrogate recovery was outside of laboratory control limits due to an apparent matrix effect.
E1	Estimated value because of quality control sample exceedances.
ND	Analyte NOT DETECTED at or above the reporting limit or limit of detection (if listed).
NR	Not Reported
dry	Sample results reported on a dry weight basis. If the word 'dry' does not appear after the units, results are reported on an as-is basis.
RPD	Relative Percent Difference

Chain of Custody

A191325

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☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN
Cert. Needed: ☐ Yes ☐ No

Workorder: 10468606 **Workorder Name:** 19-01567 MPCA Freeway LF 19 WT **Owner Received Date:** 3/28/2019 **Results Requested By:** 4/18/2019

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6436	Pace Analytical Madison 2525 Advance Road Madison, WI 53718 Phone (608)221-8700

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved	Preserved Containers: AG1U	MDA List 1	MDA List 2	LAB USE ONLY
1	462520	PS	3/28/2019 11:25	10468606001	Water	4		X	X	01
2	240818	PS	3/28/2019 11:00	10468606002	Water	4		X	X	02
3	462523	PS	3/28/2019 12:30	10468606003	Water	4		X	X	03
4	434011	PS	3/28/2019 14:20	10468606004	Water	4		X	X	04
5										

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature]	3/28/19 1520	[signature]	1240
2				
3				

Comments: Need MPCA Equis EDD and Barr Equis 5 EDD

Cooler Temperature on Receipt 2.3 °C | **Custody Seal** Y or (N) | **Received on Ice** (Y) or N | **Samples Intact** (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.*

thermometer S/N: 160142274
exp: 7/13/19

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

April 17, 2019

Mr. Brad Jacobson
Pace Analytical Services, LLC..
1700 Elm Street
Suite 200
Minneapolis, MN 55414

RE: Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468813

Dear Mr. Jacobson:
Enclosed are the analytical results for sample(s) received by the laboratory on March 29, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Some analyses have been subcontracted outside of the Pace Network. The subcontracted laboratory report has been attached.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jennifer Anderson
jennifer.anderson@pacelabs.com
(612)607-6436
Project Manager

Enclosures

cc: Tom Halverson, Pace Analytical Field Services
Chris Pelosi, Pace Analytical Services - Field Services

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CERTIFICATIONS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468813

Minnesota Certification IDs

1700 Elm Street SE, Minneapolis, MN 55414-2485
A2LA Certification #: 2926.01
Alabama Certification #: 40770
Alaska Contaminated Sites Certification #: 17-009
Alaska DW Certification #: MN00064
Arizona Certification #: AZ0014
Arkansas DW Certification #: MN00064
Arkansas WW Certification #: 88-0680
California Certification #: 2929
CNMI Saipan Certification #: MP0003
Colorado Certification #: MN00064
Connecticut Certification #: PH-0256
EPA Region 8+Wyoming DW Certification #: via MN 027-053-137
Florida Certification #: E87605
Georgia Certification #: 959
Guam EPA Certification #: MN00064
Hawaii Certification #: MN00064
Idaho Certification #: MN00064
Illinois Certification #: 200011
Indiana Certification #: C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky DW Certification #: 90062
Kentucky WW Certification #: 90062
Louisiana DEQ Certification #: 03086
Louisiana DW Certification #: MN00064
Maine Certification #: MN00064
Maryland Certification #: 322
Massachusetts Certification #: M-MN064
Michigan Certification #: 9909
Minnesota Certification #: 027-053-137
Minnesota Dept of Ag Certifcation #: via MN 027-053-137
Minnesota Petrofund Certification #: 1240
Mississippi Certification #: MN00064
Missouri Certification #: 10100
Montana Certification #: CERT0092
Nebraska Certification #: NE-OS-18-06
Nevada Certification #: MN00064
New Hampshire Certification #: 2081
New Jersey Certification #: MN002
New York Certification #: 11647
North Carolina DW Certification #: 27700
North Carolina WW Certification #: 530
North Dakota Certification #: R-036
Ohio DW Certification #: 41244
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Primary Certification #: MN300001
Oregon Secondary Certification #: MN200001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification #: MN00064
South Carolina Certification #:74003001
Tennessee Certification #: TN02818
Texas Certification #: T104704192
Utah Certification #: MN00064
Vermont Certification #: VT-027053137
Virginia Certification #: 460163
Washington Certification #: C486
West Virginia DEP Certification #: 382
West Virginia DW Certification #: 9952 C
Wisconsin Certification #: 999407970
Wyoming UST Certification #: via A2LA 2926.01

Virginia Minnesota Certification ID's

315 Chestnut Street, Virginia, MN 55792
Alaska Certification UST-107
Montana Certificate #CERT0103
Minnesota Dept of Health Certification #: 027-137-445
North Dakota Certification: # R-203
Wisconsin DNR Certification # : 998027470
WA Department of Ecology Lab ID# C1007

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Florida: Cert E871149 SEKS WET
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221

REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468813

Pennsylvania Certification IDs

KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

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SAMPLE SUMMARY

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468813

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10468813001	**462521**	Water	03/29/19 13:00	03/29/19 14:20
10468813002	**M-2**	Water	03/29/19 13:05	03/29/19 14:20
10468813003	**462522**	Water	03/29/19 13:50	03/29/19 14:20

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SAMPLE ANALYTE COUNT

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468813

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10468813001	**462521**	EPA 8082A	RAG	11	PASI-M
		EPA 200.7	IP	9	PASI-M
		EPA 200.8	RJS	12	PASI-M
		EPA 8270D	STB	38	PASI-M
			CLJ	16	PASI-V
		EPA 900.0	NEG	2	PASI-PA
		EPA 300.0	KEO	1	PASI-M
		SM 3500-Cr B Modified	JFP	1	PASI-M
		EPA 350.1	CLJ	1	PASI-V
		EPA 350.1 rev. 2 (1993)	DMB	1	PASI-V
		SM 4500-CN-E	DCL	1	PASI-M
10468813002	**M-2**	EPA 8082A	RAG	11	PASI-M
		EPA 200.7	IP	9	PASI-M
		EPA 200.8	RJS	12	PASI-M
		EPA 8270D	STB	38	PASI-M
		EPA 900.0	NEG	2	PASI-PA
		EPA 300.0	KEO	1	PASI-M
		SM 3500-Cr B Modified	JFP	1	PASI-M
		EPA 350.1 rev. 2 (1993)	DMB	1	PASI-V
		SM 4500-CN-E	DCL	1	PASI-M
10468813003	**462522**	EPA 8082A	RAG	11	PASI-M
		EPA 200.7	IP	9	PASI-M
		EPA 200.8	RJS	12	PASI-M
		EPA 8270D	STB	38	PASI-M
			CLJ	16	PASI-V
		EPA 900.0	NEG	2	PASI-PA
		EPA 300.0	KEO	1	PASI-M
		SM 3500-Cr B Modified	JFP	1	PASI-M
		EPA 350.1	CLJ	1	PASI-V
		EPA 350.1 rev. 2 (1993)	DMB	1	PASI-V
		SM 4500-CN-E	DCL	1	PASI-M

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468813

Sample: 462521 **Lab ID: 10468813001** Collected: 03/29/19 13:00 Received: 03/29/19 14:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA Mod. 3510C							
PCB-1016 (Aroclor 1016)	ND	ug/L	0.095	1	03/29/19 16:36	04/01/19 11:15	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/L	0.095	1	03/29/19 16:36	04/01/19 11:15	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/L	0.095	1	03/29/19 16:36	04/01/19 11:15	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/L	0.095	1	03/29/19 16:36	04/01/19 11:15	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/L	0.095	1	03/29/19 16:36	04/01/19 11:15	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/L	0.095	1	03/29/19 16:36	04/01/19 11:15	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/L	0.095	1	03/29/19 16:36	04/01/19 11:15	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/L	0.095	1	03/29/19 16:36	04/01/19 11:15	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/L	0.095	1	03/29/19 16:36	04/01/19 11:15	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	66	%.	30-125	1	03/29/19 16:36	04/01/19 11:15	877-09-8	
Decachlorobiphenyl (S)	75	%.	30-125	1	03/29/19 16:36	04/01/19 11:15	2051-24-3	
200.7 MET ICP, Dissolved	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Aluminum, Dissolved	ND	ug/L	200	1	04/02/19 05:55	04/05/19 16:55	7429-90-5	
Barium, Dissolved	**302**	ug/L	10.0	1	04/02/19 05:55	04/05/19 16:55	7440-39-3	
Copper, Dissolved	ND	ug/L	10.0	1	04/02/19 05:55	04/05/19 16:55	7440-50-8	
Manganese, Dissolved	**60.0**	ug/L	5.0	1	04/02/19 05:55	04/05/19 16:55	7439-96-5	
Nickel, Dissolved	ND	ug/L	20.0	1	04/02/19 05:55	04/05/19 16:55	7440-02-0	
Silver, Dissolved	ND	ug/L	10.0	1	04/02/19 05:55	04/05/19 16:55	7440-22-4	
Tin, Dissolved	ND	ug/L	75.0	1	04/02/19 05:55	04/05/19 16:55	7440-31-5	
Total Hardness by 2340B, Dissolved	**315000**	ug/L	3300	1	04/02/19 05:55	04/05/19 16:55		
Zinc, Dissolved	ND	ug/L	20.0	1	04/02/19 05:55	04/05/19 16:55	7440-66-6	
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Dissolved	ND	ug/L	0.50	1	04/02/19 05:55	04/15/19 18:13	7440-36-0	
Arsenic, Dissolved	ND	ug/L	0.50	1	04/02/19 05:55	04/15/19 18:13	7440-38-2	
Beryllium, Dissolved	ND	ug/L	0.20	1	04/02/19 05:55	04/15/19 18:13	7440-41-7	
Boron, Dissolved	**47.2**	ug/L	10.0	1	04/02/19 05:55	04/15/19 18:13	7440-42-8	
Cadmium, Dissolved	ND	ug/L	0.080	1	04/02/19 05:55	04/15/19 18:13	7440-43-9	
Chromium, Dissolved	ND	ug/L	0.50	1	04/02/19 05:55	04/15/19 18:13	7440-47-3	
Cobalt, Dissolved	ND	ug/L	0.50	1	04/02/19 05:55	04/15/19 18:13	7440-48-4	
Lead, Dissolved	ND	ug/L	0.10	1	04/02/19 05:55	04/15/19 18:13	7439-92-1	
Selenium, Dissolved	ND	ug/L	0.50	1	04/02/19 05:55	04/15/19 18:13	7782-49-2	
Thallium, Dissolved	ND	ug/L	0.10	1	04/02/19 05:55	04/15/19 18:13	7440-28-0	
Uranium-238, Dissolved	ND	ug/L	0.50	1	04/02/19 05:55	04/15/19 18:13	7440-61-1	
Vanadium, Dissolved	ND	ug/L	1.0	1	04/02/19 05:55	04/15/19 18:13	7440-62-2	
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
Acenaphthene	ND	ug/L	9.8	1	04/01/19 19:25	04/03/19 16:53	83-32-9	
Anthracene	ND	ug/L	9.8	1	04/01/19 19:25	04/03/19 16:53	120-12-7	
Benzo(a)pyrene	ND	ug/L	9.8	1	04/01/19 19:25	04/03/19 16:53	50-32-8	
Benzoic acid	ND	ug/L	48.8	1	04/01/19 19:25	04/03/19 16:53	65-85-0	
4-Bromophenylphenyl ether	ND	ug/L	9.8	1	04/01/19 19:25	04/03/19 16:53	101-55-3	
Butylbenzylphthalate	ND	ug/L	9.8	1	04/01/19 19:25	04/03/19 16:53	85-68-7	
bis(2-Chloroethyl) ether	ND	ug/L	9.8	1	04/01/19 19:25	04/03/19 16:53	111-44-4	

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468813

Sample: 462521 **Lab ID: 10468813001** Collected: 03/29/19 13:00 Received: 03/29/19 14:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
2-Chlorophenol	ND	ug/L	9.8	1	04/01/19 19:25	04/03/19 16:53	95-57-8	
3,3'-Dichlorobenzidine	ND	ug/L	48.8	1	04/01/19 19:25	04/03/19 16:53	91-94-1	
2,4-Dichlorophenol	ND	ug/L	9.8	1	04/01/19 19:25	04/03/19 16:53	120-83-2	
Diethylphthalate	ND	ug/L	9.8	1	04/01/19 19:25	04/03/19 16:53	84-66-2	
2,4-Dimethylphenol	ND	ug/L	9.8	1	04/01/19 19:25	04/03/19 16:53	105-67-9	
Dimethylphthalate	ND	ug/L	9.8	1	04/01/19 19:25	04/03/19 16:53	131-11-3	
Di-n-butylphthalate	ND	ug/L	9.8	1	04/01/19 19:25	04/03/19 16:53	84-74-2	
2,4-Dinitrophenol	ND	ug/L	9.8	1	04/01/19 19:25	04/03/19 16:53	51-28-5	
Di-n-octylphthalate	ND	ug/L	9.8	1	04/01/19 19:25	04/03/19 16:53	117-84-0	
bis(2-Ethylhexyl)phthalate	ND	ug/L	9.8	1	04/01/19 19:25	04/03/19 16:53	117-81-7	
Fluoranthene	ND	ug/L	9.8	1	04/01/19 19:25	04/03/19 16:53	206-44-0	
Fluorene	ND	ug/L	9.8	1	04/01/19 19:25	04/03/19 16:53	86-73-7	
Hexachlorobenzene	ND	ug/L	9.8	1	04/01/19 19:25	04/03/19 16:53	118-74-1	
Hexachlorocyclopentadiene	ND	ug/L	48.8	1	04/01/19 19:25	04/03/19 16:53	77-47-4	L2
Hexachloroethane	ND	ug/L	9.8	1	04/01/19 19:25	04/03/19 16:53	67-72-1	
Isophorone	ND	ug/L	9.8	1	04/01/19 19:25	04/03/19 16:53	78-59-1	
2-Methylnaphthalene	ND	ug/L	9.8	1	04/01/19 19:25	04/03/19 16:53	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/L	9.8	1	04/01/19 19:25	04/03/19 16:53	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/L	19.5	1	04/01/19 19:25	04/03/19 16:53		
N-Nitrosodimethylamine	ND	ug/L	9.8	1	04/01/19 19:25	04/03/19 16:53	62-75-9	
Pentachlorophenol	ND	ug/L	19.5	1	04/01/19 19:25	04/03/19 16:53	87-86-5	
Phenanthrene	ND	ug/L	9.8	1	04/01/19 19:25	04/03/19 16:53	85-01-8	
Phenol	ND	ug/L	9.8	1	04/01/19 19:25	04/03/19 16:53	108-95-2	
Pyrene	ND	ug/L	9.8	1	04/01/19 19:25	04/03/19 16:53	129-00-0	
2,4,6-Trichlorophenol	ND	ug/L	9.8	1	04/01/19 19:25	04/03/19 16:53	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	78	%.	55-125	1	04/01/19 19:25	04/03/19 16:53	4165-60-0	
2-Fluorobiphenyl (S)	73	%.	52-125	1	04/01/19 19:25	04/03/19 16:53	321-60-8	
p-Terphenyl-d14 (S)	86	%.	57-125	1	04/01/19 19:25	04/03/19 16:53	1718-51-0	
Phenol-d6 (S)	76	%.	30-125	1	04/01/19 19:25	04/03/19 16:53	13127-88-3	
2-Fluorophenol (S)	74	%.	30-125	1	04/01/19 19:25	04/03/19 16:53	367-12-4	
2,4,6-Tribromophenol (S)	91	%.	52-125	1	04/01/19 19:25	04/03/19 16:53	118-79-6	
Field Data	Analytical Method:							
Collected Date	**03/29/19**			1		03/29/19 13:00		
Collected Time	**1300**			1		03/29/19 13:00		
Field pH	**7.5**	Std. Units		1		03/29/19 13:00		
Field Temperature	**12.0**	deg C		1		03/29/19 13:00		
Field Specific Conductance	**680**	umhos/cm		1		03/29/19 13:00		
Oxygen, Dissolved	**0.1**	mg/L		1		03/29/19 13:00	7782-44-7	
REDOX	**-177**	mV		1		03/29/19 13:00		
Turbidity	**4.5**	NTU		1		03/29/19 13:00		
Apparent Color	**Clear**			1		03/29/19 13:00		
Odor	**No**			1		03/29/19 13:00		
Well Locked	**Yes**			1		03/29/19 13:00		
Purge Method	**Grundfos Redi-Flo**			1		03/29/19 13:00		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468813

Sample: 462521 **Lab ID: 10468813001** Collected: 03/29/19 13:00 Received: 03/29/19 14:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:							
Total Well Depth	**187.0**	feet		1		03/29/19 13:00		
Depth of Water	**39.20**			1		03/29/19 13:00		
Well Volume Purged	**294.0**			1		03/29/19 13:00		
Purge Rate	**3.5**			1		03/29/19 13:00		
300.0 IC Anions	Analytical Method: EPA 300.0							
Chloride	**55.3**	mg/L	1.2	1		04/02/19 11:30	16887-00-6	
Chromium, Hexavalent	Analytical Method: SM 3500-Cr B Modified							
Chromium, Hexavalent	ND	mg/L	0.010	1		03/30/19 12:22		FS
350.1 Ammonia, Unionized	Analytical Method: EPA 350.1							
Nitrogen, Ammonia (Unionized)	ND	mg/L	0.010	1		04/11/19 14:41		
350.1 Ammonia, Distilled	Analytical Method: EPA 350.1 rev. 2 (1993) Preparation Method: EPA 350.1 rev. 2 (1993)							
Nitrogen, Ammonia	**0.30**	mg/L	0.11	1	04/09/19 08:29	04/09/19 12:20	7664-41-7	
SM4500CN-E Cyanide	Analytical Method: SM 4500-CN-E Preparation Method: SM 4500-CN-E							
Cyanide	ND	ug/L	20.0	1	04/10/19 09:16	04/11/19 10:36	57-12-5	

Sample: M-2 **Lab ID: 10468813002** Collected: 03/29/19 13:05 Received: 03/29/19 14:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA Mod. 3510C							
PCB-1016 (Aroclor 1016)	ND	ug/L	0.098	1	03/29/19 16:36	04/01/19 11:31	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/L	0.098	1	03/29/19 16:36	04/01/19 11:31	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/L	0.098	1	03/29/19 16:36	04/01/19 11:31	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/L	0.098	1	03/29/19 16:36	04/01/19 11:31	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/L	0.098	1	03/29/19 16:36	04/01/19 11:31	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/L	0.098	1	03/29/19 16:36	04/01/19 11:31	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/L	0.098	1	03/29/19 16:36	04/01/19 11:31	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/L	0.098	1	03/29/19 16:36	04/01/19 11:31	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/L	0.098	1	03/29/19 16:36	04/01/19 11:31	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	61	%.	30-125	1	03/29/19 16:36	04/01/19 11:31	877-09-8	
Decachlorobiphenyl (S)	72	%.	30-125	1	03/29/19 16:36	04/01/19 11:31	2051-24-3	
200.7 MET ICP, Dissolved	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Aluminum, Dissolved	ND	ug/L	200	1	04/02/19 05:55	04/05/19 17:03	7429-90-5	
Barium, Dissolved	**305**	ug/L	10.0	1	04/02/19 05:55	04/05/19 17:03	7440-39-3	
Copper, Dissolved	ND	ug/L	10.0	1	04/02/19 05:55	04/05/19 17:03	7440-50-8	
Manganese, Dissolved	**61.5**	ug/L	5.0	1	04/02/19 05:55	04/05/19 17:03	7439-96-5	
Nickel, Dissolved	ND	ug/L	20.0	1	04/02/19 05:55	04/05/19 17:03	7440-02-0	
Silver, Dissolved	ND	ug/L	10.0	1	04/02/19 05:55	04/05/19 17:03	7440-22-4	

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(612)607-1700

ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468813

Sample: M-2 **Lab ID: 10468813002** Collected: 03/29/19 13:05 Received: 03/29/19 14:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 MET ICP, Dissolved	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Tin, Dissolved	ND	ug/L	75.0	1	04/02/19 05:55	04/05/19 17:03	7440-31-5	
Total Hardness by 2340B, Dissolved	**318000**	ug/L	3300	1	04/02/19 05:55	04/05/19 17:03		
Zinc, Dissolved	ND	ug/L	20.0	1	04/02/19 05:55	04/05/19 17:03	7440-66-6	
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Dissolved	ND	ug/L	0.50	1	04/02/19 05:55	04/15/19 18:22	7440-36-0	
Arsenic, Dissolved	ND	ug/L	0.50	1	04/02/19 05:55	04/15/19 18:22	7440-38-2	
Beryllium, Dissolved	ND	ug/L	0.20	1	04/02/19 05:55	04/15/19 18:22	7440-41-7	
Boron, Dissolved	**50.1**	ug/L	10.0	1	04/02/19 05:55	04/15/19 18:22	7440-42-8	
Cadmium, Dissolved	ND	ug/L	0.080	1	04/02/19 05:55	04/15/19 18:22	7440-43-9	
Chromium, Dissolved	ND	ug/L	0.50	1	04/02/19 05:55	04/15/19 18:22	7440-47-3	
Cobalt, Dissolved	ND	ug/L	0.50	1	04/02/19 05:55	04/15/19 18:22	7440-48-4	
Lead, Dissolved	ND	ug/L	0.10	1	04/02/19 05:55	04/15/19 18:22	7439-92-1	
Selenium, Dissolved	ND	ug/L	0.50	1	04/02/19 05:55	04/15/19 18:22	7782-49-2	
Thallium, Dissolved	ND	ug/L	0.10	1	04/02/19 05:55	04/15/19 18:22	7440-28-0	
Uranium-238, Dissolved	ND	ug/L	0.50	1	04/02/19 05:55	04/15/19 18:22	7440-61-1	
Vanadium, Dissolved	ND	ug/L	1.0	1	04/02/19 05:55	04/15/19 18:22	7440-62-2	
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
Acenaphthene	ND	ug/L	9.5	1	04/01/19 19:25	04/03/19 17:18	83-32-9	
Anthracene	ND	ug/L	9.5	1	04/01/19 19:25	04/03/19 17:18	120-12-7	
Benzo(a)pyrene	ND	ug/L	9.5	1	04/01/19 19:25	04/03/19 17:18	50-32-8	
Benzoic acid	ND	ug/L	47.4	1	04/01/19 19:25	04/03/19 17:18	65-85-0	
4-Bromophenylphenyl ether	ND	ug/L	9.5	1	04/01/19 19:25	04/03/19 17:18	101-55-3	
Butylbenzylphthalate	ND	ug/L	9.5	1	04/01/19 19:25	04/03/19 17:18	85-68-7	
bis(2-Chloroethyl) ether	ND	ug/L	9.5	1	04/01/19 19:25	04/03/19 17:18	111-44-4	
2-Chlorophenol	ND	ug/L	9.5	1	04/01/19 19:25	04/03/19 17:18	95-57-8	
3,3'-Dichlorobenzidine	ND	ug/L	47.4	1	04/01/19 19:25	04/03/19 17:18	91-94-1	
2,4-Dichlorophenol	ND	ug/L	9.5	1	04/01/19 19:25	04/03/19 17:18	120-83-2	
Diethylphthalate	ND	ug/L	9.5	1	04/01/19 19:25	04/03/19 17:18	84-66-2	
2,4-Dimethylphenol	ND	ug/L	9.5	1	04/01/19 19:25	04/03/19 17:18	105-67-9	
Dimethylphthalate	ND	ug/L	9.5	1	04/01/19 19:25	04/03/19 17:18	131-11-3	
Di-n-butylphthalate	ND	ug/L	9.5	1	04/01/19 19:25	04/03/19 17:18	84-74-2	
2,4-Dinitrophenol	ND	ug/L	9.5	1	04/01/19 19:25	04/03/19 17:18	51-28-5	
Di-n-octylphthalate	ND	ug/L	9.5	1	04/01/19 19:25	04/03/19 17:18	117-84-0	
bis(2-Ethylhexyl)phthalate	ND	ug/L	9.5	1	04/01/19 19:25	04/03/19 17:18	117-81-7	
Fluoranthene	ND	ug/L	9.5	1	04/01/19 19:25	04/03/19 17:18	206-44-0	
Fluorene	ND	ug/L	9.5	1	04/01/19 19:25	04/03/19 17:18	86-73-7	
Hexachlorobenzene	ND	ug/L	9.5	1	04/01/19 19:25	04/03/19 17:18	118-74-1	
Hexachlorocyclopentadiene	ND	ug/L	47.4	1	04/01/19 19:25	04/03/19 17:18	77-47-4	L2
Hexachloroethane	ND	ug/L	9.5	1	04/01/19 19:25	04/03/19 17:18	67-72-1	
Isophorone	ND	ug/L	9.5	1	04/01/19 19:25	04/03/19 17:18	78-59-1	
2-Methylnaphthalene	ND	ug/L	9.5	1	04/01/19 19:25	04/03/19 17:18	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/L	9.5	1	04/01/19 19:25	04/03/19 17:18	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/L	19.0	1	04/01/19 19:25	04/03/19 17:18		
N-Nitrosodimethylamine	ND	ug/L	9.5	1	04/01/19 19:25	04/03/19 17:18	62-75-9	

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(612)607-1700

ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468813

Sample: M-2 **Lab ID: 10468813002** Collected: 03/29/19 13:05 Received: 03/29/19 14:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
Pentachlorophenol	ND	ug/L	19.0	1	04/01/19 19:25	04/03/19 17:18	87-86-5	
Phenanthrene	ND	ug/L	9.5	1	04/01/19 19:25	04/03/19 17:18	85-01-8	
Phenol	ND	ug/L	9.5	1	04/01/19 19:25	04/03/19 17:18	108-95-2	
Pyrene	ND	ug/L	9.5	1	04/01/19 19:25	04/03/19 17:18	129-00-0	
2,4,6-Trichlorophenol	ND	ug/L	9.5	1	04/01/19 19:25	04/03/19 17:18	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	81	%.	55-125	1	04/01/19 19:25	04/03/19 17:18	4165-60-0	
2-Fluorobiphenyl (S)	75	%.	52-125	1	04/01/19 19:25	04/03/19 17:18	321-60-8	
p-Terphenyl-d14 (S)	86	%.	57-125	1	04/01/19 19:25	04/03/19 17:18	1718-51-0	
Phenol-d6 (S)	80	%.	30-125	1	04/01/19 19:25	04/03/19 17:18	13127-88-3	
2-Fluorophenol (S)	78	%.	30-125	1	04/01/19 19:25	04/03/19 17:18	367-12-4	
2,4,6-Tribromophenol (S)	94	%.	52-125	1	04/01/19 19:25	04/03/19 17:18	118-79-6	
300.0 IC Anions	Analytical Method: EPA 300.0							
Chloride	**54.1**	mg/L	1.2	1		04/02/19 11:45	16887-00-6	
Chromium, Hexavalent	Analytical Method: SM 3500-Cr B Modified							
Chromium, Hexavalent	ND	mg/L	0.010	1		03/30/19 12:22		FS
350.1 Ammonia, Distilled	Analytical Method: EPA 350.1 rev. 2 (1993) Preparation Method: EPA 350.1 rev. 2 (1993)							
Nitrogen, Ammonia	**0.29**	mg/L	0.11	1	04/09/19 08:29	04/09/19 12:22	7664-41-7	
SM4500CN-E Cyanide	Analytical Method: SM 4500-CN-E Preparation Method: SM 4500-CN-E							
Cyanide	ND	ug/L	20.0	1	04/10/19 09:16	04/11/19 10:39	57-12-5	

Sample: 462522 **Lab ID: 10468813003** Collected: 03/29/19 13:50 Received: 03/29/19 14:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA Mod. 3510C							
PCB-1016 (Aroclor 1016)	ND	ug/L	0.098	1	03/29/19 16:36	04/01/19 11:46	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/L	0.098	1	03/29/19 16:36	04/01/19 11:46	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/L	0.098	1	03/29/19 16:36	04/01/19 11:46	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/L	0.098	1	03/29/19 16:36	04/01/19 11:46	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/L	0.098	1	03/29/19 16:36	04/01/19 11:46	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/L	0.098	1	03/29/19 16:36	04/01/19 11:46	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/L	0.098	1	03/29/19 16:36	04/01/19 11:46	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/L	0.098	1	03/29/19 16:36	04/01/19 11:46	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/L	0.098	1	03/29/19 16:36	04/01/19 11:46	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	69	%.	30-125	1	03/29/19 16:36	04/01/19 11:46	877-09-8	
Decachlorobiphenyl (S)	77	%.	30-125	1	03/29/19 16:36	04/01/19 11:46	2051-24-3	
200.7 MET ICP, Dissolved	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Aluminum, Dissolved	ND	ug/L	200	1	04/02/19 05:55	04/05/19 17:06	7429-90-5	

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468813

Sample: 462522 **Lab ID: 10468813003** Collected: 03/29/19 13:50 Received: 03/29/19 14:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 MET ICP, Dissolved	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Dissolved	**255**	ug/L	10.0	1	04/02/19 05:55	04/05/19 17:06	7440-39-3	
Copper, Dissolved	ND	ug/L	10.0	1	04/02/19 05:55	04/05/19 17:06	7440-50-8	
Manganese, Dissolved	**8.2**	ug/L	5.0	1	04/02/19 05:55	04/05/19 17:06	7439-96-5	
Nickel, Dissolved	ND	ug/L	20.0	1	04/02/19 05:55	04/05/19 17:06	7440-02-0	
Silver, Dissolved	ND	ug/L	10.0	1	04/02/19 05:55	04/05/19 17:06	7440-22-4	
Tin, Dissolved	ND	ug/L	75.0	1	04/02/19 05:55	04/05/19 17:06	7440-31-5	
Total Hardness by 2340B, Dissolved	**321000**	ug/L	3300	1	04/02/19 05:55	04/05/19 17:06		
Zinc, Dissolved	ND	ug/L	20.0	1	04/02/19 05:55	04/05/19 17:06	7440-66-6	
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Dissolved	ND	ug/L	0.50	1	04/02/19 05:55	04/15/19 18:17	7440-36-0	
Arsenic, Dissolved	ND	ug/L	0.50	1	04/02/19 05:55	04/15/19 18:17	7440-38-2	
Beryllium, Dissolved	ND	ug/L	0.20	1	04/02/19 05:55	04/15/19 18:17	7440-41-7	
Boron, Dissolved	**145**	ug/L	10.0	1	04/02/19 05:55	04/15/19 18:17	7440-42-8	
Cadmium, Dissolved	ND	ug/L	0.080	1	04/02/19 05:55	04/15/19 18:17	7440-43-9	
Chromium, Dissolved	ND	ug/L	0.50	1	04/02/19 05:55	04/15/19 18:17	7440-47-3	
Cobalt, Dissolved	**0.63**	ug/L	0.50	1	04/02/19 05:55	04/15/19 18:17	7440-48-4	
Lead, Dissolved	ND	ug/L	0.10	1	04/02/19 05:55	04/15/19 18:17	7439-92-1	
Selenium, Dissolved	**1.4**	ug/L	0.50	1	04/02/19 05:55	04/15/19 18:17	7782-49-2	
Thallium, Dissolved	**0.20**	ug/L	0.10	1	04/02/19 05:55	04/15/19 18:17	7440-28-0	
Uranium-238, Dissolved	**1.4**	ug/L	0.50	1	04/02/19 05:55	04/15/19 18:17	7440-61-1	
Vanadium, Dissolved	ND	ug/L	1.0	1	04/02/19 05:55	04/15/19 18:17	7440-62-2	
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
Acenaphthene	ND	ug/L	9.7	1	04/01/19 19:25	04/03/19 17:42	83-32-9	
Anthracene	ND	ug/L	9.7	1	04/01/19 19:25	04/03/19 17:42	120-12-7	
Benzo(a)pyrene	ND	ug/L	9.7	1	04/01/19 19:25	04/03/19 17:42	50-32-8	
Benzoic acid	ND	ug/L	48.5	1	04/01/19 19:25	04/03/19 17:42	65-85-0	
4-Bromophenylphenyl ether	ND	ug/L	9.7	1	04/01/19 19:25	04/03/19 17:42	101-55-3	
Butylbenzylphthalate	ND	ug/L	9.7	1	04/01/19 19:25	04/03/19 17:42	85-68-7	
bis(2-Chloroethyl) ether	ND	ug/L	9.7	1	04/01/19 19:25	04/03/19 17:42	111-44-4	
2-Chlorophenol	ND	ug/L	9.7	1	04/01/19 19:25	04/03/19 17:42	95-57-8	
3,3'-Dichlorobenzidine	ND	ug/L	48.5	1	04/01/19 19:25	04/03/19 17:42	91-94-1	
2,4-Dichlorophenol	ND	ug/L	9.7	1	04/01/19 19:25	04/03/19 17:42	120-83-2	
Diethylphthalate	ND	ug/L	9.7	1	04/01/19 19:25	04/03/19 17:42	84-66-2	
2,4-Dimethylphenol	ND	ug/L	9.7	1	04/01/19 19:25	04/03/19 17:42	105-67-9	
Dimethylphthalate	ND	ug/L	9.7	1	04/01/19 19:25	04/03/19 17:42	131-11-3	
Di-n-butylphthalate	ND	ug/L	9.7	1	04/01/19 19:25	04/03/19 17:42	84-74-2	
2,4-Dinitrophenol	ND	ug/L	9.7	1	04/01/19 19:25	04/03/19 17:42	51-28-5	
Di-n-octylphthalate	ND	ug/L	9.7	1	04/01/19 19:25	04/03/19 17:42	117-84-0	
bis(2-Ethylhexyl)phthalate	ND	ug/L	9.7	1	04/01/19 19:25	04/03/19 17:42	117-81-7	
Fluoranthene	ND	ug/L	9.7	1	04/01/19 19:25	04/03/19 17:42	206-44-0	
Fluorene	ND	ug/L	9.7	1	04/01/19 19:25	04/03/19 17:42	86-73-7	
Hexachlorobenzene	ND	ug/L	9.7	1	04/01/19 19:25	04/03/19 17:42	118-74-1	
Hexachlorocyclopentadiene	ND	ug/L	48.5	1	04/01/19 19:25	04/03/19 17:42	77-47-4	L2
Hexachloroethane	ND	ug/L	9.7	1	04/01/19 19:25	04/03/19 17:42	67-72-1	

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468813

Sample: 462522 **Lab ID: 10468813003** Collected: 03/29/19 13:50 Received: 03/29/19 14:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
Isophorone	ND	ug/L	9.7	1	04/01/19 19:25	04/03/19 17:42	78-59-1	
2-Methylnaphthalene	ND	ug/L	9.7	1	04/01/19 19:25	04/03/19 17:42	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/L	9.7	1	04/01/19 19:25	04/03/19 17:42	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/L	19.4	1	04/01/19 19:25	04/03/19 17:42		
N-Nitrosodimethylamine	ND	ug/L	9.7	1	04/01/19 19:25	04/03/19 17:42	62-75-9	
Pentachlorophenol	ND	ug/L	19.4	1	04/01/19 19:25	04/03/19 17:42	87-86-5	
Phenanthrene	ND	ug/L	9.7	1	04/01/19 19:25	04/03/19 17:42	85-01-8	
Phenol	ND	ug/L	9.7	1	04/01/19 19:25	04/03/19 17:42	108-95-2	
Pyrene	ND	ug/L	9.7	1	04/01/19 19:25	04/03/19 17:42	129-00-0	
2,4,6-Trichlorophenol	ND	ug/L	9.7	1	04/01/19 19:25	04/03/19 17:42	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	85	%.	55-125	1	04/01/19 19:25	04/03/19 17:42	4165-60-0	
2-Fluorobiphenyl (S)	80	%.	52-125	1	04/01/19 19:25	04/03/19 17:42	321-60-8	
p-Terphenyl-d14 (S)	90	%.	57-125	1	04/01/19 19:25	04/03/19 17:42	1718-51-0	
Phenol-d6 (S)	82	%.	30-125	1	04/01/19 19:25	04/03/19 17:42	13127-88-3	
2-Fluorophenol (S)	80	%.	30-125	1	04/01/19 19:25	04/03/19 17:42	367-12-4	
2,4,6-Tribromophenol (S)	100	%.	52-125	1	04/01/19 19:25	04/03/19 17:42	118-79-6	
Field Data	Analytical Method:							
Collected Date	**03/29/19**			1		03/29/19 13:50		
Collected Time	**1350**			1		03/29/19 13:50		
Field pH	**6.9**	Std. Units		1		03/29/19 13:50		
Field Temperature	**13.0**	deg C		1		03/29/19 13:50		
Field Specific Conductance	**730**	umhos/cm		1		03/29/19 13:50		
Oxygen, Dissolved	**1.2**	mg/L		1		03/29/19 13:50	7782-44-7	
REDOX	**54**	mV		1		03/29/19 13:50		
Turbidity	**3.4**	NTU		1		03/29/19 13:50		
Apparent Color	**Clear**			1		03/29/19 13:50		
Odor	**No**			1		03/29/19 13:50		
Well Locked	**Yes**			1		03/29/19 13:50		
Purge Method	**Grundfos Redi-Flo**			1		03/29/19 13:50		
Total Well Depth	**81.73**	feet		1		03/29/19 13:50		
Depth of Water	**60.02**			1		03/29/19 13:50		
Well Volume Purged	**48.0**			1		03/29/19 13:50		
Purge Rate	**2.0**			1		03/29/19 13:50		
300.0 IC Anions	Analytical Method: EPA 300.0							
Chloride	**30.2**	mg/L	1.2	1		04/02/19 12:00	16887-00-6	
Chromium, Hexavalent	Analytical Method: SM 3500-Cr B Modified							
Chromium, Hexavalent	ND	mg/L	0.010	1		03/30/19 12:22		FS
350.1 Ammonia, Unionized	Analytical Method: EPA 350.1							
Nitrogen, Ammonia (Unionized)	ND	mg/L	0.010	1		04/11/19 14:42		

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468813

Sample: 462522 **Lab ID: 10468813003** Collected: 03/29/19 13:50 Received: 03/29/19 14:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
350.1 Ammonia, Distilled	Analytical Method: EPA 350.1 rev. 2 (1993) Preparation Method: EPA 350.1 rev. 2 (1993)							
Nitrogen, Ammonia	**0.50**	mg/L	0.11	1	04/09/19 08:29	04/09/19 12:23	7664-41-7	
SM4500CN-E Cyanide	Analytical Method: SM 4500-CN-E Preparation Method: SM 4500-CN-E							
Cyanide	ND	ug/L	20.0	1	04/10/19 09:16	04/11/19 10:39	57-12-5	

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468813

QC Batch: 596975 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 MET Dissolved
Associated Lab Samples: 10468813001, 10468813002, 10468813003

METHOD BLANK: 3228238 Matrix: Water
Associated Lab Samples: 10468813001, 10468813002, 10468813003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum, Dissolved	ug/L	ND	200	04/05/19 16:49	
Barium, Dissolved	ug/L	ND	10.0	04/05/19 16:49	
Copper, Dissolved	ug/L	ND	10.0	04/05/19 16:49	
Manganese, Dissolved	ug/L	ND	5.0	04/05/19 16:49	
Nickel, Dissolved	ug/L	ND	20.0	04/05/19 16:49	
Silver, Dissolved	ug/L	ND	10.0	04/05/19 16:49	
Tin, Dissolved	ug/L	ND	75.0	04/05/19 16:49	
Zinc, Dissolved	ug/L	ND	20.0	04/05/19 16:49	

LABORATORY CONTROL SAMPLE: 3228239

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum, Dissolved	ug/L	20000	19900	99	85-115	
Barium, Dissolved	ug/L	1000	993	99	85-115	
Copper, Dissolved	ug/L	1000	956	96	85-115	
Manganese, Dissolved	ug/L	1000	1000	100	85-115	
Nickel, Dissolved	ug/L	1000	970	97	85-115	
Silver, Dissolved	ug/L	500	488	98	85-115	
Tin, Dissolved	ug/L	1000	992	99	85-115	
Zinc, Dissolved	ug/L	1000	966	97	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3228240 3228241

Parameter	Units	10468813001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum, Dissolved	ug/L	ND	20000	20000	20100	20700	101	103	70-130	3	20	
Barium, Dissolved	ug/L	302	1000	1000	1290	1320	98	101	70-130	2	20	
Copper, Dissolved	ug/L	ND	1000	1000	960	982	96	98	70-130	2	20	
Manganese, Dissolved	ug/L	60.0	1000	1000	1050	1070	99	101	70-130	2	20	
Nickel, Dissolved	ug/L	ND	1000	1000	946	973	95	97	70-130	3	20	
Silver, Dissolved	ug/L	ND	500	500	492	504	98	101	70-130	2	20	
Tin, Dissolved	ug/L	ND	1000	1000	968	989	97	99	70-130	2	20	
Zinc, Dissolved	ug/L	ND	1000	1000	940	962	94	96	70-130	2	20	

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468813

QC Batch: 596976 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET Dissolved
Associated Lab Samples: 10468813001, 10468813002, 10468813003

METHOD BLANK: 3228242 Matrix: Water
Associated Lab Samples: 10468813001, 10468813002, 10468813003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony, Dissolved	ug/L	ND	0.50	04/15/19 18:08	
Arsenic, Dissolved	ug/L	ND	0.50	04/15/19 18:08	
Beryllium, Dissolved	ug/L	ND	0.20	04/15/19 18:08	
Boron, Dissolved	ug/L	ND	10.0	04/15/19 18:08	
Cadmium, Dissolved	ug/L	ND	0.080	04/15/19 18:08	
Chromium, Dissolved	ug/L	ND	0.50	04/15/19 18:08	
Cobalt, Dissolved	ug/L	ND	0.50	04/15/19 18:08	
Lead, Dissolved	ug/L	ND	0.10	04/15/19 18:08	
Selenium, Dissolved	ug/L	ND	0.50	04/15/19 18:08	
Thallium, Dissolved	ug/L	ND	0.10	04/15/19 18:08	
Uranium-238, Dissolved	ug/L	ND	0.50	04/15/19 18:08	
Vanadium, Dissolved	ug/L	ND	1.0	04/15/19 18:08	

LABORATORY CONTROL SAMPLE: 3228243

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony, Dissolved	ug/L	100	107	107	85-115	
Arsenic, Dissolved	ug/L	100	102	102	85-115	
Beryllium, Dissolved	ug/L	100	98.7	99	85-115	
Boron, Dissolved	ug/L	100	97.5	97	85-115	
Cadmium, Dissolved	ug/L	100	110	110	85-115	
Chromium, Dissolved	ug/L	100	106	106	85-115	
Cobalt, Dissolved	ug/L	100	105	105	85-115	
Lead, Dissolved	ug/L	100	109	109	85-115	
Selenium, Dissolved	ug/L	100	104	104	85-115	
Thallium, Dissolved	ug/L	100	105	105	85-115	
Uranium-238, Dissolved	ug/L	100	110	110	85-115	
Vanadium, Dissolved	ug/L	100	106	106	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3228244 3228245

Parameter	Units	10468813002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony, Dissolved	ug/L	ND	100	100	101	102	101	102	70-130	2	20	
Arsenic, Dissolved	ug/L	ND	100	100	98.2	100	98	100	70-130	2	20	
Beryllium, Dissolved	ug/L	ND	100	100	100	99.3	100	99	70-130	1	20	
Boron, Dissolved	ug/L	50.1	100	100	149	149	99	99	70-130	0	20	
Cadmium, Dissolved	ug/L	ND	100	100	98.0	99.7	98	100	70-130	2	20	

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468813

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3228244 3228245

Parameter	Units	10468813002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Dissolved	ug/L	ND	100	100	99.8	101	100	101	70-130	1	20	
Cobalt, Dissolved	ug/L	ND	100	100	100	103	100	102	70-130	2	20	
Lead, Dissolved	ug/L	ND	100	100	101	104	101	104	70-130	2	20	
Selenium, Dissolved	ug/L	ND	100	100	97.8	99.7	98	100	70-130	2	20	
Thallium, Dissolved	ug/L	ND	100	100	96.7	98.7	97	99	70-130	2	20	
Uranium-238, Dissolved	ug/L	ND	100	100	105	106	105	106	70-130	1	20	
Vanadium, Dissolved	ug/L	ND	100	100	99.8	101	100	101	70-130	1	20	

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468813

QC Batch: 596550 Analysis Method: EPA 8082A
QC Batch Method: EPA Mod. 3510C Analysis Description: 8082A GCS PCB
Associated Lab Samples: 10468813001, 10468813002, 10468813003

METHOD BLANK: 3225285 Matrix: Water
Associated Lab Samples: 10468813001, 10468813002, 10468813003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
PCB-1016 (Aroclor 1016)	ug/L	ND	0.10	04/01/19 09:59	
PCB-1221 (Aroclor 1221)	ug/L	ND	0.10	04/01/19 09:59	
PCB-1232 (Aroclor 1232)	ug/L	ND	0.10	04/01/19 09:59	
PCB-1242 (Aroclor 1242)	ug/L	ND	0.10	04/01/19 09:59	
PCB-1248 (Aroclor 1248)	ug/L	ND	0.10	04/01/19 09:59	
PCB-1254 (Aroclor 1254)	ug/L	ND	0.10	04/01/19 09:59	
PCB-1260 (Aroclor 1260)	ug/L	ND	0.10	04/01/19 09:59	
PCB-1262 (Aroclor 1262)	ug/L	ND	0.10	04/01/19 09:59	
PCB-1268 (Aroclor 1268)	ug/L	ND	0.10	04/01/19 09:59	
Decachlorobiphenyl (S)	%.	82	30-125	04/01/19 09:59	
Tetrachloro-m-xylene (S)	%.	54	30-125	04/01/19 09:59	

LABORATORY CONTROL SAMPLE & LCSD: 3225286 3225287

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
PCB-1016 (Aroclor 1016)	ug/L	2	1.7	1.7	85	84	45-125	1	20	
PCB-1260 (Aroclor 1260)	ug/L	2	1.8	1.7	90	84	49-125	7	20	
Decachlorobiphenyl (S)	%.				91	78	30-125			
Tetrachloro-m-xylene (S)	%.				71	58	30-125			

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468813

QC Batch: 596867 Analysis Method: EPA 8270D
QC Batch Method: EPA 3520 Analysis Description: 8270D Water MSSV
Associated Lab Samples: 10468813001, 10468813002, 10468813003

METHOD BLANK: 3227573 Matrix: Water
Associated Lab Samples: 10468813001, 10468813002, 10468813003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
2,4,6-Trichlorophenol	ug/L	ND	10.0	04/03/19 14:02	
2,4-Dichlorophenol	ug/L	ND	10.0	04/03/19 14:02	
2,4-Dimethylphenol	ug/L	ND	10.0	04/03/19 14:02	
2,4-Dinitrophenol	ug/L	ND	10.0	04/03/19 14:02	
2-Chlorophenol	ug/L	ND	10.0	04/03/19 14:02	
2-Methylnaphthalene	ug/L	ND	10.0	04/03/19 14:02	
2-Methylphenol(o-Cresol)	ug/L	ND	10.0	04/03/19 14:02	
3&4-Methylphenol(m&p Cresol)	ug/L	ND	20.0	04/03/19 14:02	
3,3'-Dichlorobenzidine	ug/L	ND	50.0	04/03/19 14:02	
4-Bromophenylphenyl ether	ug/L	ND	10.0	04/03/19 14:02	
Acenaphthene	ug/L	ND	10.0	04/03/19 14:02	
Anthracene	ug/L	ND	10.0	04/03/19 14:02	
Benzo(a)pyrene	ug/L	ND	10.0	04/03/19 14:02	
Benzoic acid	ug/L	ND	50.0	04/03/19 14:02	
bis(2-Chloroethyl) ether	ug/L	ND	10.0	04/03/19 14:02	
bis(2-Ethylhexyl)phthalate	ug/L	ND	10.0	04/03/19 14:02	
Butylbenzylphthalate	ug/L	ND	10.0	04/03/19 14:02	
Di-n-butylphthalate	ug/L	ND	10.0	04/03/19 14:02	
Di-n-octylphthalate	ug/L	ND	10.0	04/03/19 14:02	
Diethylphthalate	ug/L	ND	10.0	04/03/19 14:02	
Dimethylphthalate	ug/L	ND	10.0	04/03/19 14:02	
Fluoranthene	ug/L	ND	10.0	04/03/19 14:02	
Fluorene	ug/L	ND	10.0	04/03/19 14:02	
Hexachlorobenzene	ug/L	ND	10.0	04/03/19 14:02	
Hexachlorocyclopentadiene	ug/L	ND	50.0	04/03/19 14:02	
Hexachloroethane	ug/L	ND	10.0	04/03/19 14:02	
Isophorone	ug/L	ND	10.0	04/03/19 14:02	
N-Nitrosodimethylamine	ug/L	ND	10.0	04/03/19 14:02	
Pentachlorophenol	ug/L	ND	20.0	04/03/19 14:02	
Phenanthrene	ug/L	ND	10.0	04/03/19 14:02	
Phenol	ug/L	ND	10.0	04/03/19 14:02	
Pyrene	ug/L	ND	10.0	04/03/19 14:02	
2,4,6-Tribromophenol (S)	%.	91	52-125	04/03/19 14:02	
2-Fluorobiphenyl (S)	%.	71	52-125	04/03/19 14:02	
2-Fluorophenol (S)	%.	82	30-125	04/03/19 14:02	
Nitrobenzene-d5 (S)	%.	85	55-125	04/03/19 14:02	
p-Terphenyl-d14 (S)	%.	91	57-125	04/03/19 14:02	
Phenol-d6 (S)	%.	85	30-125	04/03/19 14:02	

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468813

LABORATORY CONTROL SAMPLE & LCSD: 3227574 3227575

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
2,4,6-Trichlorophenol	ug/L	50	44.5	44.4	89	89	60-125	0	20	
2,4-Dichlorophenol	ug/L	50	40.6	39.4	81	79	56-125	3	20	
2,4-Dimethylphenol	ug/L	50	33.5	28.5	67	57	33-125	16	20	
2,4-Dinitrophenol	ug/L	50	35.3	36.4	71	73	32-125	3	20	
2-Chlorophenol	ug/L	50	39.1	38.3	78	77	52-125	2	20	
2-Methylnaphthalene	ug/L	50	34.6	39.2	69	78	52-125	13	20	
2-Methylphenol(o-Cresol)	ug/L	50	37.6	36.3	75	73	55-125	4	20	
3&4-Methylphenol(m&p Cresol)	ug/L	50	36.9	37.1	74	74	57-125	0	20	
3,3'-Dichlorobenzidine	ug/L	50	41J	36.1J	82	72	39-150		20	
4-Bromophenylphenyl ether	ug/L	50	43.1	46.5	86	93	61-125	8	20	
Acenaphthene	ug/L	50	41.5	44.9	83	90	59-125	8	20	
Anthracene	ug/L	50	43.4	48.2	87	96	64-125	10	20	
Benzo(a)pyrene	ug/L	50	40.5	43.4	81	87	63-125	7	20	
Benzoic acid	ug/L	50	33.5J	31.6J	67	63	30-125		20	1M
bis(2-Chloroethyl) ether	ug/L	50	36.9	36.4	74	73	49-125	1	20	
bis(2-Ethylhexyl)phthalate	ug/L	50	43.2	45.9	86	92	68-125	6	20	
Butylbenzylphthalate	ug/L	50	42.0	45.5	84	91	67-125	8	20	
Di-n-butylphthalate	ug/L	50	45.9	48.3	92	97	67-125	5	20	
Di-n-octylphthalate	ug/L	50	42.8	46.5	86	93	67-125	8	20	
Diethylphthalate	ug/L	50	46.1	44.8	92	90	64-125	3	20	
Dimethylphthalate	ug/L	50	45.7	44.1	91	88	65-125	4	20	
Fluoranthene	ug/L	50	44.1	47.5	88	95	64-125	7	20	
Fluorene	ug/L	50	42.6	45.2	85	90	63-125	6	20	
Hexachlorobenzene	ug/L	50	47.8	50.4	96	101	61-125	5	20	
Hexachlorocyclopentadiene	ug/L	50	ND	ND	18	17	30-125		20	L2
Hexachloroethane	ug/L	50	19.8	28.9	40	58	30-125	37	20	R1
Isophorone	ug/L	50	41.3	41.3	83	83	59-125	0	20	
N-Nitrosodimethylamine	ug/L	50	37.1	37.2	74	74	43-125	0	20	
Pentachlorophenol	ug/L	50	37.8	40.5	76	81	35-125	7	20	
Phenanthrene	ug/L	50	44.1	47.6	88	95	65-125	8	20	
Phenol	ug/L	50	37.9	38.5	76	77	54-125	1	20	
Pyrene	ug/L	50	41.6	45.1	83	90	65-125	8	20	
2,4,6-Tribromophenol (S)	%.				100	95	52-125			
2-Fluorobiphenyl (S)	%.				75	80	52-125			
2-Fluorophenol (S)	%.				77	76	30-125			
Nitrobenzene-d5 (S)	%.				81	81	55-125			
p-Terphenyl-d14 (S)	%.				81	88	57-125			
Phenol-d6 (S)	%.				76	75	30-125			

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468813

QC Batch: 596900 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 10468813001, 10468813002, 10468813003

METHOD BLANK: 3227643 Matrix: Water
Associated Lab Samples: 10468813001, 10468813002, 10468813003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.2	04/02/19 03:39	

LABORATORY CONTROL SAMPLE: 3227644

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	12.5	12.7	102	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3227645 3227646

Parameter	Units	10468903001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	37.2	12.5	12.5	42.1	42.2	39	40	90-110	0	20	M1

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3227647 3227648

Parameter	Units	10468903002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	48.6	12.5	12.5	51.4	51.3	22	21	90-110	0	20	M1

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468813

QC Batch: 596661 Analysis Method: SM 3500-Cr B Modified
QC Batch Method: SM 3500-Cr B Modified Analysis Description: Chromium, Hexavalent by 3500
Associated Lab Samples: 10468813001, 10468813002, 10468813003

METHOD BLANK: 3226333 Matrix: Water
Associated Lab Samples: 10468813001, 10468813002, 10468813003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium, Hexavalent	mg/L	ND	0.010	03/30/19 12:22	FS

LABORATORY CONTROL SAMPLE: 3226334

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/L	0.2	0.21	105	90-110	FS

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3226335 3226336

Parameter	Units	10468813001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Hexavalent	mg/L	ND	0.2	0.2	0.20	0.21	96	103	85-115	6	20	FS

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Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468813

QC Batch: 163940 Analysis Method: EPA 350.1 rev. 2 (1993)
QC Batch Method: EPA 350.1 rev. 2 (1993) Analysis Description: 350.1 Ammonia Distilled
Associated Lab Samples: 10468813001, 10468813002, 10468813003

METHOD BLANK: 646074 Matrix: Water
Associated Lab Samples: 10468813001, 10468813002, 10468813003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, Ammonia	mg/L	ND	0.11	04/09/19 12:02	

LABORATORY CONTROL SAMPLE: 646075

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Ammonia	mg/L	5	5.2	104	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 646076 646077

Parameter	Units	12123225001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, Ammonia	mg/L	0.15	5	5	5.4	5.3	104	104	90-110	1	10	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 646078 646079

Parameter	Units	12123229002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, Ammonia	mg/L	ND	5	5	5.3	5.3	105	104	90-110	0	10	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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Minneapolis, MN 55414
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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468813

QC Batch: 598592 Analysis Method: SM 4500-CN-E
QC Batch Method: SM 4500-CN-E Analysis Description: SM4500CN-E Cyanide
Associated Lab Samples: 10468813001, 10468813002, 10468813003

METHOD BLANK: 3236543 Matrix: Water
Associated Lab Samples: 10468813001, 10468813002, 10468813003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cyanide	ug/L	ND	20.0	04/11/19 09:22	

LABORATORY CONTROL SAMPLE: 3236544

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cyanide	ug/L	250	247	99	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3236545 3236546

Parameter	Units	10468606001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cyanide	ug/L	ND	250	250	251	243	100	97	80-120	3	30	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3236547 3236548

Parameter	Units	10468606002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cyanide	ug/L	ND	250	250	266	246	101	93	80-120	8	30	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468813

Sample: 462521 **Lab ID: 10468813001** Collected: 03/29/19 13:00 Received: 03/29/19 14:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 900.0	**17.6 ± 4.77 (2.91) C:NA T:NA**	pCi/L	04/10/19 09:01	12587-46-1	
Gross Beta	EPA 900.0	**6.16 ± 2.22 (2.89) C:NA T:NA**	pCi/L	04/10/19 09:01	12587-47-2	

Sample: M-2 **Lab ID: 10468813002** Collected: 03/29/19 13:05 Received: 03/29/19 14:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 900.0	**21.4 ± 6.04 (2.89) C:NA T:NA**	pCi/L	04/10/19 08:44	12587-46-1	
Gross Beta	EPA 900.0	**6.04 ± 2.37 (2.67) C:NA T:NA**	pCi/L	04/10/19 08:44	12587-47-2	

Sample: 462522 **Lab ID: 10468813003** Collected: 03/29/19 13:50 Received: 03/29/19 14:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 900.0	**3.40 ± 2.24 (2.96) C:NA T:NA**	pCi/L	04/10/19 08:34	12587-46-1	
Gross Beta	EPA 900.0	**6.62 ± 2.32 (2.88) C:NA T:NA**	pCi/L	04/10/19 08:34	12587-47-2	

REPORT OF LABORATORY ANALYSIS

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Minneapolis, MN 55414
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QUALITY CONTROL - RADIOCHEMISTRY

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468813

QC Batch: 336926 Analysis Method: EPA 900.0
QC Batch Method: EPA 900.0 Analysis Description: 900.0 Gross Alpha/Beta
Associated Lab Samples: 10468813001, 10468813002, 10468813003

METHOD BLANK: 1639653 Matrix: Water
Associated Lab Samples: 10468813001, 10468813002, 10468813003

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Gross Alpha	0.216 ± 0.784 (1.94) C:NA T:NA	pCi/L	04/10/19 08:20	
Gross Beta	0.340 ± 0.855 (1.98) C:NA T:NA	pCi/L	04/10/19 08:20	

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REPORT OF LABORATORY ANALYSIS

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Minneapolis, MN 55414
(612)607-1700

QUALIFIERS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468813

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-M	Pace Analytical Services - Minneapolis
PASI-PA	Pace Analytical Services - Greensburg
PASI-V	Pace Analytical Services - Virginia

WORKORDER QUALIFIERS

WO: 10468813

[1] Samples were received outside of the recommended temperature range of 0-6 degrees Celsius. The samples were received from the field on ice.

BATCH QUALIFIERS

Batch: 596775

[M5] A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

Batch: 597462

[M5] A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

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1700 Elm Street - Suite 200
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(612)607-1700

QUALIFIERS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468813

ANALYTE QUALIFIERS

1M	The associated compound was outside of 20% for the associated continuing calibration but within 40% of the true value.
FS	The sample was filtered in the laboratory prior to analysis.
L2	Analyte recovery in the laboratory control sample (LCS) was below QC limits. Results for this analyte in associated samples may be biased low.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
R1	RPD value was outside control limits.

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1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10468813

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10468813001	**462521**	EPA Mod. 3510C	596550	EPA 8082A	596775
10468813002	**M-2**	EPA Mod. 3510C	596550	EPA 8082A	596775
10468813003	**462522**	EPA Mod. 3510C	596550	EPA 8082A	596775
10468813001	**462521**	EPA 200.7	596975	EPA 200.7	597156
10468813002	**M-2**	EPA 200.7	596975	EPA 200.7	597156
10468813003	**462522**	EPA 200.7	596975	EPA 200.7	597156
10468813001	**462521**	EPA 200.8	596976	EPA 200.8	597743
10468813002	**M-2**	EPA 200.8	596976	EPA 200.8	597743
10468813003	**462522**	EPA 200.8	596976	EPA 200.8	597743
10468813001	**462521**	EPA 3520	596867	EPA 8270D	597462
10468813002	**M-2**	EPA 3520	596867	EPA 8270D	597462
10468813003	**462522**	EPA 3520	596867	EPA 8270D	597462
10468813001	**462521**				
10468813003	**462522**				
10468813001	**462521**	EPA 900.0	336926		
10468813002	**M-2**	EPA 900.0	336926		
10468813003	**462522**	EPA 900.0	336926		
10468813001	**462521**	EPA 300.0	596900		
10468813002	**M-2**	EPA 300.0	596900		
10468813003	**462522**	EPA 300.0	596900		
10468813001	**462521**	SM 3500-Cr B Modified	596661		
10468813002	**M-2**	SM 3500-Cr B Modified	596661		
10468813003	**462522**	SM 3500-Cr B Modified	596661		
10468813001	**462521**	EPA 350.1			
10468813003	**462522**	EPA 350.1			
10468813001	**462521**	EPA 350.1 rev. 2 (1993)	163940	EPA 350.1 rev. 2 (1993)	163958
10468813002	**M-2**	EPA 350.1 rev. 2 (1993)	163940	EPA 350.1 rev. 2 (1993)	163958
10468813003	**462522**	EPA 350.1 rev. 2 (1993)	163940	EPA 350.1 rev. 2 (1993)	163958
10468813001	**462521**	SM 4500-CN-E	598592	SM 4500-CN-E	598682
10468813002	**M-2**	SM 4500-CN-E	598592	SM 4500-CN-E	598682
10468813003	**462522**	SM 4500-CN-E	598592	SM 4500-CN-E	598682

REPORT OF LABORATORY ANALYSIS

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Minnesota Pollution Control Agency

Chain-of-Custody Form revised 2013.0909

Work Order Number: | COC Type: | Page: 1 of 1

Turnaround Time: | COC ID:

FOR LAB USE ONLY

PROJECT/CLIENT INFO

Facility Code: MNSW-057 | Program Code (MDH Lab Only):

Project Name: 19-01567 MPCA Freeway Landfill 2019 Waters | Project Task Code: PRJ07786

Project Manager: Brad Jacobson | 612-607-6375 | EPIC PROFILE #: 38716 Line 2

Potential Hazard? If yes, add information to Sampler Comments Section

LABORATORY

Lab Name: Pace Analytical - Minneapolis, MN

Address: 1700 SE Elm Street

Minneapolis | MN | 55414

Phone No: 612-607-6400

Lab Work Order Sticker

SAMPLE DETAILS

SAMPLE TYPE CODES
Sample=Routine Sample
S-IVP=Integrated Vertical Profile Sample
S-CWOP=Composite Sample
QC-FB=Field Blank Sample
QC-FR=Field Replicate Sample
QC-TB=Trip Blank Sample

LAB MATRIX CODES
DW=Drinking Water
NW=Non-potable Water
SD=Soil/Solid
WP=Wipe
AR=Air
BL=Biological Material
OT=Other
TS=Tissue

FIELD MATRIX CODES
Wtr-Ground=Groundwater
Wtr-Surf=Surface Water
QC-BLANK=Artificial Blank Water
Leachate=Leachate Sample

ANALYSIS REQUESTED

Location Identifier	Sample Type	Date	Time	Start Depth, in meters	End Depth, in meters	Grab (G) or Composite (C) Sample	Lab Matrix Code	Field Matrix Code	AIS	Sampler Comments (filter volume, special handling, etc.)	# of Cont	PRESERV.	ANALYSIS: Field Parameters: SWL, Temp, pH, DO, Cond, Eh, Turbidity	Metals 200.7 / 200.8 / Gross Alpha/Beta - QAPP Table 3a	300.0 / HexCr - QAPP Table 3a	Ammonia/ Unionized NH3 - QAPP Table 3a	Total Cyanide / Free Cyanide - QAPP Table 3a	8270 SVOC, 8082, MDA1, MDA2 - QAPP Table 3a	Lab Sample No.	#
												None		HNO3	None	H2SO4	NaOH	None		
462521	Sample	3/29/19	1300			G	NW	Wtr-Ground	N		14		X	X	X	X	X	X	001	1
MW-2	QC-FR	3/29/19	1305			G	NW	Wtr-Ground	N		14		X	X	X	X	X	X	002	2
462522	Sample	3/29/19	1350			G	NW	Wtr-Ground	N		14		X	X	X	X	X	X	003	3
									N											4
									N											5
									N											6
									N											7
									N											8
									N											9
									N											10

DUP 3/29/19

WO#: 10468813

10468813

Sampled By: David Anderson / Chris Pelasi | Sampler's Signature: David Anderson | Phone #:

Receiving Comments:

Relinquished By/Affiliation	Date/Time	Accepted By/ Affiliation	Date/Time
(Sampler) David Anderson / Pace Analytical	3/29/19 1420		3/29/19
		F- S6,6,1,15	14:20

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 06Feb2019 Page 1 of 1
	Document No.: F-MN-L-213-rev.25	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt **Client Name:** Pace, Field **Project #:** WO#: 10468813

PM: JMA Due Date: 04/12/19
CLIENT: PASI-MNFLD

Courier: ☐Fed Ex ☐UPS ☐USPS ☒Client ☒Pace ☐SpeeDee ☐Commercial See Exception ☐

Tracking Number: _____

Custody Seal on Cooler/Box Present? ☐Yes ☒No **Seals Intact?** ☐Yes ☑No **Biological Tissue Frozen?** ☐Yes ☐No ☑N/A

Packing Material: ☑Bubble Wrap ☑Bubble Bags ☐None ☐Other:_____ **Temp Blank?** ☑Yes ☐No

Thermometer: ☐ G87A9155100842 ☒ G87A9170600254 **Type of Ice:** ☑Wet ☐Blue ☐None ☐Dry ☐Melted

Note: Each West Virginia Sample must have temp taken (no temp blanks)

Temp should be above freezing to 6°C	Cooler Temp Read w/temp blank: 5.6, 6.1, 1.5 °C	Average Corrected Temp (no temp blank only): °C See Exceptions ☐
Correction Factor: True	Cooler Temp Corrected w/temp blank: 5.6, 6.1, 1.5 °C	

USDA Regulated Soil: (☒ N/A, water sample/Other:_____) **Date/Initials of Person Examining Contents:** CLJ 3/26/19

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA. MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐Yes ☐No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐Yes ☐No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present and Filled Out?	☑Yes	☐No		1.
Chain of Custody Relinquished?	☑Yes	☐No		2.
Sampler Name and/or Signature on COC?	☑Yes	☐No	☐N/A	3.
Samples Arrived within Hold Time?	☑Yes	☐No		4.
Short Hold Time Analysis (<72 hr)?	☑Yes	☐No		5. ☐Fecal Coliform ☐HPC ☐Total Coliform/E coli ☐BOD/cBOD ☐Hex Chrome ☑Turbidity ☐Nitrate ☐Nitrite ☐Orthophos ☐Other_____
Rush Turn Around Time Requested?	☐Yes	☑No		6.
Sufficient Volume?	☑Yes	☐No		7.
Correct Containers Used?	☑Yes	☐No		8.
-Pace Containers Used?	☑Yes	☐No		
Containers Intact?	☑Yes	☐No		9.
Field Filtered Volume Received for Dissolved Tests? YUA 4/4/19	☐Yes	☐No	☑N/A	10. Is sediment visible in the dissolved container? ☐Yes ☐No
Is sufficient information available to reconcile the samples to the COC? Matrix: ☑Water ☐Soil ☐Oil ☐Other_____	☑Yes	☐No		11. If no, write ID/ Date/Time on Container Below: See Exception ☐
All containers needing acid/base preservation have been checked?	☑Yes	☐No	☐N/A	12. Sample # 1-3 1-3 1-3
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>12 Cyanide)	☑Yes	☐No	☐N/A	☑ NaOH ☑ HNO_3 ☑ H_2SO_4 ☐ Zinc Acetate 2/2 2/2 1/1
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin/PFAS	☐Yes	☐No	☑N/A	Positive for Res. Chlorine? ☐Yes ☐No See Exception ☐
Headspace in VOA Vials (greater than 6mm)?	☐Yes	☐No	☑N/A	13. See Exception ☐
Trip Blank Present?	☐Yes	☐No	☑N/A	14.
Trip Blank Custody Seals Present?	☐Yes	☐No	☑N/A	Pace Trip Blank Lot # (if purchased):_____

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐Yes ☐No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

Project Manager Review: _____ Date: 04/01/2019

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers).

Labeled by: _____

Chain of Custody

WO#: 12123105

PM: CLJ **Due Date: 04/19/19**

CLIENT: PACE MPLS

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN

Cert. Needed: ☐ Yes ☐

Workorder: 10468813 **Workorder Name:** 19-01567 MPCA Freeway LF 19 WT **Owner Received Date:** 3/29/2019 **Results Requested By:** 4/19/2019

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6436	Pace Analytical Virginia MN 315 Chestnut Street Virginia, MN 55792 Phone (218)742-1042

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: H2SO4 BP3S						Requested Analysis: 350.1 Ammonia	Unionized Ammonia											LAB USE ONLY
1	462521	PS	3/29/2019 13:00	10468813001	Water	1						X	X											
2	M-2	PS	3/29/2019 13:05	10468813002	Water	1						X	X											
3	462522	PS	3/29/2019 13:50	10468813003	Water	1						X	X											
4																								
5																								

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature]	4/1/19 1630	B Mathews	4/2/19 1025
2				
3				

Comments

Cooler Temperature on Receipt 3.6 °C **Custody Seal** (Y) or N **Received on Ice** (Y) or N **Samples Intact** (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.*

Sample Condition Upon Receipt

Client Name: Pace Mpls

Project #: WO#: 12123105

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☑ Other: SD

Tracking Number:

Custody Seal on Cooler/Box Present? ☑ Yes ☐ No Seals Intact? ☑ Yes ☐ No Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☑ None ☐ Other: Temp Blank? ☑ Yes ☐ No

Thermometer Used: ☑ 111336683 Type of Ice: ☑ Wet ☐ Blue ☐ None ☐ Samples on ice, cooling process has begun

Cooler Temp Read °C: 3.3 Cooler Temp Corrected °C: 3.6 Biological Tissue Frozen? ☐ Yes ☐ No ☑ NA

Temp should be above freezing to 6°C Correction Factor: +0.3 Date and Initials of Person Examining Contents: BM 4/2/19

				Comments:
Chain of Custody Present?	☑ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☑ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☑ Yes	☐ No	☐ N/A	3.
Sampler Name and Signature on COC?	☐ Yes	☑ No	☐ N/A	4.
Samples Arrived within Hold Time?	☑ Yes	☐ No	☐ N/A	5. If Fecal: ☐ <8 hours ☐ >8, <24 hours ☐ >24 hours
Short Hold Time Analysis (<72 hr)?	☐ Yes	☑ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☑ No	☐ N/A	7.
Sufficient Volume?	☑ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☑ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☑ Yes	☐ No	☐ N/A	
Containers Intact?	☑ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☑ N/A	11. Note if sediment is visible in the dissolved containers.
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: WT	☑ Yes	☐ No	☐ N/A	12.
All containers needing acid/base preservation will be checked and documented in the pH logbook.	☑ Yes	☐ No	☐ N/A	See pH log for results and additional preservation documentation
Headspace in Methyl Mercury Container	☐ Yes	☐ No	☑ N/A	13.
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☑ N/A	14.
Trip Blank Present?	☐ Yes	☐ No	☑ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☑ N/A	
Pace Trip Blank Lot # (if purchased):				

CLIENT NOTIFICATION/RESOLUTION Field Data Required? ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

FECAL WAIVER ON FILE Y N TEMPERATURE WAIVER ON FILE Y N

Project Manager Review: Katie Richards Date: 4/2/2019

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Chain of Custody

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN
Cert. Needed: ☐ Yes ☐ No

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Workorder: 10468813 **Workorder Name:** 19-01567 MPCA Freeway LF 19 WT **Owner Received Date:** 3/29/2019 **Results Requested By:** 4/19/2019

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6436	Pace Analytical Pittsburgh 1638 Roseytown Road Suites 2,3 & 4 Greensburg, PA 15601 Phone (724)850-5600

WO# : 30287095
30287095

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers HNO3 BP1N	Gross Alpha/Beta	LAB USE ONLY
1	462521	PS	3/29/2019 13:00	10468813001	Water	1	X	001
2	M-2	PS	3/29/2019 13:05	10468813002	Water	1	X	002
3	462522	PS	3/29/2019 13:50	10468813003	Water	1	X	003
4								
5								

Comments

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature]	4/1/19 1600	[signature]	4/2/19 9:45
2				
3				

Cooler Temperature on Receipt — °C | **Custody Seal** Y or N mg 4/2/19 | **Received on Ice** Y or N | **Samples Intact** Y or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.*

Pittsburgh Lab Sample Condition Upon Receipt

Pace Analytical

Client Name: Pace MN

Project # 30287095

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Label ET
LIMS Login ET

Tracking #: 4638 0195 6549 mg 4/2/19

Custody Seal on Cooler/Box Present: ☐ yes ☑ no Seals intact: ☐ yes ☐ no

Thermometer Used N/A Type of Ice: Wet Blue None

Cooler Temperature Observed Temp — °C Correction Factor: — °C Final Temp: — °C

Temp should be above freezing to 6°C

pH paper Lot# 10D2981 | Date and Initials of person examining contents: mg 4/2/19

Comments:	Yes	No	N/A	
Chain of Custody Present:	✓			1.
Chain of Custody Filled Out:	✓			2.
Chain of Custody Relinquished:	✓			3.
Sampler Name & Signature on COC:		✓		4.
Sample Labels match COC: -Includes date/time/ID Matrix: WT	✓			5.
Samples Arrived within Hold Time:	✓			6.
Short Hold Time Analysis (<72hr remaining):		✓		7.
Rush Turn Around Time Requested:		✓		8.
Sufficient Volume:	✓			9.
Correct Containers Used: -Pace Containers Used:	✓ ✓			10.
Containers Intact:	✓			11.
Orthophosphate field filtered			✓	12.
Hex Cr Aqueous Compliance/NPDES sample field filtered			✓	13.
Organic Samples checked for dechlorination:			✓	14.
Filtered volume received for Dissolved tests			✓	15.
All containers have been checked for preservation. All containers needing preservation are found to be in compliance with EPA recommendation.	✓ ✓			16. pH < 2
exceptions: VOA, coliform, TOC, O&G, Phenolics				Initial when completed mg / Date/time of preservation / Lot # of added preservative
Headspace in VOA Vials (>6mm):			✓	17.
Trip Blank Present:		✓		18.
Trip Blank Custody Seals Present			✓	
Rad Samples Screened < 0.5 mrem/hr	✓			Initial when completed: mg / Date: 4/2/19

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

☐ **A check in this box indicates that additional information has been stored in ereports.**

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

***PM review** is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

12-Apr-2019

Jennifer Anderson
Pace Analytical Services, LLC
1700 Elm Street
Suite 200
Minneapolis, MN 55414

Re: **10468813** Work Order: **1904100**

Dear Jennifer,

ALS Environmental received 3 samples on 02-Apr-2019 10:30 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental - Holland and for only the analyses requested.

Sample results are compliant with industry accepted practices and Quality Control results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 9.

If you have any questions regarding this report, please feel free to contact me:

ADDRESS: 3352 128th Avenue, Holland, MI, USA
PHONE: +1 (616) 399-6070 FAX: +1 (616) 399-6185

Sincerely,

Electronically approved by: Chad Whelton

Chad Whelton
Project Manager

ALS Group, USA

Date: 12-Apr-19

Client: Pace Analytical Services, LLC
Project: 10468813
Work Order: **1904100**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1904100-01	462521	Water		3/29/2019 13:00	4/2/2019 10:30	☐
1904100-02	M-2	Water		3/29/2019 13:05	4/2/2019 10:30	☐
1904100-03	462522	Water		3/29/2019 13:50	4/2/2019 10:30	☐

Client: Pace Analytical Services, LLC
Project: 10468813
WorkOrder: **1904100**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
**	Estimated Value
a	Analyte is non-accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
Hr	BOD/CBOD - Sample was reset outside Hold Time, value should be considered estimated.
J	Analyte is present at an estimated concentration between the MDL and Report Limit
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and Reporting Limit, sample results may exhibit background or reagent contamination at the observed level.

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

Units Reported	Description
µg/L	Micrograms per Liter

ALS Group, USA

Date: *12-Apr-19*

Client:	Pace Analytical Services, LLC		
Project:	10468813	**Work Order:**	1904100
Sample ID:	462521	**Lab ID:**	1904100-01
Collection Date:	3/29/2019 01:00 PM	**Matrix:**	WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
CYANIDE, FREE			**SW9014**			Analyst: **RZM**
Cyanide, Free	ND		20	µg/L	1	4/8/2019 10:30 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Pace Analytical Services, LLC
Project: 10468813 **Work Order:** 1904100
Sample ID: M-2 **Lab ID:** 1904100-02
Collection Date: 3/29/2019 01:05 PM **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
CYANIDE, FREE			**SW9014**			Analyst: **RZM**
Cyanide, Free	ND		20	µg/L	1	4/8/2019 10:30 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *12-Apr-19*

Client:	Pace Analytical Services, LLC		
Project:	10468813	**Work Order:**	1904100
Sample ID:	462522	**Lab ID:**	1904100-03
Collection Date:	3/29/2019 01:50 PM	**Matrix:**	WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
CYANIDE, FREE			**SW9014**			Analyst: **RZM**
Cyanide, Free	ND		20	µg/L	1	4/8/2019 10:30 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

QC BATCH REPORT

Batch ID: **R258103** Instrument ID **WETCHEM** Method: **SW9014**

MBLK Sample ID: **MB-R258103-R258103** Units: **µg/L** Analysis Date: **4/8/2019 10:30 AM**

Client ID: Run ID: **WETCHEM_190408Q** SeqNo: **5596554** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Free	ND	20								

LCS Sample ID: **LCS-R258103-R258103** Units: **µg/L** Analysis Date: **4/8/2019 10:30 AM**

Client ID: Run ID: **WETCHEM_190408Q** SeqNo: **5596555** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Free	264.9	20	250	0	106	81-119	0			

MS Sample ID: **1904010-01A MS** Units: **µg/L** Analysis Date: **4/8/2019 10:30 AM**

Client ID: Run ID: **WETCHEM_190408Q** SeqNo: **5596560** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Free	264.9	20	250	-6.48	109	81-119	0			

MSD Sample ID: **1904010-01A MSD** Units: **µg/L** Analysis Date: **4/8/2019 10:30 AM**

Client ID: Run ID: **WETCHEM_190408Q** SeqNo: **5596561** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Free	247.2	20	250	-6.48	101	81-119	264.9	6.91	20	

The following samples were analyzed in this batch: 1904100-01A 1904100-02A 1904100-03A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Chain of Custody

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www.pacelabs.com

Workorder: 10468813 **Workorder Name:** 19-01567 MPCA Freeway LF 19 WT **Results Requested By:** 4/19/2019 i904100

Report / Invoice To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6436 Email: jennifer.anderson@pacelabs.com	ALS 3352 128th Avenue Holland, MI 49424 P.O. 10468813

State of Sample Origin: MN

Item	Sample ID	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Other BP3A	Requested Analysis: Free Cyanide	LAB USE ONLY
1	462521	3/29/2019 13:00	10468813001	Water	1	X	
2	M-2	3/29/2019 13:05	10468813002	Water	1	X	
3	462522	3/29/2019 13:50	10468813003	Water	1	X	
4							
5							

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature]	3/4/19 1550		
2		3/4/19		
3				

Comments

Cooler Temperature on Receipt °C | **Custody Seal** Y or N | **Received on Ice** Y or N | **Samples Intact** Y or N

CM 2 4-2-19 1030
MF 4-2-19 13:00
8k2
pH 5 36c

ALS Group, USA

Sample Receipt Checklist

Client Name: **PACE_MN** Date/Time Received: **02-Apr-19 10:30**

Work Order: **1904100** Received by: **BNF**

Checklist completed by Bernina France (eSignature) 02-Apr-19 (Date) Reviewed by: Chad Whelton (eSignature) 02-Apr-19 (Date)

Matrices: Water

Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Sample(s) received on ice?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	3.6/3.6 C	SR2	
Cooler(s)/Kit(s):	1		
Date/Time sample(s) sent to storage:	4/2/2019 1:11:18 PM		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

Pace Analytical®
ECCS Mobile Lab Services

2525 Advance Road
Madison, WI 53718
608.221.8700 Phone
608.221.4889 Fax

April 16, 2019

Jennifer Anderson
Pace Analytical
1700 Elm Street, Suite 200
Minneapolis, MN 55414

RE: MPCA Freeway LF Water - MN

Enclosed are the analytical results for the samples received by the laboratory on 04/02/2019.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. These results are in compliance with the 2009 NELAC Standards and the appropriate agencies listed below, unless otherwise noted in the case narrative. This analytical report should be reproduced in its entirety.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jessica Esser

Project Manager

Certification List			Expires
DODELAP	DOD ELAP Accreditation (A2LA)	3269.01	03/31/2020
ILEPA	Illinois Secondary NELAP Accreditation	004366	04/30/2019
KDHE	Kansas Secondary NELAP Accreditation	E-10384	04/30/2019
LELAP	Louisiana Primary NELAP Accreditation	04165	06/30/2019
NCDEQ	North Carolina Dept. of Environmental Quality Accreditation	688	12/31/2019
NJDEP	New Jersey Secondary NELAP Accreditation	WI004	06/30/2019
ODEQ	Oklahoma Department of Environmental Quality Accreditation	2018-087	08/31/2019
TCEQ	Texas Secondary NELAP Accreditation	T104704504-16-7	11/30/2019
WDNR	Wisconsin Certification under NR 149	113289110	08/31/2019

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Pace Analytical	Project: MPCA Freeway LF Water - MN
1700 Elm Street, Suite 200	Project Number: 10468813
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
462521	A191402-01	Water	03/29/2019	04/02/2019
M-2	A191402-02	Water	03/29/2019	04/02/2019
462522	A191402-03	Water	03/29/2019	04/02/2019

CASE NARRATIVE

Sample Receipt Information:
3 samples were received on 04/02/2019. Samples were received at 1.8 degrees Celsius. Samples were received in acceptable condition.

Please see the chain of custody (COC) document at the end of this report for additional information.

Laboratory Control Samples (LCS):
The E1 footnote on samples A191402-01 through A191402-03 indicates that there were quality control sample exceedances for terbufos. The LCS recovery was below acceptable limits. Please see the quality control section of the report for more information.

The LCS and LCS duplicate recoveries indicate a potential high bias for ethalfluralin, fonofos, propachlor and triallate for samples A191402-01 through A191402-03. Samples were less than the reporting limit for these analytes so no further action is required.

Continuing Calibration Verification (CCV):
CCV indicates a potential high bias for cyanazine, ethalfluralin, pendimethalin and trifluralin for samples A191402-01 through A191402-03. Samples were less than the reporting limit for these analytes so no further action is required.

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Madison, WI 53718
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608.221.4889 Fax

Pace Analytical	Project: MPCA Freeway LF Water - MN
1700 Elm Street, Suite 200	Project Number: 10468813
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

462521

A191402-01 (Water)

Date Sampled
03/29/2019 13:00

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Pace Analytical - Madison								
Base Neutral Pesticides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A904147**			
Acetochlor	ND	0.50	ug/L	1	04/04/2019	04/09/2019 12:35	EPA 8270D	
Alachlor	ND	0.50	ug/L	1	04/04/2019	04/09/2019 12:35	EPA 8270D	
Atrazine	ND	0.50	ug/L	1	04/04/2019	04/09/2019 12:35	EPA 8270D	
Chlorpyrifos	ND	0.50	ug/L	1	04/04/2019	04/09/2019 12:35	EPA 8270D	
Cyanazine	ND	0.20	ug/L	1	04/04/2019	04/09/2019 12:35	EPA 8270D	
Desethylatrazine	ND	0.50	ug/L	1	04/04/2019	04/09/2019 12:35	EPA 8270D	
Deisopropylatrazine	ND	0.50	ug/L	1	04/04/2019	04/09/2019 12:35	EPA 8270D	
Dimethenamid	ND	0.50	ug/L	1	04/04/2019	04/09/2019 12:35	EPA 8270D	
EPTC	ND	0.50	ug/L	1	04/04/2019	04/09/2019 12:35	EPA 8270D	
Ethalfluralin	ND	0.50	ug/L	1	04/04/2019	04/09/2019 12:35	EPA 8270D	
Fonofos	ND	0.50	ug/L	1	04/04/2019	04/09/2019 12:35	EPA 8270D	
Metolachlor	ND	0.50	ug/L	1	04/04/2019	04/09/2019 12:35	EPA 8270D	
Metribuzin	ND	0.50	ug/L	1	04/04/2019	04/09/2019 12:35	EPA 8270D	
Pendimethalin	ND	0.50	ug/L	1	04/04/2019	04/09/2019 12:35	EPA 8270D	
Phorate	ND	0.30	ug/L	1	04/04/2019	04/09/2019 12:35	EPA 8270D	
Prometon	ND	0.50	ug/L	1	04/04/2019	04/09/2019 12:35	EPA 8270D	
Propachlor	ND	0.50	ug/L	1	04/04/2019	04/09/2019 12:35	EPA 8270D	
Propazine	ND	0.50	ug/L	1	04/04/2019	04/09/2019 12:35	EPA 8270D	
Simazine	ND	0.50	ug/L	1	04/04/2019	04/09/2019 12:35	EPA 8270D	
Terbufos	ND	0.20	ug/L	1	04/04/2019	04/09/2019 12:35	EPA 8270D	E1
Triallate	ND	0.50	ug/L	1	04/04/2019	04/09/2019 12:35	EPA 8270D	
Trifluralin	ND	0.50	ug/L	1	04/04/2019	04/09/2019 12:35	EPA 8270D	
Surrogate: Atrazine-d5		*89.8 %*		*56.9-123*	*04/04/2019*	*04/09/2019 12:35*	*EPA 8270D*	
Surrogate: Parathion-d10		*1630 %*		*23.8-169*	*04/04/2019*	*04/09/2019 12:35*	*EPA 8270D*	*S*
Surrogate: Triphenyl phosphate		*101 %*		*50.5-178*	*04/04/2019*	*04/09/2019 12:35*	*EPA 8270D*	
Acid Herbicides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A904142**			
2,4-D	ND	0.50	ug/L	1	04/03/2019	04/07/2019 09:30	EPA 8151A	
2,4-DB	ND	0.50	ug/L	1	04/03/2019	04/07/2019 09:30	EPA 8151A	
2,4,5-T	ND	0.50	ug/L	1	04/03/2019	04/07/2019 09:30	EPA 8151A	
2,4,5-TP (Silvex)	ND	0.50	ug/L	1	04/03/2019	04/07/2019 09:30	EPA 8151A	
Bentazon	ND	0.50	ug/L	1	04/03/2019	04/07/2019 09:30	EPA 8151A	
Dicamba	ND	0.50	ug/L	1	04/03/2019	04/07/2019 09:30	EPA 8151A	
MCPA	ND	0.30	ug/L	1	04/03/2019	04/07/2019 09:30	EPA 8151A	
Picloram	ND	0.50	ug/L	1	04/03/2019	04/07/2019 09:30	EPA 8151A	
Triclopyr	ND	0.50	ug/L	1	04/03/2019	04/07/2019 09:30	EPA 8151A	
Surrogate: 2,4-D-d5		*82.8 %*		*44.2-121*	*04/03/2019*	*04/07/2019 09:30*	*EPA 8151A*	

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2525 Advance Road
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608.221.8700 Phone
608.221.4889 Fax

Pace Analytical	Project: MPCA Freeway LF Water - MN
1700 Elm Street, Suite 200	Project Number: 10468813
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

M-2

A191402-02 (Water)

Date Sampled
03/29/2019 13:05

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Base Neutral Pesticides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A904147**			
Acetochlor	ND	0.50	ug/L	1	04/04/2019	04/09/2019 13:03	EPA 8270D	
Alachlor	ND	0.50	ug/L	1	04/04/2019	04/09/2019 13:03	EPA 8270D	
Atrazine	ND	0.50	ug/L	1	04/04/2019	04/09/2019 13:03	EPA 8270D	
Chlorpyrifos	ND	0.50	ug/L	1	04/04/2019	04/09/2019 13:03	EPA 8270D	
Cyanazine	ND	0.20	ug/L	1	04/04/2019	04/09/2019 13:03	EPA 8270D	
Desethylatrazine	ND	0.50	ug/L	1	04/04/2019	04/09/2019 13:03	EPA 8270D	
Deisopropylatrazine	ND	0.50	ug/L	1	04/04/2019	04/09/2019 13:03	EPA 8270D	
Dimethenamid	ND	0.50	ug/L	1	04/04/2019	04/09/2019 13:03	EPA 8270D	
EPTC	ND	0.50	ug/L	1	04/04/2019	04/09/2019 13:03	EPA 8270D	
Ethalfluralin	ND	0.50	ug/L	1	04/04/2019	04/09/2019 13:03	EPA 8270D	
Fonofos	ND	0.50	ug/L	1	04/04/2019	04/09/2019 13:03	EPA 8270D	
Metolachlor	ND	0.50	ug/L	1	04/04/2019	04/09/2019 13:03	EPA 8270D	
Metribuzin	ND	0.50	ug/L	1	04/04/2019	04/09/2019 13:03	EPA 8270D	
Pendimethalin	ND	0.50	ug/L	1	04/04/2019	04/09/2019 13:03	EPA 8270D	
Phorate	ND	0.30	ug/L	1	04/04/2019	04/09/2019 13:03	EPA 8270D	
Prometon	ND	0.50	ug/L	1	04/04/2019	04/09/2019 13:03	EPA 8270D	
Propachlor	ND	0.50	ug/L	1	04/04/2019	04/09/2019 13:03	EPA 8270D	
Propazine	ND	0.50	ug/L	1	04/04/2019	04/09/2019 13:03	EPA 8270D	
Simazine	ND	0.50	ug/L	1	04/04/2019	04/09/2019 13:03	EPA 8270D	
Terbufos	ND	0.20	ug/L	1	04/04/2019	04/09/2019 13:03	EPA 8270D	E1
Triallate	ND	0.50	ug/L	1	04/04/2019	04/09/2019 13:03	EPA 8270D	
Trifluralin	ND	0.50	ug/L	1	04/04/2019	04/09/2019 13:03	EPA 8270D	
Surrogate: Atrazine-d5		*83.7 %*		*56.9-123*	*04/04/2019*	*04/09/2019 13:03*	*EPA 8270D*	
Surrogate: Parathion-d10		*202 %*		*23.8-169*	*04/04/2019*	*04/09/2019 13:03*	*EPA 8270D*	*S*
Surrogate: Triphenyl phosphate		*91.0 %*		*50.5-178*	*04/04/2019*	*04/09/2019 13:03*	*EPA 8270D*	
Acid Herbicides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A904142**			
2,4-D	ND	0.50	ug/L	1	04/03/2019	04/07/2019 10:06	EPA 8151A	
2,4-DB	ND	0.50	ug/L	1	04/03/2019	04/07/2019 10:06	EPA 8151A	
2,4,5-T	ND	0.50	ug/L	1	04/03/2019	04/07/2019 10:06	EPA 8151A	
2,4,5-TP (Silvex)	ND	0.50	ug/L	1	04/03/2019	04/07/2019 10:06	EPA 8151A	
Bentazon	ND	0.50	ug/L	1	04/03/2019	04/07/2019 10:06	EPA 8151A	
Dicamba	ND	0.50	ug/L	1	04/03/2019	04/07/2019 10:06	EPA 8151A	
MCPA	ND	0.30	ug/L	1	04/03/2019	04/07/2019 10:06	EPA 8151A	
Picloram	ND	0.50	ug/L	1	04/03/2019	04/07/2019 10:06	EPA 8151A	
Triclopyr	ND	0.50	ug/L	1	04/03/2019	04/07/2019 10:06	EPA 8151A	
Surrogate: 2,4-D-d5		*73.8 %*		*44.2-121*	*04/03/2019*	*04/07/2019 10:06*	*EPA 8151A*	

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1700 Elm Street, Suite 200	Project Number: 10468813
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

462522

A191402-03 (Water)

Date Sampled
03/29/2019 13:50

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Base Neutral Pesticides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A904147**			
Acetochlor	ND	0.50	ug/L	1	04/04/2019	04/09/2019 13:31	EPA 8270D	
Alachlor	ND	0.50	ug/L	1	04/04/2019	04/09/2019 13:31	EPA 8270D	
Atrazine	ND	0.50	ug/L	1	04/04/2019	04/09/2019 13:31	EPA 8270D	
Chlorpyrifos	ND	0.50	ug/L	1	04/04/2019	04/09/2019 13:31	EPA 8270D	
Cyanazine	ND	0.20	ug/L	1	04/04/2019	04/09/2019 13:31	EPA 8270D	
Desethylatrazine	ND	0.50	ug/L	1	04/04/2019	04/09/2019 13:31	EPA 8270D	
Deisopropylatrazine	ND	0.50	ug/L	1	04/04/2019	04/09/2019 13:31	EPA 8270D	
Dimethenamid	ND	0.50	ug/L	1	04/04/2019	04/09/2019 13:31	EPA 8270D	
EPTC	ND	0.50	ug/L	1	04/04/2019	04/09/2019 13:31	EPA 8270D	
Ethalfluralin	ND	0.50	ug/L	1	04/04/2019	04/09/2019 13:31	EPA 8270D	
Fonofos	ND	0.50	ug/L	1	04/04/2019	04/09/2019 13:31	EPA 8270D	
Metolachlor	ND	0.50	ug/L	1	04/04/2019	04/09/2019 13:31	EPA 8270D	
Metribuzin	ND	0.50	ug/L	1	04/04/2019	04/09/2019 13:31	EPA 8270D	
Pendimethalin	ND	0.50	ug/L	1	04/04/2019	04/09/2019 13:31	EPA 8270D	
Phorate	ND	0.30	ug/L	1	04/04/2019	04/09/2019 13:31	EPA 8270D	
Prometon	ND	0.50	ug/L	1	04/04/2019	04/09/2019 13:31	EPA 8270D	
Propachlor	ND	0.50	ug/L	1	04/04/2019	04/09/2019 13:31	EPA 8270D	
Propazine	ND	0.50	ug/L	1	04/04/2019	04/09/2019 13:31	EPA 8270D	
Simazine	ND	0.50	ug/L	1	04/04/2019	04/09/2019 13:31	EPA 8270D	
Terbufos	ND	0.20	ug/L	1	04/04/2019	04/09/2019 13:31	EPA 8270D	E1
Triallate	ND	0.50	ug/L	1	04/04/2019	04/09/2019 13:31	EPA 8270D	
Trifluralin	ND	0.50	ug/L	1	04/04/2019	04/09/2019 13:31	EPA 8270D	
Surrogate: Atrazine-d5		*85.3 %*		*56.9-123*	*04/04/2019*	*04/09/2019 13:31*	*EPA 8270D*	
Surrogate: Parathion-d10		*185 %*		*23.8-169*	*04/04/2019*	*04/09/2019 13:31*	*EPA 8270D*	*S*
Surrogate: Triphenyl phosphate		*98.7 %*		*50.5-178*	*04/04/2019*	*04/09/2019 13:31*	*EPA 8270D*	
Acid Herbicides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A904142**			
2,4-D	ND	0.50	ug/L	1	04/03/2019	04/07/2019 10:41	EPA 8151A	
2,4-DB	ND	0.50	ug/L	1	04/03/2019	04/07/2019 10:41	EPA 8151A	
2,4,5-T	ND	0.50	ug/L	1	04/03/2019	04/07/2019 10:41	EPA 8151A	
2,4,5-TP (Silvex)	ND	0.50	ug/L	1	04/03/2019	04/07/2019 10:41	EPA 8151A	
Bentazon	ND	0.50	ug/L	1	04/03/2019	04/07/2019 10:41	EPA 8151A	
Dicamba	ND	0.50	ug/L	1	04/03/2019	04/07/2019 10:41	EPA 8151A	
MCPA	ND	0.30	ug/L	1	04/03/2019	04/07/2019 10:41	EPA 8151A	
Picloram	ND	0.50	ug/L	1	04/03/2019	04/07/2019 10:41	EPA 8151A	
Triclopyr	ND	0.50	ug/L	1	04/03/2019	04/07/2019 10:41	EPA 8151A	
Surrogate: 2,4-D-d5		*74.3 %*		*44.2-121*	*04/03/2019*	*04/07/2019 10:41*	*EPA 8151A*	

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1700 Elm Street, Suite 200	Project Number: 10468813
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Base Neutral Pesticides by Gas Chromatography/Mass Spectrometry - Quality Control

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A904147 - EPA 3510C										
Blank (A904147-BLK1)				Prepared: 04/04/2019 Analyzed: 04/08/2019 18:08						
Acetochlor	ND	0.50	ug/L							
Alachlor	ND	0.50	ug/L							
Atrazine	ND	0.50	ug/L							
Chlorpyrifos	ND	0.50	ug/L							
Cyanazine	ND	0.20	ug/L							
Desethylatrazine	ND	0.50	ug/L							
Deisopropylatrazine	ND	0.50	ug/L							
Dimethenamid	ND	0.50	ug/L							
EPTC	ND	0.50	ug/L							
Ethalfluralin	ND	0.50	ug/L							
Fonofos	ND	0.50	ug/L							
Metolachlor	ND	0.50	ug/L							
Metribuzin	ND	0.50	ug/L							
Pendimethalin	ND	0.50	ug/L							
Phorate	ND	0.30	ug/L							
Prometon	ND	0.50	ug/L							
Propachlor	ND	0.50	ug/L							
Propazine	ND	0.50	ug/L							
Simazine	ND	0.50	ug/L							
Terbufos	ND	0.20	ug/L							
Triallate	ND	0.50	ug/L							
Trifluralin	ND	0.50	ug/L							
Surrogate: Atrazine-d5	*0.511*		*ug/L*	*0.5000*		*102*	*56.9-123*			
Surrogate: Parathion-d10	*1.07*		*ug/L*	*0.5000*		*215*	*23.8-169*			*S*
Surrogate: Triphenyl phosphate	*0.453*		*ug/L*	*0.5000*		*90.6*	*50.5-178*			
LCS (A904147-BS1)				Prepared: 04/04/2019 Analyzed: 04/08/2019 18:36						
Acetochlor	0.817	0.50	ug/L	1.000		81.7	67.8-122			
Alachlor	0.819	0.50	ug/L	1.000		81.9	68.6-119			
Atrazine	0.802	0.50	ug/L	1.000		80.2	68.6-115			
Chlorpyrifos	0.841	0.50	ug/L	1.000		84.1	63.1-120			
Cyanazine	0.832	0.20	ug/L	1.000		83.2	55.3-143			
Desethylatrazine	0.766	0.50	ug/L	1.000		76.6	67.8-115			
Deisopropylatrazine	0.594	0.50	ug/L	1.000		59.4	50.1-100			
Dimethenamid	0.795	0.50	ug/L	1.000		79.5	70.3-121			
EPTC	0.649	0.50	ug/L	1.000		64.9	50.4-101			
Ethalfluralin	1.87	0.50	ug/L	1.000		187	42.6-121			
Fonofos	1.62	0.50	ug/L	1.000		162	56.6-119			
Metolachlor	0.822	0.50	ug/L	1.000		82.2	71.3-128			
Metribuzin	0.760	0.50	ug/L	1.000		76.0	64.9-120			
Pendimethalin	0.841	0.50	ug/L	1.000		84.1	60.9-128			
Phorate	0.477	0.30	ug/L	1.000		47.7	37.3-112			
Prometon	0.799	0.50	ug/L	1.000		79.9	67.1-120			
Propachlor	1.92	0.50	ug/L	1.000		192	66.2-127			
Propazine	0.800	0.50	ug/L	1.000		80.0	68.2-118			
Simazine	0.800	0.50	ug/L	1.000		80.0	67.2-117			

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1700 Elm Street, Suite 200	Project Number: 10468813
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Base Neutral Pesticides by Gas Chromatography/Mass Spectrometry - Quality Control

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A904147 - EPA 3510C										
LCS (A904147-BS1)				Prepared: 04/04/2019 Analyzed: 04/08/2019 18:36						
Terbufos	0.283	0.20	ug/L	1.000		28.3	34.3-111			
Triallate	1.82	0.50	ug/L	1.000		182	53-121			
Trifluralin	0.759	0.50	ug/L	1.000		75.9	45.9-116			
Surrogate: Atrazine-d5	*0.447*		*ug/L*	*0.5000*		*89.4*	*56.9-123*			
Surrogate: Parathion-d10	*0.952*		*ug/L*	*0.5000*		*190*	*23.8-169*			*S*
Surrogate: Triphenyl phosphate	*0.418*		*ug/L*	*0.5000*		*83.5*	*50.5-178*			
LCS Dup (A904147-BSD1)				Prepared: 04/04/2019 Analyzed: 04/08/2019 19:04						
Acetochlor	0.885	0.50	ug/L	1.000		88.5	67.8-122	7.93	20	
Alachlor	0.867	0.50	ug/L	1.000		86.7	68.6-119	5.69	20	
Atrazine	0.846	0.50	ug/L	1.000		84.6	68.6-115	5.34	20	
Chlorpyrifos	0.897	0.50	ug/L	1.000		89.7	63.1-120	6.43	20	
Cyanazine	0.904	0.20	ug/L	1.000		90.4	55.3-143	8.21	20	
Desethylatrazine	0.822	0.50	ug/L	1.000		82.2	67.8-115	7.00	20	
Deisopropylatrazine	0.616	0.50	ug/L	1.000		61.6	50.1-100	3.55	20	
Dimethenamid	0.855	0.50	ug/L	1.000		85.5	70.3-121	7.20	20	
EPTC	0.742	0.50	ug/L	1.000		74.2	50.4-101	13.3	20	
Ethalfluralin	1.47	0.50	ug/L	1.000		147	42.6-121	24.0	20	X
Fonofos	1.35	0.50	ug/L	1.000		135	56.6-119	17.8	20	
Metolachlor	0.886	0.50	ug/L	1.000		88.6	71.3-128	7.43	20	
Metribuzin	0.789	0.50	ug/L	1.000		78.9	64.9-120	3.69	20	
Pendimethalin	0.888	0.50	ug/L	1.000		88.8	60.9-128	5.41	20	
Phorate	0.541	0.30	ug/L	1.000		54.1	37.3-112	12.7	20	
Prometon	0.831	0.50	ug/L	1.000		83.1	67.1-120	3.92	20	
Propachlor	1.63	0.50	ug/L	1.000		163	66.2-127	16.7	20	
Propazine	0.874	0.50	ug/L	1.000		87.4	68.2-118	8.91	20	
Simazine	0.883	0.50	ug/L	1.000		88.3	67.2-117	9.75	20	
Terbufos	0.366	0.20	ug/L	1.000		36.6	34.3-111	25.7	20	X
Triallate	1.57	0.50	ug/L	1.000		157	53-121	14.6	20	
Trifluralin	0.805	0.50	ug/L	1.000		80.5	45.9-116	5.95	20	
Surrogate: Atrazine-d5	*0.478*		*ug/L*	*0.5000*		*95.7*	*56.9-123*			
Surrogate: Parathion-d10	*0.842*		*ug/L*	*0.5000*		*168*	*23.8-169*			
Surrogate: Triphenyl phosphate	*0.410*		*ug/L*	*0.5000*		*82.1*	*50.5-178*			

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1700 Elm Street, Suite 200	Project Number: 10468813
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Acid Herbicides by Gas Chromatography/Mass Spectrometry - Quality Control

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A904142 - EPA 3510C										
Blank (A904142-BLK1)				Prepared: 04/03/2019 Analyzed: 04/06/2019 23:26						
2,4-D	ND	0.50	ug/L							
2,4-DB	ND	0.50	ug/L							
2,4,5-T	ND	0.50	ug/L							
2,4,5-TP (Silvex)	ND	0.50	ug/L							
Bentazon	ND	0.50	ug/L							
Dicamba	ND	0.50	ug/L							
MCPA	ND	0.30	ug/L							
Picloram	ND	0.50	ug/L							
Triclopyr	ND	0.50	ug/L							
Surrogate: 2,4-D-d5	*1.51*		*ug/L*	*2.006*		*75.1*	*44.2-121*			
LCS (A904142-BS1)				Prepared: 04/03/2019 Analyzed: 04/07/2019 00:01						
2,4-D	1.90	0.50	ug/L	2.000		95.1	64.6-148			
2,4-DB	1.80	0.50	ug/L	2.000		89.9	66.7-143			
2,4,5-T	1.80	0.50	ug/L	2.000		90.1	63.4-133			
2,4,5-TP (Silvex)	1.68	0.50	ug/L	2.000		84.1	63-145			
Bentazon	0.679	0.50	ug/L	1.000		67.9	52.5-139			
Dicamba	1.61	0.50	ug/L	2.000		80.6	55.4-143			
MCPA	1.45	0.30	ug/L	2.000		72.4	33.5-143			
Picloram	0.740	0.50	ug/L	1.000		74.0	47.9-113			
Triclopyr	1.62	0.50	ug/L	2.000		80.9	65.1-141			
Surrogate: 2,4-D-d5	*1.60*		*ug/L*	*2.006*		*79.6*	*44.2-121*			
LCS Dup (A904142-BSD1)				Prepared: 04/03/2019 Analyzed: 04/07/2019 00:37						
2,4-D	1.73	0.50	ug/L	2.000		86.4	64.6-148	9.56	20	
2,4-DB	1.63	0.50	ug/L	2.000		81.6	66.7-143	9.67	20	
2,4,5-T	1.67	0.50	ug/L	2.000		83.5	63.4-133	7.57	20	
2,4,5-TP (Silvex)	1.59	0.50	ug/L	2.000		79.3	63-145	5.92	20	
Bentazon	0.656	0.50	ug/L	1.000		65.6	52.5-139	3.52	20	
Dicamba	1.64	0.50	ug/L	2.000		81.8	55.4-143	1.47	20	
MCPA	1.45	0.30	ug/L	2.000		72.4	33.5-143	0.0138	20	
Picloram	0.714	0.50	ug/L	1.000		71.4	47.9-113	3.60	20	
Triclopyr	1.56	0.50	ug/L	2.000		77.9	65.1-141	3.79	20	
Surrogate: 2,4-D-d5	*1.47*		*ug/L*	*2.006*		*73.2*	*44.2-121*			

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1700 Elm Street, Suite 200	Project Number: 10468813
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Notes and Definitions

X	Precision for the matrix spike duplicate, laboratory control sample duplicate or lab duplicate was outside of control limits.
S	Surrogate recovery was outside of laboratory control limits due to an apparent matrix effect.
E1	Estimated value because of quality control sample exceedances.
ND	Analyte NOT DETECTED at or above the reporting limit or limit of detection (if listed).
NR	Not Reported
dry	Sample results reported on a dry weight basis. If the word 'dry' does not appear after the units, results are reported on an as-is basis.
RPD	Relative Percent Difference

Chain of Custody

A191402

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☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN
Cert. Needed: ☐ Yes ☐ No

Workorder: 10468813 **Workorder Name:** 19-01567 MPCA Freeway LF 19 WT **Owner Received Date:** 3/29/2019 **Results Requested By:** 4/19/2019

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6436	Pace Analytical Madison 2525 Advance Road Madison, WI 53718 Phone (608)221-8700

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved AG1U	MDA List 1	MDA List 2	LAB USE ONLY
1	462521	PS	3/29/2019 13:00	10468813001	Water	4	X	X	01
2	M-2	PS	3/29/2019 13:05	10468813002	Water	4	X	X	02
3	462522	PS	3/29/2019 13:50	10468813003	Water	4	X	X	03
4									
5									

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature] via [illegible]	4/1/19 1500	Kari-Ann Killen	4/2/19 1015
2				
3				

Comments

Need MPCA Equis EDD and Barr Equis 5 EDD

Cooler Temperature on Receipt 1.8 °C | **Custody Seal** (Y) or N | **Received on Ice** (Y) or N | **Samples Intact** (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.*

1601422774 exp 7/13/19

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

April 18, 2019

Mr. Brad Jacobson
Pace Analytical Services, LLC..
1700 Elm Street
Suite 200
Minneapolis, MN 55414

RE: Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10469117

Dear Mr. Jacobson:
Enclosed are the analytical results for sample(s) received by the laboratory on April 01, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Some analyses have been subcontracted outside of the Pace Network. The subcontracted laboratory report has been attached.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jennifer Anderson
jennifer.anderson@pacelabs.com
(612)607-6436
Project Manager

Enclosures

cc: Tom Halverson, Pace Analytical Field Services
Chris Pelosi, Pace Analytical Services - Field Services

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Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

CERTIFICATIONS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10469117

Minnesota Certification IDs

1700 Elm Street SE, Minneapolis, MN 55414-2485
A2LA Certification #: 2926.01
Alabama Certification #: 40770
Alaska Contaminated Sites Certification #: 17-009
Alaska DW Certification #: MN00064
Arizona Certification #: AZ0014
Arkansas DW Certification #: MN00064
Arkansas WW Certification #: 88-0680
California Certification #: 2929
CNMI Saipan Certification #: MP0003
Colorado Certification #: MN00064
Connecticut Certification #: PH-0256
EPA Region 8+Wyoming DW Certification #: via MN 027-053-137
Florida Certification #: E87605
Georgia Certification #: 959
Guam EPA Certification #: MN00064
Hawaii Certification #: MN00064
Idaho Certification #: MN00064
Illinois Certification #: 200011
Indiana Certification #: C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky DW Certification #: 90062
Kentucky WW Certification #: 90062
Louisiana DEQ Certification #: 03086
Louisiana DW Certification #: MN00064
Maine Certification #: MN00064
Maryland Certification #: 322
Massachusetts Certification #: M-MN064
Michigan Certification #: 9909
Minnesota Certification #: 027-053-137
Minnesota Dept of Ag Certifcation #: via MN 027-053-137
Minnesota Petrofund Certification #: 1240
Mississippi Certification #: MN00064
Missouri Certification #: 10100
Montana Certification #: CERT0092
Nebraska Certification #: NE-OS-18-06
Nevada Certification #: MN00064
New Hampshire Certification #: 2081
New Jersey Certification #: MN002
New York Certification #: 11647
North Carolina DW Certification #: 27700
North Carolina WW Certification #: 530
North Dakota Certification #: R-036
Ohio DW Certification #: 41244
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Primary Certification #: MN300001
Oregon Secondary Certification #: MN200001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification #: MN00064
South Carolina Certification #:74003001
Tennessee Certification #: TN02818
Texas Certification #: T104704192
Utah Certification #: MN00064
Vermont Certification #: VT-027053137
Virginia Certification #: 460163
Washington Certification #: C486
West Virginia DEP Certification #: 382
West Virginia DW Certification #: 9952 C
Wisconsin Certification #: 999407970
Wyoming UST Certification #: via A2LA 2926.01

Virginia Minnesota Certification ID's

315 Chestnut Street, Virginia, MN 55792
Alaska Certification UST-107
Montana Certificate #CERT0103
Minnesota Dept of Health Certification #: 027-137-445
North Dakota Certification: # R-203
Wisconsin DNR Certification # : 998027470
WA Department of Ecology Lab ID# C1007

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Florida: Cert E871149 SEKS WET
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221

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CERTIFICATIONS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10469117

Pennsylvania Certification IDs

KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

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SAMPLE SUMMARY

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10469117

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10469117001	**813740**	Water	04/01/19 10:10	04/01/19 16:25
10469117002	**813764**	Water	04/01/19 10:50	04/01/19 16:25
10469117003	**813761**	Water	04/01/19 13:00	04/01/19 16:25
10469117004	**240816**	Water	04/01/19 15:10	04/01/19 16:25

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SAMPLE ANALYTE COUNT

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10469117

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10469117001	**813740**	EPA 8082A	RAG	11	PASI-M
		EPA 200.7	DM	9	PASI-M
		EPA 200.8	RJS	12	PASI-M
		EPA 8270D	STB	38	PASI-M
			CLJ	16	PASI-V
		EPA 900.0	CLA	2	PASI-PA
		EPA 300.0	KEO	1	PASI-M
		SM 3500-Cr B Modified	JFP	1	PASI-M
		EPA 350.1	CLJ	1	PASI-V
		EPA 350.1 rev. 2 (1993)	DMB	1	PASI-V
		SM 4500-CN-E	DCL	1	PASI-M
10469117002	**813764**	EPA 8082A	RAG	11	PASI-M
		EPA 200.7	DM	9	PASI-M
		EPA 200.8	RJS	12	PASI-M
		EPA 8270D	STB	38	PASI-M
			CLJ	16	PASI-V
		EPA 900.0	CLA	2	PASI-PA
		EPA 300.0	KEO	1	PASI-M
		SM 3500-Cr B Modified	JFP	1	PASI-M
		EPA 350.1	CLJ	1	PASI-V
		EPA 350.1 rev. 2 (1993)	DMB	1	PASI-V
		SM 4500-CN-E	DCL	1	PASI-M
10469117003	**813761**	EPA 8082A	RAG	11	PASI-M
		EPA 200.7	DM	9	PASI-M
		EPA 200.8	RJS	12	PASI-M
		EPA 8270D	STB	38	PASI-M
			CLJ	16	PASI-V
		EPA 900.0	CLA	2	PASI-PA
		EPA 300.0	KEO	1	PASI-M
		SM 3500-Cr B Modified	JFP	1	PASI-M
		EPA 350.1	CLJ	1	PASI-V
		EPA 350.1 rev. 2 (1993)	DMB	1	PASI-V
		SM 4500-CN-E	DCL	1	PASI-M
10469117004	**240816**	EPA 8082A	RAG	11	PASI-M
		EPA 200.7	DM	9	PASI-M
		EPA 200.8	RJS	12	PASI-M
		EPA 8270D	STB	38	PASI-M

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SAMPLE ANALYTE COUNT

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10469117

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
			CLJ	16	PASI-V
		EPA 900.0	CLA	2	PASI-PA
		EPA 300.0	KEO	1	PASI-M
		SM 3500-Cr B Modified	JFP	1	PASI-M
		EPA 350.1	CLJ	1	PASI-V
		EPA 350.1 rev. 2 (1993)	DMB	1	PASI-V
		SM 4500-CN-E	DCL	1	PASI-M

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10469117

Sample: 813740 **Lab ID: 10469117001** Collected: 04/01/19 10:10 Received: 04/01/19 16:25 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA Mod. 3510C							
PCB-1016 (Aroclor 1016)	ND	ug/L	0.095	1	04/02/19 13:33	04/03/19 09:05	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/L	0.095	1	04/02/19 13:33	04/03/19 09:05	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/L	0.095	1	04/02/19 13:33	04/03/19 09:05	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/L	0.095	1	04/02/19 13:33	04/03/19 09:05	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/L	0.095	1	04/02/19 13:33	04/03/19 09:05	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/L	0.095	1	04/02/19 13:33	04/03/19 09:05	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/L	0.095	1	04/02/19 13:33	04/03/19 09:05	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/L	0.095	1	04/02/19 13:33	04/03/19 09:05	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/L	0.095	1	04/02/19 13:33	04/03/19 09:05	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	55	%.	30-125	1	04/02/19 13:33	04/03/19 09:05	877-09-8	
Decachlorobiphenyl (S)	41	%.	30-125	1	04/02/19 13:33	04/03/19 09:05	2051-24-3	
200.7 MET ICP, Dissolved	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Aluminum, Dissolved	ND	ug/L	200	1	04/03/19 14:21	04/08/19 16:23	7429-90-5	
Barium, Dissolved	**703**	ug/L	10.0	1	04/03/19 14:21	04/08/19 16:23	7440-39-3	
Copper, Dissolved	ND	ug/L	10.0	1	04/03/19 14:21	04/08/19 16:23	7440-50-8	
Manganese, Dissolved	**101**	ug/L	5.0	1	04/03/19 14:21	04/08/19 16:23	7439-96-5	
Nickel, Dissolved	**34.3**	ug/L	20.0	1	04/03/19 14:21	04/08/19 16:23	7440-02-0	
Silver, Dissolved	ND	ug/L	10.0	1	04/03/19 14:21	04/08/19 16:23	7440-22-4	
Tin, Dissolved	ND	ug/L	75.0	1	04/03/19 14:21	04/08/19 16:23	7440-31-5	
Total Hardness by 2340B, Dissolved	**683000**	ug/L	3300	1	04/03/19 14:21	04/08/19 16:23		
Zinc, Dissolved	ND	ug/L	20.0	1	04/03/19 14:21	04/08/19 16:23	7440-66-6	
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Dissolved	ND	ug/L	0.50	1	04/03/19 14:21	04/11/19 02:19	7440-36-0	
Arsenic, Dissolved	**10.9**	ug/L	0.50	1	04/03/19 14:21	04/11/19 02:19	7440-38-2	
Beryllium, Dissolved	ND	ug/L	0.20	1	04/03/19 14:21	04/11/19 02:19	7440-41-7	
Boron, Dissolved	**1220**	ug/L	100	10	04/03/19 14:21	04/11/19 15:45	7440-42-8	
Cadmium, Dissolved	ND	ug/L	0.080	1	04/03/19 14:21	04/11/19 02:19	7440-43-9	
Chromium, Dissolved	**4.2**	ug/L	0.50	1	04/03/19 14:21	04/11/19 02:19	7440-47-3	
Cobalt, Dissolved	**10.9**	ug/L	0.50	1	04/03/19 14:21	04/11/19 02:19	7440-48-4	
Lead, Dissolved	ND	ug/L	0.10	1	04/03/19 14:21	04/11/19 02:19	7439-92-1	
Selenium, Dissolved	ND	ug/L	0.50	1	04/03/19 14:21	04/11/19 02:19	7782-49-2	
Thallium, Dissolved	ND	ug/L	0.10	1	04/03/19 14:21	04/11/19 02:19	7440-28-0	
Uranium-238, Dissolved	**0.90**	ug/L	0.50	1	04/03/19 14:21	04/11/19 02:19	7440-61-1	
Vanadium, Dissolved	**1.6**	ug/L	1.0	1	04/03/19 14:21	04/11/19 02:19	7440-62-2	
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
Acenaphthene	ND	ug/L	9.9	1	04/02/19 17:26	04/04/19 13:56	83-32-9	
Anthracene	ND	ug/L	9.9	1	04/02/19 17:26	04/04/19 13:56	120-12-7	
Benzo(a)pyrene	ND	ug/L	9.9	1	04/02/19 17:26	04/04/19 13:56	50-32-8	
Benzoic acid	ND	ug/L	49.5	1	04/02/19 17:26	04/04/19 13:56	65-85-0	
4-Bromophenylphenyl ether	ND	ug/L	9.9	1	04/02/19 17:26	04/04/19 13:56	101-55-3	
Butylbenzylphthalate	ND	ug/L	9.9	1	04/02/19 17:26	04/04/19 13:56	85-68-7	
bis(2-Chloroethyl) ether	ND	ug/L	9.9	1	04/02/19 17:26	04/04/19 13:56	111-44-4	

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10469117

Sample: 813740 **Lab ID: 10469117001** Collected: 04/01/19 10:10 Received: 04/01/19 16:25 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
2-Chlorophenol	ND	ug/L	9.9	1	04/02/19 17:26	04/04/19 13:56	95-57-8	
3,3'-Dichlorobenzidine	ND	ug/L	49.5	1	04/02/19 17:26	04/04/19 13:56	91-94-1	
2,4-Dichlorophenol	ND	ug/L	9.9	1	04/02/19 17:26	04/04/19 13:56	120-83-2	
Diethylphthalate	ND	ug/L	9.9	1	04/02/19 17:26	04/04/19 13:56	84-66-2	
2,4-Dimethylphenol	ND	ug/L	9.9	1	04/02/19 17:26	04/04/19 13:56	105-67-9	
Dimethylphthalate	ND	ug/L	9.9	1	04/02/19 17:26	04/04/19 13:56	131-11-3	
Di-n-butylphthalate	ND	ug/L	9.9	1	04/02/19 17:26	04/04/19 13:56	84-74-2	
2,4-Dinitrophenol	ND	ug/L	9.9	1	04/02/19 17:26	04/04/19 13:56	51-28-5	
Di-n-octylphthalate	ND	ug/L	9.9	1	04/02/19 17:26	04/04/19 13:56	117-84-0	
bis(2-Ethylhexyl)phthalate	ND	ug/L	9.9	1	04/02/19 17:26	04/04/19 13:56	117-81-7	
Fluoranthene	ND	ug/L	9.9	1	04/02/19 17:26	04/04/19 13:56	206-44-0	
Fluorene	ND	ug/L	9.9	1	04/02/19 17:26	04/04/19 13:56	86-73-7	
Hexachlorobenzene	ND	ug/L	9.9	1	04/02/19 17:26	04/04/19 13:56	118-74-1	
Hexachlorocyclopentadiene	ND	ug/L	49.5	1	04/02/19 17:26	04/04/19 13:56	77-47-4	
Hexachloroethane	ND	ug/L	9.9	1	04/02/19 17:26	04/04/19 13:56	67-72-1	
Isophorone	ND	ug/L	9.9	1	04/02/19 17:26	04/04/19 13:56	78-59-1	
2-Methylnaphthalene	ND	ug/L	9.9	1	04/02/19 17:26	04/04/19 13:56	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/L	9.9	1	04/02/19 17:26	04/04/19 13:56	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/L	19.8	1	04/02/19 17:26	04/04/19 13:56		
N-Nitrosodimethylamine	ND	ug/L	9.9	1	04/02/19 17:26	04/04/19 13:56	62-75-9	
Pentachlorophenol	ND	ug/L	19.8	1	04/02/19 17:26	04/04/19 13:56	87-86-5	
Phenanthrene	ND	ug/L	9.9	1	04/02/19 17:26	04/04/19 13:56	85-01-8	
Phenol	ND	ug/L	9.9	1	04/02/19 17:26	04/04/19 13:56	108-95-2	
Pyrene	ND	ug/L	9.9	1	04/02/19 17:26	04/04/19 13:56	129-00-0	
2,4,6-Trichlorophenol	ND	ug/L	9.9	1	04/02/19 17:26	04/04/19 13:56	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	109	%.	55-125	1	04/02/19 17:26	04/04/19 13:56	4165-60-0	
2-Fluorobiphenyl (S)	98	%.	52-125	1	04/02/19 17:26	04/04/19 13:56	321-60-8	
p-Terphenyl-d14 (S)	109	%.	57-125	1	04/02/19 17:26	04/04/19 13:56	1718-51-0	
Phenol-d6 (S)	98	%.	30-125	1	04/02/19 17:26	04/04/19 13:56	13127-88-3	
2-Fluorophenol (S)	92	%.	30-125	1	04/02/19 17:26	04/04/19 13:56	367-12-4	
2,4,6-Tribromophenol (S)	125	%.	52-125	1	04/02/19 17:26	04/04/19 13:56	118-79-6	
Field Data	Analytical Method:							
Well Locked	**Yes**			1		04/01/19 10:10		
Purge Method	**Grundfos Redi-Flo**			1		04/01/19 10:10		
Total Well Depth	**66.35**	feet		1		04/01/19 10:10		
Depth of Water	**55.90**			1		04/01/19 10:10		
Well Volume Purged	**5.1**			1		04/01/19 10:10		
Purge Rate	**0.1**			1		04/01/19 10:10		
Collected Date	**04/01/19**			1		04/01/19 10:10		
Collected Time	**1010**			1		04/01/19 10:10		
Field pH	**6.9**	Std. Units		1		04/01/19 10:10		
Field Temperature	**12.5**	deg C		1		04/01/19 10:10		
Field Specific Conductance	**4440**	umhos/cm		1		04/01/19 10:10		
Oxygen, Dissolved	**0.9**	mg/L		1		04/01/19 10:10	7782-44-7	

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10469117

Sample: 813740 **Lab ID: 10469117001** Collected: 04/01/19 10:10 Received: 04/01/19 16:25 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:							
REDOX	**-91**	mV		1		04/01/19 10:10		
Turbidity	**47.3**	NTU		1		04/01/19 10:10		
Apparent Color	**Slightly Cloudy**			1		04/01/19 10:10		
Odor	**No**			1		04/01/19 10:10		
300.0 IC Anions	Analytical Method: EPA 300.0							
Chloride	**501**	mg/L	12.0	10		04/04/19 15:19	16887-00-6	
Chromium, Hexavalent	Analytical Method: SM 3500-Cr B Modified							
Chromium, Hexavalent	ND	mg/L	0.010	1		04/02/19 09:31		FS
350.1 Ammonia, Unionized	Analytical Method: EPA 350.1							
Nitrogen, Ammonia (Unionized)	**0.15**	mg/L	0.010	1		04/11/19 14:34		
350.1 Ammonia, Distilled	Analytical Method: EPA 350.1 rev. 2 (1993) Preparation Method: EPA 350.1 rev. 2 (1993)							
Nitrogen, Ammonia	**84.9**	mg/L	1.1	10	04/09/19 08:29	04/09/19 13:03	7664-41-7	
SM4500CN-E Cyanide	Analytical Method: SM 4500-CN-E Preparation Method: SM 4500-CN-E							
Cyanide	ND	ug/L	20.0	1	04/10/19 09:16	04/11/19 10:48	57-12-5	

Sample: 813764 **Lab ID: 10469117002** Collected: 04/01/19 10:50 Received: 04/01/19 16:25 Matrix: Water

Comments: • Upon receipt at the laboratory, 5 mls of nitric acid were added to the sample to meet the sample preservation requirement of pH <2 for radiochemistry analysis.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA Mod. 3510C							
PCB-1016 (Aroclor 1016)	ND	ug/L	0.11	1	04/02/19 13:33	04/03/19 09:21	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/L	0.11	1	04/02/19 13:33	04/03/19 09:21	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/L	0.11	1	04/02/19 13:33	04/03/19 09:21	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/L	0.11	1	04/02/19 13:33	04/03/19 09:21	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/L	0.11	1	04/02/19 13:33	04/03/19 09:21	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/L	0.11	1	04/02/19 13:33	04/03/19 09:21	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/L	0.11	1	04/02/19 13:33	04/03/19 09:21	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/L	0.11	1	04/02/19 13:33	04/03/19 09:21	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/L	0.11	1	04/02/19 13:33	04/03/19 09:21	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	46	%.	30-125	1	04/02/19 13:33	04/03/19 09:21	877-09-8	
Decachlorobiphenyl (S)	35	%.	30-125	1	04/02/19 13:33	04/03/19 09:21	2051-24-3	
200.7 MET ICP, Dissolved	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Aluminum, Dissolved	ND	ug/L	200	1	04/03/19 14:21	04/08/19 16:34	7429-90-5	
Barium, Dissolved	**587**	ug/L	10.0	1	04/03/19 14:21	04/08/19 16:34	7440-39-3	
Copper, Dissolved	ND	ug/L	10.0	1	04/03/19 14:21	04/08/19 16:34	7440-50-8	

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10469117

Sample: 813764 **Lab ID: 10469117002** Collected: 04/01/19 10:50 Received: 04/01/19 16:25 Matrix: Water

Comments: • Upon receipt at the laboratory, 5 mls of nitric acid were added to the sample to meet the sample preservation requirement of pH <2 for radiochemistry analysis.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 MET ICP, Dissolved	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Manganese, Dissolved	**289**	ug/L	5.0	1	04/03/19 14:21	04/08/19 16:34	7439-96-5	
Nickel, Dissolved	**38.1**	ug/L	20.0	1	04/03/19 14:21	04/08/19 16:34	7440-02-0	
Silver, Dissolved	ND	ug/L	10.0	1	04/03/19 14:21	04/08/19 16:34	7440-22-4	
Tin, Dissolved	ND	ug/L	75.0	1	04/03/19 14:21	04/08/19 16:34	7440-31-5	
Total Hardness by 2340B, Dissolved	**1470000**	ug/L	3300	1	04/03/19 14:21	04/08/19 16:34		
Zinc, Dissolved	ND	ug/L	20.0	1	04/03/19 14:21	04/08/19 16:34	7440-66-6	
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Dissolved	**0.59**	ug/L	0.50	1	04/03/19 14:21	04/11/19 10:49	7440-36-0	
Arsenic, Dissolved	**3.8**	ug/L	0.50	1	04/03/19 14:21	04/11/19 10:49	7440-38-2	
Beryllium, Dissolved	ND	ug/L	1.0	5	04/03/19 14:21	04/11/19 00:15	7440-41-7	D3
Boron, Dissolved	**2820**	ug/L	500	50	04/03/19 14:21	04/11/19 15:32	7440-42-8	
Cadmium, Dissolved	ND	ug/L	0.080	1	04/03/19 14:21	04/11/19 10:49	7440-43-9	
Chromium, Dissolved	**8.8**	ug/L	2.5	5	04/03/19 14:21	04/11/19 00:15	7440-47-3	
Cobalt, Dissolved	**42.6**	ug/L	0.50	1	04/03/19 14:21	04/11/19 10:49	7440-48-4	
Lead, Dissolved	**0.15**	ug/L	0.10	1	04/03/19 14:21	04/11/19 10:49	7439-92-1	
Selenium, Dissolved	ND	ug/L	0.50	1	04/03/19 14:21	04/11/19 10:49	7782-49-2	
Thallium, Dissolved	ND	ug/L	0.10	1	04/03/19 14:21	04/11/19 10:49	7440-28-0	
Uranium-238, Dissolved	ND	ug/L	0.50	1	04/03/19 14:21	04/11/19 10:49	7440-61-1	
Vanadium, Dissolved	ND	ug/L	5.0	5	04/03/19 14:21	04/11/19 00:15	7440-62-2	D3
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
Acenaphthene	ND	ug/L	21.1	2	04/02/19 17:26	04/04/19 13:27	83-32-9	
Anthracene	ND	ug/L	21.1	2	04/02/19 17:26	04/04/19 13:27	120-12-7	
Benzo(a)pyrene	ND	ug/L	21.1	2	04/02/19 17:26	04/04/19 13:27	50-32-8	
Benzoic acid	ND	ug/L	105	2	04/02/19 17:26	04/04/19 13:27	65-85-0	
4-Bromophenylphenyl ether	ND	ug/L	21.1	2	04/02/19 17:26	04/04/19 13:27	101-55-3	
Butylbenzylphthalate	ND	ug/L	21.1	2	04/02/19 17:26	04/04/19 13:27	85-68-7	
bis(2-Chloroethyl) ether	ND	ug/L	21.1	2	04/02/19 17:26	04/04/19 13:27	111-44-4	
2-Chlorophenol	ND	ug/L	21.1	2	04/02/19 17:26	04/04/19 13:27	95-57-8	
3,3'-Dichlorobenzidine	ND	ug/L	105	2	04/02/19 17:26	04/04/19 13:27	91-94-1	
2,4-Dichlorophenol	ND	ug/L	21.1	2	04/02/19 17:26	04/04/19 13:27	120-83-2	
Diethylphthalate	ND	ug/L	21.1	2	04/02/19 17:26	04/04/19 13:27	84-66-2	
2,4-Dimethylphenol	ND	ug/L	21.1	2	04/02/19 17:26	04/04/19 13:27	105-67-9	
Dimethylphthalate	ND	ug/L	21.1	2	04/02/19 17:26	04/04/19 13:27	131-11-3	
Di-n-butylphthalate	ND	ug/L	21.1	2	04/02/19 17:26	04/04/19 13:27	84-74-2	
2,4-Dinitrophenol	ND	ug/L	21.1	2	04/02/19 17:26	04/04/19 13:27	51-28-5	
Di-n-octylphthalate	ND	ug/L	21.1	2	04/02/19 17:26	04/04/19 13:27	117-84-0	
bis(2-Ethylhexyl)phthalate	ND	ug/L	21.1	2	04/02/19 17:26	04/04/19 13:27	117-81-7	
Fluoranthene	ND	ug/L	21.1	2	04/02/19 17:26	04/04/19 13:27	206-44-0	
Fluorene	ND	ug/L	21.1	2	04/02/19 17:26	04/04/19 13:27	86-73-7	
Hexachlorobenzene	ND	ug/L	21.1	2	04/02/19 17:26	04/04/19 13:27	118-74-1	
Hexachlorocyclopentadiene	ND	ug/L	105	2	04/02/19 17:26	04/04/19 13:27	77-47-4	
Hexachloroethane	ND	ug/L	21.1	2	04/02/19 17:26	04/04/19 13:27	67-72-1	

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1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10469117

Sample: 813764 **Lab ID: 10469117002** Collected: 04/01/19 10:50 Received: 04/01/19 16:25 Matrix: Water

Comments: • Upon receipt at the laboratory, 5 mls of nitric acid were added to the sample to meet the sample preservation requirement of pH <2 for radiochemistry analysis.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
Isophorone	ND	ug/L	21.1	2	04/02/19 17:26	04/04/19 13:27	78-59-1	
2-Methylnaphthalene	ND	ug/L	21.1	2	04/02/19 17:26	04/04/19 13:27	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/L	21.1	2	04/02/19 17:26	04/04/19 13:27	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/L	42.1	2	04/02/19 17:26	04/04/19 13:27		
N-Nitrosodimethylamine	ND	ug/L	21.1	2	04/02/19 17:26	04/04/19 13:27	62-75-9	
Pentachlorophenol	ND	ug/L	42.1	2	04/02/19 17:26	04/04/19 13:27	87-86-5	
Phenanthrene	ND	ug/L	21.1	2	04/02/19 17:26	04/04/19 13:27	85-01-8	
Phenol	ND	ug/L	21.1	2	04/02/19 17:26	04/04/19 13:27	108-95-2	
Pyrene	ND	ug/L	21.1	2	04/02/19 17:26	04/04/19 13:27	129-00-0	
2,4,6-Trichlorophenol	ND	ug/L	21.1	2	04/02/19 17:26	04/04/19 13:27	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	102	%.	55-125	2	04/02/19 17:26	04/04/19 13:27	4165-60-0	D3
2-Fluorobiphenyl (S)	95	%.	52-125	2	04/02/19 17:26	04/04/19 13:27	321-60-8	
p-Terphenyl-d14 (S)	101	%.	57-125	2	04/02/19 17:26	04/04/19 13:27	1718-51-0	
Phenol-d6 (S)	92	%.	30-125	2	04/02/19 17:26	04/04/19 13:27	13127-88-3	
2-Fluorophenol (S)	87	%.	30-125	2	04/02/19 17:26	04/04/19 13:27	367-12-4	
2,4,6-Tribromophenol (S)	118	%.	52-125	2	04/02/19 17:26	04/04/19 13:27	118-79-6	
Field Data	Analytical Method:							
Well Locked	**Yes**			1		04/01/19 10:50		
Purge Method	**Grundfos Redi-Flo**			1		04/01/19 10:50		
Total Well Depth	**50.43**	feet		1		04/01/19 10:50		
Depth of Water	**46.38**			1		04/01/19 10:50		
Well Volume Purged	**2.1**			1		04/01/19 10:50		
Purge Rate	**0.1**			1		04/01/19 10:50		
Collected Date	**04/01/19**			1		04/01/19 10:50		
Collected Time	**1050**			1		04/01/19 10:50		
Field pH	**6.9**	Std. Units		1		04/01/19 10:50		
Field Temperature	**12.5**	deg C		1		04/01/19 10:50		
Field Specific Conductance	**7290**	umhos/cm		1		04/01/19 10:50		
Oxygen, Dissolved	**0.8**	mg/L		1		04/01/19 10:50	7782-44-7	
REDOX	**-118**	mV		1		04/01/19 10:50		
Turbidity	**107**	NTU		1		04/01/19 10:50		
Apparent Color	**Slightly Cloudy**			1		04/01/19 10:50		
Odor	**No**			1		04/01/19 10:50		
300.0 IC Anions	Analytical Method: EPA 300.0							
Chloride	**1070**	mg/L	24.0	20		04/04/19 15:37	16887-00-6	
Chromium, Hexavalent	Analytical Method: SM 3500-Cr B Modified							
Chromium, Hexavalent	ND	mg/L	0.010	1		04/02/19 10:20		FS

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10469117

Sample: 813764 **Lab ID: 10469117002** Collected: 04/01/19 10:50 Received: 04/01/19 16:25 Matrix: Water

Comments: • Upon receipt at the laboratory, 5 mls of nitric acid were added to the sample to meet the sample preservation requirement of pH <2 for radiochemistry analysis.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
350.1 Ammonia, Unionized	Analytical Method: EPA 350.1							
Nitrogen, Ammonia (Unionized)	ND	mg/L	0.010	1		04/11/19 14:35		
350.1 Ammonia, Distilled	Analytical Method: EPA 350.1 rev. 2 (1993) Preparation Method: EPA 350.1 rev. 2 (1993)							
Nitrogen, Ammonia	ND	mg/L	0.11	1	04/09/19 08:29	04/09/19 12:11	7664-41-7	
SM4500CN-E Cyanide	Analytical Method: SM 4500-CN-E Preparation Method: SM 4500-CN-E							
Cyanide	ND	ug/L	20.0	1	04/10/19 09:16	04/11/19 10:49	57-12-5	

Sample: 813761 **Lab ID: 10469117003** Collected: 04/01/19 13:00 Received: 04/01/19 16:25 Matrix: Water

Comments: • Upon receipt at the laboratory, 10 mls of nitric acid were added to the sample to meet the sample preservation requirement of pH <2 for radiochemistry analysis. Sample would not preserve to a pH <2.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA Mod. 3510C							
PCB-1016 (Aroclor 1016)	ND	ug/L	1.0	1	04/02/19 13:33	04/03/19 09:36	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/L	1.0	1	04/02/19 13:33	04/03/19 09:36	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/L	1.0	1	04/02/19 13:33	04/03/19 09:36	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/L	1.0	1	04/02/19 13:33	04/03/19 09:36	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/L	1.0	1	04/02/19 13:33	04/03/19 09:36	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/L	1.0	1	04/02/19 13:33	04/03/19 09:36	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/L	1.0	1	04/02/19 13:33	04/03/19 09:36	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/L	1.0	1	04/02/19 13:33	04/03/19 09:36	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/L	1.0	1	04/02/19 13:33	04/03/19 09:36	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	88	%.	30-125	1	04/02/19 13:33	04/03/19 09:36	877-09-8	
Decachlorobiphenyl (S)	45	%.	30-125	1	04/02/19 13:33	04/03/19 09:36	2051-24-3	
200.7 MET ICP, Dissolved	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Aluminum, Dissolved	**2050**	ug/L	200	1	04/03/19 14:21	04/08/19 16:36	7429-90-5	
Barium, Dissolved	**87.8**	ug/L	10.0	1	04/03/19 14:21	04/08/19 16:36	7440-39-3	
Copper, Dissolved	ND	ug/L	10.0	1	04/03/19 14:21	04/08/19 16:36	7440-50-8	
Manganese, Dissolved	**35700**	ug/L	25.0	5	04/03/19 14:21	04/08/19 17:37	7439-96-5	
Nickel, Dissolved	**1730**	ug/L	20.0	1	04/03/19 14:21	04/08/19 16:36	7440-02-0	
Silver, Dissolved	ND	ug/L	10.0	1	04/03/19 14:21	04/08/19 16:36	7440-22-4	
Tin, Dissolved	**78.5**	ug/L	75.0	1	04/03/19 14:21	04/08/19 16:36	7440-31-5	
Total Hardness by 2340B, Dissolved	**6930000**	ug/L	16500	5	04/03/19 14:21	04/08/19 17:37		
Zinc, Dissolved	**64300**	ug/L	100	5	04/03/19 14:21	04/08/19 17:37	7440-66-6	
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Dissolved	**15.8**	ug/L	2.5	5	04/03/19 14:21	04/11/19 00:19	7440-36-0	
Arsenic, Dissolved	**11.4**	ug/L	2.5	5	04/03/19 14:21	04/11/19 00:19	7440-38-2	
Beryllium, Dissolved	ND	ug/L	1.0	5	04/03/19 14:21	04/11/19 00:19	7440-41-7	D3

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10469117

Sample: 813761 **Lab ID: 10469117003** Collected: 04/01/19 13:00 Received: 04/01/19 16:25 Matrix: Water

Comments: • Upon receipt at the laboratory, 10 mls of nitric acid were added to the sample to meet the sample preservation requirement of pH <2 for radiochemistry analysis. Sample would not preserve to a pH <2.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Boron, Dissolved	**14800**	ug/L	1000	100	04/03/19 14:21	04/11/19 15:36	7440-42-8	
Cadmium, Dissolved	**5.4**	ug/L	0.40	5	04/03/19 14:21	04/11/19 00:19	7440-43-9	
Chromium, Dissolved	**74.6**	ug/L	2.5	5	04/03/19 14:21	04/11/19 00:19	7440-47-3	
Cobalt, Dissolved	**347**	ug/L	2.5	5	04/03/19 14:21	04/11/19 00:19	7440-48-4	
Lead, Dissolved	**33.9**	ug/L	0.50	5	04/03/19 14:21	04/11/19 00:19	7439-92-1	
Selenium, Dissolved	ND	ug/L	2.5	5	04/03/19 14:21	04/11/19 00:19	7782-49-2	D3
Thallium, Dissolved	ND	ug/L	0.50	5	04/03/19 14:21	04/11/19 00:19	7440-28-0	D3
Uranium-238, Dissolved	ND	ug/L	2.5	5	04/03/19 14:21	04/11/19 00:19	7440-61-1	D3
Vanadium, Dissolved	**6.0**	ug/L	5.0	5	04/03/19 14:21	04/11/19 00:19	7440-62-2	
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
Acenaphthene	ND	ug/L	500	1	04/02/19 17:26	04/04/19 12:59	83-32-9	
Anthracene	ND	ug/L	500	1	04/02/19 17:26	04/04/19 12:59	120-12-7	
Benzo(a)pyrene	ND	ug/L	500	1	04/02/19 17:26	04/04/19 12:59	50-32-8	
Benzoic acid	ND	ug/L	2500	1	04/02/19 17:26	04/04/19 12:59	65-85-0	
4-Bromophenylphenyl ether	ND	ug/L	500	1	04/02/19 17:26	04/04/19 12:59	101-55-3	
Butylbenzylphthalate	ND	ug/L	500	1	04/02/19 17:26	04/04/19 12:59	85-68-7	
bis(2-Chloroethyl) ether	ND	ug/L	500	1	04/02/19 17:26	04/04/19 12:59	111-44-4	
2-Chlorophenol	ND	ug/L	500	1	04/02/19 17:26	04/04/19 12:59	95-57-8	
3,3'-Dichlorobenzidine	ND	ug/L	2500	1	04/02/19 17:26	04/04/19 12:59	91-94-1	
2,4-Dichlorophenol	ND	ug/L	500	1	04/02/19 17:26	04/04/19 12:59	120-83-2	
Diethylphthalate	**1300**	ug/L	500	1	04/02/19 17:26	04/04/19 12:59	84-66-2	
2,4-Dimethylphenol	ND	ug/L	500	1	04/02/19 17:26	04/04/19 12:59	105-67-9	
Dimethylphthalate	ND	ug/L	500	1	04/02/19 17:26	04/04/19 12:59	131-11-3	
Di-n-butylphthalate	ND	ug/L	500	1	04/02/19 17:26	04/04/19 12:59	84-74-2	
2,4-Dinitrophenol	ND	ug/L	500	1	04/02/19 17:26	04/04/19 12:59	51-28-5	
Di-n-octylphthalate	ND	ug/L	500	1	04/02/19 17:26	04/04/19 12:59	117-84-0	
bis(2-Ethylhexyl)phthalate	ND	ug/L	500	1	04/02/19 17:26	04/04/19 12:59	117-81-7	
Fluoranthene	ND	ug/L	500	1	04/02/19 17:26	04/04/19 12:59	206-44-0	
Fluorene	ND	ug/L	500	1	04/02/19 17:26	04/04/19 12:59	86-73-7	
Hexachlorobenzene	ND	ug/L	500	1	04/02/19 17:26	04/04/19 12:59	118-74-1	
Hexachlorocyclopentadiene	ND	ug/L	2500	1	04/02/19 17:26	04/04/19 12:59	77-47-4	
Hexachloroethane	ND	ug/L	500	1	04/02/19 17:26	04/04/19 12:59	67-72-1	
Isophorone	ND	ug/L	500	1	04/02/19 17:26	04/04/19 12:59	78-59-1	
2-Methylnaphthalene	ND	ug/L	500	1	04/02/19 17:26	04/04/19 12:59	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/L	500	1	04/02/19 17:26	04/04/19 12:59	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/L	1000	1	04/02/19 17:26	04/04/19 12:59		
N-Nitrosodimethylamine	ND	ug/L	500	1	04/02/19 17:26	04/04/19 12:59	62-75-9	
Pentachlorophenol	ND	ug/L	1000	1	04/02/19 17:26	04/04/19 12:59	87-86-5	
Phenanthrene	ND	ug/L	500	1	04/02/19 17:26	04/04/19 12:59	85-01-8	
Phenol	ND	ug/L	500	1	04/02/19 17:26	04/04/19 12:59	108-95-2	
Pyrene	ND	ug/L	500	1	04/02/19 17:26	04/04/19 12:59	129-00-0	
2,4,6-Trichlorophenol	ND	ug/L	500	1	04/02/19 17:26	04/04/19 12:59	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	107	%.	55-125	1	04/02/19 17:26	04/04/19 12:59	4165-60-0	P3

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10469117

Sample: 813761 **Lab ID: 10469117003** Collected: 04/01/19 13:00 Received: 04/01/19 16:25 Matrix: Water

Comments: • Upon receipt at the laboratory, 10 mls of nitric acid were added to the sample to meet the sample preservation requirement of pH <2 for radiochemistry analysis. Sample would not preserve to a pH <2.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
Surrogates								
2-Fluorobiphenyl (S)	82	%.	52-125	1	04/02/19 17:26	04/04/19 12:59	321-60-8	
p-Terphenyl-d14 (S)	89	%.	57-125	1	04/02/19 17:26	04/04/19 12:59	1718-51-0	
Phenol-d6 (S)	64	%.	30-125	1	04/02/19 17:26	04/04/19 12:59	13127-88-3	
2-Fluorophenol (S)	10	%.	30-125	1	04/02/19 17:26	04/04/19 12:59	367-12-4	S5
2,4,6-Tribromophenol (S)	97	%.	52-125	1	04/02/19 17:26	04/04/19 12:59	118-79-6	
Field Data	Analytical Method:							
Collected Date	**04/01/19**			1		04/01/19 13:00		
Collected Time	**1300**			1		04/01/19 13:00		
Field pH	**5.7**	Std. Units		1		04/01/19 13:00		
Field Temperature	**11.0**	deg C		1		04/01/19 13:00		
Field Specific Conductance	**18100**	umhos/cm		1		04/01/19 13:00		
Oxygen, Dissolved	**0.9**	mg/L		1		04/01/19 13:00	7782-44-7	
REDOX	**-28**	mV		1		04/01/19 13:00		
Turbidity	**440**	NTU		1		04/01/19 13:00		
Apparent Color	**Cloudy w/Particulate**			1		04/01/19 13:00		
Odor	**Leachate Odor**			1		04/01/19 13:00		
Well Locked	**Yes**			1		04/01/19 13:00		
Purge Method	**Disposable Bailer**			1		04/01/19 13:00		
Total Well Depth	**40.03**	feet		1		04/01/19 13:00		
Depth of Water	**36.62**			1		04/01/19 13:00		
Well Volume Purged	**1.8**			1		04/01/19 13:00		
Purge Rate	**NA**			1		04/01/19 13:00		
300.0 IC Anions	Analytical Method: EPA 300.0							
Chloride	**1240**	mg/L	60.0	50		04/04/19 15:54	16887-00-6	
Chromium, Hexavalent	Analytical Method: SM 3500-Cr B Modified							
Chromium, Hexavalent	**0.12**	mg/L	0.020	2		04/02/19 15:48		FS,H5
350.1 Ammonia, Unionized	Analytical Method: EPA 350.1							
Nitrogen, Ammonia (Unionized)	**0.062**	mg/L	0.010	1		04/11/19 14:36		
350.1 Ammonia, Distilled	Analytical Method: EPA 350.1 rev. 2 (1993) Preparation Method: EPA 350.1 rev. 2 (1993)							
Nitrogen, Ammonia	**621**	mg/L	11.0	5	04/09/19 08:29	04/09/19 12:49	7664-41-7	
SM4500CN-E Cyanide	Analytical Method: SM 4500-CN-E Preparation Method: SM 4500-CN-E							
Cyanide	ND	ug/L	20.0	1	04/10/19 09:16	04/11/19 10:49	57-12-5	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10469117

Sample: 240816 **Lab ID: 10469117004** Collected: 04/01/19 15:10 Received: 04/01/19 16:25 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA Mod. 3510C							
PCB-1016 (Aroclor 1016)	ND	ug/L	0.098	1	04/02/19 13:33	04/03/19 09:51	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/L	0.098	1	04/02/19 13:33	04/03/19 09:51	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/L	0.098	1	04/02/19 13:33	04/03/19 09:51	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/L	0.098	1	04/02/19 13:33	04/03/19 09:51	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/L	0.098	1	04/02/19 13:33	04/03/19 09:51	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/L	0.098	1	04/02/19 13:33	04/03/19 09:51	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/L	0.098	1	04/02/19 13:33	04/03/19 09:51	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/L	0.098	1	04/02/19 13:33	04/03/19 09:51	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/L	0.098	1	04/02/19 13:33	04/03/19 09:51	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	56	%.	30-125	1	04/02/19 13:33	04/03/19 09:51	877-09-8	
Decachlorobiphenyl (S)	62	%.	30-125	1	04/02/19 13:33	04/03/19 09:51	2051-24-3	
200.7 MET ICP, Dissolved	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Aluminum, Dissolved	ND	ug/L	200	1	04/03/19 14:21	04/08/19 16:37	7429-90-5	
Barium, Dissolved	**146**	ug/L	10.0	1	04/03/19 14:21	04/08/19 16:37	7440-39-3	
Copper, Dissolved	ND	ug/L	10.0	1	04/03/19 14:21	04/08/19 16:37	7440-50-8	
Manganese, Dissolved	**1240**	ug/L	5.0	1	04/03/19 14:21	04/08/19 16:37	7439-96-5	
Nickel, Dissolved	ND	ug/L	20.0	1	04/03/19 14:21	04/08/19 16:37	7440-02-0	
Silver, Dissolved	ND	ug/L	10.0	1	04/03/19 14:21	04/08/19 16:37	7440-22-4	
Tin, Dissolved	ND	ug/L	75.0	1	04/03/19 14:21	04/08/19 16:37	7440-31-5	
Total Hardness by 2340B, Dissolved	**602000**	ug/L	3300	1	04/03/19 14:21	04/08/19 16:37		
Zinc, Dissolved	ND	ug/L	20.0	1	04/03/19 14:21	04/08/19 16:37	7440-66-6	
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Dissolved	ND	ug/L	0.50	1	04/03/19 14:21	04/11/19 02:23	7440-36-0	
Arsenic, Dissolved	**3.0**	ug/L	0.50	1	04/03/19 14:21	04/11/19 02:23	7440-38-2	
Beryllium, Dissolved	ND	ug/L	0.20	1	04/03/19 14:21	04/11/19 02:23	7440-41-7	
Boron, Dissolved	**377**	ug/L	50.0	5	04/03/19 14:21	04/11/19 15:40	7440-42-8	
Cadmium, Dissolved	ND	ug/L	0.080	1	04/03/19 14:21	04/11/19 02:23	7440-43-9	
Chromium, Dissolved	ND	ug/L	0.50	1	04/03/19 14:21	04/11/19 02:23	7440-47-3	
Cobalt, Dissolved	**4.4**	ug/L	0.50	1	04/03/19 14:21	04/11/19 02:23	7440-48-4	
Lead, Dissolved	**0.11**	ug/L	0.10	1	04/03/19 14:21	04/11/19 02:23	7439-92-1	
Selenium, Dissolved	ND	ug/L	0.50	1	04/03/19 14:21	04/11/19 02:23	7782-49-2	
Thallium, Dissolved	**0.18**	ug/L	0.10	1	04/03/19 14:21	04/11/19 02:23	7440-28-0	
Uranium-238, Dissolved	**3.3**	ug/L	0.50	1	04/03/19 14:21	04/11/19 02:23	7440-61-1	
Vanadium, Dissolved	ND	ug/L	1.0	1	04/03/19 14:21	04/11/19 02:23	7440-62-2	
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
Acenaphthene	ND	ug/L	9.5	1	04/02/19 17:26	04/04/19 14:24	83-32-9	
Anthracene	ND	ug/L	9.5	1	04/02/19 17:26	04/04/19 14:24	120-12-7	
Benzo(a)pyrene	ND	ug/L	9.5	1	04/02/19 17:26	04/04/19 14:24	50-32-8	
Benzoic acid	ND	ug/L	47.4	1	04/02/19 17:26	04/04/19 14:24	65-85-0	
4-Bromophenylphenyl ether	ND	ug/L	9.5	1	04/02/19 17:26	04/04/19 14:24	101-55-3	
Butylbenzylphthalate	ND	ug/L	9.5	1	04/02/19 17:26	04/04/19 14:24	85-68-7	
bis(2-Chloroethyl) ether	ND	ug/L	9.5	1	04/02/19 17:26	04/04/19 14:24	111-44-4	

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10469117

Sample: 240816 **Lab ID: 10469117004** Collected: 04/01/19 15:10 Received: 04/01/19 16:25 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
2-Chlorophenol	ND	ug/L	9.5	1	04/02/19 17:26	04/04/19 14:24	95-57-8	
3,3'-Dichlorobenzidine	ND	ug/L	47.4	1	04/02/19 17:26	04/04/19 14:24	91-94-1	
2,4-Dichlorophenol	ND	ug/L	9.5	1	04/02/19 17:26	04/04/19 14:24	120-83-2	
Diethylphthalate	ND	ug/L	9.5	1	04/02/19 17:26	04/04/19 14:24	84-66-2	
2,4-Dimethylphenol	ND	ug/L	9.5	1	04/02/19 17:26	04/04/19 14:24	105-67-9	
Dimethylphthalate	ND	ug/L	9.5	1	04/02/19 17:26	04/04/19 14:24	131-11-3	
Di-n-butylphthalate	ND	ug/L	9.5	1	04/02/19 17:26	04/04/19 14:24	84-74-2	
2,4-Dinitrophenol	ND	ug/L	9.5	1	04/02/19 17:26	04/04/19 14:24	51-28-5	
Di-n-octylphthalate	ND	ug/L	9.5	1	04/02/19 17:26	04/04/19 14:24	117-84-0	
bis(2-Ethylhexyl)phthalate	ND	ug/L	9.5	1	04/02/19 17:26	04/04/19 14:24	117-81-7	
Fluoranthene	ND	ug/L	9.5	1	04/02/19 17:26	04/04/19 14:24	206-44-0	
Fluorene	ND	ug/L	9.5	1	04/02/19 17:26	04/04/19 14:24	86-73-7	
Hexachlorobenzene	ND	ug/L	9.5	1	04/02/19 17:26	04/04/19 14:24	118-74-1	
Hexachlorocyclopentadiene	ND	ug/L	47.4	1	04/02/19 17:26	04/04/19 14:24	77-47-4	
Hexachloroethane	ND	ug/L	9.5	1	04/02/19 17:26	04/04/19 14:24	67-72-1	
Isophorone	ND	ug/L	9.5	1	04/02/19 17:26	04/04/19 14:24	78-59-1	
2-Methylnaphthalene	ND	ug/L	9.5	1	04/02/19 17:26	04/04/19 14:24	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/L	9.5	1	04/02/19 17:26	04/04/19 14:24	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/L	19.0	1	04/02/19 17:26	04/04/19 14:24		
N-Nitrosodimethylamine	ND	ug/L	9.5	1	04/02/19 17:26	04/04/19 14:24	62-75-9	
Pentachlorophenol	ND	ug/L	19.0	1	04/02/19 17:26	04/04/19 14:24	87-86-5	
Phenanthrene	ND	ug/L	9.5	1	04/02/19 17:26	04/04/19 14:24	85-01-8	
Phenol	ND	ug/L	9.5	1	04/02/19 17:26	04/04/19 14:24	108-95-2	
Pyrene	ND	ug/L	9.5	1	04/02/19 17:26	04/04/19 14:24	129-00-0	
2,4,6-Trichlorophenol	ND	ug/L	9.5	1	04/02/19 17:26	04/04/19 14:24	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	78	%.	55-125	1	04/02/19 17:26	04/04/19 14:24	4165-60-0	
2-Fluorobiphenyl (S)	79	%.	52-125	1	04/02/19 17:26	04/04/19 14:24	321-60-8	
p-Terphenyl-d14 (S)	98	%.	57-125	1	04/02/19 17:26	04/04/19 14:24	1718-51-0	
Phenol-d6 (S)	74	%.	30-125	1	04/02/19 17:26	04/04/19 14:24	13127-88-3	
2-Fluorophenol (S)	65	%.	30-125	1	04/02/19 17:26	04/04/19 14:24	367-12-4	
2,4,6-Tribromophenol (S)	107	%.	52-125	1	04/02/19 17:26	04/04/19 14:24	118-79-6	
Field Data	Analytical Method:							
Collected Date	**04/01/19**			1		04/01/19 15:10		
Collected Time	**1510**			1		04/01/19 15:10		
Field pH	**6.9**	Std. Units		1		04/01/19 15:10		
Field Temperature	**8.5**	deg C		1		04/01/19 15:10		
Field Specific Conductance	**1730**	umhos/cm		1		04/01/19 15:10		
Oxygen, Dissolved	**0.3**	mg/L		1		04/01/19 15:10	7782-44-7	
REDOX	**-50**	mV		1		04/01/19 15:10		
Turbidity	**3.6**	NTU		1		04/01/19 15:10		
Apparent Color	**Clear**			1		04/01/19 15:10		
Odor	**No**			1		04/01/19 15:10		
Well Locked	**No**			1		04/01/19 15:10		
Purge Method	**Peristaltic pump**			1		04/01/19 15:10		

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10469117

Sample: 240816 **Lab ID: 10469117004** Collected: 04/01/19 15:10 Received: 04/01/19 16:25 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:							
Total Well Depth	**25.55**	feet		1		04/01/19 15:10		
Depth of Water	**7.90**			1		04/01/19 15:10		
Well Volume Purged	**9.0**			1		04/01/19 15:10		
Purge Rate	**0.15**			1		04/01/19 15:10		
300.0 IC Anions	Analytical Method: EPA 300.0							
Chloride	**240**	mg/L	6.0	5		04/04/19 15:02	16887-00-6	
Chromium, Hexavalent	Analytical Method: SM 3500-Cr B Modified							
Chromium, Hexavalent	ND	mg/L	0.010	1		04/02/19 09:31		M3
350.1 Ammonia, Unionized	Analytical Method: EPA 350.1							
Nitrogen, Ammonia (Unionized)	ND	mg/L	0.010	1		04/11/19 14:39		
350.1 Ammonia, Distilled	Analytical Method: EPA 350.1 rev. 2 (1993) Preparation Method: EPA 350.1 rev. 2 (1993)							
Nitrogen, Ammonia	**0.14**	mg/L	0.11	1	04/09/19 08:29	04/09/19 12:19	7664-41-7	
SM4500CN-E Cyanide	Analytical Method: SM 4500-CN-E Preparation Method: SM 4500-CN-E							
Cyanide	**21.9**	ug/L	20.0	1	04/15/19 11:21	04/15/19 17:32	57-12-5	

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10469117

QC Batch: 597270 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 MET Dissolved
Associated Lab Samples: 10469117001, 10469117002, 10469117003, 10469117004

METHOD BLANK: 3229879 Matrix: Water
Associated Lab Samples: 10469117001, 10469117002, 10469117003, 10469117004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum, Dissolved	ug/L	ND	200	04/08/19 16:14	
Barium, Dissolved	ug/L	ND	10.0	04/08/19 16:14	
Copper, Dissolved	ug/L	ND	10.0	04/08/19 16:14	
Manganese, Dissolved	ug/L	ND	5.0	04/08/19 16:14	
Nickel, Dissolved	ug/L	ND	20.0	04/08/19 16:14	
Silver, Dissolved	ug/L	ND	10.0	04/08/19 16:14	
Tin, Dissolved	ug/L	ND	75.0	04/08/19 16:14	
Zinc, Dissolved	ug/L	ND	20.0	04/08/19 16:14	

LABORATORY CONTROL SAMPLE: 3229880

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum, Dissolved	ug/L	20000	20400	102	85-115	
Barium, Dissolved	ug/L	1000	992	99	85-115	
Copper, Dissolved	ug/L	1000	932	93	85-115	
Manganese, Dissolved	ug/L	1000	1000	100	85-115	
Nickel, Dissolved	ug/L	1000	974	97	85-115	
Silver, Dissolved	ug/L	500	489	98	85-115	
Tin, Dissolved	ug/L	1000	1010	101	85-115	
Zinc, Dissolved	ug/L	1000	998	100	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3229881 3229882

Parameter	Units	10469117001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum, Dissolved	ug/L	ND	20000	20000	21400	21600	107	108	70-130	1	20	
Barium, Dissolved	ug/L	703	1000	1000	1640	1670	93	96	70-130	2	20	
Copper, Dissolved	ug/L	ND	1000	1000	1010	1010	101	101	70-130	1	20	
Manganese, Dissolved	ug/L	101	1000	1000	1090	1090	99	99	70-130	0	20	
Nickel, Dissolved	ug/L	34.3	1000	1000	978	991	94	96	70-130	1	20	
Silver, Dissolved	ug/L	ND	500	500	523	526	105	105	70-130	1	20	
Tin, Dissolved	ug/L	ND	1000	1000	968	975	97	97	70-130	1	20	
Zinc, Dissolved	ug/L	ND	1000	1000	936	950	93	95	70-130	1	20	

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10469117

QC Batch: 597269 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET Dissolved
Associated Lab Samples: 10469117001, 10469117002, 10469117003, 10469117004

METHOD BLANK: 3229874 Matrix: Water
Associated Lab Samples: 10469117001, 10469117002, 10469117003, 10469117004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony, Dissolved	ug/L	ND	0.50	04/11/19 00:11	
Arsenic, Dissolved	ug/L	ND	0.50	04/11/19 00:11	
Beryllium, Dissolved	ug/L	ND	0.20	04/11/19 00:11	
Boron, Dissolved	ug/L	ND	10.0	04/11/19 00:11	
Cadmium, Dissolved	ug/L	ND	0.080	04/11/19 00:11	
Chromium, Dissolved	ug/L	ND	0.50	04/11/19 00:11	
Cobalt, Dissolved	ug/L	ND	0.50	04/11/19 00:11	
Lead, Dissolved	ug/L	ND	0.10	04/11/19 00:11	
Selenium, Dissolved	ug/L	ND	0.50	04/11/19 00:11	
Thallium, Dissolved	ug/L	ND	0.10	04/11/19 00:11	
Uranium-238, Dissolved	ug/L	ND	0.50	04/11/19 00:11	
Vanadium, Dissolved	ug/L	ND	1.0	04/11/19 00:11	

LABORATORY CONTROL SAMPLE: 3229875

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony, Dissolved	ug/L	100	105	105	85-115	
Arsenic, Dissolved	ug/L	100	101	101	85-115	
Beryllium, Dissolved	ug/L	100	109	109	85-115	
Boron, Dissolved	ug/L	100	111	111	85-115	
Cadmium, Dissolved	ug/L	100	104	104	85-115	
Chromium, Dissolved	ug/L	100	104	104	85-115	
Cobalt, Dissolved	ug/L	100	105	105	85-115	
Lead, Dissolved	ug/L	100	105	105	85-115	
Selenium, Dissolved	ug/L	100	104	104	85-115	
Thallium, Dissolved	ug/L	100	103	103	85-115	
Uranium-238, Dissolved	ug/L	100	106	106	85-115	
Vanadium, Dissolved	ug/L	100	107	107	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3229876 3229877

Parameter	Units	10468732001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony, Dissolved	ug/L	ND	100	100	95.8	103	96	103	70-130	7	20	
Arsenic, Dissolved	ug/L	5.9	100	100	108	109	102	103	70-130	1	20	
Beryllium, Dissolved	ug/L	ND	100	100	96.7	97.5	97	97	70-130	1	20	
Boron, Dissolved	ug/L	89.4	100	100	198	200	109	110	70-130	1	20	
Cadmium, Dissolved	ug/L	ND	100	100	97.6	99.2	98	99	70-130	2	20	

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10469117

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3229876 3229877

Parameter	Units	10468732001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Dissolved	ug/L	ND	100	100	102	106	102	106	70-130	4	20	
Cobalt, Dissolved	ug/L	1.1	100	100	107	110	106	109	70-130	3	20	
Lead, Dissolved	ug/L	0.15	100	100	96.8	98.7	97	99	70-130	2	20	
Selenium, Dissolved	ug/L	ND	100	100	100	101	100	101	70-130	0	20	
Thallium, Dissolved	ug/L	ND	100	100	96.9	98.9	97	99	70-130	2	20	
Uranium-238, Dissolved	ug/L	ND	100	100	104	107	104	107	70-130	2	20	
Vanadium, Dissolved	ug/L	ND	100	100	108	111	108	111	70-130	2	20	

MATRIX SPIKE SAMPLE: 3229878

Parameter	Units	10469199002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Antimony, Dissolved	ug/L	ND	100	106	106	70-130	
Arsenic, Dissolved	ug/L	ND	100	104	103	70-130	
Beryllium, Dissolved	ug/L	ND	100	105	105	70-130	
Boron, Dissolved	ug/L	14.7	100	118	103	70-130	
Cadmium, Dissolved	ug/L	ND	100	105	105	70-130	
Chromium, Dissolved	ug/L	1.5	100	110	109	70-130	
Cobalt, Dissolved	ug/L	0.80	100	108	107	70-130	
Lead, Dissolved	ug/L	ND	100	106	106	70-130	
Selenium, Dissolved	ug/L	ND	100	102	102	70-130	
Thallium, Dissolved	ug/L	ND	100	105	105	70-130	
Uranium-238, Dissolved	ug/L	0.96	100	110	109	70-130	
Vanadium, Dissolved	ug/L	ND	100	113	113	70-130	

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10469117

QC Batch: 597142 Analysis Method: EPA 8082A
QC Batch Method: EPA Mod. 3510C Analysis Description: 8082A GCS PCB
Associated Lab Samples: 10469117001, 10469117002, 10469117003, 10469117004

METHOD BLANK: 3228857 Matrix: Water
Associated Lab Samples: 10469117001, 10469117002, 10469117003, 10469117004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
PCB-1016 (Aroclor 1016)	ug/L	ND	0.10	04/03/19 08:20	
PCB-1221 (Aroclor 1221)	ug/L	ND	0.10	04/03/19 08:20	
PCB-1232 (Aroclor 1232)	ug/L	ND	0.10	04/03/19 08:20	
PCB-1242 (Aroclor 1242)	ug/L	ND	0.10	04/03/19 08:20	
PCB-1248 (Aroclor 1248)	ug/L	ND	0.10	04/03/19 08:20	
PCB-1254 (Aroclor 1254)	ug/L	ND	0.10	04/03/19 08:20	
PCB-1260 (Aroclor 1260)	ug/L	ND	0.10	04/03/19 08:20	
PCB-1262 (Aroclor 1262)	ug/L	ND	0.10	04/03/19 08:20	
PCB-1268 (Aroclor 1268)	ug/L	ND	0.10	04/03/19 08:20	
Decachlorobiphenyl (S)	%.	81	30-125	04/03/19 08:20	
Tetrachloro-m-xylene (S)	%.	64	30-125	04/03/19 08:20	

LABORATORY CONTROL SAMPLE & LCSD: 3228858 3228859

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
PCB-1016 (Aroclor 1016)	ug/L	2	1.8	1.8	88	90	45-125	2	20	
PCB-1260 (Aroclor 1260)	ug/L	2	2.0	2.0	100	101	49-125	2	20	
Decachlorobiphenyl (S)	%.				102	104	30-125			
Tetrachloro-m-xylene (S)	%.				71	64	30-125			

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10469117

QC Batch: 597233 Analysis Method: EPA 8270D
QC Batch Method: EPA 3520 Analysis Description: 8270D Water MSSV
Associated Lab Samples: 10469117001, 10469117002, 10469117003, 10469117004

METHOD BLANK: 3229432 Matrix: Water
Associated Lab Samples: 10469117001, 10469117002, 10469117003, 10469117004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
2,4,6-Trichlorophenol	ug/L	ND	10.0	04/04/19 11:04	
2,4-Dichlorophenol	ug/L	ND	10.0	04/04/19 11:04	
2,4-Dimethylphenol	ug/L	ND	10.0	04/04/19 11:04	
2,4-Dinitrophenol	ug/L	ND	10.0	04/04/19 11:04	
2-Chlorophenol	ug/L	ND	10.0	04/04/19 11:04	
2-Methylnaphthalene	ug/L	ND	10.0	04/04/19 11:04	
2-Methylphenol(o-Cresol)	ug/L	ND	10.0	04/04/19 11:04	
3&4-Methylphenol(m&p Cresol)	ug/L	ND	20.0	04/04/19 11:04	
3,3'-Dichlorobenzidine	ug/L	ND	50.0	04/04/19 11:04	
4-Bromophenylphenyl ether	ug/L	ND	10.0	04/04/19 11:04	
Acenaphthene	ug/L	ND	10.0	04/04/19 11:04	
Anthracene	ug/L	ND	10.0	04/04/19 11:04	
Benzo(a)pyrene	ug/L	ND	10.0	04/04/19 11:04	
Benzoic acid	ug/L	ND	50.0	04/04/19 11:04	
bis(2-Chloroethyl) ether	ug/L	ND	10.0	04/04/19 11:04	
bis(2-Ethylhexyl)phthalate	ug/L	ND	10.0	04/04/19 11:04	
Butylbenzylphthalate	ug/L	ND	10.0	04/04/19 11:04	
Di-n-butylphthalate	ug/L	ND	10.0	04/04/19 11:04	
Di-n-octylphthalate	ug/L	ND	10.0	04/04/19 11:04	
Diethylphthalate	ug/L	ND	10.0	04/04/19 11:04	
Dimethylphthalate	ug/L	ND	10.0	04/04/19 11:04	
Fluoranthene	ug/L	ND	10.0	04/04/19 11:04	
Fluorene	ug/L	ND	10.0	04/04/19 11:04	
Hexachlorobenzene	ug/L	ND	10.0	04/04/19 11:04	
Hexachlorocyclopentadiene	ug/L	ND	50.0	04/04/19 11:04	
Hexachloroethane	ug/L	ND	10.0	04/04/19 11:04	
Isophorone	ug/L	ND	10.0	04/04/19 11:04	
N-Nitrosodimethylamine	ug/L	ND	10.0	04/04/19 11:04	
Pentachlorophenol	ug/L	ND	20.0	04/04/19 11:04	
Phenanthrene	ug/L	ND	10.0	04/04/19 11:04	
Phenol	ug/L	ND	10.0	04/04/19 11:04	
Pyrene	ug/L	ND	10.0	04/04/19 11:04	
2,4,6-Tribromophenol (S)	%.	103	52-125	04/04/19 11:04	
2-Fluorobiphenyl (S)	%.	74	52-125	04/04/19 11:04	
2-Fluorophenol (S)	%.	80	30-125	04/04/19 11:04	
Nitrobenzene-d5 (S)	%.	90	55-125	04/04/19 11:04	
p-Terphenyl-d14 (S)	%.	86	57-125	04/04/19 11:04	
Phenol-d6 (S)	%.	84	30-125	04/04/19 11:04	

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10469117

LABORATORY CONTROL SAMPLE & LCSD: 3229433 3229434

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
2,4,6-Trichlorophenol	ug/L	50	48.5	49.5	97	99	60-125	2	20	
2,4-Dichlorophenol	ug/L	50	46.0	47.1	92	94	56-125	2	20	
2,4-Dimethylphenol	ug/L	50	44.2	44.7	88	89	33-125	1	20	
2,4-Dinitrophenol	ug/L	50	45.0	40.4	90	81	32-125	11	20	
2-Chlorophenol	ug/L	50	41.6	42.5	83	85	52-125	2	20	
2-Methylnaphthalene	ug/L	50	33.0	35.4	66	71	52-125	7	20	
2-Methylphenol(o-Cresol)	ug/L	50	41.3	41.9	83	84	55-125	1	20	
3&4-Methylphenol(m&p Cresol)	ug/L	50	40.5	41.5	81	83	57-125	3	20	
3,3'-Dichlorobenzidine	ug/L	50	46.6J	42.4J	93	85	39-150		20	
4-Bromophenylphenyl ether	ug/L	50	44.4	49.4	89	99	61-125	11	20	
Acenaphthene	ug/L	50	39.0	41.5	78	83	59-125	6	20	
Anthracene	ug/L	50	42.4	45.9	85	92	64-125	8	20	
Benzo(a)pyrene	ug/L	50	41.6	45.1	83	90	63-125	8	20	
Benzoic acid	ug/L	50	39.3J	43.9J	79	88	30-125		20	
bis(2-Chloroethyl) ether	ug/L	50	41.4	43.7	83	87	49-125	5	20	
bis(2-Ethylhexyl)phthalate	ug/L	50	40.8	45.2	82	90	68-125	10	20	
Butylbenzylphthalate	ug/L	50	40.6	43.2	81	86	67-125	6	20	
Di-n-butylphthalate	ug/L	50	42.1	45.3	84	91	67-125	7	20	
Di-n-octylphthalate	ug/L	50	40.1	42.6	80	85	67-125	6	20	
Diethylphthalate	ug/L	50	44.8	44.9	90	90	64-125	0	20	
Dimethylphthalate	ug/L	50	46.7	47.0	93	94	65-125	1	20	
Fluoranthene	ug/L	50	46.9	50.2	94	100	64-125	7	20	
Fluorene	ug/L	50	41.4	43.3	83	87	63-125	5	20	
Hexachlorobenzene	ug/L	50	47.6	51.7	95	103	61-125	8	20	
Hexachlorocyclopentadiene	ug/L	50	ND	21J	35	42	30-125		20	
Hexachloroethane	ug/L	50	19.4	22.2	39	44	30-125	14	20	
Isophorone	ug/L	50	47.7	48.5	95	97	59-125	2	20	
N-Nitrosodimethylamine	ug/L	50	46.5	45.3	93	91	43-125	3	20	
Pentachlorophenol	ug/L	50	48.9	52.2	98	104	35-125	7	20	
Phenanthrene	ug/L	50	43.3	46.3	87	93	65-125	7	20	
Phenol	ug/L	50	41.3	42.8	83	86	54-125	4	20	
Pyrene	ug/L	50	46.1	47.7	92	95	65-125	4	20	
2,4,6-Tribromophenol (S)	%.				108	105	52-125			
2-Fluorobiphenyl (S)	%.				80	80	52-125			
2-Fluorophenol (S)	%.				80	81	30-125			
Nitrobenzene-d5 (S)	%.				93	92	55-125			
p-Terphenyl-d14 (S)	%.				94	98	57-125			
Phenol-d6 (S)	%.				82	85	30-125			

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10469117

QC Batch: 597495 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 10469117001, 10469117002, 10469117003, 10469117004

METHOD BLANK: 3230742 Matrix: Water
Associated Lab Samples: 10469117001, 10469117002, 10469117003, 10469117004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.2	04/04/19 03:27	

LABORATORY CONTROL SAMPLE: 3230743

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	12.5	11.8	95	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3230744 3230745

Parameter	Units	10469198001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	2.6	12.5	12.5	14.5	14.5	95	95	90-110	0	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3230746 3230747

Parameter	Units	10469198002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	2.8	12.5	12.5	14.6	14.6	94	95	90-110	0	20	

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10469117

QC Batch: 597160 Analysis Method: SM 3500-Cr B Modified
QC Batch Method: SM 3500-Cr B Modified Analysis Description: Chromium, Hexavalent by 3500
Associated Lab Samples: 10469117001, 10469117002, 10469117003, 10469117004

METHOD BLANK: 3228996 Matrix: Water
Associated Lab Samples: 10469117001, 10469117002, 10469117003, 10469117004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium, Hexavalent	mg/L	ND	0.010	04/02/19 09:31	FS

LABORATORY CONTROL SAMPLE: 3228997

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/L	0.2	0.20	99	90-110	FS

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3228998 3228999

Parameter	Units	10469117004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Hexavalent	mg/L	ND	0.2	0.2	.0079J	.008J	0	0	85-115		20	M3

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10469117

QC Batch: 163940 Analysis Method: EPA 350.1 rev. 2 (1993)
QC Batch Method: EPA 350.1 rev. 2 (1993) Analysis Description: 350.1 Ammonia Distilled
Associated Lab Samples: 10469117001, 10469117002, 10469117003, 10469117004

METHOD BLANK: 646074 Matrix: Water
Associated Lab Samples: 10469117001, 10469117002, 10469117003, 10469117004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, Ammonia	mg/L	ND	0.11	04/09/19 12:02	

LABORATORY CONTROL SAMPLE: 646075

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Ammonia	mg/L	5	5.2	104	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 646076 646077

Parameter	Units	12123225001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, Ammonia	mg/L	0.15	5	5	5.4	5.3	104	104	90-110	1	10	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 646078 646079

Parameter	Units	12123229002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, Ammonia	mg/L	ND	5	5	5.3	5.3	105	104	90-110	0	10	

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10469117

QC Batch: 598592 Analysis Method: SM 4500-CN-E
QC Batch Method: SM 4500-CN-E Analysis Description: SM4500CN-E Cyanide
Associated Lab Samples: 10469117001, 10469117002, 10469117003

METHOD BLANK: 3236543 Matrix: Water
Associated Lab Samples: 10469117001, 10469117002, 10469117003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cyanide	ug/L	ND	20.0	04/11/19 09:22	

LABORATORY CONTROL SAMPLE: 3236544

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cyanide	ug/L	250	247	99	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3236545 3236546

Parameter	Units	10468606001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cyanide	ug/L	ND	250	250	251	243	100	97	80-120	3	30	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3236547 3236548

Parameter	Units	10468606002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cyanide	ug/L	ND	250	250	266	246	101	93	80-120	8	30	

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10469117

QC Batch: 599418 Analysis Method: SM 4500-CN-E
QC Batch Method: SM 4500-CN-E Analysis Description: SM4500CN-E Cyanide
Associated Lab Samples: 10469117004

METHOD BLANK: 3240961 Matrix: Water
Associated Lab Samples: 10469117004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cyanide	ug/L	ND	20.0	04/15/19 17:31	

LABORATORY CONTROL SAMPLE: 3240962

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cyanide	ug/L	250	273	109	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3240963 3240964

Parameter	Units	10469117004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cyanide	ug/L	21.9	250	250	235	244	85	89	80-120	4	30	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3240965 3240966

Parameter	Units	10469593001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cyanide	ug/L	<8.5	250	250	263	237	102	92	80-120	10	30	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10469117

Sample: 813740 **Lab ID: 10469117001** Collected: 04/01/19 10:10 Received: 04/01/19 16:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 900.0	**16.6 ± 6.48 (8.33) C:NA T:NA**	pCi/L	04/12/19 18:36	12587-46-1	
Gross Beta	EPA 900.0	**59.6 ± 12.1 (6.83) C:NA T:NA**	pCi/L	04/12/19 18:36	12587-47-2	

Sample: 813764 **Lab ID: 10469117002** Collected: 04/01/19 10:50 Received: 04/01/19 16:25 Matrix: Water
PWS: Site ID: Sample Type:

Comments: • Upon receipt at the laboratory, 5 mls of nitric acid were added to the sample to meet the sample preservation requirement of pH <2 for radiochemistry analysis.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 900.0	**0.881 ± 6.24 (12.5) C:NA T:NA**	pCi/L	04/12/19 18:36	12587-46-1	
Gross Beta	EPA 900.0	**143 ± 27.6 (10.4) C:NA T:NA**	pCi/L	04/12/19 18:36	12587-47-2	

Sample: 813761 **Lab ID: 10469117003** Collected: 04/01/19 13:00 Received: 04/01/19 16:25 Matrix: Water
PWS: Site ID: Sample Type:

Comments: • Upon receipt at the laboratory, 10 mls of nitric acid were added to the sample to meet the sample preservation requirement of pH <2 for radiochemistry analysis. Sample would not preserve to a pH <2.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 900.0	**27.9 ± 57.0 (107) C:NA T:NA**	pCi/L	04/12/19 18:36	12587-46-1	
Gross Beta	EPA 900.0	**365 ± 96.8 (110) C:NA T:NA**	pCi/L	04/12/19 18:36	12587-47-2	

Sample: 240816 **Lab ID: 10469117004** Collected: 04/01/19 15:10 Received: 04/01/19 16:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 900.0	**4.87 ± 3.17 (5.13) C:NA T:NA**	pCi/L	04/12/19 18:36	12587-46-1	
Gross Beta	EPA 900.0	**7.12 ± 3.36 (5.35) C:NA T:NA**	pCi/L	04/12/19 18:36	12587-47-2	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10469117

QC Batch: 337115 Analysis Method: EPA 900.0
QC Batch Method: EPA 900.0 Analysis Description: 900.0 Gross Alpha/Beta
Associated Lab Samples: 10469117001, 10469117002, 10469117003, 10469117004

METHOD BLANK: 1640839 Matrix: Water
Associated Lab Samples: 10469117001, 10469117002, 10469117003, 10469117004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Gross Alpha	0.118 ± 0.667 (1.72) C:NA T:NA	pCi/L	04/11/19 08:53	
Gross Beta	0.341 ± 0.871 (2.02) C:NA T:NA	pCi/L	04/11/19 08:53	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALIFIERS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10469117

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-M	Pace Analytical Services - Minneapolis
PASI-PA	Pace Analytical Services - Greensburg
PASI-V	Pace Analytical Services - Virginia

BATCH QUALIFIERS

Batch: 597334

[M5] A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

Batch: 597639

[M5] A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

ANALYTE QUALIFIERS

D3	Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
FS	The sample was filtered in the laboratory prior to analysis.
H5	Reanalysis conducted in excess of EPA method holding time. Results confirm original analysis performed in hold time.

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QUALIFIERS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10469117

ANALYTE QUALIFIERS

M3	Matrix spike recovery was outside laboratory control limits due to matrix interferences.
P3	Sample extract could not be concentrated to the routine final volume, resulting in elevated reporting limits.
S5	Surrogate recovery outside control limits due to matrix interferences (not confirmed by re-analysis).

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Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10469117

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10469117001	**813740**	EPA Mod. 3510C	597142	EPA 8082A	597334
10469117002	**813764**	EPA Mod. 3510C	597142	EPA 8082A	597334
10469117003	**813761**	EPA Mod. 3510C	597142	EPA 8082A	597334
10469117004	**240816**	EPA Mod. 3510C	597142	EPA 8082A	597334
10469117001	**813740**	EPA 200.7	597270	EPA 200.7	597565
10469117002	**813764**	EPA 200.7	597270	EPA 200.7	597565
10469117003	**813761**	EPA 200.7	597270	EPA 200.7	597565
10469117004	**240816**	EPA 200.7	597270	EPA 200.7	597565
10469117001	**813740**	EPA 200.8	597269	EPA 200.8	598489
10469117002	**813764**	EPA 200.8	597269	EPA 200.8	598489
10469117003	**813761**	EPA 200.8	597269	EPA 200.8	598489
10469117004	**240816**	EPA 200.8	597269	EPA 200.8	598489
10469117001	**813740**	EPA 3520	597233	EPA 8270D	597639
10469117002	**813764**	EPA 3520	597233	EPA 8270D	597639
10469117003	**813761**	EPA 3520	597233	EPA 8270D	597639
10469117004	**240816**	EPA 3520	597233	EPA 8270D	597639
10469117001	**813740**				
10469117002	**813764**				
10469117003	**813761**				
10469117004	**240816**				
10469117001	**813740**	EPA 900.0	337115		
10469117002	**813764**	EPA 900.0	337115		
10469117003	**813761**	EPA 900.0	337115		
10469117004	**240816**	EPA 900.0	337115		
10469117001	**813740**	EPA 300.0	597495		
10469117002	**813764**	EPA 300.0	597495		
10469117003	**813761**	EPA 300.0	597495		
10469117004	**240816**	EPA 300.0	597495		
10469117001	**813740**	SM 3500-Cr B Modified	597160		
10469117002	**813764**	SM 3500-Cr B Modified	597160		
10469117003	**813761**	SM 3500-Cr B Modified	597160		
10469117004	**240816**	SM 3500-Cr B Modified	597160		
10469117001	**813740**	EPA 350.1			
10469117002	**813764**	EPA 350.1			
10469117003	**813761**	EPA 350.1			
10469117004	**240816**	EPA 350.1			
10469117001	**813740**	EPA 350.1 rev. 2 (1993)	163940	EPA 350.1 rev. 2 (1993)	163958
10469117002	**813764**	EPA 350.1 rev. 2 (1993)	163940	EPA 350.1 rev. 2 (1993)	163958
10469117003	**813761**	EPA 350.1 rev. 2 (1993)	163940	EPA 350.1 rev. 2 (1993)	163958
10469117004	**240816**	EPA 350.1 rev. 2 (1993)	163940	EPA 350.1 rev. 2 (1993)	163958
10469117001	**813740**	SM 4500-CN-E	598592	SM 4500-CN-E	598682
10469117002	**813764**	SM 4500-CN-E	598592	SM 4500-CN-E	598682
10469117003	**813761**	SM 4500-CN-E	598592	SM 4500-CN-E	598682

REPORT OF LABORATORY ANALYSIS

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Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10469117

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10469117004	**240816**	SM 4500-CN-E	599418	SM 4500-CN-E	599555

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WO# : 10469117

10469117

Minnesota Pollution Control Agency

Work Order Number:	COC Type:	Page: 1 of 1
Turnaround Time:	COC ID:	FOR LAB USE ONLY

PROJECT/CLIENT INFO				LABORATORY			
Facility Code:	MNSW-057	Program Code (MDH Lab Only):		Lab Name:	Pace Analytical - Minneapolis, MN		
Project Name:	19-01567 MPCA Freeway Landfill 2019 Waters	Project Task Code:	PRJ07786	Address:	1700 SE Elm Street		
Project Manager:	Brad Jacobson 612-607-6375	EPIC PROFILE #: 38716 Line 2			Minneapolis	MN	55414
Potential Hazard?	If yes, add information to Sampler Comments Section			Phone No:	612-607-6400		Lab Work Order Sticker

SAMPLE DETAILS

SAMPLE TYPE CODES
Sample=Routine Sample
S-IVP=Integrated Vertical Profile Sample
S-CWOP=Composite Sample
QC-FB=Field Blank Sample
QC-FR=Field Replicate Sample
QC-TB=Trip Blank Sample

LAB MATRIX CODES
DW=Drinking Water
NW=Non-potable Water
SD=Soil/Solid
WP=Wipe
AR=Air
BL=Biological Material
OT=Other
TS=Tissue

FIELD MATRIX CODES
Wtr-Ground=Groundwater
Wtr-Surf=Surface Water
QC-BLANK=Artificial Blank Water
Leachate=Leachate Sample

ANALYSIS REQUESTED

Location Identifier	Sample Type	Date	Time	Start Depth, in meters	End Depth, in meters	Grab (G) or Composite (C) Sample	Lab Matrix Code	Field Matrix Code	AIS	Sampler Comments (filter volume, special handling, etc.)	# of Cont	PRESERV.	ANALYSIS: Field Parameters: SWL, Temp, pH, DO, Cond, Eh, Turbidity	Metals 200.7 / 200.8 / Gross Alpha/Beta - QAPP Table 3a	300.0 / HexCr - QAPP Table 3a	Ammonia/ Unionized NH3 - QAPP Table 3a	Total Cyanide / Free Cyanide - QAPP Table 3a	8270 SVOC, 8082, MDA1, MDA2 - QAPP Table 3a	Lab Sample No.	#
												None	HNO3	None	H2SO4	NaOH	None		
813740	Sample	4/1/19	1010			G	NW	Wtr-Ground	N		14		X	X	X	X	X	X	001	1
813764	Sample	4/1/19	1050			G	NW	Wtr-Ground	N		10		X	X	X	X	X	X	002	2
813761	Sample	4/1/19	1300			G	NW	Wtr-Ground	N	DUP 4/1/19 12	~~14~~		X	X	X	X	X	X	003	3
240816	Sample	4/1/19	1510			G	NW	Wtr-Ground	N		14		X	X	X	X	X	X	004	4
									N											5
									N											6
									N											7
									N											8
									N											9
									N											10

DUP 4/1/19

Sampled By: David Anderson

Sampler's Signature: Dave Anderson

Phone #:

Receiving Comments:

Relinquished By/Affiliation	Date/Time	Accepted By/Affiliation	Date/Time
(Sampler) Dave Anderson / Pace Analytical	4/1/19/1620		4/1/19 1625

4.1
2.5
3.0
4.5

Sample 813761 is leachate like sample.

Pace Analytical	Document Name: **Sample Condition Upon Receipt Form**	Document Revised: 06Feb2019 Page 1 of 1
	Document No.: **F-MN-L-213-rev.25**	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt **Client Name:** MPCA **Project #:** WO#:10469117 PM: JMA Due Date: 04/15/19 CLIENT: PAS1-MNFLD

Courier: ☐Fed Ex ☐UPS ☐USPS ☐Client ☑Pace ☐SpeeDee ☐Commercial **See Exception** ☐

Tracking Number: _____

Custody Seal on Cooler/Box Present? ☐Yes ☑No **Seals Intact?** ☐Yes ☑No **Biological Tissue Frozen?** ☐Yes ☐No ☑N/A

Packing Material: ☑Bubble Wrap ☑Bubble Bags ☐None ☐Other:_____ **Temp Blank?** ☑Yes ☐No

Thermometer: ☐ G87A9155100842 ☑ G87A9170600254 **Type of Ice:** ☑Wet ☐Blue ☐None ☐Dry ☐Melted

Note: Each West Virginia Sample must have temp taken (no temp blanks)

Temp should be above freezing to 6°C **Cooler Temp Read w/temp blank:** 4.1, 2.5, 3.0, 4.5 °C **Average Corrected Temp (no temp blank only):** _____ °C **See Exceptions** ☐

Correction Factor: NA **Cooler Temp Corrected w/temp blank:** 4.1, 2.5, 3.0, 4.5 °C

USDA Regulated Soil: (☑N/A, water sample/Other:_____) **Date/Initials of Person Examining Contents:** TC 4/1/19

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA. MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐Yes ☐No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐Yes ☐No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present and Filled Out?	☑Yes	☐No		1.
Chain of Custody Relinquished?	☑Yes	☐No		2.
Sampler Name and/or Signature on COC?	☑Yes	☐No	☐N/A	3.
Samples Arrived within Hold Time?	☑Yes	☐No		4.
Short Hold Time Analysis (<72 hr)?	☑Yes	☐No		5. ☐Fecal Coliform ☐HPC ☐Total Coliform/E coli ☐BOD/cBOD ☐Hex Chrome ☐Turbidity ☐Nitrate ☐Nitrite ☐Orthophos ☐Other_____
Rush Turn Around Time Requested?	☐Yes	☑No		6.
Sufficient Volume?	☑Yes	☐No		7.
Correct Containers Used?	☑Yes	☐No		8.
-Pace Containers Used?	☑Yes	☐No		
Containers Intact?	☑Yes	☐No		9.
Field Filtered Volume Received for Dissolved Tests? PZV 3MA	☑Yes	☐No	~~☑N/A~~	10. Is sediment visible in the dissolved container? ☐Yes ☐No
Is sufficient information available to reconcile the samples to the COC? CM 4/2/19	☑Yes	☐No		11. **If no, write ID/ Date/Time on Container Below:** **See Exception** ☐
Matrix: ☑Water ☐Soil ☐Oil ☐Other_____				
All containers needing acid/base preservation have been checked?	☑Yes	☐No	☐N/A	12. Sample # 1-4 2/2 1-4 2/2 1-4 1/1 ☑NaOH ☑HNO_3 ☑H_2SO_4 ☐Zinc Acetate CM 4/2/19
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>12 Cyanide)	☐Yes	☑No	☐N/A	
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin/PFAS	☐Yes	☐No	☑N/A	Positive for Res. ☐Yes Chlorine? ☑No **See Exception** ☐
Headspace in VOA Vials (greater than 6mm)?	☐Yes	☐No	☑N/A	13. **See Exception** ☐
Trip Blank Present?	☐Yes	☐No	☑N/A	14.
Trip Blank Custody Seals Present?	☐Yes	☐No	☑N/A	Pace Trip Blank Lot # (if purchased): NA

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐Yes ☐No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

Project Manager Review: _____ **Date:** 04/02/2019

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers).

Labeled by: TC CM CM 4/2/19

Pace Analytical	Document Name: SCUR Exception Form – Coolers Above 6°C	Document Revised: 04Feb2019 Page 1 of 1
	Document No.: F-MN-C-298-Rev.01	Issuing Authority: Pace Minnesota Quality Office

During sample triage, this form is to be placed in each cooler that arrives above 6.0 degrees Celsius

SCUR Exceptions: **Workorder #:**

Out of Temp Sample IDs	Container Type	# of Containers

PM Notified? ☐Yes ☐No

If yes, indicate who was contacted/date/time.
If no, indicate reason why.

Multiple Cooler Project? ☐Yes ☐No
If you answered yes, fill out information to the left.

No Temp Blank		
Read Temp	Corrected Temp	Average Temp

Other Issues

Issue Type: Sample ID	Container Type	# of Containers

Tracking Number	

pH Adjustment Log for Preserved Samples

Sample ID	Type of Preserv.	pH Upon Receipt	Date Adjusted	Time Adjusted	Amount Added (mL)	Lot # Added	pH After	In Compliance after addition?	Initials
813764	HNO_3	7	4/2/19	1247	1.0	1118100	1	☒Yes ☐No	CMI
"	H_2SO_4	4	4/2/19	1253	1.0	3117051	1	☒Yes ☐No	CMI
813761	HNO_3	5	4/2/19	1251	1.0	1118100	5	~~☒Yes~~ ☒No CM 4/2/19	CMI
"	H_2SO_4	5	4/2/19	1256	1.0	3117051	4	☐Yes ☒No	CMI

WO# : 12123159

12123159

Chain of Custody

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN

Cert. Needed: ☐ Yes ☐

Workorder: 10469117 **Workorder Name:** 19-01567 MPCA Freeway LF 19 WT **Owner Received Date:** 4/1/2019 **Results Requested By:** 4/22/2019

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6436	Pace Analytical Virginia MN 315 Chestnut Street Virginia, MN 55792 Phone (218)742-1042

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: H2SO4 BP3S						Requested Analysis: 350.1 Ammonia	Unionized Ammonia											LAB USE ONLY
1	813740	PS	4/1/2019 10:10	10469117001	Water	1						X	X											
2	813764	PS	4/1/2019 10:50	10469117002	Water	1						X	X											
3	813761	PS	4/1/2019 13:00	10469117003	Water	1						X	X											
4	240816	PS	4/1/2019 15:10	10469117004	Water	1						X	X											
5																								

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature]	4/2/19 1600	[signature] 4/3/19	10:20
2				
3				

Comments

Cooler Temperature on Receipt 1.9 °C | **Custody Seal** (Y) or N | **Received on Ice** (Y) or N | **Samples Intact** (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.*

This chain of custody is considered complete as is since this information is available in the owner laboratory.

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 01Apr2019 Page 1 of 1
	Document No.: F-VM-C-001-Rev.11	Issuing Authority: Pace Virginia, Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Pace MPLS

Project #: **WO#: 12123159**

PM: CLJ Due Date: 04/22/19

CLIENT: PACE MPLS

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☑ Other: SD

Tracking Number:

Custody Seal on Cooler/Box Present? ☑ Yes ☐ No Seals Intact? ☑ Yes ☐ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☑ None ☐ Other: Temp Blank? ☑ Yes ☐ No

Thermometer Used: 9 111336683 Type of Ice: ☑ Wet ☐ Blue ☐ None ☐ Samples on ice, cooling process has begun

Cooler Temp Read °C: 1.6 Cooler Temp Corrected °C: 1.9 Biological Tissue Frozen? ☐ Yes ☐ No ☑ NA

Temp should be above freezing to 6°C Correction Factor: +0.3 Date and Initials of Person Examining Contents: RH 4/3/19

Comments:

Chain of Custody Present?	☑ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☑ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☑ Yes	☐ No	☐ N/A	3.
Sampler Name and Signature on COC?	☐ Yes	☑ No	☐ N/A	4.
Samples Arrived within Hold Time?	☑ Yes	☐ No	☐ N/A	5. If Fecal: ☐ <8 hours ☐ >8, <24 hours ☐ >24 hours
Short Hold Time Analysis (<72 hr)?	☐ Yes	☑ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☑ No	☐ N/A	7.
Sufficient Volume?	☑ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☑ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☑ Yes	☐ No	☐ N/A	
Containers Intact?	☑ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☑ N/A	11. Note if sediment is visible in the dissolved containers.
Sample Labels Match COC?	☑ Yes	☐ No	☐ N/A	12.
-Includes Date/Time/ID/Analysis Matrix: WT				
All containers needing acid/base preservation will be checked and documented in the pH logbook.	☑ Yes	☐ No	☐ N/A	See pH log for results and additional preservation documentation
Headspace in Methyl Mercury Container	☐ Yes	☐ No	☑ N/A	13.
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☑ N/A	14.
Trip Blank Present?	☐ Yes	☐ No	☑ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☑ N/A	
Pace Trip Blank Lot # (if purchased):				

CLIENT NOTIFICATION/RESOLUTION Field Data Required? ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

FECAL WAIVER ON FILE Y N TEMPERATURE WAIVER ON FILE Y N

Project Manager Review: Katie Richards Date: 4/3/2019

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Chain of Custody

Pace Analytical®
www.pacelabs.com

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN
Cert. Needed: ☐ Yes ☐ No

Workorder: 10469117 **Workorder Name:** 19-01567 MPCA Freeway LF 19 WT **Owner Received Date:** 4/1/2019 **Results Requested By:** 4/22/2019

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6436	Pace Analytical Pittsburgh 1638 Roseytown Road Suites 2,3 & 4 Greensburg, PA 15601 Phone (724)850-5600

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: HNO3 BP1N	Gross Alpha/Beta	LAB USE ONLY
1	813740	PS	4/1/2019 10:10	10469117001	Water	1	X	001
2	813764	PS	4/1/2019 10:50	10469117002	Water	1	X	002
3	813761	PS	4/1/2019 13:00	10469117003	Water	1	X	003
4	240816	PS	4/1/2019 15:10	10469117004	Water	1	X	004
5								

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature]	4/2/19 1730	[signature]	4-3-19 0940
2				
3				

Comments

Cooler Temperature on Receipt NA °C | **Custody Seal** Y or (N) | **Received on Ice** Y or (N) | **Samples Intact** (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.*

WO# : 30287398

30287398

Pittsburgh Lab Sample Condition Upon Receipt

Pace Analytical

Client Name: Pace MN Project # # 30287398

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Label MJ

Tracking #: 4638801956605Z LIMS Login MJ

Custody Seal on Cooler/Box Present: ☐ yes ☑ no Seals intact: ☐ yes ☐ no

Thermometer Used NA Type of Ice: Wet Blue ~~None~~

Cooler Temperature Observed Temp — °C Correction Factor: — °C Final Temp: — °C

Temp should be above freezing to 6°C

pH paper Lot# 10029481 Date and Initials of person examining contents: MDS 4319

Comments:	Yes	No	N/A	
Chain of Custody Present:	✓			1.
Chain of Custody Filled Out:	✓			2.
Chain of Custody Relinquished:	✓			3.
Sampler Name & Signature on COC:		✓		4.
Sample Labels match COC: -Includes date/time/ID Matrix: WT	✓			5.
Samples Arrived within Hold Time:	✓			6.
Short Hold Time Analysis (<72hr remaining):		✓		7.
Rush Turn Around Time Requested:		✓		8.
Sufficient Volume:	✓			9.
Correct Containers Used: -Pace Containers Used:	✓ ✓			10.
Containers Intact:	✓			11.
Orthophosphate field filtered			✓	12.
Hex Cr Aqueous Compliance/NPDES sample field filtered			✓	13.
Organic Samples checked for dechlorination:			✓	14.
Filtered volume received for Dissolved tests			✓	15.
All containers have been checked for preservation.	✓			16. added 5mL of HNO3 to Sample002
All containers needing preservation are found to be in compliance with EPA recommendation.		✓		added 10mL of HNO3 to Sample003 Sample is still unpreserved
exceptions: VOA, coliform, TOC, O&G, Phenolics				Initial when completed MDS Date/time of preservation 4319-1330
				Lot # of added preservative DU9-0236
Headspace in VOA Vials (>6mm):			✓	17.
Trip Blank Present:			✓	18.
Trip Blank Custody Seals Present			✓	
Rad Samples Screened < 0.5 mrem/hr	✓			Initial when completed: MDS Date: 4319

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

☐ **A check in this box indicates that additional information has been stored in ereports.**

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

***PM review** is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

12-Apr-2019

Jennifer Anderson
Pace Analytical Services, LLC
1700 Elm Street
Suite 200
Minneapolis, MN 55414

Re: **10469117** Work Order: **1904149**

Dear Jennifer,

ALS Environmental received 4 samples on 03-Apr-2019 09:45 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental - Holland and for only the analyses requested.

Sample results are compliant with industry accepted practices and Quality Control results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 10.

If you have any questions regarding this report, please feel free to contact me:

ADDRESS: 3352 128th Avenue, Holland, MI, USA
PHONE: +1 (616) 399-6070 FAX: +1 (616) 399-6185

Sincerely,

Electronically approved by: Chad Whelton

Chad Whelton
Project Manager

ALS Group, USA

Date: 12-Apr-19

Client: Pace Analytical Services, LLC
Project: 10469117
Work Order: **1904149**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1904149-01	813740	Water		4/1/2019 10:10	4/3/2019 09:45	☐
1904149-02	813764	Water		4/1/2019 10:50	4/3/2019 09:45	☐
1904149-03	813761	Water		4/1/2019 13:00	4/3/2019 09:45	☐
1904149-04	240816	Water		4/1/2019 15:10	4/3/2019 09:45	☐

Client: Pace Analytical Services, LLC
Project: 10469117
WorkOrder: **1904149**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
**	Estimated Value
a	Analyte is non-accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
Hr	BOD/CBOD - Sample was reset outside Hold Time, value should be considered estimated.
J	Analyte is present at an estimated concentration between the MDL and Report Limit
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and Reporting Limit, sample results may exhibit background or reagent contamination at the observed level.

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

Units Reported	Description
µg/L	Micrograms per Liter

ALS Group, USA

Date: *12-Apr-19*

Client:	Pace Analytical Services, LLC		
Project:	10469117	**Work Order:**	1904149
Sample ID:	813740	**Lab ID:**	1904149-01
Collection Date:	4/1/2019 10:10 AM	**Matrix:**	WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
CYANIDE, FREE			**SW9014**			Analyst: **RZM**
Cyanide, Free	ND		20	µg/L	1	4/8/2019 10:30 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Pace Analytical Services, LLC
Project: 10469117 **Work Order:** 1904149
Sample ID: 813764 **Lab ID:** 1904149-02
Collection Date: 4/1/2019 10:50 AM **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
CYANIDE, FREE			**SW9014**			Analyst: **RZM**
Cyanide, Free	ND		20	µg/L	1	4/8/2019 10:30 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Pace Analytical Services, LLC
Project: 10469117 **Work Order:** 1904149
Sample ID: 813761 **Lab ID:** 1904149-03
Collection Date: 4/1/2019 01:00 PM **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
CYANIDE, FREE			**SW9014**			Analyst: **RZM**
Cyanide, Free	ND		20	µg/L	1	4/8/2019 10:30 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Pace Analytical Services, LLC
Project: 10469117 **Work Order:** 1904149
Sample ID: 240816 **Lab ID:** 1904149-04
Collection Date: 4/1/2019 03:10 PM **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
CYANIDE, FREE			**SW9014**			Analyst: **RZM**
Cyanide, Free	ND		20	µg/L	1	4/8/2019 10:30 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

QC BATCH REPORT

Batch ID: **R258103** Instrument ID **WETCHEM** Method: **SW9014**

MBLK Sample ID: **MB-R258103-R258103** Units: **µg/L** Analysis Date: **4/8/2019 10:30 AM**

Client ID: Run ID: **WETCHEM_190408Q** SeqNo: **5596554** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Free	ND	20								

LCS Sample ID: **LCS-R258103-R258103** Units: **µg/L** Analysis Date: **4/8/2019 10:30 AM**

Client ID: Run ID: **WETCHEM_190408Q** SeqNo: **5596555** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Free	264.9	20	250	0	106	81-119	0			

MS Sample ID: **1904010-01A MS** Units: **µg/L** Analysis Date: **4/8/2019 10:30 AM**

Client ID: Run ID: **WETCHEM_190408Q** SeqNo: **5596560** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Free	264.9	20	250	-6.48	109	81-119	0			

MSD Sample ID: **1904010-01A MSD** Units: **µg/L** Analysis Date: **4/8/2019 10:30 AM**

Client ID: Run ID: **WETCHEM_190408Q** SeqNo: **5596561** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Free	247.2	20	250	-6.48	101	81-119	264.9	6.91	20	

The following samples were analyzed in this batch:

1904149-01A 1904149-02A 1904149-03A
1904149-04A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

1904149

Chain of Custody

Pace Analytical
www.pacelabs.com

Workorder: 10469117 **Workorder Name:** 19-01567 MPCA Freeway LF 19 WT **Results Requested By:** 4/22/2019

Report / Invoice To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6436 Email: jennifer.anderson@pacelabs.com	ALS 3352 128th Avenue Holland, MI 49424

P.O. 10469117

State of Sample Origin: MN

Item	Sample ID	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Other BP3A	Requested Analysis: Free Cyanide	LAB USE ONLY
1	813740	4/1/2019 10:10	10469117001	Water	1	X	
2	813764	4/1/2019 10:50	10469117002	Water	1	X	
3	813761	4/1/2019 13:00	10469117003	Water	1	X	
4	240816	4/1/2019 15:10	10469117004	Water	1	X	
5							

Transfers	Released By	Date/Time	Received By	Date/Time
1	Into Pace	4/2/19 1145		4/3/19 0945
2				
3				

Comments

Cooler Temperature on Receipt 4.0 °C | Custody Seal Y or N | Received on Ice Y or N | Samples Intact Y or N

ALS Group, USA

Sample Receipt Checklist

Client Name: **PACE_MN** Date/Time Received: **03-Apr-19 09:45**

Work Order: **1904149** Received by: **DS**

Checklist completed by Diane Shaw (eSignature) 03-Apr-19 (Date) Reviewed by: Chad Whelton (eSignature) 03-Apr-19 (Date)

Matrices: Water
Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Sample(s) received on ice?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	4.6/4.6 c	SR2	
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	4/3/2019 10:12:41 AM		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

2525 Advance Road
Madison, WI 53718
608.221.8700 Phone
608.221.4889 Fax

April 16, 2019

Jennifer Anderson
Pace Analytical
1700 Elm Street, Suite 200
Minneapolis, MN 55414

RE: MPCA Freeway LF Water - MN

Enclosed are the analytical results for the samples received by the laboratory on 04/03/2019.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. These results are in compliance with the 2009 NELAC Standards and the appropriate agencies listed below, unless otherwise noted in the case narrative. This analytical report should be reproduced in its entirety.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jessica Esser

Project Manager

Certification List			Expires
DODELAP	DOD ELAP Accreditation (A2LA)	3269.01	03/31/2020
ILEPA	Illinois Secondary NELAP Accreditation	004366	04/30/2019
KDHE	Kansas Secondary NELAP Accreditation	E-10384	04/30/2019
LELAP	Louisiana Primary NELAP Accreditation	04165	06/30/2019
NCDEQ	North Carolina Dept. of Environmental Quality Accreditation	688	12/31/2019
NJDEP	New Jersey Secondary NELAP Accreditation	WI004	06/30/2019
ODEQ	Oklahoma Department of Environmental Quality Accreditation	2018-087	08/31/2019
TCEQ	Texas Secondary NELAP Accreditation	T104704504-16-7	11/30/2019
WDNR	Wisconsin Certification under NR 149	113289110	08/31/2019

2525 Advance Road
Madison, WI 53718
608.221.8700 Phone
608.221.4889 Fax

Pace Analytical	Project: MPCA Freeway LF Water - MN
1700 Elm Street, Suite 200	Project Number: 10469117
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
813740	A191407-01	Water	04/01/2019	04/03/2019
813764	A191407-02	Water	04/01/2019	04/03/2019
813761	A191407-03	Water	04/01/2019	04/03/2019
240816	A191407-04	Water	04/01/2019	04/03/2019

CASE NARRATIVE

Sample Receipt Information:
4 samples were received on 04/03/2019. Samples were received at 2.6 degrees Celsius. Samples were received in acceptable condition.

Please see the chain of custody (COC) document at the end of this report for additional information.

Sample Preparation:
Due to the sample matrix, only 100 mL of sample A191407-03 was used in the MDA List 1 and MDA List 2 extractions. Sample A191407-03 was also analyzed at an initial dilution factor of 1:10 for these analyses. The reporting limits have been raised accordingly and the sample is reported to the limit of detection.

Laboratory Control Samples (LCS):
The E1 footnote on samples A191407-01 through A191407-04 indicates that there were quality control sample exceedances for terbufos. The LCS recovery was below acceptable limits. Please see the quality control section of the report for more information.

The LCS and LCS duplicate recoveries indicate a potential high bias for ethalfluralin, fonofos, propachlor and triallate for samples A191407-01 through A191407-04. Samples were less than the reporting limit for these analytes so no further action is required.

Continuing Calibration Verification (CCV):
The LC footnote on sample A191407-03 states that there was a low CCV recovery for picloram. The lower control limit is 80% and the lowest recovery was 78.1%.

CCV indicates a potential high bias for cyanazine, ethalfluralin, pendimethalin and trifluralin for samples A191407-01 through A191407-04. Samples were less than the reporting limit for these analytes so no further action is required.

Pace Analytical
ECCS Mobile Lab Services

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608.221.8700 Phone
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Pace Analytical	Project: MPCA Freeway LF Water - MN
1700 Elm Street, Suite 200	Project Number: 10469117
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

813740

A191407-01 (Water)

Date Sampled
04/01/2019 10:10

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Base Neutral Pesticides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A904147**			
Acetochlor	ND	0.50	ug/L	1	04/04/2019	04/09/2019 14:56	EPA 8270D	
Alachlor	ND	0.50	ug/L	1	04/04/2019	04/09/2019 14:56	EPA 8270D	
Atrazine	ND	0.50	ug/L	1	04/04/2019	04/09/2019 14:56	EPA 8270D	
Chlorpyrifos	ND	0.50	ug/L	1	04/04/2019	04/09/2019 14:56	EPA 8270D	
Cyanazine	ND	0.20	ug/L	1	04/04/2019	04/09/2019 14:56	EPA 8270D	
Desethylatrazine	ND	0.50	ug/L	1	04/04/2019	04/09/2019 14:56	EPA 8270D	
Deisopropylatrazine	ND	0.50	ug/L	1	04/04/2019	04/09/2019 14:56	EPA 8270D	
Dimethenamid	ND	0.50	ug/L	1	04/04/2019	04/09/2019 14:56	EPA 8270D	
EPTC	ND	0.50	ug/L	1	04/04/2019	04/09/2019 14:56	EPA 8270D	
Ethalfluralin	ND	0.50	ug/L	1	04/04/2019	04/09/2019 14:56	EPA 8270D	
Fonofos	ND	0.50	ug/L	1	04/04/2019	04/09/2019 14:56	EPA 8270D	
Metolachlor	ND	0.50	ug/L	1	04/04/2019	04/09/2019 14:56	EPA 8270D	
Metribuzin	ND	0.50	ug/L	1	04/04/2019	04/09/2019 14:56	EPA 8270D	
Pendimethalin	ND	0.50	ug/L	1	04/04/2019	04/09/2019 14:56	EPA 8270D	
Phorate	ND	0.30	ug/L	1	04/04/2019	04/09/2019 14:56	EPA 8270D	
Prometon	ND	0.50	ug/L	1	04/04/2019	04/09/2019 14:56	EPA 8270D	
Propachlor	ND	0.50	ug/L	1	04/04/2019	04/09/2019 14:56	EPA 8270D	
Propazine	ND	0.50	ug/L	1	04/04/2019	04/09/2019 14:56	EPA 8270D	
Simazine	ND	0.50	ug/L	1	04/04/2019	04/09/2019 14:56	EPA 8270D	
Terbufos	ND	0.20	ug/L	1	04/04/2019	04/09/2019 14:56	EPA 8270D	E1
Triallate	ND	0.50	ug/L	1	04/04/2019	04/09/2019 14:56	EPA 8270D	
Trifluralin	ND	0.50	ug/L	1	04/04/2019	04/09/2019 14:56	EPA 8270D	
Surrogate: Atrazine-d5		*98.0 %*		*56.9-123*	*04/04/2019*	*04/09/2019 14:56*	*EPA 8270D*	
Surrogate: Parathion-d10		*115 %*		*23.8-169*	*04/04/2019*	*04/09/2019 14:56*	*EPA 8270D*	
Surrogate: Triphenyl phosphate		*106 %*		*50.5-178*	*04/04/2019*	*04/09/2019 14:56*	*EPA 8270D*	
Acid Herbicides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A904151**			
2,4-D	ND	0.50	ug/L	1	04/08/2019	04/10/2019 02:29	EPA 8151A	
2,4-DB	ND	0.50	ug/L	1	04/08/2019	04/10/2019 02:29	EPA 8151A	
2,4,5-T	ND	0.50	ug/L	1	04/08/2019	04/10/2019 02:29	EPA 8151A	
2,4,5-TP (Silvex)	ND	0.50	ug/L	1	04/08/2019	04/10/2019 02:29	EPA 8151A	
Bentazon	ND	0.50	ug/L	1	04/08/2019	04/10/2019 02:29	EPA 8151A	
Dicamba	ND	0.50	ug/L	1	04/08/2019	04/10/2019 02:29	EPA 8151A	
MCPA	ND	0.30	ug/L	1	04/08/2019	04/10/2019 02:29	EPA 8151A	
Picloram	ND	0.50	ug/L	1	04/08/2019	04/10/2019 02:29	EPA 8151A	
Triclopyr	ND	0.50	ug/L	1	04/08/2019	04/10/2019 02:29	EPA 8151A	
Surrogate: 2,4-D-d5		*91.6 %*		*44.2-121*	*04/08/2019*	*04/10/2019 02:29*	*EPA 8151A*	

Pace Analytical
ECCS Mobile Lab Services

2525 Advance Road
Madison, WI 53718
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608.221.4889 Fax

Pace Analytical
1700 Elm Street, Suite 200
Minneapolis MN, 55414

Project: MPCA Freeway LF Water - MN
Project Number: 10469117
Project Manager: Jennifer Anderson

813764

A191407-02 (Water)

Date Sampled
04/01/2019 10:50

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Base Neutral Pesticides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A904147**			
Acetochlor	ND	0.50	ug/L	1	04/04/2019	04/09/2019 15:24	EPA 8270D	
Alachlor	ND	0.50	ug/L	1	04/04/2019	04/09/2019 15:24	EPA 8270D	
Atrazine	ND	0.50	ug/L	1	04/04/2019	04/09/2019 15:24	EPA 8270D	
Chlorpyrifos	ND	0.50	ug/L	1	04/04/2019	04/09/2019 15:24	EPA 8270D	
Cyanazine	ND	0.20	ug/L	1	04/04/2019	04/09/2019 15:24	EPA 8270D	
Desethylatrazine	ND	0.50	ug/L	1	04/04/2019	04/09/2019 15:24	EPA 8270D	
Deisopropylatrazine	ND	0.50	ug/L	1	04/04/2019	04/09/2019 15:24	EPA 8270D	
Dimethenamid	ND	0.50	ug/L	1	04/04/2019	04/09/2019 15:24	EPA 8270D	
EPTC	ND	0.50	ug/L	1	04/04/2019	04/09/2019 15:24	EPA 8270D	
Ethalfluralin	ND	0.50	ug/L	1	04/04/2019	04/09/2019 15:24	EPA 8270D	
Fonofos	ND	0.50	ug/L	1	04/04/2019	04/09/2019 15:24	EPA 8270D	
Metolachlor	ND	0.50	ug/L	1	04/04/2019	04/09/2019 15:24	EPA 8270D	
Metribuzin	ND	0.50	ug/L	1	04/04/2019	04/09/2019 15:24	EPA 8270D	
Pendimethalin	ND	0.50	ug/L	1	04/04/2019	04/09/2019 15:24	EPA 8270D	
Phorate	ND	0.30	ug/L	1	04/04/2019	04/09/2019 15:24	EPA 8270D	
Prometon	ND	0.50	ug/L	1	04/04/2019	04/09/2019 15:24	EPA 8270D	
Propachlor	ND	0.50	ug/L	1	04/04/2019	04/09/2019 15:24	EPA 8270D	
Propazine	ND	0.50	ug/L	1	04/04/2019	04/09/2019 15:24	EPA 8270D	
Simazine	ND	0.50	ug/L	1	04/04/2019	04/09/2019 15:24	EPA 8270D	
Terbufos	ND	0.20	ug/L	1	04/04/2019	04/09/2019 15:24	EPA 8270D	E1
Triallate	ND	0.50	ug/L	1	04/04/2019	04/09/2019 15:24	EPA 8270D	
Trifluralin	ND	0.50	ug/L	1	04/04/2019	04/09/2019 15:24	EPA 8270D	
Surrogate: Atrazine-d5		*141 %*		*56.9-123*	*04/04/2019*	*04/09/2019 15:24*	*EPA 8270D*	*S*
Surrogate: Parathion-d10		*148 %*		*23.8-169*	*04/04/2019*	*04/09/2019 15:24*	*EPA 8270D*	
Surrogate: Triphenyl phosphate		*172 %*		*50.5-178*	*04/04/2019*	*04/09/2019 15:24*	*EPA 8270D*	
Acid Herbicides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A904151**			
2,4-D	ND	0.50	ug/L	1	04/08/2019	04/10/2019 03:04	EPA 8151A	
2,4-DB	ND	0.50	ug/L	1	04/08/2019	04/10/2019 03:04	EPA 8151A	
2,4,5-T	ND	0.50	ug/L	1	04/08/2019	04/10/2019 03:04	EPA 8151A	
2,4,5-TP (Silvex)	ND	0.50	ug/L	1	04/08/2019	04/10/2019 03:04	EPA 8151A	
Bentazon	ND	0.50	ug/L	1	04/08/2019	04/10/2019 03:04	EPA 8151A	
Dicamba	ND	0.50	ug/L	1	04/08/2019	04/10/2019 03:04	EPA 8151A	
MCPA	ND	0.30	ug/L	1	04/08/2019	04/10/2019 03:04	EPA 8151A	
Picloram	ND	0.50	ug/L	1	04/08/2019	04/10/2019 03:04	EPA 8151A	
Triclopyr	ND	0.50	ug/L	1	04/08/2019	04/10/2019 03:04	EPA 8151A	
Surrogate: 2,4-D-d5		*94.4 %*		*44.2-121*	*04/08/2019*	*04/10/2019 03:04*	*EPA 8151A*	

Pace Analytical
ECCS Mobile Lab Services

2525 Advance Road
Madison, WI 53718
608.221.8700 Phone
608.221.4889 Fax

Pace Analytical	Project: MPCA Freeway LF Water - MN
1700 Elm Street, Suite 200	Project Number: 10469117
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

813761

A191407-03 (Water)

Date Sampled
04/01/2019 13:00

Pace Analytical - Madison

Analyte	Result	Limit of Detection	Limit of Quantitation	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Base Neutral Pesticides by Gas Chromatography/Mass Spectrometry						**Preparation Batch: A904147**			
Acetochlor	ND	2.5	50	ug/L	10	04/04/2019	04/09/2019 18:40	EPA 8270D	
Alachlor	ND	5.0	50	ug/L	10	04/04/2019	04/09/2019 18:40	EPA 8270D	
Atrazine	ND	2.5	50	ug/L	10	04/04/2019	04/09/2019 18:40	EPA 8270D	
Chlorpyrifos	ND	3.8	50	ug/L	10	04/04/2019	04/09/2019 18:40	EPA 8270D	
Cyanazine	ND	6.0	20	ug/L	10	04/04/2019	04/09/2019 18:40	EPA 8270D	
Desethylatrazine	ND	2.2	50	ug/L	10	04/04/2019	04/09/2019 18:40	EPA 8270D	
Deisopropylatrazine	ND	3.9	50	ug/L	10	04/04/2019	04/09/2019 18:40	EPA 8270D	
Dimethenamid	ND	2.5	50	ug/L	10	04/04/2019	04/09/2019 18:40	EPA 8270D	
EPTC	ND	2.3	50	ug/L	10	04/04/2019	04/09/2019 18:40	EPA 8270D	
Ethalfluralin	ND	9.6	50	ug/L	10	04/04/2019	04/09/2019 18:40	EPA 8270D	
Fonofos	ND	4.6	50	ug/L	10	04/04/2019	04/09/2019 18:40	EPA 8270D	
Metolachlor	ND	3.0	50	ug/L	10	04/04/2019	04/09/2019 18:40	EPA 8270D	
Metribuzin	ND	1.9	50	ug/L	10	04/04/2019	04/09/2019 18:40	EPA 8270D	
Pendimethalin	ND	2.8	50	ug/L	10	04/04/2019	04/09/2019 18:40	EPA 8270D	
Phorate	ND	5.5	30	ug/L	10	04/04/2019	04/09/2019 18:40	EPA 8270D	
Prometon	ND	3.3	50	ug/L	10	04/04/2019	04/09/2019 18:40	EPA 8270D	
Propachlor	ND	4.6	50	ug/L	10	04/04/2019	04/09/2019 18:40	EPA 8270D	
Propazine	ND	4.3	50	ug/L	10	04/04/2019	04/09/2019 18:40	EPA 8270D	
Simazine	ND	2.3	50	ug/L	10	04/04/2019	04/09/2019 18:40	EPA 8270D	
Terbufos	ND	4.0	20	ug/L	10	04/04/2019	04/09/2019 18:40	EPA 8270D	E1
Triallate	ND	6.5	50	ug/L	10	04/04/2019	04/09/2019 18:40	EPA 8270D	
Trifluralin	ND	2.8	50	ug/L	10	04/04/2019	04/09/2019 18:40	EPA 8270D	
Surrogate: Atrazine-d5			*253 %*	*56.9-123*		*04/04/2019*	*04/09/2019 18:40*	*EPA 8270D*	*D, S*
Surrogate: Parathion-d10			*145 %*	*23.8-169*		*04/04/2019*	*04/09/2019 18:40*	*EPA 8270D*	*D*
Surrogate: Triphenyl phosphate			*252 %*	*50.5-178*		*04/04/2019*	*04/09/2019 18:40*	*EPA 8270D*	*D, S*
Acid Herbicides by Gas Chromatography/Mass Spectrometry						**Preparation Batch: A904151**			
2,4-D	ND	14	50	ug/L	10	04/08/2019	04/10/2019 10:39	EPA 8151A	
2,4-DB	ND	10	50	ug/L	10	04/08/2019	04/10/2019 10:39	EPA 8151A	
2,4,5-T	ND	6.5	50	ug/L	10	04/08/2019	04/10/2019 10:39	EPA 8151A	
2,4,5-TP (Silvex)	ND	5.1	50	ug/L	10	04/08/2019	04/10/2019 10:39	EPA 8151A	
Bentazon	ND	13	50	ug/L	10	04/08/2019	04/10/2019 10:39	EPA 8151A	
Dicamba	ND	3.8	50	ug/L	10	04/08/2019	04/10/2019 10:39	EPA 8151A	
MCPA	ND	7.3	30	ug/L	10	04/08/2019	04/10/2019 10:39	EPA 8151A	
Picloram	ND	4.4	50	ug/L	10	04/08/2019	04/10/2019 10:39	EPA 8151A	LC
Triclopyr	ND	8.5	50	ug/L	10	04/08/2019	04/10/2019 10:39	EPA 8151A	
Surrogate: 2,4-D-d5			*163 %*	*44.2-121*		*04/08/2019*	*04/10/2019 10:39*	*EPA 8151A*	*D, S*

Pace Analytical
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Pace Analytical	Project: MPCA Freeway LF Water - MN
1700 Elm Street, Suite 200	Project Number: 10469117
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

240816

A191407-04 (Water)

Date Sampled
04/01/2019 15:10

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Base Neutral Pesticides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A904147**			
Acetochlor	ND	0.50	ug/L	1	04/04/2019	04/09/2019 12:07	EPA 8270D	
Alachlor	ND	0.50	ug/L	1	04/04/2019	04/09/2019 12:07	EPA 8270D	
Atrazine	ND	0.50	ug/L	1	04/04/2019	04/09/2019 12:07	EPA 8270D	
Chlorpyrifos	ND	0.50	ug/L	1	04/04/2019	04/09/2019 12:07	EPA 8270D	
Cyanazine	ND	0.20	ug/L	1	04/04/2019	04/09/2019 12:07	EPA 8270D	
Desethylatrazine	ND	0.50	ug/L	1	04/04/2019	04/09/2019 12:07	EPA 8270D	
Deisopropylatrazine	ND	0.50	ug/L	1	04/04/2019	04/09/2019 12:07	EPA 8270D	
Dimethenamid	ND	0.50	ug/L	1	04/04/2019	04/09/2019 12:07	EPA 8270D	
EPTC	ND	0.50	ug/L	1	04/04/2019	04/09/2019 12:07	EPA 8270D	
Ethalfluralin	ND	0.50	ug/L	1	04/04/2019	04/09/2019 12:07	EPA 8270D	
Fonofos	ND	0.50	ug/L	1	04/04/2019	04/09/2019 12:07	EPA 8270D	
Metolachlor	ND	0.50	ug/L	1	04/04/2019	04/09/2019 12:07	EPA 8270D	
Metribuzin	ND	0.50	ug/L	1	04/04/2019	04/09/2019 12:07	EPA 8270D	
Pendimethalin	ND	0.50	ug/L	1	04/04/2019	04/09/2019 12:07	EPA 8270D	
Phorate	ND	0.30	ug/L	1	04/04/2019	04/09/2019 12:07	EPA 8270D	
Prometon	ND	0.50	ug/L	1	04/04/2019	04/09/2019 12:07	EPA 8270D	
Propachlor	ND	0.50	ug/L	1	04/04/2019	04/09/2019 12:07	EPA 8270D	
Propazine	ND	0.50	ug/L	1	04/04/2019	04/09/2019 12:07	EPA 8270D	
Simazine	ND	0.50	ug/L	1	04/04/2019	04/09/2019 12:07	EPA 8270D	
Terbufos	ND	0.20	ug/L	1	04/04/2019	04/09/2019 12:07	EPA 8270D	E1
Triallate	ND	0.50	ug/L	1	04/04/2019	04/09/2019 12:07	EPA 8270D	
Trifluralin	ND	0.50	ug/L	1	04/04/2019	04/09/2019 12:07	EPA 8270D	
Surrogate: Atrazine-d5		*92.9 %*		*56.9-123*	*04/04/2019*	*04/09/2019 12:07*	*EPA 8270D*	
Surrogate: Parathion-d10		*132 %*		*23.8-169*	*04/04/2019*	*04/09/2019 12:07*	*EPA 8270D*	
Surrogate: Triphenyl phosphate		*106 %*		*50.5-178*	*04/04/2019*	*04/09/2019 12:07*	*EPA 8270D*	
Acid Herbicides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A904151**			
2,4-D	ND	0.50	ug/L	1	04/08/2019	04/10/2019 03:39	EPA 8151A	
2,4-DB	ND	0.50	ug/L	1	04/08/2019	04/10/2019 03:39	EPA 8151A	
2,4,5-T	ND	0.50	ug/L	1	04/08/2019	04/10/2019 03:39	EPA 8151A	
2,4,5-TP (Silvex)	ND	0.50	ug/L	1	04/08/2019	04/10/2019 03:39	EPA 8151A	
Bentazon	ND	0.50	ug/L	1	04/08/2019	04/10/2019 03:39	EPA 8151A	
Dicamba	ND	0.50	ug/L	1	04/08/2019	04/10/2019 03:39	EPA 8151A	
MCPA	ND	0.30	ug/L	1	04/08/2019	04/10/2019 03:39	EPA 8151A	
Picloram	ND	0.50	ug/L	1	04/08/2019	04/10/2019 03:39	EPA 8151A	
Triclopyr	ND	0.50	ug/L	1	04/08/2019	04/10/2019 03:39	EPA 8151A	
Surrogate: 2,4-D-d5		*79.5 %*		*44.2-121*	*04/08/2019*	*04/10/2019 03:39*	*EPA 8151A*	

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Pace Analytical	Project: MPCA Freeway LF Water - MN
1700 Elm Street, Suite 200	Project Number: 10469117
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Base Neutral Pesticides by Gas Chromatography/Mass Spectrometry - Quality Control

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A904147 - EPA 3510C										
Blank (A904147-BLK1)				Prepared: 04/04/2019 Analyzed: 04/08/2019 18:08						
Acetochlor	ND	0.50	ug/L							
Alachlor	ND	0.50	ug/L							
Atrazine	ND	0.50	ug/L							
Chlorpyrifos	ND	0.50	ug/L							
Cyanazine	ND	0.20	ug/L							
Desethylatrazine	ND	0.50	ug/L							
Deisopropylatrazine	ND	0.50	ug/L							
Dimethenamid	ND	0.50	ug/L							
EPTC	ND	0.50	ug/L							
Ethalfluralin	ND	0.50	ug/L							
Fonofos	ND	0.50	ug/L							
Metolachlor	ND	0.50	ug/L							
Metribuzin	ND	0.50	ug/L							
Pendimethalin	ND	0.50	ug/L							
Phorate	ND	0.30	ug/L							
Prometon	ND	0.50	ug/L							
Propachlor	ND	0.50	ug/L							
Propazine	ND	0.50	ug/L							
Simazine	ND	0.50	ug/L							
Terbufos	ND	0.20	ug/L							
Triallate	ND	0.50	ug/L							
Trifluralin	ND	0.50	ug/L							
Surrogate: Atrazine-d5	*0.511*		*ug/L*	*0.5000*		*102*	*56.9-123*			
Surrogate: Parathion-d10	*1.07*		*ug/L*	*0.5000*		*215*	*23.8-169*			*S*
Surrogate: Triphenyl phosphate	*0.453*		*ug/L*	*0.5000*		*90.6*	*50.5-178*			
LCS (A904147-BS1)				Prepared: 04/04/2019 Analyzed: 04/08/2019 18:36						
Acetochlor	0.817	0.50	ug/L	1.000		81.7	67.8-122			
Alachlor	0.819	0.50	ug/L	1.000		81.9	68.6-119			
Atrazine	0.802	0.50	ug/L	1.000		80.2	68.6-115			
Chlorpyrifos	0.841	0.50	ug/L	1.000		84.1	63.1-120			
Cyanazine	0.832	0.20	ug/L	1.000		83.2	55.3-143			
Desethylatrazine	0.766	0.50	ug/L	1.000		76.6	67.8-115			
Deisopropylatrazine	0.594	0.50	ug/L	1.000		59.4	50.1-100			
Dimethenamid	0.795	0.50	ug/L	1.000		79.5	70.3-121			
EPTC	0.649	0.50	ug/L	1.000		64.9	50.4-101			
Ethalfluralin	1.87	0.50	ug/L	1.000		187	42.6-121			
Fonofos	1.62	0.50	ug/L	1.000		162	56.6-119			
Metolachlor	0.822	0.50	ug/L	1.000		82.2	71.3-128			
Metribuzin	0.760	0.50	ug/L	1.000		76.0	64.9-120			
Pendimethalin	0.841	0.50	ug/L	1.000		84.1	60.9-128			
Phorate	0.477	0.30	ug/L	1.000		47.7	37.3-112			
Prometon	0.799	0.50	ug/L	1.000		79.9	67.1-120			
Propachlor	1.92	0.50	ug/L	1.000		192	66.2-127			
Propazine	0.800	0.50	ug/L	1.000		80.0	68.2-118			
Simazine	0.800	0.50	ug/L	1.000		80.0	67.2-117			

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Pace Analytical	Project: MPCA Freeway LF Water - MN
1700 Elm Street, Suite 200	Project Number: 10469117
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Base Neutral Pesticides by Gas Chromatography/Mass Spectrometry - Quality Control

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A904147 - EPA 3510C										
LCS (A904147-BS1)				Prepared: 04/04/2019 Analyzed: 04/08/2019 18:36						
Terbufos	0.283	0.20	ug/L	1.000		28.3	34.3-111			
Triallate	1.82	0.50	ug/L	1.000		182	53-121			
Trifluralin	0.759	0.50	ug/L	1.000		75.9	45.9-116			
Surrogate: Atrazine-d5	*0.447*		*ug/L*	*0.5000*		*89.4*	*56.9-123*			
Surrogate: Parathion-d10	*0.952*		*ug/L*	*0.5000*		*190*	*23.8-169*			*S*
Surrogate: Triphenyl phosphate	*0.418*		*ug/L*	*0.5000*		*83.5*	*50.5-178*			
LCS Dup (A904147-BSD1)				Prepared: 04/04/2019 Analyzed: 04/08/2019 19:04						
Acetochlor	0.885	0.50	ug/L	1.000		88.5	67.8-122	7.93	20	
Alachlor	0.867	0.50	ug/L	1.000		86.7	68.6-119	5.69	20	
Atrazine	0.846	0.50	ug/L	1.000		84.6	68.6-115	5.34	20	
Chlorpyrifos	0.897	0.50	ug/L	1.000		89.7	63.1-120	6.43	20	
Cyanazine	0.904	0.20	ug/L	1.000		90.4	55.3-143	8.21	20	
Desethylatrazine	0.822	0.50	ug/L	1.000		82.2	67.8-115	7.00	20	
Deisopropylatrazine	0.616	0.50	ug/L	1.000		61.6	50.1-100	3.55	20	
Dimethenamid	0.855	0.50	ug/L	1.000		85.5	70.3-121	7.20	20	
EPTC	0.742	0.50	ug/L	1.000		74.2	50.4-101	13.3	20	
Ethalfluralin	1.47	0.50	ug/L	1.000		147	42.6-121	24.0	20	X
Fonofos	1.35	0.50	ug/L	1.000		135	56.6-119	17.8	20	
Metolachlor	0.886	0.50	ug/L	1.000		88.6	71.3-128	7.43	20	
Metribuzin	0.789	0.50	ug/L	1.000		78.9	64.9-120	3.69	20	
Pendimethalin	0.888	0.50	ug/L	1.000		88.8	60.9-128	5.41	20	
Phorate	0.541	0.30	ug/L	1.000		54.1	37.3-112	12.7	20	
Prometon	0.831	0.50	ug/L	1.000		83.1	67.1-120	3.92	20	
Propachlor	1.63	0.50	ug/L	1.000		163	66.2-127	16.7	20	
Propazine	0.874	0.50	ug/L	1.000		87.4	68.2-118	8.91	20	
Simazine	0.883	0.50	ug/L	1.000		88.3	67.2-117	9.75	20	
Terbufos	0.366	0.20	ug/L	1.000		36.6	34.3-111	25.7	20	X
Triallate	1.57	0.50	ug/L	1.000		157	53-121	14.6	20	
Trifluralin	0.805	0.50	ug/L	1.000		80.5	45.9-116	5.95	20	
Surrogate: Atrazine-d5	*0.478*		*ug/L*	*0.5000*		*95.7*	*56.9-123*			
Surrogate: Parathion-d10	*0.842*		*ug/L*	*0.5000*		*168*	*23.8-169*			
Surrogate: Triphenyl phosphate	*0.410*		*ug/L*	*0.5000*		*82.1*	*50.5-178*			

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1700 Elm Street, Suite 200	Project Number: 10469117
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Acid Herbicides by Gas Chromatography/Mass Spectrometry - Quality Control

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A904151 - EPA 3510C										
Blank (A904151-BLK1)				Prepared: 04/08/2019 Analyzed: 04/10/2019 00:08						
2,4-D	ND	0.50	ug/L							
2,4-DB	ND	0.50	ug/L							
2,4,5-T	ND	0.50	ug/L							
2,4,5-TP (Silvex)	ND	0.50	ug/L							
Bentazon	ND	0.50	ug/L							
Dicamba	ND	0.50	ug/L							
MCPA	ND	0.30	ug/L							
Picloram	ND	0.50	ug/L							
Triclopyr	ND	0.50	ug/L							
Surrogate: 2,4-D-d5	*1.75*		*ug/L*	*2.006*		*87.4*	*44.2-121*			
LCS (A904151-BS1)				Prepared: 04/08/2019 Analyzed: 04/10/2019 01:19						
2,4-D	1.92	0.50	ug/L	2.000		96.0	64.6-148			
2,4-DB	1.99	0.50	ug/L	2.000		99.6	66.7-143			
2,4,5-T	1.72	0.50	ug/L	2.000		86.0	63.4-133			
2,4,5-TP (Silvex)	1.94	0.50	ug/L	2.000		96.9	63-145			
Bentazon	0.994	0.50	ug/L	1.000		99.4	52.5-139			
Dicamba	1.78	0.50	ug/L	2.000		89.1	55.4-143			
MCPA	1.95	0.30	ug/L	2.000		97.4	33.5-143			
Picloram	0.794	0.50	ug/L	1.000		79.4	47.9-113			
Triclopyr	1.89	0.50	ug/L	2.000		94.7	65.1-141			
Surrogate: 2,4-D-d5	*1.78*		*ug/L*	*2.006*		*88.5*	*44.2-121*			
LCS Dup (A904151-BSD1)				Prepared: 04/08/2019 Analyzed: 04/10/2019 01:54						
2,4-D	1.96	0.50	ug/L	2.000		98.2	64.6-148	2.17	20	
2,4-DB	2.00	0.50	ug/L	2.000		100	66.7-143	0.436	20	
2,4,5-T	1.83	0.50	ug/L	2.000		91.5	63.4-133	6.23	20	
2,4,5-TP (Silvex)	1.96	0.50	ug/L	2.000		97.9	63-145	1.00	20	
Bentazon	1.01	0.50	ug/L	1.000		101	52.5-139	1.64	20	
Dicamba	1.82	0.50	ug/L	2.000		90.8	55.4-143	1.83	20	
MCPA	1.90	0.30	ug/L	2.000		95.2	33.5-143	2.33	20	
Picloram	0.715	0.50	ug/L	1.000		71.5	47.9-113	10.4	20	
Triclopyr	1.94	0.50	ug/L	2.000		96.9	65.1-141	2.40	20	
Surrogate: 2,4-D-d5	*1.73*		*ug/L*	*2.006*		*86.0*	*44.2-121*			

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Pace Analytical	Project: MPCA Freeway LF Water - MN
1700 Elm Street, Suite 200	Project Number: 10469117
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Notes and Definitions

X	Precision for the matrix spike duplicate, laboratory control sample duplicate or lab duplicate was outside of control limits.
S	Surrogate recovery was outside of laboratory control limits due to an apparent matrix effect.
LC	Results may be biased low because of low continuing calibration verification (CCV).
E1	Estimated value because of quality control sample exceedances.
D	Data reported from a dilution
ND	Analyte NOT DETECTED at or above the reporting limit or limit of detection (if listed).
NR	Not Reported
dry	Sample results reported on a dry weight basis. If the word 'dry' does not appear after the units, results are reported on an as-is basis.
RPD	Relative Percent Difference

Chain of Custody

A191407

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☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN
Cert. Needed: ☐ Yes ☐ No

Workorder: 10469117 **Workorder Name:** 19-01567 MPCA Freeway LF 19 WT **Owner Received Date:** 4/1/2019 **Results Requested By:** 4/22/2019

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6436	Pace Analytical Madison 2525 Advance Road Madison, WI 53718 Phone (608)221-8700

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved	Preserved Containers: AG1U	MDA List 1	MDA List 2	LAB USE ONLY
1	813740	PS	4/1/2019 10:10	10469117001	Water	4		X	X	01
2	813764	PS	4/1/2019 10:50	10469117002	Water	2		X	X	02
3	813761	PS	4/1/2019 13:00	10469117003	Water	3		X	X	03
4	240816	PS	4/1/2019 15:10	10469117004	Water	4		X	X	04
5										

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature]	4/2/19 BB	[signature]	4/3/19 1657
2				
3				

Comments

Need MPCA Equis EDD and Barr Equis 5 EDD

Cooler Temperature on Receipt 2.6 °C **Custody Seal** (Y) or N **Received on Ice** (Y) or N **Samples Intact** (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.*
This chain of custody is considered complete as is since this information is available in the owner laboratory.

1601422774 exp 7/13/19

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

April 19, 2019

Mr. Brad Jacobson
Pace Analytical Services, LLC..
1700 Elm Street
Suite 200
Minneapolis, MN 55414

RE: Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10469389

Dear Mr. Jacobson:
Enclosed are the analytical results for sample(s) received by the laboratory on April 03, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Some analyses have been subcontracted outside of the Pace Network. The subcontracted laboratory report has been attached.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jennifer Anderson
jennifer.anderson@pacelabs.com
(612)607-6436
Project Manager

Enclosures

cc: Tom Halverson, Pace Analytical Field Services
Chris Pelosi, Pace Analytical Services - Field Services

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CERTIFICATIONS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10469389

Minnesota Certification IDs

1700 Elm Street SE, Minneapolis, MN 55414-2485
A2LA Certification #: 2926.01
Alabama Certification #: 40770
Alaska Contaminated Sites Certification #: 17-009
Alaska DW Certification #: MN00064
Arizona Certification #: AZ0014
Arkansas DW Certification #: MN00064
Arkansas WW Certification #: 88-0680
California Certification #: 2929
CNMI Saipan Certification #: MP0003
Colorado Certification #: MN00064
Connecticut Certification #: PH-0256
EPA Region 8+Wyoming DW Certification #: via MN 027-053-137
Florida Certification #: E87605
Georgia Certification #: 959
Guam EPA Certification #: MN00064
Hawaii Certification #: MN00064
Idaho Certification #: MN00064
Illinois Certification #: 200011
Indiana Certification #: C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky DW Certification #: 90062
Kentucky WW Certification #: 90062
Louisiana DEQ Certification #: 03086
Louisiana DW Certification #: MN00064
Maine Certification #: MN00064
Maryland Certification #: 322
Massachusetts Certification #: M-MN064
Michigan Certification #: 9909
Minnesota Certification #: 027-053-137
Minnesota Dept of Ag Certifcation #: via MN 027-053-137
Minnesota Petrofund Certification #: 1240
Mississippi Certification #: MN00064
Missouri Certification #: 10100
Montana Certification #: CERT0092
Nebraska Certification #: NE-OS-18-06
Nevada Certification #: MN00064
New Hampshire Certification #: 2081
New Jersey Certification #: MN002
New York Certification #: 11647
North Carolina DW Certification #: 27700
North Carolina WW Certification #: 530
North Dakota Certification #: R-036
Ohio DW Certification #: 41244
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Primary Certification #: MN300001
Oregon Secondary Certification #: MN200001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification #: MN00064
South Carolina Certification #:74003001
Tennessee Certification #: TN02818
Texas Certification #: T104704192
Utah Certification #: MN00064
Vermont Certification #: VT-027053137
Virginia Certification #: 460163
Washington Certification #: C486
West Virginia DEP Certification #: 382
West Virginia DW Certification #: 9952 C
Wisconsin Certification #: 999407970
Wyoming UST Certification #: via A2LA 2926.01

Virginia Minnesota Certification ID's

315 Chestnut Street, Virginia, MN 55792
Alaska Certification UST-107
Montana Certificate #CERT0103
Minnesota Dept of Health Certification #: 027-137-445
North Dakota Certification: # R-203
Wisconsin DNR Certification # : 998027470
WA Department of Ecology Lab ID# C1007

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Florida: Cert E871149 SEKS WET
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221

REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10469389

Pennsylvania Certification IDs

KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

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SAMPLE SUMMARY

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10469389

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10469389001	**834662**	Water	04/03/19 09:20	04/03/19 14:35
10469389002	**834663**	Water	04/03/19 10:40	04/03/19 14:35
10469389003	**834661**	Water	04/03/19 11:35	04/03/19 14:35
10469389004	**FB-2**	Water	04/03/19 12:30	04/03/19 14:35
10469389005	**834660**	Water	04/03/19 13:30	04/03/19 14:35

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SAMPLE ANALYTE COUNT

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10469389

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10469389001	**834662**	EPA 8082A	RAG	11	PASI-M
		EPA 200.7	DM	9	PASI-M
		EPA 200.8	BWB	12	PASI-M
		EPA 8270D	STB	38	PASI-M
			CLJ	16	PASI-V
		EPA 900.0	CLA	2	PASI-PA
		EPA 300.0	KEO	1	PASI-M
		SM 3500-Cr B Modified	JFP	1	PASI-M
		EPA 350.1	CLJ	1	PASI-V
		EPA 350.1 rev. 2 (1993)	DMB	1	PASI-V
		SM 4500-CN-E	DCL	1	PASI-M
10469389002	**834663**	EPA 8082A	RAG	11	PASI-M
		EPA 200.7	DM	9	PASI-M
		EPA 200.8	BWB	12	PASI-M
		EPA 8270D	STB	38	PASI-M
			CLJ	16	PASI-V
		EPA 900.0	CLA	2	PASI-PA
		EPA 300.0	KEO	1	PASI-M
		SM 3500-Cr B Modified	JFP	1	PASI-M
		EPA 350.1	CLJ	1	PASI-V
		EPA 350.1 rev. 2 (1993)	DMB	1	PASI-V
		SM 4500-CN-E	DCL	1	PASI-M
10469389003	**834661**	EPA 8082A	RAG	11	PASI-M
		EPA 200.7	DM	9	PASI-M
		EPA 200.8	BWB	12	PASI-M
		EPA 8270D	STB	38	PASI-M
			CLJ	16	PASI-V
		EPA 900.0	CLA	2	PASI-PA
		EPA 300.0	KEO	1	PASI-M
		SM 3500-Cr B Modified	JFP	1	PASI-M
		EPA 350.1	CLJ	1	PASI-V
		EPA 350.1 rev. 2 (1993)	DMB	1	PASI-V
		SM 4500-CN-E	DCL	1	PASI-M
10469389004	**FB-2**	EPA 8082A	RAG	11	PASI-M
		EPA 200.7	DM	9	PASI-M
		EPA 200.8	BWB	12	PASI-M
		EPA 8270D	STB	38	PASI-M

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SAMPLE ANALYTE COUNT

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10469389

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 900.0	CLA	2	PASI-PA
		EPA 300.0	KEO	1	PASI-M
		SM 3500-Cr B Modified	JFP	1	PASI-M
		EPA 350.1 rev. 2 (1993)	DMB	1	PASI-V
		SM 4500-CN-E	DCL	1	PASI-M
10469389005	**834660**	EPA 8082A	RAG	11	PASI-M
		EPA 200.7	DM	9	PASI-M
		EPA 200.8	BWB	12	PASI-M
		EPA 8270D	STB	38	PASI-M
			CLJ	16	PASI-V
		EPA 900.0	CLA	2	PASI-PA
		EPA 300.0	KEO	1	PASI-M
		SM 3500-Cr B Modified	JFP	1	PASI-M
		EPA 350.1	CLJ	1	PASI-V
		EPA 350.1 rev. 2 (1993)	DMB	1	PASI-V
		SM 4500-CN-E	DCL	1	PASI-M

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10469389

Sample: 834662 **Lab ID: 10469389001** Collected: 04/03/19 09:20 Received: 04/03/19 14:35 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA Mod. 3510C							
PCB-1016 (Aroclor 1016)	ND	ug/L	0.098	1	04/04/19 17:38	04/08/19 10:36	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/L	0.098	1	04/04/19 17:38	04/08/19 10:36	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/L	0.098	1	04/04/19 17:38	04/08/19 10:36	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/L	0.098	1	04/04/19 17:38	04/08/19 10:36	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/L	0.098	1	04/04/19 17:38	04/08/19 10:36	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/L	0.098	1	04/04/19 17:38	04/08/19 10:36	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/L	0.098	1	04/04/19 17:38	04/08/19 10:36	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/L	0.098	1	04/04/19 17:38	04/08/19 10:36	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/L	0.098	1	04/04/19 17:38	04/08/19 10:36	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	51	%.	30-125	1	04/04/19 17:38	04/08/19 10:36	877-09-8	
Decachlorobiphenyl (S)	58	%.	30-125	1	04/04/19 17:38	04/08/19 10:36	2051-24-3	
200.7 MET ICP, Dissolved	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Aluminum, Dissolved	ND	ug/L	200	1	04/08/19 05:43	04/08/19 14:56	7429-90-5	
Barium, Dissolved	**354**	ug/L	10.0	1	04/08/19 05:43	04/08/19 14:56	7440-39-3	
Copper, Dissolved	ND	ug/L	10.0	1	04/08/19 05:43	04/08/19 14:56	7440-50-8	
Manganese, Dissolved	**433**	ug/L	5.0	1	04/08/19 05:43	04/08/19 14:56	7439-96-5	
Nickel, Dissolved	ND	ug/L	20.0	1	04/08/19 05:43	04/08/19 14:56	7440-02-0	
Silver, Dissolved	ND	ug/L	10.0	1	04/08/19 05:43	04/08/19 14:56	7440-22-4	
Tin, Dissolved	ND	ug/L	75.0	1	04/08/19 05:43	04/08/19 14:56	7440-31-5	
Total Hardness by 2340B, Dissolved	**883000**	ug/L	3300	1	04/08/19 05:43	04/08/19 14:56		
Zinc, Dissolved	ND	ug/L	20.0	1	04/08/19 05:43	04/08/19 14:56	7440-66-6	
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Dissolved	ND	ug/L	0.50	1	04/08/19 05:43	04/08/19 18:11	7440-36-0	
Arsenic, Dissolved	**0.84**	ug/L	0.50	1	04/08/19 05:43	04/08/19 18:11	7440-38-2	
Beryllium, Dissolved	ND	ug/L	0.20	1	04/08/19 05:43	04/08/19 18:11	7440-41-7	
Boron, Dissolved	**20600**	ug/L	2000	200	04/08/19 05:43	04/09/19 18:50	7440-42-8	
Cadmium, Dissolved	ND	ug/L	0.080	1	04/08/19 05:43	04/08/19 18:11	7440-43-9	
Chromium, Dissolved	**0.65**	ug/L	0.50	1	04/08/19 05:43	04/08/19 18:11	7440-47-3	
Cobalt, Dissolved	**1.0**	ug/L	0.50	1	04/08/19 05:43	04/08/19 18:11	7440-48-4	
Lead, Dissolved	ND	ug/L	0.10	1	04/08/19 05:43	04/08/19 18:11	7439-92-1	
Selenium, Dissolved	**7.0**	ug/L	0.50	1	04/08/19 05:43	04/08/19 18:11	7782-49-2	
Thallium, Dissolved	ND	ug/L	0.10	1	04/08/19 05:43	04/08/19 18:11	7440-28-0	
Uranium-238, Dissolved	**10.6**	ug/L	0.50	1	04/08/19 05:43	04/08/19 18:11	7440-61-1	
Vanadium, Dissolved	**1.7**	ug/L	1.0	1	04/08/19 05:43	04/08/19 18:11	7440-62-2	
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
Acenaphthene	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 16:15	83-32-9	
Anthracene	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 16:15	120-12-7	
Benzo(a)pyrene	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 16:15	50-32-8	
Benzoic acid	ND	ug/L	48.8	1	04/04/19 16:18	04/08/19 16:15	65-85-0	
4-Bromophenylphenyl ether	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 16:15	101-55-3	
Butylbenzylphthalate	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 16:15	85-68-7	
bis(2-Chloroethyl) ether	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 16:15	111-44-4	

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(612)607-1700

ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10469389

Sample: 834662 **Lab ID: 10469389001** Collected: 04/03/19 09:20 Received: 04/03/19 14:35 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
2-Chlorophenol	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 16:15	95-57-8	
3,3'-Dichlorobenzidine	ND	ug/L	48.8	1	04/04/19 16:18	04/08/19 16:15	91-94-1	
2,4-Dichlorophenol	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 16:15	120-83-2	
Diethylphthalate	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 16:15	84-66-2	
2,4-Dimethylphenol	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 16:15	105-67-9	
Dimethylphthalate	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 16:15	131-11-3	
Di-n-butylphthalate	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 16:15	84-74-2	
2,4-Dinitrophenol	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 16:15	51-28-5	
Di-n-octylphthalate	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 16:15	117-84-0	
bis(2-Ethylhexyl)phthalate	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 16:15	117-81-7	
Fluoranthene	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 16:15	206-44-0	
Fluorene	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 16:15	86-73-7	
Hexachlorobenzene	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 16:15	118-74-1	
Hexachlorocyclopentadiene	ND	ug/L	48.8	1	04/04/19 16:18	04/08/19 16:15	77-47-4	
Hexachloroethane	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 16:15	67-72-1	
Isophorone	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 16:15	78-59-1	
2-Methylnaphthalene	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 16:15	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 16:15	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/L	19.5	1	04/04/19 16:18	04/08/19 16:15		
N-Nitrosodimethylamine	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 16:15	62-75-9	
Pentachlorophenol	ND	ug/L	19.5	1	04/04/19 16:18	04/08/19 16:15	87-86-5	
Phenanthrene	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 16:15	85-01-8	
Phenol	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 16:15	108-95-2	
Pyrene	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 16:15	129-00-0	
2,4,6-Trichlorophenol	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 16:15	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	69	%.	55-125	1	04/04/19 16:18	04/08/19 16:15	4165-60-0	
2-Fluorobiphenyl (S)	71	%.	52-125	1	04/04/19 16:18	04/08/19 16:15	321-60-8	
p-Terphenyl-d14 (S)	68	%.	57-125	1	04/04/19 16:18	04/08/19 16:15	1718-51-0	
Phenol-d6 (S)	67	%.	30-125	1	04/04/19 16:18	04/08/19 16:15	13127-88-3	
2-Fluorophenol (S)	64	%.	30-125	1	04/04/19 16:18	04/08/19 16:15	367-12-4	
2,4,6-Tribromophenol (S)	80	%.	52-125	1	04/04/19 16:18	04/08/19 16:15	118-79-6	
Field Data	Analytical Method:							
Collected Date	**04/03/19**			1		04/03/19 09:20		
Collected Time	**0920**			1		04/03/19 09:20		
Field pH	**6.6**	Std. Units		1		04/03/19 09:20		
Field Temperature	**10.0**	deg C		1		04/03/19 09:20		
Field Specific Conductance	**1850**	umhos/cm		1		04/03/19 09:20		
Oxygen, Dissolved	**0.7**	mg/L		1		04/03/19 09:20	7782-44-7	
REDOX	**5**	mV		1		04/03/19 09:20		
Turbidity	**4.5**	NTU		1		04/03/19 09:20		
Apparent Color	**Clear**			1		04/03/19 09:20		
Odor	**No**			1		04/03/19 09:20		
Well Locked	**No**			1		04/03/19 09:20		
Purge Method	**Peristaltic pump**			1		04/03/19 09:20		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10469389

Sample: 834662 **Lab ID: 10469389001** Collected: 04/03/19 09:20 Received: 04/03/19 14:35 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:							
Total Well Depth	**21.32**	feet		1		04/03/19 09:20		
Depth of Water	**14.98**			1		04/03/19 09:20		
Well Volume Purged	**3.15**			1		04/03/19 09:20		
Purge Rate	**0.15**			1		04/03/19 09:20		
300.0 IC Anions	Analytical Method: EPA 300.0							
Chloride	**38.9**	mg/L	1.2	1		04/05/19 00:07	16887-00-6	
Chromium, Hexavalent	Analytical Method: SM 3500-Cr B Modified							
Chromium, Hexavalent	ND	mg/L	0.010	1		04/03/19 16:06		
350.1 Ammonia, Unionized	Analytical Method: EPA 350.1							
Nitrogen, Ammonia (Unionized)	ND	mg/L	0.010	1		04/10/19 16:18		
350.1 Ammonia, Distilled	Analytical Method: EPA 350.1 rev. 2 (1993) Preparation Method: EPA 350.1 rev. 2 (1993)							
Nitrogen, Ammonia	**7.2**	mg/L	0.11	1	04/09/19 08:29	04/09/19 12:38	7664-41-7	
SM4500CN-E Cyanide	Analytical Method: SM 4500-CN-E Preparation Method: SM 4500-CN-E							
Cyanide	**23.2**	ug/L	20.0	1	04/15/19 11:21	04/16/19 08:47	57-12-5	

Sample: 834663 **Lab ID: 10469389002** Collected: 04/03/19 10:40 Received: 04/03/19 14:35 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA Mod. 3510C							
PCB-1016 (Aroclor 1016)	ND	ug/L	0.097	1	04/04/19 17:38	04/08/19 10:51	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/L	0.097	1	04/04/19 17:38	04/08/19 10:51	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/L	0.097	1	04/04/19 17:38	04/08/19 10:51	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/L	0.097	1	04/04/19 17:38	04/08/19 10:51	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/L	0.097	1	04/04/19 17:38	04/08/19 10:51	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/L	0.097	1	04/04/19 17:38	04/08/19 10:51	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/L	0.097	1	04/04/19 17:38	04/08/19 10:51	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/L	0.097	1	04/04/19 17:38	04/08/19 10:51	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/L	0.097	1	04/04/19 17:38	04/08/19 10:51	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	49	%.	30-125	1	04/04/19 17:38	04/08/19 10:51	877-09-8	
Decachlorobiphenyl (S)	30	%.	30-125	1	04/04/19 17:38	04/08/19 10:51	2051-24-3	
200.7 MET ICP, Dissolved	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Aluminum, Dissolved	ND	ug/L	200	1	04/08/19 05:43	04/08/19 14:58	7429-90-5	
Barium, Dissolved	**545**	ug/L	10.0	1	04/08/19 05:43	04/08/19 14:58	7440-39-3	
Copper, Dissolved	ND	ug/L	10.0	1	04/08/19 05:43	04/08/19 14:58	7440-50-8	
Manganese, Dissolved	**478**	ug/L	5.0	1	04/08/19 05:43	04/08/19 14:58	7439-96-5	
Nickel, Dissolved	ND	ug/L	20.0	1	04/08/19 05:43	04/08/19 14:58	7440-02-0	
Silver, Dissolved	ND	ug/L	10.0	1	04/08/19 05:43	04/08/19 14:58	7440-22-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10469389

Sample: 834663 **Lab ID: 10469389002** Collected: 04/03/19 10:40 Received: 04/03/19 14:35 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 MET ICP, Dissolved	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Tin, Dissolved	ND	ug/L	75.0	1	04/08/19 05:43	04/08/19 14:58	7440-31-5	
Total Hardness by 2340B, Dissolved	**925000**	ug/L	3300	1	04/08/19 05:43	04/08/19 14:58		
Zinc, Dissolved	ND	ug/L	20.0	1	04/08/19 05:43	04/08/19 14:58	7440-66-6	
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Dissolved	ND	ug/L	0.50	1	04/08/19 05:43	04/08/19 18:17	7440-36-0	
Arsenic, Dissolved	**0.79**	ug/L	0.50	1	04/08/19 05:43	04/08/19 18:17	7440-38-2	
Beryllium, Dissolved	ND	ug/L	0.20	1	04/08/19 05:43	04/08/19 18:17	7440-41-7	
Boron, Dissolved	**38400**	ug/L	2000	200	04/08/19 05:43	04/09/19 18:53	7440-42-8	
Cadmium, Dissolved	ND	ug/L	0.080	1	04/08/19 05:43	04/08/19 18:17	7440-43-9	
Chromium, Dissolved	**2.3**	ug/L	0.50	1	04/08/19 05:43	04/08/19 18:17	7440-47-3	
Cobalt, Dissolved	**0.87**	ug/L	0.50	1	04/08/19 05:43	04/08/19 18:17	7440-48-4	
Lead, Dissolved	**0.76**	ug/L	0.10	1	04/08/19 05:43	04/08/19 18:17	7439-92-1	
Selenium, Dissolved	**0.94**	ug/L	0.50	1	04/08/19 05:43	04/08/19 18:17	7782-49-2	
Thallium, Dissolved	ND	ug/L	0.10	1	04/08/19 05:43	04/08/19 18:17	7440-28-0	
Uranium-238, Dissolved	**0.85**	ug/L	0.50	1	04/08/19 05:43	04/08/19 18:17	7440-61-1	
Vanadium, Dissolved	**2.8**	ug/L	1.0	1	04/08/19 05:43	04/08/19 18:17	7440-62-2	
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
Acenaphthene	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 16:40	83-32-9	
Anthracene	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 16:40	120-12-7	
Benzo(a)pyrene	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 16:40	50-32-8	
Benzoic acid	ND	ug/L	48.8	1	04/04/19 16:18	04/08/19 16:40	65-85-0	
4-Bromophenylphenyl ether	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 16:40	101-55-3	
Butylbenzylphthalate	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 16:40	85-68-7	
bis(2-Chloroethyl) ether	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 16:40	111-44-4	
2-Chlorophenol	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 16:40	95-57-8	
3,3'-Dichlorobenzidine	ND	ug/L	48.8	1	04/04/19 16:18	04/08/19 16:40	91-94-1	
2,4-Dichlorophenol	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 16:40	120-83-2	
Diethylphthalate	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 16:40	84-66-2	
2,4-Dimethylphenol	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 16:40	105-67-9	
Dimethylphthalate	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 16:40	131-11-3	
Di-n-butylphthalate	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 16:40	84-74-2	
2,4-Dinitrophenol	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 16:40	51-28-5	
Di-n-octylphthalate	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 16:40	117-84-0	
bis(2-Ethylhexyl)phthalate	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 16:40	117-81-7	
Fluoranthene	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 16:40	206-44-0	
Fluorene	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 16:40	86-73-7	
Hexachlorobenzene	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 16:40	118-74-1	
Hexachlorocyclopentadiene	ND	ug/L	48.8	1	04/04/19 16:18	04/08/19 16:40	77-47-4	
Hexachloroethane	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 16:40	67-72-1	
Isophorone	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 16:40	78-59-1	
2-Methylnaphthalene	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 16:40	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 16:40	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/L	19.5	1	04/04/19 16:18	04/08/19 16:40		
N-Nitrosodimethylamine	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 16:40	62-75-9	

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10469389

Sample: 834663 **Lab ID: 10469389002** Collected: 04/03/19 10:40 Received: 04/03/19 14:35 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
Pentachlorophenol	ND	ug/L	19.5	1	04/04/19 16:18	04/08/19 16:40	87-86-5	
Phenanthrene	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 16:40	85-01-8	
Phenol	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 16:40	108-95-2	
Pyrene	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 16:40	129-00-0	
2,4,6-Trichlorophenol	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 16:40	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	79	%.	55-125	1	04/04/19 16:18	04/08/19 16:40	4165-60-0	
2-Fluorobiphenyl (S)	78	%.	52-125	1	04/04/19 16:18	04/08/19 16:40	321-60-8	
p-Terphenyl-d14 (S)	72	%.	57-125	1	04/04/19 16:18	04/08/19 16:40	1718-51-0	
Phenol-d6 (S)	78	%.	30-125	1	04/04/19 16:18	04/08/19 16:40	13127-88-3	
2-Fluorophenol (S)	76	%.	30-125	1	04/04/19 16:18	04/08/19 16:40	367-12-4	
2,4,6-Tribromophenol (S)	89	%.	52-125	1	04/04/19 16:18	04/08/19 16:40	118-79-6	
Field Data	Analytical Method:							
Collected Date	**04/03/19**			1		04/03/19 10:40		
Collected Time	**1040**			1		04/03/19 10:40		
Field pH	**6.6**	Std. Units		1		04/03/19 10:40		
Field Temperature	**11.0**	deg C		1		04/03/19 10:40		
Field Specific Conductance	**2180**	umhos/cm		1		04/03/19 10:40		
Oxygen, Dissolved	**0.5**	mg/L		1		04/03/19 10:40	7782-44-7	
REDOX	**-88**	mV		1		04/03/19 10:40		
Turbidity	**14**	NTU		1		04/03/19 10:40		
Apparent Color	**Clear**			1		04/03/19 10:40		
Odor	**No**			1		04/03/19 10:40		
Well Locked	**No**			1		04/03/19 10:40		
Purge Method	**Dual Whale pump**			1		04/03/19 10:40		
Total Well Depth	**35.18**	feet		1		04/03/19 10:40		
Depth of Water	**15.07**			1		04/03/19 10:40		
Well Volume Purged	**11.25**			1		04/03/19 10:40		
Purge Rate	**1.25**			1		04/03/19 10:40		
300.0 IC Anions	Analytical Method: EPA 300.0							
Chloride	**74.4**	mg/L	12.0	10		04/05/19 04:42	16887-00-6	
Chromium, Hexavalent	Analytical Method: SM 3500-Cr B Modified							
Chromium, Hexavalent	**0.012**	mg/L	0.010	1		04/03/19 16:06		FS
350.1 Ammonia, Unionized	Analytical Method: EPA 350.1							
Nitrogen, Ammonia (Unionized)	**0.015**	mg/L	0.010	1		04/10/19 16:18		
350.1 Ammonia, Distilled	Analytical Method: EPA 350.1 rev. 2 (1993) Preparation Method: EPA 350.1 rev. 2 (1993)							
Nitrogen, Ammonia	**18.7**	mg/L	0.55	5	04/09/19 08:29	04/09/19 12:52	7664-41-7	
SM4500CN-E Cyanide	Analytical Method: SM 4500-CN-E Preparation Method: SM 4500-CN-E							
Cyanide	**44.8**	ug/L	20.0	1	04/15/19 11:21	04/16/19 08:48	57-12-5	

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10469389

Sample: 834661 **Lab ID: 10469389003** Collected: 04/03/19 11:35 Received: 04/03/19 14:35 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA Mod. 3510C							
PCB-1016 (Aroclor 1016)	ND	ug/L	0.097	1	04/04/19 17:38	04/08/19 11:06	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/L	0.097	1	04/04/19 17:38	04/08/19 11:06	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/L	0.097	1	04/04/19 17:38	04/08/19 11:06	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/L	0.097	1	04/04/19 17:38	04/08/19 11:06	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/L	0.097	1	04/04/19 17:38	04/08/19 11:06	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/L	0.097	1	04/04/19 17:38	04/08/19 11:06	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/L	0.097	1	04/04/19 17:38	04/08/19 11:06	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/L	0.097	1	04/04/19 17:38	04/08/19 11:06	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/L	0.097	1	04/04/19 17:38	04/08/19 11:06	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	58	%.	30-125	1	04/04/19 17:38	04/08/19 11:06	877-09-8	
Decachlorobiphenyl (S)	32	%.	30-125	1	04/04/19 17:38	04/08/19 11:06	2051-24-3	
200.7 MET ICP, Dissolved	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Aluminum, Dissolved	ND	ug/L	200	1	04/08/19 05:43	04/08/19 14:59	7429-90-5	
Barium, Dissolved	**440**	ug/L	10.0	1	04/08/19 05:43	04/08/19 14:59	7440-39-3	
Copper, Dissolved	ND	ug/L	10.0	1	04/08/19 05:43	04/08/19 14:59	7440-50-8	
Manganese, Dissolved	**414**	ug/L	5.0	1	04/08/19 05:43	04/08/19 14:59	7439-96-5	
Nickel, Dissolved	ND	ug/L	20.0	1	04/08/19 05:43	04/08/19 14:59	7440-02-0	
Silver, Dissolved	ND	ug/L	10.0	1	04/08/19 05:43	04/08/19 14:59	7440-22-4	
Tin, Dissolved	ND	ug/L	75.0	1	04/08/19 05:43	04/08/19 14:59	7440-31-5	
Total Hardness by 2340B, Dissolved	**560000**	ug/L	3300	1	04/08/19 05:43	04/08/19 14:59		
Zinc, Dissolved	ND	ug/L	20.0	1	04/08/19 05:43	04/08/19 14:59	7440-66-6	
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Dissolved	ND	ug/L	0.50	1	04/08/19 05:43	04/08/19 18:33	7440-36-0	
Arsenic, Dissolved	**1.2**	ug/L	0.50	1	04/08/19 05:43	04/08/19 18:33	7440-38-2	
Beryllium, Dissolved	ND	ug/L	0.20	1	04/08/19 05:43	04/08/19 18:33	7440-41-7	
Boron, Dissolved	**9800**	ug/L	1000	100	04/08/19 05:43	04/09/19 18:56	7440-42-8	
Cadmium, Dissolved	ND	ug/L	0.080	1	04/08/19 05:43	04/08/19 18:33	7440-43-9	
Chromium, Dissolved	**4.2**	ug/L	0.50	1	04/08/19 05:43	04/08/19 18:33	7440-47-3	
Cobalt, Dissolved	**0.67**	ug/L	0.50	1	04/08/19 05:43	04/08/19 18:33	7440-48-4	
Lead, Dissolved	**0.25**	ug/L	0.10	1	04/08/19 05:43	04/08/19 18:33	7439-92-1	
Selenium, Dissolved	ND	ug/L	0.50	1	04/08/19 05:43	04/08/19 18:33	7782-49-2	
Thallium, Dissolved	ND	ug/L	0.10	1	04/08/19 05:43	04/08/19 18:33	7440-28-0	
Uranium-238, Dissolved	**0.90**	ug/L	0.50	1	04/08/19 05:43	04/08/19 18:33	7440-61-1	
Vanadium, Dissolved	**2.0**	ug/L	1.0	1	04/08/19 05:43	04/08/19 18:33	7440-62-2	
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
Acenaphthene	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 17:05	83-32-9	
Anthracene	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 17:05	120-12-7	
Benzo(a)pyrene	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 17:05	50-32-8	
Benzoic acid	ND	ug/L	49.0	1	04/04/19 16:18	04/08/19 17:05	65-85-0	
4-Bromophenylphenyl ether	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 17:05	101-55-3	
Butylbenzylphthalate	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 17:05	85-68-7	
bis(2-Chloroethyl) ether	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 17:05	111-44-4	

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10469389

Sample: 834661 **Lab ID: 10469389003** Collected: 04/03/19 11:35 Received: 04/03/19 14:35 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
2-Chlorophenol	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 17:05	95-57-8	
3,3'-Dichlorobenzidine	ND	ug/L	49.0	1	04/04/19 16:18	04/08/19 17:05	91-94-1	
2,4-Dichlorophenol	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 17:05	120-83-2	
Diethylphthalate	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 17:05	84-66-2	
2,4-Dimethylphenol	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 17:05	105-67-9	
Dimethylphthalate	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 17:05	131-11-3	
Di-n-butylphthalate	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 17:05	84-74-2	
2,4-Dinitrophenol	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 17:05	51-28-5	
Di-n-octylphthalate	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 17:05	117-84-0	
bis(2-Ethylhexyl)phthalate	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 17:05	117-81-7	
Fluoranthene	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 17:05	206-44-0	
Fluorene	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 17:05	86-73-7	
Hexachlorobenzene	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 17:05	118-74-1	
Hexachlorocyclopentadiene	ND	ug/L	49.0	1	04/04/19 16:18	04/08/19 17:05	77-47-4	
Hexachloroethane	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 17:05	67-72-1	
Isophorone	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 17:05	78-59-1	
2-Methylnaphthalene	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 17:05	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 17:05	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/L	19.6	1	04/04/19 16:18	04/08/19 17:05		
N-Nitrosodimethylamine	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 17:05	62-75-9	
Pentachlorophenol	ND	ug/L	19.6	1	04/04/19 16:18	04/08/19 17:05	87-86-5	
Phenanthrene	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 17:05	85-01-8	
Phenol	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 17:05	108-95-2	
Pyrene	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 17:05	129-00-0	
2,4,6-Trichlorophenol	ND	ug/L	9.8	1	04/04/19 16:18	04/08/19 17:05	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	80	%.	55-125	1	04/04/19 16:18	04/08/19 17:05	4165-60-0	
2-Fluorobiphenyl (S)	79	%.	52-125	1	04/04/19 16:18	04/08/19 17:05	321-60-8	
p-Terphenyl-d14 (S)	74	%.	57-125	1	04/04/19 16:18	04/08/19 17:05	1718-51-0	
Phenol-d6 (S)	78	%.	30-125	1	04/04/19 16:18	04/08/19 17:05	13127-88-3	
2-Fluorophenol (S)	76	%.	30-125	1	04/04/19 16:18	04/08/19 17:05	367-12-4	
2,4,6-Tribromophenol (S)	90	%.	52-125	1	04/04/19 16:18	04/08/19 17:05	118-79-6	
Field Data	Analytical Method:							
Collected Date	**04/03/19**			1		04/03/19 11:35		
Collected Time	**1135**			1		04/03/19 11:35		
Field pH	**6.7**	Std. Units		1		04/03/19 11:35		
Field Temperature	**10.0**	deg C		1		04/03/19 11:35		
Field Specific Conductance	**1450**	umhos/cm		1		04/03/19 11:35		
Oxygen, Dissolved	**1.0**	mg/L		1		04/03/19 11:35	7782-44-7	
REDOX	**-93**	mV		1		04/03/19 11:35		
Turbidity	**9.9**	NTU		1		04/03/19 11:35		
Apparent Color	**Slightly Cloudy**			1		04/03/19 11:35		
Odor	**No**			1		04/03/19 11:35		
Well Locked	**No**			1		04/03/19 11:35		

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10469389

Sample: 834661 **Lab ID: 10469389003** Collected: 04/03/19 11:35 Received: 04/03/19 14:35 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:							
Purge Method	**Dual Whale pump**			1		04/03/19 11:35		
Total Well Depth	**38.03**	feet		1		04/03/19 11:35		
Depth of Water	**17.43**			1		04/03/19 11:35		
Well Volume Purged	**11.25**			1		04/03/19 11:35		
Purge Rate	**1.25**			1		04/03/19 11:35		
300.0 IC Anions	Analytical Method: EPA 300.0							
Chloride	**44.6**	mg/L	1.2	1		04/05/19 00:37	16887-00-6	
Chromium, Hexavalent	Analytical Method: SM 3500-Cr B Modified							
Chromium, Hexavalent	ND	mg/L	0.010	1		04/03/19 16:06		FS
350.1 Ammonia, Unionized	Analytical Method: EPA 350.1							
Nitrogen, Ammonia (Unionized)	**0.019**	mg/L	0.010	1		04/10/19 16:26		
350.1 Ammonia, Distilled	Analytical Method: EPA 350.1 rev. 2 (1993) Preparation Method: EPA 350.1 rev. 2 (1993)							
Nitrogen, Ammonia	**20.2**	mg/L	0.55	5	04/09/19 08:29	04/09/19 12:55	7664-41-7	
SM4500CN-E Cyanide	Analytical Method: SM 4500-CN-E Preparation Method: SM 4500-CN-E							
Cyanide	ND	ug/L	20.0	1	04/15/19 11:21	04/16/19 08:49	57-12-5	

Sample: FB-2 **Lab ID: 10469389004** Collected: 04/03/19 12:30 Received: 04/03/19 14:35 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA Mod. 3510C							
PCB-1016 (Aroclor 1016)	ND	ug/L	0.097	1	04/04/19 17:38	04/08/19 11:21	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/L	0.097	1	04/04/19 17:38	04/08/19 11:21	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/L	0.097	1	04/04/19 17:38	04/08/19 11:21	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/L	0.097	1	04/04/19 17:38	04/08/19 11:21	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/L	0.097	1	04/04/19 17:38	04/08/19 11:21	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/L	0.097	1	04/04/19 17:38	04/08/19 11:21	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/L	0.097	1	04/04/19 17:38	04/08/19 11:21	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/L	0.097	1	04/04/19 17:38	04/08/19 11:21	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/L	0.097	1	04/04/19 17:38	04/08/19 11:21	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	45	%.	30-125	1	04/04/19 17:38	04/08/19 11:21	877-09-8	
Decachlorobiphenyl (S)	46	%.	30-125	1	04/04/19 17:38	04/08/19 11:21	2051-24-3	
200.7 MET ICP, Dissolved	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Aluminum, Dissolved	ND	ug/L	200	1	04/08/19 05:43	04/08/19 15:01	7429-90-5	
Barium, Dissolved	ND	ug/L	10.0	1	04/08/19 05:43	04/08/19 15:01	7440-39-3	
Copper, Dissolved	ND	ug/L	10.0	1	04/08/19 05:43	04/08/19 15:01	7440-50-8	
Manganese, Dissolved	ND	ug/L	5.0	1	04/08/19 05:43	04/08/19 15:01	7439-96-5	

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10469389

Sample: FB-2 **Lab ID: 10469389004** Collected: 04/03/19 12:30 Received: 04/03/19 14:35 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 MET ICP, Dissolved	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Nickel, Dissolved	ND	ug/L	20.0	1	04/08/19 05:43	04/08/19 15:01	7440-02-0	
Silver, Dissolved	ND	ug/L	10.0	1	04/08/19 05:43	04/08/19 15:01	7440-22-4	
Tin, Dissolved	ND	ug/L	75.0	1	04/08/19 05:43	04/08/19 15:01	7440-31-5	
Total Hardness by 2340B, Dissolved	ND	ug/L	3300	1	04/08/19 05:43	04/08/19 15:01		
Zinc, Dissolved	ND	ug/L	20.0	1	04/08/19 05:43	04/08/19 15:01	7440-66-6	
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Dissolved	ND	ug/L	0.50	1	04/08/19 05:43	04/08/19 18:39	7440-36-0	
Arsenic, Dissolved	ND	ug/L	0.50	1	04/08/19 05:43	04/08/19 18:39	7440-38-2	
Beryllium, Dissolved	ND	ug/L	0.20	1	04/08/19 05:43	04/08/19 18:39	7440-41-7	
Boron, Dissolved	ND	ug/L	10.0	1	04/08/19 05:43	04/09/19 18:37	7440-42-8	
Cadmium, Dissolved	ND	ug/L	0.080	1	04/08/19 05:43	04/08/19 18:39	7440-43-9	
Chromium, Dissolved	ND	ug/L	0.50	1	04/08/19 05:43	04/08/19 18:39	7440-47-3	
Cobalt, Dissolved	ND	ug/L	0.50	1	04/08/19 05:43	04/08/19 18:39	7440-48-4	
Lead, Dissolved	ND	ug/L	0.10	1	04/08/19 05:43	04/08/19 18:39	7439-92-1	
Selenium, Dissolved	ND	ug/L	0.50	1	04/08/19 05:43	04/08/19 18:39	7782-49-2	
Thallium, Dissolved	ND	ug/L	0.10	1	04/08/19 05:43	04/08/19 18:39	7440-28-0	
Uranium-238, Dissolved	ND	ug/L	0.50	1	04/08/19 05:43	04/08/19 18:39	7440-61-1	
Vanadium, Dissolved	ND	ug/L	1.0	1	04/08/19 05:43	04/08/19 18:39	7440-62-2	
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
Acenaphthene	ND	ug/L	9.6	1	04/04/19 16:18	04/08/19 17:30	83-32-9	
Anthracene	ND	ug/L	9.6	1	04/04/19 16:18	04/08/19 17:30	120-12-7	
Benzo(a)pyrene	ND	ug/L	9.6	1	04/04/19 16:18	04/08/19 17:30	50-32-8	
Benzoic acid	ND	ug/L	48.1	1	04/04/19 16:18	04/08/19 17:30	65-85-0	
4-Bromophenylphenyl ether	ND	ug/L	9.6	1	04/04/19 16:18	04/08/19 17:30	101-55-3	
Butylbenzylphthalate	ND	ug/L	9.6	1	04/04/19 16:18	04/08/19 17:30	85-68-7	
bis(2-Chloroethyl) ether	ND	ug/L	9.6	1	04/04/19 16:18	04/08/19 17:30	111-44-4	
2-Chlorophenol	ND	ug/L	9.6	1	04/04/19 16:18	04/08/19 17:30	95-57-8	
3,3'-Dichlorobenzidine	ND	ug/L	48.1	1	04/04/19 16:18	04/08/19 17:30	91-94-1	
2,4-Dichlorophenol	ND	ug/L	9.6	1	04/04/19 16:18	04/08/19 17:30	120-83-2	
Diethylphthalate	ND	ug/L	9.6	1	04/04/19 16:18	04/08/19 17:30	84-66-2	
2,4-Dimethylphenol	ND	ug/L	9.6	1	04/04/19 16:18	04/08/19 17:30	105-67-9	
Dimethylphthalate	ND	ug/L	9.6	1	04/04/19 16:18	04/08/19 17:30	131-11-3	
Di-n-butylphthalate	ND	ug/L	9.6	1	04/04/19 16:18	04/08/19 17:30	84-74-2	
2,4-Dinitrophenol	ND	ug/L	9.6	1	04/04/19 16:18	04/08/19 17:30	51-28-5	
Di-n-octylphthalate	ND	ug/L	9.6	1	04/04/19 16:18	04/08/19 17:30	117-84-0	
bis(2-Ethylhexyl)phthalate	ND	ug/L	9.6	1	04/04/19 16:18	04/08/19 17:30	117-81-7	
Fluoranthene	ND	ug/L	9.6	1	04/04/19 16:18	04/08/19 17:30	206-44-0	
Fluorene	ND	ug/L	9.6	1	04/04/19 16:18	04/08/19 17:30	86-73-7	
Hexachlorobenzene	ND	ug/L	9.6	1	04/04/19 16:18	04/08/19 17:30	118-74-1	
Hexachlorocyclopentadiene	ND	ug/L	48.1	1	04/04/19 16:18	04/08/19 17:30	77-47-4	
Hexachloroethane	ND	ug/L	9.6	1	04/04/19 16:18	04/08/19 17:30	67-72-1	
Isophorone	ND	ug/L	9.6	1	04/04/19 16:18	04/08/19 17:30	78-59-1	
2-Methylnaphthalene	ND	ug/L	9.6	1	04/04/19 16:18	04/08/19 17:30	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/L	9.6	1	04/04/19 16:18	04/08/19 17:30	95-48-7	

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10469389

Sample: FB-2 **Lab ID: 10469389004** Collected: 04/03/19 12:30 Received: 04/03/19 14:35 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
3&4-Methylphenol(m&p Cresol)	ND	ug/L	19.2	1	04/04/19 16:18	04/08/19 17:30		
N-Nitrosodimethylamine	ND	ug/L	9.6	1	04/04/19 16:18	04/08/19 17:30	62-75-9	
Pentachlorophenol	ND	ug/L	19.2	1	04/04/19 16:18	04/08/19 17:30	87-86-5	
Phenanthrene	ND	ug/L	9.6	1	04/04/19 16:18	04/08/19 17:30	85-01-8	
Phenol	ND	ug/L	9.6	1	04/04/19 16:18	04/08/19 17:30	108-95-2	
Pyrene	ND	ug/L	9.6	1	04/04/19 16:18	04/08/19 17:30	129-00-0	
2,4,6-Trichlorophenol	ND	ug/L	9.6	1	04/04/19 16:18	04/08/19 17:30	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	60	%.	55-125	1	04/04/19 16:18	04/08/19 17:30	4165-60-0	
2-Fluorobiphenyl (S)	57	%.	52-125	1	04/04/19 16:18	04/08/19 17:30	321-60-8	
p-Terphenyl-d14 (S)	63	%.	57-125	1	04/04/19 16:18	04/08/19 17:30	1718-51-0	
Phenol-d6 (S)	57	%.	30-125	1	04/04/19 16:18	04/08/19 17:30	13127-88-3	
2-Fluorophenol (S)	56	%.	30-125	1	04/04/19 16:18	04/08/19 17:30	367-12-4	
2,4,6-Tribromophenol (S)	70	%.	52-125	1	04/04/19 16:18	04/08/19 17:30	118-79-6	
300.0 IC Anions	Analytical Method: EPA 300.0							
Chloride	ND	mg/L	1.2	1		04/05/19 04:07	16887-00-6	
Chromium, Hexavalent	Analytical Method: SM 3500-Cr B Modified							
Chromium, Hexavalent	ND	mg/L	0.010	1		04/03/19 16:06		
350.1 Ammonia, Distilled	Analytical Method: EPA 350.1 rev. 2 (1993) Preparation Method: EPA 350.1 rev. 2 (1993)							
Nitrogen, Ammonia	ND	mg/L	0.11	1	04/09/19 08:29	04/09/19 12:42	7664-41-7	
SM4500CN-E Cyanide	Analytical Method: SM 4500-CN-E Preparation Method: SM 4500-CN-E							
Cyanide	ND	ug/L	20.0	1	04/15/19 11:21	04/16/19 08:51	57-12-5	

Sample: 834660 **Lab ID: 10469389005** Collected: 04/03/19 13:30 Received: 04/03/19 14:35 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA Mod. 3510C							
PCB-1016 (Aroclor 1016)	ND	ug/L	0.098	1	04/04/19 17:38	04/08/19 11:36	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/L	0.098	1	04/04/19 17:38	04/08/19 11:36	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/L	0.098	1	04/04/19 17:38	04/08/19 11:36	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/L	0.098	1	04/04/19 17:38	04/08/19 11:36	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/L	0.098	1	04/04/19 17:38	04/08/19 11:36	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/L	0.098	1	04/04/19 17:38	04/08/19 11:36	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/L	0.098	1	04/04/19 17:38	04/08/19 11:36	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/L	0.098	1	04/04/19 17:38	04/08/19 11:36	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/L	0.098	1	04/04/19 17:38	04/08/19 11:36	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	57	%.	30-125	1	04/04/19 17:38	04/08/19 11:36	877-09-8	
Decachlorobiphenyl (S)	75	%.	30-125	1	04/04/19 17:38	04/08/19 11:36	2051-24-3	

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10469389

Sample: 834660 **Lab ID: 10469389005** Collected: 04/03/19 13:30 Received: 04/03/19 14:35 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 MET ICP, Dissolved	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Aluminum, Dissolved	ND	ug/L	200	1	04/08/19 05:43	04/08/19 15:03	7429-90-5	
Barium, Dissolved	**54.4**	ug/L	10.0	1	04/08/19 05:43	04/08/19 15:03	7440-39-3	
Copper, Dissolved	ND	ug/L	10.0	1	04/08/19 05:43	04/08/19 15:03	7440-50-8	
Manganese, Dissolved	**604**	ug/L	5.0	1	04/08/19 05:43	04/08/19 15:03	7439-96-5	
Nickel, Dissolved	ND	ug/L	20.0	1	04/08/19 05:43	04/08/19 15:03	7440-02-0	
Silver, Dissolved	ND	ug/L	10.0	1	04/08/19 05:43	04/08/19 15:03	7440-22-4	
Tin, Dissolved	ND	ug/L	75.0	1	04/08/19 05:43	04/08/19 15:03	7440-31-5	
Total Hardness by 2340B, Dissolved	**506000**	ug/L	3300	1	04/08/19 05:43	04/08/19 15:03		
Zinc, Dissolved	ND	ug/L	20.0	1	04/08/19 05:43	04/08/19 15:03	7440-66-6	
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Dissolved	**3.6**	ug/L	0.50	1	04/08/19 05:43	04/08/19 18:45	7440-36-0	
Arsenic, Dissolved	**6.3**	ug/L	0.50	1	04/08/19 05:43	04/08/19 18:45	7440-38-2	
Beryllium, Dissolved	ND	ug/L	0.20	1	04/08/19 05:43	04/08/19 18:45	7440-41-7	
Boron, Dissolved	**18700**	ug/L	2000	200	04/08/19 05:43	04/09/19 18:59	7440-42-8	
Cadmium, Dissolved	ND	ug/L	0.080	1	04/08/19 05:43	04/08/19 18:45	7440-43-9	
Chromium, Dissolved	ND	ug/L	0.50	1	04/08/19 05:43	04/08/19 18:45	7440-47-3	
Cobalt, Dissolved	**1.2**	ug/L	0.50	1	04/08/19 05:43	04/08/19 18:45	7440-48-4	
Lead, Dissolved	ND	ug/L	0.10	1	04/08/19 05:43	04/08/19 18:45	7439-92-1	
Selenium, Dissolved	**19.0**	ug/L	0.50	1	04/08/19 05:43	04/08/19 18:45	7782-49-2	
Thallium, Dissolved	ND	ug/L	0.10	1	04/08/19 05:43	04/08/19 18:45	7440-28-0	
Uranium-238, Dissolved	**10.4**	ug/L	0.50	1	04/08/19 05:43	04/08/19 18:45	7440-61-1	
Vanadium, Dissolved	**8.1**	ug/L	1.0	1	04/08/19 05:43	04/08/19 18:45	7440-62-2	
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
Acenaphthene	ND	ug/L	9.9	1	04/04/19 16:18	04/08/19 17:55	83-32-9	
Anthracene	ND	ug/L	9.9	1	04/04/19 16:18	04/08/19 17:55	120-12-7	
Benzo(a)pyrene	ND	ug/L	9.9	1	04/04/19 16:18	04/08/19 17:55	50-32-8	
Benzoic acid	ND	ug/L	49.3	1	04/04/19 16:18	04/08/19 17:55	65-85-0	
4-Bromophenylphenyl ether	ND	ug/L	9.9	1	04/04/19 16:18	04/08/19 17:55	101-55-3	
Butylbenzylphthalate	ND	ug/L	9.9	1	04/04/19 16:18	04/08/19 17:55	85-68-7	
bis(2-Chloroethyl) ether	ND	ug/L	9.9	1	04/04/19 16:18	04/08/19 17:55	111-44-4	
2-Chlorophenol	ND	ug/L	9.9	1	04/04/19 16:18	04/08/19 17:55	95-57-8	
3,3'-Dichlorobenzidine	ND	ug/L	49.3	1	04/04/19 16:18	04/08/19 17:55	91-94-1	
2,4-Dichlorophenol	ND	ug/L	9.9	1	04/04/19 16:18	04/08/19 17:55	120-83-2	
Diethylphthalate	ND	ug/L	9.9	1	04/04/19 16:18	04/08/19 17:55	84-66-2	
2,4-Dimethylphenol	ND	ug/L	9.9	1	04/04/19 16:18	04/08/19 17:55	105-67-9	
Dimethylphthalate	ND	ug/L	9.9	1	04/04/19 16:18	04/08/19 17:55	131-11-3	
Di-n-butylphthalate	ND	ug/L	9.9	1	04/04/19 16:18	04/08/19 17:55	84-74-2	
2,4-Dinitrophenol	ND	ug/L	9.9	1	04/04/19 16:18	04/08/19 17:55	51-28-5	
Di-n-octylphthalate	ND	ug/L	9.9	1	04/04/19 16:18	04/08/19 17:55	117-84-0	
bis(2-Ethylhexyl)phthalate	ND	ug/L	9.9	1	04/04/19 16:18	04/08/19 17:55	117-81-7	
Fluoranthene	ND	ug/L	9.9	1	04/04/19 16:18	04/08/19 17:55	206-44-0	
Fluorene	ND	ug/L	9.9	1	04/04/19 16:18	04/08/19 17:55	86-73-7	
Hexachlorobenzene	ND	ug/L	9.9	1	04/04/19 16:18	04/08/19 17:55	118-74-1	
Hexachlorocyclopentadiene	ND	ug/L	49.3	1	04/04/19 16:18	04/08/19 17:55	77-47-4	

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10469389

Sample: 834660 **Lab ID: 10469389005** Collected: 04/03/19 13:30 Received: 04/03/19 14:35 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
Hexachloroethane	ND	ug/L	9.9	1	04/04/19 16:18	04/08/19 17:55	67-72-1	
Isophorone	ND	ug/L	9.9	1	04/04/19 16:18	04/08/19 17:55	78-59-1	
2-Methylnaphthalene	ND	ug/L	9.9	1	04/04/19 16:18	04/08/19 17:55	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/L	9.9	1	04/04/19 16:18	04/08/19 17:55	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/L	19.7	1	04/04/19 16:18	04/08/19 17:55		
N-Nitrosodimethylamine	ND	ug/L	9.9	1	04/04/19 16:18	04/08/19 17:55	62-75-9	
Pentachlorophenol	ND	ug/L	19.7	1	04/04/19 16:18	04/08/19 17:55	87-86-5	
Phenanthrene	ND	ug/L	9.9	1	04/04/19 16:18	04/08/19 17:55	85-01-8	
Phenol	ND	ug/L	9.9	1	04/04/19 16:18	04/08/19 17:55	108-95-2	
Pyrene	ND	ug/L	9.9	1	04/04/19 16:18	04/08/19 17:55	129-00-0	
2,4,6-Trichlorophenol	ND	ug/L	9.9	1	04/04/19 16:18	04/08/19 17:55	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	70	%.	55-125	1	04/04/19 16:18	04/08/19 17:55	4165-60-0	
2-Fluorobiphenyl (S)	71	%.	52-125	1	04/04/19 16:18	04/08/19 17:55	321-60-8	
p-Terphenyl-d14 (S)	73	%.	57-125	1	04/04/19 16:18	04/08/19 17:55	1718-51-0	
Phenol-d6 (S)	68	%.	30-125	1	04/04/19 16:18	04/08/19 17:55	13127-88-3	
2-Fluorophenol (S)	68	%.	30-125	1	04/04/19 16:18	04/08/19 17:55	367-12-4	
2,4,6-Tribromophenol (S)	85	%.	52-125	1	04/04/19 16:18	04/08/19 17:55	118-79-6	
Field Data	Analytical Method:							
Collected Date	**04/03/19**			1		04/03/19 13:30		
Collected Time	**1330**			1		04/03/19 13:30		
Field pH	**7.4**	Std. Units		1		04/03/19 13:30		
Field Temperature	**9.5**	deg C		1		04/03/19 13:30		
Field Specific Conductance	**1140**	umhos/cm		1		04/03/19 13:30		
Oxygen, Dissolved	**3.7**	mg/L		1		04/03/19 13:30	7782-44-7	
REDOX	**-30**	mV		1		04/03/19 13:30		
Turbidity	**114**	NTU		1		04/03/19 13:30		
Apparent Color	**Slightly Cloudy**			1		04/03/19 13:30		
Odor	**No**			1		04/03/19 13:30		
Well Locked	**No**			1		04/03/19 13:30		
Purge Method	**Peristaltic pump**			1		04/03/19 13:30		
Total Well Depth	**20.29**	feet		1		04/03/19 13:30		
Depth of Water	**11.64**			1		04/03/19 13:30		
Well Volume Purged	**4.5**			1		04/03/19 13:30		
Purge Rate	**1.25/0.15**			1		04/03/19 13:30		
300.0 IC Anions	Analytical Method: EPA 300.0							
Chloride	**25.0**	mg/L	1.2	1		04/05/19 00:52	16887-00-6	
Chromium, Hexavalent	Analytical Method: SM 3500-Cr B Modified							
Chromium, Hexavalent	ND	mg/L	0.010	1		04/03/19 16:06		FS,M1
350.1 Ammonia, Unionized	Analytical Method: EPA 350.1							
Nitrogen, Ammonia (Unionized)	ND	mg/L	0.010	1		04/10/19 16:34		

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10469389

Sample: 834660 **Lab ID: 10469389005** Collected: 04/03/19 13:30 Received: 04/03/19 14:35 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
350.1 Ammonia, Distilled	Analytical Method: EPA 350.1 rev. 2 (1993) Preparation Method: EPA 350.1 rev. 2 (1993)							
Nitrogen, Ammonia	**0.40**	mg/L	0.11	1	04/09/19 08:29	04/09/19 12:44	7664-41-7	
SM4500CN-E Cyanide	Analytical Method: SM 4500-CN-E Preparation Method: SM 4500-CN-E							
Cyanide	ND	ug/L	20.0	1	04/15/19 11:21	04/16/19 08:53	57-12-5	

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10469389

QC Batch: 597783 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 MET Dissolved
Associated Lab Samples: 10469389001, 10469389002, 10469389003, 10469389004, 10469389005

METHOD BLANK: 3232443 Matrix: Water
Associated Lab Samples: 10469389001, 10469389002, 10469389003, 10469389004, 10469389005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum, Dissolved	ug/L	ND	200	04/08/19 14:35	
Barium, Dissolved	ug/L	ND	10.0	04/08/19 14:35	
Copper, Dissolved	ug/L	ND	10.0	04/08/19 14:35	
Manganese, Dissolved	ug/L	ND	5.0	04/08/19 14:35	
Nickel, Dissolved	ug/L	ND	20.0	04/08/19 14:35	
Silver, Dissolved	ug/L	ND	10.0	04/08/19 14:35	
Tin, Dissolved	ug/L	ND	75.0	04/08/19 14:35	
Zinc, Dissolved	ug/L	ND	20.0	04/08/19 14:35	

LABORATORY CONTROL SAMPLE: 3232444

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum, Dissolved	ug/L	20000	21300	106	85-115	
Barium, Dissolved	ug/L	1000	1030	103	85-115	
Copper, Dissolved	ug/L	1000	977	98	85-115	
Manganese, Dissolved	ug/L	1000	1040	104	85-115	
Nickel, Dissolved	ug/L	1000	1010	101	85-115	
Silver, Dissolved	ug/L	500	509	102	85-115	
Tin, Dissolved	ug/L	1000	1030	103	85-115	
Zinc, Dissolved	ug/L	1000	1020	102	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3232445 3232446

Parameter	Units	10469416002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum, Dissolved	ug/L	ND	20000	20000	22600	22700	113	113	70-130	0	20	
Barium, Dissolved	ug/L	515	1000	1000	1570	1560	105	105	70-130	0	20	
Copper, Dissolved	ug/L	ND	1000	1000	1060	1060	106	106	70-130	0	20	
Manganese, Dissolved	ug/L	494	1000	1000	1550	1540	106	104	70-130	1	20	
Nickel, Dissolved	ug/L	ND	1000	1000	1000	996	100	99	70-130	1	20	
Silver, Dissolved	ug/L	ND	500	500	553	553	111	111	70-130	0	20	
Tin, Dissolved	ug/L	ND	1000	1000	1020	1010	102	100	70-130	2	20	
Zinc, Dissolved	ug/L	ND	1000	1000	992	984	99	98	70-130	1	20	

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10469389

QC Batch: 597782 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET Dissolved
Associated Lab Samples: 10469389001, 10469389002, 10469389003, 10469389004, 10469389005

METHOD BLANK: 3232439 Matrix: Water
Associated Lab Samples: 10469389001, 10469389002, 10469389003, 10469389004, 10469389005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony, Dissolved	ug/L	ND	0.50	04/08/19 17:24	
Arsenic, Dissolved	ug/L	ND	0.50	04/08/19 17:24	
Beryllium, Dissolved	ug/L	ND	0.20	04/08/19 17:24	
Boron, Dissolved	ug/L	ND	10.0	04/08/19 17:24	
Cadmium, Dissolved	ug/L	ND	0.080	04/08/19 17:24	
Chromium, Dissolved	ug/L	ND	0.50	04/08/19 17:24	
Cobalt, Dissolved	ug/L	ND	0.50	04/08/19 17:24	
Lead, Dissolved	ug/L	ND	0.10	04/08/19 17:24	
Selenium, Dissolved	ug/L	ND	0.50	04/08/19 17:24	
Thallium, Dissolved	ug/L	ND	0.10	04/08/19 17:24	
Uranium-238, Dissolved	ug/L	ND	0.50	04/08/19 17:24	
Vanadium, Dissolved	ug/L	ND	1.0	04/08/19 17:24	

LABORATORY CONTROL SAMPLE: 3232440

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony, Dissolved	ug/L	100	99.7	100	85-115	
Arsenic, Dissolved	ug/L	100	98.0	98	85-115	
Beryllium, Dissolved	ug/L	100	103	103	85-115	
Boron, Dissolved	ug/L	100	101	101	85-115	
Cadmium, Dissolved	ug/L	100	103	103	85-115	
Chromium, Dissolved	ug/L	100	107	107	85-115	
Cobalt, Dissolved	ug/L	100	106	106	85-115	
Lead, Dissolved	ug/L	100	108	108	85-115	
Selenium, Dissolved	ug/L	100	103	103	85-115	
Thallium, Dissolved	ug/L	100	107	107	85-115	
Uranium-238, Dissolved	ug/L	100	102	102	85-115	
Vanadium, Dissolved	ug/L	100	106	106	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3232441 3232442

Parameter	Units	10469416001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony, Dissolved	ug/L	ND	100	100	105	102	105	102	70-130	3	20	
Arsenic, Dissolved	ug/L	0.75	100	100	102	105	102	104	70-130	3	20	
Beryllium, Dissolved	ug/L	ND	100	100	98.2	102	98	102	70-130	3	20	
Boron, Dissolved	ug/L	20200	100	100	21100	21800	822	1570	70-130	3	20	M6
Cadmium, Dissolved	ug/L	ND	100	100	104	106	104	106	70-130	2	20	

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10469389

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3232441 3232442

Parameter	Units	10469416001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Dissolved	ug/L	0.52	100	100	107	108	106	108	70-130	1	20	
Cobalt, Dissolved	ug/L	0.91	100	100	103	106	102	105	70-130	3	20	
Lead, Dissolved	ug/L	ND	100	100	103	105	103	105	70-130	1	20	
Selenium, Dissolved	ug/L	6.9	100	100	109	113	102	106	70-130	4	20	
Thallium, Dissolved	ug/L	ND	100	100	103	103	103	103	70-130	0	20	
Uranium-238, Dissolved	ug/L	9.3	100	100	115	117	106	108	70-130	2	20	
Vanadium, Dissolved	ug/L	1.7	100	100	110	112	109	110	70-130	1	20	

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10469389

QC Batch: 597661 Analysis Method: EPA 8082A
QC Batch Method: EPA Mod. 3510C Analysis Description: 8082A GCS PCB
Associated Lab Samples: 10469389001, 10469389002, 10469389003, 10469389004, 10469389005

METHOD BLANK: 3231801 Matrix: Water
Associated Lab Samples: 10469389001, 10469389002, 10469389003, 10469389004, 10469389005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
PCB-1016 (Aroclor 1016)	ug/L	ND	0.10	04/08/19 10:05	
PCB-1221 (Aroclor 1221)	ug/L	ND	0.10	04/08/19 10:05	
PCB-1232 (Aroclor 1232)	ug/L	ND	0.10	04/08/19 10:05	
PCB-1242 (Aroclor 1242)	ug/L	ND	0.10	04/08/19 10:05	
PCB-1248 (Aroclor 1248)	ug/L	ND	0.10	04/08/19 10:05	
PCB-1254 (Aroclor 1254)	ug/L	ND	0.10	04/08/19 10:05	
PCB-1260 (Aroclor 1260)	ug/L	ND	0.10	04/08/19 10:05	
PCB-1262 (Aroclor 1262)	ug/L	ND	0.10	04/08/19 10:05	
PCB-1268 (Aroclor 1268)	ug/L	ND	0.10	04/08/19 10:05	
Decachlorobiphenyl (S)	%.	84	30-125	04/08/19 10:05	
Tetrachloro-m-xylene (S)	%.	58	30-125	04/08/19 10:05	

LABORATORY CONTROL SAMPLE & LCSD: 3231802 3231803

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
PCB-1016 (Aroclor 1016)	ug/L	2	1.4	1.6	69	78	45-125	12	20	
PCB-1260 (Aroclor 1260)	ug/L	2	1.6	1.7	78	86	49-125	11	20	
Decachlorobiphenyl (S)	%.				81	90	30-125			
Tetrachloro-m-xylene (S)	%.				58	65	30-125			

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10469389

QC Batch: 597687 Analysis Method: EPA 8270D
QC Batch Method: EPA 3520 Analysis Description: 8270D Water MSSV
Associated Lab Samples: 10469389001, 10469389002, 10469389003, 10469389004, 10469389005

METHOD BLANK: 3231843 Matrix: Water
Associated Lab Samples: 10469389001, 10469389002, 10469389003, 10469389004, 10469389005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
2,4,6-Trichlorophenol	ug/L	ND	10.0	04/08/19 13:46	
2,4-Dichlorophenol	ug/L	ND	10.0	04/08/19 13:46	
2,4-Dimethylphenol	ug/L	ND	10.0	04/08/19 13:46	
2,4-Dinitrophenol	ug/L	ND	10.0	04/08/19 13:46	
2-Chlorophenol	ug/L	ND	10.0	04/08/19 13:46	
2-Methylnaphthalene	ug/L	ND	10.0	04/08/19 13:46	
2-Methylphenol(o-Cresol)	ug/L	ND	10.0	04/08/19 13:46	
3&4-Methylphenol(m&p Cresol)	ug/L	ND	20.0	04/08/19 13:46	
3,3'-Dichlorobenzidine	ug/L	ND	50.0	04/08/19 13:46	
4-Bromophenylphenyl ether	ug/L	ND	10.0	04/08/19 13:46	
Acenaphthene	ug/L	ND	10.0	04/08/19 13:46	
Anthracene	ug/L	ND	10.0	04/08/19 13:46	
Benzo(a)pyrene	ug/L	ND	10.0	04/08/19 13:46	
Benzoic acid	ug/L	ND	50.0	04/08/19 13:46	
bis(2-Chloroethyl) ether	ug/L	ND	10.0	04/08/19 13:46	
bis(2-Ethylhexyl)phthalate	ug/L	ND	10.0	04/08/19 13:46	
Butylbenzylphthalate	ug/L	ND	10.0	04/08/19 13:46	
Di-n-butylphthalate	ug/L	ND	10.0	04/08/19 13:46	
Di-n-octylphthalate	ug/L	ND	10.0	04/08/19 13:46	
Diethylphthalate	ug/L	ND	10.0	04/08/19 13:46	
Dimethylphthalate	ug/L	ND	10.0	04/08/19 13:46	
Fluoranthene	ug/L	ND	10.0	04/08/19 13:46	
Fluorene	ug/L	ND	10.0	04/08/19 13:46	
Hexachlorobenzene	ug/L	ND	10.0	04/08/19 13:46	
Hexachlorocyclopentadiene	ug/L	ND	50.0	04/08/19 13:46	
Hexachloroethane	ug/L	ND	10.0	04/08/19 13:46	
Isophorone	ug/L	ND	10.0	04/08/19 13:46	
N-Nitrosodimethylamine	ug/L	ND	10.0	04/08/19 13:46	
Pentachlorophenol	ug/L	ND	20.0	04/08/19 13:46	
Phenanthrene	ug/L	ND	10.0	04/08/19 13:46	
Phenol	ug/L	ND	10.0	04/08/19 13:46	
Pyrene	ug/L	ND	10.0	04/08/19 13:46	
2,4,6-Tribromophenol (S)	%.	80	52-125	04/08/19 13:46	
2-Fluorobiphenyl (S)	%.	71	52-125	04/08/19 13:46	
2-Fluorophenol (S)	%.	71	30-125	04/08/19 13:46	
Nitrobenzene-d5 (S)	%.	76	55-125	04/08/19 13:46	
p-Terphenyl-d14 (S)	%.	74	57-125	04/08/19 13:46	
Phenol-d6 (S)	%.	72	30-125	04/08/19 13:46	

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10469389

LABORATORY CONTROL SAMPLE & LCSD: 3231844 3231845

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
2,4,6-Trichlorophenol	ug/L	50	40.8	36.1	82	72	60-125	12	20	
2,4-Dichlorophenol	ug/L	50	40.3	36.2	81	72	56-125	11	20	
2,4-Dimethylphenol	ug/L	50	33.7	32.5	67	65	33-125	4	20	
2,4-Dinitrophenol	ug/L	50	27.2	22.8	54	46	32-125	17	20	1M
2-Chlorophenol	ug/L	50	40.2	35.6	80	71	52-125	12	20	
2-Methylnaphthalene	ug/L	50	40.2	35.9	80	72	52-125	12	20	
2-Methylphenol(o-Cresol)	ug/L	50	38.8	34.9	78	70	55-125	10	20	
3&4-Methylphenol(m&p Cresol)	ug/L	50	39.1	34.3	78	69	57-125	13	20	
3,3'-Dichlorobenzidine	ug/L	50	39.1J	33.4J	78	67	39-150		20	
4-Bromophenylphenyl ether	ug/L	50	40.1	35.6	80	71	61-125	12	20	
Acenaphthene	ug/L	50	40.7	36.7	81	73	59-125	10	20	
Anthracene	ug/L	50	42.1	36.8	84	74	64-125	14	20	
Benzo(a)pyrene	ug/L	50	39.0	33.4	78	67	63-125	15	20	
Benzoic acid	ug/L	50	23.7J	20.5J	47	41	30-125		20	
bis(2-Chloroethyl) ether	ug/L	50	37.9	34.2	76	68	49-125	10	20	
bis(2-Ethylhexyl)phthalate	ug/L	50	40.4	36.2	81	72	68-125	11	20	
Butylbenzylphthalate	ug/L	50	39.9	34.5	80	69	67-125	14	20	
Di-n-butylphthalate	ug/L	50	44.5	37.9	89	76	67-125	16	20	
Di-n-octylphthalate	ug/L	50	40.2	36.0	80	72	67-125	11	20	
Diethylphthalate	ug/L	50	42.6	37.7	85	75	64-125	12	20	
Dimethylphthalate	ug/L	50	42.1	37.5	84	75	65-125	12	20	
Fluoranthene	ug/L	50	42.9	36.4	86	73	64-125	16	20	
Fluorene	ug/L	50	41.1	36.8	82	74	63-125	11	20	
Hexachlorobenzene	ug/L	50	44.2	38.2	88	76	61-125	15	20	
Hexachlorocyclopentadiene	ug/L	50	22.5J	ND	45	40	30-125		20	
Hexachloroethane	ug/L	50	38.8	35.3	78	71	30-125	10	20	
Isophorone	ug/L	50	40.3	35.8	81	72	59-125	12	20	
N-Nitrosodimethylamine	ug/L	50	38.6	34.3	77	69	43-125	12	20	
Pentachlorophenol	ug/L	50	31.1	26.9	62	54	35-125	14	20	
Phenanthrene	ug/L	50	41.9	36.4	84	73	65-125	14	20	
Phenol	ug/L	50	39.5	34.6	79	69	54-125	13	20	
Pyrene	ug/L	50	39.6	34.2	79	68	65-125	15	20	
2,4,6-Tribromophenol (S)	%.				91	77	52-125			
2-Fluorobiphenyl (S)	%.				79	72	52-125			
2-Fluorophenol (S)	%.				79	69	30-125			
Nitrobenzene-d5 (S)	%.				81	73	55-125			
p-Terphenyl-d14 (S)	%.				76	66	57-125			
Phenol-d6 (S)	%.				79	70	30-125			

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REPORT OF LABORATORY ANALYSIS

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Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10469389

QC Batch: 597704 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 10469389001, 10469389002, 10469389003, 10469389004, 10469389005

METHOD BLANK: 3231898 Matrix: Water
Associated Lab Samples: 10469389001, 10469389002, 10469389003, 10469389004, 10469389005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.2	04/04/19 07:03	

LABORATORY CONTROL SAMPLE: 3231899

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	12.5	11.7	93	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3231900 3231901

Parameter	Units	10469416001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	37.6	125	125	153	152	92	92	90-110	0	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3231902 3231903

Parameter	Units	10469416002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	72.3	125	125	189	188	93	92	90-110	1	20	

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10469389

QC Batch: 597501 Analysis Method: SM 3500-Cr B Modified
QC Batch Method: SM 3500-Cr B Modified Analysis Description: Chromium, Hexavalent by 3500
Associated Lab Samples: 10469389001, 10469389002, 10469389003, 10469389004, 10469389005

METHOD BLANK: 3230800 Matrix: Water
Associated Lab Samples: 10469389001, 10469389002, 10469389003, 10469389004, 10469389005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium, Hexavalent	mg/L	ND	0.010	04/03/19 16:06	FS

LABORATORY CONTROL SAMPLE: 3230801

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/L	0.2	0.19	97	90-110	FS

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3230802 3230803

Parameter	Units	10469389005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Hexavalent	mg/L	ND	0.2	0.2	0.14	0.15	68	71	85-115	4	20	FS,M1

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10469389

QC Batch: 163940 Analysis Method: EPA 350.1 rev. 2 (1993)
QC Batch Method: EPA 350.1 rev. 2 (1993) Analysis Description: 350.1 Ammonia Distilled
Associated Lab Samples: 10469389001, 10469389002, 10469389003, 10469389004, 10469389005

METHOD BLANK: 646074 Matrix: Water
Associated Lab Samples: 10469389001, 10469389002, 10469389003, 10469389004, 10469389005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, Ammonia	mg/L	ND	0.11	04/09/19 12:02	

LABORATORY CONTROL SAMPLE: 646075

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Ammonia	mg/L	5	5.2	104	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 646076 646077

Parameter	Units	12123225001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, Ammonia	mg/L	0.15	5	5	5.4	5.3	104	104	90-110	1	10	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 646078 646079

Parameter	Units	12123229002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, Ammonia	mg/L	ND	5	5	5.3	5.3	105	104	90-110	0	10	

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10469389

QC Batch: 599418 Analysis Method: SM 4500-CN-E
QC Batch Method: SM 4500-CN-E Analysis Description: SM4500CN-E Cyanide
Associated Lab Samples: 10469389001, 10469389002, 10469389003, 10469389004, 10469389005

METHOD BLANK: 3240961 Matrix: Water
Associated Lab Samples: 10469389001, 10469389002, 10469389003, 10469389004, 10469389005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cyanide	ug/L	ND	20.0	04/15/19 17:31	

LABORATORY CONTROL SAMPLE: 3240962

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cyanide	ug/L	250	273	109	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3240963 3240964

Parameter	Units	10469117004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cyanide	ug/L	21.9	250	250	235	244	85	89	80-120	4	30	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3240965 3240966

Parameter	Units	10469593001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cyanide	ug/L	<8.5	250	250	263	237	102	92	80-120	10	30	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10469389

Sample: 834662 **Lab ID: 10469389001** Collected: 04/03/19 09:20 Received: 04/03/19 14:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 900.0	**16.3 ± 4.95 (4.59) C:NA T:NA**	pCi/L	04/15/19 18:14	12587-46-1	
Gross Beta	EPA 900.0	**58.0 ± 10.9 (2.74) C:NA T:NA**	pCi/L	04/15/19 18:14	12587-47-2	

Sample: 834663 **Lab ID: 10469389002** Collected: 04/03/19 10:40 Received: 04/03/19 14:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 900.0	**7.74 ± 3.32 (3.98) C:NA T:NA**	pCi/L	04/15/19 18:50	12587-46-1	
Gross Beta	EPA 900.0	**57.9 ± 10.9 (2.99) C:NA T:NA**	pCi/L	04/15/19 18:50	12587-47-2	

Sample: 834661 **Lab ID: 10469389003** Collected: 04/03/19 11:35 Received: 04/03/19 14:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 900.0	**4.18 ± 1.95 (2.54) C:NA T:NA**	pCi/L	04/15/19 18:15	12587-46-1	
Gross Beta	EPA 900.0	**33.3 ± 6.24 (1.51) C:NA T:NA**	pCi/L	04/15/19 18:15	12587-47-2	

Sample: FB-2 **Lab ID: 10469389004** Collected: 04/03/19 12:30 Received: 04/03/19 14:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 900.0	**0.572 ± 0.667 (1.25) C:NA T:NA**	pCi/L	04/11/19 08:13	12587-46-1	
Gross Beta	EPA 900.0	**-0.042 ± 0.564 (1.40) C:NA T:NA**	pCi/L	04/11/19 08:13	12587-47-2	

Sample: 834660 **Lab ID: 10469389005** Collected: 04/03/19 13:30 Received: 04/03/19 14:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 900.0	**10.6 ± 3.61 (2.99) C:NA T:NA**	pCi/L	04/11/19 08:11	12587-46-1	
Gross Beta	EPA 900.0	**23.7 ± 4.85 (2.25) C:NA T:NA**	pCi/L	04/11/19 08:11	12587-47-2	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10469389

QC Batch: 337355 Analysis Method: EPA 900.0
QC Batch Method: EPA 900.0 Analysis Description: 900.0 Gross Alpha/Beta
Associated Lab Samples: 10469389001, 10469389002, 10469389003, 10469389004, 10469389005

METHOD BLANK: 1641975 Matrix: Water
Associated Lab Samples: 10469389001, 10469389002, 10469389003, 10469389004, 10469389005

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Gross Alpha	0.003 ± 0.364 (1.10) C:NA T:NA	pCi/L	04/11/19 08:11	
Gross Beta	-0.024 ± 0.814 (2.01) C:NA T:NA	pCi/L	04/11/19 08:11	

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QUALIFIERS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10469389

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-M	Pace Analytical Services - Minneapolis
PASI-PA	Pace Analytical Services - Greensburg
PASI-V	Pace Analytical Services - Virginia

WORKORDER QUALIFIERS

WO: 10469389

[1] Samples were received outside of the recommended temperature range of 0-6 degrees Celsius. The samples were received from the field on ice.

BATCH QUALIFIERS

Batch: 598122

[M5] A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

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QUALIFIERS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10469389

ANALYTE QUALIFIERS

1M	The associated compound was outside of 20% for the associated continuing calibration but within 40% of the true value
FS	The sample was filtered in the laboratory prior to analysis.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
M6	Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10469389

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10469389001	**834662**	EPA Mod. 3510C	597661	EPA 8082A	598122
10469389002	**834663**	EPA Mod. 3510C	597661	EPA 8082A	598122
10469389003	**834661**	EPA Mod. 3510C	597661	EPA 8082A	598122
10469389004	**FB-2**	EPA Mod. 3510C	597661	EPA 8082A	598122
10469389005	**834660**	EPA Mod. 3510C	597661	EPA 8082A	598122
10469389001	**834662**	EPA 200.7	597783	EPA 200.7	598200
10469389002	**834663**	EPA 200.7	597783	EPA 200.7	598200
10469389003	**834661**	EPA 200.7	597783	EPA 200.7	598200
10469389004	**FB-2**	EPA 200.7	597783	EPA 200.7	598200
10469389005	**834660**	EPA 200.7	597783	EPA 200.7	598200
10469389001	**834662**	EPA 200.8	597782	EPA 200.8	598167
10469389002	**834663**	EPA 200.8	597782	EPA 200.8	598167
10469389003	**834661**	EPA 200.8	597782	EPA 200.8	598167
10469389004	**FB-2**	EPA 200.8	597782	EPA 200.8	598167
10469389005	**834660**	EPA 200.8	597782	EPA 200.8	598167
10469389001	**834662**	EPA 3520	597687	EPA 8270D	598133
10469389002	**834663**	EPA 3520	597687	EPA 8270D	598133
10469389003	**834661**	EPA 3520	597687	EPA 8270D	598133
10469389004	**FB-2**	EPA 3520	597687	EPA 8270D	598133
10469389005	**834660**	EPA 3520	597687	EPA 8270D	598133
10469389001	**834662**				
10469389002	**834663**				
10469389003	**834661**				
10469389005	**834660**				
10469389001	**834662**	EPA 900.0	337355		
10469389002	**834663**	EPA 900.0	337355		
10469389003	**834661**	EPA 900.0	337355		
10469389004	**FB-2**	EPA 900.0	337355		
10469389005	**834660**	EPA 900.0	337355		
10469389001	**834662**	EPA 300.0	597704		
10469389002	**834663**	EPA 300.0	597704		
10469389003	**834661**	EPA 300.0	597704		
10469389004	**FB-2**	EPA 300.0	597704		
10469389005	**834660**	EPA 300.0	597704		
10469389001	**834662**	SM 3500-Cr B Modified	597501		
10469389002	**834663**	SM 3500-Cr B Modified	597501		
10469389003	**834661**	SM 3500-Cr B Modified	597501		
10469389004	**FB-2**	SM 3500-Cr B Modified	597501		
10469389005	**834660**	SM 3500-Cr B Modified	597501		
10469389001	**834662**	EPA 350.1			
10469389002	**834663**	EPA 350.1			
10469389003	**834661**	EPA 350.1			
10469389005	**834660**	EPA 350.1			
10469389001	**834662**	EPA 350.1 rev. 2 (1993)	163940	EPA 350.1 rev. 2 (1993)	163958

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10469389

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10469389002	**834663**	EPA 350.1 rev. 2 (1993)	163940	EPA 350.1 rev. 2 (1993)	163958
10469389003	**834661**	EPA 350.1 rev. 2 (1993)	163940	EPA 350.1 rev. 2 (1993)	163958
10469389004	**FB-2**	EPA 350.1 rev. 2 (1993)	163940	EPA 350.1 rev. 2 (1993)	163958
10469389005	**834660**	EPA 350.1 rev. 2 (1993)	163940	EPA 350.1 rev. 2 (1993)	163958
10469389001	**834662**	SM 4500-CN-E	599418	SM 4500-CN-E	599555
10469389002	**834663**	SM 4500-CN-E	599418	SM 4500-CN-E	599555
10469389003	**834661**	SM 4500-CN-E	599418	SM 4500-CN-E	599555
10469389004	**FB-2**	SM 4500-CN-E	599418	SM 4500-CN-E	599555
10469389005	**834660**	SM 4500-CN-E	599418	SM 4500-CN-E	599555

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WO#: 10469389

10469389

Minnesota Pollution Control Agency

Chain-of-Custody Form revison 2013.0909

Work Order Number: CO

Turnaround Time:

PROJECT/CLIENT INFO

Facility Code:	MNSW-057	Program Code (MDH Lab Only):	
Project Name:	19-01567 MPCA Freeway Landfill 2019 Waters	Project Task Code:	PRJ07786
Project Manager:	Brad Jacobson	612-607-6375	EPIC PROFILE #: 38716 Line 2
Potential Hazard?	If yes, add information to Sampler Comments Section		

LABORATORY

Lab Name: Pace Analytical - Minneapolis, MN

Address: 1700 SE Elm Street

Minneapolis MN 55414

Phone No: 612-607-6400

Lab Work Order Sticker

SAMPLE DETAILS

SAMPLE TYPE CODES
Sample=Routine Sample
S-IVP=Integrated Vertical Profile Sample
S-CWOP=Composite Sample
QC-FB=Field Blank Sample
QC-FR=Field Replicate Sample
QC-TB=Trip Blank Sample

LAB MATRIX CODES
DW=Drinking Water
NW=Non-potable Water
SD=Soil/Solid
WP=Wipe
AR=Air
BL=Biological Material
OT=Other
TS=Tissue

FIELD MATRIX CODES
Wtr-Ground=Groundwater
Wtr-Surf=Surface Water
QC-BLANK=Artificial Blank Water
Leachate=Leachate Sample

ANALYSIS REQUESTED

Location Identifier	Sample Type	Date	Time	Start Depth, in meters	End Depth, in meters	Grab (G) or Composite (C) Sample	Lab Matrix Code	Field Matrix Code	AIS	Sampler Comments (filter volume, special handling, etc.)	# of Cont	ANALYSIS / PRESERV.	Field Parameters: SWL, Temp, pH, DO, Cond, Eh, Turbidity / None	Metals 200.7 / 200.8 / Gross Alpha/Beta - QAPP Table 3a / HNO3	300.0 / HexCr - QAPP Table 3a / None	Ammonia/ Unionized NH3 - QAPP Table 3a / H2SO4	Total Cyanide / Free Cyanide - QAPP Table 3a / NaOH	8270 SVOC, 8082, MDA1, MDA2 - QAPP Table 3a / None	Lab Sample No.	#
834662	Sample	4/3/19	0920			G	NW	Wtr-Ground	N		14		X	X	X	X	X	X	001	1
834663	Sample	4/3/19	1040			G	NW	Wtr-Ground	N		14		X	X	X	X	X	X	002	2
834661	Sample	4/3/19	1135			G	NW	Wtr-Ground	N		14		X	X	X	X	X	X	003	3
FB-2	QC-FB	4/3/19	1230			G	NW	QC Blank	N		14		X	X	X	X	X	X	004	4
834660	Sample	4/3/19	1320			G	NW	Wtr-Ground	N		14		X	X	X	X	X	X	005	5
									N											6
					DTM 4/3/19				N											7
									N											8
									N											9
									N											10

Sampled By: David Anderson / Chris Pelosi

Sampler's Signature: David Anderson

Phone #:

Receiving Comments:

Relinquished By/Affiliation	Date/Time	Accepted By/ Affiliation	Date/Time
(Sampler) David Anderson / Pace Analytical	4/3/19 1435		4/3/19 1435

T = 6.2, 14.0, 2.6, 12.8, 9.7

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 06Feb2019 Page 1 of 1
	Document No.: F-MN-L-213-rev.25	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt **Client Name:** Pace Fred **Project #:** WO#: 10469389 PM: JMA Due Date: 04/10/19 CLIENT: PASI-MNFLD

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☒ Pace ☐ SpeeDee ☐ Commercial **See Exception** ☐

Tracking Number:

Custody Seal on Cooler/Box Present? ☐ Yes ☒ No **Seals Intact?** ☐ Yes ☒ No **Biological Tissue Frozen?** ☐ Yes ☐ No ☒ N/A

Packing Material: ☒ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other: **Temp Blank?** ☒ Yes ☐ No

Thermometer: ☐ G87A9155100842 ☒ G87A9170600254 **Type of Ice:** ☒ Wet ☐ Blue ☐ None ☐ Dry ☐ Melted

Note: Each West Virginia Sample must have temp taken (no temp blanks)

Temp should be above freezing to 6°C **Cooler Temp Read w/temp blank:** 6.2, 14.0, 2.6, 12.8, 9.7 °C **Average Corrected Temp (no temp blank only):** °C **See Exceptions** ☐

Correction Factor: none **Cooler Temp Corrected w/temp blank:** 6.2, 14.0, 2.6, 12.8, 9.7 °C

USDA Regulated Soil: (☒ N/A, water sample/Other:) **Date/Initials of Person Examining Contents:** KV 4/3/19

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA. MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐ Yes ☐ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☐ No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present and Filled Out?	☒ Yes	☐ No		1.
Chain of Custody Relinquished?	☒ Yes	☐ No		2.
Sampler Name and/or Signature on COC?	☒ Yes	☐ No	☐ N/A	3.
Samples Arrived within Hold Time?	☒ Yes	☐ No		4.
Short Hold Time Analysis (<72 hr)?	☒ Yes	☐ No		5. ☐ Fecal Coliform ☐ HPC ☐ Total Coliform/E coli ☐ BOD/cBOD ☒ Hex Chrome ☐ Turbidity ☐ Nitrate ☐ Nitrite ☐ Orthophos ☐ Other
Rush Turn Around Time Requested?	☐ Yes	☒ No		6.
Sufficient Volume?	☒ Yes	☐ No		7.
Correct Containers Used?	☒ Yes	☐ No		8.
-Pace Containers Used?	☒ Yes	☐ No		
Containers Intact?	☒ Yes	☐ No		9.
Field Filtered Volume Received for Dissolved Tests?	☒ Yes	☐ No	☒ N/A	10. Is sediment visible in the dissolved container? ☐ Yes ☐ No
Is sufficient information available to reconcile the samples to the COC?	☒ Yes	☐ No		11. If no, write ID/ Date/Time on Container Below: **See Exception** ☐
Matrix: ☒ Water ☐ Soil ☐ Oil ☐ Other				
All containers needing acid/base preservation have been checked?	☒ Yes	☐ No	☐ N/A	12. Sample #: 1-5 2/2 1-5 2/2 1-5 5
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>12 Cyanide)	☒ Yes	☐ No	☐ N/A	☒ NaOH ☒ HNO_3 ☒ H_2SO_4 ☐ Zinc Acetate
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin/PFAS	☐ Yes	☐ No	☒ N/A	Positive for Res. Chlorine? ☐ Yes ☒ No **See Exception** ☐
Headspace in VOA Vials (greater than 6mm)?	☐ Yes	☐ No	☒ N/A	13. **See Exception** ☐
Trip Blank Present?	☐ Yes	☐ No	☒ N/A	14.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☒ N/A	Pace Trip Blank Lot # (if purchased): N/A

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: Date: 04/03/2019

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers).

Labeled by: KV

During sample triage, this form is to be placed in each cooler that arrives above 6.0 degrees Celsius

SCUR Exceptions: **Workorder #:**

Out of Temp Sample IDs	Container Type	# of Containers	PM Notified? ☐Yes ☒No
			If yes, indicate who was contacted/date/time. If no, indicate reason why. Samples Same day
			Multiple Cooler Project? ☐Yes ☐No If you answered yes, fill out information to the left.

No Temp Blank		
Read Temp	Corrected Temp	Average Temp

Other Issues

Issue Type: Sample ID	Container Type	# of Containers

Tracking Number	

pH Adjustment Log for Preserved Samples

Sample ID	Type of Preserv.	pH Upon Receipt	Date Adjusted	Time Adjusted	Amount Added (mL)	Lot # Added	pH After	In Compliance after addition?	Initials
								☐Yes ☐No	
								☐Yes ☐No	
								☐Yes ☐No	
								☐Yes ☐No	

WO#: 12123316

PM: CLJ Due Date: 04/24/19

CLIENT: PACE MPLS

Chain of Custody

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN

Cert. Needed: ☐ Yes ☐ No

Workorder: 10469389 **Workorder Name:** 19-01567 MPCA Freeway LF 19 WT **Owner Received Date:** 4/3/2019 **Results Requested By:** 4/24/2019

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6436	Pace Analytical Virginia MN 315 Chestnut Street Virginia, MN 55792 Phone (218)742-1042

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: H2SO4 BP3S						Requested Analysis: 350.1 Ammonia	Unionized Ammonia											LAB USE ONLY
1	834662	PS	4/3/2019 09:20	10469389001	Water	1						X	X											
2	834663	PS	4/3/2019 10:40	10469389002	Water	1						X	X											
3	834661	PS	4/3/2019 11:35	10469389003	Water	1						X	X											
4	FB-2	PS	4/3/2019 12:30	10469389004	Water	1						X												
5	834660	PS	4/3/2019 13:30	10469389005	Water	1						X	X											

Comments

Transfers	Released By	Date/Time	Received By	Date/Time
1	Pace	4/4/19 1105	Stephenie Mu	4/4/19 1230
2	Stephenie Mu	4/4/19 1510		
3			Katie Rhoades	4/5/19 9:30

Cooler Temperature on Receipt ____ °C | Custody Seal Y or N | Received on Ice Y or N | Samples Intact Y or N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.

This chain of custody is considered complete as is since this information is available in the owner laboratory.

Katie Rhoades 4/5/19 11:32

Received By: [signature] 4/5/19 11:32 2.6°C

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 03Apr2019 Page 1 of 1
	Document No.: F-VM-C-001-Rev.12	Issuing Authority: Pace Virginia, Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Pace MN

Project #: **WO# : 12123316**

12123316

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☑ Pace ☐ Other: _____

Tracking Number: _____

Custody Seal on Cooler/Box Present? ☑ Yes ☐ No Seals Intact? ☑ Yes ☐ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other: _____ Temp Blank? ☑ Yes ☐ No

Thermometer Used: ☑ 140792808 Type of Ice: ☑ Wet ☐ Blue ☐ None ☐ Samples on ice, cooling process has begun

Cooler Temp Read °C: 2.3 Cooler Temp Corrected °C: 2.6 Biological Tissue Frozen? ☐ Yes ☐ No ☑ NA

Temp should be above freezing to 6°C Correction Factor: +0.3 Date and Initials of Person Examining Contents: RH 4/5/19

Comments:

Chain of Custody Present?	☑ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☑ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☑ Yes	☐ No	☐ N/A	3.
Sampler Name and Signature on COC?	☐ Yes	☑ No	☐ N/A	4.
Samples Arrived within Hold Time?	☑ Yes	☐ No	☐ N/A	5. If Fecal: ☐ <8 hours ☐ >8, <24 hours ☐ >24 hours
Short Hold Time Analysis (<72 hr)?	☐ Yes	☑ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☑ No	☐ N/A	7.
Sufficient Volume?	☑ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☑ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☑ Yes	☐ No	☐ N/A	
Containers Intact?	☑ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☑ N/A	11. Note if sediment is visible in the dissolved containers.
Sample Labels Match COC?	☑ Yes	☐ No	☐ N/A	12.
-Includes Date/Time/ID/Analysis Matrix: WT				
All containers needing acid/base preservation will be checked and documented in the pH logbook.	☑ Yes	☐ No	☐ N/A	See pH log for results and additional preservation documentation
Headspace in Methyl Mercury Container	☐ Yes	☐ No	☑ N/A	13.
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☑ N/A	14.
Trip Blank Present?	☐ Yes	☐ No	☑ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☑ N/A	
Pace Trip Blank Lot # (if purchased):				

CLIENT NOTIFICATION/RESOLUTION

Field Data Required? ☐ Yes ☐ No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

FECAL WAIVER ON FILE Y N TEMPERATURE WAIVER ON FILE Y N

Project Manager Review: Katie Richards Date: 4/5/2019

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Chain of Custody

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN
Cert. Needed: ☐ Yes ☐ No

Pace Analytical®
www.pacelabs.com

Workorder: 10469389 **Workorder Name:** 19-01567 MPCA Freeway LF 19 WT **Owner Received Date:** 4/3/2019 **Results Requested By:** 4/24/2019

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6436	Pace Analytical Pittsburgh 1638 Roseytown Road Suites 2,3 & 4 Greensburg, PA 15601 Phone (724)850-5600

WO# : 30287914

30287914

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: HNO3 BP1N	Gross Alpha/Beta	LAB USE ONLY
1	834662	PS	4/3/2019 09:20	10469389001	Water	1	X	001
2	834663	PS	4/3/2019 10:40	10469389002	Water	1	X	002
3	834661	PS	4/3/2019 11:35	10469389003	Water	1	X	003
4	FB-2	PS	4/3/2019 12:30	10469389004	Water	1	X	004
5	834660	PS	4/3/2019 13:30	10469389005	Water	1	X	005

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature]	4/4/19 1510	[signature]	4/5/19 9:30
2				
3				

Comments

Cooler Temperature on Receipt N/A °C | **Custody Seal** (Y) or N | **Received on Ice** Y or (N) | **Samples Intact** (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.*
This chain of custody is considered complete as is since this information is available in the owner laboratory.

Pittsburgh Lab Sample Condition Upon Receipt

Pace Analytical

Client Name: Pace - MN. Project # 30287914

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Label MG
LIMS Login

Tracking #: 4638 0195 7626

Custody Seal on Cooler/Box Present: ☑ yes ☐ no Seals intact: ☐ yes ☐ no

Thermometer Used N/A Type of Ice: Wet Blue (None)

Cooler Temperature Observed Temp — °C Correction Factor: — °C Final Temp: — °C

Temp should be above freezing to 6°C

pH paper Lot# 1003581 Date and Initials of person examining contents: MG 4/5/19

Comments:	Yes	No	N/A	
Chain of Custody Present:	✓			1.
Chain of Custody Filled Out:	✓			2.
Chain of Custody Relinquished:	✓			3.
Sampler Name & Signature on COC:		✓		4.
Sample Labels match COC: -Includes date/time/ID Matrix: WT	✓			5.
Samples Arrived within Hold Time:	✓			6.
Short Hold Time Analysis (<72hr remaining):		✓		7.
Rush Turn Around Time Requested:		✓		8.
Sufficient Volume:	✓			9.
Correct Containers Used: -Pace Containers Used:	✓ ✓			10.
Containers Intact:	✓			11.
Orthophosphate field filtered			✓	12.
Hex Cr Aqueous Compliance/NPDES sample field filtered			✓	13.
Organic Samples checked for dechlorination:			✓	14.
Filtered volume received for Dissolved tests			✓	15.
All containers have been checked for preservation. All containers needing preservation are found to be in compliance with EPA recommendation.	✓ ✓			16. pH < 2
exceptions: VOA, coliform, TOC, O&G, Phenolics				Initial when completed MG Date/time of preservation
				Lot # of added preservative
Headspace in VOA Vials (>6mm):			✓	17.
Trip Blank Present:		✓		18.
Trip Blank Custody Seals Present			✓	
Rad Samples Screened < 0.5 mrem/hr	✓			Initial when completed: MG Date: 4/5/19

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

☐ **A check in this box indicates that additional information has been stored in ereports.**

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

16-Apr-2019

Jennifer Anderson
Pace Analytical Services, LLC
1700 Elm Street
Suite 200
Minneapolis, MN 55414

Re: **10469389** Work Order: **1904359**

Dear Jennifer,

ALS Environmental received 5 samples on 05-Apr-2019 08:30 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental - Holland and for only the analyses requested.

Sample results are compliant with industry accepted practices and Quality Control results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 11.

If you have any questions regarding this report, please feel free to contact me:

ADDRESS: 3352 128th Avenue, Holland, MI, USA
PHONE: +1 (616) 399-6070 FAX: +1 (616) 399-6185

Sincerely,

Electronically approved by: Chad Whelton

Chad Whelton
Project Manager

ALS Group, USA

Date: 16-Apr-19

Client: Pace Analytical Services, LLC
Project: 10469389
Work Order: **1904359**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1904359-01	834662	Water		4/3/2019 09:20	4/5/2019 08:30	☐
1904359-02	834663	Water		4/3/2019 10:40	4/5/2019 08:30	☐
1904359-03	834661	Water		4/3/2019 11:35	4/5/2019 08:30	☐
1904359-04	FB-2	Water		4/3/2019 12:30	4/5/2019 08:30	☐
1904359-05	834660	Water		4/3/2019 13:30	4/5/2019 08:30	☐

Client: Pace Analytical Services, LLC
Project: 10469389
WorkOrder: **1904359**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
**	Estimated Value
a	Analyte is non-accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
Hr	BOD/CBOD - Sample was reset outside Hold Time, value should be considered estimated.
J	Analyte is present at an estimated concentration between the MDL and Report Limit
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and Reporting Limit, sample results may exhibit background or reagent contamination at the observed level.

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

Units Reported	Description
µg/L	Micrograms per Liter

ALS Group, USA

Date: *16-Apr-19*

Client:	Pace Analytical Services, LLC		
Project:	10469389	**Work Order:**	1904359
Sample ID:	834662	**Lab ID:**	1904359-01
Collection Date:	4/3/2019 09:20 AM	**Matrix:**	WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
CYANIDE, FREE			**SW9014**			Analyst: **RZM**
Cyanide, Free	ND		20	µg/L	1	4/15/2019 10:15 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Pace Analytical Services, LLC
Project: 10469389 **Work Order:** 1904359
Sample ID: 834663 **Lab ID:** 1904359-02
Collection Date: 4/3/2019 10:40 AM **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
CYANIDE, FREE			**SW9014**			Analyst: **RZM**
Cyanide, Free	ND		20	µg/L	1	4/15/2019 10:15 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Pace Analytical Services, LLC
Project: 10469389 **Work Order:** 1904359
Sample ID: 834661 **Lab ID:** 1904359-03
Collection Date: 4/3/2019 11:35 AM **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
CYANIDE, FREE			**SW9014**			Analyst: **RZM**
Cyanide, Free	ND		20	µg/L	1	4/15/2019 10:15 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Pace Analytical Services, LLC
Project: 10469389 **Work Order:** 1904359
Sample ID: FB-2 **Lab ID:** 1904359-04
Collection Date: 4/3/2019 12:30 PM **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
CYANIDE, FREE			**SW9014**			Analyst: **RZM**
Cyanide, Free	ND		20	µg/L	1	4/15/2019 10:15 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Pace Analytical Services, LLC
Project: 10469389 **Work Order:** 1904359
Sample ID: 834660 **Lab ID:** 1904359-05
Collection Date: 4/3/2019 01:30 PM **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
CYANIDE, FREE			**SW9014**			Analyst: **RZM**
Cyanide, Free	ND		20	µg/L	1	4/15/2019 10:15 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Pace Analytical Services, LLC

Work Order: 1904359

Project: 10469389

QC BATCH REPORT

Batch ID: **R258491** Instrument ID **WETCHEM** Method: **SW9014**

MBLK Sample ID: **MB-R258491-R258491** Units: **µg/L** Analysis Date: **4/15/2019 10:15 AM**

Client ID: Run ID: **WETCHEM_190415G** SeqNo: **5606769** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Free	ND	20								

LCS Sample ID: **LCS-R258491-R258491** Units: **µg/L** Analysis Date: **4/15/2019 10:15 AM**

Client ID: Run ID: **WETCHEM_190415G** SeqNo: **5606770** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Free	262.2	20	250	0	105	81-119	0			

MS Sample ID: **1904419-13B MS** Units: **µg/L** Analysis Date: **4/15/2019 10:15 AM**

Client ID: Run ID: **WETCHEM_190415G** SeqNo: **5606777** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Free	ND	20	250	-4.88	1.95	81-119	0			S

MSD Sample ID: **1904419-13B MSD** Units: **µg/L** Analysis Date: **4/15/2019 10:15 AM**

Client ID: Run ID: **WETCHEM_190415G** SeqNo: **5606778** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Free	ND	20	250	-4.88	1.95	81-119	-2.37	0	20	S

The following samples were analyzed in this batch:

1904359-01A	1904359-02A	1904359-03A
1904359-04A	1904359-05A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

1904359

Chain of Custody

Pace Analytical®
www.pacelabs.com

Workorder: 10469389 **Workorder Name:** 19-01567 MPCA Freeway LF 19 WT **Results Requested By:** 4/24/2019

Report / Invoice To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6436 Email: jennifer.anderson@pacelabs.com	ALS 3352 128th Avenue Holland, MI 49424 P.O. 10469389

State of Sample Origin: MN

Item	Sample ID	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Other	Preserved Containers: BP3A	Requested Analysis: Free Cyanide	LAB USE ONLY
1	834662	4/3/2019 09:20	10469389001	Water	1		X	
2	834663	4/3/2019 10:40	10469389002	Water	1		X	
3	834661	4/3/2019 11:35	10469389003	Water	1		X	
4	FB-2	4/3/2019 12:30	10469389004	Water	1		X	
5	834660	4/3/2019 13:30	10469389005	Water	1		X	

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature]	4/4/19 1455		
2				
3				

Comments

Cooler Temperature on Receipt ____ °C | **Custody Seal** Y or N | **Received on Ice** Y or N | **Samples Intact** Y or N

4.5.19 8:30
MF 4.5.19 10:20
SRC
2.8C
pH 15

ALS Group, USA

Sample Receipt Checklist

Client Name: **PACE_MN** Date/Time Received: **05-Apr-19 08:30**

Work Order: **1904359** Received by: **BNF**

Checklist completed by Bernina France (eSignature) 05-Apr-19 (Date) Reviewed by: Chad Whelton (eSignature) 05-Apr-19 (Date)

Matrices: Water

Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Sample(s) received on ice?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	2.8/2.8 C	SR2	
Cooler(s)/Kit(s):	1		
Date/Time sample(s) sent to storage:	4/5/2019 10:24:53 AM		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

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2525 Advance Road
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April 18, 2019

Jennifer Anderson
Pace Analytical
1700 Elm Street, Suite 200
Minneapolis, MN 55414

RE: MPCA Freeway LF Water - MN

Enclosed are the analytical results for the samples received by the laboratory on 04/05/2019.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. These results are in compliance with the 2009 NELAC Standards and the appropriate agencies listed below, unless otherwise noted in the case narrative. This analytical report should be reproduced in its entirety.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jessica Esser

Project Manager

Certification List			Expires
DODELAP	DOD ELAP Accreditation (A2LA)	3269.01	03/31/2020
ILEPA	Illinois Secondary NELAP Accreditation	004366	04/30/2019
KDHE	Kansas Secondary NELAP Accreditation	E-10384	04/30/2019
LELAP	Louisiana Primary NELAP Accreditation	04165	06/30/2019
NCDEQ	North Carolina Dept. of Environmental Quality Accreditation	688	12/31/2019
NJDEP	New Jersey Secondary NELAP Accreditation	WI004	06/30/2019
ODEQ	Oklahoma Department of Environmental Quality Accreditation	2018-087	08/31/2019
TCEQ	Texas Secondary NELAP Accreditation	T104704504-16-7	11/30/2019
WDNR	Wisconsin Certification under NR 149	113289110	08/31/2019

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1700 Elm Street, Suite 200	Project Number: 10469389
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
834662	A191415-01	Water	04/03/2019	04/05/2019
834663	A191415-02	Water	04/03/2019	04/05/2019
834661	A191415-03	Water	04/03/2019	04/05/2019
FB-2	A191415-04	Water	04/03/2019	04/05/2019
834660	A191415-05	Water	04/03/2019	04/05/2019

CASE NARRATIVE

Sample Receipt Information:
5 samples were received on 04/05/2019. Samples were received at 1.5 degrees Celsius. Samples were received in acceptable condition.

Please see the chain of custody (COC) document at the end of this report for additional information.

Continuing Calibration Verification (CCV):
CCV indicates a potential high bias for acetochlor and prometon for samples A191415-01 through A191415-05. Samples were less than the reporting limit for these analytes so no further action is required.

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1700 Elm Street, Suite 200	Project Number: 10469389
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

834662

A191415-01 (Water)

Date Sampled
04/03/2019 09:20

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Base Neutral Pesticides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A904148**			
Acetochlor	ND	0.50	ug/L	1	04/05/2019	04/11/2019 05:51	EPA 8270D	
Alachlor	ND	0.50	ug/L	1	04/05/2019	04/11/2019 05:51	EPA 8270D	
Atrazine	ND	0.50	ug/L	1	04/05/2019	04/11/2019 05:51	EPA 8270D	
Chlorpyrifos	ND	0.50	ug/L	1	04/05/2019	04/11/2019 05:51	EPA 8270D	
Cyanazine	ND	0.20	ug/L	1	04/05/2019	04/11/2019 05:51	EPA 8270D	
Desethylatrazine	ND	0.50	ug/L	1	04/05/2019	04/11/2019 05:51	EPA 8270D	
Deisopropylatrazine	ND	0.50	ug/L	1	04/05/2019	04/11/2019 05:51	EPA 8270D	
Dimethenamid	ND	0.50	ug/L	1	04/05/2019	04/11/2019 05:51	EPA 8270D	
EPTC	ND	0.50	ug/L	1	04/05/2019	04/11/2019 05:51	EPA 8270D	
Ethalfluralin	ND	0.50	ug/L	1	04/05/2019	04/11/2019 05:51	EPA 8270D	
Fonofos	ND	0.50	ug/L	1	04/05/2019	04/11/2019 05:51	EPA 8270D	
Metolachlor	ND	0.50	ug/L	1	04/05/2019	04/11/2019 05:51	EPA 8270D	
Metribuzin	ND	0.50	ug/L	1	04/05/2019	04/11/2019 05:51	EPA 8270D	
Pendimethalin	ND	0.50	ug/L	1	04/05/2019	04/11/2019 05:51	EPA 8270D	
Phorate	ND	0.30	ug/L	1	04/05/2019	04/11/2019 05:51	EPA 8270D	
Prometon	ND	0.50	ug/L	1	04/05/2019	04/11/2019 05:51	EPA 8270D	
Propachlor	ND	0.50	ug/L	1	04/05/2019	04/11/2019 05:51	EPA 8270D	
Propazine	ND	0.50	ug/L	1	04/05/2019	04/11/2019 05:51	EPA 8270D	
Simazine	ND	0.50	ug/L	1	04/05/2019	04/11/2019 05:51	EPA 8270D	
Terbufos	ND	0.20	ug/L	1	04/05/2019	04/11/2019 05:51	EPA 8270D	
Triallate	ND	0.50	ug/L	1	04/05/2019	04/11/2019 05:51	EPA 8270D	
Trifluralin	ND	0.50	ug/L	1	04/05/2019	04/11/2019 05:51	EPA 8270D	
Surrogate: Atrazine-d5		*98.3 %*		*56.9-123*	*04/05/2019*	*04/11/2019 05:51*	*EPA 8270D*	
Surrogate: Parathion-d10		*72.4 %*		*23.8-169*	*04/05/2019*	*04/11/2019 05:51*	*EPA 8270D*	
Surrogate: Triphenyl phosphate		*86.4 %*		*50.5-178*	*04/05/2019*	*04/11/2019 05:51*	*EPA 8270D*	
Acid Herbicides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A904151**			
2,4-D	ND	0.50	ug/L	1	04/08/2019	04/10/2019 04:14	EPA 8151A	
2,4-DB	ND	0.50	ug/L	1	04/08/2019	04/10/2019 04:14	EPA 8151A	
2,4,5-T	ND	0.50	ug/L	1	04/08/2019	04/10/2019 04:14	EPA 8151A	
2,4,5-TP (Silvex)	ND	0.50	ug/L	1	04/08/2019	04/10/2019 04:14	EPA 8151A	
Bentazon	ND	0.50	ug/L	1	04/08/2019	04/10/2019 04:14	EPA 8151A	
Dicamba	ND	0.50	ug/L	1	04/08/2019	04/10/2019 04:14	EPA 8151A	
MCPA	ND	0.30	ug/L	1	04/08/2019	04/10/2019 04:14	EPA 8151A	
Picloram	ND	0.50	ug/L	1	04/08/2019	04/10/2019 04:14	EPA 8151A	
Triclopyr	ND	0.50	ug/L	1	04/08/2019	04/10/2019 04:14	EPA 8151A	
Surrogate: 2,4-D-d5		*90.2 %*		*44.2-121*	*04/08/2019*	*04/10/2019 04:14*	*EPA 8151A*	

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1700 Elm Street, Suite 200	Project Number: 10469389
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

834663

A191415-02 (Water)

Date Sampled
04/03/2019 10:40

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Base Neutral Pesticides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A904148**			
Acetochlor	ND	0.50	ug/L	1	04/05/2019	04/11/2019 06:23	EPA 8270D	
Alachlor	ND	0.50	ug/L	1	04/05/2019	04/11/2019 06:23	EPA 8270D	
Atrazine	ND	0.50	ug/L	1	04/05/2019	04/11/2019 06:23	EPA 8270D	
Chlorpyrifos	ND	0.50	ug/L	1	04/05/2019	04/11/2019 06:23	EPA 8270D	
Cyanazine	ND	0.20	ug/L	1	04/05/2019	04/11/2019 06:23	EPA 8270D	
Desethylatrazine	ND	0.50	ug/L	1	04/05/2019	04/11/2019 06:23	EPA 8270D	
Deisopropylatrazine	ND	0.50	ug/L	1	04/05/2019	04/11/2019 06:23	EPA 8270D	
Dimethenamid	ND	0.50	ug/L	1	04/05/2019	04/11/2019 06:23	EPA 8270D	
EPTC	ND	0.50	ug/L	1	04/05/2019	04/11/2019 06:23	EPA 8270D	
Ethalfluralin	ND	0.50	ug/L	1	04/05/2019	04/11/2019 06:23	EPA 8270D	
Fonofos	ND	0.50	ug/L	1	04/05/2019	04/11/2019 06:23	EPA 8270D	
Metolachlor	ND	0.50	ug/L	1	04/05/2019	04/11/2019 06:23	EPA 8270D	
Metribuzin	ND	0.50	ug/L	1	04/05/2019	04/11/2019 06:23	EPA 8270D	
Pendimethalin	ND	0.50	ug/L	1	04/05/2019	04/11/2019 06:23	EPA 8270D	
Phorate	ND	0.30	ug/L	1	04/05/2019	04/11/2019 06:23	EPA 8270D	
Prometon	ND	0.50	ug/L	1	04/05/2019	04/11/2019 06:23	EPA 8270D	
Propachlor	ND	0.50	ug/L	1	04/05/2019	04/11/2019 06:23	EPA 8270D	
Propazine	ND	0.50	ug/L	1	04/05/2019	04/11/2019 06:23	EPA 8270D	
Simazine	ND	0.50	ug/L	1	04/05/2019	04/11/2019 06:23	EPA 8270D	
Terbufos	ND	0.20	ug/L	1	04/05/2019	04/11/2019 06:23	EPA 8270D	
Triallate	ND	0.50	ug/L	1	04/05/2019	04/11/2019 06:23	EPA 8270D	
Trifluralin	ND	0.50	ug/L	1	04/05/2019	04/11/2019 06:23	EPA 8270D	
Surrogate: Atrazine-d5		*104 %*		*56.9-123*	*04/05/2019*	*04/11/2019 06:23*	*EPA 8270D*	
Surrogate: Parathion-d10		*84.3 %*		*23.8-169*	*04/05/2019*	*04/11/2019 06:23*	*EPA 8270D*	
Surrogate: Triphenyl phosphate		*98.8 %*		*50.5-178*	*04/05/2019*	*04/11/2019 06:23*	*EPA 8270D*	
Acid Herbicides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A904151**			
2,4-D	ND	0.50	ug/L	1	04/08/2019	04/10/2019 04:49	EPA 8151A	
2,4-DB	ND	0.50	ug/L	1	04/08/2019	04/10/2019 04:49	EPA 8151A	
2,4,5-T	ND	0.50	ug/L	1	04/08/2019	04/10/2019 04:49	EPA 8151A	
2,4,5-TP (Silvex)	ND	0.50	ug/L	1	04/08/2019	04/10/2019 04:49	EPA 8151A	
Bentazon	ND	0.50	ug/L	1	04/08/2019	04/10/2019 04:49	EPA 8151A	
Dicamba	ND	0.50	ug/L	1	04/08/2019	04/10/2019 04:49	EPA 8151A	
MCPA	ND	0.30	ug/L	1	04/08/2019	04/10/2019 04:49	EPA 8151A	
Picloram	ND	0.50	ug/L	1	04/08/2019	04/10/2019 04:49	EPA 8151A	
Triclopyr	ND	0.50	ug/L	1	04/08/2019	04/10/2019 04:49	EPA 8151A	
Surrogate: 2,4-D-d5		*85.6 %*		*44.2-121*	*04/08/2019*	*04/10/2019 04:49*	*EPA 8151A*	

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1700 Elm Street, Suite 200	Project Number: 10469389
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

834661

A191415-03 (Water)

Date Sampled
04/03/2019 11:35

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Base Neutral Pesticides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A904148**			
Acetochlor	ND	0.50	ug/L	1	04/05/2019	04/11/2019 06:54	EPA 8270D	
Alachlor	ND	0.50	ug/L	1	04/05/2019	04/11/2019 06:54	EPA 8270D	
Atrazine	ND	0.50	ug/L	1	04/05/2019	04/11/2019 06:54	EPA 8270D	
Chlorpyrifos	ND	0.50	ug/L	1	04/05/2019	04/11/2019 06:54	EPA 8270D	
Cyanazine	ND	0.20	ug/L	1	04/05/2019	04/11/2019 06:54	EPA 8270D	
Desethylatrazine	ND	0.50	ug/L	1	04/05/2019	04/11/2019 06:54	EPA 8270D	
Deisopropylatrazine	ND	0.50	ug/L	1	04/05/2019	04/11/2019 06:54	EPA 8270D	
Dimethenamid	ND	0.50	ug/L	1	04/05/2019	04/11/2019 06:54	EPA 8270D	
EPTC	ND	0.50	ug/L	1	04/05/2019	04/11/2019 06:54	EPA 8270D	
Ethalfluralin	ND	0.50	ug/L	1	04/05/2019	04/11/2019 06:54	EPA 8270D	
Fonofos	ND	0.50	ug/L	1	04/05/2019	04/11/2019 06:54	EPA 8270D	
Metolachlor	ND	0.50	ug/L	1	04/05/2019	04/11/2019 06:54	EPA 8270D	
Metribuzin	ND	0.50	ug/L	1	04/05/2019	04/11/2019 06:54	EPA 8270D	
Pendimethalin	ND	0.50	ug/L	1	04/05/2019	04/11/2019 06:54	EPA 8270D	
Phorate	ND	0.30	ug/L	1	04/05/2019	04/11/2019 06:54	EPA 8270D	
Prometon	ND	0.50	ug/L	1	04/05/2019	04/11/2019 06:54	EPA 8270D	
Propachlor	ND	0.50	ug/L	1	04/05/2019	04/11/2019 06:54	EPA 8270D	
Propazine	ND	0.50	ug/L	1	04/05/2019	04/11/2019 06:54	EPA 8270D	
Simazine	ND	0.50	ug/L	1	04/05/2019	04/11/2019 06:54	EPA 8270D	
Terbufos	ND	0.20	ug/L	1	04/05/2019	04/11/2019 06:54	EPA 8270D	
Triallate	ND	0.50	ug/L	1	04/05/2019	04/11/2019 06:54	EPA 8270D	
Trifluralin	ND	0.50	ug/L	1	04/05/2019	04/11/2019 06:54	EPA 8270D	
Surrogate: Atrazine-d5		*109 %*		*56.9-123*	*04/05/2019*	*04/11/2019 06:54*	*EPA 8270D*	
Surrogate: Parathion-d10		*81.6 %*		*23.8-169*	*04/05/2019*	*04/11/2019 06:54*	*EPA 8270D*	
Surrogate: Triphenyl phosphate		*105 %*		*50.5-178*	*04/05/2019*	*04/11/2019 06:54*	*EPA 8270D*	
Acid Herbicides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A904151**			
2,4-D	ND	0.50	ug/L	1	04/08/2019	04/10/2019 05:24	EPA 8151A	
2,4-DB	ND	0.50	ug/L	1	04/08/2019	04/10/2019 05:24	EPA 8151A	
2,4,5-T	ND	0.50	ug/L	1	04/08/2019	04/10/2019 05:24	EPA 8151A	
2,4,5-TP (Silvex)	ND	0.50	ug/L	1	04/08/2019	04/10/2019 05:24	EPA 8151A	
Bentazon	ND	0.50	ug/L	1	04/08/2019	04/10/2019 05:24	EPA 8151A	
Dicamba	ND	0.50	ug/L	1	04/08/2019	04/10/2019 05:24	EPA 8151A	
MCPA	ND	0.30	ug/L	1	04/08/2019	04/10/2019 05:24	EPA 8151A	
Picloram	ND	0.50	ug/L	1	04/08/2019	04/10/2019 05:24	EPA 8151A	
Triclopyr	ND	0.50	ug/L	1	04/08/2019	04/10/2019 05:24	EPA 8151A	
Surrogate: 2,4-D-d5		*95.8 %*		*44.2-121*	*04/08/2019*	*04/10/2019 05:24*	*EPA 8151A*	

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1700 Elm Street, Suite 200	Project Number: 10469389
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

FB-2

A191415-04 (Water)

Date Sampled
04/03/2019 12:30

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Base Neutral Pesticides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A904148**			
Acetochlor	ND	0.50	ug/L	1	04/05/2019	04/11/2019 07:25	EPA 8270D	
Alachlor	ND	0.50	ug/L	1	04/05/2019	04/11/2019 07:25	EPA 8270D	
Atrazine	ND	0.50	ug/L	1	04/05/2019	04/11/2019 07:25	EPA 8270D	
Chlorpyrifos	ND	0.50	ug/L	1	04/05/2019	04/11/2019 07:25	EPA 8270D	
Cyanazine	ND	0.20	ug/L	1	04/05/2019	04/11/2019 07:25	EPA 8270D	
Desethylatrazine	ND	0.50	ug/L	1	04/05/2019	04/11/2019 07:25	EPA 8270D	
Deisopropylatrazine	ND	0.50	ug/L	1	04/05/2019	04/11/2019 07:25	EPA 8270D	
Dimethenamid	ND	0.50	ug/L	1	04/05/2019	04/11/2019 07:25	EPA 8270D	
EPTC	ND	0.50	ug/L	1	04/05/2019	04/11/2019 07:25	EPA 8270D	
Ethalfluralin	ND	0.50	ug/L	1	04/05/2019	04/11/2019 07:25	EPA 8270D	
Fonofos	ND	0.50	ug/L	1	04/05/2019	04/11/2019 07:25	EPA 8270D	
Metolachlor	ND	0.50	ug/L	1	04/05/2019	04/11/2019 07:25	EPA 8270D	
Metribuzin	ND	0.50	ug/L	1	04/05/2019	04/11/2019 07:25	EPA 8270D	
Pendimethalin	ND	0.50	ug/L	1	04/05/2019	04/11/2019 07:25	EPA 8270D	
Phorate	ND	0.30	ug/L	1	04/05/2019	04/11/2019 07:25	EPA 8270D	
Prometon	ND	0.50	ug/L	1	04/05/2019	04/11/2019 07:25	EPA 8270D	
Propachlor	ND	0.50	ug/L	1	04/05/2019	04/11/2019 07:25	EPA 8270D	
Propazine	ND	0.50	ug/L	1	04/05/2019	04/11/2019 07:25	EPA 8270D	
Simazine	ND	0.50	ug/L	1	04/05/2019	04/11/2019 07:25	EPA 8270D	
Terbufos	ND	0.20	ug/L	1	04/05/2019	04/11/2019 07:25	EPA 8270D	
Triallate	ND	0.50	ug/L	1	04/05/2019	04/11/2019 07:25	EPA 8270D	
Trifluralin	ND	0.50	ug/L	1	04/05/2019	04/11/2019 07:25	EPA 8270D	
Surrogate: Atrazine-d5		*87.9 %*		*56.9-123*	*04/05/2019*	*04/11/2019 07:25*	*EPA 8270D*	
Surrogate: Parathion-d10		*78.2 %*		*23.8-169*	*04/05/2019*	*04/11/2019 07:25*	*EPA 8270D*	
Surrogate: Triphenyl phosphate		*101 %*		*50.5-178*	*04/05/2019*	*04/11/2019 07:25*	*EPA 8270D*	
Acid Herbicides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A904151**			
2,4-D	ND	0.50	ug/L	1	04/08/2019	04/10/2019 05:59	EPA 8151A	
2,4-DB	ND	0.50	ug/L	1	04/08/2019	04/10/2019 05:59	EPA 8151A	
2,4,5-T	ND	0.50	ug/L	1	04/08/2019	04/10/2019 05:59	EPA 8151A	
2,4,5-TP (Silvex)	ND	0.50	ug/L	1	04/08/2019	04/10/2019 05:59	EPA 8151A	
Bentazon	ND	0.50	ug/L	1	04/08/2019	04/10/2019 05:59	EPA 8151A	
Dicamba	ND	0.50	ug/L	1	04/08/2019	04/10/2019 05:59	EPA 8151A	
MCPA	ND	0.30	ug/L	1	04/08/2019	04/10/2019 05:59	EPA 8151A	
Picloram	ND	0.50	ug/L	1	04/08/2019	04/10/2019 05:59	EPA 8151A	
Triclopyr	ND	0.50	ug/L	1	04/08/2019	04/10/2019 05:59	EPA 8151A	
Surrogate: 2,4-D-d5		*82.4 %*		*44.2-121*	*04/08/2019*	*04/10/2019 05:59*	*EPA 8151A*	

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1700 Elm Street, Suite 200	Project Number: 10469389
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

834660

A191415-05 (Water)

Date Sampled
04/03/2019 13:30

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Base Neutral Pesticides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A904148**			
Acetochlor	ND	0.50	ug/L	1	04/05/2019	04/11/2019 07:56	EPA 8270D	
Alachlor	ND	0.50	ug/L	1	04/05/2019	04/11/2019 07:56	EPA 8270D	
Atrazine	ND	0.50	ug/L	1	04/05/2019	04/11/2019 07:56	EPA 8270D	
Chlorpyrifos	ND	0.50	ug/L	1	04/05/2019	04/11/2019 07:56	EPA 8270D	
Cyanazine	ND	0.20	ug/L	1	04/05/2019	04/11/2019 07:56	EPA 8270D	
Desethylatrazine	ND	0.50	ug/L	1	04/05/2019	04/11/2019 07:56	EPA 8270D	
Deisopropylatrazine	ND	0.50	ug/L	1	04/05/2019	04/11/2019 07:56	EPA 8270D	
Dimethenamid	ND	0.50	ug/L	1	04/05/2019	04/11/2019 07:56	EPA 8270D	
EPTC	ND	0.50	ug/L	1	04/05/2019	04/11/2019 07:56	EPA 8270D	
Ethalfluralin	ND	0.50	ug/L	1	04/05/2019	04/11/2019 07:56	EPA 8270D	
Fonofos	ND	0.50	ug/L	1	04/05/2019	04/11/2019 07:56	EPA 8270D	
Metolachlor	ND	0.50	ug/L	1	04/05/2019	04/11/2019 07:56	EPA 8270D	
Metribuzin	ND	0.50	ug/L	1	04/05/2019	04/11/2019 07:56	EPA 8270D	
Pendimethalin	ND	0.50	ug/L	1	04/05/2019	04/11/2019 07:56	EPA 8270D	
Phorate	ND	0.30	ug/L	1	04/05/2019	04/11/2019 07:56	EPA 8270D	
Prometon	ND	0.50	ug/L	1	04/05/2019	04/11/2019 07:56	EPA 8270D	
Propachlor	ND	0.50	ug/L	1	04/05/2019	04/11/2019 07:56	EPA 8270D	
Propazine	ND	0.50	ug/L	1	04/05/2019	04/11/2019 07:56	EPA 8270D	
Simazine	ND	0.50	ug/L	1	04/05/2019	04/11/2019 07:56	EPA 8270D	
Terbufos	ND	0.20	ug/L	1	04/05/2019	04/11/2019 07:56	EPA 8270D	
Triallate	ND	0.50	ug/L	1	04/05/2019	04/11/2019 07:56	EPA 8270D	
Trifluralin	ND	0.50	ug/L	1	04/05/2019	04/11/2019 07:56	EPA 8270D	
Surrogate: Atrazine-d5		*102 %*		*56.9-123*	*04/05/2019*	*04/11/2019 07:56*	*EPA 8270D*	
Surrogate: Parathion-d10		*77.4 %*		*23.8-169*	*04/05/2019*	*04/11/2019 07:56*	*EPA 8270D*	
Surrogate: Triphenyl phosphate		*94.2 %*		*50.5-178*	*04/05/2019*	*04/11/2019 07:56*	*EPA 8270D*	
Acid Herbicides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A904158**			
2,4-D	ND	0.50	ug/L	1	04/10/2019	04/12/2019 17:48	EPA 8151A	
2,4-DB	ND	0.50	ug/L	1	04/10/2019	04/12/2019 17:48	EPA 8151A	
2,4,5-T	ND	0.50	ug/L	1	04/10/2019	04/12/2019 17:48	EPA 8151A	
2,4,5-TP (Silvex)	ND	0.50	ug/L	1	04/10/2019	04/12/2019 17:48	EPA 8151A	
Bentazon	ND	0.50	ug/L	1	04/10/2019	04/12/2019 17:48	EPA 8151A	
Dicamba	ND	0.50	ug/L	1	04/10/2019	04/12/2019 17:48	EPA 8151A	
MCPA	ND	0.30	ug/L	1	04/10/2019	04/12/2019 17:48	EPA 8151A	
Picloram	ND	0.50	ug/L	1	04/10/2019	04/12/2019 17:48	EPA 8151A	
Triclopyr	ND	0.50	ug/L	1	04/10/2019	04/12/2019 17:48	EPA 8151A	
Surrogate: 2,4-D-d5		*85.6 %*		*44.2-121*	*04/10/2019*	*04/12/2019 17:48*	*EPA 8151A*	

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Pace Analytical	Project: MPCA Freeway LF Water - MN
1700 Elm Street, Suite 200	Project Number: 10469389
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Base Neutral Pesticides by Gas Chromatography/Mass Spectrometry - Quality Control

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A904148 - EPA 3510C										
Blank (A904148-BLK1)				Prepared: 04/05/2019 Analyzed: 04/10/2019 22:04						
Acetochlor	ND	0.50	ug/L							
Alachlor	ND	0.50	ug/L							
Atrazine	ND	0.50	ug/L							
Chlorpyrifos	ND	0.50	ug/L							
Cyanazine	ND	0.20	ug/L							
Desethylatrazine	ND	0.50	ug/L							
Deisopropylatrazine	ND	0.50	ug/L							
Dimethenamid	ND	0.50	ug/L							
EPTC	ND	0.50	ug/L							
Ethalfluralin	ND	0.50	ug/L							
Fonofos	ND	0.50	ug/L							
Metolachlor	ND	0.50	ug/L							
Metribuzin	ND	0.50	ug/L							
Pendimethalin	ND	0.50	ug/L							
Phorate	ND	0.30	ug/L							
Prometon	ND	0.50	ug/L							
Propachlor	ND	0.50	ug/L							
Propazine	ND	0.50	ug/L							
Simazine	ND	0.50	ug/L							
Terbufos	ND	0.20	ug/L							
Triallate	ND	0.50	ug/L							
Trifluralin	ND	0.50	ug/L							
Surrogate: Atrazine-d5	*0.549*		*ug/L*	*0.5000*		*110*	*56.9-123*			
Surrogate: Parathion-d10	*0.330*		*ug/L*	*0.5000*		*66.0*	*23.8-169*			
Surrogate: Triphenyl phosphate	*0.491*		*ug/L*	*0.5000*		*98.3*	*50.5-178*			
LCS (A904148-BS1)				Prepared: 04/05/2019 Analyzed: 04/10/2019 22:35						
Acetochlor	0.888	0.50	ug/L	1.000		88.8	67.8-122			
Alachlor	0.808	0.50	ug/L	1.000		80.8	68.6-119			
Atrazine	0.817	0.50	ug/L	1.000		81.7	68.6-115			
Chlorpyrifos	0.733	0.50	ug/L	1.000		73.3	63.1-120			
Cyanazine	0.791	0.20	ug/L	1.000		79.1	55.3-143			
Desethylatrazine	0.812	0.50	ug/L	1.000		81.2	67.8-115			
Deisopropylatrazine	0.613	0.50	ug/L	1.000		61.3	50.1-100			
Dimethenamid	0.844	0.50	ug/L	1.000		84.4	70.3-121			
EPTC	0.593	0.50	ug/L	1.000		59.3	50.4-101			
Ethalfluralin	0.441	0.50	ug/L	1.000		44.1	42.6-121			
Fonofos	0.676	0.50	ug/L	1.000		67.6	56.6-119			
Metolachlor	0.837	0.50	ug/L	1.000		83.7	71.3-128			
Metribuzin	0.771	0.50	ug/L	1.000		77.1	64.9-120			
Pendimethalin	0.736	0.50	ug/L	1.000		73.6	60.9-128			
Phorate	0.582	0.30	ug/L	1.000		58.2	37.3-112			
Prometon	0.940	0.50	ug/L	1.000		94.0	67.1-120			
Propachlor	0.788	0.50	ug/L	1.000		78.8	66.2-127			
Propazine	0.825	0.50	ug/L	1.000		82.5	68.2-118			
Simazine	0.822	0.50	ug/L	1.000		82.2	67.2-117			

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1700 Elm Street, Suite 200	Project Number: 10469389
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Base Neutral Pesticides by Gas Chromatography/Mass Spectrometry - Quality Control

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A904148 - EPA 3510C										
LCS (A904148-BS1)				Prepared: 04/05/2019 Analyzed: 04/10/2019 22:35						
Terbufos	0.584	0.20	ug/L	1.000		58.4	34.3-111			
Triallate	0.596	0.50	ug/L	1.000		59.6	53-121			
Trifluralin	0.474	0.50	ug/L	1.000		47.4	45.9-116			
Surrogate: Atrazine-d5	*0.465*		*ug/L*	*0.5000*		*93.0*	*56.9-123*			
Surrogate: Parathion-d10	*0.397*		*ug/L*	*0.5000*		*79.4*	*23.8-169*			
Surrogate: Triphenyl phosphate	*0.419*		*ug/L*	*0.5000*		*83.8*	*50.5-178*			
LCS Dup (A904148-BSD1)				Prepared: 04/05/2019 Analyzed: 04/11/2019 00:09						
Acetochlor	0.901	0.50	ug/L	1.000		90.1	67.8-122	1.50	20	
Alachlor	0.823	0.50	ug/L	1.000		82.3	68.6-119	1.83	20	
Atrazine	0.783	0.50	ug/L	1.000		78.3	68.6-115	4.26	20	
Chlorpyrifos	0.710	0.50	ug/L	1.000		71.0	63.1-120	3.24	20	
Cyanazine	0.833	0.20	ug/L	1.000		83.3	55.3-143	5.20	20	
Desethylatrazine	0.806	0.50	ug/L	1.000		80.6	67.8-115	0.637	20	
Deisopropylatrazine	0.646	0.50	ug/L	1.000		64.6	50.1-100	5.24	20	
Dimethenamid	0.834	0.50	ug/L	1.000		83.4	70.3-121	1.28	20	
EPTC	0.641	0.50	ug/L	1.000		64.1	50.4-101	7.77	20	
Ethalfluralin	0.593	0.50	ug/L	1.000		59.3	42.6-121	29.3	20	X
Fonofos	0.705	0.50	ug/L	1.000		70.5	56.6-119	4.11	20	
Metolachlor	0.882	0.50	ug/L	1.000		88.2	71.3-128	5.33	20	
Metribuzin	0.823	0.50	ug/L	1.000		82.3	64.9-120	6.50	20	
Pendimethalin	0.785	0.50	ug/L	1.000		78.5	60.9-128	6.41	20	
Phorate	0.656	0.30	ug/L	1.000		65.6	37.3-112	11.9	20	
Prometon	0.887	0.50	ug/L	1.000		88.7	67.1-120	5.72	20	
Propachlor	0.797	0.50	ug/L	1.000		79.7	66.2-127	1.15	20	
Propazine	0.824	0.50	ug/L	1.000		82.4	68.2-118	0.0364	20	
Simazine	0.791	0.50	ug/L	1.000		79.1	67.2-117	3.81	20	
Terbufos	0.631	0.20	ug/L	1.000		63.1	34.3-111	7.66	20	
Triallate	0.706	0.50	ug/L	1.000		70.6	53-121	17.0	20	
Trifluralin	0.548	0.50	ug/L	1.000		54.8	45.9-116	14.5	20	
Surrogate: Atrazine-d5	*0.444*		*ug/L*	*0.5000*		*88.8*	*56.9-123*			
Surrogate: Parathion-d10	*0.355*		*ug/L*	*0.5000*		*70.9*	*23.8-169*			
Surrogate: Triphenyl phosphate	*0.428*		*ug/L*	*0.5000*		*85.6*	*50.5-178*			

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Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Acid Herbicides by Gas Chromatography/Mass Spectrometry - Quality Control

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A904151 - EPA 3510C										
Blank (A904151-BLK1)				Prepared: 04/08/2019 Analyzed: 04/10/2019 00:08						
2,4-D	ND	0.50	ug/L							
2,4-DB	ND	0.50	ug/L							
2,4,5-T	ND	0.50	ug/L							
2,4,5-TP (Silvex)	ND	0.50	ug/L							
Bentazon	ND	0.50	ug/L							
Dicamba	ND	0.50	ug/L							
MCPA	ND	0.30	ug/L							
Picloram	ND	0.50	ug/L							
Triclopyr	ND	0.50	ug/L							
Surrogate: 2,4-D-d5	*1.75*		*ug/L*	*2.006*		*87.4*	*44.2-121*			
LCS (A904151-BS1)				Prepared: 04/08/2019 Analyzed: 04/10/2019 01:19						
2,4-D	1.92	0.50	ug/L	2.000		96.0	64.6-148			
2,4-DB	1.99	0.50	ug/L	2.000		99.6	66.7-143			
2,4,5-T	1.72	0.50	ug/L	2.000		86.0	63.4-133			
2,4,5-TP (Silvex)	1.94	0.50	ug/L	2.000		96.9	63-145			
Bentazon	0.994	0.50	ug/L	1.000		99.4	52.5-139			
Dicamba	1.78	0.50	ug/L	2.000		89.1	55.4-143			
MCPA	1.95	0.30	ug/L	2.000		97.4	33.5-143			
Picloram	0.794	0.50	ug/L	1.000		79.4	47.9-113			
Triclopyr	1.89	0.50	ug/L	2.000		94.7	65.1-141			
Surrogate: 2,4-D-d5	*1.78*		*ug/L*	*2.006*		*88.5*	*44.2-121*			
LCS Dup (A904151-BSD1)				Prepared: 04/08/2019 Analyzed: 04/10/2019 01:54						
2,4-D	1.96	0.50	ug/L	2.000		98.2	64.6-148	2.17	20	
2,4-DB	2.00	0.50	ug/L	2.000		100	66.7-143	0.436	20	
2,4,5-T	1.83	0.50	ug/L	2.000		91.5	63.4-133	6.23	20	
2,4,5-TP (Silvex)	1.96	0.50	ug/L	2.000		97.9	63-145	1.00	20	
Bentazon	1.01	0.50	ug/L	1.000		101	52.5-139	1.64	20	
Dicamba	1.82	0.50	ug/L	2.000		90.8	55.4-143	1.83	20	
MCPA	1.90	0.30	ug/L	2.000		95.2	33.5-143	2.33	20	
Picloram	0.715	0.50	ug/L	1.000		71.5	47.9-113	10.4	20	
Triclopyr	1.94	0.50	ug/L	2.000		96.9	65.1-141	2.40	20	
Surrogate: 2,4-D-d5	*1.73*		*ug/L*	*2.006*		*86.0*	*44.2-121*			

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1700 Elm Street, Suite 200	Project Number: 10469389
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Acid Herbicides by Gas Chromatography/Mass Spectrometry - Quality Control

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A904158 - EPA 3510C										
Blank (A904158-BLK1)				Prepared: 04/10/2019 Analyzed: 04/12/2019 15:27						
2,4-D	ND	0.50	ug/L							
2,4-DB	ND	0.50	ug/L							
2,4,5-T	ND	0.50	ug/L							
2,4,5-TP (Silvex)	ND	0.50	ug/L							
Bentazon	ND	0.50	ug/L							
Dicamba	ND	0.50	ug/L							
MCPA	ND	0.30	ug/L							
Picloram	ND	0.50	ug/L							
Triclopyr	ND	0.50	ug/L							
Surrogate: 2,4-D-d5	*1.53*		*ug/L*	*2.006*		*76.3*	*44.2-121*			
LCS (A904158-BS1)				Prepared: 04/10/2019 Analyzed: 04/12/2019 16:02						
2,4-D	1.80	0.50	ug/L	2.000		90.1	64.6-148			
2,4-DB	1.94	0.50	ug/L	2.000		97.2	66.7-143			
2,4,5-T	1.77	0.50	ug/L	2.000		88.6	63.4-133			
2,4,5-TP (Silvex)	1.85	0.50	ug/L	2.000		92.4	63-145			
Bentazon	0.939	0.50	ug/L	1.000		93.9	52.5-139			
Dicamba	1.71	0.50	ug/L	2.000		85.6	55.4-143			
MCPA	1.83	0.30	ug/L	2.000		91.7	33.5-143			
Picloram	0.807	0.50	ug/L	1.000		80.7	47.9-113			
Triclopyr	1.79	0.50	ug/L	2.000		89.6	65.1-141			
Surrogate: 2,4-D-d5	*1.63*		*ug/L*	*2.006*		*81.3*	*44.2-121*			
Matrix Spike (A904158-MS1)	**Source: A191420-01**			Prepared: 04/10/2019 Analyzed: 04/12/2019 16:38						
2,4-D	1.90	0.50	ug/L	1.905	ND	99.6	44.6-158			
2,4-DB	1.78	0.50	ug/L	1.905	ND	93.3	64.7-136			
2,4,5-T	1.62	0.50	ug/L	1.905	ND	85.2	54.1-129			
2,4,5-TP (Silvex)	1.73	0.50	ug/L	1.905	ND	90.8	55.3-147			
Bentazon	0.939	0.50	ug/L	0.9524	ND	98.6	35.5-160			
Dicamba	1.62	0.50	ug/L	1.905	ND	85.2	45.2-150			
MCPA	1.80	0.30	ug/L	1.905	ND	94.3	33.6-149			
Picloram	0.745	0.50	ug/L	0.9524	ND	78.2	32.6-139			
Triclopyr	1.73	0.50	ug/L	1.905	ND	90.7	56.8-143			
Surrogate: 2,4-D-d5	*1.56*		*ug/L*	*1.911*		*81.8*	*44.2-121*			
Matrix Spike Dup (A904158-MSD1)	**Source: A191420-01**			Prepared: 04/10/2019 Analyzed: 04/12/2019 17:13						
2,4-D	1.93	0.50	ug/L	1.942	ND	99.6	44.6-158	1.97	20	
2,4-DB	1.91	0.50	ug/L	1.942	ND	98.5	64.7-136	7.31	20	
2,4,5-T	1.76	0.50	ug/L	1.942	ND	90.5	54.1-129	7.97	20	
2,4,5-TP (Silvex)	1.92	0.50	ug/L	1.942	ND	98.9	55.3-147	10.5	20	
Bentazon	1.05	0.50	ug/L	0.9709	ND	109	35.5-160	11.5	20	
Dicamba	1.72	0.50	ug/L	1.942	ND	88.5	45.2-150	5.73	20	
MCPA	1.85	0.30	ug/L	1.942	ND	95.4	33.6-149	3.09	20	
Picloram	0.829	0.50	ug/L	0.9709	ND	85.4	32.6-139	10.7	20	
Triclopyr	1.80	0.50	ug/L	1.942	ND	92.5	56.8-143	3.90	20	
Surrogate: 2,4-D-d5	*1.65*		*ug/L*	*1.948*		*84.8*	*44.2-121*			

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Pace Analytical	Project: MPCA Freeway LF Water - MN
1700 Elm Street, Suite 200	Project Number: 10469389
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Notes and Definitions

X	Precision for the matrix spike duplicate, laboratory control sample duplicate or lab duplicate was outside of control limits.
ND	Analyte NOT DETECTED at or above the reporting limit or limit of detection (if listed).
NR	Not Reported
dry	Sample results reported on a dry weight basis. If the word 'dry' does not appear after the units, results are reported on an as-is basis.
RPD	Relative Percent Difference

Chain of Custody

A191415

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☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN
Cert. Needed: ☐ Yes ☐ No

Workorder: 10469389 **Workorder Name:** 19-01567 MPCA Freeway LF 19 WT **Owner Received Date:** 4/3/2019 **Results Requested By:** 4/24/2019

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6436	Pace Analytical Madison 2525 Advance Road Madison, WI 53718 Phone (608)221-8700

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved AG1U						Requested Analysis: MDA List 1	MDA List 2										LAB USE ONLY
1	834662	PS	4/3/2019 09:20	10469389001	Water	4						X	X										01
2	834663	PS	4/3/2019 10:40	10469389002	Water	4						X	X										02
3	834661	PS	4/3/2019 11:35	10469389003	Water	4						X	X										03
4	FB-2	PS	4/3/2019 12:30	10469389004	Water	4						X	X										04
5	834660	PS	4/3/2019 13:30	10469389005	Water	4						X	X										05

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature] Pace	4/4/19 1425	Kari-Ann Killen	4/5/19
2				$30
3				

Comments
Need MPCA Equis EDD and Barr Equis 5 EDD

Cooler Temperature on Receipt 1.5 °C | **Custody Seal** (Y) or N | **Received on Ice** (Y) or N | **Samples Intact** (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.*

1601422 74 exp 7/13/19

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

April 29, 2019

Mr. Brad Jacobson
Pace Analytical Services, LLC..
1700 Elm Street
Suite 200
Minneapolis, MN 55414

RE: Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10470295

Dear Mr. Jacobson:
Enclosed are the analytical results for sample(s) received by the laboratory on April 10, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Some analyses have been subcontracted outside of the Pace Network. The subcontracted laboratory report has been attached.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jennifer Anderson
jennifer.anderson@pacelabs.com
(612)607-6436
Project Manager

Enclosures

cc: Tom Halverson, Pace Analytical Field Services
Chris Pelosi, Pace Analytical Services - Field Services

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CERTIFICATIONS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10470295

Minnesota Certification IDs

1700 Elm Street SE, Minneapolis, MN 55414-2485
A2LA Certification #: 2926.01
Alabama Certification #: 40770
Alaska Contaminated Sites Certification #: 17-009
Alaska DW Certification #: MN00064
Arizona Certification #: AZ0014
Arkansas DW Certification #: MN00064
Arkansas WW Certification #: 88-0680
California Certification #: 2929
CNMI Saipan Certification #: MP0003
Colorado Certification #: MN00064
Connecticut Certification #: PH-0256
EPA Region 8+Wyoming DW Certification #: via MN 027-053-137
Florida Certification #: E87605
Georgia Certification #: 959
Guam EPA Certification #: MN00064
Hawaii Certification #: MN00064
Idaho Certification #: MN00064
Illinois Certification #: 200011
Indiana Certification #: C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky DW Certification #: 90062
Kentucky WW Certification #: 90062
Louisiana DEQ Certification #: 03086
Louisiana DW Certification #: MN00064
Maine Certification #: MN00064
Maryland Certification #: 322
Massachusetts Certification #: M-MN064
Michigan Certification #: 9909
Minnesota Certification #: 027-053-137
Minnesota Dept of Ag Certifcation #: via MN 027-053-137
Minnesota Petrofund Certification #: 1240
Mississippi Certification #: MN00064
Missouri Certification #: 10100
Montana Certification #: CERT0092
Nebraska Certification #: NE-OS-18-06
Nevada Certification #: MN00064
New Hampshire Certification #: 2081
New Jersey Certification #: MN002
New York Certification #: 11647
North Carolina DW Certification #: 27700
North Carolina WW Certification #: 530
North Dakota Certification #: R-036
Ohio DW Certification #: 41244
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Primary Certification #: MN300001
Oregon Secondary Certification #: MN200001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification #: MN00064
South Carolina Certification #:74003001
Tennessee Certification #: TN02818
Texas Certification #: T104704192
Utah Certification #: MN00064
Vermont Certification #: VT-027053137
Virginia Certification #: 460163
Washington Certification #: C486
West Virginia DEP Certification #: 382
West Virginia DW Certification #: 9952 C
Wisconsin Certification #: 999407970
Wyoming UST Certification #: via A2LA 2926.01

Virginia Minnesota Certification ID's

315 Chestnut Street, Virginia, MN 55792
Alaska Certification UST-107
Montana Certificate #CERT0103
Minnesota Dept of Health Certification #: 027-137-445
North Dakota Certification: # R-203
Wisconsin DNR Certification # : 998027470
WA Department of Ecology Lab ID# C1007

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Florida: Cert E871149 SEKS WET
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221

REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10470295

Pennsylvania Certification IDs

KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

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SAMPLE SUMMARY

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10470295

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10470295001	**837777**	Water	04/10/19 11:10	04/10/19 14:00
10470295002	**837776**	Water	04/10/19 13:10	04/10/19 14:00

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SAMPLE ANALYTE COUNT

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10470295

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10470295001	**837777**	EPA 8082A	RAG	11	PASI-M
		EPA 200.7	DM	9	PASI-M
		EPA 200.8	BWB	12	PASI-M
		EPA 8270D	STB	38	PASI-M
			CLJ	16	PASI-V
		EPA 900.0	CLA	2	PASI-PA
		EPA 300.0	KEO	1	PASI-M
		SM 3500-Cr B Modified	JFP	1	PASI-M
		EPA 350.1	CLJ	1	PASI-V
		EPA 350.1 rev. 2 (1993)	DMB	1	PASI-V
		SM 4500-CN-E	DCL	1	PASI-M
10470295002	**837776**	EPA 8082A	RAG	11	PASI-M
		EPA 200.7	DM	9	PASI-M
		EPA 200.8	BWB	12	PASI-M
		EPA 8270D	STB	38	PASI-M
			CLJ	16	PASI-V
		EPA 900.0	CLA	2	PASI-PA
		EPA 300.0	KEO	1	PASI-M
		SM 3500-Cr B Modified	JFP	1	PASI-M
		EPA 350.1	CLJ	1	PASI-V
		EPA 350.1 rev. 2 (1993)	DMB	1	PASI-V
		SM 4500-CN-E	DCL	1	PASI-M

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10470295

Sample: 837777 **Lab ID: 10470295001** Collected: 04/10/19 11:10 Received: 04/10/19 14:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA Mod. 3510C							
PCB-1016 (Aroclor 1016)	ND	ug/L	0.097	1	04/10/19 17:39	04/12/19 10:33	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/L	0.097	1	04/10/19 17:39	04/12/19 10:33	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/L	0.097	1	04/10/19 17:39	04/12/19 10:33	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/L	0.097	1	04/10/19 17:39	04/12/19 10:33	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/L	0.097	1	04/10/19 17:39	04/12/19 10:33	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/L	0.097	1	04/10/19 17:39	04/12/19 10:33	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/L	0.097	1	04/10/19 17:39	04/12/19 10:33	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/L	0.097	1	04/10/19 17:39	04/12/19 10:33	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/L	0.097	1	04/10/19 17:39	04/12/19 10:33	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	73	%.	30-125	1	04/10/19 17:39	04/12/19 10:33	877-09-8	
Decachlorobiphenyl (S)	49	%.	30-125	1	04/10/19 17:39	04/12/19 10:33	2051-24-3	
200.7 MET ICP, Dissolved	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Aluminum, Dissolved	ND	ug/L	200	1	04/12/19 06:45	04/15/19 10:08	7429-90-5	
Barium, Dissolved	**1250**	ug/L	10.0	1	04/12/19 06:45	04/15/19 10:08	7440-39-3	
Copper, Dissolved	ND	ug/L	10.0	1	04/12/19 06:45	04/15/19 10:08	7440-50-8	
Manganese, Dissolved	**208**	ug/L	5.0	1	04/12/19 06:45	04/15/19 10:08	7439-96-5	
Nickel, Dissolved	**35.7**	ug/L	20.0	1	04/12/19 06:45	04/15/19 10:08	7440-02-0	
Silver, Dissolved	ND	ug/L	10.0	1	04/12/19 06:45	04/15/19 10:08	7440-22-4	
Tin, Dissolved	ND	ug/L	75.0	1	04/12/19 06:45	04/15/19 10:08	7440-31-5	
Total Hardness by 2340B, Dissolved	**445000**	ug/L	3300	1	04/12/19 06:45	04/15/19 10:08		
Zinc, Dissolved	ND	ug/L	20.0	1	04/12/19 06:45	04/15/19 10:08	7440-66-6	
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Dissolved	ND	ug/L	0.50	1	04/12/19 14:52	04/15/19 18:21	7440-36-0	
Arsenic, Dissolved	**7.5**	ug/L	0.50	1	04/12/19 14:52	04/15/19 18:21	7440-38-2	
Beryllium, Dissolved	ND	ug/L	0.20	1	04/12/19 14:52	04/15/19 18:21	7440-41-7	
Boron, Dissolved	**1260**	ug/L	200	20	04/12/19 14:52	04/15/19 18:24	7440-42-8	
Cadmium, Dissolved	ND	ug/L	0.080	1	04/12/19 14:52	04/15/19 18:21	7440-43-9	
Chromium, Dissolved	**0.66**	ug/L	0.50	1	04/12/19 14:52	04/15/19 18:21	7440-47-3	
Cobalt, Dissolved	**6.9**	ug/L	0.50	1	04/12/19 14:52	04/15/19 18:21	7440-48-4	
Lead, Dissolved	ND	ug/L	0.10	1	04/12/19 14:52	04/15/19 18:21	7439-92-1	
Selenium, Dissolved	ND	ug/L	0.50	1	04/12/19 14:52	04/15/19 18:21	7782-49-2	
Thallium, Dissolved	**0.18**	ug/L	0.10	1	04/12/19 14:52	04/15/19 18:21	7440-28-0	
Uranium-238, Dissolved	ND	ug/L	0.50	1	04/12/19 14:52	04/15/19 18:21	7440-61-1	
Vanadium, Dissolved	ND	ug/L	1.0	1	04/12/19 14:52	04/15/19 18:21	7440-62-2	
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
Acenaphthene	ND	ug/L	9.7	1	04/12/19 14:57	04/18/19 14:22	83-32-9	
Anthracene	ND	ug/L	9.7	1	04/12/19 14:57	04/18/19 14:22	120-12-7	
Benzo(a)pyrene	ND	ug/L	9.7	1	04/12/19 14:57	04/18/19 14:22	50-32-8	
Benzoic acid	ND	ug/L	48.5	1	04/12/19 14:57	04/18/19 14:22	65-85-0	
4-Bromophenylphenyl ether	ND	ug/L	9.7	1	04/12/19 14:57	04/18/19 14:22	101-55-3	
Butylbenzylphthalate	ND	ug/L	9.7	1	04/12/19 14:57	04/18/19 14:22	85-68-7	
bis(2-Chloroethyl) ether	ND	ug/L	9.7	1	04/12/19 14:57	04/18/19 14:22	111-44-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10470295

Sample: 837777 **Lab ID: 10470295001** Collected: 04/10/19 11:10 Received: 04/10/19 14:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
2-Chlorophenol	ND	ug/L	9.7	1	04/12/19 14:57	04/18/19 14:22	95-57-8	
3,3'-Dichlorobenzidine	ND	ug/L	48.5	1	04/12/19 14:57	04/18/19 14:22	91-94-1	
2,4-Dichlorophenol	ND	ug/L	9.7	1	04/12/19 14:57	04/18/19 14:22	120-83-2	
Diethylphthalate	ND	ug/L	9.7	1	04/12/19 14:57	04/18/19 14:22	84-66-2	
2,4-Dimethylphenol	ND	ug/L	9.7	1	04/12/19 14:57	04/18/19 14:22	105-67-9	
Dimethylphthalate	ND	ug/L	9.7	1	04/12/19 14:57	04/18/19 14:22	131-11-3	
Di-n-butylphthalate	ND	ug/L	9.7	1	04/12/19 14:57	04/18/19 14:22	84-74-2	
2,4-Dinitrophenol	ND	ug/L	9.7	1	04/12/19 14:57	04/18/19 14:22	51-28-5	
Di-n-octylphthalate	ND	ug/L	9.7	1	04/12/19 14:57	04/18/19 14:22	117-84-0	
bis(2-Ethylhexyl)phthalate	ND	ug/L	9.7	1	04/12/19 14:57	04/18/19 14:22	117-81-7	
Fluoranthene	ND	ug/L	9.7	1	04/12/19 14:57	04/18/19 14:22	206-44-0	
Fluorene	ND	ug/L	9.7	1	04/12/19 14:57	04/18/19 14:22	86-73-7	
Hexachlorobenzene	ND	ug/L	9.7	1	04/12/19 14:57	04/18/19 14:22	118-74-1	
Hexachlorocyclopentadiene	ND	ug/L	48.5	1	04/12/19 14:57	04/18/19 14:22	77-47-4	L2
Hexachloroethane	ND	ug/L	9.7	1	04/12/19 14:57	04/18/19 14:22	67-72-1	
Isophorone	ND	ug/L	9.7	1	04/12/19 14:57	04/18/19 14:22	78-59-1	
2-Methylnaphthalene	ND	ug/L	9.7	1	04/12/19 14:57	04/18/19 14:22	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/L	9.7	1	04/12/19 14:57	04/18/19 14:22	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/L	19.4	1	04/12/19 14:57	04/18/19 14:22		
N-Nitrosodimethylamine	ND	ug/L	9.7	1	04/12/19 14:57	04/18/19 14:22	62-75-9	
Pentachlorophenol	ND	ug/L	19.4	1	04/12/19 14:57	04/18/19 14:22	87-86-5	
Phenanthrene	ND	ug/L	9.7	1	04/12/19 14:57	04/18/19 14:22	85-01-8	
Phenol	ND	ug/L	9.7	1	04/12/19 14:57	04/18/19 14:22	108-95-2	
Pyrene	ND	ug/L	9.7	1	04/12/19 14:57	04/18/19 14:22	129-00-0	
2,4,6-Trichlorophenol	ND	ug/L	9.7	1	04/12/19 14:57	04/18/19 14:22	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	84	%.	55-125	1	04/12/19 14:57	04/18/19 14:22	4165-60-0	
2-Fluorobiphenyl (S)	81	%.	52-125	1	04/12/19 14:57	04/18/19 14:22	321-60-8	
p-Terphenyl-d14 (S)	103	%.	57-125	1	04/12/19 14:57	04/18/19 14:22	1718-51-0	
Phenol-d6 (S)	87	%.	30-125	1	04/12/19 14:57	04/18/19 14:22	13127-88-3	
2-Fluorophenol (S)	85	%.	30-125	1	04/12/19 14:57	04/18/19 14:22	367-12-4	
2,4,6-Tribromophenol (S)	107	%.	52-125	1	04/12/19 14:57	04/18/19 14:22	118-79-6	
Field Data	Analytical Method:							
Collected Date	**04/10/19**			1		04/10/19 11:10		
Collected Time	**1110**			1		04/10/19 11:10		
Field pH	**7.2**	Std. Units		1		04/10/19 11:10		
Field Temperature	**10.5**	deg C		1		04/10/19 11:10		
Field Specific Conductance	**1930**	umhos/cm		1		04/10/19 11:10		
Oxygen, Dissolved	**0.5**	mg/L		1		04/10/19 11:10	7782-44-7	
REDOX	**-138**	mV		1		04/10/19 11:10		
Turbidity	**3.1**	NTU		1		04/10/19 11:10		
Apparent Color	**Clear**			1		04/10/19 11:10		
Odor	**No**			1		04/10/19 11:10		
Well Locked	**Yes**			1		04/10/19 11:10		
Purge Method	**Grundfos Redi-Flo**			1		04/10/19 11:10		

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10470295

Sample: 837777 **Lab ID: 10470295001** Collected: 04/10/19 11:10 Received: 04/10/19 14:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:							
Total Well Depth	**84.50**	feet		1		04/10/19 11:10		
Depth of Water	**69.79**			1		04/10/19 11:10		
Well Volume Purged	**30.0**			1		04/10/19 11:10		
Purge Rate	**0.5**			1		04/10/19 11:10		
300.0 IC Anions	Analytical Method: EPA 300.0							
Chloride	**240**	mg/L	12.0	10		04/11/19 14:07	16887-00-6	M6
Chromium, Hexavalent	Analytical Method: SM 3500-Cr B Modified							
Chromium, Hexavalent	ND	mg/L	0.010	1		04/11/19 09:02		FS,M1
350.1 Ammonia, Unionized	Analytical Method: EPA 350.1							
Nitrogen, Ammonia (Unionized)	**0.091**	mg/L	0.010	1		04/16/19 16:27		
350.1 Ammonia, Distilled	Analytical Method: EPA 350.1 rev. 2 (1993) Preparation Method: EPA 350.1 rev. 2 (1993)							
Nitrogen, Ammonia	**29.9**	mg/L	1.1	10	04/16/19 09:07	04/16/19 14:36	7664-41-7	
SM4500CN-E Cyanide	Analytical Method: SM 4500-CN-E Preparation Method: SM 4500-CN-E							
Cyanide	ND	ug/L	20.0	1	04/19/19 09:18	04/19/19 12:20	57-12-5	

Sample: 837776 **Lab ID: 10470295002** Collected: 04/10/19 13:10 Received: 04/10/19 14:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA Mod. 3510C							
PCB-1016 (Aroclor 1016)	ND	ug/L	0.10	1	04/10/19 17:39	04/12/19 10:48	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/L	0.10	1	04/10/19 17:39	04/12/19 10:48	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/L	0.10	1	04/10/19 17:39	04/12/19 10:48	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/L	0.10	1	04/10/19 17:39	04/12/19 10:48	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/L	0.10	1	04/10/19 17:39	04/12/19 10:48	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/L	0.10	1	04/10/19 17:39	04/12/19 10:48	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/L	0.10	1	04/10/19 17:39	04/12/19 10:48	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/L	0.10	1	04/10/19 17:39	04/12/19 10:48	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/L	0.10	1	04/10/19 17:39	04/12/19 10:48	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	80	%.	30-125	1	04/10/19 17:39	04/12/19 10:48	877-09-8	
Decachlorobiphenyl (S)	59	%.	30-125	1	04/10/19 17:39	04/12/19 10:48	2051-24-3	
200.7 MET ICP, Dissolved	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Aluminum, Dissolved	ND	ug/L	200	1	04/12/19 06:45	04/15/19 10:09	7429-90-5	
Barium, Dissolved	**1090**	ug/L	10.0	1	04/12/19 06:45	04/15/19 10:09	7440-39-3	
Copper, Dissolved	ND	ug/L	10.0	1	04/12/19 06:45	04/15/19 10:09	7440-50-8	
Manganese, Dissolved	**1190**	ug/L	5.0	1	04/12/19 06:45	04/15/19 10:09	7439-96-5	
Nickel, Dissolved	**42.0**	ug/L	20.0	1	04/12/19 06:45	04/15/19 10:09	7440-02-0	
Silver, Dissolved	ND	ug/L	10.0	1	04/12/19 06:45	04/15/19 10:09	7440-22-4	

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10470295

Sample: 837776 **Lab ID: 10470295002** Collected: 04/10/19 13:10 Received: 04/10/19 14:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 MET ICP, Dissolved	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Tin, Dissolved	ND	ug/L	75.0	1	04/12/19 06:45	04/15/19 10:09	7440-31-5	
Total Hardness by 2340B, Dissolved	**447000**	ug/L	3300	1	04/12/19 06:45	04/15/19 10:09		
Zinc, Dissolved	ND	ug/L	20.0	1	04/12/19 06:45	04/15/19 10:09	7440-66-6	
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Dissolved	ND	ug/L	0.50	1	04/12/19 14:52	04/15/19 18:36	7440-36-0	
Arsenic, Dissolved	**4.2**	ug/L	0.50	1	04/12/19 14:52	04/15/19 18:36	7440-38-2	
Beryllium, Dissolved	ND	ug/L	0.20	1	04/12/19 14:52	04/15/19 18:36	7440-41-7	
Boron, Dissolved	**567**	ug/L	200	20	04/12/19 14:52	04/15/19 18:39	7440-42-8	
Cadmium, Dissolved	ND	ug/L	0.080	1	04/12/19 14:52	04/15/19 18:36	7440-43-9	
Chromium, Dissolved	**0.59**	ug/L	0.50	1	04/12/19 14:52	04/15/19 18:36	7440-47-3	
Cobalt, Dissolved	**38.9**	ug/L	0.50	1	04/12/19 14:52	04/15/19 18:36	7440-48-4	
Lead, Dissolved	ND	ug/L	0.10	1	04/12/19 14:52	04/15/19 18:36	7439-92-1	
Selenium, Dissolved	ND	ug/L	0.50	1	04/12/19 14:52	04/15/19 18:36	7782-49-2	
Thallium, Dissolved	**1.3**	ug/L	0.10	1	04/12/19 14:52	04/15/19 18:36	7440-28-0	
Uranium-238, Dissolved	**0.78**	ug/L	0.50	1	04/12/19 14:52	04/15/19 18:36	7440-61-1	
Vanadium, Dissolved	ND	ug/L	1.0	1	04/12/19 14:52	04/15/19 18:36	7440-62-2	
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
Acenaphthene	ND	ug/L	9.7	1	04/12/19 14:57	04/18/19 14:51	83-32-9	
Anthracene	ND	ug/L	9.7	1	04/12/19 14:57	04/18/19 14:51	120-12-7	
Benzo(a)pyrene	ND	ug/L	9.7	1	04/12/19 14:57	04/18/19 14:51	50-32-8	
Benzoic acid	ND	ug/L	48.3	1	04/12/19 14:57	04/18/19 14:51	65-85-0	
4-Bromophenylphenyl ether	ND	ug/L	9.7	1	04/12/19 14:57	04/18/19 14:51	101-55-3	
Butylbenzylphthalate	ND	ug/L	9.7	1	04/12/19 14:57	04/18/19 14:51	85-68-7	
bis(2-Chloroethyl) ether	ND	ug/L	9.7	1	04/12/19 14:57	04/18/19 14:51	111-44-4	
2-Chlorophenol	ND	ug/L	9.7	1	04/12/19 14:57	04/18/19 14:51	95-57-8	
3,3'-Dichlorobenzidine	ND	ug/L	48.3	1	04/12/19 14:57	04/18/19 14:51	91-94-1	
2,4-Dichlorophenol	ND	ug/L	9.7	1	04/12/19 14:57	04/18/19 14:51	120-83-2	
Diethylphthalate	ND	ug/L	9.7	1	04/12/19 14:57	04/18/19 14:51	84-66-2	
2,4-Dimethylphenol	ND	ug/L	9.7	1	04/12/19 14:57	04/18/19 14:51	105-67-9	
Dimethylphthalate	ND	ug/L	9.7	1	04/12/19 14:57	04/18/19 14:51	131-11-3	
Di-n-butylphthalate	ND	ug/L	9.7	1	04/12/19 14:57	04/18/19 14:51	84-74-2	
2,4-Dinitrophenol	ND	ug/L	9.7	1	04/12/19 14:57	04/18/19 14:51	51-28-5	
Di-n-octylphthalate	ND	ug/L	9.7	1	04/12/19 14:57	04/18/19 14:51	117-84-0	
bis(2-Ethylhexyl)phthalate	ND	ug/L	9.7	1	04/12/19 14:57	04/18/19 14:51	117-81-7	
Fluoranthene	ND	ug/L	9.7	1	04/12/19 14:57	04/18/19 14:51	206-44-0	
Fluorene	ND	ug/L	9.7	1	04/12/19 14:57	04/18/19 14:51	86-73-7	
Hexachlorobenzene	ND	ug/L	9.7	1	04/12/19 14:57	04/18/19 14:51	118-74-1	
Hexachlorocyclopentadiene	ND	ug/L	48.3	1	04/12/19 14:57	04/18/19 14:51	77-47-4	L2
Hexachloroethane	ND	ug/L	9.7	1	04/12/19 14:57	04/18/19 14:51	67-72-1	
Isophorone	ND	ug/L	9.7	1	04/12/19 14:57	04/18/19 14:51	78-59-1	
2-Methylnaphthalene	ND	ug/L	9.7	1	04/12/19 14:57	04/18/19 14:51	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/L	9.7	1	04/12/19 14:57	04/18/19 14:51	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/L	19.3	1	04/12/19 14:57	04/18/19 14:51		
N-Nitrosodimethylamine	ND	ug/L	9.7	1	04/12/19 14:57	04/18/19 14:51	62-75-9	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10470295

Sample: 837776 **Lab ID: 10470295002** Collected: 04/10/19 13:10 Received: 04/10/19 14:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
Pentachlorophenol	ND	ug/L	19.3	1	04/12/19 14:57	04/18/19 14:51	87-86-5	
Phenanthrene	ND	ug/L	9.7	1	04/12/19 14:57	04/18/19 14:51	85-01-8	
Phenol	ND	ug/L	9.7	1	04/12/19 14:57	04/18/19 14:51	108-95-2	
Pyrene	ND	ug/L	9.7	1	04/12/19 14:57	04/18/19 14:51	129-00-0	
2,4,6-Trichlorophenol	ND	ug/L	9.7	1	04/12/19 14:57	04/18/19 14:51	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	81	%.	55-125	1	04/12/19 14:57	04/18/19 14:51	4165-60-0	
2-Fluorobiphenyl (S)	75	%.	52-125	1	04/12/19 14:57	04/18/19 14:51	321-60-8	
p-Terphenyl-d14 (S)	99	%.	57-125	1	04/12/19 14:57	04/18/19 14:51	1718-51-0	
Phenol-d6 (S)	84	%.	30-125	1	04/12/19 14:57	04/18/19 14:51	13127-88-3	
2-Fluorophenol (S)	83	%.	30-125	1	04/12/19 14:57	04/18/19 14:51	367-12-4	
2,4,6-Tribromophenol (S)	102	%.	52-125	1	04/12/19 14:57	04/18/19 14:51	118-79-6	
Field Data	Analytical Method:							
Collected Date	**04/10/19**			1		04/10/19 13:10		
Collected Time	**1310**			1		04/10/19 13:10		
Field pH	**7.1**	Std. Units		1		04/10/19 13:10		
Field Temperature	**11.5**	deg C		1		04/10/19 13:10		
Field Specific Conductance	**1340**	umhos/cm		1		04/10/19 13:10		
Oxygen, Dissolved	**0.3**	mg/L		1		04/10/19 13:10	7782-44-7	
REDOX	**-97**	mV		1		04/10/19 13:10		
Turbidity	**14.2**	NTU		1		04/10/19 13:10		
Apparent Color	**Clear**			1		04/10/19 13:10		
Odor	**No**			1		04/10/19 13:10		
Well Locked	**Yes**			1		04/10/19 13:10		
Purge Method	**Grundfos Redi-Flo**			1		04/10/19 13:10		
Total Well Depth	**89.05**	feet		1		04/10/19 13:10		
Depth of Water	**74.19**			1		04/10/19 13:10		
Well Volume Purged	**30.0**			1		04/10/19 13:10		
Purge Rate	**0.5**			1		04/10/19 13:10		
300.0 IC Anions	Analytical Method: EPA 300.0							
Chloride	**139**	mg/L	2.4	2		04/11/19 15:11	16887-00-6	
Chromium, Hexavalent	Analytical Method: SM 3500-Cr B Modified							
Chromium, Hexavalent	ND	mg/L	0.010	1		04/11/19 09:02		FS
350.1 Ammonia, Unionized	Analytical Method: EPA 350.1							
Nitrogen, Ammonia (Unionized)	**0.031**	mg/L	0.010	1		04/16/19 16:29		
350.1 Ammonia, Distilled	Analytical Method: EPA 350.1 rev. 2 (1993) Preparation Method: EPA 350.1 rev. 2 (1993)							
Nitrogen, Ammonia	**11.9**	mg/L	0.55	5	04/16/19 09:07	04/16/19 14:33	7664-41-7	
SM4500CN-E Cyanide	Analytical Method: SM 4500-CN-E Preparation Method: SM 4500-CN-E							
Cyanide	ND	ug/L	20.0	1	04/19/19 09:18	04/19/19 12:20	57-12-5	

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10470295

QC Batch: 599041
QC Batch Method: EPA 200.7
Analysis Method: EPA 200.7
Analysis Description: 200.7 MET Dissolved
Associated Lab Samples: 10470295001, 10470295002

METHOD BLANK: 3238544 Matrix: Water
Associated Lab Samples: 10470295001, 10470295002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum, Dissolved	ug/L	ND	200	04/15/19 09:43	
Barium, Dissolved	ug/L	ND	10.0	04/15/19 09:43	
Copper, Dissolved	ug/L	ND	10.0	04/15/19 09:43	
Manganese, Dissolved	ug/L	ND	5.0	04/15/19 09:43	
Nickel, Dissolved	ug/L	ND	20.0	04/15/19 09:43	
Silver, Dissolved	ug/L	ND	10.0	04/15/19 09:43	
Tin, Dissolved	ug/L	ND	75.0	04/15/19 09:43	
Zinc, Dissolved	ug/L	ND	20.0	04/15/19 09:43	

LABORATORY CONTROL SAMPLE: 3238545

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum, Dissolved	ug/L	20000	22000	110	85-115	
Barium, Dissolved	ug/L	1000	1030	103	85-115	
Copper, Dissolved	ug/L	1000	1020	102	85-115	
Manganese, Dissolved	ug/L	1000	1050	105	85-115	
Nickel, Dissolved	ug/L	1000	1030	103	85-115	
Silver, Dissolved	ug/L	500	524	105	85-115	
Tin, Dissolved	ug/L	1000	1020	102	85-115	
Zinc, Dissolved	ug/L	1000	1050	105	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3238546 3238547

Parameter	Units	10469872001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum, Dissolved	ug/L	ND	20000	20000	23000	22800	115	114	70-130	1	20	
Barium, Dissolved	ug/L	35.8	1000	1000	1070	1070	104	103	70-130	0	20	
Copper, Dissolved	ug/L	ND	1000	1000	1060	1050	106	105	70-130	1	20	
Manganese, Dissolved	ug/L	25.3	1000	1000	1080	1080	105	105	70-130	0	20	
Nickel, Dissolved	ug/L	ND	1000	1000	1010	998	101	100	70-130	1	20	
Silver, Dissolved	ug/L	ND	500	500	552	550	110	110	70-130	0	20	
Tin, Dissolved	ug/L	ND	1000	1000	1020	990	102	99	70-130	3	20	
Zinc, Dissolved	ug/L	ND	1000	1000	1020	1010	101	101	70-130	1	20	

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10470295

QC Batch: 599044
QC Batch Method: EPA 200.8
Analysis Method: EPA 200.8
Analysis Description: 200.8 MET Dissolved
Associated Lab Samples: 10470295001, 10470295002

METHOD BLANK: 3238557 Matrix: Water
Associated Lab Samples: 10470295001, 10470295002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony, Dissolved	ug/L	ND	0.50	04/15/19 16:53	
Arsenic, Dissolved	ug/L	ND	0.50	04/15/19 16:53	
Beryllium, Dissolved	ug/L	ND	0.20	04/15/19 16:53	
Boron, Dissolved	ug/L	ND	10.0	04/15/19 16:53	
Cadmium, Dissolved	ug/L	ND	0.080	04/15/19 16:53	
Chromium, Dissolved	ug/L	ND	0.50	04/15/19 16:53	
Cobalt, Dissolved	ug/L	ND	0.50	04/15/19 16:53	
Lead, Dissolved	ug/L	ND	0.10	04/15/19 16:53	
Selenium, Dissolved	ug/L	ND	0.50	04/15/19 16:53	
Thallium, Dissolved	ug/L	ND	0.10	04/15/19 16:53	
Uranium-238, Dissolved	ug/L	ND	0.50	04/15/19 16:53	
Vanadium, Dissolved	ug/L	ND	1.0	04/15/19 16:53	

LABORATORY CONTROL SAMPLE: 3238558

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony, Dissolved	ug/L	100	93.7	94	85-115	
Arsenic, Dissolved	ug/L	100	89.9	90	85-115	
Beryllium, Dissolved	ug/L	100	99.8	100	85-115	
Boron, Dissolved	ug/L	100	99.0	99	85-115	
Cadmium, Dissolved	ug/L	100	92.4	92	85-115	
Chromium, Dissolved	ug/L	100	97.9	98	85-115	
Cobalt, Dissolved	ug/L	100	100	100	85-115	
Lead, Dissolved	ug/L	100	97.8	98	85-115	
Selenium, Dissolved	ug/L	100	99.8	100	85-115	
Thallium, Dissolved	ug/L	100	96.7	97	85-115	
Uranium-238, Dissolved	ug/L	100	97.4	97	85-115	
Vanadium, Dissolved	ug/L	100	96.0	96	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3238559 3238560

Parameter	Units	10469872002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony, Dissolved	ug/L	ND	100	100	91.2	94.3	91	94	70-130	3	20	
Arsenic, Dissolved	ug/L	0.61	100	100	92.4	96.1	92	95	70-130	4	20	
Beryllium, Dissolved	ug/L	ND	100	100	107	114	107	113	70-130	6	20	
Boron, Dissolved	ug/L	155	100	100	278	294	122	138	70-130	6	20	M1
Cadmium, Dissolved	ug/L	ND	100	100	91.1	93.1	91	93	70-130	2	20	

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10470295

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3238559 3238560

Parameter	Units	10469872002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Dissolved	ug/L	ND	100	100	93.8	97.3	94	97	70-130	4	20	
Cobalt, Dissolved	ug/L	ND	100	100	94.7	98.3	94	98	70-130	4	20	
Lead, Dissolved	ug/L	ND	100	100	89.2	90.9	89	91	70-130	2	20	
Selenium, Dissolved	ug/L	3.1	100	100	111	118	108	115	70-130	6	20	
Thallium, Dissolved	ug/L	ND	100	100	89.3	90.7	89	91	70-130	2	20	
Uranium-238, Dissolved	ug/L	7.2	100	100	105	108	97	101	70-130	3	20	
Vanadium, Dissolved	ug/L	ND	100	100	94.9	98.6	95	98	70-130	4	20	

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10470295

QC Batch: 598633 Analysis Method: EPA 8082A
QC Batch Method: EPA Mod. 3510C Analysis Description: 8082A GCS PCB
Associated Lab Samples: 10470295001, 10470295002

METHOD BLANK: 3236649 Matrix: Water
Associated Lab Samples: 10470295001, 10470295002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
PCB-1016 (Aroclor 1016)	ug/L	ND	0.10	04/12/19 08:16	
PCB-1221 (Aroclor 1221)	ug/L	ND	0.10	04/12/19 08:16	
PCB-1232 (Aroclor 1232)	ug/L	ND	0.10	04/12/19 08:16	
PCB-1242 (Aroclor 1242)	ug/L	ND	0.10	04/12/19 08:16	
PCB-1248 (Aroclor 1248)	ug/L	ND	0.10	04/12/19 08:16	
PCB-1254 (Aroclor 1254)	ug/L	ND	0.10	04/12/19 08:16	
PCB-1260 (Aroclor 1260)	ug/L	ND	0.10	04/12/19 08:16	
PCB-1262 (Aroclor 1262)	ug/L	ND	0.10	04/12/19 08:16	
PCB-1268 (Aroclor 1268)	ug/L	ND	0.10	04/12/19 08:16	
Decachlorobiphenyl (S)	%.	71	30-125	04/12/19 08:16	
Tetrachloro-m-xylene (S)	%.	49	30-125	04/12/19 08:16	

LABORATORY CONTROL SAMPLE & LCSD: 3236650 3236651

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
PCB-1016 (Aroclor 1016)	ug/L	2	1.6	1.4	81	69	45-125	16	20	
PCB-1260 (Aroclor 1260)	ug/L	2	1.8	1.6	90	80	49-125	11	20	
Decachlorobiphenyl (S)	%.				104	90	30-125			
Tetrachloro-m-xylene (S)	%.				73	53	30-125			

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10470295

QC Batch: 599196 Analysis Method: EPA 8270D
QC Batch Method: EPA 3520 Analysis Description: 8270D Water MSSV
Associated Lab Samples: 10470295001, 10470295002

METHOD BLANK: 3239525 Matrix: Water
Associated Lab Samples: 10470295001, 10470295002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
2,4,6-Trichlorophenol	ug/L	ND	10.0	04/16/19 12:09	
2,4-Dichlorophenol	ug/L	ND	10.0	04/16/19 12:09	
2,4-Dimethylphenol	ug/L	ND	10.0	04/16/19 12:09	
2,4-Dinitrophenol	ug/L	ND	10.0	04/16/19 12:09	
2-Chlorophenol	ug/L	ND	10.0	04/16/19 12:09	
2-Methylnaphthalene	ug/L	ND	10.0	04/16/19 12:09	
2-Methylphenol(o-Cresol)	ug/L	ND	10.0	04/16/19 12:09	
3&4-Methylphenol(m&p Cresol)	ug/L	ND	20.0	04/16/19 12:09	
3,3'-Dichlorobenzidine	ug/L	ND	50.0	04/16/19 12:09	
4-Bromophenylphenyl ether	ug/L	ND	10.0	04/16/19 12:09	
Acenaphthene	ug/L	ND	10.0	04/16/19 12:09	
Anthracene	ug/L	ND	10.0	04/16/19 12:09	
Benzo(a)pyrene	ug/L	ND	10.0	04/16/19 12:09	
Benzoic acid	ug/L	ND	50.0	04/16/19 12:09	
bis(2-Chloroethyl) ether	ug/L	ND	10.0	04/16/19 12:09	
bis(2-Ethylhexyl)phthalate	ug/L	ND	10.0	04/16/19 12:09	
Butylbenzylphthalate	ug/L	ND	10.0	04/16/19 12:09	
Di-n-butylphthalate	ug/L	ND	10.0	04/16/19 12:09	
Di-n-octylphthalate	ug/L	ND	10.0	04/16/19 12:09	
Diethylphthalate	ug/L	ND	10.0	04/16/19 12:09	
Dimethylphthalate	ug/L	ND	10.0	04/16/19 12:09	
Fluoranthene	ug/L	ND	10.0	04/16/19 12:09	
Fluorene	ug/L	ND	10.0	04/16/19 12:09	
Hexachlorobenzene	ug/L	ND	10.0	04/16/19 12:09	
Hexachlorocyclopentadiene	ug/L	ND	50.0	04/16/19 12:09	
Hexachloroethane	ug/L	ND	10.0	04/16/19 12:09	
Isophorone	ug/L	ND	10.0	04/16/19 12:09	
N-Nitrosodimethylamine	ug/L	ND	10.0	04/16/19 12:09	
Pentachlorophenol	ug/L	ND	20.0	04/16/19 12:09	
Phenanthrene	ug/L	ND	10.0	04/16/19 12:09	
Phenol	ug/L	ND	10.0	04/16/19 12:09	
Pyrene	ug/L	ND	10.0	04/16/19 12:09	
2,4,6-Tribromophenol (S)	%.	97	52-125	04/16/19 12:09	
2-Fluorobiphenyl (S)	%.	74	52-125	04/16/19 12:09	
2-Fluorophenol (S)	%.	79	30-125	04/16/19 12:09	
Nitrobenzene-d5 (S)	%.	79	55-125	04/16/19 12:09	
p-Terphenyl-d14 (S)	%.	101	57-125	04/16/19 12:09	
Phenol-d6 (S)	%.	77	30-125	04/16/19 12:09	

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REPORT OF LABORATORY ANALYSIS

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1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10470295

LABORATORY CONTROL SAMPLE & LCSD: 3239526 3239527

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
2,4,6-Trichlorophenol	ug/L	50	46.5	45.1	93	90	60-125	3	20	
2,4-Dichlorophenol	ug/L	50	41.5	41.7	83	83	56-125	0	20	
2,4-Dimethylphenol	ug/L	50	29.1	24.4	58	49	33-125	18	20	
2,4-Dinitrophenol	ug/L	50	45.1	46.9	90	94	32-125	4	20	
2-Chlorophenol	ug/L	50	35.9	37.3	72	75	52-125	4	20	
2-Methylnaphthalene	ug/L	50	41.3	41.2	83	82	52-125	0	20	
2-Methylphenol(o-Cresol)	ug/L	50	36.8	37.1	74	74	55-125	1	20	
3&4-Methylphenol(m&p Cresol)	ug/L	50	39.2	39.5	78	79	57-125	1	20	
3,3'-Dichlorobenzidine	ug/L	50	47.6J	41.5J	95	83	39-150		20	
4-Bromophenylphenyl ether	ug/L	50	45.5	45.5	91	91	61-125	0	20	
Acenaphthene	ug/L	50	43.4	42.9	87	86	59-125	1	20	
Anthracene	ug/L	50	45.8	45.3	92	91	64-125	1	20	
Benzo(a)pyrene	ug/L	50	44.4	43.6	89	87	63-125	2	20	
Benzoic acid	ug/L	50	44.6J	39.6J	89	79	30-125		20	
bis(2-Chloroethyl) ether	ug/L	50	36.2	37.9	72	76	49-125	4	20	
bis(2-Ethylhexyl)phthalate	ug/L	50	47.8	47.8	96	96	68-125	0	20	
Butylbenzylphthalate	ug/L	50	47.8	47.3	96	95	67-125	1	20	
Di-n-butylphthalate	ug/L	50	46.6	47.1	93	94	67-125	1	20	
Di-n-octylphthalate	ug/L	50	48.4	47.8	97	96	67-125	1	20	
Diethylphthalate	ug/L	50	45.3	44.5	91	89	64-125	2	20	
Dimethylphthalate	ug/L	50	45.1	44.3	90	89	65-125	2	20	
Fluoranthene	ug/L	50	45.8	45.4	92	91	64-125	1	20	
Fluorene	ug/L	50	44.4	43.4	89	87	63-125	2	20	
Hexachlorobenzene	ug/L	50	44.5	43.9	89	88	61-125	1	20	
Hexachlorocyclopentadiene	ug/L	50	ND	ND	16	15	30-125		20	L2
Hexachloroethane	ug/L	50	34.0	35.4	68	71	30-125	4	20	
Isophorone	ug/L	50	44.6	44.1	89	88	59-125	1	20	
N-Nitrosodimethylamine	ug/L	50	40.1	39.6	80	79	43-125	1	20	1M
Pentachlorophenol	ug/L	50	57.4	56.3	115	113	35-125	2	20	
Phenanthrene	ug/L	50	44.7	45.2	89	90	65-125	1	20	
Phenol	ug/L	50	37.4	38.4	75	77	54-125	3	20	
Pyrene	ug/L	50	46.1	45.6	92	91	65-125	1	20	
2,4,6-Tribromophenol (S)	%.				101	97	52-125			
2-Fluorobiphenyl (S)	%.				84	81	52-125			
2-Fluorophenol (S)	%.				73	74	30-125			
Nitrobenzene-d5 (S)	%.				78	77	55-125			
p-Terphenyl-d14 (S)	%.				95	95	57-125			
Phenol-d6 (S)	%.				75	76	30-125			

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(612)607-1700

QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10470295

QC Batch: 598690 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 10470295001, 10470295002

METHOD BLANK: 3236831 Matrix: Water
Associated Lab Samples: 10470295001, 10470295002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.2	04/10/19 20:11	

LABORATORY CONTROL SAMPLE: 3236832

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	12.5	12.3	98	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3236846 3236847

Parameter	Units	10470255006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	147	62.5	62.5	188	188	66	66	90-110	0	20	M1

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3237864 3237865

Parameter	Units	10470295001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	240	125	125	344	344	83	83	90-110	0	20	M6

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10470295

QC Batch: 598875 Analysis Method: SM 3500-Cr B Modified
QC Batch Method: SM 3500-Cr B Modified Analysis Description: Chromium, Hexavalent by 3500
Associated Lab Samples: 10470295001, 10470295002

METHOD BLANK: 3237874 Matrix: Water
Associated Lab Samples: 10470295001, 10470295002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium, Hexavalent	mg/L	ND	0.010	04/11/19 09:02	FS

LABORATORY CONTROL SAMPLE: 3237875

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/L	0.2	0.19	94	90-110	FS

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3237876 3237877

Parameter	Units	10470295001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Hexavalent	mg/L	ND	0.2	0.2	0.080	0.074	38	35	85-115	8	20	FS,M1

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10470295

QC Batch: 164346 Analysis Method: EPA 350.1 rev. 2 (1993)
QC Batch Method: EPA 350.1 rev. 2 (1993) Analysis Description: 350.1 Ammonia Distilled
Associated Lab Samples: 10470295001, 10470295002

METHOD BLANK: 647484 Matrix: Water
Associated Lab Samples: 10470295001, 10470295002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, Ammonia	mg/L	ND	0.11	04/16/19 13:52	

LABORATORY CONTROL SAMPLE: 647485

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Ammonia	mg/L	5	4.9	99	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 647486 647487

Parameter	Units	12123517002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, Ammonia	mg/L	ND	5	5	5.1	5.2	101	102	90-110	1	10	

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10470295

QC Batch: 600214 Analysis Method: SM 4500-CN-E
QC Batch Method: SM 4500-CN-E Analysis Description: SM4500CN-E Cyanide
Associated Lab Samples: 10470295001, 10470295002

METHOD BLANK: 3244808 Matrix: Water
Associated Lab Samples: 10470295001, 10470295002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cyanide	ug/L	ND	20.0	04/19/19 11:54	

LABORATORY CONTROL SAMPLE: 3244809

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cyanide	ug/L	250	250	100	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3244810 3244811

Parameter	Units	10471130001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cyanide	ug/L	0.024 mg/L	250	250	237	219	85	78	80-120	8	30	M1

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3244812 3244813

Parameter	Units	10471132001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cyanide	ug/L	ND	250	250	226	261	85	99	80-120	14	30	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10470295

Sample: 837777 **Lab ID: 10470295001** Collected: 04/10/19 11:10 Received: 04/10/19 14:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 900.0	**5.24 ± 3.14 (5.12) C:NA T:NA**	pCi/L	04/18/19 18:08	12587-46-1	
Gross Beta	EPA 900.0	**18.7 ± 4.24 (3.66) C:NA T:NA**	pCi/L	04/18/19 18:08	12587-47-2	

Sample: 837776 **Lab ID: 10470295002** Collected: 04/10/19 13:10 Received: 04/10/19 14:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 900.0	**6.89 ± 2.49 (2.98) C:NA T:NA**	pCi/L	04/18/19 18:09	12587-46-1	
Gross Beta	EPA 900.0	**8.25 ± 2.10 (2.16) C:NA T:NA**	pCi/L	04/18/19 18:09	12587-47-2	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10470295

QC Batch: 338742 Analysis Method: EPA 900.0
QC Batch Method: EPA 900.0 Analysis Description: 900.0 Gross Alpha/Beta
Associated Lab Samples: 10470295001, 10470295002

METHOD BLANK: 1648700 Matrix: Water
Associated Lab Samples: 10470295001, 10470295002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Gross Alpha	0.181 ± 0.507 (1.26) C:NA T:NA	pCi/L	04/19/19 08:12	
Gross Beta	0.188 ± 0.813 (1.93) C:NA T:NA	pCi/L	04/19/19 08:12	

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QUALIFIERS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10470295

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-M	Pace Analytical Services - Minneapolis
PASI-PA	Pace Analytical Services - Greensburg
PASI-V	Pace Analytical Services - Virginia

WORKORDER QUALIFIERS

WO: 10470295

[1] Samples were received outside of the recommended temperature range of 0-6 degrees Celsius. The samples were received from the field on ice.

BATCH QUALIFIERS

Batch: 599105

[M5] A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

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(612)607-1700

QUALIFIERS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10470295

ANALYTE QUALIFIERS

1M	The associated compound was outside of 20% for the associated continuing calibration but within 40% of the true value
FS	The sample was filtered in the laboratory prior to analysis.
L2	Analyte recovery in the laboratory control sample (LCS) was below QC limits. Results for this analyte in associated samples may be biased low.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
M6	Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10470295

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10470295001	**837777**	EPA Mod. 3510C	598633	EPA 8082A	599105
10470295002	**837776**	EPA Mod. 3510C	598633	EPA 8082A	599105
10470295001	**837777**	EPA 200.7	599041	EPA 200.7	599255
10470295002	**837776**	EPA 200.7	599041	EPA 200.7	599255
10470295001	**837777**	EPA 200.8	599044	EPA 200.8	599500
10470295002	**837776**	EPA 200.8	599044	EPA 200.8	599500
10470295001	**837777**	EPA 3520	599196	EPA 8270D	599776
10470295002	**837776**	EPA 3520	599196	EPA 8270D	599776
10470295001	**837777**				
10470295002	**837776**				
10470295001	**837777**	EPA 900.0	338742		
10470295002	**837776**	EPA 900.0	338742		
10470295001	**837777**	EPA 300.0	598690		
10470295002	**837776**	EPA 300.0	598690		
10470295001	**837777**	SM 3500-Cr B Modified	598875		
10470295002	**837776**	SM 3500-Cr B Modified	598875		
10470295001	**837777**	EPA 350.1			
10470295002	**837776**	EPA 350.1			
10470295001	**837777**	EPA 350.1 rev. 2 (1993)	164346	EPA 350.1 rev. 2 (1993)	164351
10470295002	**837776**	EPA 350.1 rev. 2 (1993)	164346	EPA 350.1 rev. 2 (1993)	164351
10470295001	**837777**	SM 4500-CN-E	600214	SM 4500-CN-E	600574
10470295002	**837776**	SM 4500-CN-E	600214	SM 4500-CN-E	600574

REPORT OF LABORATORY ANALYSIS

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WO# : 10470295

10470295

Minnesota Pollution Control Agency

Chain-of-Custody Form revision 2013.0909

Work Order Number:

Turnaround Time:

Page: 1 of 1

PROJECT/CLIENT INFO

Facility Code:	MNSW-057	Program Code (MDH Lab Only):	
Project Name:	19-01567 MPCA Freeway Landfill 2019 Waters	Project Task Code:	PRJ07786
Project Manager:	Brad Jacobson 612-607-6375	EPIC PROFILE #: 38716 Line 2	
Potential Hazard?	If yes, add information to Sampler Comments Section		

Lab Name: Pace Analytical - Minneapolis, MN

Address: 1700 SE Elm Street

Minneapolis MN 55414

Phone No: 612-607-6400

FOR LAB USE ONLY

Lab Work Order Sticker

SAMPLE DETAILS

SAMPLE TYPE CODES
Sample=Routine Sample
S-IVP=Integrated Vertical Profile Sample
S-CWOP=Composite Sample
QC-FB=Field Blank Sample
QC-FR=Field Replicate Sample
QC-TB=Trip Blank Sample

LAB MATRIX CODES
DW=Drinking Water
NW=Non-potable Water
SD=Soil/Solid
WP=Wipe
AR=Air
BL=Biological Material
OT=Other
TS=Tissue

FIELD MATRIX CODES
Wtr-Ground=Groundwater
Wtr-Surf=Surface Water
QC-BLANK=Artificial Blank Water
Leachate=Leachate Sample

ANALYSIS REQUESTED

Location Identifier	Sample Type	Date	Time	Start Depth, in meters	End Depth, in meters	Grab (G) or Composite (C) Sample	Lab Matrix Code	Field Matrix Code	AIS	Sampler Comments (filter volume, special handling, etc.)	# of Cont	PRESERV.	Field Parameters: SWL, Temp, pH, DO, Cond, Eh, Turbidity	Metals 200.7 / 200.8 / Gross Alpha/Beta - QAPP Table 3a	300.0 / HexCr - QAPP Table 3a	Ammonia/ Unionized NH3 - QAPP Table 3a	Total Cyanide / Free Cyanide - QAPP Table 3a	8270 SVOC, 8082, MDA1, MDA2 - QAPP Table 3a	Lab Sample No.	#
												ANALYSIS	None	HNO3	None	H2SO4	NaOH	None		
837777	Sample	4/10/19	1110			G	NW	WTR-Ground	N		14		X	X	X	X	X	X	01	1
837776	Sample	4/10/19	1310			G	NW	WTR-Ground	N		14		X	X	X	X	X	X	02	2
									N											3
									N											4
									N											5
									N											6
									N											7
									N											8
									N											9
									N											10

DTA 4/16/19

Sampled By: David Anderson

Sampler's Signature: David Anderson

Phone #:

Receiving Comments:

Relinquished By/Affiliation	Date/Time	Accepted By/ Affiliation	Date/Time
(Sampler) David Anderson / Pace Analytical	4/10/19 1400		4/10/19 1400

I 8.2 (5)

Pace Analytical	Document Name: **Sample Condition Upon Receipt Form**	Document Revised: 05Apr2019 Page 1 of 1
	Document No.: **F-MN-L-213-rev.27**	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt **Client Name:** MN Pollution Control Agency **Project #:** **WO#: 10470295**

PM: JMA **Due Date: 04/24/19**

CLIENT: PASI-MNFLD

Courier: ☐Fed Ex ☐UPS ☐USPS ☐Client ☒Pace ☐SpeeDee ☐Commercial **See Exception** ☐

Tracking Number:

Custody Seal on Cooler/Box Present? ☐Yes ☒No **Seals Intact?** ☐Yes ☒No **Biological Tissue Frozen?** ☐Yes ☐No ☒N/A

Packing Material: ☒Bubble Wrap ☒Bubble Bags ☐None ☒Other: PB **Temp Blank?** ☐Yes ☒No

Thermometer: ☐T1(0461) ☐T2(1336) ☐T3(0459) ☒T4(0254) ☐T5(0048) **Type of Ice:** ☒Wet ☐Blue ☐None ☐Dry ☐Melted

Note: Each West Virginia Sample must have temp taken (no temp blanks)

Temp should be above freezing to 6°C **Cooler Temp Read w/temp blank:** ____ °C **Average Corrected Temp (no temp blank only):** 8.1, 8.9 °C **See Exceptions** ☒

Correction Factor: Tue **Cooler Temp Corrected w/temp blank:** ____ °C

USDA Regulated Soil: (☒ N/A, water sample/Other: ____) **Date/Initials of Person Examining Contents:** CG 4/10/19

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA. MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐Yes ☐No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐Yes ☐No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present and Filled Out?	☒Yes	☐No		1.
Chain of Custody Relinquished?	☒Yes	☐No		2.
Sampler Name and/or Signature on COC?	☒Yes	☐No	☐N/A	3.
Samples Arrived within Hold Time?	☒Yes	☐No		4.
Short Hold Time Analysis (<72 hr)?	☒Yes	☐No		5. ☐Fecal Coliform ☐HPC ☐Total Coliform/E coli ☐BOD/cBOD ☒Hex Chrome ☒Turbidity ☐Nitrate ☐Nitrite ☐Orthophos ☐Other
Rush Turn Around Time Requested?	☐Yes	☒No		6.
Sufficient Volume?	☒Yes	☐No		7.
Correct Containers Used?	☒Yes	☐No		8.
-Pace Containers Used?	☒Yes	☐No		
Containers Intact?	☒Yes	☐No		9.
Field Filtered Volume Received for Dissolved Tests?	☒Yes	☐No	☒N/A	10. Is sediment visible in the dissolved container? ☐Yes ☐No
Is sufficient information available to reconcile the samples to the COC?	☒Yes	☐No	CG 4/10/19	11. **If no, write ID/ Date/Time on Container Below:** **See Exception** ☐
Matrix: ☒Water ☐Soil ☐Oil ☐Other				
All containers needing acid/base preservation have been checked?	☒Yes	☐No	☐N/A	12. Sample # 1-2 2/2 1-2 2/2 1-2 1/1 ☒NaOH ☒HNO_3 ☒H_2SO_4 ☐Zinc Acetate
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>12 Cyanide)	☒Yes	☐No	☐N/A	
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin/PFAS	☐Yes	☐No	☒N/A	Positive for Res. Chlorine? ☐Yes ☒No **pH Paper Lot#** **See Exception** ☐
				Res. Chlorine: 140ZLB R9/no 225718 | 0-6 Roll | 0-6 Strip | 0-14 Strip: 160358
Headspace in VOA Vials (greater than 6mm)?	☐Yes	☐No	☒N/A	13. **See Exception** ☐
Trip Blank Present?	☐Yes	☐No	☒N/A	14.
Trip Blank Custody Seals Present?	☐Yes	☐No	☒N/A	Pace Trip Blank Lot # (if purchased): N/A

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐Yes ☐No

Person Contacted: ____ Date/Time: ____

Comments/Resolution: ____

Project Manager Review: [signature] **Date:** 04/11/2019

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers).

Labeled by: [signature]

During sample triage, this form is to be placed in each cooler that arrives above 6.0 degrees Celsius

SCUR Exceptions:

Workorder #:

Out of Temp Sample IDs	Container Type	# of Containers

PM Notified? ☐Yes ☒No

If yes, indicate who was contacted/date/time.
If no, indicate reason why.

Same day, on ice

Multiple Cooler Project? ☐Yes ☒No
If you answered yes, fill out information to the left.

No Temp Blank

Read Temp	Corrected Temp	Average Temp
7.2	7.2	8.1
8.1	8.1	
8.0	8.0	
9.3	9.3	

Tracking Number/Temperature	

Other Issues

Issue Type: Sample ID	Container Type	# of Containers

pH Adjustment Log for Preserved Samples

Sample ID	Type of Preserv.	pH Upon Receipt	Date Adjusted	Time Adjusted	Amount Added (mL)	Lot # Added	pH After	In Compliance after addition?	Initials
								☐Yes ☐No	
								☐Yes ☐No	
								☐Yes ☐No	
								☐Yes ☐No	

During sample triage, this form is to be placed in each cooler that arrives above 6.0 degrees Celsius

SCUR Exceptions:

Workorder #:

Out of Temp Sample IDs	Container Type	# of Containers

PM Notified? ☐Yes ☑No

If yes, indicate who was contacted/date/time.
If no, indicate reason why.

Same day, on ice

Multiple Cooler Project? ☐Yes ☒No
If you answered yes, fill out information to the left.

No Temp Blank		
Read Temp	Corrected Temp	Average Temp
5.8	5.8	6.9
6.7	6.7	
7.1	7.1	
8.0	8.0	

Tracking Number/Temperature	

Other Issues		
Issue Type: Sample ID	Container Type	# of Containers

pH Adjustment Log for Preserved Samples

Sample ID	Type of Preserv.	pH Upon Receipt	Date Adjusted	Time Adjusted	Amount Added (mL)	Lot # Added	pH After	In Compliance after addition?	Initials
								☐Yes ☐No	
								☐Yes ☐No	
								☐Yes ☐No	
								☐Yes ☐No	

WO# : 12123568

12123568

Chain of Custody

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN

Cert. Needed: ☐ Yes

Workorder: 10470295 Workorder Name: 19-01567 MPCA Freeway LF 19 WT Owner Received Date: 4/10/2019 Results Requested By: 5/1/2019

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6436	Pace Analytical Virginia MN 315 Chestnut Street Virginia, MN 55792 Phone (218)742-1042

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: H2SO4 BP3S						Requested Analysis: 350.1 Ammonia	Unionized Ammonia											LAB USE ONLY
1	837777	PS	4/10/2019 11:10	10470295001	Water	1						X	X											
2	837776	PS	4/10/2019 13:10	10470295002	Water	1						X	X											
3																								
4																								
5																								

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature] Pace	4/11/19 1500	[signature]	4/11/19 1500
2	[signature]	4/11/19 2300	B. Mathews	4/12/19 0800
3				

Comments

Cooler Temperature on Receipt 1.3 °C | Custody Seal (Y) or N | Received on Ice (Y) or N | Samples Intact (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.*

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 03Apr2019 Page 1 of 1
	Document No.: F-VM-C-001-Rev.12	Issuing Authority: Pace Virginia, Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Pace MN

Project #: **WO#: 12123568**

PM: CLJ **Due Date: 05/02/19**

CLIENT: PACE MPLS

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other:

Tracking Number:

Custody Seal on Cooler/Box Present? ☒ Yes ☐ No Seals Intact? ☒ Yes ☐ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☒ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other: Temp Blank? ☒ Yes ☐ No

Thermometer Used: ☒ 140792808 Type of Ice: ☐ Wet ☐ Blue ☐ None ☒ Samples on ice, cooling process has begun

Cooler Temp Read °C: 1.0 Cooler Temp Corrected °C: 1.3 Biological Tissue Frozen? ☐ Yes ☐ No ☒ NA

Temp should be above freezing to 6°C Correction Factor: 0.3 Date and Initials of Person Examining Contents: 4/11/19 DC

Comments: BM 4/12/19

Chain of Custody Present?	☒ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☒ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☒ Yes	☐ No	☐ N/A	3.
Sampler Name and Signature on COC?	☐ Yes	☒ No	☐ N/A	4.
Samples Arrived within Hold Time?	☒ Yes	☐ No	☐ N/A	5. If Fecal: ☐ <8 hours ☐ >8, <24 hours ☐ >24 hours
Short Hold Time Analysis (<72 hr)?	☐ Yes	☒ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☒ No	☐ N/A	7.
Sufficient Volume?	☒ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☒ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☒ Yes	☐ No	☐ N/A	
Containers Intact?	☒ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☒ N/A	11. Note if sediment is visible in the dissolved containers.
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: WT	☒ Yes	☐ No	☐ N/A	12.
All containers needing acid/base preservation will be checked and documented in the pH logbook.	☒ Yes	☐ No	☐ N/A	See pH log for results and additional preservation documentation
Headspace in Methyl Mercury Container	☐ Yes	☐ No	☒ N/A	13.
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☒ N/A	14.
Trip Blank Present?	☐ Yes	☐ No	☒ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☒ N/A	
Pace Trip Blank Lot # (if purchased):				

CLIENT NOTIFICATION/RESOLUTION Field Data Required? ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

FECAL WAIVER ON FILE Y N TEMPERATURE WAIVER ON FILE Y N

Project Manager Review: Katie Richards Date: 4/12/2019

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Chain of Custody

Pace Analytical®
www.pacelabs.com

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN
Cert. Needed: ☐ Yes ☐ No

Workorder: 10470295 **Workorder Name:** 19-01567 MPCA Freeway LF 19 WT **Owner Received Date:** 4/10/2019 **Results Requested By:** 5/1/2019

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6436	Pace Analytical Pittsburgh 1638 Roseytown Road Suites 2,3 & 4 Greensburg, PA 15601 Phone (724)850-5600

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: HNO3 BP1N	Requested Analysis: Gross Alpha/Beta	LAB USE ONLY
1	837777	PS	4/10/2019 11:10	10470295001	Water	1	X	001
2	837776	PS	4/10/2019 13:10	10470295002	Water	1	X	002
3								
4								
5								

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature]	4/11/19 1045	[signature]	4-Bi9 1030
2				
3				

Comments

Cooler Temperature on Receipt 4.7 °C | **Custody Seal** (Y) or N | **Received on Ice** (Y) or N | **Samples Intact** (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.*

WO# : 30289275

30289275

Pittsburgh Lab Sample Condition Upon Receipt

30289275

Pace Analytical

Client Name: Pace MN Project #

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other

Label MJS
LIMS Login MJS

Tracking #: 463801958747

Custody Seal on Cooler/Box Present: ☑ yes ☐ no Seals intact: ☑ yes ☐ no

Thermometer Used 11 Type of Ice: (Wet) Blue None

Cooler Temperature Observed Temp 3.8 °C Correction Factor: +0.0 °C Final Temp: 3.8 °C

Temp should be above freezing to 6°C

pH paper Lot# N/A

Date and Initials of person examining contents: MJS 4-13-19

Comments:	Yes	No	N/A	
Chain of Custody Present:	✓			1.
Chain of Custody Filled Out:	✓			2.
Chain of Custody Relinquished:	✓			3.
Sampler Name & Signature on COC:		✓		4.
Sample Labels match COC: -Includes date/time/ID Matrix: WT	✓			5.
Samples Arrived within Hold Time:	✓			6.
Short Hold Time Analysis (<72hr remaining):		✓		7.
Rush Turn Around Time Requested:		✓		8.
Sufficient Volume:	✓			9.
Correct Containers Used: -Pace Containers Used:	✓ ✓			10.
Containers Intact:	✓			11.
Orthophosphate field filtered			✓	12.
Hex Cr Aqueous Compliance/NPDES sample field filtered			✓	13.
Organic Samples checked for dechlorination:			✓	14.
Filtered volume received for Dissolved tests			✓	15.
All containers have been checked for preservation. All containers needing preservation are found to be in compliance with EPA recommendation. exceptions: VOA, coliform, TOC, O&G, Phenolics	✓ ✓			16. pH<2 Initial when completed MJS Date/time of preservation Lot # of added preservative
Headspace in VOA Vials (>6mm):			✓	17.
Trip Blank Present:			✓	18.
Trip Blank Custody Seals Present			✓	
Rad Samples Screened < 0.5 mrem/hr	✓			Initial when completed: MJS Date: 4-13-19

Client Notification/ Resolution:

Person Contacted: Date/Time: Contacted By:

Comments/ Resolution:

☐ **A check in this box indicates that additional information has been stored in ereports.**

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

***PM review** is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

25-Apr-2019

Jennifer Anderson
Pace Analytical Services, LLC
1700 Elm Street
Suite 200
Minneapolis, MN 55414

Re: **10470295** Work Order: **1904840**

Dear Jennifer,

ALS Environmental received 2 samples on 12-Apr-2019 09:30 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental - Holland and for only the analyses requested.

Sample results are compliant with industry accepted practices and Quality Control results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 9.

If you have any questions regarding this report, please feel free to contact me:

ADDRESS: 3352 128th Avenue, Holland, MI, USA
PHONE: +1 (616) 399-6070 FAX: +1 (616) 399-6185

Sincerely,

Electronically approved by: Chad Whelton

Chad Whelton
Project Manager

Client: Pace Analytical Services, LLC
Project: 10470295
Work Order: **1904840**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1904840-01	837777	Water		4/10/2019 11:10	4/12/2019 09:30	☐
1904840-02	837776	Water		4/10/2019 13:10	4/12/2019 09:30	☐

Client: Pace Analytical Services, LLC
Project: 10470295
Work Order: 1904840

Case Narrative

Batch R259157, Method CNF_9014_W, Sample 1904840-01A MS/MSD: The MS/MSD recovery was below the lower control limit for Free Cyanide. The corresponding result in the parent sample may be biased low.

Client: Pace Analytical Services, LLC
Project: 10470295
WorkOrder: **1904840**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
**	Estimated Value
a	Analyte is non-accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
Hr	BOD/CBOD - Sample was reset outside Hold Time, value should be considered estimated.
J	Analyte is present at an estimated concentration between the MDL and Report Limit
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and Reporting Limit, sample results may exhibit background or reagent contamination at the observed level.

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

Units Reported	Description
µg/L	Micrograms per Liter

ALS Group, USA

Date: *25-Apr-19*

Client:	Pace Analytical Services, LLC		
Project:	10470295	**Work Order:**	1904840
Sample ID:	837777	**Lab ID:**	1904840-01
Collection Date:	4/10/2019 11:10 AM	**Matrix:**	WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
CYANIDE, FREE			**SW9014**			Analyst: **RZM**
Cyanide, Free	ND		20	µg/L	1	4/24/2019 04:50 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *25-Apr-19*

Client:	Pace Analytical Services, LLC		
Project:	10470295	**Work Order:**	1904840
Sample ID:	837776	**Lab ID:**	1904840-02
Collection Date:	4/10/2019 01:10 PM	**Matrix:**	WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
CYANIDE, FREE			**SW9014**			Analyst: **RZM**
Cyanide, Free	ND		20	µg/L	1	4/24/2019 04:50 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Pace Analytical Services, LLC

Work Order: 1904840

Project: 10470295

QC BATCH REPORT

Batch ID: **R259157** Instrument ID **WETCHEM** Method: **SW9014**

MBLK Sample ID: **MB-R259157-R259157** Units: **µg/L** Analysis Date: **4/24/2019 04:50 PM**

Client ID: Run ID: **WETCHEM_190424O** SeqNo: **5624244** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Free	ND	20								

LCS Sample ID: **LCS-R259157-R259157** Units: **µg/L** Analysis Date: **4/24/2019 04:50 PM**

Client ID: Run ID: **WETCHEM_190424O** SeqNo: **5624245** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Free	257.3	20	250	0	103	81-119	0			

MS Sample ID: **1904840-01A MS** Units: **µg/L** Analysis Date: **4/24/2019 04:50 PM**

Client ID: **837777** Run ID: **WETCHEM_190424O** SeqNo: **5624248** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Free	172.1	20	250	6.67	66.2	81-119	0			S

MSD Sample ID: **1904840-01A MSD** Units: **µg/L** Analysis Date: **4/24/2019 04:50 PM**

Client ID: **837777** Run ID: **WETCHEM_190424O** SeqNo: **5624249** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Free	187.6	20	250	6.67	72.4	81-119	172.1	8.63	20	S

The following samples were analyzed in this batch: 1904840-01A 1904840-02A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

1904840

Chain of Custody

Pace Analytical®
www.pacelabs.com

Workorder: 10470295 **Workorder Name:** 19-01567 MPCA Freeway LF 19 WT **Results Requested By:** 5/1/2019

Report / Invoice To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6436 Email: jennifer.anderson@pacelabs.com	ALS 3352 128th Avenue Holland, MI 49424 P.O. 10470295

State of Sample Origin: MN

Item	Sample ID	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Other BP3A	Requested Analysis: Free Cyanide	LAB USE ONLY
1	837777	4/10/2019 11:10	10470295001	Water	1	X	
2	837776	4/10/2019 13:10	10470295002	Water	1	X	
3							
4							
5							

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature] Pace	4/11/19 1830	FED EX	
2	FED EX	4/12/19 0930	[signature]	
3				

Comments

Cooler Temperature on Receipt 2.2 °C **Custody Seal** Y or N **Received on Ice** Y or N **Samples Intact** Y or N

SR2

ALS Group, USA

Sample Receipt Checklist

Client Name: **PACE_MN** Date/Time Received: **12-Apr-19 09:30**

Work Order: **1904840** Received by: **DS**

Checklist completed by Diane Shaw (eSignature) 12-Apr-19 (Date) Reviewed by: Chad Whelton (eSignature) 12-Apr-19 (Date)

Matrices: Water

Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Sample(s) received on ice?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	2.2/2.2 c	SR2	
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	4/12/2019 10:44:59 AM		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

Pace Analytical®
ECCS Mobile Lab Services

2525 Advance Road
Madison, WI 53718
608.221.8700 Phone
608.221.4889 Fax

April 25, 2019

Jennifer Anderson
Pace Analytical
1700 Elm Street, Suite 200
Minneapolis, MN 55414

RE: MPCA Freeway LF Water - MN

Enclosed are the analytical results for the samples received by the laboratory on 04/12/2019.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. These results are in compliance with the 2009 NELAC Standards and the appropriate agencies listed below, unless otherwise noted in the case narrative. This analytical report should be reproduced in its entirety.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jessica Esser

Project Manager

Certification List			Expires
DODELAP	DOD ELAP Accreditation (A2LA)	3269.01	03/31/2020
ILEPA	Illinois Secondary NELAP Accreditation	004366	04/30/2020
KDHE	Kansas Secondary NELAP Accreditation	E-10384	04/30/2020
LELAP	Louisiana Primary NELAP Accreditation	04165	06/30/2019
NCDEQ	North Carolina Dept. of Environmental Quality Accreditation	688	12/31/2019
NJDEP	New Jersey Secondary NELAP Accreditation	WI004	06/30/2019
ODEQ	Oklahoma Department of Environmental Quality Accreditation	2018-087	08/31/2019
TCEQ	Texas Secondary NELAP Accreditation	T104704504-16-7	11/30/2019
WDNR	Wisconsin Certification under NR 149	113289110	08/31/2019

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1700 Elm Street, Suite 200	Project Number: 10470295
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
837777	A191517-01	Water	04/10/2019	04/12/2019
837776	A191517-02	Water	04/10/2019	04/12/2019

CASE NARRATIVE

Sample Receipt Information:
2 samples were received on 04/12/2019. Samples were received at 2.4 degrees Celsius. Samples were received in acceptable condition.

Please see the chain of custody (COC) document at the end of this report for additional information.

Continuing Calibration Verification (CCV):
CCV indicates a potential high bias for multiple compounds for the MDA List 2 analysis. Samples were less than the reporting limit for these analytes so no further action is required.

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1700 Elm Street, Suite 200	Project Number: 10470295
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

837777

A191517-01 (Water)

Date Sampled
04/10/2019 11:10

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Pace Analytical - Madison								
Base Neutral Pesticides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A904180**			
Acetochlor	ND	0.50	ug/L	1	04/16/2019	04/23/2019 12:44	EPA 8270D	
Alachlor	ND	0.50	ug/L	1	04/16/2019	04/23/2019 12:44	EPA 8270D	
Atrazine	ND	0.50	ug/L	1	04/16/2019	04/23/2019 12:44	EPA 8270D	
Chlorpyrifos	ND	0.50	ug/L	1	04/16/2019	04/23/2019 12:44	EPA 8270D	
Cyanazine	ND	0.20	ug/L	1	04/16/2019	04/23/2019 12:44	EPA 8270D	
Desethylatrazine	ND	0.50	ug/L	1	04/16/2019	04/23/2019 12:44	EPA 8270D	
Deisopropylatrazine	ND	0.50	ug/L	1	04/16/2019	04/23/2019 12:44	EPA 8270D	
Dimethenamid	ND	0.50	ug/L	1	04/16/2019	04/23/2019 12:44	EPA 8270D	
EPTC	ND	0.50	ug/L	1	04/16/2019	04/23/2019 12:44	EPA 8270D	
Ethalfluralin	ND	0.50	ug/L	1	04/16/2019	04/23/2019 12:44	EPA 8270D	
Fonofos	ND	0.50	ug/L	1	04/16/2019	04/23/2019 12:44	EPA 8270D	
Metolachlor	ND	0.50	ug/L	1	04/16/2019	04/23/2019 12:44	EPA 8270D	
Metribuzin	ND	0.50	ug/L	1	04/16/2019	04/23/2019 12:44	EPA 8270D	
Pendimethalin	ND	0.50	ug/L	1	04/16/2019	04/23/2019 12:44	EPA 8270D	
Phorate	ND	0.30	ug/L	1	04/16/2019	04/23/2019 12:44	EPA 8270D	
Prometon	ND	0.50	ug/L	1	04/16/2019	04/23/2019 12:44	EPA 8270D	
Propachlor	ND	0.50	ug/L	1	04/16/2019	04/23/2019 12:44	EPA 8270D	
Propazine	ND	0.50	ug/L	1	04/16/2019	04/23/2019 12:44	EPA 8270D	
Simazine	ND	0.50	ug/L	1	04/16/2019	04/23/2019 12:44	EPA 8270D	
Terbufos	ND	0.20	ug/L	1	04/16/2019	04/23/2019 12:44	EPA 8270D	
Triallate	ND	0.50	ug/L	1	04/16/2019	04/23/2019 12:44	EPA 8270D	
Trifluralin	ND	0.50	ug/L	1	04/16/2019	04/23/2019 12:44	EPA 8270D	
Surrogate: Atrazine-d5		*106 %*		*56.9-123*	*04/16/2019*	*04/23/2019 12:44*	*EPA 8270D*	
Surrogate: Parathion-d10		*84.0 %*		*23.8-169*	*04/16/2019*	*04/23/2019 12:44*	*EPA 8270D*	
Surrogate: Triphenyl phosphate		*108 %*		*50.5-178*	*04/16/2019*	*04/23/2019 12:44*	*EPA 8270D*	
Acid Herbicides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A904172**			
2,4-D	ND	0.50	ug/L	1	04/15/2019	04/20/2019 00:01	EPA 8151A	
2,4-DB	ND	0.50	ug/L	1	04/15/2019	04/20/2019 00:01	EPA 8151A	
2,4,5-T	ND	0.50	ug/L	1	04/15/2019	04/20/2019 00:01	EPA 8151A	
2,4,5-TP (Silvex)	ND	0.50	ug/L	1	04/15/2019	04/20/2019 00:01	EPA 8151A	
Bentazon	ND	0.50	ug/L	1	04/15/2019	04/20/2019 00:01	EPA 8151A	
Dicamba	ND	0.50	ug/L	1	04/15/2019	04/20/2019 00:01	EPA 8151A	
MCPA	ND	0.30	ug/L	1	04/15/2019	04/20/2019 00:01	EPA 8151A	
Picloram	ND	0.50	ug/L	1	04/15/2019	04/20/2019 00:01	EPA 8151A	
Triclopyr	ND	0.50	ug/L	1	04/15/2019	04/20/2019 00:01	EPA 8151A	
Surrogate: 2,4-D-d5		*94.4 %*		*43.1-133*	*04/15/2019*	*04/20/2019 00:01*	*EPA 8151A*	

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837776

A191517-02 (Water)

Date Sampled
04/10/2019 13:10

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Base Neutral Pesticides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A904180**			
Acetochlor	ND	0.50	ug/L	1	04/16/2019	04/23/2019 13:12	EPA 8270D	
Alachlor	ND	0.50	ug/L	1	04/16/2019	04/23/2019 13:12	EPA 8270D	
Atrazine	ND	0.50	ug/L	1	04/16/2019	04/23/2019 13:12	EPA 8270D	
Chlorpyrifos	ND	0.50	ug/L	1	04/16/2019	04/23/2019 13:12	EPA 8270D	
Cyanazine	ND	0.20	ug/L	1	04/16/2019	04/23/2019 13:12	EPA 8270D	
Desethylatrazine	ND	0.50	ug/L	1	04/16/2019	04/23/2019 13:12	EPA 8270D	
Deisopropylatrazine	ND	0.50	ug/L	1	04/16/2019	04/23/2019 13:12	EPA 8270D	
Dimethenamid	ND	0.50	ug/L	1	04/16/2019	04/23/2019 13:12	EPA 8270D	
EPTC	ND	0.50	ug/L	1	04/16/2019	04/23/2019 13:12	EPA 8270D	
Ethalfluralin	ND	0.50	ug/L	1	04/16/2019	04/23/2019 13:12	EPA 8270D	
Fonofos	ND	0.50	ug/L	1	04/16/2019	04/23/2019 13:12	EPA 8270D	
Metolachlor	ND	0.50	ug/L	1	04/16/2019	04/23/2019 13:12	EPA 8270D	
Metribuzin	ND	0.50	ug/L	1	04/16/2019	04/23/2019 13:12	EPA 8270D	
Pendimethalin	ND	0.50	ug/L	1	04/16/2019	04/23/2019 13:12	EPA 8270D	
Phorate	ND	0.30	ug/L	1	04/16/2019	04/23/2019 13:12	EPA 8270D	
Prometon	ND	0.50	ug/L	1	04/16/2019	04/23/2019 13:12	EPA 8270D	
Propachlor	ND	0.50	ug/L	1	04/16/2019	04/23/2019 13:12	EPA 8270D	
Propazine	ND	0.50	ug/L	1	04/16/2019	04/23/2019 13:12	EPA 8270D	
Simazine	ND	0.50	ug/L	1	04/16/2019	04/23/2019 13:12	EPA 8270D	
Terbufos	ND	0.20	ug/L	1	04/16/2019	04/23/2019 13:12	EPA 8270D	
Triallate	ND	0.50	ug/L	1	04/16/2019	04/23/2019 13:12	EPA 8270D	
Trifluralin	ND	0.50	ug/L	1	04/16/2019	04/23/2019 13:12	EPA 8270D	
Surrogate: Atrazine-d5		*93.1 %*		*56.9-123*	*04/16/2019*	*04/23/2019 13:12*	*EPA 8270D*	
Surrogate: Parathion-d10		*76.4 %*		*23.8-169*	*04/16/2019*	*04/23/2019 13:12*	*EPA 8270D*	
Surrogate: Triphenyl phosphate		*96.1 %*		*50.5-178*	*04/16/2019*	*04/23/2019 13:12*	*EPA 8270D*	
Acid Herbicides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A904172**			
2,4-D	ND	0.50	ug/L	1	04/15/2019	04/20/2019 00:36	EPA 8151A	
2,4-DB	ND	0.50	ug/L	1	04/15/2019	04/20/2019 00:36	EPA 8151A	
2,4,5-T	ND	0.50	ug/L	1	04/15/2019	04/20/2019 00:36	EPA 8151A	
2,4,5-TP (Silvex)	ND	0.50	ug/L	1	04/15/2019	04/20/2019 00:36	EPA 8151A	
Bentazon	ND	0.50	ug/L	1	04/15/2019	04/20/2019 00:36	EPA 8151A	
Dicamba	ND	0.50	ug/L	1	04/15/2019	04/20/2019 00:36	EPA 8151A	
MCPA	ND	0.30	ug/L	1	04/15/2019	04/20/2019 00:36	EPA 8151A	
Picloram	ND	0.50	ug/L	1	04/15/2019	04/20/2019 00:36	EPA 8151A	
Triclopyr	ND	0.50	ug/L	1	04/15/2019	04/20/2019 00:36	EPA 8151A	
Surrogate: 2,4-D-d5		*92.7 %*		*43.1-133*	*04/15/2019*	*04/20/2019 00:36*	*EPA 8151A*	

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Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Base Neutral Pesticides by Gas Chromatography/Mass Spectrometry - Quality Control

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A904180 - EPA 3510C										
Blank (A904180-BLK1)				Prepared: 04/16/2019 Analyzed: 04/23/2019 07:31						
Acetochlor	ND	0.50	ug/L							
Alachlor	ND	0.50	ug/L							
Atrazine	ND	0.50	ug/L							
Chlorpyrifos	ND	0.50	ug/L							
Cyanazine	ND	0.20	ug/L							
Desethylatrazine	ND	0.50	ug/L							
Deisopropylatrazine	ND	0.50	ug/L							
Dimethenamid	ND	0.50	ug/L							
EPTC	ND	0.50	ug/L							
Ethalfluralin	ND	0.50	ug/L							
Fonofos	ND	0.50	ug/L							
Metolachlor	ND	0.50	ug/L							
Metribuzin	ND	0.50	ug/L							
Pendimethalin	ND	0.50	ug/L							
Phorate	ND	0.30	ug/L							
Prometon	ND	0.50	ug/L							
Propachlor	ND	0.50	ug/L							
Propazine	ND	0.50	ug/L							
Simazine	ND	0.50	ug/L							
Terbufos	ND	0.20	ug/L							
Triallate	ND	0.50	ug/L							
Trifluralin	ND	0.50	ug/L							
Surrogate: Atrazine-d5	*0.487*		*ug/L*	*0.5000*		*97.4*	*56.9-123*			
Surrogate: Parathion-d10	*0.293*		*ug/L*	*0.5000*		*58.5*	*23.8-169*			
Surrogate: Triphenyl phosphate	*0.445*		*ug/L*	*0.5000*		*89.0*	*50.5-178*			
LCS (A904180-BS1)				Prepared: 04/16/2019 Analyzed: 04/23/2019 08:00						
Acetochlor	0.853	0.50	ug/L	1.000		85.3	67.8-122			
Alachlor	0.837	0.50	ug/L	1.000		83.7	68.6-119			
Atrazine	0.864	0.50	ug/L	1.000		86.4	68.6-115			
Chlorpyrifos	0.788	0.50	ug/L	1.000		78.8	63.1-120			
Cyanazine	0.869	0.20	ug/L	1.000		86.9	55.3-143			
Desethylatrazine	0.811	0.50	ug/L	1.000		81.1	67.8-115			
Deisopropylatrazine	0.596	0.50	ug/L	1.000		59.6	50.1-100			
Dimethenamid	0.850	0.50	ug/L	1.000		85.0	70.3-121			
EPTC	0.652	0.50	ug/L	1.000		65.2	50.4-101			
Ethalfluralin	0.619	0.50	ug/L	1.000		61.9	42.6-121			
Fonofos	0.815	0.50	ug/L	1.000		81.5	56.6-119			
Metolachlor	0.875	0.50	ug/L	1.000		87.5	71.3-128			
Metribuzin	0.825	0.50	ug/L	1.000		82.5	64.9-120			
Pendimethalin	0.770	0.50	ug/L	1.000		77.0	60.9-128			
Phorate	0.636	0.30	ug/L	1.000		63.6	37.3-112			
Prometon	0.814	0.50	ug/L	1.000		81.4	67.1-120			
Propachlor	0.849	0.50	ug/L	1.000		84.9	66.2-127			
Propazine	0.911	0.50	ug/L	1.000		91.1	68.2-118			
Simazine	0.843	0.50	ug/L	1.000		84.3	67.2-117			

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Project: MPCA Freeway LF Water - MN
Project Number: 10470295
Project Manager: Jennifer Anderson

Base Neutral Pesticides by Gas Chromatography/Mass Spectrometry - Quality Control

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A904180 - EPA 3510C										
LCS (A904180-BS1)				Prepared: 04/16/2019 Analyzed: 04/23/2019 08:00						
Terbufos	0.574	0.20	ug/L	1.000		57.4	34.3-111			
Triallate	0.666	0.50	ug/L	1.000		66.6	53-121			
Trifluralin	0.567	0.50	ug/L	1.000		56.7	45.9-116			
Surrogate: Atrazine-d5	*0.475*		*ug/L*	*0.5000*		*94.9*	*56.9-123*			
Surrogate: Parathion-d10	*0.386*		*ug/L*	*0.5000*		*77.2*	*23.8-169*			
Surrogate: Triphenyl phosphate	*0.448*		*ug/L*	*0.5000*		*89.5*	*50.5-178*			
Matrix Spike (A904180-MS1)		**Source: A191601-04**		Prepared: 04/16/2019 Analyzed: 04/23/2019 08:28						
Acetochlor	1.38	0.50	ug/L	0.9901	0.513	87.0	66.8-131			
Alachlor	1.14	0.50	ug/L	0.9901	0.209	94.4	68.2-133			
Atrazine	1.64	0.50	ug/L	0.9901	0.732	91.3	70-119			
Chlorpyrifos	0.916	0.50	ug/L	0.9901	ND	92.5	64.9-131			
Cyanazine	1.03	0.20	ug/L	0.9901	0.0729	96.4	62.6-155			
Desethylatrazine	0.931	0.50	ug/L	0.9901	0.0781	86.1	63.2-129			
Deisopropylatrazine	0.795	0.50	ug/L	0.9901	ND	80.3	43-119			
Dimethenamid	2.33	0.50	ug/L	0.9901	1.38	95.9	71-132			
EPTC	0.889	0.50	ug/L	0.9901	0.148	74.8	50-110			
Ethalfluralin	0.759	0.50	ug/L	0.9901	ND	76.6	42.9-140			
Fonofos	0.840	0.50	ug/L	0.9901	ND	84.9	52.1-124			
Metolachlor	41.4	10	ug/L	0.9901	47.2	NR	50.8-155			M1, D
Metribuzin	0.912	0.50	ug/L	0.9901	0.0571	86.4	66.7-131			
Pendimethalin	0.935	0.50	ug/L	0.9901	ND	94.5	61.2-152			
Phorate	0.722	0.30	ug/L	0.9901	ND	72.9	42-122			
Prometon	0.917	0.50	ug/L	0.9901	ND	92.6	64.1-135			
Propachlor	0.932	0.50	ug/L	0.9901	ND	94.2	61.4-137			
Propazine	0.930	0.50	ug/L	0.9901	ND	93.9	68.2-126			
Simazine	0.859	0.50	ug/L	0.9901	ND	86.8	68.4-122			
Terbufos	0.721	0.20	ug/L	0.9901	ND	72.8	43.5-119			
Triallate	0.827	0.50	ug/L	0.9901	ND	83.6	58.4-122			
Trifluralin	0.760	0.50	ug/L	0.9901	ND	76.7	51-132			
Surrogate: Atrazine-d5	*0.463*		*ug/L*	*0.4950*		*93.6*	*56.9-123*			
Surrogate: Parathion-d10	*0.419*		*ug/L*	*0.4950*		*84.7*	*23.8-169*			
Surrogate: Triphenyl phosphate	*0.475*		*ug/L*	*0.4950*		*96.0*	*50.5-178*			
Matrix Spike Dup (A904180-MSD1)		**Source: A191601-04**		Prepared: 04/16/2019 Analyzed: 04/23/2019 08:56						
Acetochlor	1.37	0.50	ug/L	0.9901	0.513	86.9	66.8-131	0.126	20	
Alachlor	1.12	0.50	ug/L	0.9901	0.209	91.9	68.2-133	2.17	20	
Atrazine	1.57	0.50	ug/L	0.9901	0.732	84.9	70-119	3.97	20	
Chlorpyrifos	0.928	0.50	ug/L	0.9901	ND	93.8	64.9-131	1.30	20	
Cyanazine	0.990	0.20	ug/L	0.9901	0.0729	92.6	62.6-155	3.76	20	
Desethylatrazine	0.916	0.50	ug/L	0.9901	0.0781	84.7	63.2-129	1.55	20	
Deisopropylatrazine	0.752	0.50	ug/L	0.9901	ND	76.0	43-119	5.45	20	
Dimethenamid	2.29	0.50	ug/L	0.9901	1.38	92.3	71-132	1.52	20	
EPTC	0.875	0.50	ug/L	0.9901	0.148	73.5	50-110	1.50	20	
Ethalfluralin	0.841	0.50	ug/L	0.9901	ND	84.9	42.9-140	10.3	20	
Fonofos	0.843	0.50	ug/L	0.9901	ND	85.1	52.1-124	0.306	20	

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Base Neutral Pesticides by Gas Chromatography/Mass Spectrometry - Quality Control

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A904180 - EPA 3510C										
Matrix Spike Dup (A904180-MSD1)	**Source: A191601-04**			Prepared: 04/16/2019 Analyzed: 04/23/2019 14:37						
Metolachlor	42.6	10	ug/L	0.9901	47.2	NR	50.8-155	2.89	20	M1, D
Metribuzin	0.903	0.50	ug/L	0.9901	0.0571	85.5	66.7-131	0.960	20	
Pendimethalin	0.946	0.50	ug/L	0.9901	ND	95.6	61.2-152	1.16	20	
Phorate	0.755	0.30	ug/L	0.9901	ND	76.3	42-122	4.54	20	
Prometon	0.885	0.50	ug/L	0.9901	ND	89.4	64.1-135	3.57	20	
Propachlor	0.955	0.50	ug/L	0.9901	ND	96.5	61.4-137	2.44	20	
Propazine	0.842	0.50	ug/L	0.9901	ND	85.0	68.2-126	9.98	20	
Simazine	0.872	0.50	ug/L	0.9901	ND	88.1	68.4-122	1.54	20	
Terbufos	0.755	0.20	ug/L	0.9901	ND	76.3	43.5-119	4.63	20	
Triallate	0.812	0.50	ug/L	0.9901	ND	82.1	58.4-122	1.84	20	
Trifluralin	0.752	0.50	ug/L	0.9901	ND	76.0	51-132	1.00	20	
Surrogate: Atrazine-d5	*0.473*		*ug/L*	*0.4950*		*95.5*	*56.9-123*			
Surrogate: Parathion-d10	*0.410*		*ug/L*	*0.4950*		*82.7*	*23.8-169*			
Surrogate: Triphenyl phosphate	*0.448*		*ug/L*	*0.4950*		*90.5*	*50.5-178*			

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Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Acid Herbicides by Gas Chromatography/Mass Spectrometry - Quality Control

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A904172 - EPA 3510C										
Blank (A904172-BLK1)				Prepared: 04/15/2019 Analyzed: 04/19/2019 18:46						
2,4-D	ND	0.50	ug/L							
2,4-DB	ND	0.50	ug/L							
2,4,5-T	ND	0.50	ug/L							
2,4,5-TP (Silvex)	ND	0.50	ug/L							
Bentazon	ND	0.50	ug/L							
Dicamba	ND	0.50	ug/L							
MCPA	ND	0.30	ug/L							
Picloram	ND	0.50	ug/L							
Triclopyr	ND	0.50	ug/L							
Surrogate: 2,4-D-d5	*1.75*		*ug/L*	*2.006*		*87.3*	*43.1-133*			
LCS (A904172-BS1)				Prepared: 04/15/2019 Analyzed: 04/19/2019 19:21						
2,4-D	2.10	0.50	ug/L	2.000		105	51.7-152			
2,4-DB	2.17	0.50	ug/L	2.000		109	51.5-146			
2,4,5-T	2.14	0.50	ug/L	2.000		107	55.4-138			
2,4,5-TP (Silvex)	2.09	0.50	ug/L	2.000		105	47.2-152			
Bentazon	0.930	0.50	ug/L	1.000		93.0	48.9-146			
Dicamba	2.11	0.50	ug/L	2.000		105	41-149			
MCPA	2.06	0.30	ug/L	2.000		103	32.6-148			
Picloram	0.770	0.50	ug/L	1.000		77.0	37.8-121			
Triclopyr	2.16	0.50	ug/L	2.000		108	49.9-149			
Surrogate: 2,4-D-d5	*1.94*		*ug/L*	*2.006*		*96.8*	*43.1-133*			
LCS Dup (A904172-BSD1)				Prepared: 04/15/2019 Analyzed: 04/19/2019 19:56						
2,4-D	1.90	0.50	ug/L	2.000		95.2	51.7-152	9.69	20	
2,4-DB	2.24	0.50	ug/L	2.000		112	51.5-146	3.04	20	
2,4,5-T	2.02	0.50	ug/L	2.000		101	55.4-138	5.87	20	
2,4,5-TP (Silvex)	1.97	0.50	ug/L	2.000		98.5	47.2-152	5.95	20	
Bentazon	0.947	0.50	ug/L	1.000		94.7	48.9-146	1.83	20	
Dicamba	2.13	0.50	ug/L	2.000		106	41-149	0.972	20	
MCPA	2.07	0.30	ug/L	2.000		103	32.6-148	0.242	20	
Picloram	0.807	0.50	ug/L	1.000		80.7	37.8-121	4.69	20	
Triclopyr	2.04	0.50	ug/L	2.000		102	49.9-149	5.94	20	
Surrogate: 2,4-D-d5	*1.76*		*ug/L*	*2.006*		*87.7*	*43.1-133*			

Pace Analytical®
ECCS Mobile Lab Services

2525 Advance Road
Madison, WI 53718
608.221.8700 Phone
608.221.4889 Fax

Pace Analytical	Project: MPCA Freeway LF Water - MN
1700 Elm Street, Suite 200	Project Number: 10470295
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Notes and Definitions

M1	Spike recoveries were not evaluated because of elevated levels of the spiked analyte in the parent sample.
D	Data reported from a dilution
ND	Analyte NOT DETECTED at or above the reporting limit or limit of detection (if listed).
NR	Not Reported
dry	Sample results reported on a dry weight basis. If the word 'dry' does not appear after the units, results are reported on an as-is basis.
RPD	Relative Percent Difference

Chain of Custody A191517

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☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN
Cert. Needed: ☐ Yes ☐ No

Workorder: 10470295 **Workorder Name:** 19-01567 MPCA Freeway LF 19 WT **Owner Received Date:** 4/10/2019 **Results Requested By:** 5/1/2019

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6436	Pace Analytical Madison 2525 Advance Road Madison, WI 53718 Phone (608)221-8700

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved AG1U	MDA List 1	MDA List 2	LAB USE ONLY
1	837777	PS	4/10/2019 11:10	10470295001	Water	4	X	X	01
2	837776	PS	4/10/2019 13:10	10470295002	Water	4	X	X	02
3									
4									
5									

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature]	4/11/19 1055	[signature]	4/12/19
2				1040
3				

Comments

Need MPCA Equis EDD and Barr Equis 5 EDD

Cooler Temperature on Receipt 2.4 °C | **Custody Seal** (Y) or N | **Received on Ice** (Y) or N | **Samples Intact** (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.*

160142274 exp 7/13/19

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

June 12, 2019

Mr. Brad Jacobson
Pace Analytical Services, LLC..
1700 Elm Street
Suite 200
Minneapolis, MN 55414

RE: Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10475854

Dear Mr. Jacobson:
Enclosed are the analytical results for sample(s) received by the laboratory on May 21, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Some analyses have been subcontracted outside of the Pace Network. The subcontracted laboratory report has been attached.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jennifer Anderson
jennifer.anderson@pacelabs.com
(612)607-6436
Project Manager

Enclosures

cc: Tom Halverson, Pace Analytical Field Services
Chris Pelosi, Pace Analytical Services - Field Services

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Minneapolis, MN 55414
(612)607-1700

CERTIFICATIONS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10475854

Minnesota Certification IDs

1700 Elm Street SE, Minneapolis, MN 55414-2485
A2LA Certification #: 2926.01
Alabama Certification #: 40770
Alaska Contaminated Sites Certification #: 17-009
Alaska DW Certification #: MN00064
Arizona Certification #: AZ0014
Arkansas DW Certification #: MN00064
Arkansas WW Certification #: 88-0680
California Certification #: 2929
CNMI Saipan Certification #: MP0003
Colorado Certification #: MN00064
Connecticut Certification #: PH-0256
EPA Region 8+Wyoming DW Certification #: via MN 027-053-137
Florida Certification #: E87605
Georgia Certification #: 959
Guam EPA Certification #: MN00064
Hawaii Certification #: MN00064
Idaho Certification #: MN00064
Illinois Certification #: 200011
Indiana Certification #: C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky DW Certification #: 90062
Kentucky WW Certification #: 90062
Louisiana DEQ Certification #: 03086
Louisiana DW Certification #: MN00064
Maine Certification #: MN00064
Maryland Certification #: 322
Massachusetts Certification #: M-MN064
Michigan Certification #: 9909
Minnesota Certification #: 027-053-137
Minnesota Dept of Ag Certifcation #: via MN 027-053-137
Minnesota Petrofund Certification #: 1240
Mississippi Certification #: MN00064
Missouri Certification #: 10100
Montana Certification #: CERT0092
Nebraska Certification #: NE-OS-18-06
Nevada Certification #: MN00064
New Hampshire Certification #: 2081
New Jersey Certification #: MN002
New York Certification #: 11647
North Carolina DW Certification #: 27700
North Carolina WW Certification #: 530
North Dakota Certification #: R-036
Ohio DW Certification #: 41244
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Primary Certification #: MN300001
Oregon Secondary Certification #: MN200001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification #: MN00064
South Carolina Certification #:74003001
Tennessee Certification #: TN02818
Texas Certification #: T104704192
Utah Certification #: MN00064
Vermont Certification #: VT-027053137
Virginia Certification #: 460163
Washington Certification #: C486
West Virginia DEP Certification #: 382
West Virginia DW Certification #: 9952 C
Wisconsin Certification #: 999407970
Wyoming UST Certification #: via A2LA 2926.01

Virginia Minnesota Certification ID's

315 Chestnut Street, Virginia, MN 55792
Montana Certificate #CERT0103
Alaska Certification UST-107
Minnesota Dept of Health Certification #: 027-137-445
North Dakota Certification: # R-203
Wisconsin DNR Certification # : 998027470
WA Department of Ecology Lab ID# C1007

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Florida: Cert E871149 SEKS WET
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221

REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10475854

Pennsylvania Certification IDs

KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

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SAMPLE SUMMARY

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10475854

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10475854001	**472759**	Water	05/21/19 10:45	05/21/19 16:00
10475854002	**603286**	Water	05/21/19 12:50	05/21/19 16:00
10475854003	**603284**	Water	05/21/19 14:20	05/21/19 16:00
10475854004	**603283**	Water	05/21/19 15:40	05/21/19 16:00

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SAMPLE ANALYTE COUNT

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10475854

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10475854001	**472759**	EPA 8082A	RAG	11	PASI-M
		EPA 200.7	DM	9	PASI-M
		EPA 200.8	PW1	12	PASI-M
		EPA 8270D	STB	38	PASI-M
			CLJ	16	PASI-V
		EPA 900.0	CLA	2	PASI-PA
		EPA 300.0	KEO	1	PASI-M
		SM 3500-Cr B Modified	KEO	1	PASI-M
		EPA 350.1	CLJ	1	PASI-V
		EPA 350.1 rev. 2 (1993)	DMB	1	PASI-V
		SM 4500-CN-E	DCL	1	PASI-M
10475854002	**603286**	EPA 8082A	RAG	11	PASI-M
		EPA 200.7	DM	9	PASI-M
		EPA 200.8	BWB, PW1	12	PASI-M
		EPA 8270D	STB	38	PASI-M
			CLJ	16	PASI-V
		EPA 900.0	CLA	2	PASI-PA
		EPA 300.0	KEO	1	PASI-M
		SM 3500-Cr B Modified	KEO	1	PASI-M
		EPA 350.1	CLJ	1	PASI-V
		EPA 350.1 rev. 2 (1993)	DMB	1	PASI-V
		SM 4500-CN-E	DCL	1	PASI-M
10475854003	**603284**	EPA 8082A	RAG	11	PASI-M
		EPA 200.7	DM	9	PASI-M
		EPA 200.8	BWB, PW1	12	PASI-M
		EPA 8270D	STB	38	PASI-M
			CLJ	16	PASI-V
		EPA 900.0	CLA	2	PASI-PA
		EPA 300.0	KEO	1	PASI-M
		SM 3500-Cr B Modified	KEO	1	PASI-M
		EPA 350.1	CLJ	1	PASI-V
		EPA 350.1 rev. 2 (1993)	DMB	1	PASI-V
		SM 4500-CN-E	DCL	1	PASI-M
10475854004	**603283**	EPA 8082A	RAG	11	PASI-M
		EPA 200.7	DM	9	PASI-M
		EPA 200.8	BWB, PW1	12	PASI-M
		EPA 8270D	STB	38	PASI-M

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SAMPLE ANALYTE COUNT

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10475854

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
			CLJ	16	PASI-V
		EPA 900.0	CLA	2	PASI-PA
		EPA 300.0	KEO	1	PASI-M
		SM 3500-Cr B Modified	KEO	1	PASI-M
		EPA 350.1	CLJ	1	PASI-V
		EPA 350.1 rev. 2 (1993)	DMB	1	PASI-V
		SM 4500-CN-E	DCL	1	PASI-M

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10475854

Sample: 472759 **Lab ID: 10475854001** Collected: 05/21/19 10:45 Received: 05/21/19 16:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA Mod. 3510C							
PCB-1016 (Aroclor 1016)	ND	ug/L	0.095	1	05/22/19 17:24	05/24/19 10:32	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/L	0.095	1	05/22/19 17:24	05/24/19 10:32	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/L	0.095	1	05/22/19 17:24	05/24/19 10:32	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/L	0.095	1	05/22/19 17:24	05/24/19 10:32	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/L	0.095	1	05/22/19 17:24	05/24/19 10:32	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/L	0.095	1	05/22/19 17:24	05/24/19 10:32	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/L	0.095	1	05/22/19 17:24	05/24/19 10:32	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/L	0.095	1	05/22/19 17:24	05/24/19 10:32	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/L	0.095	1	05/22/19 17:24	05/24/19 10:32	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	54	%.	30-125	1	05/22/19 17:24	05/24/19 10:32	877-09-8	
Decachlorobiphenyl (S)	104	%.	30-125	1	05/22/19 17:24	05/24/19 10:32	2051-24-3	
200.7 MET ICP, Dissolved	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Aluminum, Dissolved	ND	ug/L	200	1	05/28/19 15:31	05/29/19 09:49	7429-90-5	
Barium, Dissolved	**25.9**	ug/L	10.0	1	05/28/19 15:31	05/29/19 09:49	7440-39-3	
Copper, Dissolved	ND	ug/L	10.0	1	05/28/19 15:31	05/29/19 09:49	7440-50-8	
Manganese, Dissolved	**1020**	ug/L	5.0	1	05/28/19 15:31	05/29/19 09:49	7439-96-5	
Nickel, Dissolved	ND	ug/L	20.0	1	05/28/19 15:31	05/29/19 09:49	7440-02-0	
Silver, Dissolved	ND	ug/L	10.0	1	05/28/19 15:31	05/29/19 09:49	7440-22-4	
Tin, Dissolved	ND	ug/L	75.0	1	05/28/19 15:31	05/29/19 09:49	7440-31-5	
Total Hardness by 2340B, Dissolved	**983000**	ug/L	3300	1	05/28/19 15:31	05/29/19 09:49		
Zinc, Dissolved	ND	ug/L	20.0	1	05/28/19 15:31	05/29/19 09:49	7440-66-6	
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Dissolved	ND	ug/L	0.50	1	06/03/19 10:23	06/05/19 10:39	7440-36-0	
Arsenic, Dissolved	**8.8**	ug/L	0.50	1	06/03/19 10:23	06/05/19 10:39	7440-38-2	
Beryllium, Dissolved	ND	ug/L	0.20	1	06/03/19 10:23	06/05/19 10:39	7440-41-7	
Boron, Dissolved	**4480**	ug/L	1000	100	06/03/19 10:23	06/05/19 10:48	7440-42-8	
Cadmium, Dissolved	**0.16**	ug/L	0.080	1	06/03/19 10:23	06/05/19 10:39	7440-43-9	
Chromium, Dissolved	ND	ug/L	0.50	1	06/03/19 10:23	06/05/19 10:39	7440-47-3	
Cobalt, Dissolved	**3.0**	ug/L	0.50	1	06/03/19 10:23	06/05/19 10:39	7440-48-4	
Lead, Dissolved	**0.18**	ug/L	0.10	1	06/03/19 10:23	06/05/19 10:39	7439-92-1	
Selenium, Dissolved	**0.97**	ug/L	0.50	1	06/03/19 10:23	06/05/19 10:39	7782-49-2	
Thallium, Dissolved	**0.13**	ug/L	0.10	1	06/03/19 10:23	06/05/19 10:39	7440-28-0	
Uranium, Dissolved	**4.7**	ug/L	0.50	1	06/03/19 10:23	06/05/19 10:39	7440-61-1	
Vanadium, Dissolved	ND	ug/L	1.0	1	06/03/19 10:23	06/05/19 10:39	7440-62-2	
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
Acenaphthene	ND	ug/L	10.2	1	05/22/19 19:09	05/31/19 15:12	83-32-9	
Anthracene	ND	ug/L	10.2	1	05/22/19 19:09	05/31/19 15:12	120-12-7	
Benzo(a)pyrene	ND	ug/L	10.2	1	05/22/19 19:09	05/31/19 15:12	50-32-8	
Benzoic acid	ND	ug/L	50.8	1	05/22/19 19:09	05/31/19 15:12	65-85-0	
4-Bromophenylphenyl ether	ND	ug/L	10.2	1	05/22/19 19:09	05/31/19 15:12	101-55-3	
Butylbenzylphthalate	ND	ug/L	10.2	1	05/22/19 19:09	05/31/19 15:12	85-68-7	
bis(2-Chloroethyl) ether	ND	ug/L	10.2	1	05/22/19 19:09	05/31/19 15:12	111-44-4	

REPORT OF LABORATORY ANALYSIS

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1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10475854

Sample: 472759 **Lab ID: 10475854001** Collected: 05/21/19 10:45 Received: 05/21/19 16:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
2-Chlorophenol	ND	ug/L	10.2	1	05/22/19 19:09	05/31/19 15:12	95-57-8	
3,3'-Dichlorobenzidine	ND	ug/L	50.8	1	05/22/19 19:09	05/31/19 15:12	91-94-1	
2,4-Dichlorophenol	ND	ug/L	10.2	1	05/22/19 19:09	05/31/19 15:12	120-83-2	
Diethylphthalate	ND	ug/L	10.2	1	05/22/19 19:09	05/31/19 15:12	84-66-2	
2,4-Dimethylphenol	ND	ug/L	10.2	1	05/22/19 19:09	05/31/19 15:12	105-67-9	
Dimethylphthalate	ND	ug/L	10.2	1	05/22/19 19:09	05/31/19 15:12	131-11-3	
Di-n-butylphthalate	ND	ug/L	10.2	1	05/22/19 19:09	05/31/19 15:12	84-74-2	
2,4-Dinitrophenol	ND	ug/L	10.2	1	05/22/19 19:09	05/31/19 15:12	51-28-5	
Di-n-octylphthalate	ND	ug/L	10.2	1	05/22/19 19:09	05/31/19 15:12	117-84-0	
bis(2-Ethylhexyl)phthalate	ND	ug/L	10.2	1	05/22/19 19:09	05/31/19 15:12	117-81-7	
Fluoranthene	ND	ug/L	10.2	1	05/22/19 19:09	05/31/19 15:12	206-44-0	
Fluorene	ND	ug/L	10.2	1	05/22/19 19:09	05/31/19 15:12	86-73-7	
Hexachlorobenzene	ND	ug/L	10.2	1	05/22/19 19:09	05/31/19 15:12	118-74-1	
Hexachlorocyclopentadiene	ND	ug/L	50.8	1	05/22/19 19:09	05/31/19 15:12	77-47-4	
Hexachloroethane	ND	ug/L	10.2	1	05/22/19 19:09	05/31/19 15:12	67-72-1	
Isophorone	ND	ug/L	10.2	1	05/22/19 19:09	05/31/19 15:12	78-59-1	
2-Methylnaphthalene	ND	ug/L	10.2	1	05/22/19 19:09	05/31/19 15:12	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/L	10.2	1	05/22/19 19:09	05/31/19 15:12	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/L	10.2	1	05/22/19 19:09	05/31/19 15:12		
N-Nitrosodimethylamine	ND	ug/L	10.2	1	05/22/19 19:09	05/31/19 15:12	62-75-9	
Pentachlorophenol	ND	ug/L	20.3	1	05/22/19 19:09	05/31/19 15:12	87-86-5	
Phenanthrene	ND	ug/L	10.2	1	05/22/19 19:09	05/31/19 15:12	85-01-8	
Phenol	ND	ug/L	10.2	1	05/22/19 19:09	05/31/19 15:12	108-95-2	
Pyrene	ND	ug/L	10.2	1	05/22/19 19:09	05/31/19 15:12	129-00-0	
2,4,6-Trichlorophenol	ND	ug/L	10.2	1	05/22/19 19:09	05/31/19 15:12	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	76	%.	55-125	1	05/22/19 19:09	05/31/19 15:12	4165-60-0	
2-Fluorobiphenyl (S)	68	%.	52-125	1	05/22/19 19:09	05/31/19 15:12	321-60-8	
p-Terphenyl-d14 (S)	95	%.	57-125	1	05/22/19 19:09	05/31/19 15:12	1718-51-0	
Phenol-d6 (S)	76	%.	30-125	1	05/22/19 19:09	05/31/19 15:12	13127-88-3	
2-Fluorophenol (S)	70	%.	30-125	1	05/22/19 19:09	05/31/19 15:12	367-12-4	
2,4,6-Tribromophenol (S)	97	%.	52-125	1	05/22/19 19:09	05/31/19 15:12	118-79-6	
Field Data	Analytical Method:							
Collected Date	**05/21/19**			1		05/21/19 10:45		
Collected Time	**1045**			1		05/21/19 10:45		
Field pH	**6.2**	Std. Units		1		05/21/19 10:45		
Field Temperature	**9.0**	deg C		1		05/21/19 10:45		
Field Specific Conductance	**1850**	umhos/cm		1		05/21/19 10:45		
Oxygen, Dissolved	**0.8**	mg/L		1		05/21/19 10:45	7782-44-7	
REDOX	**-35**	mV		1		05/21/19 10:45		
Turbidity	**9.9**	NTU		1		05/21/19 10:45		
Apparent Color	**Clear**			1		05/21/19 10:45		
Odor	**No**			1		05/21/19 10:45		
Well Locked	**Yes**			1		05/21/19 10:45		
Purge Method	**Dual Whale Pump**			1		05/21/19 10:45		

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10475854

Sample: 472759 **Lab ID: 10475854001** Collected: 05/21/19 10:45 Received: 05/21/19 16:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:							
Total Well Depth	**23.20**	feet		1		05/21/19 10:45		
Depth of Water	**5.19**			1		05/21/19 10:45		
Well Volume Purged	**9.0**			1		05/21/19 10:45		
Purge Rate	**0.5**			1		05/21/19 10:45		
300.0 IC Anions	Analytical Method: EPA 300.0							
Chloride	**49.5**	mg/L	1.2	1		05/24/19 14:36	16887-00-6	
Chromium, Hexavalent	Analytical Method: SM 3500-Cr B Modified							
Chromium, Hexavalent	ND	mg/L	0.010	1		05/22/19 07:23		M1
350.1 Ammonia, Unionized	Analytical Method: EPA 350.1							
Nitrogen, Ammonia (Unionized)	ND	mg/L	0.010	1		06/05/19 11:23		
350.1 Ammonia, Distilled	Analytical Method: EPA 350.1 rev. 2 (1993) Preparation Method: EPA 350.1 rev. 2 (1993)							
Nitrogen, Ammonia	**0.18**	mg/L	0.11	1	05/28/19 09:43	05/29/19 12:56	7664-41-7	
SM4500CN-E Cyanide	Analytical Method: SM 4500-CN-E Preparation Method: SM 4500-CN-E							
Cyanide	ND	ug/L	20.0	1	06/04/19 08:53	06/04/19 15:16	57-12-5	

Sample: 603286 **Lab ID: 10475854002** Collected: 05/21/19 12:50 Received: 05/21/19 16:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA Mod. 3510C							
PCB-1016 (Aroclor 1016)	ND	ug/L	0.098	1	05/22/19 17:24	05/24/19 10:47	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/L	0.098	1	05/22/19 17:24	05/24/19 10:47	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/L	0.098	1	05/22/19 17:24	05/24/19 10:47	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/L	0.098	1	05/22/19 17:24	05/24/19 10:47	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/L	0.098	1	05/22/19 17:24	05/24/19 10:47	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/L	0.098	1	05/22/19 17:24	05/24/19 10:47	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/L	0.098	1	05/22/19 17:24	05/24/19 10:47	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/L	0.098	1	05/22/19 17:24	05/24/19 10:47	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/L	0.098	1	05/22/19 17:24	05/24/19 10:47	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	77	%.	30-125	1	05/22/19 17:24	05/24/19 10:47	877-09-8	
Decachlorobiphenyl (S)	97	%.	30-125	1	05/22/19 17:24	05/24/19 10:47	2051-24-3	
200.7 MET ICP, Dissolved	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Aluminum, Dissolved	ND	ug/L	200	1	06/03/19 10:23	06/04/19 11:56	7429-90-5	
Barium, Dissolved	**25.9**	ug/L	10.0	1	06/03/19 10:23	06/04/19 11:56	7440-39-3	
Copper, Dissolved	ND	ug/L	10.0	1	06/03/19 10:23	06/04/19 11:56	7440-50-8	
Manganese, Dissolved	**244**	ug/L	5.0	1	06/03/19 10:23	06/04/19 11:56	7439-96-5	
Nickel, Dissolved	ND	ug/L	20.0	1	06/03/19 10:23	06/04/19 11:56	7440-02-0	
Silver, Dissolved	ND	ug/L	10.0	1	06/03/19 10:23	06/04/19 11:56	7440-22-4	

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10475854

Sample: 603286 **Lab ID: 10475854002** Collected: 05/21/19 12:50 Received: 05/21/19 16:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 MET ICP, Dissolved	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Tin, Dissolved	ND	ug/L	75.0	1	06/03/19 10:23	06/04/19 11:56	7440-31-5	
Total Hardness by 2340B, Dissolved	**811000**	ug/L	3300	1	06/03/19 10:23	06/04/19 11:56		
Zinc, Dissolved	ND	ug/L	20.0	1	06/03/19 10:23	06/04/19 11:56	7440-66-6	
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Dissolved	ND	ug/L	0.50	1	06/03/19 10:23	06/05/19 11:06	7440-36-0	
Arsenic, Dissolved	ND	ug/L	0.50	1	06/03/19 10:23	06/05/19 11:06	7440-38-2	
Beryllium, Dissolved	ND	ug/L	0.20	1	06/03/19 10:23	06/05/19 11:06	7440-41-7	
Boron, Dissolved	**690**	ug/L	100	10	06/03/19 10:23	06/07/19 12:04	7440-42-8	
Cadmium, Dissolved	ND	ug/L	0.080	1	06/03/19 10:23	06/05/19 11:06	7440-43-9	
Chromium, Dissolved	ND	ug/L	0.50	1	06/03/19 10:23	06/05/19 11:06	7440-47-3	
Cobalt, Dissolved	**0.66**	ug/L	0.50	1	06/03/19 10:23	06/05/19 11:06	7440-48-4	
Lead, Dissolved	ND	ug/L	0.10	1	06/03/19 10:23	06/05/19 11:06	7439-92-1	
Selenium, Dissolved	ND	ug/L	0.50	1	06/03/19 10:23	06/05/19 11:06	7782-49-2	
Thallium, Dissolved	**0.48**	ug/L	0.10	1	06/03/19 10:23	06/05/19 11:06	7440-28-0	
Uranium, Dissolved	**6.7**	ug/L	0.50	1	06/03/19 10:23	06/05/19 11:06	7440-61-1	
Vanadium, Dissolved	ND	ug/L	1.0	1	06/03/19 10:23	06/05/19 11:06	7440-62-2	
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
Acenaphthene	ND	ug/L	10.2	1	05/22/19 19:09	05/31/19 15:39	83-32-9	
Anthracene	ND	ug/L	10.2	1	05/22/19 19:09	05/31/19 15:39	120-12-7	
Benzo(a)pyrene	ND	ug/L	10.2	1	05/22/19 19:09	05/31/19 15:39	50-32-8	
Benzoic acid	ND	ug/L	51.0	1	05/22/19 19:09	05/31/19 15:39	65-85-0	
4-Bromophenylphenyl ether	ND	ug/L	10.2	1	05/22/19 19:09	05/31/19 15:39	101-55-3	
Butylbenzylphthalate	ND	ug/L	10.2	1	05/22/19 19:09	05/31/19 15:39	85-68-7	
bis(2-Chloroethyl) ether	ND	ug/L	10.2	1	05/22/19 19:09	05/31/19 15:39	111-44-4	
2-Chlorophenol	ND	ug/L	10.2	1	05/22/19 19:09	05/31/19 15:39	95-57-8	
3,3'-Dichlorobenzidine	ND	ug/L	51.0	1	05/22/19 19:09	05/31/19 15:39	91-94-1	
2,4-Dichlorophenol	ND	ug/L	10.2	1	05/22/19 19:09	05/31/19 15:39	120-83-2	
Diethylphthalate	ND	ug/L	10.2	1	05/22/19 19:09	05/31/19 15:39	84-66-2	
2,4-Dimethylphenol	ND	ug/L	10.2	1	05/22/19 19:09	05/31/19 15:39	105-67-9	
Dimethylphthalate	ND	ug/L	10.2	1	05/22/19 19:09	05/31/19 15:39	131-11-3	
Di-n-butylphthalate	ND	ug/L	10.2	1	05/22/19 19:09	05/31/19 15:39	84-74-2	
2,4-Dinitrophenol	ND	ug/L	10.2	1	05/22/19 19:09	05/31/19 15:39	51-28-5	
Di-n-octylphthalate	ND	ug/L	10.2	1	05/22/19 19:09	05/31/19 15:39	117-84-0	
bis(2-Ethylhexyl)phthalate	ND	ug/L	10.2	1	05/22/19 19:09	05/31/19 15:39	117-81-7	
Fluoranthene	ND	ug/L	10.2	1	05/22/19 19:09	05/31/19 15:39	206-44-0	
Fluorene	ND	ug/L	10.2	1	05/22/19 19:09	05/31/19 15:39	86-73-7	
Hexachlorobenzene	ND	ug/L	10.2	1	05/22/19 19:09	05/31/19 15:39	118-74-1	
Hexachlorocyclopentadiene	ND	ug/L	51.0	1	05/22/19 19:09	05/31/19 15:39	77-47-4	
Hexachloroethane	ND	ug/L	10.2	1	05/22/19 19:09	05/31/19 15:39	67-72-1	
Isophorone	ND	ug/L	10.2	1	05/22/19 19:09	05/31/19 15:39	78-59-1	
2-Methylnaphthalene	ND	ug/L	10.2	1	05/22/19 19:09	05/31/19 15:39	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/L	10.2	1	05/22/19 19:09	05/31/19 15:39	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/L	10.2	1	05/22/19 19:09	05/31/19 15:39		
N-Nitrosodimethylamine	ND	ug/L	10.2	1	05/22/19 19:09	05/31/19 15:39	62-75-9	

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10475854

Sample: 603286 **Lab ID: 10475854002** Collected: 05/21/19 12:50 Received: 05/21/19 16:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
Pentachlorophenol	ND	ug/L	20.4	1	05/22/19 19:09	05/31/19 15:39	87-86-5	
Phenanthrene	ND	ug/L	10.2	1	05/22/19 19:09	05/31/19 15:39	85-01-8	
Phenol	ND	ug/L	10.2	1	05/22/19 19:09	05/31/19 15:39	108-95-2	
Pyrene	ND	ug/L	10.2	1	05/22/19 19:09	05/31/19 15:39	129-00-0	
2,4,6-Trichlorophenol	ND	ug/L	10.2	1	05/22/19 19:09	05/31/19 15:39	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	74	%.	55-125	1	05/22/19 19:09	05/31/19 15:39	4165-60-0	
2-Fluorobiphenyl (S)	68	%.	52-125	1	05/22/19 19:09	05/31/19 15:39	321-60-8	
p-Terphenyl-d14 (S)	91	%.	57-125	1	05/22/19 19:09	05/31/19 15:39	1718-51-0	
Phenol-d6 (S)	73	%.	30-125	1	05/22/19 19:09	05/31/19 15:39	13127-88-3	
2-Fluorophenol (S)	69	%.	30-125	1	05/22/19 19:09	05/31/19 15:39	367-12-4	
2,4,6-Tribromophenol (S)	94	%.	52-125	1	05/22/19 19:09	05/31/19 15:39	118-79-6	
Field Data	Analytical Method:							
Collected Date	**05/21/19**			1		05/21/19 12:50		
Collected Time	**1250**			1		05/21/19 12:50		
Field pH	**6.9**	Std. Units		1		05/21/19 12:50		
Field Temperature	**7.5**	deg C		1		05/21/19 12:50		
Field Specific Conductance	**1400**	umhos/cm		1		05/21/19 12:50		
Oxygen, Dissolved	**0.1**	mg/L		1		05/21/19 12:50	7782-44-7	
REDOX	**-17**	mV		1		05/21/19 12:50		
Turbidity	**11.4**	NTU		1		05/21/19 12:50		
Apparent Color	**Clear**			1		05/21/19 12:50		
Odor	**No**			1		05/21/19 12:50		
Well Locked	**Yes**			1		05/21/19 12:50		
Purge Method	**Dual Whale Pump**			1		05/21/19 12:50		
Total Well Depth	**23.22**	feet		1		05/21/19 12:50		
Depth of Water	**5.94**			1		05/21/19 12:50		
Well Volume Purged	**36.0**			1		05/21/19 12:50		
Purge Rate	**1.0**			1		05/21/19 12:50		
300.0 IC Anions	Analytical Method: EPA 300.0							
Chloride	**34.2**	mg/L	1.2	1		05/24/19 14:51	16887-00-6	
Chromium, Hexavalent	Analytical Method: SM 3500-Cr B Modified							
Chromium, Hexavalent	ND	mg/L	0.010	1		05/22/19 07:23		
350.1 Ammonia, Unionized	Analytical Method: EPA 350.1							
Nitrogen, Ammonia (Unionized)	ND	mg/L	0.010	1		06/05/19 11:24		
350.1 Ammonia, Distilled	Analytical Method: EPA 350.1 rev. 2 (1993) Preparation Method: EPA 350.1 rev. 2 (1993)							
Nitrogen, Ammonia	**0.12**	mg/L	0.11	1	05/28/19 09:43	05/29/19 12:57	7664-41-7	
SM4500CN-E Cyanide	Analytical Method: SM 4500-CN-E Preparation Method: SM 4500-CN-E							
Cyanide	ND	ug/L	20.0	1	06/04/19 08:53	06/04/19 15:19	57-12-5	

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10475854

Sample: 603284 **Lab ID: 10475854003** Collected: 05/21/19 14:20 Received: 05/21/19 16:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA Mod. 3510C							
PCB-1016 (Aroclor 1016)	ND	ug/L	0.096	1	05/22/19 17:24	05/24/19 11:03	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/L	0.096	1	05/22/19 17:24	05/24/19 11:03	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/L	0.096	1	05/22/19 17:24	05/24/19 11:03	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/L	0.096	1	05/22/19 17:24	05/24/19 11:03	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/L	0.096	1	05/22/19 17:24	05/24/19 11:03	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/L	0.096	1	05/22/19 17:24	05/24/19 11:03	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/L	0.096	1	05/22/19 17:24	05/24/19 11:03	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/L	0.096	1	05/22/19 17:24	05/24/19 11:03	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/L	0.096	1	05/22/19 17:24	05/24/19 11:03	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	67	%.	30-125	1	05/22/19 17:24	05/24/19 11:03	877-09-8	
Decachlorobiphenyl (S)	118	%.	30-125	1	05/22/19 17:24	05/24/19 11:03	2051-24-3	
200.7 MET ICP, Dissolved	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Aluminum, Dissolved	ND	ug/L	200	1	06/03/19 10:23	06/04/19 12:01	7429-90-5	
Barium, Dissolved	**36.6**	ug/L	10.0	1	06/03/19 10:23	06/04/19 12:01	7440-39-3	
Copper, Dissolved	ND	ug/L	10.0	1	06/03/19 10:23	06/04/19 12:01	7440-50-8	
Manganese, Dissolved	ND	ug/L	5.0	1	06/03/19 10:23	06/04/19 12:01	7439-96-5	
Nickel, Dissolved	ND	ug/L	20.0	1	06/03/19 10:23	06/04/19 12:01	7440-02-0	
Silver, Dissolved	ND	ug/L	10.0	1	06/03/19 10:23	06/04/19 12:01	7440-22-4	
Tin, Dissolved	ND	ug/L	75.0	1	06/03/19 10:23	06/04/19 12:01	7440-31-5	
Total Hardness by 2340B, Dissolved	**616000**	ug/L	3300	1	06/03/19 10:23	06/04/19 12:01		
Zinc, Dissolved	ND	ug/L	20.0	1	06/03/19 10:23	06/04/19 12:01	7440-66-6	
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Dissolved	ND	ug/L	0.50	1	06/03/19 10:23	06/05/19 11:12	7440-36-0	
Arsenic, Dissolved	ND	ug/L	0.50	1	06/03/19 10:23	06/05/19 11:12	7440-38-2	
Beryllium, Dissolved	ND	ug/L	0.20	1	06/03/19 10:23	06/05/19 11:12	7440-41-7	
Boron, Dissolved	**10500**	ug/L	1000	100	06/03/19 10:23	06/06/19 16:03	7440-42-8	
Cadmium, Dissolved	ND	ug/L	0.080	1	06/03/19 10:23	06/05/19 11:12	7440-43-9	
Chromium, Dissolved	ND	ug/L	0.50	1	06/03/19 10:23	06/05/19 11:12	7440-47-3	
Cobalt, Dissolved	ND	ug/L	0.50	1	06/03/19 10:23	06/05/19 11:12	7440-48-4	
Lead, Dissolved	ND	ug/L	0.10	1	06/03/19 10:23	06/05/19 11:12	7439-92-1	
Selenium, Dissolved	**15.7**	ug/L	0.50	1	06/03/19 10:23	06/05/19 11:12	7782-49-2	
Thallium, Dissolved	**0.11**	ug/L	0.10	1	06/03/19 10:23	06/05/19 11:12	7440-28-0	
Uranium, Dissolved	**6.9**	ug/L	0.50	1	06/03/19 10:23	06/05/19 11:12	7440-61-1	
Vanadium, Dissolved	ND	ug/L	1.0	1	06/03/19 10:23	06/05/19 11:12	7440-62-2	
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
Acenaphthene	ND	ug/L	10.3	1	05/22/19 19:09	05/31/19 16:06	83-32-9	
Anthracene	ND	ug/L	10.3	1	05/22/19 19:09	05/31/19 16:06	120-12-7	
Benzo(a)pyrene	ND	ug/L	10.3	1	05/22/19 19:09	05/31/19 16:06	50-32-8	
Benzoic acid	ND	ug/L	51.5	1	05/22/19 19:09	05/31/19 16:06	65-85-0	
4-Bromophenylphenyl ether	ND	ug/L	10.3	1	05/22/19 19:09	05/31/19 16:06	101-55-3	
Butylbenzylphthalate	ND	ug/L	10.3	1	05/22/19 19:09	05/31/19 16:06	85-68-7	
bis(2-Chloroethyl) ether	ND	ug/L	10.3	1	05/22/19 19:09	05/31/19 16:06	111-44-4	

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(612)607-1700

ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10475854

Sample: 603284 **Lab ID: 10475854003** Collected: 05/21/19 14:20 Received: 05/21/19 16:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
2-Chlorophenol	ND	ug/L	10.3	1	05/22/19 19:09	05/31/19 16:06	95-57-8	
3,3'-Dichlorobenzidine	ND	ug/L	51.5	1	05/22/19 19:09	05/31/19 16:06	91-94-1	
2,4-Dichlorophenol	ND	ug/L	10.3	1	05/22/19 19:09	05/31/19 16:06	120-83-2	
Diethylphthalate	ND	ug/L	10.3	1	05/22/19 19:09	05/31/19 16:06	84-66-2	
2,4-Dimethylphenol	ND	ug/L	10.3	1	05/22/19 19:09	05/31/19 16:06	105-67-9	
Dimethylphthalate	ND	ug/L	10.3	1	05/22/19 19:09	05/31/19 16:06	131-11-3	
Di-n-butylphthalate	ND	ug/L	10.3	1	05/22/19 19:09	05/31/19 16:06	84-74-2	
2,4-Dinitrophenol	ND	ug/L	10.3	1	05/22/19 19:09	05/31/19 16:06	51-28-5	
Di-n-octylphthalate	ND	ug/L	10.3	1	05/22/19 19:09	05/31/19 16:06	117-84-0	
bis(2-Ethylhexyl)phthalate	ND	ug/L	10.3	1	05/22/19 19:09	05/31/19 16:06	117-81-7	
Fluoranthene	ND	ug/L	10.3	1	05/22/19 19:09	05/31/19 16:06	206-44-0	
Fluorene	ND	ug/L	10.3	1	05/22/19 19:09	05/31/19 16:06	86-73-7	
Hexachlorobenzene	ND	ug/L	10.3	1	05/22/19 19:09	05/31/19 16:06	118-74-1	
Hexachlorocyclopentadiene	ND	ug/L	51.5	1	05/22/19 19:09	05/31/19 16:06	77-47-4	
Hexachloroethane	ND	ug/L	10.3	1	05/22/19 19:09	05/31/19 16:06	67-72-1	
Isophorone	ND	ug/L	10.3	1	05/22/19 19:09	05/31/19 16:06	78-59-1	
2-Methylnaphthalene	ND	ug/L	10.3	1	05/22/19 19:09	05/31/19 16:06	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/L	10.3	1	05/22/19 19:09	05/31/19 16:06	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/L	10.3	1	05/22/19 19:09	05/31/19 16:06		
N-Nitrosodimethylamine	ND	ug/L	10.3	1	05/22/19 19:09	05/31/19 16:06	62-75-9	
Pentachlorophenol	ND	ug/L	20.6	1	05/22/19 19:09	05/31/19 16:06	87-86-5	
Phenanthrene	ND	ug/L	10.3	1	05/22/19 19:09	05/31/19 16:06	85-01-8	
Phenol	ND	ug/L	10.3	1	05/22/19 19:09	05/31/19 16:06	108-95-2	
Pyrene	ND	ug/L	10.3	1	05/22/19 19:09	05/31/19 16:06	129-00-0	
2,4,6-Trichlorophenol	ND	ug/L	10.3	1	05/22/19 19:09	05/31/19 16:06	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	64	%.	55-125	1	05/22/19 19:09	05/31/19 16:06	4165-60-0	
2-Fluorobiphenyl (S)	57	%.	52-125	1	05/22/19 19:09	05/31/19 16:06	321-60-8	
p-Terphenyl-d14 (S)	76	%.	57-125	1	05/22/19 19:09	05/31/19 16:06	1718-51-0	
Phenol-d6 (S)	62	%.	30-125	1	05/22/19 19:09	05/31/19 16:06	13127-88-3	
2-Fluorophenol (S)	60	%.	30-125	1	05/22/19 19:09	05/31/19 16:06	367-12-4	
2,4,6-Tribromophenol (S)	73	%.	52-125	1	05/22/19 19:09	05/31/19 16:06	118-79-6	
Field Data	Analytical Method:							
Collected Date	**05/21/19**			1		05/21/19 14:20		
Collected Time	**1420**			1		05/21/19 14:20		
Field pH	**6.9**	Std. Units		1		05/21/19 14:20		
Field Temperature	**8.0**	deg C		1		05/21/19 14:20		
Field Specific Conductance	**1240**	umhos/cm		1		05/21/19 14:20		
Oxygen, Dissolved	**4.7**	mg/L		1		05/21/19 14:20	7782-44-7	
REDOX	**106**	mV		1		05/21/19 14:20		
Turbidity	**7.4**	NTU		1		05/21/19 14:20		
Apparent Color	**Clear**			1		05/21/19 14:20		
Odor	**No**			1		05/21/19 14:20		
Well Locked	**Yes**			1		05/21/19 14:20		
Purge Method	**Whale Pump**			1		05/21/19 14:20		

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10475854

Sample: 603284 **Lab ID: 10475854003** Collected: 05/21/19 14:20 Received: 05/21/19 16:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:							
Total Well Depth	**20.99**	feet		1		05/21/19 14:20		
Depth of Water	**5.89**			1		05/21/19 14:20		
Well Volume Purged	**70.2**			1		05/21/19 14:20		
Purge Rate	**1.35**			1		05/21/19 14:20		
300.0 IC Anions	Analytical Method: EPA 300.0							
Chloride	**72.7**	mg/L	1.2	1		05/24/19 15:06	16887-00-6	
Chromium, Hexavalent	Analytical Method: SM 3500-Cr B Modified							
Chromium, Hexavalent	ND	mg/L	0.010	1		05/22/19 07:23		
350.1 Ammonia, Unionized	Analytical Method: EPA 350.1							
Nitrogen, Ammonia (Unionized)	ND	mg/L	0.010	1		06/05/19 11:24		
350.1 Ammonia, Distilled	Analytical Method: EPA 350.1 rev. 2 (1993) Preparation Method: EPA 350.1 rev. 2 (1993)							
Nitrogen, Ammonia	ND	mg/L	0.11	1	05/28/19 09:43	05/29/19 12:59	7664-41-7	
SM4500CN-E Cyanide	Analytical Method: SM 4500-CN-E Preparation Method: SM 4500-CN-E							
Cyanide	ND	ug/L	20.0	1	06/04/19 08:53	06/04/19 15:23	57-12-5	

Sample: 603283 **Lab ID: 10475854004** Collected: 05/21/19 15:40 Received: 05/21/19 16:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA Mod. 3510C							
PCB-1016 (Aroclor 1016)	ND	ug/L	0.10	1	05/22/19 17:24	05/24/19 11:18	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/L	0.10	1	05/22/19 17:24	05/24/19 11:18	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/L	0.10	1	05/22/19 17:24	05/24/19 11:18	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/L	0.10	1	05/22/19 17:24	05/24/19 11:18	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/L	0.10	1	05/22/19 17:24	05/24/19 11:18	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/L	0.10	1	05/22/19 17:24	05/24/19 11:18	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/L	0.10	1	05/22/19 17:24	05/24/19 11:18	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/L	0.10	1	05/22/19 17:24	05/24/19 11:18	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/L	0.10	1	05/22/19 17:24	05/24/19 11:18	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	63	%.	30-125	1	05/22/19 17:24	05/24/19 11:18	877-09-8	
Decachlorobiphenyl (S)	91	%.	30-125	1	05/22/19 17:24	05/24/19 11:18	2051-24-3	
200.7 MET ICP, Dissolved	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Aluminum, Dissolved	ND	ug/L	200	1	06/03/19 10:23	06/04/19 12:03	7429-90-5	
Barium, Dissolved	**25.0**	ug/L	10.0	1	06/03/19 10:23	06/04/19 12:03	7440-39-3	
Copper, Dissolved	ND	ug/L	10.0	1	06/03/19 10:23	06/04/19 12:03	7440-50-8	
Manganese, Dissolved	**170**	ug/L	5.0	1	06/03/19 10:23	06/04/19 12:03	7439-96-5	
Nickel, Dissolved	ND	ug/L	20.0	1	06/03/19 10:23	06/04/19 12:03	7440-02-0	
Silver, Dissolved	ND	ug/L	10.0	1	06/03/19 10:23	06/04/19 12:03	7440-22-4	

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10475854

Sample: 603283 **Lab ID: 10475854004** Collected: 05/21/19 15:40 Received: 05/21/19 16:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 MET ICP, Dissolved	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Tin, Dissolved	ND	ug/L	75.0	1	06/03/19 10:23	06/04/19 12:03	7440-31-5	
Total Hardness by 2340B, Dissolved	**1060000**	ug/L	3300	1	06/03/19 10:23	06/04/19 12:03		
Zinc, Dissolved	ND	ug/L	20.0	1	06/03/19 10:23	06/04/19 12:03	7440-66-6	
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Dissolved	**2.8**	ug/L	0.50	1	06/03/19 10:23	06/05/19 11:18	7440-36-0	
Arsenic, Dissolved	**2.5**	ug/L	0.50	1	06/03/19 10:23	06/05/19 11:18	7440-38-2	
Beryllium, Dissolved	ND	ug/L	0.20	1	06/03/19 10:23	06/05/19 11:18	7440-41-7	
Boron, Dissolved	**52800**	ug/L	2500	250	06/03/19 10:23	06/06/19 16:06	7440-42-8	
Cadmium, Dissolved	ND	ug/L	0.080	1	06/03/19 10:23	06/05/19 11:18	7440-43-9	
Chromium, Dissolved	ND	ug/L	0.50	1	06/03/19 10:23	06/05/19 11:18	7440-47-3	
Cobalt, Dissolved	ND	ug/L	0.50	1	06/03/19 10:23	06/05/19 11:18	7440-48-4	
Lead, Dissolved	ND	ug/L	0.10	1	06/03/19 10:23	06/05/19 11:18	7439-92-1	
Selenium, Dissolved	**55.0**	ug/L	0.50	1	06/03/19 10:23	06/05/19 11:18	7782-49-2	
Thallium, Dissolved	ND	ug/L	0.10	1	06/03/19 10:23	06/05/19 11:18	7440-28-0	
Uranium, Dissolved	**46.9**	ug/L	0.50	1	06/03/19 10:23	06/05/19 11:18	7440-61-1	
Vanadium, Dissolved	**14.0**	ug/L	1.0	1	06/03/19 10:23	06/05/19 11:18	7440-62-2	
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
Acenaphthene	ND	ug/L	10.3	1	05/22/19 19:09	05/31/19 16:33	83-32-9	
Anthracene	ND	ug/L	10.3	1	05/22/19 19:09	05/31/19 16:33	120-12-7	
Benzo(a)pyrene	ND	ug/L	10.3	1	05/22/19 19:09	05/31/19 16:33	50-32-8	
Benzoic acid	ND	ug/L	51.5	1	05/22/19 19:09	05/31/19 16:33	65-85-0	
4-Bromophenylphenyl ether	ND	ug/L	10.3	1	05/22/19 19:09	05/31/19 16:33	101-55-3	
Butylbenzylphthalate	ND	ug/L	10.3	1	05/22/19 19:09	05/31/19 16:33	85-68-7	
bis(2-Chloroethyl) ether	ND	ug/L	10.3	1	05/22/19 19:09	05/31/19 16:33	111-44-4	
2-Chlorophenol	ND	ug/L	10.3	1	05/22/19 19:09	05/31/19 16:33	95-57-8	
3,3'-Dichlorobenzidine	ND	ug/L	51.5	1	05/22/19 19:09	05/31/19 16:33	91-94-1	
2,4-Dichlorophenol	ND	ug/L	10.3	1	05/22/19 19:09	05/31/19 16:33	120-83-2	
Diethylphthalate	ND	ug/L	10.3	1	05/22/19 19:09	05/31/19 16:33	84-66-2	
2,4-Dimethylphenol	ND	ug/L	10.3	1	05/22/19 19:09	05/31/19 16:33	105-67-9	
Dimethylphthalate	ND	ug/L	10.3	1	05/22/19 19:09	05/31/19 16:33	131-11-3	
Di-n-butylphthalate	ND	ug/L	10.3	1	05/22/19 19:09	05/31/19 16:33	84-74-2	
2,4-Dinitrophenol	ND	ug/L	10.3	1	05/22/19 19:09	05/31/19 16:33	51-28-5	
Di-n-octylphthalate	ND	ug/L	10.3	1	05/22/19 19:09	05/31/19 16:33	117-84-0	
bis(2-Ethylhexyl)phthalate	ND	ug/L	10.3	1	05/22/19 19:09	05/31/19 16:33	117-81-7	
Fluoranthene	ND	ug/L	10.3	1	05/22/19 19:09	05/31/19 16:33	206-44-0	
Fluorene	ND	ug/L	10.3	1	05/22/19 19:09	05/31/19 16:33	86-73-7	
Hexachlorobenzene	ND	ug/L	10.3	1	05/22/19 19:09	05/31/19 16:33	118-74-1	
Hexachlorocyclopentadiene	ND	ug/L	51.5	1	05/22/19 19:09	05/31/19 16:33	77-47-4	
Hexachloroethane	ND	ug/L	10.3	1	05/22/19 19:09	05/31/19 16:33	67-72-1	
Isophorone	ND	ug/L	10.3	1	05/22/19 19:09	05/31/19 16:33	78-59-1	
2-Methylnaphthalene	ND	ug/L	10.3	1	05/22/19 19:09	05/31/19 16:33	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/L	10.3	1	05/22/19 19:09	05/31/19 16:33	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/L	10.3	1	05/22/19 19:09	05/31/19 16:33		
N-Nitrosodimethylamine	ND	ug/L	10.3	1	05/22/19 19:09	05/31/19 16:33	62-75-9	

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10475854

Sample: 603283 **Lab ID: 10475854004** Collected: 05/21/19 15:40 Received: 05/21/19 16:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
Pentachlorophenol	ND	ug/L	20.6	1	05/22/19 19:09	05/31/19 16:33	87-86-5	
Phenanthrene	ND	ug/L	10.3	1	05/22/19 19:09	05/31/19 16:33	85-01-8	
Phenol	ND	ug/L	10.3	1	05/22/19 19:09	05/31/19 16:33	108-95-2	
Pyrene	ND	ug/L	10.3	1	05/22/19 19:09	05/31/19 16:33	129-00-0	
2,4,6-Trichlorophenol	ND	ug/L	10.3	1	05/22/19 19:09	05/31/19 16:33	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	76	%.	55-125	1	05/22/19 19:09	05/31/19 16:33	4165-60-0	
2-Fluorobiphenyl (S)	70	%.	52-125	1	05/22/19 19:09	05/31/19 16:33	321-60-8	
p-Terphenyl-d14 (S)	88	%.	57-125	1	05/22/19 19:09	05/31/19 16:33	1718-51-0	
Phenol-d6 (S)	72	%.	30-125	1	05/22/19 19:09	05/31/19 16:33	13127-88-3	
2-Fluorophenol (S)	68	%.	30-125	1	05/22/19 19:09	05/31/19 16:33	367-12-4	
2,4,6-Tribromophenol (S)	90	%.	52-125	1	05/22/19 19:09	05/31/19 16:33	118-79-6	
Field Data	Analytical Method:							
Collected Date	**05/21/19**			1		05/21/19 15:40		
Collected Time	**1540**			1		05/21/19 15:40		
Field pH	**8.7**	Std. Units		1		05/21/19 15:40		
Field Temperature	**9.5**	deg C		1		05/21/19 15:40		
Field Specific Conductance	**2110**	umhos/cm		1		05/21/19 15:40		
Oxygen, Dissolved	**2.7**	mg/L		1		05/21/19 15:40	7782-44-7	
REDOX	**-90**	mV		1		05/21/19 15:40		
Turbidity	**170**	NTU		1		05/21/19 15:40		
Apparent Color	**Clear**			1		05/21/19 15:40		
Odor	**No**			1		05/21/19 15:40		
Well Locked	**Yes**			1		05/21/19 15:40		
Purge Method	**Whale Pump**			1		05/21/19 15:40		
Total Well Depth	**29.55**	feet		1		05/21/19 15:40		
Depth of Water	**11.20**			1		05/21/19 15:40		
Well Volume Purged	**81.9**			1		05/21/19 15:40		
Purge Rate	**1.3**			1		05/21/19 15:40		
300.0 IC Anions	Analytical Method: EPA 300.0							
Chloride	**66.5**	mg/L	1.2	1		05/24/19 15:21	16887-00-6	
Chromium, Hexavalent	Analytical Method: SM 3500-Cr B Modified							
Chromium, Hexavalent	ND	mg/L	0.010	1		05/22/19 07:23		
350.1 Ammonia, Unionized	Analytical Method: EPA 350.1							
Nitrogen, Ammonia (Unionized)	**0.063**	mg/L	0.010	1		06/05/19 11:24		
350.1 Ammonia, Distilled	Analytical Method: EPA 350.1 rev. 2 (1993) Preparation Method: EPA 350.1 rev. 2 (1993)							
Nitrogen, Ammonia	**0.77**	mg/L	0.11	1	05/28/19 09:43	05/29/19 13:00	7664-41-7	
SM4500CN-E Cyanide	Analytical Method: SM 4500-CN-E Preparation Method: SM 4500-CN-E							
Cyanide	ND	ug/L	20.0	1	06/04/19 08:53	06/04/19 15:24	57-12-5	

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10475854

QC Batch: 608670
QC Batch Method: EPA 200.7
Analysis Method: EPA 200.7
Analysis Description: 200.7 MET Dissolved
Associated Lab Samples: 10475854001

METHOD BLANK: 3290018 Matrix: Water
Associated Lab Samples: 10475854001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum, Dissolved	ug/L	ND	200	05/29/19 09:23	
Barium, Dissolved	ug/L	ND	10.0	05/29/19 09:23	
Copper, Dissolved	ug/L	ND	10.0	05/29/19 09:23	
Manganese, Dissolved	ug/L	ND	5.0	05/29/19 09:23	
Nickel, Dissolved	ug/L	ND	20.0	05/29/19 09:23	
Silver, Dissolved	ug/L	ND	10.0	05/29/19 09:23	
Tin, Dissolved	ug/L	ND	75.0	05/29/19 09:23	
Zinc, Dissolved	ug/L	ND	20.0	05/29/19 09:23	

LABORATORY CONTROL SAMPLE: 3290019

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum, Dissolved	ug/L	20000	21700	108	85-115	
Barium, Dissolved	ug/L	1000	1030	103	85-115	
Copper, Dissolved	ug/L	1000	997	100	85-115	
Manganese, Dissolved	ug/L	1000	1040	104	85-115	
Nickel, Dissolved	ug/L	1000	1010	101	85-115	
Silver, Dissolved	ug/L	500	509	102	85-115	
Tin, Dissolved	ug/L	1000	998	100	85-115	
Zinc, Dissolved	ug/L	1000	1030	103	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3290020 3290021

Parameter	Units	10476012001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum, Dissolved	ug/L	ND	20000	20000	21500	22000	107	110	70-130	2	20	
Barium, Dissolved	ug/L	19.0	1000	1000	1030	1050	101	103	70-130	2	20	
Copper, Dissolved	ug/L	ND	1000	1000	1010	1020	100	102	70-130	2	20	
Manganese, Dissolved	ug/L	ND	1000	1000	1020	1040	102	104	70-130	2	20	
Nickel, Dissolved	ug/L	ND	1000	1000	981	994	98	99	70-130	1	20	
Silver, Dissolved	ug/L	ND	500	500	512	521	102	104	70-130	2	20	
Tin, Dissolved	ug/L	ND	1000	1000	979	999	98	100	70-130	2	20	
Zinc, Dissolved	ug/L	59.2	1000	1000	1050	1070	99	101	70-130	2	20	

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10475854

QC Batch: 609218 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 MET Dissolved
Associated Lab Samples: 10475854002, 10475854003, 10475854004

METHOD BLANK: 3292563 Matrix: Water
Associated Lab Samples: 10475854002, 10475854003, 10475854004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum, Dissolved	ug/L	ND	200	06/04/19 11:53	
Barium, Dissolved	ug/L	ND	10.0	06/04/19 11:53	
Copper, Dissolved	ug/L	ND	10.0	06/04/19 11:53	
Manganese, Dissolved	ug/L	ND	5.0	06/04/19 11:53	
Nickel, Dissolved	ug/L	ND	20.0	06/04/19 11:53	
Silver, Dissolved	ug/L	ND	10.0	06/04/19 11:53	
Tin, Dissolved	ug/L	ND	75.0	06/04/19 11:53	
Zinc, Dissolved	ug/L	ND	20.0	06/04/19 11:53	

LABORATORY CONTROL SAMPLE: 3292564

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum, Dissolved	ug/L	20000	21200	106	85-115	
Barium, Dissolved	ug/L	1000	1020	102	85-115	
Copper, Dissolved	ug/L	1000	976	98	85-115	
Manganese, Dissolved	ug/L	1000	1020	102	85-115	
Nickel, Dissolved	ug/L	1000	1000	100	85-115	
Silver, Dissolved	ug/L	500	502	100	85-115	
Tin, Dissolved	ug/L	1000	1000	100	85-115	
Zinc, Dissolved	ug/L	1000	1020	102	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3292565 3292566

Parameter	Units	10475854002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum, Dissolved	ug/L	ND	20000	20000	22200	22000	111	110	70-130	1	20	
Barium, Dissolved	ug/L	25.9	1000	1000	1050	1040	102	102	70-130	1	20	
Copper, Dissolved	ug/L	ND	1000	1000	1020	1010	102	101	70-130	1	20	
Manganese, Dissolved	ug/L	244	1000	1000	1270	1270	103	103	70-130	0	20	
Nickel, Dissolved	ug/L	ND	1000	1000	980	972	98	97	70-130	1	20	
Silver, Dissolved	ug/L	ND	500	500	528	522	106	104	70-130	1	20	
Tin, Dissolved	ug/L	ND	1000	1000	1000	978	100	98	70-130	2	20	
Zinc, Dissolved	ug/L	ND	1000	1000	990	983	99	98	70-130	1	20	

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10475854

QC Batch: 609219 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET Dissolved
Associated Lab Samples: 10475854001, 10475854002, 10475854003, 10475854004

METHOD BLANK: 3292568 Matrix: Water
Associated Lab Samples: 10475854001, 10475854002, 10475854003, 10475854004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony, Dissolved	ug/L	ND	0.50	06/05/19 09:44	
Arsenic, Dissolved	ug/L	ND	0.50	06/05/19 09:44	
Beryllium, Dissolved	ug/L	ND	0.20	06/05/19 09:44	
Boron, Dissolved	ug/L	ND	10.0	06/05/19 09:44	
Cadmium, Dissolved	ug/L	ND	0.080	06/05/19 09:44	
Chromium, Dissolved	ug/L	ND	0.50	06/05/19 09:44	
Cobalt, Dissolved	ug/L	ND	0.50	06/05/19 09:44	
Lead, Dissolved	ug/L	ND	0.10	06/05/19 09:44	
Selenium, Dissolved	ug/L	ND	0.50	06/05/19 09:44	
Thallium, Dissolved	ug/L	ND	0.10	06/05/19 09:44	
Uranium, Dissolved	ug/L	ND	0.50	06/05/19 09:44	
Vanadium, Dissolved	ug/L	ND	1.0	06/05/19 09:44	

LABORATORY CONTROL SAMPLE: 3292569

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony, Dissolved	ug/L	100	106	106	85-115	
Arsenic, Dissolved	ug/L	100	101	101	85-115	
Beryllium, Dissolved	ug/L	100	94.2	94	85-115	
Boron, Dissolved	ug/L	100	99.9	100	85-115	
Cadmium, Dissolved	ug/L	100	101	101	85-115	
Chromium, Dissolved	ug/L	100	102	102	85-115	
Cobalt, Dissolved	ug/L	100	104	104	85-115	
Lead, Dissolved	ug/L	100	104	104	85-115	
Selenium, Dissolved	ug/L	100	112	112	85-115	
Thallium, Dissolved	ug/L	100	111	111	85-115	
Uranium, Dissolved	ug/L	100	98.2	98	85-115	
Vanadium, Dissolved	ug/L	100	99.8	100	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3292570 3292571

Parameter	Units	10476128001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony, Dissolved	ug/L	ND	100	100	108	108	107	108	70-130	1	20	
Arsenic, Dissolved	ug/L	ND	100	100	102	102	101	102	70-130	1	20	
Beryllium, Dissolved	ug/L	ND	100	100	96.3	96.0	96	96	70-130	0	20	
Boron, Dissolved	ug/L	77.5	100	100	167	168	89	90	70-130	1	20	
Cadmium, Dissolved	ug/L	0.13	100	100	95.8	97.8	96	98	70-130	2	20	

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10475854

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3292570 3292571

Parameter	Units	10476128001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Dissolved	ug/L	ND	100	100	108	109	108	109	70-130	1	20	
Cobalt, Dissolved	ug/L	ND	100	100	104	105	104	105	70-130	1	20	
Lead, Dissolved	ug/L	0.11	100	100	95.6	96.7	96	97	70-130	1	20	
Selenium, Dissolved	ug/L	2.7	100	100	114	116	111	113	70-130	2	20	
Thallium, Dissolved	ug/L	0.11	100	100	103	104	103	104	70-130	1	20	
Uranium, Dissolved	ug/L	11.5	100	100	111	110	99	98	70-130	1	20	
Vanadium, Dissolved	ug/L	ND	100	100	111	113	110	112	70-130	1	20	

MATRIX SPIKE SAMPLE: 3292572

Parameter	Units	10476128003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Antimony, Dissolved	ug/L	ND	100	105	105	70-130	
Arsenic, Dissolved	ug/L	ND	100	101	101	70-130	
Beryllium, Dissolved	ug/L	ND	100	97.9	98	70-130	
Boron, Dissolved	ug/L	13.2	100	116	103	70-130	
Cadmium, Dissolved	ug/L	ND	100	99.9	100	70-130	
Chromium, Dissolved	ug/L	ND	100	104	104	70-130	
Cobalt, Dissolved	ug/L	ND	100	105	105	70-130	
Lead, Dissolved	ug/L	ND	100	102	102	70-130	
Selenium, Dissolved	ug/L	ND	100	110	110	70-130	
Thallium, Dissolved	ug/L	ND	100	108	108	70-130	
Uranium, Dissolved	ug/L	ND	100	98.1	98	70-130	
Vanadium, Dissolved	ug/L	ND	100	103	103	70-130	

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10475854

QC Batch: 607602 Analysis Method: EPA 8082A
QC Batch Method: EPA Mod. 3510C Analysis Description: 8082A GCS PCB
Associated Lab Samples: 10475854001, 10475854002, 10475854003, 10475854004

METHOD BLANK: 3284566 Matrix: Water
Associated Lab Samples: 10475854001, 10475854002, 10475854003, 10475854004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
PCB-1016 (Aroclor 1016)	ug/L	ND	0.10	05/24/19 09:32	
PCB-1221 (Aroclor 1221)	ug/L	ND	0.10	05/24/19 09:32	
PCB-1232 (Aroclor 1232)	ug/L	ND	0.10	05/24/19 09:32	
PCB-1242 (Aroclor 1242)	ug/L	ND	0.10	05/24/19 09:32	
PCB-1248 (Aroclor 1248)	ug/L	ND	0.10	05/24/19 09:32	
PCB-1254 (Aroclor 1254)	ug/L	ND	0.10	05/24/19 09:32	
PCB-1260 (Aroclor 1260)	ug/L	ND	0.10	05/24/19 09:32	
PCB-1262 (Aroclor 1262)	ug/L	ND	0.10	05/24/19 09:32	
PCB-1268 (Aroclor 1268)	ug/L	ND	0.10	05/24/19 09:32	
Decachlorobiphenyl (S)	%.	117	30-125	05/24/19 09:32	
Tetrachloro-m-xylene (S)	%.	53	30-125	05/24/19 09:32	

LABORATORY CONTROL SAMPLE & LCSD: 3284567 3284568

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
PCB-1016 (Aroclor 1016)	ug/L	2	1.6	1.6	81	82	45-125	1	20	
PCB-1260 (Aroclor 1260)	ug/L	2	1.8	1.8	90	91	49-125	0	20	
Decachlorobiphenyl (S)	%.				126	125	30-125			S0
Tetrachloro-m-xylene (S)	%.				72	75	30-125			

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10475854

QC Batch: 607604 Analysis Method: EPA 8270D
QC Batch Method: EPA 3520 Analysis Description: 8270D Water MSSV
Associated Lab Samples: 10475854001, 10475854002, 10475854003, 10475854004

METHOD BLANK: 3284579 Matrix: Water
Associated Lab Samples: 10475854001, 10475854002, 10475854003, 10475854004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
2,4,6-Trichlorophenol	ug/L	ND	10.0	05/30/19 13:45	
2,4-Dichlorophenol	ug/L	ND	10.0	05/30/19 13:45	
2,4-Dimethylphenol	ug/L	ND	10.0	05/30/19 13:45	
2,4-Dinitrophenol	ug/L	ND	10.0	05/30/19 13:45	
2-Chlorophenol	ug/L	ND	10.0	05/30/19 13:45	
2-Methylnaphthalene	ug/L	ND	10.0	05/30/19 13:45	
2-Methylphenol(o-Cresol)	ug/L	ND	10.0	05/30/19 13:45	
3&4-Methylphenol(m&p Cresol)	ug/L	ND	10.0	05/30/19 13:45	
3,3'-Dichlorobenzidine	ug/L	ND	50.0	05/30/19 13:45	
4-Bromophenylphenyl ether	ug/L	ND	10.0	05/30/19 13:45	
Acenaphthene	ug/L	ND	10.0	05/30/19 13:45	
Anthracene	ug/L	ND	10.0	05/30/19 13:45	
Benzo(a)pyrene	ug/L	ND	10.0	05/30/19 13:45	
Benzoic acid	ug/L	ND	50.0	05/30/19 13:45	
bis(2-Chloroethyl) ether	ug/L	ND	10.0	05/30/19 13:45	
bis(2-Ethylhexyl)phthalate	ug/L	ND	10.0	05/30/19 13:45	
Butylbenzylphthalate	ug/L	ND	10.0	05/30/19 13:45	
Di-n-butylphthalate	ug/L	ND	10.0	05/30/19 13:45	
Di-n-octylphthalate	ug/L	ND	10.0	05/30/19 13:45	
Diethylphthalate	ug/L	ND	10.0	05/30/19 13:45	
Dimethylphthalate	ug/L	ND	10.0	05/30/19 13:45	
Fluoranthene	ug/L	ND	10.0	05/30/19 13:45	
Fluorene	ug/L	ND	10.0	05/30/19 13:45	
Hexachlorobenzene	ug/L	ND	10.0	05/30/19 13:45	
Hexachlorocyclopentadiene	ug/L	ND	50.0	05/30/19 13:45	
Hexachloroethane	ug/L	ND	10.0	05/30/19 13:45	
Isophorone	ug/L	ND	10.0	05/30/19 13:45	
N-Nitrosodimethylamine	ug/L	ND	10.0	05/30/19 13:45	
Pentachlorophenol	ug/L	ND	20.0	05/30/19 13:45	
Phenanthrene	ug/L	ND	10.0	05/30/19 13:45	
Phenol	ug/L	ND	10.0	05/30/19 13:45	
Pyrene	ug/L	ND	10.0	05/30/19 13:45	
2,4,6-Tribromophenol (S)	%.	87	52-125	05/30/19 13:45	
2-Fluorobiphenyl (S)	%.	69	52-125	05/30/19 13:45	
2-Fluorophenol (S)	%.	62	30-125	05/30/19 13:45	
Nitrobenzene-d5 (S)	%.	66	55-125	05/30/19 13:45	
p-Terphenyl-d14 (S)	%.	90	57-125	05/30/19 13:45	
Phenol-d6 (S)	%.	61	30-125	05/30/19 13:45	

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10475854

LABORATORY CONTROL SAMPLE & LCSD: 3284580 3284581

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
2,4,6-Trichlorophenol	ug/L	50	43.9	44.6	88	89	60-125	2	20	
2,4-Dichlorophenol	ug/L	50	40.8	40.8	82	82	56-125	0	20	
2,4-Dimethylphenol	ug/L	50	36.5	36.6	73	73	33-125	0	20	
2,4-Dinitrophenol	ug/L	50	43.8	43.9	88	88	32-125	0	20	
2-Chlorophenol	ug/L	50	36.5	38.0	73	76	52-125	4	20	
2-Methylnaphthalene	ug/L	50	40.5	41.2	81	82	52-125	2	20	
2-Methylphenol(o-Cresol)	ug/L	50	37.5	37.8	75	76	55-125	1	20	
3&4-Methylphenol(m&p Cresol)	ug/L	50	38.6	38.3	77	77	57-125	1	20	
3,3'-Dichlorobenzidine	ug/L	50	47.2J	50.3	94	101	39-150		20	
4-Bromophenylphenyl ether	ug/L	50	45.0	45.6	90	91	61-125	1	20	
Acenaphthene	ug/L	50	42.7	43.5	85	87	59-125	2	20	
Anthracene	ug/L	50	44.0	45.0	88	90	64-125	2	20	
Benzo(a)pyrene	ug/L	50	44.9	46.3	90	93	63-125	3	20	
Benzoic acid	ug/L	50	31.4J	24.3J	63	49	30-125		20	
bis(2-Chloroethyl) ether	ug/L	50	34.9	35.8	70	72	49-125	3	20	
bis(2-Ethylhexyl)phthalate	ug/L	50	43.8	44.6	88	89	68-125	2	20	
Butylbenzylphthalate	ug/L	50	44.2	45.8	88	92	67-125	4	20	
Di-n-butylphthalate	ug/L	50	43.8	45.4	88	91	67-125	4	20	
Di-n-octylphthalate	ug/L	50	43.2	44.5	86	89	67-125	3	20	
Diethylphthalate	ug/L	50	44.2	45.8	88	92	64-125	3	20	
Dimethylphthalate	ug/L	50	44.6	45.2	89	90	65-125	2	20	
Fluoranthene	ug/L	50	44.1	45.0	88	90	64-125	2	20	
Fluorene	ug/L	50	43.3	44.1	87	88	63-125	2	20	
Hexachlorobenzene	ug/L	50	44.9	45.7	90	91	61-125	2	20	
Hexachlorocyclopentadiene	ug/L	50	ND	ND	39	37	30-125		20	1M
Hexachloroethane	ug/L	50	32.0	33.0	64	66	30-125	3	20	
Isophorone	ug/L	50	41.7	42.7	83	85	59-125	2	20	
N-Nitrosodimethylamine	ug/L	50	34.4	35.1	69	70	43-125	2	20	
Pentachlorophenol	ug/L	50	39.7	38.2	79	76	35-125	4	20	
Phenanthrene	ug/L	50	43.9	44.2	88	88	65-125	1	20	
Phenol	ug/L	50	36.7	37.5	73	75	54-125	2	20	
Pyrene	ug/L	50	43.5	45.5	87	91	65-125	5	20	
2,4,6-Tribromophenol (S)	%.				95	98	52-125			
2-Fluorobiphenyl (S)	%.				77	76	52-125			
2-Fluorophenol (S)	%.				68	70	30-125			
Nitrobenzene-d5 (S)	%.				74	75	55-125			
p-Terphenyl-d14 (S)	%.				90	92	57-125			
Phenol-d6 (S)	%.				72	73	30-125			

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10475854

QC Batch: 607680 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 10475854001, 10475854002, 10475854003, 10475854004

METHOD BLANK: 3284982 Matrix: Water
Associated Lab Samples: 10475854001, 10475854002, 10475854003, 10475854004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.2	05/24/19 03:02	

LABORATORY CONTROL SAMPLE: 3284983

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	12.5	13.2	105	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3284984 3284985

Parameter	Units	10475846001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	144	125	125	272	271	102	101	90-110	0	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3284986 3284987

Parameter	Units	10475846002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	17.9	12.5	12.5	28.9	29.4	88	91	90-110	1	20	M1

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REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10475854

QC Batch: 607489 Analysis Method: SM 3500-Cr B Modified
QC Batch Method: SM 3500-Cr B Modified Analysis Description: Chromium, Hexavalent by 3500
Associated Lab Samples: 10475854001, 10475854002, 10475854003, 10475854004

METHOD BLANK: 3284059 Matrix: Water
Associated Lab Samples: 10475854001, 10475854002, 10475854003, 10475854004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium, Hexavalent	mg/L	ND	0.010	05/22/19 07:23	

LABORATORY CONTROL SAMPLE: 3284060

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/L	0.2	0.19	97	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3284061 3284062

Parameter	Units	10475854001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Hexavalent	mg/L	ND	0.2	0.2	0.12	0.12	60	61	85-115	1	20	M1

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10475854

QC Batch: 166887 Analysis Method: EPA 350.1 rev. 2 (1993)
QC Batch Method: EPA 350.1 rev. 2 (1993) Analysis Description: 350.1 Ammonia Distilled
Associated Lab Samples: 10475854001, 10475854002, 10475854003, 10475854004

METHOD BLANK: 657660 Matrix: Water
Associated Lab Samples: 10475854001, 10475854002, 10475854003, 10475854004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, Ammonia	mg/L	ND	0.11	05/29/19 12:51	

LABORATORY CONTROL SAMPLE: 657661

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Ammonia	mg/L	5	5.2	103	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 657662 657663

Parameter	Units	12125357002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, Ammonia	mg/L	4.1	5	5	8.7	8.7	92	93	90-110	0	10	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 657664 657665

Parameter	Units	12125430002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, Ammonia	mg/L	0.14	5	5	5.3	5.2	103	102	90-110	0	10	

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10475854

QC Batch: 610208 Analysis Method: SM 4500-CN-E
QC Batch Method: SM 4500-CN-E Analysis Description: SM4500CN-E Cyanide
Associated Lab Samples: 10475854001, 10475854002, 10475854003, 10475854004

METHOD BLANK: 3297765 Matrix: Water
Associated Lab Samples: 10475854001, 10475854002, 10475854003, 10475854004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cyanide	ug/L	ND	20.0	06/04/19 15:15	

LABORATORY CONTROL SAMPLE: 3297766

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cyanide	ug/L	250	252	101	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3297767 3297768

Parameter	Units	10475854001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cyanide	ug/L	ND	250	250	239	243	92	94	80-120	1	30	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3297769 3297770

Parameter	Units	10475854002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cyanide	ug/L	ND	250	250	251	261	94	98	80-120	4	30	

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(612)607-1700

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10475854

Sample: 472759 **Lab ID: 10475854001** Collected: 05/21/19 10:45 Received: 05/21/19 16:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 900.0	**4.63 ± 4.02 (7.23) C:NA T:NA**	pCi/L	05/30/19 19:55	12587-46-1	
Gross Beta	EPA 900.0	**9.08 ± 2.92 (3.78) C:NA T:NA**	pCi/L	05/30/19 19:55	12587-47-2	

Sample: 603286 **Lab ID: 10475854002** Collected: 05/21/19 12:50 Received: 05/21/19 16:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 900.0	**6.25 ± 4.24 (6.92) C:NA T:NA**	pCi/L	05/30/19 19:55	12587-46-1	
Gross Beta	EPA 900.0	**4.64 ± 3.44 (6.07) C:NA T:NA**	pCi/L	05/30/19 19:55	12587-47-2	

Sample: 603284 **Lab ID: 10475854003** Collected: 05/21/19 14:20 Received: 05/21/19 16:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 900.0	**1.35 ± 5.45 (11.2) C:NA T:NA**	pCi/L	05/30/19 19:55	12587-46-1	
Gross Beta	EPA 900.0	**9.38 ± 5.49 (9.43) C:NA T:NA**	pCi/L	05/30/19 19:55	12587-47-2	

Sample: 603283 **Lab ID: 10475854004** Collected: 05/21/19 15:40 Received: 05/21/19 16:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 900.0	**42.8 ± 16.8 (20.6) C:NA T:NA**	pCi/L	05/30/19 19:56	12587-46-1	
Gross Beta	EPA 900.0	**32.6 ± 12.4 (17.0) C:NA T:NA**	pCi/L	05/30/19 19:56	12587-47-2	

REPORT OF LABORATORY ANALYSIS

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Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL - RADIOCHEMISTRY

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10475854

QC Batch: 344343 Analysis Method: EPA 900.0
QC Batch Method: EPA 900.0 Analysis Description: 900.0 Gross Alpha/Beta
Associated Lab Samples: 10475854001, 10475854002, 10475854003, 10475854004

METHOD BLANK: 1675864 Matrix: Water
Associated Lab Samples: 10475854001, 10475854002, 10475854003, 10475854004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Gross Alpha	-0.427 ± 1.11 (2.64) C:NA T:NA	pCi/L	05/30/19 19:55	
Gross Beta	2.21 ± 1.79 (3.27) C:NA T:NA	pCi/L	05/30/19 19:55	

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1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALIFIERS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10475854

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-M	Pace Analytical Services - Minneapolis
PASI-PA	Pace Analytical Services - Greensburg
PASI-V	Pace Analytical Services - Virginia

BATCH QUALIFIERS

Batch: 608183

[M5]	A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

ANALYTE QUALIFIERS

1M	The associated compound was outside of 20% for the associated continuing calibration but within 40% of the true value
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
S0	Surrogate recovery outside laboratory control limits.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10475854

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10475854001	**472759**	EPA Mod. 3510C	607602	EPA 8082A	608183
10475854002	**603286**	EPA Mod. 3510C	607602	EPA 8082A	608183
10475854003	**603284**	EPA Mod. 3510C	607602	EPA 8082A	608183
10475854004	**603283**	EPA Mod. 3510C	607602	EPA 8082A	608183
10475854001	**472759**	EPA 200.7	608670	EPA 200.7	608907
10475854002	**603286**	EPA 200.7	609218	EPA 200.7	610218
10475854003	**603284**	EPA 200.7	609218	EPA 200.7	610218
10475854004	**603283**	EPA 200.7	609218	EPA 200.7	610218
10475854001	**472759**	EPA 200.8	609219	EPA 200.8	610407
10475854002	**603286**	EPA 200.8	609219	EPA 200.8	610407
10475854003	**603284**	EPA 200.8	609219	EPA 200.8	610407
10475854004	**603283**	EPA 200.8	609219	EPA 200.8	610407
10475854001	**472759**	EPA 3520	607604	EPA 8270D	609407
10475854002	**603286**	EPA 3520	607604	EPA 8270D	609407
10475854003	**603284**	EPA 3520	607604	EPA 8270D	609407
10475854004	**603283**	EPA 3520	607604	EPA 8270D	609407
10475854001	**472759**				
10475854002	**603286**				
10475854003	**603284**				
10475854004	**603283**				
10475854001	**472759**	EPA 900.0	344343		
10475854002	**603286**	EPA 900.0	344343		
10475854003	**603284**	EPA 900.0	344343		
10475854004	**603283**	EPA 900.0	344343		
10475854001	**472759**	EPA 300.0	607680		
10475854002	**603286**	EPA 300.0	607680		
10475854003	**603284**	EPA 300.0	607680		
10475854004	**603283**	EPA 300.0	607680		
10475854001	**472759**	SM 3500-Cr B Modified	607489		
10475854002	**603286**	SM 3500-Cr B Modified	607489		
10475854003	**603284**	SM 3500-Cr B Modified	607489		
10475854004	**603283**	SM 3500-Cr B Modified	607489		
10475854001	**472759**	EPA 350.1			
10475854002	**603286**	EPA 350.1			
10475854003	**603284**	EPA 350.1			
10475854004	**603283**	EPA 350.1			
10475854001	**472759**	EPA 350.1 rev. 2 (1993)	166887	EPA 350.1 rev. 2 (1993)	167036
10475854002	**603286**	EPA 350.1 rev. 2 (1993)	166887	EPA 350.1 rev. 2 (1993)	167036
10475854003	**603284**	EPA 350.1 rev. 2 (1993)	166887	EPA 350.1 rev. 2 (1993)	167036
10475854004	**603283**	EPA 350.1 rev. 2 (1993)	166887	EPA 350.1 rev. 2 (1993)	167036
10475854001	**472759**	SM 4500-CN-E	610208	SM 4500-CN-E	610283
10475854002	**603286**	SM 4500-CN-E	610208	SM 4500-CN-E	610283
10475854003	**603284**	SM 4500-CN-E	610208	SM 4500-CN-E	610283

REPORT OF LABORATORY ANALYSIS

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Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10475854

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10475854004	**603283**	SM 4500-CN-E	610208	SM 4500-CN-E	610283

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WO# 10475854

10475854

stody Form revision 2013.0909

Work Order Number: | COC Type: | Page: 1 of 1

Turnaround Time: | COC ID:

Minnesota Pollution Control Agency

PROJECT/CLIENT INFO

Facility Code:	MNSW-057	Program Code (MDH Lab Only):	
Project Name:	19-01567 MPCA Freeway Landfill 2019 Waters	Project Task Code:	PRJ07786
Project Manager:	Brad Jacobson	612-607-6375	EPIC PROFILE #: 38716 Line 2
Potential Hazard?	If yes, add information to Sampler Comments Section		

LABORATORY

Lab Name: Pace Analytical - Minneapolis, MN

Address: 1700 SE Elm Street

Minneapolis MN 55414

Phone No: 612-607-6400

FOR LAB USE ONLY

Lab Work Order Sticker

SAMPLE DETAILS

SAMPLE TYPE CODES
Sample=Routine Sample
S-IVP=Integrated Vertical Profile Sample
S-CWOP=Composite Sample
QC-FB=Field Blank Sample
QC-FR=Field Replicate Sample
QC-TB=Trip Blank Sample

LAB MATRIX CODES
DW=Drinking Water
NW=Non-potable Water
SD=Soil/Solid
WP=Wipe
AR=Air
BL=Biological Material
OT=Other
TS=Tissue

FIELD MATRIX CODES
Wtr-Ground=Groundwater
Wtr-Surf=Surface Water
QC-BLANK=Artificial Blank Water
Leachate=Leachate Sample

ANALYSIS REQUESTED

Location Identifier	Sample Type	Date	Time	Start Depth, in meters	End Depth, in meters	Grab (G) or Composite (C) Sample	Lab Matrix Code	Field Matrix Code	AIS	Sampler Comments (filter volume, special handling, etc.)	# of Cont	PRESERV.	Field Parameters: SWL, Temp, pH, DO, Cond, Eh, Turbidity	Metals 200.7 / 200.8 / Gross Alpha/Beta - QAPP Table 3a	300.0 / HexCr - QAPP Table 3a	Ammonia/ Unionized NH3 - QAPP Table 3a	Total Cyanide / Free Cyanide - QAPP Table 3a	8270 SVOC, 8082, MDA1, MDA2 - QAPP Table 3a	Lab Sample No.	#
												ANALYSIS	None	HNO3	None	H2SO4	NaOH	None		
472759	Sample	5/21/19	1045			G	NW	Wtr-Ground	N	(OFMW-1)	14		X	X	X	X	X	X		1
603286	Sample	5/21/19	1250			G	NW	Wtr-Ground	N	(MW-97-9)	14		X	X	X	X	X	X		2
603284	Sample	5/21/19	1420			G	NW	Wtr-Ground	N	(MW-97-7)	14		X	X	X	X	X	X		3
603283	Sample	5/21/19	1540			G	NW	Wtr-Ground	N	(MW-97-3)	14		X	X	X	X	X	X		4
									N											5
									N											6
								DW	N	5/21/19										7
									N											8
									N											9
									N											10

MW1 MW2 MW3 MW4

Sampled By: David Anderson

Sampler's Signature: David Anderson

Phone #:

Receiving Comments:

Relinquished By/Affiliation	Date/Time	Accepted By/ Affiliation	Date/Time
(Sampler) David Anderson / Pace Analytical	5/21/19/1600	Pace T=5.2,5.9,5.6,5.2°C	5-21-19, 1530

FE Shipping

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 09May2019 Page 1 of 1
	Document No.: F-MN-L-213-rev.28	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt **Client Name:** MPCA **Project #:** WO#: 10475854

PM: JMA Due Date: 06/05/19
CLIENT: PASI-MNFLD

Courier: ☐Fed Ex ☐UPS ☐USPS ☐Client ☒Pace ☐SpeeDee ☐Commercial **See Exception** ☐

Tracking Number:

Custody Seal on Cooler/Box Present? ☒Yes ☐No **Seals Intact?** ☒Yes ☐No **Biological Tissue Frozen?** ☐Yes ☐No ☒N/A

Packing Material: ☐Bubble Wrap ☒Bubble Bags ☐None ☐Other: **Temp Blank?** ☒Yes ☐No

Thermometer: ☐T1(0461) ☐T2(1336) ☐T3(0459) ☒T4(0254) ☐T5(0489) **Type of Ice:** ☒Wet ☐Blue ☐None ☐Dry ☐Melted

Note: Each West Virginia Sample must have temp taken (no temp blanks)

Temp should be above freezing to 6°C **Cooler Temp Read w/temp blank** 5.4, 5.9, 5.6, 5.2 °C **Average Corrected Temp (no temp blank only):** °C **See Exceptions** ☐

Correction Factor: TNTC **Cooler Temp Corrected w/temp blank** 5.4 5.9 5.6 5.2 °C

USDA Regulated Soil: (☒N/A, water sample/Other:) **Date/Initials of Person Examining Contents:** GMZ 5/21/19

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA. MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐Yes ☐No Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐Yes ☐No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present and Filled Out?	☒Yes	☐No		1.
Chain of Custody Relinquished?	☒Yes	☐No		2.
Sampler Name and/or Signature on COC?	☒Yes	☐No	☐N/A	3.
Samples Arrived within Hold Time?	☒Yes	☐No		4.
Short Hold Time Analysis (<72 hr)?	☒Yes	☐No		5. ☐Fecal Coliform ☐HPC ☐Total Coliform/E coli ☐BOD/cBOD ☒Hex Chrome ☐Turbidity ☐Nitrate ☐Nitrite ☐Orthophos ☐Other
Rush Turn Around Time Requested?	☐Yes	☒No		6.
Sufficient Volume?	☒Yes	☐No		7.
Correct Containers Used? -Pace Containers Used?	☒Yes ☒Yes	☐No ☐No		8.
Containers Intact?	☒Yes	☐No		9.
Field Filtered Volume Received for Dissolved Tests? JMA 5/22/19	☒Yes	☐No	☒N/A	10. Is sediment visible in the dissolved container? ☐Yes ☐No
Is sufficient information available to reconcile the samples to the COC? Matrix: ☒Water ☐Soil ☐Oil ☐Other	☒Yes	☐No		11. **If no, write ID/ Date/Time on Container Below:** **See Exception** ☐
All containers needing acid/base preservation have been checked?	☒Yes	☐No	☐N/A	12. Sample #
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>12 Cyanide)	☒Yes	☐No	☐N/A	☒ NaOH ☒ HNO_3 ☒ H_2SO_4 ☐ Zinc Acetate
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin/PFAS	☐Yes	☐No	☒N/A	Positive for Res. Chlorine? ☐Yes ☒No **pH Paper Lot#** **See Exception** ☐
				Res. Chlorine 9016 | 0-6 Roll 203619 | 0-6 Strip | 0-14 Strip 10D2931
Headspace in VOA Vials (greater than 6mm)?	☐Yes	☐No	☒N/A	13. **See Exception** ☐
Trip Blank Present?	☐Yes	☐No	☒N/A	14.
Trip Blank Custody Seals Present?	☐Yes	☐No	☒N/A	Pace Trip Blank Lot # (if purchased):

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐Yes ☐No

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: Date: 05/22/2019

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers).

Labeled by:

WO# : 12125365

12125365

Chain of Custody

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN

Cert. Needed: [X] Yes [ ] No

Workorder: 10475854 **Workorder Name:** 19-01567 MPCA Freeway LF 19 WT **Owner Received Date:** 5/21/2019 **Results Requested By:** 6/12/2019

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6436	Pace Analytical Virginia MN 315 Chestnut Street Virginia, MN 55792 Phone (218)742-1042

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: H2SO4 BP3S						Requested Analysis: 350.1 Ammonia	Unionized Ammonia										LAB USE ONLY
1	472759	PS	5/21/2019 10:45	10475854001	Water	1						X	X										
2	603286	PS	5/21/2019 12:50	10475854002	Water	1						X	X										
3	603284	PS	5/21/2019 14:20	10475854003	Water	1						X	X										
4	603283	PS	5/21/2019 15:40	10475854004	Water	1						X	X										
5																							

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature]	5/21/19 1845	[signature] CC	5/22/19 1845
2	[signature] CC 5/22/19	2330	B. Mathews	5/23/19 0645
3				

Comments

Cooler Temperature on Receipt 0.1 °C | Custody Seal (Y) or N | Received on Ice (Y) or N | Samples Intact (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.*

Sample Condition Upon Receipt

WO#: 12125365

Client Name: Pace MN

Project #:

PM: CLJ Due Date: 06/13/19

CLIENT: PACE MPLS

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☒ Pace ☐ Other:

Tracking Number:

Custody Seal on Cooler/Box Present? ☒ Yes ☐ No Seals Intact? ☒ Yes ☐ No Optional: Proj. Due Date: Proj. Name:

Packing Material: ☒ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other: Temp Blank? ☒ Yes ☐ No

Thermometer Used: ☒ 140792808 Type of Ice: ☐ Wet ☐ Blue ☐ None ☒ Samples on ice, cooling process has begun

Cooler Temp Read °C: -0.2 Cooler Temp Corrected °C: 0.1 Biological Tissue Frozen? ☐ Yes ☐ No ☒ NA

Temp should be above freezing to 6 °C Correction Factor: 0.3 Date and Initials of Person Examining Contents: 5/22/19 OC

BM 5/23/19

				Comments:
Chain of Custody Present?	☑ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☑ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☑ Yes	☐ No	☐ N/A	3.
Sampler Name and Signature on COC?	☐ Yes	☑ No	☐ N/A	4.
Samples Arrived within Hold Time?	☑ Yes	☐ No	☐ N/A	5. If Fecal: ☐ <8 hours ☐ >8, <24 hours ☐ >24 hours
Short Hold Time Analysis (<72 hr)?	☐ Yes	☑ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☑ No	☐ N/A	7.
Sufficient Volume?	☑ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☑ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☑ Yes	☐ No	☐ N/A	
Containers Intact?	☑ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☑ N/A	11. Note if sediment is visible in the dissolved containers.
Sample Labels Match COC?	☑ Yes	☐ No	☐ N/A	12.
-Includes Date/Time/ID/Analysis Matrix: WT				
All containers needing acid/base preservation properly preserved?	☑ Yes	☐ No	☐ N/A	13. Note samples needing adjustment:
Headspace in Methyl Mercury Container	☐ Yes	☐ No	☑ N/A	14.
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☑ N/A	15.
Trip Blank Present?	☐ Yes	☐ No	☑ N/A	16.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☑ N/A	
Pace Trip Blank Lot # (if purchased):				

CLIENT NOTIFICATION/RESOLUTION Field Data Required? ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

FECAL WAIVER ON FILE Y N TEMPERATURE WAIVER ON FILE Y N

Project Manager Review: Nikki Jarve Date: 5/23/19

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

Chain of Custody

Pace Analytical®
www.pacelabs.com

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN
Cert. Needed: ☐ Yes ☐ No

Workorder: 10475854 **Workorder Name:** 19-01567 MPCA Freeway LF 19 WT **Owner Received Date:** 5/21/2019 **Results Requested By:** 6/12/2019

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6436	Pace Analytical Pittsburgh 1638 Roseytown Road Suites 2,3 & 4 Greensburg, PA 15601 Phone (724)850-5600

WO# : 30295937

30295937

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: HNO3 BP1N	Gross Alpha/Beta	LAB USE ONLY
1	472759	PS	5/21/2019 10:45	10475854001	Water	1	X	001
2	603286	PS	5/21/2019 12:50	10475854002	Water	1	X	002
3	603284	PS	5/21/2019 14:20	10475854003	Water	1	X	003
4	603283	PS	5/21/2019 15:40	10475854004	Water	1	X	004
5								

Comments

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature]	5/22/19 15:50	[signature]	05-23-19 9:40
2				
3				

Cooler Temperature on Receipt N/A °C | **Custody Seal** (Y) or N | **Received on Ice** Y or (N) | **Samples Intact** (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.*

Pittsburgh Lab Sample Condition Upon Receipt

Pace Analytical

Client Name: Pace - MN

Project# 30295937

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Label DK

LIMS Login DW

Tracking #: 4638 0198 7204

Custody Seal on Cooler/Box Present: ☑ yes ☐ no Seals intact: ☑ yes ☐ no

Thermometer Used N/A Type of Ice: Wet Blue (None)

Cooler Temperature Observed Temp ~ °C Correction Factor: ~ °C Final Temp: ~ °C

Temp should be above freezing to 6°C

pH paper Lot# 10102981 Date and Initials of person examining contents: DK 05-23-19

Comments:	Yes	No	N/A	
Chain of Custody Present:	✓			1.
Chain of Custody Filled Out:	✓			2.
Chain of Custody Relinquished:	✓			3.
Sampler Name & Signature on COC:		✓		4.
Sample Labels match COC: -Includes date/time/ID Matrix: WT	✓			5.
Samples Arrived within Hold Time:	✓			6.
Short Hold Time Analysis (<72hr remaining):		✓		7.
Rush Turn Around Time Requested:		✓		8.
Sufficient Volume:	✓			9.
Correct Containers Used: -Pace Containers Used:	✓			10.
Containers Intact:	✓			11.
Orthophosphate field filtered			✓	12.
Hex Cr Aqueous sample field filtered			✓	13.
Organic Samples checked for dechlorination:			✓	14.
Filtered volume received for Dissolved tests			✓	15.
All containers have been checked for preservation. exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix	✓			16. pH<2
All containers meet method preservation requirements.	✓			Initial when completed: DK Date/time of preservation: Lot # of added preservative:
Headspace in VOA Vials (>6mm):			✓	17.
Trip Blank Present:		✓		18.
Trip Blank Custody Seals Present			✓	
Rad Samples Screened < 0.5 mrem/hr	✓			Initial when completed: DK Date: 05-23-19

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

☐ **A check in this box indicates that additional information has been stored in ereports.**

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

***PM review** is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

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Madison, WI 53718
608.221.8700 Phone
608.221.4889 Fax

May 31, 2019

Jennifer Anderson
Pace Analytical
1700 Elm Street, Suite 200
Minneapolis, MN 55414

RE: MPCA Freeway LF Water - MN

Enclosed are the analytical results for the samples received by the laboratory on 05/23/2019.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. These results are in compliance with the 2009 NELAC Standards and the appropriate agencies listed below, unless otherwise noted in the case narrative. This analytical report should be reproduced in its entirety.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jessica Esser

Project Manager

Certification List			Expires
DODELAP	DOD ELAP Accreditation (A2LA)	3269.01	03/31/2020
ILEPA	Illinois Secondary NELAP Accreditation	004366	04/30/2020
KDHE	Kansas Secondary NELAP Accreditation	E-10384	04/30/2020
LELAP	Louisiana Primary NELAP Accreditation	04165	06/30/2019
NCDEQ	North Carolina Dept. of Environmental Quality Accreditation	688	12/31/2019
NJDEP	New Jersey Secondary NELAP Accreditation	WI004	06/30/2019
ODEQ	Oklahoma Department of Environmental Quality Accreditation	2018-087	08/31/2019
TCEQ	Texas Secondary NELAP Accreditation	T104704504-16-7	11/30/2019
WDNR	Wisconsin Certification under NR 149	113289110	08/31/2019

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Pace Analytical	Project: MPCA Freeway LF Water - MN
1700 Elm Street, Suite 200	Project Number: 10475854
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
472759	A192110-01	Water	05/21/2019	05/23/2019
603286	A192110-02	Water	05/21/2019	05/23/2019
603284	A192110-03	Water	05/21/2019	05/23/2019
603283	A192110-04	Water	05/21/2019	05/23/2019

CASE NARRATIVE

Sample Receipt Information:
4 samples were received on 05/23/2019. Samples were received at 1.2 degrees Celsius. Samples were received in acceptable condition, with the exception of one broken container.

One amber liter bottle for sample A192110-03 was received broken. Lab was able to proceed with the analyses using the remaining sample volume.

Please see the chain of custody (COC) document at the end of this report for additional information.

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Pace Analytical	Project: MPCA Freeway LF Water - MN
1700 Elm Street, Suite 200	Project Number: 10475854
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

472759

A192110-01 (Water)

Date Sampled
05/21/2019 10:45

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Base Neutral Pesticides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A905267**			
Acetochlor	ND	0.50	ug/L	1	05/28/2019	05/29/2019 15:11	EPA 8270D	
Alachlor	ND	0.50	ug/L	1	05/28/2019	05/29/2019 15:11	EPA 8270D	
Atrazine	ND	0.50	ug/L	1	05/28/2019	05/29/2019 15:11	EPA 8270D	
Chlorpyrifos	ND	0.50	ug/L	1	05/28/2019	05/29/2019 15:11	EPA 8270D	
Cyanazine	ND	0.20	ug/L	1	05/28/2019	05/29/2019 15:11	EPA 8270D	
Desethylatrazine	ND	0.50	ug/L	1	05/28/2019	05/29/2019 15:11	EPA 8270D	
Deisopropylatrazine	ND	0.50	ug/L	1	05/28/2019	05/29/2019 15:11	EPA 8270D	
Dimethenamid	ND	0.50	ug/L	1	05/28/2019	05/29/2019 15:11	EPA 8270D	
EPTC	ND	0.50	ug/L	1	05/28/2019	05/29/2019 15:11	EPA 8270D	
Ethalfluralin	ND	0.50	ug/L	1	05/28/2019	05/29/2019 15:11	EPA 8270D	
Fonofos	ND	0.50	ug/L	1	05/28/2019	05/29/2019 15:11	EPA 8270D	
Metolachlor	ND	0.50	ug/L	1	05/28/2019	05/29/2019 15:11	EPA 8270D	
Metribuzin	ND	0.50	ug/L	1	05/28/2019	05/29/2019 15:11	EPA 8270D	
Pendimethalin	ND	0.50	ug/L	1	05/28/2019	05/29/2019 15:11	EPA 8270D	
Phorate	ND	0.30	ug/L	1	05/28/2019	05/29/2019 15:11	EPA 8270D	
Prometon	ND	0.50	ug/L	1	05/28/2019	05/29/2019 15:11	EPA 8270D	
Propachlor	ND	0.50	ug/L	1	05/28/2019	05/29/2019 15:11	EPA 8270D	
Propazine	ND	0.50	ug/L	1	05/28/2019	05/29/2019 15:11	EPA 8270D	
Simazine	ND	0.50	ug/L	1	05/28/2019	05/29/2019 15:11	EPA 8270D	
Terbufos	ND	0.20	ug/L	1	05/28/2019	05/29/2019 15:11	EPA 8270D	
Triallate	ND	0.50	ug/L	1	05/28/2019	05/29/2019 15:11	EPA 8270D	
Trifluralin	ND	0.50	ug/L	1	05/28/2019	05/29/2019 15:11	EPA 8270D	
Surrogate: Atrazine-d5		*85.6 %*		*56.9-123*	*05/28/2019*	*05/29/2019 15:11*	*EPA 8270D*	
Surrogate: Parathion-d10		*90.9 %*		*23.8-169*	*05/28/2019*	*05/29/2019 15:11*	*EPA 8270D*	
Surrogate: Triphenyl phosphate		*95.2 %*		*50.5-178*	*05/28/2019*	*05/29/2019 15:11*	*EPA 8270D*	
Acid Herbicides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A905268**			
2,4-D	ND	0.50	ug/L	1	05/28/2019	05/29/2019 18:55	EPA 8151A	
2,4-DB	ND	0.50	ug/L	1	05/28/2019	05/29/2019 18:55	EPA 8151A	
2,4,5-T	ND	0.50	ug/L	1	05/28/2019	05/29/2019 18:55	EPA 8151A	
2,4,5-TP (Silvex)	ND	0.50	ug/L	1	05/28/2019	05/29/2019 18:55	EPA 8151A	
Bentazon	ND	0.50	ug/L	1	05/28/2019	05/29/2019 18:55	EPA 8151A	
Dicamba	ND	0.50	ug/L	1	05/28/2019	05/29/2019 18:55	EPA 8151A	
MCPA	ND	0.30	ug/L	1	05/28/2019	05/29/2019 18:55	EPA 8151A	
Picloram	ND	0.50	ug/L	1	05/28/2019	05/29/2019 18:55	EPA 8151A	
Triclopyr	ND	0.50	ug/L	1	05/28/2019	05/29/2019 18:55	EPA 8151A	
Surrogate: 2,4-D-d5		*57.2 %*		*43.1-133*	*05/28/2019*	*05/29/2019 18:55*	*EPA 8151A*	

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Pace Analytical	Project: MPCA Freeway LF Water - MN
1700 Elm Street, Suite 200	Project Number: 10475854
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

603286

A192110-02 (Water)

Date Sampled
05/21/2019 12:50

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Base Neutral Pesticides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A905267**			
Acetochlor	ND	0.50	ug/L	1	05/28/2019	05/29/2019 15:40	EPA 8270D	
Alachlor	ND	0.50	ug/L	1	05/28/2019	05/29/2019 15:40	EPA 8270D	
Atrazine	ND	0.50	ug/L	1	05/28/2019	05/29/2019 15:40	EPA 8270D	
Chlorpyrifos	ND	0.50	ug/L	1	05/28/2019	05/29/2019 15:40	EPA 8270D	
Cyanazine	ND	0.20	ug/L	1	05/28/2019	05/29/2019 15:40	EPA 8270D	
Desethylatrazine	ND	0.50	ug/L	1	05/28/2019	05/29/2019 15:40	EPA 8270D	
Deisopropylatrazine	ND	0.50	ug/L	1	05/28/2019	05/29/2019 15:40	EPA 8270D	
Dimethenamid	ND	0.50	ug/L	1	05/28/2019	05/29/2019 15:40	EPA 8270D	
EPTC	ND	0.50	ug/L	1	05/28/2019	05/29/2019 15:40	EPA 8270D	
Ethalfluralin	ND	0.50	ug/L	1	05/28/2019	05/29/2019 15:40	EPA 8270D	
Fonofos	ND	0.50	ug/L	1	05/28/2019	05/29/2019 15:40	EPA 8270D	
Metolachlor	ND	0.50	ug/L	1	05/28/2019	05/29/2019 15:40	EPA 8270D	
Metribuzin	ND	0.50	ug/L	1	05/28/2019	05/29/2019 15:40	EPA 8270D	
Pendimethalin	ND	0.50	ug/L	1	05/28/2019	05/29/2019 15:40	EPA 8270D	
Phorate	ND	0.30	ug/L	1	05/28/2019	05/29/2019 15:40	EPA 8270D	
Prometon	ND	0.50	ug/L	1	05/28/2019	05/29/2019 15:40	EPA 8270D	
Propachlor	ND	0.50	ug/L	1	05/28/2019	05/29/2019 15:40	EPA 8270D	
Propazine	ND	0.50	ug/L	1	05/28/2019	05/29/2019 15:40	EPA 8270D	
Simazine	ND	0.50	ug/L	1	05/28/2019	05/29/2019 15:40	EPA 8270D	
Terbufos	ND	0.20	ug/L	1	05/28/2019	05/29/2019 15:40	EPA 8270D	
Triallate	ND	0.50	ug/L	1	05/28/2019	05/29/2019 15:40	EPA 8270D	
Trifluralin	ND	0.50	ug/L	1	05/28/2019	05/29/2019 15:40	EPA 8270D	
Surrogate: Atrazine-d5		*90.1 %*		*56.9-123*	*05/28/2019*	*05/29/2019 15:40*	*EPA 8270D*	
Surrogate: Parathion-d10		*89.4 %*		*23.8-169*	*05/28/2019*	*05/29/2019 15:40*	*EPA 8270D*	
Surrogate: Triphenyl phosphate		*95.6 %*		*50.5-178*	*05/28/2019*	*05/29/2019 15:40*	*EPA 8270D*	
Acid Herbicides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A905268**			
2,4-D	ND	0.50	ug/L	1	05/28/2019	05/29/2019 19:31	EPA 8151A	
2,4-DB	ND	0.50	ug/L	1	05/28/2019	05/29/2019 19:31	EPA 8151A	
2,4,5-T	ND	0.50	ug/L	1	05/28/2019	05/29/2019 19:31	EPA 8151A	
2,4,5-TP (Silvex)	ND	0.50	ug/L	1	05/28/2019	05/29/2019 19:31	EPA 8151A	
Bentazon	ND	0.50	ug/L	1	05/28/2019	05/29/2019 19:31	EPA 8151A	
Dicamba	ND	0.50	ug/L	1	05/28/2019	05/29/2019 19:31	EPA 8151A	
MCPA	ND	0.30	ug/L	1	05/28/2019	05/29/2019 19:31	EPA 8151A	
Picloram	ND	0.50	ug/L	1	05/28/2019	05/29/2019 19:31	EPA 8151A	
Triclopyr	ND	0.50	ug/L	1	05/28/2019	05/29/2019 19:31	EPA 8151A	
Surrogate: 2,4-D-d5		*75.7 %*		*43.1-133*	*05/28/2019*	*05/29/2019 19:31*	*EPA 8151A*	

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Pace Analytical	Project: MPCA Freeway LF Water - MN
1700 Elm Street, Suite 200	Project Number: 10475854
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

603284

A192110-03 (Water)

Date Sampled
05/21/2019 14:20

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Base Neutral Pesticides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A905267**			
Acetochlor	ND	0.50	ug/L	1	05/28/2019	05/29/2019 16:08	EPA 8270D	
Alachlor	ND	0.50	ug/L	1	05/28/2019	05/29/2019 16:08	EPA 8270D	
Atrazine	ND	0.50	ug/L	1	05/28/2019	05/29/2019 16:08	EPA 8270D	
Chlorpyrifos	ND	0.50	ug/L	1	05/28/2019	05/29/2019 16:08	EPA 8270D	
Cyanazine	ND	0.20	ug/L	1	05/28/2019	05/29/2019 16:08	EPA 8270D	
Desethylatrazine	ND	0.50	ug/L	1	05/28/2019	05/29/2019 16:08	EPA 8270D	
Deisopropylatrazine	ND	0.50	ug/L	1	05/28/2019	05/29/2019 16:08	EPA 8270D	
Dimethenamid	ND	0.50	ug/L	1	05/28/2019	05/29/2019 16:08	EPA 8270D	
EPTC	ND	0.50	ug/L	1	05/28/2019	05/29/2019 16:08	EPA 8270D	
Ethalfluralin	ND	0.50	ug/L	1	05/28/2019	05/29/2019 16:08	EPA 8270D	
Fonofos	ND	0.50	ug/L	1	05/28/2019	05/29/2019 16:08	EPA 8270D	
Metolachlor	ND	0.50	ug/L	1	05/28/2019	05/29/2019 16:08	EPA 8270D	
Metribuzin	ND	0.50	ug/L	1	05/28/2019	05/29/2019 16:08	EPA 8270D	
Pendimethalin	ND	0.50	ug/L	1	05/28/2019	05/29/2019 16:08	EPA 8270D	
Phorate	ND	0.30	ug/L	1	05/28/2019	05/29/2019 16:08	EPA 8270D	
Prometon	ND	0.50	ug/L	1	05/28/2019	05/29/2019 16:08	EPA 8270D	
Propachlor	ND	0.50	ug/L	1	05/28/2019	05/29/2019 16:08	EPA 8270D	
Propazine	ND	0.50	ug/L	1	05/28/2019	05/29/2019 16:08	EPA 8270D	
Simazine	ND	0.50	ug/L	1	05/28/2019	05/29/2019 16:08	EPA 8270D	
Terbufos	ND	0.20	ug/L	1	05/28/2019	05/29/2019 16:08	EPA 8270D	
Triallate	ND	0.50	ug/L	1	05/28/2019	05/29/2019 16:08	EPA 8270D	
Trifluralin	ND	0.50	ug/L	1	05/28/2019	05/29/2019 16:08	EPA 8270D	
Surrogate: Atrazine-d5		*82.5 %*		*56.9-123*	*05/28/2019*	*05/29/2019 16:08*	*EPA 8270D*	
Surrogate: Parathion-d10		*103 %*		*23.8-169*	*05/28/2019*	*05/29/2019 16:08*	*EPA 8270D*	
Surrogate: Triphenyl phosphate		*93.5 %*		*50.5-178*	*05/28/2019*	*05/29/2019 16:08*	*EPA 8270D*	
Acid Herbicides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A905268**			
2,4-D	ND	0.50	ug/L	1	05/28/2019	05/29/2019 20:06	EPA 8151A	
2,4-DB	ND	0.50	ug/L	1	05/28/2019	05/29/2019 20:06	EPA 8151A	
2,4,5-T	ND	0.50	ug/L	1	05/28/2019	05/29/2019 20:06	EPA 8151A	
2,4,5-TP (Silvex)	ND	0.50	ug/L	1	05/28/2019	05/29/2019 20:06	EPA 8151A	
Bentazon	ND	0.50	ug/L	1	05/28/2019	05/29/2019 20:06	EPA 8151A	
Dicamba	ND	0.50	ug/L	1	05/28/2019	05/29/2019 20:06	EPA 8151A	
MCPA	ND	0.30	ug/L	1	05/28/2019	05/29/2019 20:06	EPA 8151A	
Picloram	ND	0.50	ug/L	1	05/28/2019	05/29/2019 20:06	EPA 8151A	
Triclopyr	ND	0.50	ug/L	1	05/28/2019	05/29/2019 20:06	EPA 8151A	
Surrogate: 2,4-D-d5		*80.9 %*		*43.1-133*	*05/28/2019*	*05/29/2019 20:06*	*EPA 8151A*	

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Pace Analytical	Project: MPCA Freeway LF Water - MN
1700 Elm Street, Suite 200	Project Number: 10475854
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

603283

A192110-04 (Water)

Date Sampled
05/21/2019 15:40

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Base Neutral Pesticides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A905267**			
Acetochlor	ND	0.50	ug/L	1	05/28/2019	05/29/2019 16:37	EPA 8270D	
Alachlor	ND	0.50	ug/L	1	05/28/2019	05/29/2019 16:37	EPA 8270D	
Atrazine	ND	0.50	ug/L	1	05/28/2019	05/29/2019 16:37	EPA 8270D	
Chlorpyrifos	ND	0.50	ug/L	1	05/28/2019	05/29/2019 16:37	EPA 8270D	
Cyanazine	ND	0.20	ug/L	1	05/28/2019	05/29/2019 16:37	EPA 8270D	
Desethylatrazine	ND	0.50	ug/L	1	05/28/2019	05/29/2019 16:37	EPA 8270D	
Deisopropylatrazine	ND	0.50	ug/L	1	05/28/2019	05/29/2019 16:37	EPA 8270D	
Dimethenamid	ND	0.50	ug/L	1	05/28/2019	05/29/2019 16:37	EPA 8270D	
EPTC	ND	0.50	ug/L	1	05/28/2019	05/29/2019 16:37	EPA 8270D	
Ethalfluralin	ND	0.50	ug/L	1	05/28/2019	05/29/2019 16:37	EPA 8270D	
Fonofos	ND	0.50	ug/L	1	05/28/2019	05/29/2019 16:37	EPA 8270D	
Metolachlor	ND	0.50	ug/L	1	05/28/2019	05/29/2019 16:37	EPA 8270D	
Metribuzin	ND	0.50	ug/L	1	05/28/2019	05/29/2019 16:37	EPA 8270D	
Pendimethalin	ND	0.50	ug/L	1	05/28/2019	05/29/2019 16:37	EPA 8270D	
Phorate	ND	0.30	ug/L	1	05/28/2019	05/29/2019 16:37	EPA 8270D	
Prometon	ND	0.50	ug/L	1	05/28/2019	05/29/2019 16:37	EPA 8270D	
Propachlor	ND	0.50	ug/L	1	05/28/2019	05/29/2019 16:37	EPA 8270D	
Propazine	ND	0.50	ug/L	1	05/28/2019	05/29/2019 16:37	EPA 8270D	
Simazine	ND	0.50	ug/L	1	05/28/2019	05/29/2019 16:37	EPA 8270D	
Terbufos	ND	0.20	ug/L	1	05/28/2019	05/29/2019 16:37	EPA 8270D	
Triallate	ND	0.50	ug/L	1	05/28/2019	05/29/2019 16:37	EPA 8270D	
Trifluralin	ND	0.50	ug/L	1	05/28/2019	05/29/2019 16:37	EPA 8270D	
Surrogate: Atrazine-d5		*87.0 %*		*56.9-123*	*05/28/2019*	*05/29/2019 16:37*	*EPA 8270D*	
Surrogate: Parathion-d10		*88.0 %*		*23.8-169*	*05/28/2019*	*05/29/2019 16:37*	*EPA 8270D*	
Surrogate: Triphenyl phosphate		*97.0 %*		*50.5-178*	*05/28/2019*	*05/29/2019 16:37*	*EPA 8270D*	
Acid Herbicides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A905268**			
2,4-D	ND	0.50	ug/L	1	05/28/2019	05/29/2019 20:41	EPA 8151A	
2,4-DB	ND	0.50	ug/L	1	05/28/2019	05/29/2019 20:41	EPA 8151A	
2,4,5-T	ND	0.50	ug/L	1	05/28/2019	05/29/2019 20:41	EPA 8151A	
2,4,5-TP (Silvex)	ND	0.50	ug/L	1	05/28/2019	05/29/2019 20:41	EPA 8151A	
Bentazon	ND	0.50	ug/L	1	05/28/2019	05/29/2019 20:41	EPA 8151A	
Dicamba	ND	0.50	ug/L	1	05/28/2019	05/29/2019 20:41	EPA 8151A	
MCPA	ND	0.30	ug/L	1	05/28/2019	05/29/2019 20:41	EPA 8151A	
Picloram	ND	0.50	ug/L	1	05/28/2019	05/29/2019 20:41	EPA 8151A	
Triclopyr	ND	0.50	ug/L	1	05/28/2019	05/29/2019 20:41	EPA 8151A	
Surrogate: 2,4-D-d5		*68.9 %*		*43.1-133*	*05/28/2019*	*05/29/2019 20:41*	*EPA 8151A*	

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1700 Elm Street, Suite 200	Project Number: 10475854
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Base Neutral Pesticides by Gas Chromatography/Mass Spectrometry - Quality Control

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A905267 - EPA 3510C										
Blank (A905267-BLK1)				Prepared: 05/28/2019 Analyzed: 05/29/2019 13:46						
Acetochlor	ND	0.50	ug/L							
Alachlor	ND	0.50	ug/L							
Atrazine	ND	0.50	ug/L							
Chlorpyrifos	ND	0.50	ug/L							
Cyanazine	ND	0.20	ug/L							
Desethylatrazine	ND	0.50	ug/L							
Deisopropylatrazine	ND	0.50	ug/L							
Dimethenamid	ND	0.50	ug/L							
EPTC	ND	0.50	ug/L							
Ethalfluralin	ND	0.50	ug/L							
Fonofos	ND	0.50	ug/L							
Metolachlor	ND	0.50	ug/L							
Metribuzin	ND	0.50	ug/L							
Pendimethalin	ND	0.50	ug/L							
Phorate	ND	0.30	ug/L							
Prometon	ND	0.50	ug/L							
Propachlor	ND	0.50	ug/L							
Propazine	ND	0.50	ug/L							
Simazine	ND	0.50	ug/L							
Terbufos	ND	0.20	ug/L							
Triallate	ND	0.50	ug/L							
Trifluralin	ND	0.50	ug/L							
Surrogate: Atrazine-d5	*0.404*		*ug/L*	*0.5250*		*76.9*	*56.9-123*			
Surrogate: Parathion-d10	*0.483*		*ug/L*	*0.5445*		*88.7*	*23.8-169*			
Surrogate: Triphenyl phosphate	*0.432*		*ug/L*	*0.5000*		*86.4*	*50.5-178*			
LCS (A905267-BS1)				Prepared: 05/28/2019 Analyzed: 05/29/2019 14:15						
Acetochlor	0.895	0.50	ug/L	1.000		89.5	67.8-122			
Alachlor	0.897	0.50	ug/L	1.000		89.7	68.6-119			
Atrazine	0.916	0.50	ug/L	1.000		91.6	68.6-115			
Chlorpyrifos	0.835	0.50	ug/L	1.000		83.5	63.1-120			
Cyanazine	0.961	0.20	ug/L	1.000		96.1	55.3-143			
Desethylatrazine	0.849	0.50	ug/L	1.000		84.9	67.8-115			
Deisopropylatrazine	0.729	0.50	ug/L	1.000		72.9	50.1-100			
Dimethenamid	0.919	0.50	ug/L	1.000		91.9	70.3-121			
EPTC	0.708	0.50	ug/L	1.000		70.8	50.4-101			
Ethalfluralin	0.747	0.50	ug/L	1.000		74.7	42.6-121			
Fonofos	1.01	0.50	ug/L	1.000		101	56.6-119			
Metolachlor	0.938	0.50	ug/L	1.000		93.8	71.3-128			
Metribuzin	0.890	0.50	ug/L	1.000		89.0	64.9-120			
Pendimethalin	0.836	0.50	ug/L	1.000		83.6	60.9-128			
Phorate	0.662	0.30	ug/L	1.000		66.2	37.3-112			
Prometon	0.908	0.50	ug/L	1.000		90.8	67.1-120			
Propachlor	1.13	0.50	ug/L	1.000		113	66.2-127			
Propazine	0.956	0.50	ug/L	1.000		95.6	68.2-118			
Simazine	0.946	0.50	ug/L	1.000		94.6	67.2-117			

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Pace Analytical	Project: MPCA Freeway LF Water - MN
1700 Elm Street, Suite 200	Project Number: 10475854
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Base Neutral Pesticides by Gas Chromatography/Mass Spectrometry - Quality Control

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A905267 - EPA 3510C										
LCS (A905267-BS1)				Prepared: 05/28/2019 Analyzed: 05/29/2019 14:15						
Terbufos	0.557	0.20	ug/L	1.000		55.7	34.3-111			
Triallate	0.858	0.50	ug/L	1.000		85.8	53-121			
Trifluralin	0.620	0.50	ug/L	1.000		62.0	45.9-116			
Surrogate: Atrazine-d5	*0.450*		*ug/L*	*0.5250*		*85.7*	*56.9-123*			
Surrogate: Parathion-d10	*0.569*		*ug/L*	*0.5445*		*105*	*23.8-169*			
Surrogate: Triphenyl phosphate	*0.468*		*ug/L*	*0.5000*		*93.6*	*50.5-178*			
LCS Dup (A905267-BSD1)				Prepared: 05/28/2019 Analyzed: 05/29/2019 14:43						
Acetochlor	0.938	0.50	ug/L	1.000		93.8	67.8-122	4.69	20	
Alachlor	0.933	0.50	ug/L	1.000		93.3	68.6-119	4.01	20	
Atrazine	0.990	0.50	ug/L	1.000		99.0	68.6-115	7.83	20	
Chlorpyrifos	0.848	0.50	ug/L	1.000		84.8	63.1-120	1.66	20	
Cyanazine	1.02	0.20	ug/L	1.000		102	55.3-143	5.72	20	
Desethylatrazine	0.874	0.50	ug/L	1.000		87.4	67.8-115	2.90	20	
Deisopropylatrazine	0.698	0.50	ug/L	1.000		69.8	50.1-100	4.32	20	
Dimethenamid	0.970	0.50	ug/L	1.000		97.0	70.3-121	5.33	20	
EPTC	0.687	0.50	ug/L	1.000		68.7	50.4-101	2.92	20	
Ethalfluralin	0.700	0.50	ug/L	1.000		70.0	42.6-121	6.54	20	
Fonofos	0.966	0.50	ug/L	1.000		96.6	56.6-119	4.13	20	
Metolachlor	0.998	0.50	ug/L	1.000		99.8	71.3-128	6.21	20	
Metribuzin	0.949	0.50	ug/L	1.000		94.9	64.9-120	6.37	20	
Pendimethalin	0.902	0.50	ug/L	1.000		90.2	60.9-128	7.62	20	
Phorate	0.647	0.30	ug/L	1.000		64.7	37.3-112	2.35	20	
Prometon	0.980	0.50	ug/L	1.000		98.0	67.1-120	7.72	20	
Propachlor	1.04	0.50	ug/L	1.000		104	66.2-127	8.63	20	
Propazine	1.02	0.50	ug/L	1.000		102	68.2-118	6.81	20	
Simazine	0.998	0.50	ug/L	1.000		99.8	67.2-117	5.32	20	
Terbufos	0.561	0.20	ug/L	1.000		56.1	34.3-111	0.832	20	
Triallate	0.843	0.50	ug/L	1.000		84.3	53-121	1.82	20	
Trifluralin	0.653	0.50	ug/L	1.000		65.3	45.9-116	5.26	20	
Surrogate: Atrazine-d5	*0.487*		*ug/L*	*0.5250*		*92.8*	*56.9-123*			
Surrogate: Parathion-d10	*0.534*		*ug/L*	*0.5445*		*98.0*	*23.8-169*			
Surrogate: Triphenyl phosphate	*0.491*		*ug/L*	*0.5000*		*98.2*	*50.5-178*			

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Pace Analytical	Project: MPCA Freeway LF Water - MN
1700 Elm Street, Suite 200	Project Number: 10475854
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Acid Herbicides by Gas Chromatography/Mass Spectrometry - Quality Control

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A905268 - EPA 3510C										
Blank (A905268-BLK1)				Prepared: 05/28/2019 Analyzed: 05/29/2019 18:20						
2,4-D	ND	0.50	ug/L							
2,4-DB	ND	0.50	ug/L							
2,4,5-T	ND	0.50	ug/L							
2,4,5-TP (Silvex)	ND	0.50	ug/L							
Bentazon	ND	0.50	ug/L							
Dicamba	ND	0.50	ug/L							
MCPA	ND	0.30	ug/L							
Picloram	ND	0.50	ug/L							
Triclopyr	ND	0.50	ug/L							
Surrogate: 2,4-D-d5	*1.69*		*ug/L*	*2.006*		*84.3*	*43.1-133*			
LCS (A905268-BS1)				Prepared: 05/28/2019 Analyzed: 05/29/2019 16:34						
2,4-D	1.71	0.50	ug/L	2.000		85.4	51.7-152			
2,4-DB	1.58	0.50	ug/L	2.000		79.1	51.5-146			
2,4,5-T	1.79	0.50	ug/L	2.000		89.4	55.4-138			
2,4,5-TP (Silvex)	1.62	0.50	ug/L	2.000		81.2	47.2-152			
Bentazon	0.874	0.50	ug/L	1.000		87.4	48.9-146			
Dicamba	1.37	0.50	ug/L	2.000		68.6	41-149			
MCPA	1.52	0.30	ug/L	2.000		76.2	32.6-148			
Picloram	0.659	0.50	ug/L	1.000		65.9	37.8-121			
Triclopyr	1.60	0.50	ug/L	2.000		80.0	49.9-149			
Surrogate: 2,4-D-d5	*1.47*		*ug/L*	*2.006*		*73.5*	*43.1-133*			
LCS Dup (A905268-BSD1)				Prepared: 05/28/2019 Analyzed: 05/29/2019 17:10						
2,4-D	1.60	0.50	ug/L	2.000		80.2	51.7-152	6.25	20	
2,4-DB	1.69	0.50	ug/L	2.000		84.5	51.5-146	6.55	20	
2,4,5-T	1.90	0.50	ug/L	2.000		94.8	55.4-138	5.87	20	
2,4,5-TP (Silvex)	1.70	0.50	ug/L	2.000		84.8	47.2-152	4.31	20	
Bentazon	0.898	0.50	ug/L	1.000		89.8	48.9-146	2.71	20	
Dicamba	1.56	0.50	ug/L	2.000		77.9	41-149	12.7	20	
MCPA	1.52	0.30	ug/L	2.000		76.1	32.6-148	0.151	20	
Picloram	0.742	0.50	ug/L	1.000		74.2	37.8-121	11.9	20	
Triclopyr	1.69	0.50	ug/L	2.000		84.3	49.9-149	5.27	20	
Surrogate: 2,4-D-d5	*1.50*		*ug/L*	*2.006*		*75.0*	*43.1-133*			

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Pace Analytical	Project: MPCA Freeway LF Water - MN
1700 Elm Street, Suite 200	Project Number: 10475854
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Notes and Definitions

ND	Analyte NOT DETECTED at or above the reporting limit or limit of detection (if listed).
NR	Not Reported
dry	Sample results reported on a dry weight basis. If the word 'dry' does not appear after the units, results are reported on an as-is basis.
RPD	Relative Percent Difference

A192110

Chain of Custody

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☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN
Cert. Needed: [X] Yes ☐ No

Workorder: 10475854 **Workorder Name:** 19-01567 MPCA Freeway LF 19 WT

Owner Received Date: 5/21/2019 **Results Requested By:** 6/12/2019

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6436	Pace Analytical Madison 2525 Advance Road Madison, WI 53718 Phone (608)221-8700

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved AG1U						MDA List 1	MDA List 2										LAB USE ONLY
1	472759	PS	5/21/2019 10:45	10475854001	Water	4						X	X										01
2	603286	PS	5/21/2019 12:50	10475854002	Water	4						X	X										02
3	603284	PS	5/21/2019 14:20	10475854003	Water	4						X	X			1 amber rec'd broken							03
4	603283	PS	5/21/2019 15:40	10475854004	Water	4						X	X										04
5																							

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature] of Pace	5/22/19 1615	Kari-Ann Killeen	5/23/19
2				0951
3				

Comments

Need MPCA Equis EDD and Barr Equis 5 EDD

Cooler Temperature on Receipt 1.2 °C | **Custody Seal** (Y) or N | **Received on Ice** (Y) or N | **Samples Intact** (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.*

This chain of custody is considered complete as is since this information is available in the owner laboratory.

160142274 exp 7/13/19

31-May-2019

Jennifer Anderson
Pace Analytical Services, LLC
1700 Elm Street
Suite 200
Minneapolis, MN 55414

Re: **10475854** Work Order: **19051578**

Dear Jennifer,

ALS Environmental received 4 samples on 23-May-2019 09:30 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental - Holland and for only the analyses requested.

Sample results are compliant with industry accepted practices and Quality Control results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 10.

If you have any questions regarding this report, please feel free to contact me:

ADDRESS: 3352 128th Avenue, Holland, MI, USA
PHONE: +1 (616) 399-6070 FAX: +1 (616) 399-6185

Sincerely,

Electronically approved by: Chad Whelton

Chad Whelton
Project Manager

ALS Group, USA

Date: 31-May-19

Client: Pace Analytical Services, LLC
Project: 10475854
Work Order: **19051578**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
19051578-01	472759	Water		5/21/2019 10:45	5/23/2019 09:30	☐
19051578-02	603286	Water		5/21/2019 12:50	5/23/2019 09:30	☐
19051578-03	603284	Water		5/21/2019 14:20	5/23/2019 09:30	☐
19051578-04	603283	Water		5/21/2019 15:40	5/23/2019 09:30	☐

Client: Pace Analytical Services, LLC
Project: 10475854
WorkOrder: **19051578**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
**	Estimated Value
a	Analyte is non-accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
Hr	BOD/CBOD - Sample was reset outside Hold Time, value should be considered estimated.
J	Analyte is present at an estimated concentration between the MDL and Report Limit
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and Reporting Limit, sample results may exhibit background or reagent contamination at the observed level.

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

Units Reported	Description
µg/L	Micrograms per Liter

ALS Group, USA

Date: *31-May-19*

Client:	Pace Analytical Services, LLC		
Project:	10475854	**Work Order:**	19051578
Sample ID:	472759	**Lab ID:**	19051578-01
Collection Date:	5/21/2019 10:45 AM	**Matrix:**	WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
CYANIDE, FREE			**SW9014**			Analyst: **RZM**
Cyanide, Free	ND		20	µg/L	1	5/31/2019 02:42 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Pace Analytical Services, LLC
Project: 10475854 **Work Order:** 19051578
Sample ID: 603286 **Lab ID:** 19051578-02
Collection Date: 5/21/2019 12:50 PM **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
CYANIDE, FREE			**SW9014**			Analyst: **RZM**
Cyanide, Free	ND		20	µg/L	1	5/31/2019 02:42 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Pace Analytical Services, LLC
Project: 10475854 **Work Order:** 19051578
Sample ID: 603284 **Lab ID:** 19051578-03
Collection Date: 5/21/2019 02:20 PM **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
CYANIDE, FREE			**SW9014**			Analyst: **RZM**
Cyanide, Free	ND		20	µg/L	1	5/31/2019 02:42 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Pace Analytical Services, LLC
Project: 10475854 **Work Order:** 19051578
Sample ID: 603283 **Lab ID:** 19051578-04
Collection Date: 5/21/2019 03:40 PM **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
CYANIDE, FREE			**SW9014**			Analyst: **RZM**
Cyanide, Free	ND		20	µg/L	1	5/31/2019 02:42 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 31-May-19

Client: Pace Analytical Services, LLC

Work Order: 19051578

Project: 10475854

QC BATCH REPORT

Batch ID: **R261706** Instrument ID **WETCHEM** Method: **SW9014**

MBLK Sample ID: **MB-R261706-R261706** Units: **µg/L** Analysis Date: **5/31/2019 02:42 PM**

Client ID: Run ID: **WETCHEM_190531V** SeqNo: **5689080** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Free	ND	20								

LCS Sample ID: **LCS-R261706-R261706** Units: **µg/L** Analysis Date: **5/31/2019 02:42 PM**

Client ID: Run ID: **WETCHEM_190531V** SeqNo: **5689081** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Free	274.4	20	250	0	110	81-119	0			

MS Sample ID: **19051781-01A MS** Units: **µg/L** Analysis Date: **5/31/2019 02:42 PM**

Client ID: Run ID: **WETCHEM_190531V** SeqNo: **5689087** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Free	235.5	20	250	-6.08	96.6	81-119	0			

MSD Sample ID: **19051781-01A MSD** Units: **µg/L** Analysis Date: **5/31/2019 02:42 PM**

Client ID: Run ID: **WETCHEM_190531V** SeqNo: **5689088** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Free	239.6	20	250	-6.08	98.3	81-119	235.5	1.71	20	

The following samples were analyzed in this batch:

19051578-01A	19051578-02A	19051578-03A
19051578-04A		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

19051578

Chain of Custody

Pace Analytical®
www.pacelabs.com

Workorder: 10475854 **Workorder Name:** 19-01567 MPCA Freeway LF 19 WT **Results Requested By:** 6/12/2019

Report / Invoice To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6436 Email: jennifer.anderson@pacelabs.com	ALS 3352 128th Avenue Holland, MI 49424 P.O. 10475854

State of Sample Origin: MN

Item	Sample ID	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Other BP3A	Requested Analysis: Free Cyanide	LAB USE ONLY
1	472759	5/21/2019 10:45	10475854001	Water	1	X	
2	603286	5/21/2019 12:50	10475854002	Water	1	X	
3	603284	5/21/2019 14:20	10475854003	Water	1	X	
4	603283	5/21/2019 15:40	10475854004	Water	1	X	
5							

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature]	5/22/19 1630	[signature]	5/23/19 0930
2				
3				

Comments: SRZ 3.0°C

Cooler Temperature on Receipt ____ °C | **Custody Seal** Y or N | **Received on Ice** Y or N | **Samples Intact** Y or N

(1)

ALS Group, USA

Sample Receipt Checklist

Client Name: **PACE_MN** Date/Time Received: **23-May-19 09:30**

Work Order: **19051578** Received by: **DS**

Checklist completed by Diane Shaw (eSignature) 23-May-19 (Date) Reviewed by: Chad Whelton (eSignature) 23-May-19 (Date)

Matrices: Water

Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Sample(s) received on ice?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	3.0/3.0 c	SR2	
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	5/23/2019 11:56:19 AM		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

June 07, 2019

Mr. Brad Jacobson
Pace Analytical Services, LLC..
1700 Elm Street
Suite 200
Minneapolis, MN 55414

RE: Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10476012

Dear Mr. Jacobson:
Enclosed are the analytical results for sample(s) received by the laboratory on May 22, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jennifer Anderson
jennifer.anderson@pacelabs.com
(612)607-6436
Project Manager

Enclosures

cc: Tom Halverson, Pace Analytical Field Services
Chris Pelosi, Pace Analytical Services - Field Services

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CERTIFICATIONS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10476012

Minnesota Certification IDs

1700 Elm Street SE, Minneapolis, MN 55414-2485
A2LA Certification #: 2926.01
Alabama Certification #: 40770
Alaska Contaminated Sites Certification #: 17-009
Alaska DW Certification #: MN00064
Arizona Certification #: AZ0014
Arkansas DW Certification #: MN00064
Arkansas WW Certification #: 88-0680
California Certification #: 2929
CNMI Saipan Certification #: MP0003
Colorado Certification #: MN00064
Connecticut Certification #: PH-0256
EPA Region 8+Wyoming DW Certification #: via MN 027-053-137
Florida Certification #: E87605
Georgia Certification #: 959
Guam EPA Certification #: MN00064
Hawaii Certification #: MN00064
Idaho Certification #: MN00064
Illinois Certification #: 200011
Indiana Certification #: C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky DW Certification #: 90062
Kentucky WW Certification #: 90062
Louisiana DEQ Certification #: 03086
Louisiana DW Certification #: MN00064
Maine Certification #: MN00064
Maryland Certification #: 322
Massachusetts Certification #: M-MN064
Michigan Certification #: 9909
Minnesota Certification #: 027-053-137
Minnesota Dept of Ag Certifcation #: via MN 027-053-137
Minnesota Petrofund Certification #: 1240
Mississippi Certification #: MN00064
Missouri Certification #: 10100
Montana Certification #: CERT0092
Nebraska Certification #: NE-OS-18-06
Nevada Certification #: MN00064
New Hampshire Certification #: 2081
New Jersey Certification #: MN002
New York Certification #: 11647
North Carolina DW Certification #: 27700
North Carolina WW Certification #: 530
North Dakota Certification #: R-036
Ohio DW Certification #: 41244
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Primary Certification #: MN300001
Oregon Secondary Certification #: MN200001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification #: MN00064
South Carolina Certification #:74003001
Tennessee Certification #: TN02818
Texas Certification #: T104704192
Utah Certification #: MN00064
Vermont Certification #: VT-027053137
Virginia Certification #: 460163
Washington Certification #: C486
West Virginia DEP Certification #: 382
West Virginia DW Certification #: 9952 C
Wisconsin Certification #: 999407970
Wyoming UST Certification #: via A2LA 2926.01

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SAMPLE SUMMARY

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10476012

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10476012001	**813763**	Water	05/22/19 12:00	05/22/19 13:48

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10476012

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10476012001	**813763**	EPA 8082A	RAG	11	PASI-M
		EPA 200.7	DM	9	PASI-M
		EPA 200.8	BWB, PW1	12	PASI-M
		EPA 8270D	STB	38	PASI-M
		EPA 300.0	KEO	1	PASI-M
		SM 3500-Cr B Modified	KEO	1	PASI-M

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10476012

Sample: 813763 **Lab ID: 10476012001** Collected: 05/22/19 12:00 Received: 05/22/19 13:48 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA Mod. 3510C							
PCB-1016 (Aroclor 1016)	ND	ug/L	1.0	1	05/22/19 17:24	05/24/19 11:33	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/L	1.0	1	05/22/19 17:24	05/24/19 11:33	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/L	1.0	1	05/22/19 17:24	05/24/19 11:33	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/L	1.0	1	05/22/19 17:24	05/24/19 11:33	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/L	1.0	1	05/22/19 17:24	05/24/19 11:33	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/L	1.0	1	05/22/19 17:24	05/24/19 11:33	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/L	1.0	1	05/22/19 17:24	05/24/19 11:33	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/L	1.0	1	05/22/19 17:24	05/24/19 11:33	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/L	1.0	1	05/22/19 17:24	05/24/19 11:33	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	76	%.	30-125	1	05/22/19 17:24	05/24/19 11:33	877-09-8	
Decachlorobiphenyl (S)	64	%.	30-125	1	05/22/19 17:24	05/24/19 11:33	2051-24-3	
200.7 MET ICP, Dissolved	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Aluminum, Dissolved	ND	ug/L	200	1	05/28/19 15:31	05/29/19 09:33	7429-90-5	
Barium, Dissolved	**19.0**	ug/L	10.0	1	05/28/19 15:31	05/29/19 09:33	7440-39-3	
Copper, Dissolved	ND	ug/L	10.0	1	05/28/19 15:31	05/29/19 09:33	7440-50-8	
Manganese, Dissolved	ND	ug/L	5.0	1	05/28/19 15:31	05/29/19 09:33	7439-96-5	
Nickel, Dissolved	ND	ug/L	20.0	1	05/28/19 15:31	05/29/19 09:33	7440-02-0	
Silver, Dissolved	ND	ug/L	10.0	1	05/28/19 15:31	05/29/19 09:33	7440-22-4	
Tin, Dissolved	ND	ug/L	75.0	1	05/28/19 15:31	05/29/19 09:33	7440-31-5	
Total Hardness by 2340B, Dissolved	**277000**	ug/L	3300	1	05/28/19 15:31	05/29/19 09:33		
Zinc, Dissolved	**59.2**	ug/L	20.0	1	05/28/19 15:31	05/29/19 09:33	7440-66-6	
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Dissolved	**13.9**	ug/L	10.0	20	06/03/19 10:23	06/05/19 09:50	7440-36-0	
Arsenic, Dissolved	ND	ug/L	10.0	20	06/03/19 10:23	06/05/19 09:50	7440-38-2	
Beryllium, Dissolved	ND	ug/L	4.0	20	06/03/19 10:23	06/05/19 09:50	7440-41-7	
Boron, Dissolved	**12800**	ug/L	2500	250	06/03/19 10:23	06/06/19 15:47	7440-42-8	
Cadmium, Dissolved	ND	ug/L	1.6	20	06/03/19 10:23	06/05/19 09:50	7440-43-9	
Chromium, Dissolved	**88.9**	ug/L	10.0	20	06/03/19 10:23	06/05/19 09:50	7440-47-3	
Cobalt, Dissolved	**308**	ug/L	10.0	20	06/03/19 10:23	06/05/19 09:50	7440-48-4	
Lead, Dissolved	ND	ug/L	2.0	20	06/03/19 10:23	06/05/19 09:50	7439-92-1	
Selenium, Dissolved	ND	ug/L	10.0	20	06/03/19 10:23	06/05/19 09:50	7782-49-2	
Thallium, Dissolved	ND	ug/L	2.0	20	06/03/19 10:23	06/05/19 09:50	7440-28-0	
Uranium, Dissolved	ND	ug/L	10.0	20	06/03/19 10:23	06/05/19 09:50	7440-61-1	
Vanadium, Dissolved	**20.1**	ug/L	20.0	20	06/03/19 10:23	06/05/19 09:50	7440-62-2	
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
Acenaphthene	ND	ug/L	2000	20	05/22/19 19:09	06/04/19 13:37	83-32-9	
Anthracene	ND	ug/L	2000	20	05/22/19 19:09	06/04/19 13:37	120-12-7	
Benzo(a)pyrene	ND	ug/L	2000	20	05/22/19 19:09	06/04/19 13:37	50-32-8	
Benzoic acid	**10400**	ug/L	10000	20	05/22/19 19:09	06/04/19 13:37	65-85-0	
4-Bromophenylphenyl ether	ND	ug/L	2000	20	05/22/19 19:09	06/04/19 13:37	101-55-3	
Butylbenzylphthalate	ND	ug/L	2000	20	05/22/19 19:09	06/04/19 13:37	85-68-7	
bis(2-Chloroethyl) ether	ND	ug/L	2000	20	05/22/19 19:09	06/04/19 13:37	111-44-4	

REPORT OF LABORATORY ANALYSIS

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(612)607-1700

ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10476012

Sample: 813763 **Lab ID: 10476012001** Collected: 05/22/19 12:00 Received: 05/22/19 13:48 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
2-Chlorophenol	ND	ug/L	2000	20	05/22/19 19:09	06/04/19 13:37	95-57-8	
3,3'-Dichlorobenzidine	ND	ug/L	10000	20	05/22/19 19:09	06/04/19 13:37	91-94-1	
2,4-Dichlorophenol	ND	ug/L	2000	20	05/22/19 19:09	06/04/19 13:37	120-83-2	
Diethylphthalate	ND	ug/L	2000	20	05/22/19 19:09	06/04/19 13:37	84-66-2	
2,4-Dimethylphenol	ND	ug/L	2000	20	05/22/19 19:09	06/04/19 13:37	105-67-9	
Dimethylphthalate	ND	ug/L	2000	20	05/22/19 19:09	06/04/19 13:37	131-11-3	
Di-n-butylphthalate	ND	ug/L	2000	20	05/22/19 19:09	06/04/19 13:37	84-74-2	
2,4-Dinitrophenol	ND	ug/L	2000	20	05/22/19 19:09	06/04/19 13:37	51-28-5	
Di-n-octylphthalate	ND	ug/L	2000	20	05/22/19 19:09	06/04/19 13:37	117-84-0	
bis(2-Ethylhexyl)phthalate	ND	ug/L	2000	20	05/22/19 19:09	06/04/19 13:37	117-81-7	
Fluoranthene	ND	ug/L	2000	20	05/22/19 19:09	06/04/19 13:37	206-44-0	
Fluorene	ND	ug/L	2000	20	05/22/19 19:09	06/04/19 13:37	86-73-7	
Hexachlorobenzene	ND	ug/L	2000	20	05/22/19 19:09	06/04/19 13:37	118-74-1	
Hexachlorocyclopentadiene	ND	ug/L	10000	20	05/22/19 19:09	06/04/19 13:37	77-47-4	
Hexachloroethane	ND	ug/L	2000	20	05/22/19 19:09	06/04/19 13:37	67-72-1	
Isophorone	ND	ug/L	2000	20	05/22/19 19:09	06/04/19 13:37	78-59-1	
2-Methylnaphthalene	ND	ug/L	2000	20	05/22/19 19:09	06/04/19 13:37	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/L	2000	20	05/22/19 19:09	06/04/19 13:37	95-48-7	
3&4-Methylphenol(m&p Cresol)	**7670**	ug/L	2000	20	05/22/19 19:09	06/04/19 13:37		
N-Nitrosodimethylamine	ND	ug/L	2000	20	05/22/19 19:09	06/04/19 13:37	62-75-9	
Pentachlorophenol	ND	ug/L	4000	20	05/22/19 19:09	06/04/19 13:37	87-86-5	
Phenanthrene	ND	ug/L	2000	20	05/22/19 19:09	06/04/19 13:37	85-01-8	
Phenol	**2330**	ug/L	2000	20	05/22/19 19:09	06/04/19 13:37	108-95-2	
Pyrene	ND	ug/L	2000	20	05/22/19 19:09	06/04/19 13:37	129-00-0	
2,4,6-Trichlorophenol	ND	ug/L	2000	20	05/22/19 19:09	06/04/19 13:37	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	0	%.	55-125	20	05/22/19 19:09	06/04/19 13:37	4165-60-0	D3,S4
2-Fluorobiphenyl (S)	0	%.	52-125	20	05/22/19 19:09	06/04/19 13:37	321-60-8	S4
p-Terphenyl-d14 (S)	0	%.	57-125	20	05/22/19 19:09	06/04/19 13:37	1718-51-0	S4
Phenol-d6 (S)	0	%.	30-125	20	05/22/19 19:09	06/04/19 13:37	13127-88-3	S4
2-Fluorophenol (S)	0	%.	30-125	20	05/22/19 19:09	06/04/19 13:37	367-12-4	S4
2,4,6-Tribromophenol (S)	0	%.	52-125	20	05/22/19 19:09	06/04/19 13:37	118-79-6	S4
300.0 IC Anions	Analytical Method: EPA 300.0							
Chloride	**2440**	mg/L	60.0	50		05/24/19 10:17	16887-00-6	
Chromium, Hexavalent	Analytical Method: SM 3500-Cr B Modified							
Chromium, Hexavalent	**0.28**	mg/L	0.10	10		05/22/19 18:28		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10476012

QC Batch: 608670
QC Batch Method: EPA 200.7
Analysis Method: EPA 200.7
Analysis Description: 200.7 MET Dissolved
Associated Lab Samples: 10476012001

METHOD BLANK: 3290018 Matrix: Water
Associated Lab Samples: 10476012001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum, Dissolved	ug/L	ND	200	05/29/19 09:23	
Barium, Dissolved	ug/L	ND	10.0	05/29/19 09:23	
Copper, Dissolved	ug/L	ND	10.0	05/29/19 09:23	
Manganese, Dissolved	ug/L	ND	5.0	05/29/19 09:23	
Nickel, Dissolved	ug/L	ND	20.0	05/29/19 09:23	
Silver, Dissolved	ug/L	ND	10.0	05/29/19 09:23	
Tin, Dissolved	ug/L	ND	75.0	05/29/19 09:23	
Zinc, Dissolved	ug/L	ND	20.0	05/29/19 09:23	

LABORATORY CONTROL SAMPLE: 3290019

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum, Dissolved	ug/L	20000	21700	108	85-115	
Barium, Dissolved	ug/L	1000	1030	103	85-115	
Copper, Dissolved	ug/L	1000	997	100	85-115	
Manganese, Dissolved	ug/L	1000	1040	104	85-115	
Nickel, Dissolved	ug/L	1000	1010	101	85-115	
Silver, Dissolved	ug/L	500	509	102	85-115	
Tin, Dissolved	ug/L	1000	998	100	85-115	
Zinc, Dissolved	ug/L	1000	1030	103	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3290020 3290021

Parameter	Units	10476012001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum, Dissolved	ug/L	ND	20000	20000	21500	22000	107	110	70-130	2	20	
Barium, Dissolved	ug/L	19.0	1000	1000	1030	1050	101	103	70-130	2	20	
Copper, Dissolved	ug/L	ND	1000	1000	1010	1020	100	102	70-130	2	20	
Manganese, Dissolved	ug/L	ND	1000	1000	1020	1040	102	104	70-130	2	20	
Nickel, Dissolved	ug/L	ND	1000	1000	981	994	98	99	70-130	1	20	
Silver, Dissolved	ug/L	ND	500	500	512	521	102	104	70-130	2	20	
Tin, Dissolved	ug/L	ND	1000	1000	979	999	98	100	70-130	2	20	
Zinc, Dissolved	ug/L	59.2	1000	1000	1050	1070	99	101	70-130	2	20	

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(612)607-1700

QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10476012

QC Batch: 609219
QC Batch Method: EPA 200.8
Analysis Method: EPA 200.8
Analysis Description: 200.8 MET Dissolved
Associated Lab Samples: 10476012001

METHOD BLANK: 3292568
Matrix: Water
Associated Lab Samples: 10476012001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony, Dissolved	ug/L	ND	0.50	06/05/19 09:44	
Arsenic, Dissolved	ug/L	ND	0.50	06/05/19 09:44	
Beryllium, Dissolved	ug/L	ND	0.20	06/05/19 09:44	
Boron, Dissolved	ug/L	ND	10.0	06/05/19 09:44	
Cadmium, Dissolved	ug/L	ND	0.080	06/05/19 09:44	
Chromium, Dissolved	ug/L	ND	0.50	06/05/19 09:44	
Cobalt, Dissolved	ug/L	ND	0.50	06/05/19 09:44	
Lead, Dissolved	ug/L	ND	0.10	06/05/19 09:44	
Selenium, Dissolved	ug/L	ND	0.50	06/05/19 09:44	
Thallium, Dissolved	ug/L	ND	0.10	06/05/19 09:44	
Uranium, Dissolved	ug/L	ND	0.50	06/05/19 09:44	
Vanadium, Dissolved	ug/L	ND	1.0	06/05/19 09:44	

LABORATORY CONTROL SAMPLE: 3292569

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony, Dissolved	ug/L	100	106	106	85-115	
Arsenic, Dissolved	ug/L	100	101	101	85-115	
Beryllium, Dissolved	ug/L	100	94.2	94	85-115	
Boron, Dissolved	ug/L	100	99.9	100	85-115	
Cadmium, Dissolved	ug/L	100	101	101	85-115	
Chromium, Dissolved	ug/L	100	102	102	85-115	
Cobalt, Dissolved	ug/L	100	104	104	85-115	
Lead, Dissolved	ug/L	100	104	104	85-115	
Selenium, Dissolved	ug/L	100	112	112	85-115	
Thallium, Dissolved	ug/L	100	111	111	85-115	
Uranium, Dissolved	ug/L	100	98.2	98	85-115	
Vanadium, Dissolved	ug/L	100	99.8	100	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3292570 3292571

Parameter	Units	10476128001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony, Dissolved	ug/L	ND	100	100	108	108	107	108	70-130	1	20	
Arsenic, Dissolved	ug/L	ND	100	100	102	102	101	102	70-130	1	20	
Beryllium, Dissolved	ug/L	ND	100	100	96.3	96.0	96	96	70-130	0	20	
Boron, Dissolved	ug/L	77.5	100	100	167	168	89	90	70-130	1	20	
Cadmium, Dissolved	ug/L	0.13	100	100	95.8	97.8	96	98	70-130	2	20	

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10476012

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3292570 3292571

Parameter	Units	10476128001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Dissolved	ug/L	ND	100	100	108	109	108	109	70-130	1	20	
Cobalt, Dissolved	ug/L	ND	100	100	104	105	104	105	70-130	1	20	
Lead, Dissolved	ug/L	0.11	100	100	95.6	96.7	96	97	70-130	1	20	
Selenium, Dissolved	ug/L	2.7	100	100	114	116	111	113	70-130	2	20	
Thallium, Dissolved	ug/L	0.11	100	100	103	104	103	104	70-130	1	20	
Uranium, Dissolved	ug/L	11.5	100	100	111	110	99	98	70-130	1	20	
Vanadium, Dissolved	ug/L	ND	100	100	111	113	110	112	70-130	1	20	

MATRIX SPIKE SAMPLE: 3292572

Parameter	Units	10476128003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Antimony, Dissolved	ug/L	ND	100	105	105	70-130	
Arsenic, Dissolved	ug/L	ND	100	101	101	70-130	
Beryllium, Dissolved	ug/L	ND	100	97.9	98	70-130	
Boron, Dissolved	ug/L	13.2	100	116	103	70-130	
Cadmium, Dissolved	ug/L	ND	100	99.9	100	70-130	
Chromium, Dissolved	ug/L	ND	100	104	104	70-130	
Cobalt, Dissolved	ug/L	ND	100	105	105	70-130	
Lead, Dissolved	ug/L	ND	100	102	102	70-130	
Selenium, Dissolved	ug/L	ND	100	110	110	70-130	
Thallium, Dissolved	ug/L	ND	100	108	108	70-130	
Uranium, Dissolved	ug/L	ND	100	98.1	98	70-130	
Vanadium, Dissolved	ug/L	ND	100	103	103	70-130	

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10476012

QC Batch: 607602 Analysis Method: EPA 8082A
QC Batch Method: EPA Mod. 3510C Analysis Description: 8082A GCS PCB
Associated Lab Samples: 10476012001

METHOD BLANK: 3284566 Matrix: Water
Associated Lab Samples: 10476012001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
PCB-1016 (Aroclor 1016)	ug/L	ND	0.10	05/24/19 09:32	
PCB-1221 (Aroclor 1221)	ug/L	ND	0.10	05/24/19 09:32	
PCB-1232 (Aroclor 1232)	ug/L	ND	0.10	05/24/19 09:32	
PCB-1242 (Aroclor 1242)	ug/L	ND	0.10	05/24/19 09:32	
PCB-1248 (Aroclor 1248)	ug/L	ND	0.10	05/24/19 09:32	
PCB-1254 (Aroclor 1254)	ug/L	ND	0.10	05/24/19 09:32	
PCB-1260 (Aroclor 1260)	ug/L	ND	0.10	05/24/19 09:32	
PCB-1262 (Aroclor 1262)	ug/L	ND	0.10	05/24/19 09:32	
PCB-1268 (Aroclor 1268)	ug/L	ND	0.10	05/24/19 09:32	
Decachlorobiphenyl (S)	%.	117	30-125	05/24/19 09:32	
Tetrachloro-m-xylene (S)	%.	53	30-125	05/24/19 09:32	

LABORATORY CONTROL SAMPLE & LCSD: 3284567 3284568

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
PCB-1016 (Aroclor 1016)	ug/L	2	1.6	1.6	81	82	45-125	1	20	
PCB-1260 (Aroclor 1260)	ug/L	2	1.8	1.8	90	91	49-125	0	20	
Decachlorobiphenyl (S)	%.				126	125	30-125			S0
Tetrachloro-m-xylene (S)	%.				72	75	30-125			

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10476012

QC Batch: 607604 Analysis Method: EPA 8270D
QC Batch Method: EPA 3520 Analysis Description: 8270D Water MSSV
Associated Lab Samples: 10476012001

METHOD BLANK: 3284579 Matrix: Water
Associated Lab Samples: 10476012001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
2,4,6-Trichlorophenol	ug/L	ND	10.0	05/30/19 13:45	
2,4-Dichlorophenol	ug/L	ND	10.0	05/30/19 13:45	
2,4-Dimethylphenol	ug/L	ND	10.0	05/30/19 13:45	
2,4-Dinitrophenol	ug/L	ND	10.0	05/30/19 13:45	
2-Chlorophenol	ug/L	ND	10.0	05/30/19 13:45	
2-Methylnaphthalene	ug/L	ND	10.0	05/30/19 13:45	
2-Methylphenol(o-Cresol)	ug/L	ND	10.0	05/30/19 13:45	
3&4-Methylphenol(m&p Cresol)	ug/L	ND	10.0	05/30/19 13:45	
3,3'-Dichlorobenzidine	ug/L	ND	50.0	05/30/19 13:45	
4-Bromophenylphenyl ether	ug/L	ND	10.0	05/30/19 13:45	
Acenaphthene	ug/L	ND	10.0	05/30/19 13:45	
Anthracene	ug/L	ND	10.0	05/30/19 13:45	
Benzo(a)pyrene	ug/L	ND	10.0	05/30/19 13:45	
Benzoic acid	ug/L	ND	50.0	05/30/19 13:45	
bis(2-Chloroethyl) ether	ug/L	ND	10.0	05/30/19 13:45	
bis(2-Ethylhexyl)phthalate	ug/L	ND	10.0	05/30/19 13:45	
Butylbenzylphthalate	ug/L	ND	10.0	05/30/19 13:45	
Di-n-butylphthalate	ug/L	ND	10.0	05/30/19 13:45	
Di-n-octylphthalate	ug/L	ND	10.0	05/30/19 13:45	
Diethylphthalate	ug/L	ND	10.0	05/30/19 13:45	
Dimethylphthalate	ug/L	ND	10.0	05/30/19 13:45	
Fluoranthene	ug/L	ND	10.0	05/30/19 13:45	
Fluorene	ug/L	ND	10.0	05/30/19 13:45	
Hexachlorobenzene	ug/L	ND	10.0	05/30/19 13:45	
Hexachlorocyclopentadiene	ug/L	ND	50.0	05/30/19 13:45	
Hexachloroethane	ug/L	ND	10.0	05/30/19 13:45	
Isophorone	ug/L	ND	10.0	05/30/19 13:45	
N-Nitrosodimethylamine	ug/L	ND	10.0	05/30/19 13:45	
Pentachlorophenol	ug/L	ND	20.0	05/30/19 13:45	
Phenanthrene	ug/L	ND	10.0	05/30/19 13:45	
Phenol	ug/L	ND	10.0	05/30/19 13:45	
Pyrene	ug/L	ND	10.0	05/30/19 13:45	
2,4,6-Tribromophenol (S)	%.	87	52-125	05/30/19 13:45	
2-Fluorobiphenyl (S)	%.	69	52-125	05/30/19 13:45	
2-Fluorophenol (S)	%.	62	30-125	05/30/19 13:45	
Nitrobenzene-d5 (S)	%.	66	55-125	05/30/19 13:45	
p-Terphenyl-d14 (S)	%.	90	57-125	05/30/19 13:45	
Phenol-d6 (S)	%.	61	30-125	05/30/19 13:45	

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10476012

LABORATORY CONTROL SAMPLE & LCSD: 3284580 3284581

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
2,4,6-Trichlorophenol	ug/L	50	43.9	44.6	88	89	60-125	2	20	
2,4-Dichlorophenol	ug/L	50	40.8	40.8	82	82	56-125	0	20	
2,4-Dimethylphenol	ug/L	50	36.5	36.6	73	73	33-125	0	20	
2,4-Dinitrophenol	ug/L	50	43.8	43.9	88	88	32-125	0	20	
2-Chlorophenol	ug/L	50	36.5	38.0	73	76	52-125	4	20	
2-Methylnaphthalene	ug/L	50	40.5	41.2	81	82	52-125	2	20	
2-Methylphenol(o-Cresol)	ug/L	50	37.5	37.8	75	76	55-125	1	20	
3&4-Methylphenol(m&p Cresol)	ug/L	50	38.6	38.3	77	77	57-125	1	20	
3,3'-Dichlorobenzidine	ug/L	50	47.2J	50.3	94	101	39-150		20	
4-Bromophenylphenyl ether	ug/L	50	45.0	45.6	90	91	61-125	1	20	
Acenaphthene	ug/L	50	42.7	43.5	85	87	59-125	2	20	
Anthracene	ug/L	50	44.0	45.0	88	90	64-125	2	20	
Benzo(a)pyrene	ug/L	50	44.9	46.3	90	93	63-125	3	20	
Benzoic acid	ug/L	50	31.4J	24.3J	63	49	30-125		20	
bis(2-Chloroethyl) ether	ug/L	50	34.9	35.8	70	72	49-125	3	20	
bis(2-Ethylhexyl)phthalate	ug/L	50	43.8	44.6	88	89	68-125	2	20	
Butylbenzylphthalate	ug/L	50	44.2	45.8	88	92	67-125	4	20	
Di-n-butylphthalate	ug/L	50	43.8	45.4	88	91	67-125	4	20	
Di-n-octylphthalate	ug/L	50	43.2	44.5	86	89	67-125	3	20	
Diethylphthalate	ug/L	50	44.2	45.8	88	92	64-125	3	20	
Dimethylphthalate	ug/L	50	44.6	45.2	89	90	65-125	2	20	
Fluoranthene	ug/L	50	44.1	45.0	88	90	64-125	2	20	
Fluorene	ug/L	50	43.3	44.1	87	88	63-125	2	20	
Hexachlorobenzene	ug/L	50	44.9	45.7	90	91	61-125	2	20	
Hexachlorocyclopentadiene	ug/L	50	ND	ND	39	37	30-125		20	1M
Hexachloroethane	ug/L	50	32.0	33.0	64	66	30-125	3	20	
Isophorone	ug/L	50	41.7	42.7	83	85	59-125	2	20	
N-Nitrosodimethylamine	ug/L	50	34.4	35.1	69	70	43-125	2	20	
Pentachlorophenol	ug/L	50	39.7	38.2	79	76	35-125	4	20	
Phenanthrene	ug/L	50	43.9	44.2	88	88	65-125	1	20	
Phenol	ug/L	50	36.7	37.5	73	75	54-125	2	20	
Pyrene	ug/L	50	43.5	45.5	87	91	65-125	5	20	
2,4,6-Tribromophenol (S)	%.				95	98	52-125			
2-Fluorobiphenyl (S)	%.				77	76	52-125			
2-Fluorophenol (S)	%.				68	70	30-125			
Nitrobenzene-d5 (S)	%.				74	75	55-125			
p-Terphenyl-d14 (S)	%.				90	92	57-125			
Phenol-d6 (S)	%.				72	73	30-125			

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10476012

QC Batch: 608153 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 10476012001

METHOD BLANK: 3287321 Matrix: Water
Associated Lab Samples: 10476012001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.2	05/23/19 20:30	

LABORATORY CONTROL SAMPLE: 3287322

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	12.5	13.1	104	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3287323 3287324

Parameter	Units	10476067001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	4.8	12.5	12.5	17.7	17.6	104	103	90-110	0	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3287325 3287326

Parameter	Units	10476067002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	4.0	12.5	12.5	17.0	16.8	103	102	90-110	1	20	

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10476012

QC Batch: 607489
QC Batch Method: SM 3500-Cr B Modified
Analysis Method: SM 3500-Cr B Modified
Analysis Description: Chromium, Hexavalent by 3500
Associated Lab Samples: 10476012001

METHOD BLANK: 3284059 Matrix: Water
Associated Lab Samples: 10476012001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium, Hexavalent	mg/L	ND	0.010	05/22/19 07:23	

LABORATORY CONTROL SAMPLE: 3284060

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/L	0.2	0.19	97	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3284061 3284062

Parameter	Units	10475854001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Hexavalent	mg/L	ND	0.2	0.2	0.12	0.12	60	61	85-115	1	20	M1

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QUALIFIERS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10476012

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-M	Pace Analytical Services - Minneapolis

WORKORDER QUALIFIERS

WO: 10476012

[1]	Samples were received outside of the recommended temperature range of 0-6 degrees Celsius. The samples were received from the field on ice.

BATCH QUALIFIERS

Batch: 608183

[M5]	A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

ANALYTE QUALIFIERS

1M	The associated compound was outside of 20% for the associated continuing calibration but within 40% of the true value
D3	Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
S0	Surrogate recovery outside laboratory control limits.
S4	Surrogate recovery not evaluated against control limits due to sample dilution.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10476012

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10476012001	**813763**	EPA Mod. 3510C	607602	EPA 8082A	608183
10476012001	**813763**	EPA 200.7	608670	EPA 200.7	608907
10476012001	**813763**	EPA 200.8	609219	EPA 200.8	610407
10476012001	**813763**	EPA 3520	607604	EPA 8270D	609407
10476012001	**813763**	EPA 300.0	608153		
10476012001	**813763**	SM 3500-Cr B Modified	607489		

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WO#: 10476012

10476012

Minnesota Pollution Control Agency

Chain-of-Custody Form revision 2013.0909

Work Order Number:

Turnaround Time:

Page: 1 of 1

FOR LAB USE ONLY

Lab Work Order Sticker

PROJECT/CLIENT INFO

Facility Code:	MNSW-057	Program Code (MDH Lab Only):	
Project Name:	19-01567 MPCA Freeway Landfill 2019 Waters	Project Task Code:	PRJ07786
Project Manager:	Brad Jacobson 612-607-6375	EPIC PROFILE #: 38716 Line 2	
Potential Hazard?	If yes, add information to Sampler Comments Section		

Lab Name: Pace Analytical - Minneapolis, MN

Address: 1700 SE Elm Street

Minneapolis MN 55414

Phone No: 612-607-6400

SAMPLE DETAILS

SAMPLE TYPE CODES
Sample=Routine Sample
S-IVP=Integrated Vertical Profile Sample
S-CWOP=Composite Sample
QC-FB=Field Blank Sample
QC-FR=Field Replicate Sample
QC-TB=Trip Blank Sample

LAB MATRIX CODES
DW=Drinking Water
NW=Non-potable Water
SD=Soil/Solid
WP=Wipe
AR=Air
BL=Biological Material
OT=Other
TS=Tissue

FIELD MATRIX CODES
Wtr-Ground=Groundwater
Wtr-Surf=Surface Water
QC-BLANK=Artificial Blank Water
Leachate=Leachate Sample

ANALYSIS REQUESTED

Location Identifier	Sample Type	Date	Time	Start Depth, in meters	End Depth, in meters	Grab (G) or Composite (C) Sample	Lab Matrix Code	Field Matrix Code	AIS	Sampler Comments (filter volume, special handling, etc.)	# of Cont	ANALYSIS / PRESERV.	Field Parameters: SWL, Temp, pH, DO, Cond, Eh, Turbidity / None	Metals 200.7 / 200.8 / ~~Gross Alpha/Beta - QAPP Table 3a~~ / HNO3	300.0 / HexCr - QAPP Table 3a / None	Ammonia/ Unionized NH3 - QAPP Table 3a / H2SO4	Total Cyanide / Free Cyanide - QAPP Table 3a / NaOH	8270 SVOC, 8082, ~~MDA1, MDA2~~ - QAPP Table 3a / None	Lab Sample No.	#
813763	Sample	5/22/19	1200			G	NW	Wtr-Ground	N	(MW-3) DVA 5/22/19	4			X	X			X	601	1
									N											2
									N											3
									N											4
									N											5
									N											6
									N											7
									N											8
									N											9
									N											10

Sampled By: David Anderson

Sampler's Signature: David Anderson

Phone #:

Receiving Comments:

Relinquished By/Affiliation	Date/Time	Accepted By/ Affilliation	Date/Time
(Sampler) David Anderson / Pace Analytical	5/22/19 / 1345	CMA Pace T=6.8°C	5-22-19, 1348

(1.) could only collect 250 HNO3 (Filtered), 250 unpreserved, and (2) 6L for sample 813763.

Pace Analytical	Document Name: **Sample Condition Upon Receipt Form**	Document Revised: 09May2019 Page 1 of 1
	Document No.: **F-MN-L-213-rev.28**	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: MPCA

Project #: WO#: 10476012

PM: JMA Due Date: 06/06/19

CLIENT: PASI-MNFLD

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☒ Pace ☐ SpeeDee ☐ Commercial See Exception ☐

Tracking Number: _____

Custody Seal on Cooler/Box Present? ☐ Yes ☒ No **Seals Intact?** ☐ Yes ☒ No **Biological Tissue Frozen?** ☐ Yes ☐ No ☒ N/A

Packing Material: ☒ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other: _____ **Temp Blank?** ☒ Yes ☐ No

Thermometer: ☐ T1(0461) ☐ T2(1336) ☐ T3(0459) ☐ T4(0254) ☒ T5(0489) **Type of Ice:** ☒ Wet ☐ Blue ☐ None ☐ Dry ☐ Melted

Note: Each West Virginia Sample must have temp taken (no temp blanks)

Temp should be above freezing to 6°C **Cooler Temp Read w/temp blank:** 7.0 °C **Average Corrected Temp (no temp blank only):** _____ °C See Exceptions ☒

Correction Factor: -0.2 **Cooler Temp Corrected w/temp blank:** 6.8 °C

USDA Regulated Soil: (☒ N/A, water sample/Other: _____)
Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐ Yes ☐ No

Date/Initials of Person Examining Contents: CG 5/22/19
Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☐ No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present and Filled Out?	☒ Yes	☐ No		1.
Chain of Custody Relinquished?	☒ Yes	☐ No		2.
Sampler Name and/or Signature on COC?	☒ Yes	☐ No	☐ N/A	3.
Samples Arrived within Hold Time?	☒ Yes	☐ No		4.
Short Hold Time Analysis (<72 hr)?	☒ Yes	☐ No		5. ☐ Fecal Coliform ☐ HPC ☐ Total Coliform/E coli ☐ BOD/cBOD ☒ Hex Chrome ☐ Turbidity ☐ Nitrate ☐ Nitrite ☐ Orthophos ☐ Other
Rush Turn Around Time Requested?	☐ Yes	☒ No		6.
Sufficient Volume?	☒ Yes	☐ No		7.
Correct Containers Used? -Pace Containers Used?	☒ Yes ☒ Yes	☐ No ☐ No		8.
Containers Intact?	☒ Yes	☐ No		9.
Field Filtered Volume Received for Dissolved Tests?	☒ Yes	☐ No	☐ N/A	10. Is sediment visible in the dissolved container? ☐ Yes ☐ No
Is sufficient information available to reconcile the samples to the COC? Matrix: ☒ Water ☐ Soil ☐ Oil ☐ Other	☒ Yes	☐ No		11. If no, write ID/ Date/Time on Container Below: See Exception ☐
All containers needing acid/base preservation have been checked?	☒ Yes	☐ No	☐ N/A	12. Sample # 1 ☐ NaOH ☒ HNO_3 ☐ H_2SO_4 ☐ Zinc Acetate
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>12 Cyanide)	☐ Yes	☒ No	☐ N/A	
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin/PFAS	☐ Yes	☐ No	☒ N/A	Positive for Res. Chlorine? ☐ Yes ☐ No pH Paper Lot# See Exception ☒
				Res. Chlorine: 0-6 Roll 203619 / 0-6 Strip / 0-14 Strip
Headspace in VOA Vials (greater than 6mm)?	☐ Yes	☐ No	☒ N/A	13. See Exception ☐
Trip Blank Present?	☐ Yes	☐ No	☒ N/A	14. Pace Trip Blank Lot # (if purchased): N/A
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☒ N/A	

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

Project Manager Review: _____ **Date:** 05/22/2019

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers).

Labeled by: C.G.

Pace Analytical	Document Name: **SCUR Exception Form – Coolers Above 6°C**	Document Revised: 08Apr2019 Page 1 of 1
	Document No.: **F-MN-C-298-Rev.02**	Issuing Authority: Pace Minnesota Quality Office

During sample triage, this form is to be placed in each cooler that arrives above 6.0 degrees Celsius

SCUR Exceptions: **Workorder #:**

Out of Temp Sample IDs	Container Type	# of Containers

PM Notified? ☐Yes ☒No

If yes, indicate who was contacted/date/time.
If no, indicate reason why.

Same day, on ice

Multiple Cooler Project? ☐Yes ☒No
If you answered yes, fill out information to the left.

No Temp Blank

Read Temp	Corrected Temp	Average Temp

Tracking Number/Temperature	

Other Issues

Issue Type: Sample ID	Container Type	# of Containers

pH Adjustment Log for Preserved Samples

Sample ID	Type of Preserv.	pH Upon Receipt	Date Adjusted	Time Adjusted	Amount Added (mL)	Lot # Added	pH After	In Compliance after addition?	Initials
813763	HNO_3	≤2	5/22/19	1424	1	111800	≤2	☐Yes ☒No	CG
								☐Yes ☐No	
								☐Yes ☐No	
								☐Yes ☐No	

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

June 18, 2019

Mr. Brad Jacobson
Pace Analytical Services, LLC..
1700 Elm Street
Suite 200
Minneapolis, MN 55414

RE: Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10476684

Dear Mr. Jacobson:
Enclosed are the analytical results for sample(s) received by the laboratory on May 28, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Some analyses have been subcontracted outside of the Pace Network. The subcontracted laboratory report has been attached.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jennifer Anderson
jennifer.anderson@pacelabs.com
(612)607-6436
Project Manager

Enclosures

cc: Tom Halverson, Pace Analytical Field Services
Chris Pelosi, Pace Analytical Services - Field Services

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CERTIFICATIONS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10476684

Minnesota Certification IDs

1700 Elm Street SE, Minneapolis, MN 55414-2485
A2LA Certification #: 2926.01
Alabama Certification #: 40770
Alaska Contaminated Sites Certification #: 17-009
Alaska DW Certification #: MN00064
Arizona Certification #: AZ0014
Arkansas DW Certification #: MN00064
Arkansas WW Certification #: 88-0680
California Certification #: 2929
CNMI Saipan Certification #: MP0003
Colorado Certification #: MN00064
Connecticut Certification #: PH-0256
EPA Region 8+Wyoming DW Certification #: via MN 027-053-137
Florida Certification #: E87605
Georgia Certification #: 959
Guam EPA Certification #: MN00064
Hawaii Certification #: MN00064
Idaho Certification #: MN00064
Illinois Certification #: 200011
Indiana Certification #: C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky DW Certification #: 90062
Kentucky WW Certification #: 90062
Louisiana DEQ Certification #: 03086
Louisiana DW Certification #: MN00064
Maine Certification #: MN00064
Maryland Certification #: 322
Massachusetts Certification #: M-MN064
Michigan Certification #: 9909
Minnesota Certification #: 027-053-137
Minnesota Dept of Ag Certifcation #: via MN 027-053-137
Minnesota Petrofund Certification #: 1240
Mississippi Certification #: MN00064
Missouri Certification #: 10100
Montana Certification #: CERT0092
Nebraska Certification #: NE-OS-18-06
Nevada Certification #: MN00064
New Hampshire Certification #: 2081
New Jersey Certification #: MN002
New York Certification #: 11647
North Carolina DW Certification #: 27700
North Carolina WW Certification #: 530
North Dakota Certification #: R-036
Ohio DW Certification #: 41244
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Primary Certification #: MN300001
Oregon Secondary Certification #: MN200001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification #: MN00064
South Carolina Certification #:74003001
Tennessee Certification #: TN02818
Texas Certification #: T104704192
Utah Certification #: MN00064
Vermont Certification #: VT-027053137
Virginia Certification #: 460163
Washington Certification #: C486
West Virginia DEP Certification #: 382
West Virginia DW Certification #: 9952 C
Wisconsin Certification #: 999407970
Wyoming UST Certification #: via A2LA 2926.01

Virginia Minnesota Certification ID's

315 Chestnut Street, Virginia, MN 55792
Montana Certificate #CERT0103
Alaska Certification UST-107
Minnesota Dept of Health Certification #: 027-137-445
North Dakota Certification: # R-203
Wisconsin DNR Certification # : 998027470
WA Department of Ecology Lab ID# C1007

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Florida: Cert E871149 SEKS WET
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221

REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10476684

Pennsylvania Certification IDs

KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

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SAMPLE SUMMARY

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10476684

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10476684001	**834657**	Water	05/28/19 10:00	05/28/19 15:01
10476684002	**834656**	Water	05/28/19 12:00	05/28/19 15:01
10476684003	**834655**	Water	05/28/19 14:00	05/28/19 15:01

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SAMPLE ANALYTE COUNT

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10476684

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10476684001	**834657**	EPA 8082A	RAG	11	PASI-M
		EPA 200.7	DM	9	PASI-M
		EPA 200.8	BWB, PW1	12	PASI-M
		EPA 8270D	STB	38	PASI-M
			CLJ	16	PASI-V
		EPA 900.0	NEG	2	PASI-PA
		EPA 300.0	KEO	1	PASI-M
		SM 3500-Cr B Modified	JFP	1	PASI-M
		EPA 350.1	CLJ	1	PASI-V
		EPA 350.1 rev. 2 (1993)	DMB	1	PASI-V
		SM 4500-CN-E	DCL	1	PASI-M
10476684002	**834656**	EPA 8082A	RAG	11	PASI-M
		EPA 200.7	DM	9	PASI-M
		EPA 200.8	BWB, PW1	12	PASI-M
		EPA 8270D	STB	38	PASI-M
			CLJ	16	PASI-V
		EPA 900.0	NEG	2	PASI-PA
		EPA 300.0	KEO	1	PASI-M
		SM 3500-Cr B Modified	JFP	1	PASI-M
		EPA 350.1	CLJ	1	PASI-V
		EPA 350.1 rev. 2 (1993)	DMB	1	PASI-V
		SM 4500-CN-E	DCL	1	PASI-M
10476684003	**834655**	EPA 8082A	RAG	11	PASI-M
		EPA 200.7	DM	9	PASI-M
		EPA 200.8	BWB, PW1	12	PASI-M
		EPA 8270D	STB	38	PASI-M
			CLJ	16	PASI-V
		EPA 900.0	NEG	2	PASI-PA
		EPA 300.0	KEO	1	PASI-M
		SM 3500-Cr B Modified	JFP	1	PASI-M
		EPA 350.1	CLJ	1	PASI-V
		EPA 350.1 rev. 2 (1993)	DMB	1	PASI-V
		SM 4500-CN-E	DCL	1	PASI-M

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10476684

Sample: 834657 **Lab ID: 10476684001** Collected: 05/28/19 10:00 Received: 05/28/19 15:01 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA Mod. 3510C							
PCB-1016 (Aroclor 1016)	ND	ug/L	0.098	1	05/30/19 09:04	06/01/19 00:36	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/L	0.098	1	05/30/19 09:04	06/01/19 00:36	11104-28-2	
PCB-1232 (Aroclor 1232)	**0.25**	ug/L	0.098	1	05/30/19 09:04	06/01/19 00:36	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/L	0.098	1	05/30/19 09:04	06/01/19 00:36	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/L	0.098	1	05/30/19 09:04	06/01/19 00:36	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/L	0.098	1	05/30/19 09:04	06/01/19 00:36	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/L	0.098	1	05/30/19 09:04	06/01/19 00:36	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/L	0.098	1	05/30/19 09:04	06/01/19 00:36	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/L	0.098	1	05/30/19 09:04	06/01/19 00:36	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	50	%.	30-125	1	05/30/19 09:04	06/01/19 00:36	877-09-8	
Decachlorobiphenyl (S)	54	%.	30-125	1	05/30/19 09:04	06/01/19 00:36	2051-24-3	
200.7 MET ICP, Dissolved	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Aluminum, Dissolved	ND	ug/L	200	1	06/03/19 10:23	06/04/19 12:08	7429-90-5	
Barium, Dissolved	**205**	ug/L	10.0	1	06/03/19 10:23	06/04/19 12:08	7440-39-3	
Copper, Dissolved	ND	ug/L	10.0	1	06/03/19 10:23	06/04/19 12:08	7440-50-8	
Manganese, Dissolved	**556**	ug/L	5.0	1	06/03/19 10:23	06/04/19 12:08	7439-96-5	
Nickel, Dissolved	ND	ug/L	20.0	1	06/03/19 10:23	06/04/19 12:08	7440-02-0	
Silver, Dissolved	ND	ug/L	10.0	1	06/03/19 10:23	06/04/19 12:08	7440-22-4	
Tin, Dissolved	ND	ug/L	75.0	1	06/03/19 10:23	06/04/19 12:08	7440-31-5	
Total Hardness by 2340B, Dissolved	**310000**	ug/L	3300	1	06/03/19 10:23	06/04/19 12:08		
Zinc, Dissolved	ND	ug/L	20.0	1	06/03/19 10:23	06/04/19 12:08	7440-66-6	
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Dissolved	ND	ug/L	0.50	1	06/03/19 10:23	06/05/19 11:42	7440-36-0	
Arsenic, Dissolved	**1.3**	ug/L	0.50	1	06/03/19 10:23	06/05/19 11:42	7440-38-2	
Beryllium, Dissolved	ND	ug/L	0.20	1	06/03/19 10:23	06/05/19 11:42	7440-41-7	
Boron, Dissolved	**224**	ug/L	10.0	1	06/03/19 10:23	06/06/19 16:25	7440-42-8	
Cadmium, Dissolved	**0.26**	ug/L	0.080	1	06/03/19 10:23	06/05/19 11:42	7440-43-9	
Chromium, Dissolved	ND	ug/L	0.50	1	06/03/19 10:23	06/05/19 11:42	7440-47-3	
Cobalt, Dissolved	ND	ug/L	0.50	1	06/03/19 10:23	06/05/19 11:42	7440-48-4	
Lead, Dissolved	**2.3**	ug/L	0.10	1	06/03/19 10:23	06/05/19 11:42	7439-92-1	
Selenium, Dissolved	ND	ug/L	0.50	1	06/03/19 10:23	06/05/19 11:42	7782-49-2	
Thallium, Dissolved	ND	ug/L	0.10	1	06/03/19 10:23	06/05/19 11:42	7440-28-0	
Uranium, Dissolved	**0.67**	ug/L	0.50	1	06/03/19 10:23	06/05/19 11:42	7440-61-1	
Vanadium, Dissolved	ND	ug/L	1.0	1	06/03/19 10:23	06/05/19 11:42	7440-62-2	
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
Acenaphthene	ND	ug/L	9.8	1	05/29/19 17:40	06/04/19 14:04	83-32-9	
Anthracene	ND	ug/L	9.8	1	05/29/19 17:40	06/04/19 14:04	120-12-7	
Benzo(a)pyrene	ND	ug/L	9.8	1	05/29/19 17:40	06/04/19 14:04	50-32-8	
Benzoic acid	ND	ug/L	49.0	1	05/29/19 17:40	06/04/19 14:04	65-85-0	
4-Bromophenylphenyl ether	ND	ug/L	9.8	1	05/29/19 17:40	06/04/19 14:04	101-55-3	
Butylbenzylphthalate	ND	ug/L	9.8	1	05/29/19 17:40	06/04/19 14:04	85-68-7	
bis(2-Chloroethyl) ether	ND	ug/L	9.8	1	05/29/19 17:40	06/04/19 14:04	111-44-4	

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10476684

Sample: 834657 **Lab ID: 10476684001** Collected: 05/28/19 10:00 Received: 05/28/19 15:01 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
2-Chlorophenol	ND	ug/L	9.8	1	05/29/19 17:40	06/04/19 14:04	95-57-8	
3,3'-Dichlorobenzidine	ND	ug/L	49.0	1	05/29/19 17:40	06/04/19 14:04	91-94-1	
2,4-Dichlorophenol	ND	ug/L	9.8	1	05/29/19 17:40	06/04/19 14:04	120-83-2	
Diethylphthalate	ND	ug/L	9.8	1	05/29/19 17:40	06/04/19 14:04	84-66-2	
2,4-Dimethylphenol	ND	ug/L	9.8	1	05/29/19 17:40	06/04/19 14:04	105-67-9	
Dimethylphthalate	ND	ug/L	9.8	1	05/29/19 17:40	06/04/19 14:04	131-11-3	
Di-n-butylphthalate	ND	ug/L	9.8	1	05/29/19 17:40	06/04/19 14:04	84-74-2	
2,4-Dinitrophenol	ND	ug/L	9.8	1	05/29/19 17:40	06/04/19 14:04	51-28-5	
Di-n-octylphthalate	ND	ug/L	9.8	1	05/29/19 17:40	06/04/19 14:04	117-84-0	
bis(2-Ethylhexyl)phthalate	ND	ug/L	9.8	1	05/29/19 17:40	06/04/19 14:04	117-81-7	
Fluoranthene	ND	ug/L	9.8	1	05/29/19 17:40	06/04/19 14:04	206-44-0	
Fluorene	ND	ug/L	9.8	1	05/29/19 17:40	06/04/19 14:04	86-73-7	
Hexachlorobenzene	ND	ug/L	9.8	1	05/29/19 17:40	06/04/19 14:04	118-74-1	
Hexachlorocyclopentadiene	ND	ug/L	49.0	1	05/29/19 17:40	06/04/19 14:04	77-47-4	L2
Hexachloroethane	ND	ug/L	9.8	1	05/29/19 17:40	06/04/19 14:04	67-72-1	
Isophorone	ND	ug/L	9.8	1	05/29/19 17:40	06/04/19 14:04	78-59-1	
2-Methylnaphthalene	ND	ug/L	9.8	1	05/29/19 17:40	06/04/19 14:04	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/L	9.8	1	05/29/19 17:40	06/04/19 14:04	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/L	9.8	1	05/29/19 17:40	06/04/19 14:04		
N-Nitrosodimethylamine	ND	ug/L	9.8	1	05/29/19 17:40	06/04/19 14:04	62-75-9	
Pentachlorophenol	ND	ug/L	19.6	1	05/29/19 17:40	06/04/19 14:04	87-86-5	
Phenanthrene	ND	ug/L	9.8	1	05/29/19 17:40	06/04/19 14:04	85-01-8	
Phenol	ND	ug/L	9.8	1	05/29/19 17:40	06/04/19 14:04	108-95-2	
Pyrene	ND	ug/L	9.8	1	05/29/19 17:40	06/04/19 14:04	129-00-0	
2,4,6-Trichlorophenol	ND	ug/L	9.8	1	05/29/19 17:40	06/04/19 14:04	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	65	%.	55-125	1	05/29/19 17:40	06/04/19 14:04	4165-60-0	
2-Fluorobiphenyl (S)	52	%.	52-125	1	05/29/19 17:40	06/04/19 14:04	321-60-8	
p-Terphenyl-d14 (S)	63	%.	57-125	1	05/29/19 17:40	06/04/19 14:04	1718-51-0	
Phenol-d6 (S)	62	%.	30-125	1	05/29/19 17:40	06/04/19 14:04	13127-88-3	
2-Fluorophenol (S)	61	%.	30-125	1	05/29/19 17:40	06/04/19 14:04	367-12-4	
2,4,6-Tribromophenol (S)	70	%.	52-125	1	05/29/19 17:40	06/04/19 14:04	118-79-6	
Field Data	Analytical Method:							
Collected Date	**05/28/19**			1		05/28/19 10:00		
Collected Time	**1000**			1		05/28/19 10:00		
Field pH	**6.0**	Std. Units		1		05/28/19 10:00		
Field Temperature	**9.5**	deg C		1		05/28/19 10:00		
Field Specific Conductance	**790**	umhos/cm		1		05/28/19 10:00		
Oxygen, Dissolved	**1.1**	mg/L		1		05/28/19 10:00	7782-44-7	
REDOX	**-69**	mV		1		05/28/19 10:00		
Turbidity	**4.8**	NTU		1		05/28/19 10:00		
Apparent Color	**Clear**			1		05/28/19 10:00		
Odor	**No**			1		05/28/19 10:00		
Well Locked	**Bolted Down**			1		05/28/19 10:00		

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10476684

Sample: 834657 **Lab ID: 10476684001** Collected: 05/28/19 10:00 Received: 05/28/19 15:01 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:							
Purge Method	**Peristaltic Pump**			1		05/28/19 10:00		
Total Well Depth	**20.32**	feet		1		05/28/19 10:00		
Depth of Water	**4.50**			1		05/28/19 10:00		
Well Volume Purged	**7.8**			1		05/28/19 10:00		
Purge Rate	**0.2**			1		05/28/19 10:00		
300.0 IC Anions	Analytical Method: EPA 300.0							
Chloride	**57.2**	mg/L	1.2	1		06/12/19 16:54	16887-00-6	M1
Chromium, Hexavalent	Analytical Method: SM 3500-Cr B Modified							
Chromium, Hexavalent	**0.016**	mg/L	0.010	1		05/29/19 09:19		
350.1 Ammonia, Unionized	Analytical Method: EPA 350.1							
Nitrogen, Ammonia (Unionized)	ND	mg/L	0.010	1		06/18/19 16:02		
350.1 Ammonia, Distilled	Analytical Method: EPA 350.1 rev. 2 (1993) Preparation Method: EPA 350.1 rev. 2 (1993)							
Nitrogen, Ammonia	**1.5**	mg/L	0.11	1	06/04/19 08:44	06/04/19 11:13	7664-41-7	
SM4500CN-E Cyanide	Analytical Method: SM 4500-CN-E Preparation Method: SM 4500-CN-E							
Cyanide	ND	ug/L	20.0	1	06/05/19 08:51	06/05/19 12:16	57-12-5	

Sample: 834656 **Lab ID: 10476684002** Collected: 05/28/19 12:00 Received: 05/28/19 15:01 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA Mod. 3510C							
PCB-1016 (Aroclor 1016)	ND	ug/L	0.098	1	05/30/19 09:04	06/01/19 00:51	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/L	0.098	1	05/30/19 09:04	06/01/19 00:51	11104-28-2	
PCB-1232 (Aroclor 1232)	**0.67**	ug/L	0.098	1	05/30/19 09:04	06/01/19 00:51	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/L	0.098	1	05/30/19 09:04	06/01/19 00:51	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/L	0.098	1	05/30/19 09:04	06/01/19 00:51	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/L	0.098	1	05/30/19 09:04	06/01/19 00:51	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/L	0.098	1	05/30/19 09:04	06/01/19 00:51	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/L	0.098	1	05/30/19 09:04	06/01/19 00:51	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/L	0.098	1	05/30/19 09:04	06/01/19 00:51	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	50	%.	30-125	1	05/30/19 09:04	06/01/19 00:51	877-09-8	
Decachlorobiphenyl (S)	40	%.	30-125	1	05/30/19 09:04	06/01/19 00:51	2051-24-3	
200.7 MET ICP, Dissolved	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Aluminum, Dissolved	ND	ug/L	200	1	06/03/19 10:23	06/04/19 12:18	7429-90-5	
Barium, Dissolved	**185**	ug/L	10.0	1	06/03/19 10:23	06/04/19 12:18	7440-39-3	
Copper, Dissolved	ND	ug/L	10.0	1	06/03/19 10:23	06/04/19 12:18	7440-50-8	
Manganese, Dissolved	**4020**	ug/L	5.0	1	06/03/19 10:23	06/04/19 12:18	7439-96-5	

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10476684

Sample: 834656 **Lab ID: 10476684002** Collected: 05/28/19 12:00 Received: 05/28/19 15:01 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 MET ICP, Dissolved	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Nickel, Dissolved	ND	ug/L	20.0	1	06/03/19 10:23	06/04/19 12:18	7440-02-0	
Silver, Dissolved	ND	ug/L	10.0	1	06/03/19 10:23	06/04/19 12:18	7440-22-4	
Tin, Dissolved	ND	ug/L	75.0	1	06/03/19 10:23	06/04/19 12:18	7440-31-5	
Total Hardness by 2340B, Dissolved	**833000**	ug/L	3300	1	06/03/19 10:23	06/04/19 12:18		
Zinc, Dissolved	ND	ug/L	20.0	1	06/03/19 10:23	06/04/19 12:18	7440-66-6	
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Dissolved	ND	ug/L	0.50	1	06/03/19 10:23	06/05/19 11:48	7440-36-0	
Arsenic, Dissolved	**1.6**	ug/L	0.50	1	06/03/19 10:23	06/05/19 11:48	7440-38-2	
Beryllium, Dissolved	ND	ug/L	0.20	1	06/03/19 10:23	06/05/19 11:48	7440-41-7	
Boron, Dissolved	**1760**	ug/L	100	10	06/03/19 10:23	06/06/19 16:28	7440-42-8	
Cadmium, Dissolved	ND	ug/L	0.080	1	06/03/19 10:23	06/05/19 11:48	7440-43-9	
Chromium, Dissolved	**0.58**	ug/L	0.50	1	06/03/19 10:23	06/05/19 11:48	7440-47-3	
Cobalt, Dissolved	**0.83**	ug/L	0.50	1	06/03/19 10:23	06/05/19 11:48	7440-48-4	
Lead, Dissolved	**0.29**	ug/L	0.10	1	06/03/19 10:23	06/05/19 11:48	7439-92-1	
Selenium, Dissolved	ND	ug/L	0.50	1	06/03/19 10:23	06/05/19 11:48	7782-49-2	
Thallium, Dissolved	ND	ug/L	0.10	1	06/03/19 10:23	06/05/19 11:48	7440-28-0	
Uranium, Dissolved	**1.2**	ug/L	0.50	1	06/03/19 10:23	06/05/19 11:48	7440-61-1	
Vanadium, Dissolved	**1.8**	ug/L	1.0	1	06/03/19 10:23	06/05/19 11:48	7440-62-2	
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
Acenaphthene	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 14:31	83-32-9	
Anthracene	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 14:31	120-12-7	
Benzo(a)pyrene	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 14:31	50-32-8	
Benzoic acid	ND	ug/L	49.3	1	05/29/19 17:40	06/04/19 14:31	65-85-0	
4-Bromophenylphenyl ether	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 14:31	101-55-3	
Butylbenzylphthalate	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 14:31	85-68-7	
bis(2-Chloroethyl) ether	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 14:31	111-44-4	
2-Chlorophenol	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 14:31	95-57-8	
3,3'-Dichlorobenzidine	ND	ug/L	49.3	1	05/29/19 17:40	06/04/19 14:31	91-94-1	
2,4-Dichlorophenol	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 14:31	120-83-2	
Diethylphthalate	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 14:31	84-66-2	
2,4-Dimethylphenol	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 14:31	105-67-9	
Dimethylphthalate	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 14:31	131-11-3	
Di-n-butylphthalate	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 14:31	84-74-2	
2,4-Dinitrophenol	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 14:31	51-28-5	
Di-n-octylphthalate	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 14:31	117-84-0	
bis(2-Ethylhexyl)phthalate	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 14:31	117-81-7	
Fluoranthene	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 14:31	206-44-0	
Fluorene	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 14:31	86-73-7	
Hexachlorobenzene	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 14:31	118-74-1	
Hexachlorocyclopentadiene	ND	ug/L	49.3	1	05/29/19 17:40	06/04/19 14:31	77-47-4	L2
Hexachloroethane	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 14:31	67-72-1	
Isophorone	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 14:31	78-59-1	
2-Methylnaphthalene	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 14:31	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 14:31	95-48-7	

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10476684

Sample: 834656 **Lab ID: 10476684002** Collected: 05/28/19 12:00 Received: 05/28/19 15:01 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
3&4-Methylphenol(m&p Cresol)	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 14:31		
N-Nitrosodimethylamine	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 14:31	62-75-9	
Pentachlorophenol	ND	ug/L	19.7	1	05/29/19 17:40	06/04/19 14:31	87-86-5	
Phenanthrene	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 14:31	85-01-8	
Phenol	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 14:31	108-95-2	
Pyrene	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 14:31	129-00-0	
2,4,6-Trichlorophenol	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 14:31	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	66	%.	55-125	1	05/29/19 17:40	06/04/19 14:31	4165-60-0	
2-Fluorobiphenyl (S)	56	%.	52-125	1	05/29/19 17:40	06/04/19 14:31	321-60-8	
p-Terphenyl-d14 (S)	78	%.	57-125	1	05/29/19 17:40	06/04/19 14:31	1718-51-0	
Phenol-d6 (S)	65	%.	30-125	1	05/29/19 17:40	06/04/19 14:31	13127-88-3	
2-Fluorophenol (S)	61	%.	30-125	1	05/29/19 17:40	06/04/19 14:31	367-12-4	
2,4,6-Tribromophenol (S)	89	%.	52-125	1	05/29/19 17:40	06/04/19 14:31	118-79-6	
Field Data	Analytical Method:							
Collected Date	**05/28/19**			1		05/28/19 12:00		
Collected Time	**1200**			1		05/28/19 12:00		
Field pH	**6.6**	Std. Units		1		05/28/19 12:00		
Field Temperature	**9.0**	deg C		1		05/28/19 12:00		
Field Specific Conductance	**1870**	umhos/cm		1		05/28/19 12:00		
Oxygen, Dissolved	**0.4**	mg/L		1		05/28/19 12:00	7782-44-7	
REDOX	**-100**	mV		1		05/28/19 12:00		
Turbidity	**4.6**	NTU		1		05/28/19 12:00		
Apparent Color	**Clear**			1		05/28/19 12:00		
Odor	**No**			1		05/28/19 12:00		
Well Locked	**Bolted Down**			1		05/28/19 12:00		
Purge Method	**Peristaltic Pump**			1		05/28/19 12:00		
Total Well Depth	**20.33**	feet		1		05/28/19 12:00		
Depth of Water	**3.50**			1		05/28/19 12:00		
Well Volume Purged	**8.4**			1		05/28/19 12:00		
Purge Rate	**0.2**			1		05/28/19 12:00		
300.0 IC Anions	Analytical Method: EPA 300.0							
Chloride	**75.6**	mg/L	1.2	1		06/12/19 20:48	16887-00-6	M1
Chromium, Hexavalent	Analytical Method: SM 3500-Cr B Modified							
Chromium, Hexavalent	**0.025**	mg/L	0.010	1		05/29/19 09:19		
350.1 Ammonia, Unionized	Analytical Method: EPA 350.1							
Nitrogen, Ammonia (Unionized)	ND	mg/L	0.010	1		06/18/19 16:03		
350.1 Ammonia, Distilled	Analytical Method: EPA 350.1 rev. 2 (1993) Preparation Method: EPA 350.1 rev. 2 (1993)							
Nitrogen, Ammonia	**3.7**	mg/L	0.11	1	06/04/19 08:44	06/04/19 11:17	7664-41-7	

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10476684

Sample: 834656 **Lab ID: 10476684002** Collected: 05/28/19 12:00 Received: 05/28/19 15:01 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
SM4500CN-E Cyanide	Analytical Method: SM 4500-CN-E Preparation Method: SM 4500-CN-E							
Cyanide	**21.0**	ug/L	20.0	1	06/05/19 08:51	06/05/19 12:17	57-12-5	

Sample: 834655 **Lab ID: 10476684003** Collected: 05/28/19 14:00 Received: 05/28/19 15:01 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA Mod. 3510C							
PCB-1016 (Aroclor 1016)	ND	ug/L	0.097	1	05/30/19 09:04	06/01/19 01:06	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/L	0.097	1	05/30/19 09:04	06/01/19 01:06	11104-28-2	
PCB-1232 (Aroclor 1232)	**31.3**	ug/L	0.97	10	05/30/19 09:04	06/03/19 11:02	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/L	0.097	1	05/30/19 09:04	06/01/19 01:06	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/L	0.097	1	05/30/19 09:04	06/01/19 01:06	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/L	0.097	1	05/30/19 09:04	06/01/19 01:06	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/L	0.097	1	05/30/19 09:04	06/01/19 01:06	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/L	0.097	1	05/30/19 09:04	06/01/19 01:06	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/L	0.097	1	05/30/19 09:04	06/01/19 01:06	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	43	%.	30-125	1	05/30/19 09:04	06/01/19 01:06	877-09-8	
Decachlorobiphenyl (S)	25	%.	30-125	1	05/30/19 09:04	06/01/19 01:06	2051-24-3	S0
200.7 MET ICP, Dissolved	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Aluminum, Dissolved	ND	ug/L	200	1	06/03/19 10:23	06/04/19 12:20	7429-90-5	
Barium, Dissolved	**369**	ug/L	10.0	1	06/03/19 10:23	06/04/19 12:20	7440-39-3	
Copper, Dissolved	ND	ug/L	10.0	1	06/03/19 10:23	06/04/19 12:20	7440-50-8	
Manganese, Dissolved	**1430**	ug/L	5.0	1	06/03/19 10:23	06/04/19 12:20	7439-96-5	
Nickel, Dissolved	ND	ug/L	20.0	1	06/03/19 10:23	06/04/19 12:20	7440-02-0	
Silver, Dissolved	ND	ug/L	10.0	1	06/03/19 10:23	06/04/19 12:20	7440-22-4	
Tin, Dissolved	ND	ug/L	75.0	1	06/03/19 10:23	06/04/19 12:20	7440-31-5	
Total Hardness by 2340B, Dissolved	**550000**	ug/L	3300	1	06/03/19 10:23	06/04/19 12:20		
Zinc, Dissolved	ND	ug/L	20.0	1	06/03/19 10:23	06/04/19 12:20	7440-66-6	
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Dissolved	ND	ug/L	0.50	1	06/03/19 10:23	06/05/19 11:54	7440-36-0	
Arsenic, Dissolved	**2.2**	ug/L	0.50	1	06/03/19 10:23	06/05/19 11:54	7440-38-2	
Beryllium, Dissolved	ND	ug/L	0.20	1	06/03/19 10:23	06/05/19 11:54	7440-41-7	
Boron, Dissolved	**345**	ug/L	10.0	1	06/03/19 10:23	06/06/19 16:31	7440-42-8	
Cadmium, Dissolved	ND	ug/L	0.080	1	06/03/19 10:23	06/05/19 11:54	7440-43-9	
Chromium, Dissolved	**1.5**	ug/L	0.50	1	06/03/19 10:23	06/05/19 11:54	7440-47-3	
Cobalt, Dissolved	**3.0**	ug/L	0.50	1	06/03/19 10:23	06/05/19 11:54	7440-48-4	
Lead, Dissolved	**0.21**	ug/L	0.10	1	06/03/19 10:23	06/05/19 11:54	7439-92-1	
Selenium, Dissolved	ND	ug/L	0.50	1	06/03/19 10:23	06/05/19 11:54	7782-49-2	
Thallium, Dissolved	ND	ug/L	0.10	1	06/03/19 10:23	06/05/19 11:54	7440-28-0	
Uranium, Dissolved	**0.58**	ug/L	0.50	1	06/03/19 10:23	06/05/19 11:54	7440-61-1	
Vanadium, Dissolved	**1.6**	ug/L	1.0	1	06/03/19 10:23	06/05/19 11:54	7440-62-2	

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10476684

Sample: 834655 **Lab ID: 10476684003** Collected: 05/28/19 14:00 Received: 05/28/19 15:01 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
Acenaphthene	ND	ug/L	9.6	1	05/29/19 17:40	06/04/19 14:58	83-32-9	
Anthracene	ND	ug/L	9.6	1	05/29/19 17:40	06/04/19 14:58	120-12-7	
Benzo(a)pyrene	ND	ug/L	9.6	1	05/29/19 17:40	06/04/19 14:58	50-32-8	
Benzoic acid	ND	ug/L	48.1	1	05/29/19 17:40	06/04/19 14:58	65-85-0	
4-Bromophenylphenyl ether	ND	ug/L	9.6	1	05/29/19 17:40	06/04/19 14:58	101-55-3	
Butylbenzylphthalate	ND	ug/L	9.6	1	05/29/19 17:40	06/04/19 14:58	85-68-7	
bis(2-Chloroethyl) ether	ND	ug/L	9.6	1	05/29/19 17:40	06/04/19 14:58	111-44-4	
2-Chlorophenol	ND	ug/L	9.6	1	05/29/19 17:40	06/04/19 14:58	95-57-8	
3,3'-Dichlorobenzidine	ND	ug/L	48.1	1	05/29/19 17:40	06/04/19 14:58	91-94-1	
2,4-Dichlorophenol	ND	ug/L	9.6	1	05/29/19 17:40	06/04/19 14:58	120-83-2	
Diethylphthalate	ND	ug/L	9.6	1	05/29/19 17:40	06/04/19 14:58	84-66-2	
2,4-Dimethylphenol	ND	ug/L	9.6	1	05/29/19 17:40	06/04/19 14:58	105-67-9	
Dimethylphthalate	ND	ug/L	9.6	1	05/29/19 17:40	06/04/19 14:58	131-11-3	
Di-n-butylphthalate	ND	ug/L	9.6	1	05/29/19 17:40	06/04/19 14:58	84-74-2	
2,4-Dinitrophenol	ND	ug/L	9.6	1	05/29/19 17:40	06/04/19 14:58	51-28-5	
Di-n-octylphthalate	ND	ug/L	9.6	1	05/29/19 17:40	06/04/19 14:58	117-84-0	
bis(2-Ethylhexyl)phthalate	ND	ug/L	9.6	1	05/29/19 17:40	06/04/19 14:58	117-81-7	
Fluoranthene	ND	ug/L	9.6	1	05/29/19 17:40	06/04/19 14:58	206-44-0	
Fluorene	ND	ug/L	9.6	1	05/29/19 17:40	06/04/19 14:58	86-73-7	
Hexachlorobenzene	ND	ug/L	9.6	1	05/29/19 17:40	06/04/19 14:58	118-74-1	
Hexachlorocyclopentadiene	ND	ug/L	48.1	1	05/29/19 17:40	06/04/19 14:58	77-47-4	L2
Hexachloroethane	ND	ug/L	9.6	1	05/29/19 17:40	06/04/19 14:58	67-72-1	
Isophorone	ND	ug/L	9.6	1	05/29/19 17:40	06/04/19 14:58	78-59-1	
2-Methylnaphthalene	ND	ug/L	9.6	1	05/29/19 17:40	06/04/19 14:58	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/L	9.6	1	05/29/19 17:40	06/04/19 14:58	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/L	9.6	1	05/29/19 17:40	06/04/19 14:58		
N-Nitrosodimethylamine	ND	ug/L	9.6	1	05/29/19 17:40	06/04/19 14:58	62-75-9	
Pentachlorophenol	ND	ug/L	19.2	1	05/29/19 17:40	06/04/19 14:58	87-86-5	
Phenanthrene	ND	ug/L	9.6	1	05/29/19 17:40	06/04/19 14:58	85-01-8	
Phenol	ND	ug/L	9.6	1	05/29/19 17:40	06/04/19 14:58	108-95-2	
Pyrene	ND	ug/L	9.6	1	05/29/19 17:40	06/04/19 14:58	129-00-0	
2,4,6-Trichlorophenol	ND	ug/L	9.6	1	05/29/19 17:40	06/04/19 14:58	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	66	%.	55-125	1	05/29/19 17:40	06/04/19 14:58	4165-60-0	
2-Fluorobiphenyl (S)	56	%.	52-125	1	05/29/19 17:40	06/04/19 14:58	321-60-8	
p-Terphenyl-d14 (S)	65	%.	57-125	1	05/29/19 17:40	06/04/19 14:58	1718-51-0	
Phenol-d6 (S)	65	%.	30-125	1	05/29/19 17:40	06/04/19 14:58	13127-88-3	
2-Fluorophenol (S)	61	%.	30-125	1	05/29/19 17:40	06/04/19 14:58	367-12-4	
2,4,6-Tribromophenol (S)	77	%.	52-125	1	05/29/19 17:40	06/04/19 14:58	118-79-6	
Field Data	Analytical Method:							
Collected Date	**05/28/19**			1		05/28/19 14:00		
Collected Time	**1400**			1		05/28/19 14:00		
Field pH	**6.4**	Std. Units		1		05/28/19 14:00		
Field Temperature	**10.5**	deg C		1		05/28/19 14:00		
Field Specific Conductance	**1230**	umhos/cm		1		05/28/19 14:00		
Oxygen, Dissolved	**2.3**	mg/L		1		05/28/19 14:00	7782-44-7	

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10476684

Sample: 834655 **Lab ID: 10476684003** Collected: 05/28/19 14:00 Received: 05/28/19 15:01 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:							
REDOX	**-65**	mV		1		05/28/19 14:00		
Turbidity	**9.8**	NTU		1		05/28/19 14:00		
Apparent Color	**Clear**			1		05/28/19 14:00		
Odor	**No**			1		05/28/19 14:00		
Well Locked	**Bolted Down**			1		05/28/19 14:00		
Purge Method	**Peristaltic Pump**			1		05/28/19 14:00		
Total Well Depth	**20.30**	feet		1		05/28/19 14:00		
Depth of Water	**4.03**			1		05/28/19 14:00		
Well Volume Purged	**8.4**			1		05/28/19 14:00		
Purge Rate	**0.2**			1		05/28/19 14:00		
300.0 IC Anions	Analytical Method: EPA 300.0							
Chloride	**19.9**	mg/L	1.2	1		06/13/19 06:29	16887-00-6	
Chromium, Hexavalent	Analytical Method: SM 3500-Cr B Modified							
Chromium, Hexavalent	**0.025**	mg/L	0.010	1		05/29/19 09:19		
350.1 Ammonia, Unionized	Analytical Method: EPA 350.1							
Nitrogen, Ammonia (Unionized)	ND	mg/L	0.010	1		06/18/19 16:03		
350.1 Ammonia, Distilled	Analytical Method: EPA 350.1 rev. 2 (1993) Preparation Method: EPA 350.1 rev. 2 (1993)							
Nitrogen, Ammonia	**10.6**	mg/L	0.55	5	06/04/19 08:44	06/04/19 11:37	7664-41-7	
SM4500CN-E Cyanide	Analytical Method: SM 4500-CN-E Preparation Method: SM 4500-CN-E							
Cyanide	ND	ug/L	20.0	1	06/11/19 09:01	06/11/19 11:51	57-12-5	

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10476684

QC Batch: 609218 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 MET Dissolved
Associated Lab Samples: 10476684001, 10476684002, 10476684003

METHOD BLANK: 3292563 Matrix: Water
Associated Lab Samples: 10476684001, 10476684002, 10476684003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum, Dissolved	ug/L	ND	200	06/04/19 11:53	
Barium, Dissolved	ug/L	ND	10.0	06/04/19 11:53	
Copper, Dissolved	ug/L	ND	10.0	06/04/19 11:53	
Manganese, Dissolved	ug/L	ND	5.0	06/04/19 11:53	
Nickel, Dissolved	ug/L	ND	20.0	06/04/19 11:53	
Silver, Dissolved	ug/L	ND	10.0	06/04/19 11:53	
Tin, Dissolved	ug/L	ND	75.0	06/04/19 11:53	
Zinc, Dissolved	ug/L	ND	20.0	06/04/19 11:53	

LABORATORY CONTROL SAMPLE: 3292564

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum, Dissolved	ug/L	20000	21200	106	85-115	
Barium, Dissolved	ug/L	1000	1020	102	85-115	
Copper, Dissolved	ug/L	1000	976	98	85-115	
Manganese, Dissolved	ug/L	1000	1020	102	85-115	
Nickel, Dissolved	ug/L	1000	1000	100	85-115	
Silver, Dissolved	ug/L	500	502	100	85-115	
Tin, Dissolved	ug/L	1000	1000	100	85-115	
Zinc, Dissolved	ug/L	1000	1020	102	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3292565 3292566

Parameter	Units	10475854002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum, Dissolved	ug/L	ND	20000	20000	22200	22000	111	110	70-130	1	20	
Barium, Dissolved	ug/L	25.9	1000	1000	1050	1040	102	102	70-130	1	20	
Copper, Dissolved	ug/L	ND	1000	1000	1020	1010	102	101	70-130	1	20	
Manganese, Dissolved	ug/L	244	1000	1000	1270	1270	103	103	70-130	0	20	
Nickel, Dissolved	ug/L	ND	1000	1000	980	972	98	97	70-130	1	20	
Silver, Dissolved	ug/L	ND	500	500	528	522	106	104	70-130	1	20	
Tin, Dissolved	ug/L	ND	1000	1000	1000	978	100	98	70-130	2	20	
Zinc, Dissolved	ug/L	ND	1000	1000	990	983	99	98	70-130	1	20	

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10476684

QC Batch: 609219 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET Dissolved
Associated Lab Samples: 10476684001, 10476684002, 10476684003

METHOD BLANK: 3292568 Matrix: Water
Associated Lab Samples: 10476684001, 10476684002, 10476684003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony, Dissolved	ug/L	ND	0.50	06/05/19 09:44	
Arsenic, Dissolved	ug/L	ND	0.50	06/05/19 09:44	
Beryllium, Dissolved	ug/L	ND	0.20	06/05/19 09:44	
Boron, Dissolved	ug/L	ND	10.0	06/05/19 09:44	
Cadmium, Dissolved	ug/L	ND	0.080	06/05/19 09:44	
Chromium, Dissolved	ug/L	ND	0.50	06/05/19 09:44	
Cobalt, Dissolved	ug/L	ND	0.50	06/05/19 09:44	
Lead, Dissolved	ug/L	ND	0.10	06/05/19 09:44	
Selenium, Dissolved	ug/L	ND	0.50	06/05/19 09:44	
Thallium, Dissolved	ug/L	ND	0.10	06/05/19 09:44	
Uranium, Dissolved	ug/L	ND	0.50	06/05/19 09:44	
Vanadium, Dissolved	ug/L	ND	1.0	06/05/19 09:44	

LABORATORY CONTROL SAMPLE: 3292569

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony, Dissolved	ug/L	100	106	106	85-115	
Arsenic, Dissolved	ug/L	100	101	101	85-115	
Beryllium, Dissolved	ug/L	100	94.2	94	85-115	
Boron, Dissolved	ug/L	100	99.9	100	85-115	
Cadmium, Dissolved	ug/L	100	101	101	85-115	
Chromium, Dissolved	ug/L	100	102	102	85-115	
Cobalt, Dissolved	ug/L	100	104	104	85-115	
Lead, Dissolved	ug/L	100	104	104	85-115	
Selenium, Dissolved	ug/L	100	112	112	85-115	
Thallium, Dissolved	ug/L	100	111	111	85-115	
Uranium, Dissolved	ug/L	100	98.2	98	85-115	
Vanadium, Dissolved	ug/L	100	99.8	100	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3292570 3292571

Parameter	Units	10476128001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony, Dissolved	ug/L	ND	100	100	108	108	107	108	70-130	1	20	
Arsenic, Dissolved	ug/L	ND	100	100	102	102	101	102	70-130	1	20	
Beryllium, Dissolved	ug/L	ND	100	100	96.3	96.0	96	96	70-130	0	20	
Boron, Dissolved	ug/L	77.5	100	100	167	168	89	90	70-130	1	20	
Cadmium, Dissolved	ug/L	0.13	100	100	95.8	97.8	96	98	70-130	2	20	

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10476684

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3292570 3292571

Parameter	Units	10476128001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Dissolved	ug/L	ND	100	100	108	109	108	109	70-130	1	20	
Cobalt, Dissolved	ug/L	ND	100	100	104	105	104	105	70-130	1	20	
Lead, Dissolved	ug/L	0.11	100	100	95.6	96.7	96	97	70-130	1	20	
Selenium, Dissolved	ug/L	2.7	100	100	114	116	111	113	70-130	2	20	
Thallium, Dissolved	ug/L	0.11	100	100	103	104	103	104	70-130	1	20	
Uranium, Dissolved	ug/L	11.5	100	100	111	110	99	98	70-130	1	20	
Vanadium, Dissolved	ug/L	ND	100	100	111	113	110	112	70-130	1	20	

MATRIX SPIKE SAMPLE: 3292572

Parameter	Units	10476128003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Antimony, Dissolved	ug/L	ND	100	105	105	70-130	
Arsenic, Dissolved	ug/L	ND	100	101	101	70-130	
Beryllium, Dissolved	ug/L	ND	100	97.9	98	70-130	
Boron, Dissolved	ug/L	13.2	100	116	103	70-130	
Cadmium, Dissolved	ug/L	ND	100	99.9	100	70-130	
Chromium, Dissolved	ug/L	ND	100	104	104	70-130	
Cobalt, Dissolved	ug/L	ND	100	105	105	70-130	
Lead, Dissolved	ug/L	ND	100	102	102	70-130	
Selenium, Dissolved	ug/L	ND	100	110	110	70-130	
Thallium, Dissolved	ug/L	ND	100	108	108	70-130	
Uranium, Dissolved	ug/L	ND	100	98.1	98	70-130	
Vanadium, Dissolved	ug/L	ND	100	103	103	70-130	

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10476684

QC Batch: 609269 Analysis Method: EPA 8082A
QC Batch Method: EPA Mod. 3510C Analysis Description: 8082A GCS PCB
Associated Lab Samples: 10476684001, 10476684002, 10476684003

METHOD BLANK: 3292705 Matrix: Water
Associated Lab Samples: 10476684001, 10476684002, 10476684003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
PCB-1016 (Aroclor 1016)	ug/L	ND	0.10	05/31/19 21:34	
PCB-1221 (Aroclor 1221)	ug/L	ND	0.10	05/31/19 21:34	
PCB-1232 (Aroclor 1232)	ug/L	ND	0.10	05/31/19 21:34	
PCB-1242 (Aroclor 1242)	ug/L	ND	0.10	05/31/19 21:34	
PCB-1248 (Aroclor 1248)	ug/L	ND	0.10	05/31/19 21:34	
PCB-1254 (Aroclor 1254)	ug/L	ND	0.10	05/31/19 21:34	
PCB-1260 (Aroclor 1260)	ug/L	ND	0.10	05/31/19 21:34	
PCB-1262 (Aroclor 1262)	ug/L	ND	0.10	05/31/19 21:34	
PCB-1268 (Aroclor 1268)	ug/L	ND	0.10	05/31/19 21:34	
Decachlorobiphenyl (S)	%.	81	30-125	05/31/19 21:34	
Tetrachloro-m-xylene (S)	%.	66	30-125	05/31/19 21:34	

LABORATORY CONTROL SAMPLE: 3292706

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
PCB-1016 (Aroclor 1016)	ug/L	2	2.0	98	45-125	
PCB-1260 (Aroclor 1260)	ug/L	2	2.2	109	49-125	
Decachlorobiphenyl (S)	%.			96	30-125	
Tetrachloro-m-xylene (S)	%.			70	30-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3292707 3292708

Parameter	Units	10476522001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
PCB-1016 (Aroclor 1016)	ug/L	<0.099	2	2	1.3	1.2	65	61	30-150	7	30	
PCB-1260 (Aroclor 1260)	ug/L	<0.099	2	2	1.7	1.5	84	73	30-150	15	30	
Decachlorobiphenyl (S)	%.						70	55	30-125			
Tetrachloro-m-xylene (S)	%.						41	40	30-125			

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10476684

QC Batch: 609142 Analysis Method: EPA 8270D
QC Batch Method: EPA 3520 Analysis Description: 8270D Water MSSV
Associated Lab Samples: 10476684001, 10476684002, 10476684003

METHOD BLANK: 3291948 Matrix: Water
Associated Lab Samples: 10476684001, 10476684002, 10476684003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
2,4,6-Trichlorophenol	ug/L	ND	10.0	06/04/19 10:55	
2,4-Dichlorophenol	ug/L	ND	10.0	06/04/19 10:55	
2,4-Dimethylphenol	ug/L	ND	10.0	06/04/19 10:55	
2,4-Dinitrophenol	ug/L	ND	10.0	06/04/19 10:55	
2-Chlorophenol	ug/L	ND	10.0	06/04/19 10:55	
2-Methylnaphthalene	ug/L	ND	10.0	06/04/19 10:55	
2-Methylphenol(o-Cresol)	ug/L	ND	10.0	06/04/19 10:55	
3&4-Methylphenol(m&p Cresol)	ug/L	ND	10.0	06/04/19 10:55	
3,3'-Dichlorobenzidine	ug/L	ND	50.0	06/04/19 10:55	
4-Bromophenylphenyl ether	ug/L	ND	10.0	06/04/19 10:55	
Acenaphthene	ug/L	ND	10.0	06/04/19 10:55	
Anthracene	ug/L	ND	10.0	06/04/19 10:55	
Benzo(a)pyrene	ug/L	ND	10.0	06/04/19 10:55	
Benzoic acid	ug/L	ND	50.0	06/04/19 10:55	
bis(2-Chloroethyl) ether	ug/L	ND	10.0	06/04/19 10:55	
bis(2-Ethylhexyl)phthalate	ug/L	ND	10.0	06/04/19 10:55	
Butylbenzylphthalate	ug/L	ND	10.0	06/04/19 10:55	
Di-n-butylphthalate	ug/L	ND	10.0	06/04/19 10:55	
Di-n-octylphthalate	ug/L	ND	10.0	06/04/19 10:55	
Diethylphthalate	ug/L	ND	10.0	06/04/19 10:55	
Dimethylphthalate	ug/L	ND	10.0	06/04/19 10:55	
Fluoranthene	ug/L	ND	10.0	06/04/19 10:55	
Fluorene	ug/L	ND	10.0	06/04/19 10:55	
Hexachlorobenzene	ug/L	ND	10.0	06/04/19 10:55	
Hexachlorocyclopentadiene	ug/L	ND	50.0	06/04/19 10:55	
Hexachloroethane	ug/L	ND	10.0	06/04/19 10:55	
Isophorone	ug/L	ND	10.0	06/04/19 10:55	
N-Nitrosodimethylamine	ug/L	ND	10.0	06/04/19 10:55	
Pentachlorophenol	ug/L	ND	20.0	06/04/19 10:55	
Phenanthrene	ug/L	ND	10.0	06/04/19 10:55	
Phenol	ug/L	ND	10.0	06/04/19 10:55	
Pyrene	ug/L	ND	10.0	06/04/19 10:55	
2,4,6-Tribromophenol (S)	%.	79	52-125	06/04/19 10:55	
2-Fluorobiphenyl (S)	%.	73	52-125	06/04/19 10:55	
2-Fluorophenol (S)	%.	73	30-125	06/04/19 10:55	
Nitrobenzene-d5 (S)	%.	79	55-125	06/04/19 10:55	
p-Terphenyl-d14 (S)	%.	76	57-125	06/04/19 10:55	
Phenol-d6 (S)	%.	74	30-125	06/04/19 10:55	

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(612)607-1700

QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10476684

LABORATORY CONTROL SAMPLE & LCSD: 3291949 3291950

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
2,4,6-Trichlorophenol	ug/L	50	41.2	40.9	82	82	60-125	1	20	
2,4-Dichlorophenol	ug/L	50	39.6	39.3	79	79	56-125	1	20	
2,4-Dimethylphenol	ug/L	50	38.8	37.4	78	75	33-125	4	20	
2,4-Dinitrophenol	ug/L	50	29.2	26.1	58	52	32-125	11	20	
2-Chlorophenol	ug/L	50	37.4	38.6	75	77	52-125	3	20	
2-Methylnaphthalene	ug/L	50	40.6	39.6	81	79	52-125	2	20	
2-Methylphenol(o-Cresol)	ug/L	50	38.8	39.3	78	79	55-125	1	20	
3&4-Methylphenol(m&p Cresol)	ug/L	50	39.0	39.0	78	78	57-125	0	20	
3,3'-Dichlorobenzidine	ug/L	50	45.3J	39.2J	91	78	39-150		20	
4-Bromophenylphenyl ether	ug/L	50	43.1	38.0	86	76	61-125	13	20	
Acenaphthene	ug/L	50	43.2	40.1	86	80	59-125	7	20	
Anthracene	ug/L	50	45.7	40.9	91	82	64-125	11	20	
Benzo(a)pyrene	ug/L	50	45.1	39.4	90	79	63-125	13	20	
Benzoic acid	ug/L	50	25.7J	ND	51	37	30-125		20	
bis(2-Chloroethyl) ether	ug/L	50	36.5	37.9	73	76	49-125	4	20	
bis(2-Ethylhexyl)phthalate	ug/L	50	44.6	38.7	89	77	68-125	14	20	
Butylbenzylphthalate	ug/L	50	44.3	38.0	89	76	67-125	15	20	
Di-n-butylphthalate	ug/L	50	46.2	40.7	92	81	67-125	13	20	
Di-n-octylphthalate	ug/L	50	44.9	39.4	90	79	67-125	13	20	
Diethylphthalate	ug/L	50	45.1	40.6	90	81	64-125	10	20	
Dimethylphthalate	ug/L	50	44.0	38.8	88	78	65-125	13	20	
Fluoranthene	ug/L	50	45.0	41.6	90	83	64-125	8	20	
Fluorene	ug/L	50	44.8	40.7	90	81	63-125	10	20	
Hexachlorobenzene	ug/L	50	43.5	38.5	87	77	61-125	12	20	
Hexachlorocyclopentadiene	ug/L	50	ND	ND	32	35	30-125		20	1M
Hexachloroethane	ug/L	50	29.5	31.2	59	62	30-125	5	20	
Isophorone	ug/L	50	42.5	40.2	85	80	59-125	6	20	
N-Nitrosodimethylamine	ug/L	50	36.3	36.2	73	72	43-125	0	20	
Pentachlorophenol	ug/L	50	30.7	27.6	61	55	35-125	11	20	
Phenanthrene	ug/L	50	45.2	40.4	90	81	65-125	11	20	
Phenol	ug/L	50	37.9	38.0	76	76	54-125	0	20	
Pyrene	ug/L	50	44.8	38.3	90	77	65-125	16	20	
2,4,6-Tribromophenol (S)	%.				83	75	52-125			
2-Fluorobiphenyl (S)	%.				78	76	52-125			
2-Fluorophenol (S)	%.				67	69	30-125			
Nitrobenzene-d5 (S)	%.				73	74	55-125			
p-Terphenyl-d14 (S)	%.				80	69	57-125			
Phenol-d6 (S)	%.				69	69	30-125			

LABORATORY CONTROL SAMPLE: 3291969

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,4,6-Trichlorophenol	ug/L	50	40.1	80	60-125	
2,4-Dichlorophenol	ug/L	50	39.7	79	56-125	
2,4-Dimethylphenol	ug/L	50	39.0	78	33-125	

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(612)607-1700

QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10476684

LABORATORY CONTROL SAMPLE: 3291969

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,4-Dinitrophenol	ug/L	50	16.6	33	32-125	
2-Chlorophenol	ug/L	50	37.3	75	52-125	
2-Methylnaphthalene	ug/L	50	41.5	83	52-125	
2-Methylphenol(o-Cresol)	ug/L	50	38.0	76	55-125	
3&4-Methylphenol(m&p Cresol)	ug/L	50	37.2	74	57-125	
3,3'-Dichlorobenzidine	ug/L	50	41.7J	83	39-150	
4-Bromophenylphenyl ether	ug/L	50	43.9	88	61-125	
Acenaphthene	ug/L	50	42.4	85	59-125	
Anthracene	ug/L	50	43.6	87	64-125	
Benzo(a)pyrene	ug/L	50	42.5	85	63-125	
Benzoic acid	ug/L	50	24.7J	49	30-125	
bis(2-Chloroethyl) ether	ug/L	50	37.0	74	49-125	
bis(2-Ethylhexyl)phthalate	ug/L	50	41.2	82	68-125	
Butylbenzylphthalate	ug/L	50	41.1	82	67-125	
Di-n-butylphthalate	ug/L	50	43.9	88	67-125	
Di-n-octylphthalate	ug/L	50	42.0	84	67-125	
Diethylphthalate	ug/L	50	44.0	88	64-125	
Dimethylphthalate	ug/L	50	42.5	85	65-125	
Fluoranthene	ug/L	50	43.0	86	64-125	
Fluorene	ug/L	50	43.0	86	63-125	
Hexachlorobenzene	ug/L	50	42.4	85	61-125	
Hexachlorocyclopentadiene	ug/L	50	ND	21	30-125	1M,L2
Hexachloroethane	ug/L	50	29.2	58	30-125	
Isophorone	ug/L	50	42.6	85	59-125	
N-Nitrosodimethylamine	ug/L	50	35.0	70	43-125	
Pentachlorophenol	ug/L	50	29.5	59	35-125	
Phenanthrene	ug/L	50	42.3	85	65-125	
Phenol	ug/L	50	37.9	76	54-125	
Pyrene	ug/L	50	41.0	82	65-125	
2,4,6-Tribromophenol (S)	%.			80	52-125	
2-Fluorobiphenyl (S)	%.			76	52-125	
2-Fluorophenol (S)	%.			67	30-125	
Nitrobenzene-d5 (S)	%.			74	55-125	
p-Terphenyl-d14 (S)	%.			74	57-125	
Phenol-d6 (S)	%.			69	30-125	

LABORATORY CONTROL SAMPLE: 3291970

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,4,6-Trichlorophenol	ug/L	50	42.5	85	60-125	
2,4-Dichlorophenol	ug/L	50	40.2	80	56-125	
2,4-Dimethylphenol	ug/L	50	34.0	68	33-125	
2,4-Dinitrophenol	ug/L	50	17.1	34	32-125	
2-Chlorophenol	ug/L	50	37.9	76	52-125	
2-Methylnaphthalene	ug/L	50	40.7	81	52-125	

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10476684

LABORATORY CONTROL SAMPLE: 3291970

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2-Methylphenol(o-Cresol)	ug/L	50	39.0	78	55-125	
3&4-Methylphenol(m&p Cresol)	ug/L	50	40.1	80	57-125	
3,3'-Dichlorobenzidine	ug/L	50	38.5J	77	39-150	
4-Bromophenylphenyl ether	ug/L	50	38.9	78	61-125	
Acenaphthene	ug/L	50	40.4	81	59-125	
Anthracene	ug/L	50	42.3	85	64-125	
Benzo(a)pyrene	ug/L	50	40.5	81	63-125	
Benzoic acid	ug/L	50	34.9J	70	30-125	
bis(2-Chloroethyl) ether	ug/L	50	39.1	78	49-125	
bis(2-Ethylhexyl)phthalate	ug/L	50	40.6	81	68-125	
Butylbenzylphthalate	ug/L	50	39.7	79	67-125	
Di-n-butylphthalate	ug/L	50	43.5	87	67-125	
Di-n-octylphthalate	ug/L	50	41.1	82	67-125	
Diethylphthalate	ug/L	50	41.4	83	64-125	
Dimethylphthalate	ug/L	50	40.6	81	65-125	
Fluoranthene	ug/L	50	43.4	87	64-125	
Fluorene	ug/L	50	41.1	82	63-125	
Hexachlorobenzene	ug/L	50	38.9	78	61-125	
Hexachlorocyclopentadiene	ug/L	50	ND	18	30-125	1M,L2
Hexachloroethane	ug/L	50	30.7	61	30-125	
Isophorone	ug/L	50	40.9	82	59-125	
N-Nitrosodimethylamine	ug/L	50	37.4	75	43-125	
Pentachlorophenol	ug/L	50	29.7	59	35-125	
Phenanthrene	ug/L	50	42.1	84	65-125	
Phenol	ug/L	50	38.0	76	54-125	
Pyrene	ug/L	50	42.2	84	65-125	
2,4,6-Tribromophenol (S)	%.			78	52-125	
2-Fluorobiphenyl (S)	%.			73	52-125	
2-Fluorophenol (S)	%.			68	30-125	
Nitrobenzene-d5 (S)	%.			75	55-125	
p-Terphenyl-d14 (S)	%.			76	57-125	
Phenol-d6 (S)	%.			70	30-125	

LABORATORY CONTROL SAMPLE: 3291971

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,4,6-Trichlorophenol	ug/L	50	37.5	75	60-125	
2,4-Dichlorophenol	ug/L	50	39.1	78	56-125	
2,4-Dimethylphenol	ug/L	50	30.6	61	33-125	
2,4-Dinitrophenol	ug/L	50	16.6	33	32-125	
2-Chlorophenol	ug/L	50	37.3	75	52-125	
2-Methylnaphthalene	ug/L	50	39.4	79	52-125	
2-Methylphenol(o-Cresol)	ug/L	50	38.1	76	55-125	
3&4-Methylphenol(m&p Cresol)	ug/L	50	38.7	77	57-125	
3,3'-Dichlorobenzidine	ug/L	50	37J	74	39-150	

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10476684

LABORATORY CONTROL SAMPLE: 3291971

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
4-Bromophenylphenyl ether	ug/L	50	38.5	77	61-125	
Acenaphthene	ug/L	50	39.5	79	59-125	
Anthracene	ug/L	50	40.2	80	64-125	
Benzo(a)pyrene	ug/L	50	39.4	79	63-125	
Benzoic acid	ug/L	50	35J	70	30-125	
bis(2-Chloroethyl) ether	ug/L	50	37.3	75	49-125	
bis(2-Ethylhexyl)phthalate	ug/L	50	38.7	77	68-125	
Butylbenzylphthalate	ug/L	50	37.7	75	67-125	
Di-n-butylphthalate	ug/L	50	38.9	78	67-125	
Di-n-octylphthalate	ug/L	50	39.2	78	67-125	
Diethylphthalate	ug/L	50	40.4	81	64-125	
Dimethylphthalate	ug/L	50	38.1	76	65-125	
Fluoranthene	ug/L	50	38.9	78	64-125	
Fluorene	ug/L	50	40.3	81	63-125	
Hexachlorobenzene	ug/L	50	38.4	77	61-125	
Hexachlorocyclopentadiene	ug/L	50	ND	17	30-125	1M,L2
Hexachloroethane	ug/L	50	28.1	56	30-125	
Isophorone	ug/L	50	42.4	85	59-125	
N-Nitrosodimethylamine	ug/L	50	34.8	70	43-125	
Pentachlorophenol	ug/L	50	28.0	56	35-125	
Phenanthrene	ug/L	50	40.7	81	65-125	
Phenol	ug/L	50	37.2	74	54-125	
Pyrene	ug/L	50	37.0	74	65-125	
2,4,6-Tribromophenol (S)	%.			74	52-125	
2-Fluorobiphenyl (S)	%.			70	52-125	
2-Fluorophenol (S)	%.			68	30-125	
Nitrobenzene-d5 (S)	%.			77	55-125	
p-Terphenyl-d14 (S)	%.			70	57-125	
Phenol-d6 (S)	%.			69	30-125	

LABORATORY CONTROL SAMPLE: 3291972

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,4,6-Trichlorophenol	ug/L	50	38.5	77	60-125	
2,4-Dichlorophenol	ug/L	50	39.9	80	56-125	
2,4-Dimethylphenol	ug/L	50	31.8	64	33-125	
2,4-Dinitrophenol	ug/L	50	17.5	35	32-125	
2-Chlorophenol	ug/L	50	38.2	76	52-125	
2-Methylnaphthalene	ug/L	50	38.4	77	52-125	
2-Methylphenol(o-Cresol)	ug/L	50	38.8	78	55-125	
3&4-Methylphenol(m&p Cresol)	ug/L	50	40.3	81	57-125	
3,3'-Dichlorobenzidine	ug/L	50	39.4J	79	39-150	
4-Bromophenylphenyl ether	ug/L	50	41.1	82	61-125	
Acenaphthene	ug/L	50	41.2	82	59-125	
Anthracene	ug/L	50	43.4	87	64-125	

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10476684

LABORATORY CONTROL SAMPLE: 3291972

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzo(a)pyrene	ug/L	50	42.5	85	63-125	
Benzoic acid	ug/L	50	35.8J	72	30-125	
bis(2-Chloroethyl) ether	ug/L	50	38.1	76	49-125	
bis(2-Ethylhexyl)phthalate	ug/L	50	41.3	83	68-125	
Butylbenzylphthalate	ug/L	50	40.7	81	67-125	
Di-n-butylphthalate	ug/L	50	43.4	87	67-125	
Di-n-octylphthalate	ug/L	50	41.7	83	67-125	
Diethylphthalate	ug/L	50	43.7	87	64-125	
Dimethylphthalate	ug/L	50	41.2	82	65-125	
Fluoranthene	ug/L	50	41.2	82	64-125	
Fluorene	ug/L	50	42.8	86	63-125	
Hexachlorobenzene	ug/L	50	40.2	80	61-125	
Hexachlorocyclopentadiene	ug/L	50	ND	18	30-125	1M,L2
Hexachloroethane	ug/L	50	29.0	58	30-125	
Isophorone	ug/L	50	41.5	83	59-125	
N-Nitrosodimethylamine	ug/L	50	35.5	71	43-125	
Pentachlorophenol	ug/L	50	30.8	62	35-125	
Phenanthrene	ug/L	50	42.6	85	65-125	
Phenol	ug/L	50	37.7	75	54-125	
Pyrene	ug/L	50	40.3	81	65-125	
2,4,6-Tribromophenol (S)	%.			82	52-125	
2-Fluorobiphenyl (S)	%.			73	52-125	
2-Fluorophenol (S)	%.			68	30-125	
Nitrobenzene-d5 (S)	%.			73	55-125	
p-Terphenyl-d14 (S)	%.			74	57-125	
Phenol-d6 (S)	%.			70	30-125	

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10476684

QC Batch: 612265 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 10476684001, 10476684002, 10476684003

METHOD BLANK: 3308328 Matrix: Water
Associated Lab Samples: 10476684001, 10476684002, 10476684003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.2	06/12/19 15:38	

LABORATORY CONTROL SAMPLE: 3308329

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	12.5	12.1	97	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3308330 3308331

Parameter	Units	10476684001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	57.2	12.5	12.5	58.8	58.8	12	13	90-110	0	20	M1

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3308332 3308333

Parameter	Units	10476684002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	75.6	62.5	62.5	124	124	78	78	90-110	0	20	M1

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10476684

QC Batch: 608961 Analysis Method: SM 3500-Cr B Modified
QC Batch Method: SM 3500-Cr B Modified Analysis Description: Chromium, Hexavalent by 3500
Associated Lab Samples: 10476684001, 10476684002, 10476684003

METHOD BLANK: 3291289 Matrix: Water
Associated Lab Samples: 10476684001, 10476684002, 10476684003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium, Hexavalent	mg/L	ND	0.010	05/29/19 09:19	

LABORATORY CONTROL SAMPLE: 3291290

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/L	0.2	0.19	97	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3291291 3291292

Parameter	Units	10476631001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Hexavalent	mg/L	0.16	0.2	0.2	0.35	0.35	96	97	85-115	0	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10476684

QC Batch: 167365 Analysis Method: EPA 350.1 rev. 2 (1993)
QC Batch Method: EPA 350.1 rev. 2 (1993) Analysis Description: 350.1 Ammonia Distilled
Associated Lab Samples: 10476684001, 10476684002, 10476684003

METHOD BLANK: 659289 Matrix: Water
Associated Lab Samples: 10476684001, 10476684002, 10476684003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, Ammonia	mg/L	ND	0.11	06/04/19 11:12	

LABORATORY CONTROL SAMPLE: 659290

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Ammonia	mg/L	5	5.0	99	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 659291 659292

Parameter	Units	10476684001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, Ammonia	mg/L	1.5	5	5	6.3	6.4	96	98	90-110	1	10	

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10476684

QC Batch: 610476 Analysis Method: SM 4500-CN-E
QC Batch Method: SM 4500-CN-E Analysis Description: SM4500CN-E Cyanide
Associated Lab Samples: 10476684001, 10476684002

METHOD BLANK: 3298940 Matrix: Water
Associated Lab Samples: 10476684001, 10476684002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cyanide	ug/L	ND	20.0	06/05/19 11:47	

LABORATORY CONTROL SAMPLE: 3298941

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cyanide	ug/L	250	257	103	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3298942 3298943

Parameter	Units	10475971001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cyanide	ug/L	8.7J	250	250	240	220	92	84	80-120	9	30	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3298944 3298945

Parameter	Units	10476522001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cyanide	ug/L	17.9J	250	250	256	248	95	92	80-120	3	30	

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10476684

QC Batch: 611928 Analysis Method: SM 4500-CN-E
QC Batch Method: SM 4500-CN-E Analysis Description: SM4500CN-E Cyanide
Associated Lab Samples: 10476684003

METHOD BLANK: 3306748 Matrix: Water
Associated Lab Samples: 10476684003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cyanide	ug/L	ND	20.0	06/11/19 11:46	

LABORATORY CONTROL SAMPLE: 3306749

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cyanide	ug/L	250	229	92	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3306750 3306751

Parameter	Units	10477785002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cyanide	ug/L	ND	250	250	25.7	ND	7	0	80-120		30	H3,M1

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3306752 3306753

Parameter	Units	10477078007 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cyanide	ug/L	<20.0	250	250	226	251	89	99	80-120	10	30	

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(612)607-1700

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10476684

Sample: 834657 **Lab ID: 10476684001** Collected: 05/28/19 10:00 Received: 05/28/19 15:01 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 900.0	**0.783 ± 1.27 (2.73) C:NA T:NA**	pCi/L	06/06/19 08:17	12587-46-1	
Gross Beta	EPA 900.0	**3.13 ± 1.25 (1.82) C:NA T:NA**	pCi/L	06/06/19 08:17	12587-47-2	

Sample: 834656 **Lab ID: 10476684002** Collected: 05/28/19 12:00 Received: 05/28/19 15:01 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 900.0	**8.00 ± 4.98 (6.61) C:NA T:NA**	pCi/L	06/06/19 08:18	12587-46-1	
Gross Beta	EPA 900.0	**10.5 ± 3.94 (5.40) C:NA T:NA**	pCi/L	06/06/19 08:18	12587-47-2	

Sample: 834655 **Lab ID: 10476684003** Collected: 05/28/19 14:00 Received: 05/28/19 15:01 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 900.0	**5.88 ± 3.72 (5.76) C:NA T:NA**	pCi/L	06/06/19 08:18	12587-46-1	
Gross Beta	EPA 900.0	**10.3 ± 3.47 (4.57) C:NA T:NA**	pCi/L	06/06/19 08:18	12587-47-2	

REPORT OF LABORATORY ANALYSIS

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Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL - RADIOCHEMISTRY

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10476684

QC Batch: 345486 Analysis Method: EPA 900.0
QC Batch Method: EPA 900.0 Analysis Description: 900.0 Gross Alpha/Beta
Associated Lab Samples: 10476684001, 10476684002, 10476684003

METHOD BLANK: 1680781 Matrix: Water
Associated Lab Samples: 10476684001, 10476684002, 10476684003

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Gross Alpha	0.055 ± 0.351 (0.895) C:NA T:NA	pCi/L	06/06/19 08:17	
Gross Beta	-0.139 ± 0.454 (1.10) C:NA T:NA	pCi/L	06/06/19 08:17	

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REPORT OF LABORATORY ANALYSIS

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1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALIFIERS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10476684

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-M	Pace Analytical Services - Minneapolis
PASI-PA	Pace Analytical Services - Greensburg
PASI-V	Pace Analytical Services - Virginia

ANALYTE QUALIFIERS

1M	The associated compound was outside of 20% for the associated continuing calibration but within 40% of the true value.
H3	Sample was received or analysis requested beyond the recognized method holding time.
L2	Analyte recovery in the laboratory control sample (LCS) was below QC limits. Results for this analyte in associated samples may be biased low.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
S0	Surrogate recovery outside laboratory control limits.

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Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10476684

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10476684001	**834657**	EPA Mod. 3510C	609269	EPA 8082A	609593
10476684002	**834656**	EPA Mod. 3510C	609269	EPA 8082A	609593
10476684003	**834655**	EPA Mod. 3510C	609269	EPA 8082A	609593
10476684001	**834657**	EPA 200.7	609218	EPA 200.7	610218
10476684002	**834656**	EPA 200.7	609218	EPA 200.7	610218
10476684003	**834655**	EPA 200.7	609218	EPA 200.7	610218
10476684001	**834657**	EPA 200.8	609219	EPA 200.8	610407
10476684002	**834656**	EPA 200.8	609219	EPA 200.8	610407
10476684003	**834655**	EPA 200.8	609219	EPA 200.8	610407
10476684001	**834657**	EPA 3520	609142	EPA 8270D	610147
10476684002	**834656**	EPA 3520	609142	EPA 8270D	610147
10476684003	**834655**	EPA 3520	609142	EPA 8270D	610147
10476684001	**834657**				
10476684002	**834656**				
10476684003	**834655**				
10476684001	**834657**	EPA 900.0	345486		
10476684002	**834656**	EPA 900.0	345486		
10476684003	**834655**	EPA 900.0	345486		
10476684001	**834657**	EPA 300.0	612265		
10476684002	**834656**	EPA 300.0	612265		
10476684003	**834655**	EPA 300.0	612265		
10476684001	**834657**	SM 3500-Cr B Modified	608961		
10476684002	**834656**	SM 3500-Cr B Modified	608961		
10476684003	**834655**	SM 3500-Cr B Modified	608961		
10476684001	**834657**	EPA 350.1			
10476684002	**834656**	EPA 350.1			
10476684003	**834655**	EPA 350.1			
10476684001	**834657**	EPA 350.1 rev. 2 (1993)	167365	EPA 350.1 rev. 2 (1993)	167379
10476684002	**834656**	EPA 350.1 rev. 2 (1993)	167365	EPA 350.1 rev. 2 (1993)	167379
10476684003	**834655**	EPA 350.1 rev. 2 (1993)	167365	EPA 350.1 rev. 2 (1993)	167379
10476684001	**834657**	SM 4500-CN-E	610476	SM 4500-CN-E	610595
10476684002	**834656**	SM 4500-CN-E	610476	SM 4500-CN-E	610595
10476684003	**834655**	SM 4500-CN-E	611928	SM 4500-CN-E	612013

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WO#: 10476684

10476684

Minnesota Pollution Control Agency

Chain-of-Custody For

COC Type: Page: 1 of 1

COC ID:

FOR LAB USE ONLY

PROJECT/CLIENT INFO				LABORATORY	
Facility Code:	MNSW-057	Program Code (MDH Lab Only):		Lab Name:	Pace Analytical - Minneapolis, MN
Project Name:	19-01567 MPCA Freeway Landfill 2019 Waters	Project Task Code:	PRJ07786	Address:	1700 SE Elm Street
Project Manager:	Brad Jacobson 612-607-6375	EPIC PROFILE #:	38716 Line 2		Minneapolis MN 55414
Potential Hazard?	If yes, add information to Sampler Comments Section			Phone No:	612-607-6400

Lab Work Order Sticker

SAMPLE DETAILS

SAMPLE TYPE CODES
Sample=Routine Sample
S-IVP=Integrated Vertical Profile Sample
S-CWOP=Composite Sample
QC-FB=Field Blank Sample
QC-FR=Field Replicate Sample
QC-TB=Trip Blank Sample

LAB MATRIX CODES
DW=Drinking Water
NW=Non-potable Water
SD=Soil/Solid
WP=Wipe
AR=Air
BL=Biological Material
OT=Other
TS=Tissue

FIELD MATRIX CODES
Wtr-Ground=Groundwater
Wtr-Surf=Surface Water
QC-BLANK=Artificial Blank Water
Leachate=Leachate Sample

ANALYSIS REQUESTED

Location Identifier	Sample Type	Date	Time	Start Depth, in meters	End Depth, in meters	Grab (G) or Composite (C) Sample	Lab Matrix Code	Field Matrix Code	AIS	Sampler Comments (filter volume, special handling, etc.)	# of Cont	PRESERV.	ANALYSIS: Field Parameters: SWL, Temp, pH, DO, Cond, Eh, Turbidity	Metals 200.7 / 200.8 / Gross Alpha/Beta - QAPP Table 3a	300.0 / HexCr - QAPP Table 3a	Ammonia/ Unionized NH3 - QAPP Table 3a	Total Cyanide / Free Cyanide - QAPP Table 3a	8270 SVOC, 8082, MDA1, MDA2 - QAPP Table 3a	Lab Sample No.	#
													None	HNO3	None	H2SO4	NaOH	None		
834657	Sample	5/28/19	1000			G	NW	Wtr-Ground	N	(MW-13)	14		X	X	X	X	X	X		1
834656	Sample	5/28/19	1200			G	NW	Wtr-Ground	N	(MW-12)	14		X	X	X	X	X	X		2
834655	Sample	5/28/19	1400			G	NW	Wtr-Ground	N	(MW-11)	14		X	X	X	X	X	X		3
									N											4
									N											5
									N											6
									N											7
									N											8
									N											9
									N											10

MW-13 MW-12 MW-11

VOA 5/28/19

Sampled By: David Anderson

Sampler's Signature: David Anderson

Phone #:

Receiving Comments:

Relinquished By/Affiliation	Date/Time	Accepted By/ Affiliation	Date/Time
(Sampler) David Anderson / Pace Analytical	5/28/19 1455	Mike K Pace T=6-2, 5-4, 4 GN 2 5/29/19 T=6-3, 5-5, 5.0°C	5/29/19 9:01

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 09May2019 Page 1 of 1
	Document No.: F-MN-L-213-rev.28	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: MPCA

Project #: WO# : 10476684
PM: JMA Due Date: 06/11/19
CLIENT: PASI-MNFLD

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☒ Client ☐ Pace ☐ SpeeDee ☐ Commercial See Exception ☐

Tracking Number:

Custody Seal on Cooler/Box Present? ☐ Yes ☒ No **Seals Intact?** ☐ Yes ☒ No **Biological Tissue Frozen?** ☐ Yes ☐ No ☒ N/A

Packing Material: ☐ Bubble Wrap ☒ Bubble Bags ☒ None ☐ Other: PB **Temp Blank?** ☒ Yes ☐ No

Thermometer: ☐ T1(0461) ☒ T2(1336) ☐ T3(0459) ☐ T4(0254) ☐ T5(0489) **Type of Ice:** ☒ Wet ☐ Blue ☐ None ☐ Dry ☐ Melted

Note: Each West Virginia Sample must have temp taken (no temp blanks)

Temp should be above freezing to 6°C **Cooler Temp Read w/temp blank:** 6.2, 5.4, 4.9 °C

Correction Factor: +0.1 **Cooler Temp Corrected w/temp blank :** 6.3, 5.5, 5.0 °C

Average Corrected Temp (no temp blank only): °C See Exceptions ☐

USDA Regulated Soil: (☒ N/A, water sample/Other:)

Date/Initials of Person Examining Contents: GN 5/28/19

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐ Yes ☐ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☐ No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present and Filled Out?	☒ Yes	☐ No		1.
Chain of Custody Relinquished?	☒ Yes	☐ No		2.
Sampler Name and/or Signature on COC?	☒ Yes	☐ No	☒ N/A	3.
Samples Arrived within Hold Time?	☒ Yes	☐ No		4. FE 5/28/19
Short Hold Time Analysis (<72 hr)?	☒ Yes	☐ No		5. ☐ Fecal Coliform ☐ HPC ☐ Total Coliform/E coli ☐ BOD/cBOD ☒ Hex Chrome ☐ Turbidity ☐ Nitrate ☐ Nitrite ☐ Orthophos ☐ Other
Rush Turn Around Time Requested?	☐ Yes	☒ No		6.
Sufficient Volume?	☒ Yes	☐ No		7.
Correct Containers Used?	☒ Yes	☐ No		8.
-Pace Containers Used?	☒ Yes	☐ No		
Containers Intact?	☒ Yes	☐ No		9.
Field Filtered Volume Received for Dissolved Tests? JMA 5/29/19	☒ Yes	☐ No	☒ N/A	10. Is sediment visible in the dissolved container? ☐ Yes ☐ No
Is sufficient information available to reconcile the samples to the COC?	☒ Yes	☐ No		11. If no, write ID/ Date/Time on Container Below: See Exception ☐
Matrix: ☒ Water ☐ Soil ☐ Oil ☐ Other				
All containers needing acid/base preservation have been checked?	☒ Yes	☐ No	☐ N/A	12. Sample #
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>12 Cyanide)	☒ Yes	☐ No	☐ N/A	☒ NaOH 1-3 2/2 ☒ HNO_3 1-3 2/2 ☒ H_2SO_4 1-3 1/1 ☐ Zinc Acetate
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin/PFAS	☐ Yes	☐ No	☒ N/A	Positive for Res. Chlorine? ☐ Yes ☒ No pH Paper Lot# See Exception ☐
				Res. Chlorine 9016 | 0-6 Roll | 0-6 Strip | 0-14 Strip
Headspace in VOA Vials (greater than 6mm)?	☐ Yes	☐ No	☒ N/A	13. See Exception ☐
Trip Blank Present?	☐ Yes	☐ No	☒ N/A	14.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☒ N/A	Pace Trip Blank Lot # (if purchased):

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: Date: 05/29/2019

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers).

Labeled by: FE

WO# : 12125610

12125610

Chain of Custody

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN

Cert. Needed: ☐ Yes ☐

Workorder: 10476684 **Workorder Name:** 19-01567 MPCA Freeway LF 19 WT **Owner Received Date:** 5/28/2019 **Results Requested By:** 6/18/2019

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6436	Pace Analytical Virginia MN 315 Chestnut Street Virginia, MN 55792 Phone (218)742-1042

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: H2SO4 BP3S						Requested Analysis: 350.1 Ammonia	Unionized Ammonia										LAB USE ONLY
1	834657	PS	5/28/2019 10:00	10476684001	Water	1						X	X										
2	834656	PS	5/28/2019 12:00	10476684002	Water	1						X	X										
3	834655	PS	5/28/2019 14:00	10476684003	Water	1						X	X										
4																							
5																							

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature]	5/29/19 1830	[signature] 5/29/19	1836
2	[signature] 5/29/19	2300	[signature] 5/30/19	08:00
3				

Comments

Cooler Temperature on Receipt 0-6 °C | **Custody Seal** (Y) or N | **Received on Ice** (Y) or N | **Samples Intact** (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.*

Sample Condition Upon Receipt

Client Name: Pace MN

Project #: **WO#: 12125610**

PM: CLJ **Due Date: 06/18/19**

CLIENT: PACE MPLS

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☒ Pace ☐ Other:

Tracking Number:

Custody Seal on Cooler/Box Present? ☒ Yes ☐ No Seals Intact? ☒ Yes ☐ No Optional: Proj. Due Date: Proj. Name:

Packing Material: ☒ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other: Temp Blank? ☒ Yes ☐ No

Thermometer Used: ☒ 140792808 Type of Ice: ☐ Wet ☐ Blue ☐ None ☒ Samples on ice, cooling process has begun

Cooler Temp Read °C: 0.7 Cooler Temp Corrected °C: 0.6 Biological Tissue Frozen? ☐ Yes ☐ No ☒ NA

Temp should be above freezing to 6 °C Correction Factor: 0.3 Date and Initials of Person Examining Contents: 5/29/19 DC RA 5/30/19

				Comments:
Chain of Custody Present?	☑ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☑ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☑ Yes	☐ No	☐ N/A	3.
Sampler Name and Signature on COC?	☐ Yes	☑ No	☐ N/A	4.
Samples Arrived within Hold Time?	☑ Yes	☐ No	☐ N/A	5. If Fecal: ☐ <8 hours ☐ >8, <24 hours ☐ >24 hours
Short Hold Time Analysis (<72 hr)?	☐ Yes	☑ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☑ No	☐ N/A	7.
Sufficient Volume?	☑ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☑ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☑ Yes	☐ No	☐ N/A	
Containers Intact?	☑ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☑ N/A	11. Note if sediment is visible in the dissolved containers.
Sample Labels Match COC?	☑ Yes	☐ No	☐ N/A	12.
-Includes Date/Time/ID/Analysis Matrix: WT				
All containers needing acid/base preservation properly preserved?	☑ Yes	☐ No	☐ N/A	13. Note samples needing adjustment:
Headspace in Methyl Mercury Container	☐ Yes	☐ No	☑ N/A	14.
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☑ N/A	15.
Trip Blank Present?	☐ Yes	☐ No	☑ N/A	16.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☑ N/A	
Pace Trip Blank Lot # (if purchased):				

CLIENT NOTIFICATION/RESOLUTION Field Data Required? ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

FECAL WAIVER ON FILE Y N TEMPERATURE WAIVER ON FILE Y N

Project Manager Review: Nikki Jarva Date: 5/30/19

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DENR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

Chain of Custody

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☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN
Cert. Needed: ☐ Yes ☐ No

Workorder: 10476684 **Workorder Name:** 19-01567 MPCA Freeway LF 19 WT **Owner Received Date:** 5/28/2019 **Results Requested By:** 6/18/2019

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6436	Pace Analytical Pittsburgh 1638 Roseytown Road Suites 2,3 & 4 Greensburg, PA 15601 Phone (724)850-5600

WO# : 30296995

30296995

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: HNO3 BP1N	Requested Analysis: Gross Alpha/Beta	LAB USE ONLY
1	834657	PS	5/28/2019 10:00	10476684001	Water	1	X	001
2	834656	PS	5/28/2019 12:00	10476684002	Water	1	X	002
3	834655	PS	5/28/2019 14:00	10476684003	Water	1	X	003
4								
5								

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature] Pace	5/29/19 1600	MINNEAPOLIS PACE	53019 925
2				
3				

Comments

Cooler Temperature on Receipt N/A °C | Custody Seal (Y) or N | Received on Ice Y or (N) | Samples Intact (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.*
This chain of custody is considered complete as is since this information is available in the owner laboratory.

Pittsburgh Lab Sample Condition Upon Receipt

Pace Analytical

Client Name: Pace - MN Project # #_30296995

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Label MG
LIMS Login MG

Tracking #: 4638 0196 9674

Custody Seal on Cooler/Box Present: ☑ yes ☐ no Seals intact: ☑ yes ☐ no

Thermometer Used NA Type of Ice: Wet Blue (None)

Cooler Temperature Observed Temp _____ °C Correction Factor: _____ °C Final Temp: _____ °C

Temp should be above freezing to 6°C

pH paper Lot# 10D4281 Date and Initials of person examining contents: MG 5/30/19

Comments:	Yes	No	N/A	
Chain of Custody Present:	✓			1.
Chain of Custody Filled Out:	✓			2.
Chain of Custody Relinquished:	✓			3.
Sampler Name & Signature on COC:		✓		4.
Sample Labels match COC: -Includes date/time/ID Matrix: WT	✓			5.
Samples Arrived within Hold Time:	✓			6.
Short Hold Time Analysis (<72hr remaining):		✓		7.
Rush Turn Around Time Requested:		✓		8.
Sufficient Volume:	✓			9.
Correct Containers Used: -Pace Containers Used:	✓ ✓			10.
Containers Intact:	✓			11.
Orthophosphate field filtered			✓	12.
Hex Cr Aqueous sample field filtered			✓	13.
Organic Samples checked for dechlorination:			✓	14.
Filtered volume received for Dissolved tests			✓	15.
All containers have been checked for preservation. exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix	✓			16. pH < 2
All containers meet method preservation requirements.	✓			Initial when completed MG Date/time of preservation Lot # of added preservative
Headspace in VOA Vials (>6mm):			✓	17.
Trip Blank Present:		✓		18.
Trip Blank Custody Seals Present			✓	
Rad Samples Screened < 0.5 mrem/hr	✓			Initial when completed: MG Date: 5/30/19

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

☐ **A check in this box indicates that additional information has been stored in ereports.**

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

***PM review** is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

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June 18, 2019

Jennifer Anderson
Pace Analytical
1700 Elm Street, Suite 200
Minneapolis, MN 55414

RE: MPCA Freeway LF Water - MN

Enclosed are the analytical results for the samples received by the laboratory on 05/30/2019.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. These results are in compliance with the 2009 NELAC Standards and the appropriate agencies listed below, unless otherwise noted in the case narrative. This analytical report should be reproduced in its entirety.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jessica Esser

Project Manager

Certification List			Expires
DODELAP	DOD ELAP Accreditation (A2LA)	3269.01	03/31/2020
ILEPA	Illinois Secondary NELAP Accreditation	004366	04/30/2020
KDHE	Kansas Secondary NELAP Accreditation	E-10384	04/30/2020
LELAP	Louisiana Primary NELAP Accreditation	04165	06/30/2019
NCDEQ	North Carolina Dept. of Environmental Quality Accreditation	688	12/31/2019
NJDEP	New Jersey Secondary NELAP Accreditation	WI004	06/30/2019
ODEQ	Oklahoma Department of Environmental Quality Accreditation	2018-087	08/31/2019
TCEQ	Texas Secondary NELAP Accreditation	T104704504-16-7	11/30/2019
WDNR	Wisconsin Certification under NR 149	113289110	08/31/2019

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Pace Analytical	Project: MPCA Freeway LF Water - MN
1700 Elm Street, Suite 200	Project Number: 10476684
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
834657	A192205-01	Water	05/28/2019	05/30/2019
834656	A192205-02	Water	05/28/2019	05/30/2019
834655	A192205-03	Water	05/28/2019	05/30/2019

CASE NARRATIVE

Sample Receipt Information:
3 samples were received on 05/30/2019. Samples were received at 2.2 degrees Celsius. Samples were received in acceptable condition.

Please see the chain of custody (COC) document at the end of this report for additional information.

Continuing Calibration Verification (CCV):
The LC footnote on samples A192205-01 through A192205-03 states that there was a low CCV recovery for bentazon. The lower control limit is 80% and the lowest recovery was 73.5%.

CCV indicates a potential high bias for 2,4,5-T for samples A192205-01 through A192205-03. The upper control limit is 120% and the highest recovery was 128%. Any detections are footnoted with an HC. For the samples where results were less than the reporting limit no further action is required.

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Pace Analytical	Project: MPCA Freeway LF Water - MN
1700 Elm Street, Suite 200	Project Number: 10476684
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

834657

A192205-01 (Water)

Date Sampled
05/28/2019 10:00

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Base Neutral Pesticides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A905286**			
Acetochlor	ND	0.50	ug/L	1	05/30/2019	05/31/2019 11:51	EPA 8270D	
Alachlor	ND	0.50	ug/L	1	05/30/2019	05/31/2019 11:51	EPA 8270D	
Atrazine	ND	0.50	ug/L	1	05/30/2019	05/31/2019 11:51	EPA 8270D	
Chlorpyrifos	ND	0.50	ug/L	1	05/30/2019	05/31/2019 11:51	EPA 8270D	
Cyanazine	ND	0.20	ug/L	1	05/30/2019	05/31/2019 11:51	EPA 8270D	
Desethylatrazine	ND	0.50	ug/L	1	05/30/2019	05/31/2019 11:51	EPA 8270D	
Deisopropylatrazine	ND	0.50	ug/L	1	05/30/2019	05/31/2019 11:51	EPA 8270D	
Dimethenamid	ND	0.50	ug/L	1	05/30/2019	05/31/2019 11:51	EPA 8270D	
EPTC	ND	0.50	ug/L	1	05/30/2019	05/31/2019 11:51	EPA 8270D	
Ethalfluralin	ND	0.50	ug/L	1	05/30/2019	05/31/2019 11:51	EPA 8270D	
Fonofos	ND	0.50	ug/L	1	05/30/2019	05/31/2019 11:51	EPA 8270D	
Metolachlor	ND	0.50	ug/L	1	05/30/2019	05/31/2019 11:51	EPA 8270D	
Metribuzin	ND	0.50	ug/L	1	05/30/2019	05/31/2019 11:51	EPA 8270D	
Pendimethalin	ND	0.50	ug/L	1	05/30/2019	05/31/2019 11:51	EPA 8270D	
Phorate	ND	0.30	ug/L	1	05/30/2019	05/31/2019 11:51	EPA 8270D	
Prometon	ND	0.50	ug/L	1	05/30/2019	05/31/2019 11:51	EPA 8270D	
Propachlor	ND	0.50	ug/L	1	05/30/2019	05/31/2019 11:51	EPA 8270D	
Propazine	ND	0.50	ug/L	1	05/30/2019	05/31/2019 11:51	EPA 8270D	
Simazine	ND	0.50	ug/L	1	05/30/2019	05/31/2019 11:51	EPA 8270D	
Terbufos	ND	0.20	ug/L	1	05/30/2019	05/31/2019 11:51	EPA 8270D	
Triallate	ND	0.50	ug/L	1	05/30/2019	05/31/2019 11:51	EPA 8270D	
Trifluralin	ND	0.50	ug/L	1	05/30/2019	05/31/2019 11:51	EPA 8270D	
Surrogate: Atrazine-d5		*86.9 %*		*56.9-123*	*05/30/2019*	*05/31/2019 11:51*	*EPA 8270D*	
Surrogate: Parathion-d10		*95.9 %*		*23.8-169*	*05/30/2019*	*05/31/2019 11:51*	*EPA 8270D*	
Surrogate: Triphenyl phosphate		*134 %*		*50.5-178*	*05/30/2019*	*05/31/2019 11:51*	*EPA 8270D*	
Acid Herbicides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A906158**			
2,4-D	ND	0.50	ug/L	1	06/04/2019	06/12/2019 18:13	EPA 8151A	
2,4-DB	ND	0.50	ug/L	1	06/04/2019	06/12/2019 18:13	EPA 8151A	
2,4,5-T	**4.0**	0.50	ug/L	1	06/04/2019	06/12/2019 18:13	EPA 8151A	HC
2,4,5-TP (Silvex)	ND	0.50	ug/L	1	06/04/2019	06/12/2019 18:13	EPA 8151A	
Bentazon	ND	0.50	ug/L	1	06/04/2019	06/12/2019 18:13	EPA 8151A	LC
Dicamba	ND	0.50	ug/L	1	06/04/2019	06/12/2019 18:13	EPA 8151A	
MCPA	ND	0.30	ug/L	1	06/04/2019	06/12/2019 18:13	EPA 8151A	
Picloram	ND	0.50	ug/L	1	06/04/2019	06/12/2019 18:13	EPA 8151A	
Triclopyr	ND	0.50	ug/L	1	06/04/2019	06/12/2019 18:13	EPA 8151A	
Surrogate: 2,4-D-d5		*74.4 %*		*43.1-133*	*06/04/2019*	*06/12/2019 18:13*	*EPA 8151A*	

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1700 Elm Street, Suite 200	Project Number: 10476684
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

834656

A192205-02 (Water)

Date Sampled
05/28/2019 12:00

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Base Neutral Pesticides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A905286**			
Acetochlor	ND	0.50	ug/L	1	05/30/2019	05/31/2019 12:20	EPA 8270D	
Alachlor	ND	0.50	ug/L	1	05/30/2019	05/31/2019 12:20	EPA 8270D	
Atrazine	ND	0.50	ug/L	1	05/30/2019	05/31/2019 12:20	EPA 8270D	
Chlorpyrifos	ND	0.50	ug/L	1	05/30/2019	05/31/2019 12:20	EPA 8270D	
Cyanazine	ND	0.20	ug/L	1	05/30/2019	05/31/2019 12:20	EPA 8270D	
Desethylatrazine	ND	0.50	ug/L	1	05/30/2019	05/31/2019 12:20	EPA 8270D	
Deisopropylatrazine	ND	0.50	ug/L	1	05/30/2019	05/31/2019 12:20	EPA 8270D	
Dimethenamid	ND	0.50	ug/L	1	05/30/2019	05/31/2019 12:20	EPA 8270D	
EPTC	ND	0.50	ug/L	1	05/30/2019	05/31/2019 12:20	EPA 8270D	
Ethalfluralin	ND	0.50	ug/L	1	05/30/2019	05/31/2019 12:20	EPA 8270D	
Fonofos	ND	0.50	ug/L	1	05/30/2019	05/31/2019 12:20	EPA 8270D	
Metolachlor	ND	0.50	ug/L	1	05/30/2019	05/31/2019 12:20	EPA 8270D	
Metribuzin	ND	0.50	ug/L	1	05/30/2019	05/31/2019 12:20	EPA 8270D	
Pendimethalin	ND	0.50	ug/L	1	05/30/2019	05/31/2019 12:20	EPA 8270D	
Phorate	ND	0.30	ug/L	1	05/30/2019	05/31/2019 12:20	EPA 8270D	
Prometon	ND	0.50	ug/L	1	05/30/2019	05/31/2019 12:20	EPA 8270D	
Propachlor	ND	0.50	ug/L	1	05/30/2019	05/31/2019 12:20	EPA 8270D	
Propazine	ND	0.50	ug/L	1	05/30/2019	05/31/2019 12:20	EPA 8270D	
Simazine	ND	0.50	ug/L	1	05/30/2019	05/31/2019 12:20	EPA 8270D	
Terbufos	ND	0.20	ug/L	1	05/30/2019	05/31/2019 12:20	EPA 8270D	
Triallate	ND	0.50	ug/L	1	05/30/2019	05/31/2019 12:20	EPA 8270D	
Trifluralin	ND	0.50	ug/L	1	05/30/2019	05/31/2019 12:20	EPA 8270D	
Surrogate: Atrazine-d5		*87.9 %*		*56.9-123*	*05/30/2019*	*05/31/2019 12:20*	*EPA 8270D*	
Surrogate: Parathion-d10		*93.9 %*		*23.8-169*	*05/30/2019*	*05/31/2019 12:20*	*EPA 8270D*	
Surrogate: Triphenyl phosphate		*545 %*		*50.5-178*	*05/30/2019*	*05/31/2019 12:20*	*EPA 8270D*	*S*
Acid Herbicides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A906158**			
2,4-D	ND	0.50	ug/L	1	06/04/2019	06/12/2019 18:48	EPA 8151A	
2,4-DB	ND	0.50	ug/L	1	06/04/2019	06/12/2019 18:48	EPA 8151A	
2,4,5-T	ND	0.50	ug/L	1	06/04/2019	06/12/2019 18:48	EPA 8151A	
2,4,5-TP (Silvex)	ND	0.50	ug/L	1	06/04/2019	06/12/2019 18:48	EPA 8151A	
Bentazon	ND	0.50	ug/L	1	06/04/2019	06/12/2019 18:48	EPA 8151A	LC
Dicamba	ND	0.50	ug/L	1	06/04/2019	06/12/2019 18:48	EPA 8151A	
MCPA	ND	0.30	ug/L	1	06/04/2019	06/12/2019 18:48	EPA 8151A	
Picloram	ND	0.50	ug/L	1	06/04/2019	06/12/2019 18:48	EPA 8151A	
Triclopyr	ND	0.50	ug/L	1	06/04/2019	06/12/2019 18:48	EPA 8151A	
Surrogate: 2,4-D-d5		*66.6 %*		*43.1-133*	*06/04/2019*	*06/12/2019 18:48*	*EPA 8151A*	

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1700 Elm Street, Suite 200	Project Number: 10476684
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

834655

A192205-03 (Water)

Date Sampled
05/28/2019 14:00

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Base Neutral Pesticides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A905286**			
Acetochlor	ND	0.50	ug/L	1	05/30/2019	05/31/2019 12:48	EPA 8270D	
Alachlor	ND	0.50	ug/L	1	05/30/2019	05/31/2019 12:48	EPA 8270D	
Atrazine	ND	0.50	ug/L	1	05/30/2019	05/31/2019 12:48	EPA 8270D	
Chlorpyrifos	ND	0.50	ug/L	1	05/30/2019	05/31/2019 12:48	EPA 8270D	
Cyanazine	ND	0.20	ug/L	1	05/30/2019	05/31/2019 12:48	EPA 8270D	
Desethylatrazine	ND	0.50	ug/L	1	05/30/2019	05/31/2019 12:48	EPA 8270D	
Deisopropylatrazine	ND	0.50	ug/L	1	05/30/2019	05/31/2019 12:48	EPA 8270D	
Dimethenamid	ND	0.50	ug/L	1	05/30/2019	05/31/2019 12:48	EPA 8270D	
EPTC	ND	0.50	ug/L	1	05/30/2019	05/31/2019 12:48	EPA 8270D	
Ethalfluralin	ND	0.50	ug/L	1	05/30/2019	05/31/2019 12:48	EPA 8270D	
Fonofos	ND	0.50	ug/L	1	05/30/2019	05/31/2019 12:48	EPA 8270D	
Metolachlor	ND	0.50	ug/L	1	05/30/2019	05/31/2019 12:48	EPA 8270D	
Metribuzin	ND	0.50	ug/L	1	05/30/2019	05/31/2019 12:48	EPA 8270D	
Pendimethalin	ND	0.50	ug/L	1	05/30/2019	05/31/2019 12:48	EPA 8270D	
Phorate	ND	0.30	ug/L	1	05/30/2019	05/31/2019 12:48	EPA 8270D	
Prometon	ND	0.50	ug/L	1	05/30/2019	05/31/2019 12:48	EPA 8270D	
Propachlor	ND	0.50	ug/L	1	05/30/2019	05/31/2019 12:48	EPA 8270D	
Propazine	ND	0.50	ug/L	1	05/30/2019	05/31/2019 12:48	EPA 8270D	
Simazine	ND	0.50	ug/L	1	05/30/2019	05/31/2019 12:48	EPA 8270D	
Terbufos	ND	0.20	ug/L	1	05/30/2019	05/31/2019 12:48	EPA 8270D	
Triallate	ND	0.50	ug/L	1	05/30/2019	05/31/2019 12:48	EPA 8270D	
Trifluralin	ND	0.50	ug/L	1	05/30/2019	05/31/2019 12:48	EPA 8270D	
Surrogate: Atrazine-d5		*112 %*		*56.9-123*	*05/30/2019*	*05/31/2019 12:48*	*EPA 8270D*	
Surrogate: Parathion-d10		*88.7 %*		*23.8-169*	*05/30/2019*	*05/31/2019 12:48*	*EPA 8270D*	
Surrogate: Triphenyl phosphate		*133 %*		*50.5-178*	*05/30/2019*	*05/31/2019 12:48*	*EPA 8270D*	
Acid Herbicides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A906158**			
2,4-D	ND	0.50	ug/L	1	06/04/2019	06/12/2019 19:24	EPA 8151A	
2,4-DB	ND	0.50	ug/L	1	06/04/2019	06/12/2019 19:24	EPA 8151A	
2,4,5-T	ND	0.50	ug/L	1	06/04/2019	06/12/2019 19:24	EPA 8151A	
2,4,5-TP (Silvex)	ND	0.50	ug/L	1	06/04/2019	06/12/2019 19:24	EPA 8151A	
Bentazon	ND	0.50	ug/L	1	06/04/2019	06/12/2019 19:24	EPA 8151A	LC
Dicamba	ND	0.50	ug/L	1	06/04/2019	06/12/2019 19:24	EPA 8151A	
MCPA	ND	0.30	ug/L	1	06/04/2019	06/12/2019 19:24	EPA 8151A	
Picloram	ND	0.50	ug/L	1	06/04/2019	06/12/2019 19:24	EPA 8151A	
Triclopyr	ND	0.50	ug/L	1	06/04/2019	06/12/2019 19:24	EPA 8151A	
Surrogate: 2,4-D-d5		*76.1 %*		*43.1-133*	*06/04/2019*	*06/12/2019 19:24*	*EPA 8151A*	

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Pace Analytical	Project: MPCA Freeway LF Water - MN
1700 Elm Street, Suite 200	Project Number: 10476684
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Base Neutral Pesticides by Gas Chromatography/Mass Spectrometry - Quality Control

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A905286 - EPA 3510C										
Blank (A905286-BLK1)				Prepared: 05/30/2019 Analyzed: 06/01/2019 16:17						
Acetochlor	ND	0.50	ug/L							
Alachlor	ND	0.50	ug/L							
Atrazine	ND	0.50	ug/L							
Chlorpyrifos	ND	0.50	ug/L							
Cyanazine	ND	0.20	ug/L							
Desethylatrazine	ND	0.50	ug/L							
Deisopropylatrazine	ND	0.50	ug/L							
Dimethenamid	ND	0.50	ug/L							
EPTC	ND	0.50	ug/L							
Ethalfluralin	ND	0.50	ug/L							
Fonofos	ND	0.50	ug/L							
Metolachlor	ND	0.50	ug/L							
Metribuzin	ND	0.50	ug/L							
Pendimethalin	ND	0.50	ug/L							
Phorate	ND	0.30	ug/L							
Prometon	ND	0.50	ug/L							
Propachlor	ND	0.50	ug/L							
Propazine	ND	0.50	ug/L							
Simazine	ND	0.50	ug/L							
Terbufos	ND	0.20	ug/L							
Triallate	ND	0.50	ug/L							
Trifluralin	ND	0.50	ug/L							
Surrogate: Atrazine-d5	*0.424*		*ug/L*	*0.5250*		*80.8*	*56.9-123*			
Surrogate: Parathion-d10	*0.988*		*ug/L*	*0.5445*		*181*	*23.8-169*			*S*
Surrogate: Triphenyl phosphate	*0.502*		*ug/L*	*0.5000*		*100*	*50.5-178*			
LCS (A905286-BS1)				Prepared: 05/30/2019 Analyzed: 06/01/2019 16:44						
Acetochlor	0.996	0.50	ug/L	1.000		99.6	67.8-122			
Alachlor	0.957	0.50	ug/L	1.000		95.7	68.6-119			
Atrazine	0.937	0.50	ug/L	1.000		93.7	68.6-115			
Chlorpyrifos	0.954	0.50	ug/L	1.000		95.4	63.1-120			
Cyanazine	1.11	0.20	ug/L	1.000		111	55.3-143			
Desethylatrazine	1.03	0.50	ug/L	1.000		103	67.8-115			
Deisopropylatrazine	0.864	0.50	ug/L	1.000		86.4	50.1-100			
Dimethenamid	0.951	0.50	ug/L	1.000		95.1	70.3-121			
EPTC	0.780	0.50	ug/L	1.000		78.0	50.4-101			
Ethalfluralin	0.793	0.50	ug/L	1.000		79.3	42.6-121			
Fonofos	0.948	0.50	ug/L	1.000		94.8	56.6-119			
Metolachlor	1.08	0.50	ug/L	1.000		108	71.3-128			
Metribuzin	0.990	0.50	ug/L	1.000		99.0	64.9-120			
Pendimethalin	1.01	0.50	ug/L	1.000		101	60.9-128			
Phorate	0.763	0.30	ug/L	1.000		76.3	37.3-112			
Prometon	1.02	0.50	ug/L	1.000		102	67.1-120			
Propachlor	0.971	0.50	ug/L	1.000		97.1	66.2-127			
Propazine	0.985	0.50	ug/L	1.000		98.5	68.2-118			
Simazine	0.972	0.50	ug/L	1.000		97.2	67.2-117			

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Pace Analytical	Project: MPCA Freeway LF Water - MN
1700 Elm Street, Suite 200	Project Number: 10476684
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Base Neutral Pesticides by Gas Chromatography/Mass Spectrometry - Quality Control

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A905286 - EPA 3510C										
LCS (A905286-BS1)				Prepared: 05/30/2019 Analyzed: 06/01/2019 16:44						
Terbufos	0.700	0.20	ug/L	1.000		70.0	34.3-111			
Triallate	0.859	0.50	ug/L	1.000		85.9	53-121			
Trifluralin	0.951	0.50	ug/L	1.000		95.1	45.9-116			
Surrogate: Atrazine-d5	*0.454*		*ug/L*	*0.5250*		*86.5*	*56.9-123*			
Surrogate: Parathion-d10	*0.834*		*ug/L*	*0.5445*		*153*	*23.8-169*			
Surrogate: Triphenyl phosphate	*0.523*		*ug/L*	*0.5000*		*105*	*50.5-178*			
LCS Dup (A905286-BSD1)				Prepared: 05/30/2019 Analyzed: 06/01/2019 17:12						
Acetochlor	0.994	0.50	ug/L	1.000		99.4	67.8-122	0.261	20	
Alachlor	0.958	0.50	ug/L	1.000		95.8	68.6-119	0.131	20	
Atrazine	0.974	0.50	ug/L	1.000		97.4	68.6-115	3.92	20	
Chlorpyrifos	0.935	0.50	ug/L	1.000		93.5	63.1-120	2.07	20	
Cyanazine	1.09	0.20	ug/L	1.000		109	55.3-143	1.94	20	
Desethylatrazine	1.01	0.50	ug/L	1.000		101	67.8-115	2.28	20	
Deisopropylatrazine	0.884	0.50	ug/L	1.000		88.4	50.1-100	2.32	20	
Dimethenamid	0.953	0.50	ug/L	1.000		95.3	70.3-121	0.231	20	
EPTC	0.776	0.50	ug/L	1.000		77.6	50.4-101	0.540	20	
Ethalfluralin	0.977	0.50	ug/L	1.000		97.7	42.6-121	20.8	20	X
Fonofos	1.02	0.50	ug/L	1.000		102	56.6-119	7.31	20	
Metolachlor	1.04	0.50	ug/L	1.000		104	71.3-128	3.49	20	
Metribuzin	0.969	0.50	ug/L	1.000		96.9	64.9-120	2.22	20	
Pendimethalin	0.985	0.50	ug/L	1.000		98.5	60.9-128	2.84	20	
Phorate	0.748	0.30	ug/L	1.000		74.8	37.3-112	1.95	20	
Prometon	1.01	0.50	ug/L	1.000		101	67.1-120	0.518	20	
Propachlor	1.10	0.50	ug/L	1.000		110	66.2-127	12.6	20	
Propazine	0.928	0.50	ug/L	1.000		92.8	68.2-118	6.02	20	
Simazine	0.969	0.50	ug/L	1.000		96.9	67.2-117	0.402	20	
Terbufos	0.725	0.20	ug/L	1.000		72.5	34.3-111	3.45	20	
Triallate	0.928	0.50	ug/L	1.000		92.8	53-121	7.74	20	
Trifluralin	0.910	0.50	ug/L	1.000		91.0	45.9-116	4.45	20	
Surrogate: Atrazine-d5	*0.443*		*ug/L*	*0.5250*		*84.3*	*56.9-123*			
Surrogate: Parathion-d10	*0.934*		*ug/L*	*0.5445*		*172*	*23.8-169*			*S*
Surrogate: Triphenyl phosphate	*0.512*		*ug/L*	*0.5000*		*102*	*50.5-178*			

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Pace Analytical	Project: MPCA Freeway LF Water - MN
1700 Elm Street, Suite 200	Project Number: 10476684
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Acid Herbicides by Gas Chromatography/Mass Spectrometry - Quality Control

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A906158 - EPA 3510C										
Blank (A906158-BLK1)				Prepared: 06/04/2019 Analyzed: 06/12/2019 17:38						
2,4-D	ND	0.50	ug/L							
2,4-DB	ND	0.50	ug/L							
2,4,5-T	ND	0.50	ug/L							
2,4,5-TP (Silvex)	ND	0.50	ug/L							
Bentazon	ND	0.50	ug/L							
Dicamba	ND	0.50	ug/L							
MCPA	ND	0.30	ug/L							
Picloram	ND	0.50	ug/L							
Triclopyr	ND	0.50	ug/L							
Surrogate: 2,4-D-d5	*1.36*		*ug/L*	*2.006*		*68.0*	*43.1-133*			
LCS (A906158-BS1)				Prepared: 06/04/2019 Analyzed: 06/12/2019 21:44						
2,4-D	1.53	0.50	ug/L	2.000		76.7	51.7-152			
2,4-DB	1.65	0.50	ug/L	2.000		82.5	51.5-146			
2,4,5-T	1.57	0.50	ug/L	2.000		78.6	55.4-138			
2,4,5-TP (Silvex)	1.50	0.50	ug/L	2.000		75.1	47.2-152			
Bentazon	0.819	0.50	ug/L	1.000		81.9	48.9-146			
Dicamba	1.50	0.50	ug/L	2.000		75.0	41-149			
MCPA	1.46	0.30	ug/L	2.000		73.2	32.6-148			
Picloram	0.609	0.50	ug/L	1.000		60.9	37.8-121			
Triclopyr	1.54	0.50	ug/L	2.000		76.9	49.9-149			
Surrogate: 2,4-D-d5	*1.39*		*ug/L*	*2.006*		*69.3*	*43.1-133*			
LCS Dup (A906158-BSD1)				Prepared: 06/04/2019 Analyzed: 06/12/2019 22:19						
2,4-D	1.62	0.50	ug/L	2.000		81.2	51.7-152	5.73	20	
2,4-DB	1.70	0.50	ug/L	2.000		85.1	51.5-146	3.09	20	
2,4,5-T	1.56	0.50	ug/L	2.000		77.8	55.4-138	1.03	20	
2,4,5-TP (Silvex)	1.60	0.50	ug/L	2.000		79.8	47.2-152	6.06	20	
Bentazon	0.825	0.50	ug/L	1.000		82.5	48.9-146	0.791	20	
Dicamba	1.58	0.50	ug/L	2.000		79.0	41-149	5.25	20	
MCPA	1.45	0.30	ug/L	2.000		72.3	32.6-148	1.20	20	
Picloram	0.509	0.50	ug/L	1.000		50.9	37.8-121	17.9	20	
Triclopyr	1.52	0.50	ug/L	2.000		76.1	49.9-149	1.10	20	
Surrogate: 2,4-D-d5	*1.35*		*ug/L*	*2.006*		*67.3*	*43.1-133*			

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Pace Analytical	Project: MPCA Freeway LF Water - MN
1700 Elm Street, Suite 200	Project Number: 10476684
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Notes and Definitions

X	Precision for the matrix spike duplicate, laboratory control sample duplicate or lab duplicate was outside of control limits.
S	Surrogate recovery was outside of laboratory control limits due to an apparent matrix effect.
LC	Results may be biased low because of low continuing calibration verification (CCV).
HC	Results may be biased high because of high continuing calibration verification (CCV).
ND	Analyte NOT DETECTED at or above the reporting limit or limit of detection (if listed).
NR	Not Reported
dry	Sample results reported on a dry weight basis. If the word 'dry' does not appear after the units, results are reported on an as-is basis.
RPD	Relative Percent Difference

Chain of Custody

A192205

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☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN
Cert. Needed: ☐ Yes ☐ No

Workorder: 10476684 **Workorder Name:** 19-01567 MPCA Freeway LF 19 WT

Owner Received Date: 5/28/2019 **Results Requested By:** 6/18/2019

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6436	Pace Analytical Madison 2525 Advance Road Madison, WI 53718 Phone (608)221-8700

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved AG1U						Requested Analysis: MDA List 1	MDA List 2										LAB USE ONLY
1	834657	PS	5/28/2019 10:00	10476684001	Water	4						X	X										01
2	834656	PS	5/28/2019 12:00	10476684002	Water	4						X	X										02
3	834655	PS	5/28/2019 14:00	10476684003	Water	4						X	X										03
4																							
5																							

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature]	5/29/19 KSP	Kari-Ann Kellin	5/30/19 10:01
2				
3				

Comments

Need MPCA Equis EDD and Barr Equis 5 EDD

Cooler Temperature on Receipt 2.2 °C | **Custody Seal** Y or N | **Received on Ice** (Y) or N | **Samples Intact** (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.*

160142274 exp 7/13/19

31-May-2019

Jennifer Anderson
Pace Analytical Services, LLC
1700 Elm Street
Suite 200
Minneapolis, MN 55414

Re: **10476684** Work Order: **19052029**

Dear Jennifer,

ALS Environmental received 3 samples on 30-May-2019 09:30 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental - Holland and for only the analyses requested.

Sample results are compliant with industry accepted practices and Quality Control results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 9.

If you have any questions regarding this report, please feel free to contact me:

ADDRESS: 3352 128th Avenue, Holland, MI, USA
PHONE: +1 (616) 399-6070 FAX: +1 (616) 399-6185

Sincerely,

Electronically approved by: Chad Whelton

Chad Whelton
Project Manager

ALS Group, USA

Date: 31-May-19

Client: Pace Analytical Services, LLC
Project: 10476684
Work Order: **19052029**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
19052029-01	834657	Water		5/28/2019 10:00	5/30/2019 09:30	☐
19052029-02	834656	Water		5/28/2019 12:00	5/30/2019 09:30	☐
19052029-03	834655	Water		5/28/2019 14:00	5/30/2019 09:30	☐

Client: Pace Analytical Services, LLC
Project: 10476684
WorkOrder: **19052029**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
**	Estimated Value
a	Analyte is non-accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
Hr	BOD/CBOD - Sample was reset outside Hold Time, value should be considered estimated.
J	Analyte is present at an estimated concentration between the MDL and Report Limit
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and Reporting Limit, sample results may exhibit background or reagent contamination at the observed level.

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

Units Reported	Description
µg/L	Micrograms per Liter

ALS Group, USA

Date: *31-May-19*

Client:	Pace Analytical Services, LLC		
Project:	10476684	**Work Order:**	19052029
Sample ID:	834657	**Lab ID:**	19052029-01
Collection Date:	5/28/2019 10:00 AM	**Matrix:**	WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
CYANIDE, FREE			**SW9014**			Analyst: **RZM**
Cyanide, Free	ND		20	µg/L	1	5/31/2019 02:42 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Pace Analytical Services, LLC
Project: 10476684 **Work Order:** 19052029
Sample ID: 834656 **Lab ID:** 19052029-02
Collection Date: 5/28/2019 12:00 PM **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
CYANIDE, FREE			**SW9014**			Analyst: **RZM**
Cyanide, Free	ND		20	µg/L	1	5/31/2019 02:42 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *31-May-19*

Client:	Pace Analytical Services, LLC		
Project:	10476684	**Work Order:**	19052029
Sample ID:	834655	**Lab ID:**	19052029-03
Collection Date:	5/28/2019 02:00 PM	**Matrix:**	WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
CYANIDE, FREE			**SW9014**			Analyst: **RZM**
Cyanide, Free	ND		20	µg/L	1	5/31/2019 02:42 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

QC BATCH REPORT

Batch ID: **R261706** Instrument ID **WETCHEM** Method: **SW9014**

MBLK	Sample ID: **MB-R261706-R261706**			Units: **µg/L**			Analysis Date: **5/31/2019 02:42 PM**			
Client ID:	Run ID: **WETCHEM_190531V**			SeqNo: **5689080**			Prep Date:		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Free	ND	20								

LCS	Sample ID: **LCS-R261706-R261706**			Units: **µg/L**			Analysis Date: **5/31/2019 02:42 PM**			
Client ID:	Run ID: **WETCHEM_190531V**			SeqNo: **5689081**			Prep Date:		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Free	274.4	20	250	0	110	81-119	0			

MS	Sample ID: **19051781-01A MS**			Units: **µg/L**			Analysis Date: **5/31/2019 02:42 PM**			
Client ID:	Run ID: **WETCHEM_190531V**			SeqNo: **5689087**			Prep Date:		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Free	235.5	20	250	-6.08	96.6	81-119	0			

MSD	Sample ID: **19051781-01A MSD**			Units: **µg/L**			Analysis Date: **5/31/2019 02:42 PM**			
Client ID:	Run ID: **WETCHEM_190531V**			SeqNo: **5689088**			Prep Date:		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Free	239.6	20	250	-6.08	98.3	81-119	235.5	1.71	20	

The following samples were analyzed in this batch:

19052029-01A	19052029-02A	19052029-03A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

14052029

Chain of Custody

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Workorder: 10476684 **Workorder Name:** 19-01567 MPCA Freeway LF 19 WT **Results Requested By:** 6/18/2019

Report / Invoice To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6436 Email: jennifer.anderson@pacelabs.com	P.O. 10476684 ALS 3352 128th Avenue Holland, MI 49424

State of Sample Origin: MN

Item	Sample ID	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Other BP3A	Requested Analysis: Free Cyanide	LAB USE ONLY
1	834657	5/28/2019 10:00	10476684001	Water	1	X	
2	834656	5/28/2019 12:00	10476684002	Water	1	X	
3	834655	5/28/2019 14:00	10476684003	Water	1	X	
4							
5							

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature]	5/29/19 1525	FED EX	
2	FED EX	5/30/19 0930	[signature]	
3				

Comments

Cooler Temperature on Receipt 4.4 °C SR2 | **Custody Seal** Y or N | **Received on Ice** Y or N | **Samples Intact** Y or N

(2)

ALS Group, USA

Sample Receipt Checklist

Client Name: **PACE_MN** Date/Time Received: **30-May-19 09:30**

Work Order: **19052029** Received by: **DS**

Checklist completed by Diane Shaw (eSignature) 30-May-19 (Date) Reviewed by: Chad Whelton (eSignature) 30-May-19 (Date)

Matrices: Water

Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Sample(s) received on ice?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	4.4/4.4 c	SR2	
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	5/30/2019 3:07:01 PM		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

June 19, 2019

Mr. Brad Jacobson
Pace Analytical Services, LLC..
1700 Elm Street
Suite 200
Minneapolis, MN 55414

RE: Project: 19-02057 MPCAKraemersMineSpr19
Pace Project No.: 10476817

Dear Mr. Jacobson:
Enclosed are the analytical results for sample(s) received by the laboratory on May 29, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Some analyses have been subcontracted outside of the Pace Network. The subcontracted laboratory report has been attached.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jennifer Anderson
jennifer.anderson@pacelabs.com
(612)607-6436
Project Manager

Enclosures

cc: Tom Halverson, Pace Analytical Field Services
Chris Pelosi, Pace Analytical Services - Field Services

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Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

CERTIFICATIONS

Project: 19-02057 MPCAKraemersMineSpr19
Pace Project No.: 10476817

Minnesota Certification IDs

1700 Elm Street SE, Minneapolis, MN 55414-2485
A2LA Certification #: 2926.01
Alabama Certification #: 40770
Alaska Contaminated Sites Certification #: 17-009
Alaska DW Certification #: MN00064
Arizona Certification #: AZ0014
Arkansas DW Certification #: MN00064
Arkansas WW Certification #: 88-0680
California Certification #: 2929
CNMI Saipan Certification #: MP0003
Colorado Certification #: MN00064
Connecticut Certification #: PH-0256
EPA Region 8+Wyoming DW Certification #: via MN 027-053-137
Florida Certification #: E87605
Georgia Certification #: 959
Guam EPA Certification #: MN00064
Hawaii Certification #: MN00064
Idaho Certification #: MN00064
Illinois Certification #: 200011
Indiana Certification #: C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky DW Certification #: 90062
Kentucky WW Certification #: 90062
Louisiana DEQ Certification #: 03086
Louisiana DW Certification #: MN00064
Maine Certification #: MN00064
Maryland Certification #: 322
Massachusetts Certification #: M-MN064
Michigan Certification #: 9909
Minnesota Certification #: 027-053-137
Minnesota Dept of Ag Certifcation #: via MN 027-053-137
Minnesota Petrofund Certification #: 1240
Mississippi Certification #: MN00064
Missouri Certification #: 10100
Montana Certification #: CERT0092
Nebraska Certification #: NE-OS-18-06
Nevada Certification #: MN00064
New Hampshire Certification #: 2081
New Jersey Certification #: MN002
New York Certification #: 11647
North Carolina DW Certification #: 27700
North Carolina WW Certification #: 530
North Dakota Certification #: R-036
Ohio DW Certification #: 41244
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Primary Certification #: MN300001
Oregon Secondary Certification #: MN200001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification #: MN00064
South Carolina Certification #:74003001
Tennessee Certification #: TN02818
Texas Certification #: T104704192
Utah Certification #: MN00064
Vermont Certification #: VT-027053137
Virginia Certification #: 460163
Washington Certification #: C486
West Virginia DEP Certification #: 382
West Virginia DW Certification #: 9952 C
Wisconsin Certification #: 999407970
Wyoming UST Certification #: via A2LA 2926.01

Virginia Minnesota Certification ID's

315 Chestnut Street, Virginia, MN 55792
Montana Certificate #CERT0103
Alaska Certification UST-107
Minnesota Dept of Health Certification #: 027-137-445
North Dakota Certification: # R-203
Wisconsin DNR Certification # : 998027470
WA Department of Ecology Lab ID# C1007

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Florida: Cert E871149 SEKS WET
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221

REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 19-02057 MPCAKraemersMineSpr19
Pace Project No.: 10476817

Pennsylvania Certification IDs

KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

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SAMPLE SUMMARY

Project: 19-02057 MPCAKraemersMineSpr19
Pace Project No.: 10476817

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10476817001	**Seep 01**	Water	05/29/19 09:40	05/29/19 14:00
10476817002	**Discharge 01**	Water	05/29/19 10:30	05/29/19 14:00
10476817003	**Duplicate**	Water	05/29/19 10:40	05/29/19 14:00

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SAMPLE ANALYTE COUNT

Project: 19-02057 MPCAKraemersMineSpr19
Pace Project No.: 10476817

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10476817001	**Seep 01**	EPA 8082A	RAG	11	PASI-M
		EPA 200.7	DM	9	PASI-M
		EPA 200.8	RJS	12	PASI-M
		EPA 8270D	STB	38	PASI-M
			CLJ	2	PASI-V
		EPA 900.0	NEG	2	PASI-PA
		EPA 300.0	KEO	1	PASI-M
		SM 3500-Cr B Modified	JFP	1	PASI-M
		EPA 350.1	CLJ	1	PASI-V
		EPA 350.1 rev. 2 (1993)	DMB	1	PASI-V
		SM 4500-CN-E	DCL	1	PASI-M
10476817002	**Discharge 01**	EPA 8082A	RAG	11	PASI-M
		EPA 200.7	DM	9	PASI-M
		EPA 200.8	RJS	12	PASI-M
		EPA 8270D	STB	38	PASI-M
			CLJ	2	PASI-V
		EPA 900.0	NEG	2	PASI-PA
		EPA 300.0	KEO	1	PASI-M
		SM 3500-Cr B Modified	JFP	1	PASI-M
		EPA 350.1	CLJ	1	PASI-V
		EPA 350.1 rev. 2 (1993)	DMB	1	PASI-V
		SM 4500-CN-E	DCL	1	PASI-M
10476817003	**Duplicate**	EPA 8082A	RAG	11	PASI-M
		EPA 200.7	DM	9	PASI-M
		EPA 200.8	RJS	12	PASI-M
		EPA 8270D	STB	38	PASI-M
		EPA 900.0	NEG	2	PASI-PA
		EPA 300.0	KEO	1	PASI-M
		SM 3500-Cr B Modified	JFP	1	PASI-M
		EPA 350.1 rev. 2 (1993)	DMB	1	PASI-V
		SM 4500-CN-E	DCL	1	PASI-M

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ANALYTICAL RESULTS

Project: 19-02057 MPCAKraemersMineSpr19
Pace Project No.: 10476817

Sample: Seep 01 **Lab ID: 10476817001** Collected: 05/29/19 09:40 Received: 05/29/19 14:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA Mod. 3510C							
PCB-1016 (Aroclor 1016)	ND	ug/L	0.098	1	05/30/19 09:04	05/31/19 23:51	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/L	0.098	1	05/30/19 09:04	05/31/19 23:51	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/L	0.098	1	05/30/19 09:04	05/31/19 23:51	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/L	0.098	1	05/30/19 09:04	05/31/19 23:51	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/L	0.098	1	05/30/19 09:04	05/31/19 23:51	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/L	0.098	1	05/30/19 09:04	05/31/19 23:51	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/L	0.098	1	05/30/19 09:04	05/31/19 23:51	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/L	0.098	1	05/30/19 09:04	05/31/19 23:51	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/L	0.098	1	05/30/19 09:04	05/31/19 23:51	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	35	%.	30-125	1	05/30/19 09:04	05/31/19 23:51	877-09-8	
Decachlorobiphenyl (S)	55	%.	30-125	1	05/30/19 09:04	05/31/19 23:51	2051-24-3	
200.7 MET ICP	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Aluminum	ND	ug/L	200	1	06/03/19 07:00	06/04/19 08:50	7429-90-5	
Barium	**522**	ug/L	10.0	1	06/03/19 07:00	06/04/19 08:50	7440-39-3	
Copper	ND	ug/L	10.0	1	06/03/19 07:00	06/04/19 08:50	7440-50-8	
Manganese	**744**	ug/L	5.0	1	06/03/19 07:00	06/04/19 08:50	7439-96-5	
Nickel	ND	ug/L	20.0	1	06/03/19 07:00	06/04/19 08:50	7440-02-0	
Silver	ND	ug/L	10.0	1	06/03/19 07:00	06/04/19 08:50	7440-22-4	
Tin	ND	ug/L	75.0	1	06/03/19 07:00	06/04/19 08:50	7440-31-5	
Total Hardness by 2340B	**370000**	ug/L	3300	1	06/03/19 07:00	06/04/19 08:50		
Zinc	ND	ug/L	20.0	1	06/03/19 07:00	06/04/19 08:50	7440-66-6	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony	ND	ug/L	0.50	1	06/03/19 06:08	06/07/19 19:34	7440-36-0	
Arsenic	ND	ug/L	0.50	1	06/03/19 06:08	06/07/19 19:34	7440-38-2	
Beryllium	ND	ug/L	0.20	1	06/03/19 06:08	06/07/19 19:34	7440-41-7	
Boron	**291**	ug/L	10.0	1	06/03/19 06:08	06/07/19 19:34	7440-42-8	
Cadmium	ND	ug/L	0.080	1	06/03/19 06:08	06/07/19 19:34	7440-43-9	
Chromium	**0.51**	ug/L	0.50	1	06/03/19 06:08	06/07/19 19:34	7440-47-3	
Cobalt	**1.6**	ug/L	0.50	1	06/03/19 06:08	06/07/19 19:34	7440-48-4	
Lead	ND	ug/L	0.10	1	06/03/19 06:08	06/07/19 19:34	7439-92-1	
Selenium	**0.70**	ug/L	0.50	1	06/03/19 06:08	06/07/19 19:34	7782-49-2	
Thallium	**1.1**	ug/L	0.10	1	06/03/19 06:08	06/07/19 19:34	7440-28-0	
Uranium	**1.8**	ug/L	0.50	1	06/03/19 06:08	06/07/19 19:34	7440-61-1	
Vanadium	ND	ug/L	1.0	1	06/03/19 06:08	06/07/19 19:34	7440-62-2	
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
Acenaphthene	ND	ug/L	10.1	1	05/29/19 17:40	06/04/19 15:25	83-32-9	
Anthracene	ND	ug/L	10.1	1	05/29/19 17:40	06/04/19 15:25	120-12-7	
Benzo(a)pyrene	ND	ug/L	10.1	1	05/29/19 17:40	06/04/19 15:25	50-32-8	
Benzoic acid	ND	ug/L	50.5	1	05/29/19 17:40	06/04/19 15:25	65-85-0	
4-Bromophenylphenyl ether	ND	ug/L	10.1	1	05/29/19 17:40	06/04/19 15:25	101-55-3	
Butylbenzylphthalate	ND	ug/L	10.1	1	05/29/19 17:40	06/04/19 15:25	85-68-7	
bis(2-Chloroethyl) ether	ND	ug/L	10.1	1	05/29/19 17:40	06/04/19 15:25	111-44-4	

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ANALYTICAL RESULTS

Project: 19-02057 MPCAKraemersMineSpr19
Pace Project No.: 10476817

Sample: Seep 01 **Lab ID: 10476817001** Collected: 05/29/19 09:40 Received: 05/29/19 14:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
2-Chlorophenol	ND	ug/L	10.1	1	05/29/19 17:40	06/04/19 15:25	95-57-8	
3,3'-Dichlorobenzidine	ND	ug/L	50.5	1	05/29/19 17:40	06/04/19 15:25	91-94-1	
2,4-Dichlorophenol	ND	ug/L	10.1	1	05/29/19 17:40	06/04/19 15:25	120-83-2	
Diethylphthalate	ND	ug/L	10.1	1	05/29/19 17:40	06/04/19 15:25	84-66-2	
2,4-Dimethylphenol	ND	ug/L	10.1	1	05/29/19 17:40	06/04/19 15:25	105-67-9	
Dimethylphthalate	ND	ug/L	10.1	1	05/29/19 17:40	06/04/19 15:25	131-11-3	
Di-n-butylphthalate	ND	ug/L	10.1	1	05/29/19 17:40	06/04/19 15:25	84-74-2	
2,4-Dinitrophenol	ND	ug/L	10.1	1	05/29/19 17:40	06/04/19 15:25	51-28-5	
Di-n-octylphthalate	ND	ug/L	10.1	1	05/29/19 17:40	06/04/19 15:25	117-84-0	
bis(2-Ethylhexyl)phthalate	ND	ug/L	10.1	1	05/29/19 17:40	06/04/19 15:25	117-81-7	
Fluoranthene	ND	ug/L	10.1	1	05/29/19 17:40	06/04/19 15:25	206-44-0	
Fluorene	ND	ug/L	10.1	1	05/29/19 17:40	06/04/19 15:25	86-73-7	
Hexachlorobenzene	ND	ug/L	10.1	1	05/29/19 17:40	06/04/19 15:25	118-74-1	
Hexachlorocyclopentadiene	ND	ug/L	50.5	1	05/29/19 17:40	06/04/19 15:25	77-47-4	L2
Hexachloroethane	ND	ug/L	10.1	1	05/29/19 17:40	06/04/19 15:25	67-72-1	
Isophorone	ND	ug/L	10.1	1	05/29/19 17:40	06/04/19 15:25	78-59-1	
2-Methylnaphthalene	ND	ug/L	10.1	1	05/29/19 17:40	06/04/19 15:25	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/L	10.1	1	05/29/19 17:40	06/04/19 15:25	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/L	10.1	1	05/29/19 17:40	06/04/19 15:25		
N-Nitrosodimethylamine	ND	ug/L	10.1	1	05/29/19 17:40	06/04/19 15:25	62-75-9	
Pentachlorophenol	ND	ug/L	20.2	1	05/29/19 17:40	06/04/19 15:25	87-86-5	
Phenanthrene	ND	ug/L	10.1	1	05/29/19 17:40	06/04/19 15:25	85-01-8	
Phenol	ND	ug/L	10.1	1	05/29/19 17:40	06/04/19 15:25	108-95-2	
Pyrene	ND	ug/L	10.1	1	05/29/19 17:40	06/04/19 15:25	129-00-0	
2,4,6-Trichlorophenol	ND	ug/L	10.1	1	05/29/19 17:40	06/04/19 15:25	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	76	%.	55-125	1	05/29/19 17:40	06/04/19 15:25	4165-60-0	
2-Fluorobiphenyl (S)	56	%.	52-125	1	05/29/19 17:40	06/04/19 15:25	321-60-8	
p-Terphenyl-d14 (S)	74	%.	57-125	1	05/29/19 17:40	06/04/19 15:25	1718-51-0	
Phenol-d6 (S)	71	%.	30-125	1	05/29/19 17:40	06/04/19 15:25	13127-88-3	
2-Fluorophenol (S)	68	%.	30-125	1	05/29/19 17:40	06/04/19 15:25	367-12-4	
2,4,6-Tribromophenol (S)	86	%.	52-125	1	05/29/19 17:40	06/04/19 15:25	118-79-6	
Field Data	Analytical Method:							
Field pH	**6.6**	Std. Units		1		05/29/19 09:40		
Field Temperature	**12.5**	deg C		1		05/29/19 09:40		
300.0 IC Anions	Analytical Method: EPA 300.0							
Chloride	**124**	mg/L	6.0	5		06/15/19 14:53	16887-00-6	
Chromium, Hexavalent	Analytical Method: SM 3500-Cr B Modified							
Chromium, Hexavalent	ND	mg/L	0.010	1		05/29/19 17:53		
350.1 Ammonia, Unionized	Analytical Method: EPA 350.1							
Nitrogen, Ammonia (Unionized)	ND	mg/L	0.010	1		06/19/19 14:42		

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ANALYTICAL RESULTS

Project: 19-02057 MPCAKraemersMineSpr19
Pace Project No.: 10476817

Sample: Seep 01 **Lab ID: 10476817001** Collected: 05/29/19 09:40 Received: 05/29/19 14:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
350.1 Ammonia, Distilled	Analytical Method: EPA 350.1 rev. 2 (1993) Preparation Method: EPA 350.1 rev. 2 (1993)							
Nitrogen, Ammonia	**6.9**	mg/L	0.11	1	06/04/19 08:44	06/04/19 11:20	7664-41-7	
SM4500CN-E Cyanide	Analytical Method: SM 4500-CN-E Preparation Method: SM 4500-CN-E							
Cyanide	ND	ug/L	20.0	1	06/11/19 09:01	06/11/19 12:04	57-12-5	

Sample: Discharge 01 **Lab ID: 10476817002** Collected: 05/29/19 10:30 Received: 05/29/19 14:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA Mod. 3510C							
PCB-1016 (Aroclor 1016)	ND	ug/L	0.098	1	05/30/19 09:04	06/01/19 00:06	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/L	0.098	1	05/30/19 09:04	06/01/19 00:06	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/L	0.098	1	05/30/19 09:04	06/01/19 00:06	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/L	0.098	1	05/30/19 09:04	06/01/19 00:06	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/L	0.098	1	05/30/19 09:04	06/01/19 00:06	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/L	0.098	1	05/30/19 09:04	06/01/19 00:06	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/L	0.098	1	05/30/19 09:04	06/01/19 00:06	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/L	0.098	1	05/30/19 09:04	06/01/19 00:06	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/L	0.098	1	05/30/19 09:04	06/01/19 00:06	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	41	%.	30-125	1	05/30/19 09:04	06/01/19 00:06	877-09-8	
Decachlorobiphenyl (S)	57	%.	30-125	1	05/30/19 09:04	06/01/19 00:06	2051-24-3	
200.7 MET ICP	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Aluminum	**317**	ug/L	200	1	06/03/19 07:00	06/04/19 08:51	7429-90-5	
Barium	**174**	ug/L	10.0	1	06/03/19 07:00	06/04/19 08:51	7440-39-3	
Copper	ND	ug/L	10.0	1	06/03/19 07:00	06/04/19 08:51	7440-50-8	
Manganese	**66.7**	ug/L	5.0	1	06/03/19 07:00	06/04/19 08:51	7439-96-5	
Nickel	ND	ug/L	20.0	1	06/03/19 07:00	06/04/19 08:51	7440-02-0	
Silver	ND	ug/L	10.0	1	06/03/19 07:00	06/04/19 08:51	7440-22-4	
Tin	ND	ug/L	75.0	1	06/03/19 07:00	06/04/19 08:51	7440-31-5	
Total Hardness by 2340B	**337000**	ug/L	3300	1	06/03/19 07:00	06/04/19 08:51		
Zinc	ND	ug/L	20.0	1	06/03/19 07:00	06/04/19 08:51	7440-66-6	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony	ND	ug/L	0.50	1	06/03/19 06:08	06/07/19 19:39	7440-36-0	
Arsenic	**0.58**	ug/L	0.50	1	06/03/19 06:08	06/07/19 19:39	7440-38-2	
Beryllium	ND	ug/L	0.20	1	06/03/19 06:08	06/07/19 19:39	7440-41-7	
Boron	**220**	ug/L	10.0	1	06/03/19 06:08	06/07/19 19:39	7440-42-8	
Cadmium	ND	ug/L	0.080	1	06/03/19 06:08	06/07/19 19:39	7440-43-9	
Chromium	ND	ug/L	0.50	1	06/03/19 06:08	06/07/19 19:39	7440-47-3	
Cobalt	ND	ug/L	0.50	1	06/03/19 06:08	06/07/19 19:39	7440-48-4	
Lead	**0.51**	ug/L	0.10	1	06/03/19 06:08	06/07/19 19:39	7439-92-1	
Selenium	**6.5**	ug/L	0.50	1	06/03/19 06:08	06/07/19 19:39	7782-49-2	
Thallium	**0.20**	ug/L	0.10	1	06/03/19 06:08	06/07/19 19:39	7440-28-0	

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ANALYTICAL RESULTS

Project: 19-02057 MPCAKraemersMineSpr19
Pace Project No.: 10476817

Sample: Discharge 01 **Lab ID: 10476817002** Collected: 05/29/19 10:30 Received: 05/29/19 14:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Uranium	**2.7**	ug/L	0.50	1	06/03/19 06:08	06/07/19 19:39	7440-61-1	
Vanadium	ND	ug/L	1.0	1	06/03/19 06:08	06/07/19 19:39	7440-62-2	
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
Acenaphthene	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 15:53	83-32-9	
Anthracene	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 15:53	120-12-7	
Benzo(a)pyrene	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 15:53	50-32-8	
Benzoic acid	ND	ug/L	49.5	1	05/29/19 17:40	06/04/19 15:53	65-85-0	
4-Bromophenylphenyl ether	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 15:53	101-55-3	
Butylbenzylphthalate	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 15:53	85-68-7	
bis(2-Chloroethyl) ether	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 15:53	111-44-4	
2-Chlorophenol	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 15:53	95-57-8	
3,3'-Dichlorobenzidine	ND	ug/L	49.5	1	05/29/19 17:40	06/04/19 15:53	91-94-1	
2,4-Dichlorophenol	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 15:53	120-83-2	
Diethylphthalate	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 15:53	84-66-2	
2,4-Dimethylphenol	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 15:53	105-67-9	
Dimethylphthalate	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 15:53	131-11-3	
Di-n-butylphthalate	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 15:53	84-74-2	
2,4-Dinitrophenol	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 15:53	51-28-5	
Di-n-octylphthalate	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 15:53	117-84-0	
bis(2-Ethylhexyl)phthalate	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 15:53	117-81-7	
Fluoranthene	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 15:53	206-44-0	
Fluorene	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 15:53	86-73-7	
Hexachlorobenzene	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 15:53	118-74-1	
Hexachlorocyclopentadiene	ND	ug/L	49.5	1	05/29/19 17:40	06/04/19 15:53	77-47-4	L2
Hexachloroethane	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 15:53	67-72-1	
Isophorone	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 15:53	78-59-1	
2-Methylnaphthalene	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 15:53	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 15:53	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 15:53		
N-Nitrosodimethylamine	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 15:53	62-75-9	
Pentachlorophenol	ND	ug/L	19.8	1	05/29/19 17:40	06/04/19 15:53	87-86-5	
Phenanthrene	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 15:53	85-01-8	
Phenol	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 15:53	108-95-2	
Pyrene	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 15:53	129-00-0	
2,4,6-Trichlorophenol	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 15:53	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	68	%.	55-125	1	05/29/19 17:40	06/04/19 15:53	4165-60-0	
2-Fluorobiphenyl (S)	56	%.	52-125	1	05/29/19 17:40	06/04/19 15:53	321-60-8	
p-Terphenyl-d14 (S)	72	%.	57-125	1	05/29/19 17:40	06/04/19 15:53	1718-51-0	
Phenol-d6 (S)	66	%.	30-125	1	05/29/19 17:40	06/04/19 15:53	13127-88-3	
2-Fluorophenol (S)	65	%.	30-125	1	05/29/19 17:40	06/04/19 15:53	367-12-4	
2,4,6-Tribromophenol (S)	79	%.	52-125	1	05/29/19 17:40	06/04/19 15:53	118-79-6	
Field Data	Analytical Method:							
Field pH	**7.5**	Std. Units		1		05/29/19 10:30		

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ANALYTICAL RESULTS

Project: 19-02057 MPCAKraemersMineSpr19
Pace Project No.: 10476817

Sample: Discharge 01 **Lab ID: 10476817002** Collected: 05/29/19 10:30 Received: 05/29/19 14:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:							
Field Temperature	**15.0**	deg C		1		05/29/19 10:30		
300.0 IC Anions	Analytical Method: EPA 300.0							
Chloride	**57.9**	mg/L	1.2	1		06/15/19 09:09	16887-00-6	
Chromium, Hexavalent	Analytical Method: SM 3500-Cr B Modified							
Chromium, Hexavalent	ND	mg/L	0.010	1		05/29/19 17:53		
350.1 Ammonia, Unionized	Analytical Method: EPA 350.1							
Nitrogen, Ammonia (Unionized)	ND	mg/L	0.010	1		06/19/19 14:42		
350.1 Ammonia, Distilled	Analytical Method: EPA 350.1 rev. 2 (1993) Preparation Method: EPA 350.1 rev. 2 (1993)							
Nitrogen, Ammonia	**0.23**	mg/L	0.11	1	06/04/19 08:44	06/04/19 11:21	7664-41-7	
SM4500CN-E Cyanide	Analytical Method: SM 4500-CN-E Preparation Method: SM 4500-CN-E							
Cyanide	ND	ug/L	20.0	1	06/11/19 09:01	06/11/19 12:04	57-12-5	

Sample: Duplicate **Lab ID: 10476817003** Collected: 05/29/19 10:40 Received: 05/29/19 14:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA Mod. 3510C							
PCB-1016 (Aroclor 1016)	ND	ug/L	0.098	1	05/30/19 09:04	06/01/19 00:21	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/L	0.098	1	05/30/19 09:04	06/01/19 00:21	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/L	0.098	1	05/30/19 09:04	06/01/19 00:21	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/L	0.098	1	05/30/19 09:04	06/01/19 00:21	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/L	0.098	1	05/30/19 09:04	06/01/19 00:21	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/L	0.098	1	05/30/19 09:04	06/01/19 00:21	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/L	0.098	1	05/30/19 09:04	06/01/19 00:21	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/L	0.098	1	05/30/19 09:04	06/01/19 00:21	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/L	0.098	1	05/30/19 09:04	06/01/19 00:21	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	45	%.	30-125	1	05/30/19 09:04	06/01/19 00:21	877-09-8	
Decachlorobiphenyl (S)	80	%.	30-125	1	05/30/19 09:04	06/01/19 00:21	2051-24-3	
200.7 MET ICP	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Aluminum	**320**	ug/L	200	1	06/03/19 07:00	06/04/19 08:53	7429-90-5	
Barium	**174**	ug/L	10.0	1	06/03/19 07:00	06/04/19 08:53	7440-39-3	
Copper	ND	ug/L	10.0	1	06/03/19 07:00	06/04/19 08:53	7440-50-8	
Manganese	**67.2**	ug/L	5.0	1	06/03/19 07:00	06/04/19 08:53	7439-96-5	
Nickel	ND	ug/L	20.0	1	06/03/19 07:00	06/04/19 08:53	7440-02-0	
Silver	ND	ug/L	10.0	1	06/03/19 07:00	06/04/19 08:53	7440-22-4	
Tin	ND	ug/L	75.0	1	06/03/19 07:00	06/04/19 08:53	7440-31-5	
Total Hardness by 2340B	**339000**	ug/L	3300	1	06/03/19 07:00	06/04/19 08:53		
Zinc	ND	ug/L	20.0	1	06/03/19 07:00	06/04/19 08:53	7440-66-6	

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ANALYTICAL RESULTS

Project: 19-02057 MPCAKraemersMineSpr19
Pace Project No.: 10476817

Sample: Duplicate **Lab ID: 10476817003** Collected: 05/29/19 10:40 Received: 05/29/19 14:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony	ND	ug/L	0.50	1	06/03/19 06:08	06/07/19 19:43	7440-36-0	
Arsenic	**0.58**	ug/L	0.50	1	06/03/19 06:08	06/07/19 19:43	7440-38-2	
Beryllium	ND	ug/L	0.20	1	06/03/19 06:08	06/07/19 19:43	7440-41-7	
Boron	**218**	ug/L	10.0	1	06/03/19 06:08	06/07/19 19:43	7440-42-8	
Cadmium	ND	ug/L	0.080	1	06/03/19 06:08	06/07/19 19:43	7440-43-9	
Chromium	ND	ug/L	0.50	1	06/03/19 06:08	06/07/19 19:43	7440-47-3	
Cobalt	ND	ug/L	0.50	1	06/03/19 06:08	06/07/19 19:43	7440-48-4	
Lead	**0.55**	ug/L	0.10	1	06/03/19 06:08	06/07/19 19:43	7439-92-1	
Selenium	**6.3**	ug/L	0.50	1	06/03/19 06:08	06/07/19 19:43	7782-49-2	
Thallium	**0.20**	ug/L	0.10	1	06/03/19 06:08	06/07/19 19:43	7440-28-0	
Uranium	**2.7**	ug/L	0.50	1	06/03/19 06:08	06/07/19 19:43	7440-61-1	
Vanadium	ND	ug/L	1.0	1	06/03/19 06:08	06/07/19 19:43	7440-62-2	
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
Acenaphthene	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 16:20	83-32-9	
Anthracene	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 16:20	120-12-7	
Benzo(a)pyrene	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 16:20	50-32-8	
Benzoic acid	ND	ug/L	49.5	1	05/29/19 17:40	06/04/19 16:20	65-85-0	
4-Bromophenylphenyl ether	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 16:20	101-55-3	
Butylbenzylphthalate	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 16:20	85-68-7	
bis(2-Chloroethyl) ether	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 16:20	111-44-4	
2-Chlorophenol	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 16:20	95-57-8	
3,3'-Dichlorobenzidine	ND	ug/L	49.5	1	05/29/19 17:40	06/04/19 16:20	91-94-1	
2,4-Dichlorophenol	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 16:20	120-83-2	
Diethylphthalate	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 16:20	84-66-2	
2,4-Dimethylphenol	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 16:20	105-67-9	
Dimethylphthalate	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 16:20	131-11-3	
Di-n-butylphthalate	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 16:20	84-74-2	
2,4-Dinitrophenol	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 16:20	51-28-5	
Di-n-octylphthalate	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 16:20	117-84-0	
bis(2-Ethylhexyl)phthalate	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 16:20	117-81-7	
Fluoranthene	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 16:20	206-44-0	
Fluorene	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 16:20	86-73-7	
Hexachlorobenzene	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 16:20	118-74-1	
Hexachlorocyclopentadiene	ND	ug/L	49.5	1	05/29/19 17:40	06/04/19 16:20	77-47-4	L2
Hexachloroethane	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 16:20	67-72-1	
Isophorone	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 16:20	78-59-1	
2-Methylnaphthalene	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 16:20	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 16:20	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 16:20		
N-Nitrosodimethylamine	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 16:20	62-75-9	
Pentachlorophenol	ND	ug/L	19.8	1	05/29/19 17:40	06/04/19 16:20	87-86-5	
Phenanthrene	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 16:20	85-01-8	
Phenol	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 16:20	108-95-2	
Pyrene	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 16:20	129-00-0	
2,4,6-Trichlorophenol	ND	ug/L	9.9	1	05/29/19 17:40	06/04/19 16:20	88-06-2	

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ANALYTICAL RESULTS

Project: 19-02057 MPCAKraemersMineSpr19
Pace Project No.: 10476817

Sample: Duplicate **Lab ID: 10476817003** Collected: 05/29/19 10:40 Received: 05/29/19 14:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
Surrogates								
Nitrobenzene-d5 (S)	68	%.	55-125	1	05/29/19 17:40	06/04/19 16:20	4165-60-0	
2-Fluorobiphenyl (S)	55	%.	52-125	1	05/29/19 17:40	06/04/19 16:20	321-60-8	
p-Terphenyl-d14 (S)	68	%.	57-125	1	05/29/19 17:40	06/04/19 16:20	1718-51-0	
Phenol-d6 (S)	65	%.	30-125	1	05/29/19 17:40	06/04/19 16:20	13127-88-3	
2-Fluorophenol (S)	62	%.	30-125	1	05/29/19 17:40	06/04/19 16:20	367-12-4	
2,4,6-Tribromophenol (S)	75	%.	52-125	1	05/29/19 17:40	06/04/19 16:20	118-79-6	
300.0 IC Anions	Analytical Method: EPA 300.0							
Chloride	**58.2**	mg/L	1.2	1		06/15/19 15:44	16887-00-6	
Chromium, Hexavalent	Analytical Method: SM 3500-Cr B Modified							
Chromium, Hexavalent	ND	mg/L	0.010	1		05/29/19 17:53		
350.1 Ammonia, Distilled	Analytical Method: EPA 350.1 rev. 2 (1993) Preparation Method: EPA 350.1 rev. 2 (1993)							
Nitrogen, Ammonia	**0.23**	mg/L	0.11	1	06/04/19 08:44	06/04/19 11:22	7664-41-7	
SM4500CN-E Cyanide	Analytical Method: SM 4500-CN-E Preparation Method: SM 4500-CN-E							
Cyanide	ND	ug/L	20.0	1	06/11/19 09:01	06/11/19 12:07	57-12-5	

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QUALITY CONTROL DATA

Project: 19-02057 MPCAKraemersMineSpr19
Pace Project No.: 10476817

QC Batch: 609530 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 MET
Associated Lab Samples: 10476817001, 10476817002, 10476817003

METHOD BLANK: 3294149 Matrix: Water
Associated Lab Samples: 10476817001, 10476817002, 10476817003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum	ug/L	ND	200	06/04/19 08:20	
Barium	ug/L	ND	10.0	06/04/19 08:20	
Copper	ug/L	ND	10.0	06/04/19 08:20	
Manganese	ug/L	ND	5.0	06/04/19 08:20	
Nickel	ug/L	ND	20.0	06/04/19 08:20	
Silver	ug/L	ND	10.0	06/04/19 08:20	
Tin	ug/L	ND	75.0	06/04/19 08:20	
Zinc	ug/L	ND	20.0	06/04/19 08:20	

LABORATORY CONTROL SAMPLE: 3294150

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	ug/L	20000	21000	105	85-115	
Barium	ug/L	1000	1000	100	85-115	
Copper	ug/L	1000	964	96	85-115	
Manganese	ug/L	1000	1010	101	85-115	
Nickel	ug/L	1000	992	99	85-115	
Silver	ug/L	500	496	99	85-115	
Tin	ug/L	1000	1000	100	85-115	
Zinc	ug/L	1000	1010	101	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3294151 3294152

Parameter	Units	10476981001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum	ug/L	53.9J	20000	20000	22100	21800	110	109	70-130	1	20	
Barium	ug/L	99.4	1000	1000	1120	1110	102	101	70-130	1	20	
Copper	ug/L	25.4	1000	1000	1060	1040	104	102	70-130	2	20	
Manganese	ug/L	137	1000	1000	1180	1160	104	102	70-130	2	20	
Nickel	ug/L	12.7J	1000	1000	1020	1010	101	99	70-130	1	20	
Silver	ug/L	<0.40	500	500	526	523	105	105	70-130	1	20	
Tin	ug/L	<3.2	1000	1000	1000	998	100	100	70-130	1	20	
Zinc	ug/L	181	1000	1000	1190	1180	101	100	70-130	1	20	

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QUALITY CONTROL DATA

Project: 19-02057 MPCAKraemersMineSpr19
Pace Project No.: 10476817

MATRIX SPIKE SAMPLE: 3294153

Parameter	Units	10477066001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Aluminum	ug/L	1870	20000	24800	114	70-130	
Barium	ug/L	81.2	1000	1090	101	70-130	
Copper	ug/L	ND	1000	1070	106	70-130	
Manganese	ug/L	361	1000	1390	103	70-130	
Nickel	ug/L	ND	1000	999	99	70-130	
Silver	ug/L	ND	500	540	108	70-130	
Tin	ug/L	ND	1000	991	99	70-130	
Zinc	ug/L	43.8	1000	1030	99	70-130	

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QUALITY CONTROL DATA

Project: 19-02057 MPCAKraemersMineSpr19
Pace Project No.: 10476817

QC Batch: 609528 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 10476817001, 10476817002, 10476817003

METHOD BLANK: 3294141 Matrix: Water
Associated Lab Samples: 10476817001, 10476817002, 10476817003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	ug/L	ND	0.50	06/07/19 19:20	
Arsenic	ug/L	ND	0.50	06/07/19 19:20	
Beryllium	ug/L	ND	0.20	06/07/19 19:20	
Boron	ug/L	ND	10.0	06/07/19 19:20	
Cadmium	ug/L	ND	0.080	06/07/19 19:20	
Chromium	ug/L	ND	0.50	06/07/19 19:20	
Cobalt	ug/L	ND	0.50	06/07/19 19:20	
Lead	ug/L	ND	0.10	06/07/19 19:20	
Selenium	ug/L	ND	0.50	06/07/19 19:20	
Thallium	ug/L	ND	0.10	06/07/19 19:20	
Uranium	ug/L	ND	0.50	06/07/19 19:20	
Vanadium	ug/L	ND	1.0	06/07/19 19:20	

LABORATORY CONTROL SAMPLE: 3294142

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	100	93.4	93	85-115	
Arsenic	ug/L	100	95.5	96	85-115	
Beryllium	ug/L	100	101	101	85-115	
Boron	ug/L	100	90.8	91	85-115	
Cadmium	ug/L	100	98.5	98	85-115	
Chromium	ug/L	100	98.6	99	85-115	
Cobalt	ug/L	100	97.3	97	85-115	
Lead	ug/L	100	99.8	100	85-115	
Selenium	ug/L	100	99.7	100	85-115	
Thallium	ug/L	100	96.2	96	85-115	
Uranium	ug/L	100	97.8	98	85-115	
Vanadium	ug/L	100	97.4	97	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3294143 3294144

Parameter	Units	10476784001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	ug/L	ND	100	100	96.2	96.6	96	96	70-130	0	20	
Arsenic	ug/L	ND	100	100	98.9	90.7	98	90	70-130	9	20	
Beryllium	ug/L	ND	100	100	102	93.4	102	93	70-130	9	20	
Boron	ug/L	25.7	100	100	116	105	90	80	70-130	9	20	
Cadmium	ug/L	ND	100	100	99.4	91.5	99	91	70-130	8	20	

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QUALITY CONTROL DATA

Project: 19-02057 MPCAKraemersMineSpr19
Pace Project No.: 10476817

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3294143 3294144

Parameter	Units	10476784001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium	ug/L	ND	100	100	101	92.0	100	92	70-130	9	20	
Cobalt	ug/L	ND	100	100	99.7	91.0	100	91	70-130	9	20	
Lead	ug/L	4.6	100	100	106	97.3	101	93	70-130	8	20	
Selenium	ug/L	ND	100	100	100	92.6	100	93	70-130	8	20	
Thallium	ug/L	ND	100	100	98.0	90.4	98	90	70-130	8	20	
Uranium	ug/L	ND	100	100	102	93.4	101	93	70-130	8	20	
Vanadium	ug/L	ND	100	100	100	92.2	100	92	70-130	8	20	

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QUALITY CONTROL DATA

Project: 19-02057 MPCAKraemersMineSpr19
Pace Project No.: 10476817

QC Batch: 609269 Analysis Method: EPA 8082A
QC Batch Method: EPA Mod. 3510C Analysis Description: 8082A GCS PCB
Associated Lab Samples: 10476817001, 10476817002, 10476817003

METHOD BLANK: 3292705 Matrix: Water
Associated Lab Samples: 10476817001, 10476817002, 10476817003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
PCB-1016 (Aroclor 1016)	ug/L	ND	0.10	05/31/19 21:34	
PCB-1221 (Aroclor 1221)	ug/L	ND	0.10	05/31/19 21:34	
PCB-1232 (Aroclor 1232)	ug/L	ND	0.10	05/31/19 21:34	
PCB-1242 (Aroclor 1242)	ug/L	ND	0.10	05/31/19 21:34	
PCB-1248 (Aroclor 1248)	ug/L	ND	0.10	05/31/19 21:34	
PCB-1254 (Aroclor 1254)	ug/L	ND	0.10	05/31/19 21:34	
PCB-1260 (Aroclor 1260)	ug/L	ND	0.10	05/31/19 21:34	
PCB-1262 (Aroclor 1262)	ug/L	ND	0.10	05/31/19 21:34	
PCB-1268 (Aroclor 1268)	ug/L	ND	0.10	05/31/19 21:34	
Decachlorobiphenyl (S)	%.	81	30-125	05/31/19 21:34	
Tetrachloro-m-xylene (S)	%.	66	30-125	05/31/19 21:34	

LABORATORY CONTROL SAMPLE: 3292706

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
PCB-1016 (Aroclor 1016)	ug/L	2	2.0	98	45-125	
PCB-1260 (Aroclor 1260)	ug/L	2	2.2	109	49-125	
Decachlorobiphenyl (S)	%.			96	30-125	
Tetrachloro-m-xylene (S)	%.			70	30-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3292707 3292708

Parameter	Units	10476522001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
PCB-1016 (Aroclor 1016)	ug/L	<0.099	2	2	1.3	1.2	65	61	30-150	7	30	
PCB-1260 (Aroclor 1260)	ug/L	<0.099	2	2	1.7	1.5	84	73	30-150	15	30	
Decachlorobiphenyl (S)	%.						70	55	30-125			
Tetrachloro-m-xylene (S)	%.						41	40	30-125			

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QUALITY CONTROL DATA

Project: 19-02057 MPCAKraemersMineSpr19
Pace Project No.: 10476817

QC Batch: 609142 Analysis Method: EPA 8270D
QC Batch Method: EPA 3520 Analysis Description: 8270D Water MSSV
Associated Lab Samples: 10476817001, 10476817002, 10476817003

METHOD BLANK: 3291948 Matrix: Water
Associated Lab Samples: 10476817001, 10476817002, 10476817003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
2,4,6-Trichlorophenol	ug/L	ND	10.0	06/04/19 10:55	
2,4-Dichlorophenol	ug/L	ND	10.0	06/04/19 10:55	
2,4-Dimethylphenol	ug/L	ND	10.0	06/04/19 10:55	
2,4-Dinitrophenol	ug/L	ND	10.0	06/04/19 10:55	
2-Chlorophenol	ug/L	ND	10.0	06/04/19 10:55	
2-Methylnaphthalene	ug/L	ND	10.0	06/04/19 10:55	
2-Methylphenol(o-Cresol)	ug/L	ND	10.0	06/04/19 10:55	
3&4-Methylphenol(m&p Cresol)	ug/L	ND	10.0	06/04/19 10:55	
3,3'-Dichlorobenzidine	ug/L	ND	50.0	06/04/19 10:55	
4-Bromophenylphenyl ether	ug/L	ND	10.0	06/04/19 10:55	
Acenaphthene	ug/L	ND	10.0	06/04/19 10:55	
Anthracene	ug/L	ND	10.0	06/04/19 10:55	
Benzo(a)pyrene	ug/L	ND	10.0	06/04/19 10:55	
Benzoic acid	ug/L	ND	50.0	06/04/19 10:55	
bis(2-Chloroethyl) ether	ug/L	ND	10.0	06/04/19 10:55	
bis(2-Ethylhexyl)phthalate	ug/L	ND	10.0	06/04/19 10:55	
Butylbenzylphthalate	ug/L	ND	10.0	06/04/19 10:55	
Di-n-butylphthalate	ug/L	ND	10.0	06/04/19 10:55	
Di-n-octylphthalate	ug/L	ND	10.0	06/04/19 10:55	
Diethylphthalate	ug/L	ND	10.0	06/04/19 10:55	
Dimethylphthalate	ug/L	ND	10.0	06/04/19 10:55	
Fluoranthene	ug/L	ND	10.0	06/04/19 10:55	
Fluorene	ug/L	ND	10.0	06/04/19 10:55	
Hexachlorobenzene	ug/L	ND	10.0	06/04/19 10:55	
Hexachlorocyclopentadiene	ug/L	ND	50.0	06/04/19 10:55	
Hexachloroethane	ug/L	ND	10.0	06/04/19 10:55	
Isophorone	ug/L	ND	10.0	06/04/19 10:55	
N-Nitrosodimethylamine	ug/L	ND	10.0	06/04/19 10:55	
Pentachlorophenol	ug/L	ND	20.0	06/04/19 10:55	
Phenanthrene	ug/L	ND	10.0	06/04/19 10:55	
Phenol	ug/L	ND	10.0	06/04/19 10:55	
Pyrene	ug/L	ND	10.0	06/04/19 10:55	
2,4,6-Tribromophenol (S)	%.	79	52-125	06/04/19 10:55	
2-Fluorobiphenyl (S)	%.	73	52-125	06/04/19 10:55	
2-Fluorophenol (S)	%.	73	30-125	06/04/19 10:55	
Nitrobenzene-d5 (S)	%.	79	55-125	06/04/19 10:55	
p-Terphenyl-d14 (S)	%.	76	57-125	06/04/19 10:55	
Phenol-d6 (S)	%.	74	30-125	06/04/19 10:55	

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QUALITY CONTROL DATA

Project: 19-02057 MPCAKraemersMineSpr19
Pace Project No.: 10476817

LABORATORY CONTROL SAMPLE & LCSD: 3291949 3291950

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
2,4,6-Trichlorophenol	ug/L	50	41.2	40.9	82	82	60-125	1	20	
2,4-Dichlorophenol	ug/L	50	39.6	39.3	79	79	56-125	1	20	
2,4-Dimethylphenol	ug/L	50	38.8	37.4	78	75	33-125	4	20	
2,4-Dinitrophenol	ug/L	50	29.2	26.1	58	52	32-125	11	20	
2-Chlorophenol	ug/L	50	37.4	38.6	75	77	52-125	3	20	
2-Methylnaphthalene	ug/L	50	40.6	39.6	81	79	52-125	2	20	
2-Methylphenol(o-Cresol)	ug/L	50	38.8	39.3	78	79	55-125	1	20	
3&4-Methylphenol(m&p Cresol)	ug/L	50	39.0	39.0	78	78	57-125	0	20	
3,3'-Dichlorobenzidine	ug/L	50	45.3J	39.2J	91	78	39-150		20	
4-Bromophenylphenyl ether	ug/L	50	43.1	38.0	86	76	61-125	13	20	
Acenaphthene	ug/L	50	43.2	40.1	86	80	59-125	7	20	
Anthracene	ug/L	50	45.7	40.9	91	82	64-125	11	20	
Benzo(a)pyrene	ug/L	50	45.1	39.4	90	79	63-125	13	20	
Benzoic acid	ug/L	50	25.7J	ND	51	37	30-125		20	
bis(2-Chloroethyl) ether	ug/L	50	36.5	37.9	73	76	49-125	4	20	
bis(2-Ethylhexyl)phthalate	ug/L	50	44.6	38.7	89	77	68-125	14	20	
Butylbenzylphthalate	ug/L	50	44.3	38.0	89	76	67-125	15	20	
Di-n-butylphthalate	ug/L	50	46.2	40.7	92	81	67-125	13	20	
Di-n-octylphthalate	ug/L	50	44.9	39.4	90	79	67-125	13	20	
Diethylphthalate	ug/L	50	45.1	40.6	90	81	64-125	10	20	
Dimethylphthalate	ug/L	50	44.0	38.8	88	78	65-125	13	20	
Fluoranthene	ug/L	50	45.0	41.6	90	83	64-125	8	20	
Fluorene	ug/L	50	44.8	40.7	90	81	63-125	10	20	
Hexachlorobenzene	ug/L	50	43.5	38.5	87	77	61-125	12	20	
Hexachlorocyclopentadiene	ug/L	50	ND	ND	32	35	30-125		20	1M
Hexachloroethane	ug/L	50	29.5	31.2	59	62	30-125	5	20	
Isophorone	ug/L	50	42.5	40.2	85	80	59-125	6	20	
N-Nitrosodimethylamine	ug/L	50	36.3	36.2	73	72	43-125	0	20	
Pentachlorophenol	ug/L	50	30.7	27.6	61	55	35-125	11	20	
Phenanthrene	ug/L	50	45.2	40.4	90	81	65-125	11	20	
Phenol	ug/L	50	37.9	38.0	76	76	54-125	0	20	
Pyrene	ug/L	50	44.8	38.3	90	77	65-125	16	20	
2,4,6-Tribromophenol (S)	%.				83	75	52-125			
2-Fluorobiphenyl (S)	%.				78	76	52-125			
2-Fluorophenol (S)	%.				67	69	30-125			
Nitrobenzene-d5 (S)	%.				73	74	55-125			
p-Terphenyl-d14 (S)	%.				80	69	57-125			
Phenol-d6 (S)	%.				69	69	30-125			

LABORATORY CONTROL SAMPLE: 3291969

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,4,6-Trichlorophenol	ug/L	50	40.1	80	60-125	
2,4-Dichlorophenol	ug/L	50	39.7	79	56-125	
2,4-Dimethylphenol	ug/L	50	39.0	78	33-125	

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QUALITY CONTROL DATA

Project: 19-02057 MPCAKraemersMineSpr19
Pace Project No.: 10476817

LABORATORY CONTROL SAMPLE: 3291969

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,4-Dinitrophenol	ug/L	50	16.6	33	32-125	
2-Chlorophenol	ug/L	50	37.3	75	52-125	
2-Methylnaphthalene	ug/L	50	41.5	83	52-125	
2-Methylphenol(o-Cresol)	ug/L	50	38.0	76	55-125	
3&4-Methylphenol(m&p Cresol)	ug/L	50	37.2	74	57-125	
3,3'-Dichlorobenzidine	ug/L	50	41.7J	83	39-150	
4-Bromophenylphenyl ether	ug/L	50	43.9	88	61-125	
Acenaphthene	ug/L	50	42.4	85	59-125	
Anthracene	ug/L	50	43.6	87	64-125	
Benzo(a)pyrene	ug/L	50	42.5	85	63-125	
Benzoic acid	ug/L	50	24.7J	49	30-125	
bis(2-Chloroethyl) ether	ug/L	50	37.0	74	49-125	
bis(2-Ethylhexyl)phthalate	ug/L	50	41.2	82	68-125	
Butylbenzylphthalate	ug/L	50	41.1	82	67-125	
Di-n-butylphthalate	ug/L	50	43.9	88	67-125	
Di-n-octylphthalate	ug/L	50	42.0	84	67-125	
Diethylphthalate	ug/L	50	44.0	88	64-125	
Dimethylphthalate	ug/L	50	42.5	85	65-125	
Fluoranthene	ug/L	50	43.0	86	64-125	
Fluorene	ug/L	50	43.0	86	63-125	
Hexachlorobenzene	ug/L	50	42.4	85	61-125	
Hexachlorocyclopentadiene	ug/L	50	ND	21	30-125	1M,L2
Hexachloroethane	ug/L	50	29.2	58	30-125	
Isophorone	ug/L	50	42.6	85	59-125	
N-Nitrosodimethylamine	ug/L	50	35.0	70	43-125	
Pentachlorophenol	ug/L	50	29.5	59	35-125	
Phenanthrene	ug/L	50	42.3	85	65-125	
Phenol	ug/L	50	37.9	76	54-125	
Pyrene	ug/L	50	41.0	82	65-125	
2,4,6-Tribromophenol (S)	%.			80	52-125	
2-Fluorobiphenyl (S)	%.			76	52-125	
2-Fluorophenol (S)	%.			67	30-125	
Nitrobenzene-d5 (S)	%.			74	55-125	
p-Terphenyl-d14 (S)	%.			74	57-125	
Phenol-d6 (S)	%.			69	30-125	

LABORATORY CONTROL SAMPLE: 3291970

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,4,6-Trichlorophenol	ug/L	50	42.5	85	60-125	
2,4-Dichlorophenol	ug/L	50	40.2	80	56-125	
2,4-Dimethylphenol	ug/L	50	34.0	68	33-125	
2,4-Dinitrophenol	ug/L	50	17.1	34	32-125	
2-Chlorophenol	ug/L	50	37.9	76	52-125	
2-Methylnaphthalene	ug/L	50	40.7	81	52-125	

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QUALITY CONTROL DATA

Project: 19-02057 MPCAKraemersMineSpr19
Pace Project No.: 10476817

LABORATORY CONTROL SAMPLE: 3291970

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2-Methylphenol(o-Cresol)	ug/L	50	39.0	78	55-125	
3&4-Methylphenol(m&p Cresol)	ug/L	50	40.1	80	57-125	
3,3'-Dichlorobenzidine	ug/L	50	38.5J	77	39-150	
4-Bromophenylphenyl ether	ug/L	50	38.9	78	61-125	
Acenaphthene	ug/L	50	40.4	81	59-125	
Anthracene	ug/L	50	42.3	85	64-125	
Benzo(a)pyrene	ug/L	50	40.5	81	63-125	
Benzoic acid	ug/L	50	34.9J	70	30-125	
bis(2-Chloroethyl) ether	ug/L	50	39.1	78	49-125	
bis(2-Ethylhexyl)phthalate	ug/L	50	40.6	81	68-125	
Butylbenzylphthalate	ug/L	50	39.7	79	67-125	
Di-n-butylphthalate	ug/L	50	43.5	87	67-125	
Di-n-octylphthalate	ug/L	50	41.1	82	67-125	
Diethylphthalate	ug/L	50	41.4	83	64-125	
Dimethylphthalate	ug/L	50	40.6	81	65-125	
Fluoranthene	ug/L	50	43.4	87	64-125	
Fluorene	ug/L	50	41.1	82	63-125	
Hexachlorobenzene	ug/L	50	38.9	78	61-125	
Hexachlorocyclopentadiene	ug/L	50	ND	18	30-125	1M,L2
Hexachloroethane	ug/L	50	30.7	61	30-125	
Isophorone	ug/L	50	40.9	82	59-125	
N-Nitrosodimethylamine	ug/L	50	37.4	75	43-125	
Pentachlorophenol	ug/L	50	29.7	59	35-125	
Phenanthrene	ug/L	50	42.1	84	65-125	
Phenol	ug/L	50	38.0	76	54-125	
Pyrene	ug/L	50	42.2	84	65-125	
2,4,6-Tribromophenol (S)	%.			78	52-125	
2-Fluorobiphenyl (S)	%.			73	52-125	
2-Fluorophenol (S)	%.			68	30-125	
Nitrobenzene-d5 (S)	%.			75	55-125	
p-Terphenyl-d14 (S)	%.			76	57-125	
Phenol-d6 (S)	%.			70	30-125	

LABORATORY CONTROL SAMPLE: 3291971

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,4,6-Trichlorophenol	ug/L	50	37.5	75	60-125	
2,4-Dichlorophenol	ug/L	50	39.1	78	56-125	
2,4-Dimethylphenol	ug/L	50	30.6	61	33-125	
2,4-Dinitrophenol	ug/L	50	16.6	33	32-125	
2-Chlorophenol	ug/L	50	37.3	75	52-125	
2-Methylnaphthalene	ug/L	50	39.4	79	52-125	
2-Methylphenol(o-Cresol)	ug/L	50	38.1	76	55-125	
3&4-Methylphenol(m&p Cresol)	ug/L	50	38.7	77	57-125	
3,3'-Dichlorobenzidine	ug/L	50	37J	74	39-150	

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REPORT OF LABORATORY ANALYSIS

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Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 19-02057 MPCAKraemersMineSpr19
Pace Project No.: 10476817

LABORATORY CONTROL SAMPLE: 3291971

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
4-Bromophenylphenyl ether	ug/L	50	38.5	77	61-125	
Acenaphthene	ug/L	50	39.5	79	59-125	
Anthracene	ug/L	50	40.2	80	64-125	
Benzo(a)pyrene	ug/L	50	39.4	79	63-125	
Benzoic acid	ug/L	50	35J	70	30-125	
bis(2-Chloroethyl) ether	ug/L	50	37.3	75	49-125	
bis(2-Ethylhexyl)phthalate	ug/L	50	38.7	77	68-125	
Butylbenzylphthalate	ug/L	50	37.7	75	67-125	
Di-n-butylphthalate	ug/L	50	38.9	78	67-125	
Di-n-octylphthalate	ug/L	50	39.2	78	67-125	
Diethylphthalate	ug/L	50	40.4	81	64-125	
Dimethylphthalate	ug/L	50	38.1	76	65-125	
Fluoranthene	ug/L	50	38.9	78	64-125	
Fluorene	ug/L	50	40.3	81	63-125	
Hexachlorobenzene	ug/L	50	38.4	77	61-125	
Hexachlorocyclopentadiene	ug/L	50	ND	17	30-125	1M,L2
Hexachloroethane	ug/L	50	28.1	56	30-125	
Isophorone	ug/L	50	42.4	85	59-125	
N-Nitrosodimethylamine	ug/L	50	34.8	70	43-125	
Pentachlorophenol	ug/L	50	28.0	56	35-125	
Phenanthrene	ug/L	50	40.7	81	65-125	
Phenol	ug/L	50	37.2	74	54-125	
Pyrene	ug/L	50	37.0	74	65-125	
2,4,6-Tribromophenol (S)	%.			74	52-125	
2-Fluorobiphenyl (S)	%.			70	52-125	
2-Fluorophenol (S)	%.			68	30-125	
Nitrobenzene-d5 (S)	%.			77	55-125	
p-Terphenyl-d14 (S)	%.			70	57-125	
Phenol-d6 (S)	%.			69	30-125	

LABORATORY CONTROL SAMPLE: 3291972

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,4,6-Trichlorophenol	ug/L	50	38.5	77	60-125	
2,4-Dichlorophenol	ug/L	50	39.9	80	56-125	
2,4-Dimethylphenol	ug/L	50	31.8	64	33-125	
2,4-Dinitrophenol	ug/L	50	17.5	35	32-125	
2-Chlorophenol	ug/L	50	38.2	76	52-125	
2-Methylnaphthalene	ug/L	50	38.4	77	52-125	
2-Methylphenol(o-Cresol)	ug/L	50	38.8	78	55-125	
3&4-Methylphenol(m&p Cresol)	ug/L	50	40.3	81	57-125	
3,3'-Dichlorobenzidine	ug/L	50	39.4J	79	39-150	
4-Bromophenylphenyl ether	ug/L	50	41.1	82	61-125	
Acenaphthene	ug/L	50	41.2	82	59-125	
Anthracene	ug/L	50	43.4	87	64-125	

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(612)607-1700

QUALITY CONTROL DATA

Project: 19-02057 MPCAKraemersMineSpr19
Pace Project No.: 10476817

LABORATORY CONTROL SAMPLE: 3291972

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzo(a)pyrene	ug/L	50	42.5	85	63-125	
Benzoic acid	ug/L	50	35.8J	72	30-125	
bis(2-Chloroethyl) ether	ug/L	50	38.1	76	49-125	
bis(2-Ethylhexyl)phthalate	ug/L	50	41.3	83	68-125	
Butylbenzylphthalate	ug/L	50	40.7	81	67-125	
Di-n-butylphthalate	ug/L	50	43.4	87	67-125	
Di-n-octylphthalate	ug/L	50	41.7	83	67-125	
Diethylphthalate	ug/L	50	43.7	87	64-125	
Dimethylphthalate	ug/L	50	41.2	82	65-125	
Fluoranthene	ug/L	50	41.2	82	64-125	
Fluorene	ug/L	50	42.8	86	63-125	
Hexachlorobenzene	ug/L	50	40.2	80	61-125	
Hexachlorocyclopentadiene	ug/L	50	ND	18	30-125	1M,L2
Hexachloroethane	ug/L	50	29.0	58	30-125	
Isophorone	ug/L	50	41.5	83	59-125	
N-Nitrosodimethylamine	ug/L	50	35.5	71	43-125	
Pentachlorophenol	ug/L	50	30.8	62	35-125	
Phenanthrene	ug/L	50	42.6	85	65-125	
Phenol	ug/L	50	37.7	75	54-125	
Pyrene	ug/L	50	40.3	81	65-125	
2,4,6-Tribromophenol (S)	%.			82	52-125	
2-Fluorobiphenyl (S)	%.			73	52-125	
2-Fluorophenol (S)	%.			68	30-125	
Nitrobenzene-d5 (S)	%.			73	55-125	
p-Terphenyl-d14 (S)	%.			74	57-125	
Phenol-d6 (S)	%.			70	30-125	

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QUALITY CONTROL DATA

Project: 19-02057 MPCAKraemersMineSpr19
Pace Project No.: 10476817

QC Batch: 612880 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 10476817001, 10476817002, 10476817003

METHOD BLANK: 3311544 Matrix: Water
Associated Lab Samples: 10476817001, 10476817002, 10476817003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.2	06/15/19 01:28	

LABORATORY CONTROL SAMPLE: 3311545

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	12.5	12.2	97	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3311546 3311547

Parameter	Units	10477492002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	26.8	12.5	12.5	32.5	35.5	46	70	90-110	9	20	M1

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3311548 3311549

Parameter	Units	10477492003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	38.3	12.5	12.5	45.1	44.0	54	45	90-110	2	20	M1

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QUALITY CONTROL DATA

Project: 19-02057 MPCAKraemersMineSpr19
Pace Project No.: 10476817

QC Batch: 608961 Analysis Method: SM 3500-Cr B Modified
QC Batch Method: SM 3500-Cr B Modified Analysis Description: Chromium, Hexavalent by 3500
Associated Lab Samples: 10476817001, 10476817002, 10476817003

METHOD BLANK: 3291289 Matrix: Water
Associated Lab Samples: 10476817001, 10476817002, 10476817003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium, Hexavalent	mg/L	ND	0.010	05/29/19 09:19	

LABORATORY CONTROL SAMPLE: 3291290

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/L	0.2	0.19	97	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3291291 3291292

Parameter	Units	10476631001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Hexavalent	mg/L	0.16	0.2	0.2	0.35	0.35	96	97	85-115	0	20	

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QUALITY CONTROL DATA

Project: 19-02057 MPCAKraemersMineSpr19
Pace Project No.: 10476817

QC Batch: 167365 Analysis Method: EPA 350.1 rev. 2 (1993)
QC Batch Method: EPA 350.1 rev. 2 (1993) Analysis Description: 350.1 Ammonia Distilled
Associated Lab Samples: 10476817001, 10476817002, 10476817003

METHOD BLANK: 659289 Matrix: Water
Associated Lab Samples: 10476817001, 10476817002, 10476817003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, Ammonia	mg/L	ND	0.11	06/04/19 11:12	

LABORATORY CONTROL SAMPLE: 659290

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Ammonia	mg/L	5	5.0	99	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 659291 659292

Parameter	Units	10476684001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, Ammonia	mg/L	1.5	5	5	6.3	6.4	96	98	90-110	1	10	

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QUALITY CONTROL DATA

Project: 19-02057 MPCAKraemersMineSpr19
Pace Project No.: 10476817

QC Batch: 611928 Analysis Method: SM 4500-CN-E
QC Batch Method: SM 4500-CN-E Analysis Description: SM4500CN-E Cyanide
Associated Lab Samples: 10476817001, 10476817002, 10476817003

METHOD BLANK: 3306748 Matrix: Water
Associated Lab Samples: 10476817001, 10476817002, 10476817003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cyanide	ug/L	ND	20.0	06/11/19 11:46	

LABORATORY CONTROL SAMPLE: 3306749

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cyanide	ug/L	250	229	92	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3306750 3306751

Parameter	Units	10477785002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cyanide	ug/L	ND	250	250	25.7	ND	7	0	80-120		30	H3,M1

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3306752 3306753

Parameter	Units	10477078007 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cyanide	ug/L	<20.0	250	250	226	251	89	99	80-120	10	30	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 19-02057 MPCAKraemersMineSpr19
Pace Project No.: 10476817

Sample: Seep 01 **Lab ID: 10476817001** Collected: 05/29/19 09:40 Received: 05/29/19 14:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 900.0	**1.79 ± 1.27 (2.06) C:NA T:NA**	pCi/L	06/06/19 19:15	12587-46-1	
Gross Beta	EPA 900.0	**10.4 ± 2.56 (2.55) C:NA T:NA**	pCi/L	06/06/19 19:15	12587-47-2	

Sample: Discharge 01 **Lab ID: 10476817002** Collected: 05/29/19 10:30 Received: 05/29/19 14:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 900.0	**4.98 ± 1.75 (1.81) C:NA T:NA**	pCi/L	06/06/19 19:15	12587-46-1	
Gross Beta	EPA 900.0	**4.08 ± 1.78 (2.81) C:NA T:NA**	pCi/L	06/06/19 19:15	12587-47-2	

Sample: Duplicate **Lab ID: 10476817003** Collected: 05/29/19 10:40 Received: 05/29/19 14:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 900.0	**2.95 ± 3.87 (7.98) C:NA T:NA**	pCi/L	06/07/19 08:03	12587-46-1	
Gross Beta	EPA 900.0	**8.28 ± 4.88 (8.83) C:NA T:NA**	pCi/L	06/07/19 08:03	12587-47-2	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 19-02057 MPCAKraemersMineSpr19
Pace Project No.: 10476817

QC Batch: 345806 Analysis Method: EPA 900.0
QC Batch Method: EPA 900.0 Analysis Description: 900.0 Gross Alpha/Beta
Associated Lab Samples: 10476817001, 10476817002, 10476817003

METHOD BLANK: 1682213 Matrix: Water
Associated Lab Samples: 10476817001, 10476817002, 10476817003

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Gross Alpha	0.152 ± 0.337 (0.767) C:NA T:NA	pCi/L	06/07/19 08:22	
Gross Beta	-0.185 ± 0.424 (1.04) C:NA T:NA	pCi/L	06/07/19 08:22	

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QUALIFIERS

Project: 19-02057 MPCAKraemersMineSpr19
Pace Project No.: 10476817

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-M	Pace Analytical Services - Minneapolis
PASI-PA	Pace Analytical Services - Greensburg
PASI-V	Pace Analytical Services - Virginia

WORKORDER QUALIFIERS

WO: 10476817

[1]	Samples were received outside of the recommended temperature range of 0-6 degrees Celsius. The samples were received from the field on ice.

ANALYTE QUALIFIERS

1M	The associated compound was outside of 20% for the associated continuing calibration but within 40% of the true value.
H3	Sample was received or analysis requested beyond the recognized method holding time.
L2	Analyte recovery in the laboratory control sample (LCS) was below QC limits. Results for this analyte in associated samples may be biased low.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 19-02057 MPCAKraemersMineSpr19
Pace Project No.: 10476817

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10476817001	**Seep 01**	EPA Mod. 3510C	609269	EPA 8082A	609593
10476817002	**Discharge 01**	EPA Mod. 3510C	609269	EPA 8082A	609593
10476817003	**Duplicate**	EPA Mod. 3510C	609269	EPA 8082A	609593
10476817001	**Seep 01**	EPA 200.7	609530	EPA 200.7	610219
10476817002	**Discharge 01**	EPA 200.7	609530	EPA 200.7	610219
10476817003	**Duplicate**	EPA 200.7	609530	EPA 200.7	610219
10476817001	**Seep 01**	EPA 200.8	609528	EPA 200.8	610443
10476817002	**Discharge 01**	EPA 200.8	609528	EPA 200.8	610443
10476817003	**Duplicate**	EPA 200.8	609528	EPA 200.8	610443
10476817001	**Seep 01**	EPA 3520	609142	EPA 8270D	610147
10476817002	**Discharge 01**	EPA 3520	609142	EPA 8270D	610147
10476817003	**Duplicate**	EPA 3520	609142	EPA 8270D	610147
10476817001	**Seep 01**				
10476817002	**Discharge 01**				
10476817001	**Seep 01**	EPA 900.0	345806		
10476817002	**Discharge 01**	EPA 900.0	345806		
10476817003	**Duplicate**	EPA 900.0	345806		
10476817001	**Seep 01**	EPA 300.0	612880		
10476817002	**Discharge 01**	EPA 300.0	612880		
10476817003	**Duplicate**	EPA 300.0	612880		
10476817001	**Seep 01**	SM 3500-Cr B Modified	608961		
10476817002	**Discharge 01**	SM 3500-Cr B Modified	608961		
10476817003	**Duplicate**	SM 3500-Cr B Modified	608961		
10476817001	**Seep 01**	EPA 350.1			
10476817002	**Discharge 01**	EPA 350.1			
10476817001	**Seep 01**	EPA 350.1 rev. 2 (1993)	167365	EPA 350.1 rev. 2 (1993)	167379
10476817002	**Discharge 01**	EPA 350.1 rev. 2 (1993)	167365	EPA 350.1 rev. 2 (1993)	167379
10476817003	**Duplicate**	EPA 350.1 rev. 2 (1993)	167365	EPA 350.1 rev. 2 (1993)	167379
10476817001	**Seep 01**	SM 4500-CN-E	611928	SM 4500-CN-E	612013
10476817002	**Discharge 01**	SM 4500-CN-E	611928	SM 4500-CN-E	612013
10476817003	**Duplicate**	SM 4500-CN-E	611928	SM 4500-CN-E	612013

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Minnesota Pollution Control Agency

Chain-of-Custody Form revision 2013.0909

Work Order Number: | COC Type: | Page: 1 of 1

Turnaround Time: | COC ID:

FOR LAB USE ONLY

PROJECT/CLIENT INFO

Facility Code: MNSW-057 | Program Code (MDH Lab Only):

Project Name: ~~19-01567 MPCA Freeway Landfill 2019 Waters~~ 19-02057 MPCA Kraemer-5 Mine Spring 2019 (DTA 5/29/19) | Project Task Code: PRJ07786

Project Manager: Brad Jacobson | 612-607-6375 | EPIC PROFILE #: 38716 Line 2

Potential Hazard? | If yes, add information to Sampler Comments Section

LABORATORY

Lab Name: Pace Analytical - Minneapolis, MN

Address: 1700 SE Elm Street

Minneapolis | MN | 55414

Phone No: 612-607-6400

Lab Work Order Sticker

SAMPLE DETAILS

SAMPLE TYPE CODES
Sample=Routine Sample
S-IVP=Integrated Vertical Profile Sample
S-CWOP=Composite Sample
QC-FB=Field Blank Sample
QC-FR=Field Replicate Sample
QC-TB=Trip Blank Sample

LAB MATRIX CODES
DW=Drinking Water
NW=Non-potable Water
SD=Soil/Solid
WP=Wipe
AR=Air
BL=Biological Material
OT=Other
TS=Tissue

FIELD MATRIX CODES
Wtr-Ground=Groundwater
Wtr-Surf=Surface Water
QC-BLANK=Artificial Blank Water
Leachate=Leachate Sample

ANALYSIS REQUESTED

Location Identifier	Sample Type	Date	Time	Start Depth, in meters	End Depth, in meters	Grab (G) or Composite (C) Sample	Lab Matrix Code	Field Matrix Code	AIS	Sampler Comments (filter volume, special handling, etc.)	# of Cont	ANALYSIS / PRESERV.	Field Parameters: SWL, Temp, pH, DO, Cond, Eh, Turbidity / None	Metals 200.7 / 200.8 / Gross Alpha/Beta - QAPP Table 3a / HNO3	300.0 / HexCr - QAPP Table 3a / None	Ammonia/ Unionized NH3 - QAPP Table 3a / H2SO4	Total Cyanide / Free Cyanide - QAPP Table 3a / NaOH	8270 SVOC, 8082, MDA1, MDA2 - QAPP Table 3a / None	Lab Sample No.	#
Seep 01	Sample	5/29/19	0940			G	NW	Wtr-Surf	N		14		X	X	X	X	X	X	001	1
Discharge 01	Sample	5/29/19	1030			G	NW	Wtr-Surf	N		14		X	X	X	X	X	X	002	2
Duplicate	FR	5/29/19	1040			G	NW	Wtr-Surf	N		14		X	X	X	X	X	X	003	3
									N											4
									N											
									N											
									N											
									N											
									N											
									N											10

DTA 5/29/19

WO#: 10476817

10476817

Sampled By: David Anderson | Sampler's Signature: David Anderson | Phone #:

Receiving Comments:

Relinquished By/Affiliation	Date/Time	Accepted By/ Affiliation	Date/Time
(Sampler) David Anderson / Pace Analytical	5/29/19 1400	Cam m Pace	5/24/19 1400

T=1.0, 13.2, 10.8

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 09May2019 Page 1 of 1
	Document No.: F-MN-L-213-rev.28	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: MPCA-Kraemers Mine

Project #: WO#: 10476817

PM: JMA **Due Date: 06/12/19**

CLIENT: PASI-MNFLD

Courier: ☐Fed Ex ☐UPS ☐USPS ☐Client ☒Pace ☐SpeeDee ☐Commercial See Exception ☐

Tracking Number:

Custody Seal on Cooler/Box Present? ☐Yes ☒No **Seals Intact?** ☐Yes ☒No **Biological Tissue Frozen?** ☐Yes ☐No ☒N/A

Packing Material: ☒Bubble Wrap ☒Bubble Bags ☐None ☒Other: PB **Temp Blank?** ☒Yes ☐No

Thermometer: ☐T1(0461) ☐T2(1336) ☒T3(0459) ☐T4(0254) ☐T5(0489) **Type of Ice:** ☒Wet ☐Blue ☐None ☐Dry ☐Melted

Note: Each West Virginia Sample must have temp taken (no temp blanks)

Temp should be above freezing to 6°C **Cooler Temp Read w/temp blank:** 0.9, 13.1, 10.7 °C

Correction Factor: +0.1 **Cooler Temp Corrected w/temp blank:** 1.0, 13.2, 10.8 °C

Average Corrected Temp (no temp blank only): °C See Exceptions ☒

USDA Regulated Soil: (☒ N/A, water sample/Other:)

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐Yes ☐No

Date/Initials of Person Examining Contents: CG 5/29/19

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐Yes ☐No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present and Filled Out?	☒Yes	☐No		1.
Chain of Custody Relinquished?	☒Yes	☐No		2.
Sampler Name and/or Signature on COC?	☒Yes	☐No	☐N/A	3.
Samples Arrived within Hold Time?	☒Yes	☐No		4.
Short Hold Time Analysis (<72 hr)?	☒Yes	☐No		5. ☐Fecal Coliform ☐HPC ☐Total Coliform/E coli ☐BOD/cBOD ☒Hex Chrome ☐Turbidity ☐Nitrate ☐Nitrite ☐Orthophos ☐Other
Rush Turn Around Time Requested?	☐Yes	☒No		6.
Sufficient Volume?	☒Yes	☐No		7.
Correct Containers Used?	☒Yes	☐No		8.
-Pace Containers Used?	☒Yes	☐No		
Containers Intact?	☒Yes	☐No		9.
Field Filtered Volume Received for Dissolved Tests?	☐Yes	☐No	☒N/A	10. Is sediment visible in the dissolved container? ☐Yes ☐No
Is sufficient information available to reconcile the samples to the COC?	☒Yes	☐No		11. If no, write ID/ Date/Time on Container Below: See Exception ☐
Matrix: ☒Water ☐Soil ☐Oil ☐Other				
All containers needing acid/base preservation have been checked?	☒Yes	☐No	☐N/A	12. Sample #
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>12 Cyanide)	☒Yes	☐No	☐N/A	1-3 2/2 ☒NaOH 1-3 2/2 ☒HNO_3 1-3 1/1 ☒H_2SO_4 ☐Zinc Acetate
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin/PFAS	☐Yes	☐No	☒N/A	Positive for Res. Chlorine? ☐Yes ☒No pH Paper Lot# See Exception ☐
				Res. Chlorine 9016 | 0-6 Roll | 0-6 Strip 213316AV | 0-14 Strip 10D46-71
Headspace in VOA Vials (greater than 6mm)?	☐Yes	☐No	☒N/A	13. See Exception ☐
Trip Blank Present?	☐Yes	☐No	☒N/A	14.
Trip Blank Custody Seals Present?	☐Yes	☐No	☒N/A	Pace Trip Blank Lot # (if purchased): N/A

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐Yes ☐No

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: Date: 05/30/2019

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers).

Labeled by:

During sample triage, this form is to be placed in each cooler that arrives above 6.0 degrees Celsius

SCUR Exceptions: **Workorder #:**

Out of Temp Sample IDs	Container Type	# of Containers

PM Notified? ☐Yes ☒No

If yes, indicate who was contacted/date/time.
If no, indicate reason why.

Same day, on ice

Multiple Cooler Project? ☐Yes ☒No
If you answered yes, fill out information to the left.

No Temp Blank

Read Temp	Corrected Temp	Average Temp

Tracking Number/Temperature	

Other Issues

Issue Type: Sample ID	Container Type	# of Containers

pH Adjustment Log for Preserved Samples

Sample ID	Type of Preserv.	pH Upon Receipt	Date Adjusted	Time Adjusted	Amount Added (mL)	Lot # Added	pH After	In Compliance after addition?	Initials
								☐Yes ☐No	
								☐Yes ☐No	
								☐Yes ☐No	
								☐Yes ☐No	

WO# : 12125685

12125685

Chain of Custody

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN

Cert. Needed: ☐ Yes ☐ No

Workorder: 10476817 **Workorder Name:** 19-02057 MPCAKraemersMineSpr19 **Owner Received Date:** 5/29/2019 **Results Requested By:** 6/19/2019

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6436	Pace Analytical Virginia MN 315 Chestnut Street Virginia, MN 55792 Phone (218)742-1042

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: H2SO4 BP3S						Requested Analysis: 350.1 Ammonia	Unionized Ammonia										LAB USE ONLY
1	Seep 01	PS	5/29/2019 09:40	10476817001	Water	1						X	X										
2	Discharge 01	PS	5/29/2019 10:30	10476817002	Water	1						X	X										
3	Duplicate	PS	5/29/2019 10:40	10476817003	Water	1						X	X										
4																							
5																							

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature] Pace	5/30/19 1740	[signature]	5/30/19 1845
2	[signature]	5/29/19 2300	R. Mathews	5/31/19 0700
3				

Comments

Cooler Temperature on Receipt 1.4 °C | **Custody Seal** (Y) or N | **Received on Ice** (Y) or N | **Samples Intact** (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.*

Sample Condition Upon Receipt

Client Name: Pace MN

Project #:

WO#: 12125685

PM: CLJ Due Date: 06/19/19

CLIENT: PACE MPLS

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☒ Pace ☐ Other:

Tracking Number:

Custody Seal on Cooler/Box Present? ☒ Yes ☐ No Seals Intact? ☒ Yes ☐ No Optional: Proj. Due Date: Proj. Name:

Packing Material: ☒ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other: Temp Blank? ☒ Yes ☐ No

Thermometer Used: ☒ 140792808 Type of Ice: ☐ Wet ☐ Blue ☐ None ☒ Samples on ice, cooling process has begun

Cooler Temp Read °C: 1.1 Cooler Temp Corrected °C: 1.4 Biological Tissue Frozen? ☐ Yes ☐ No ☒ NA

Temp should be above freezing to 6 °C Correction Factor: 0.3 Date and Initials of Person Examining Contents: 5/30/19 DC

Comments: BM 5/31/19

Chain of Custody Present?	☒ Yes	☐ No	☐ N/A	1.	
Chain of Custody Filled Out?	☒ Yes	☐ No	☐ N/A	2.	
Chain of Custody Relinquished?	☒ Yes	☐ No	☐ N/A	3.	
Sampler Name and Signature on COC?	☐ Yes	☒ No	☐ N/A	4.	
Samples Arrived within Hold Time?	☒ Yes	☐ No	☐ N/A	5.	If Fecal: ☐ <8 hours ☐ >8, <24 hours ☐ >24 hours
Short Hold Time Analysis (<72 hr)?	☐ Yes	☒ No	☐ N/A	6.	
Rush Turn Around Time Requested?	☐ Yes	☒ No	☐ N/A	7.	
Sufficient Volume?	☒ Yes	☐ No	☐ N/A	8.	
Correct Containers Used?	☒ Yes	☐ No	☐ N/A	9.	
-Pace Containers Used?	☒ Yes	☐ No	☐ N/A		
Containers Intact?	☒ Yes	☐ No	☐ N/A	10.	
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☒ N/A	11.	Note if sediment is visible in the dissolved containers.
Sample Labels Match COC?	☒ Yes	☐ No	☐ N/A	12.	
-Includes Date/Time/ID/Analysis Matrix: WT					
All containers needing acid/base preservation properly preserved?	☒ Yes	☐ No	☐ N/A	13.	Note samples needing adjustment:
Headspace in Methyl Mercury Container	☐ Yes	☐ No	☒ N/A	14.	
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☒ N/A	15.	
Trip Blank Present?	☐ Yes	☐ No	☒ N/A	16.	
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☒ N/A		
Pace Trip Blank Lot # (if purchased):					

CLIENT NOTIFICATION/RESOLUTION Field Data Required? ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

FECAL WAIVER ON FILE Y N TEMPERATURE WAIVER ON FILE Y N

Project Manager Review: Nikki Jarve Date: 5/31/19

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DLHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Chain of Custody

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN
Cert. Needed: ☐ Yes ☐ No

Pace Analytical®
www.pacelabs.com

Workorder: 10476817 **Workorder Name:** 19-02057 MPCAKraemersMineSpr19 **Owner Received Date:** 5/29/2019 **Results Requested By:** 6/19/2019

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6436	Pace Analytical Pittsburgh 1638 Roseytown Road Suites 2,3 & 4 Greensburg, PA 15601 Phone (724)850-5600

WO# : 30297294

30297294

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: HNO3 BP1N	Gross Alpha/Beta	LAB USE ONLY
1	Seep 01	PS	5/29/2019 09:40	10476817001	Water	1	X	001
2	Discharge 01	PS	5/29/2019 10:30	10476817002	Water	1	X	002
3	Duplicate	PS	5/29/2019 10:40	10476817003	Water	1	X	003
4								
5								

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature] PACE	05/30/19 1520	Emily [signature]	5-31-19 0940
2				
3				

Comments

Cooler Temperature on Receipt N/A °C | Custody Seal (Y) or N | Received on Ice Y or (N) | Samples Intact (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.*

Pittsburgh Lab Sample Condition Upon Receipt

Pace Analytical

Client Name: Pace MN

Project # 30297294

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Label ET
LIMS Login ET

Tracking #: 4638 0196 9961

Custody Seal on Cooler/Box Present: ☑ yes ☐ no Seals intact: ☑ yes ☐ no

Thermometer Used N/A Type of Ice: Wet Blue (None)

Cooler Temperature Observed Temp — °C Correction Factor: — °C Final Temp: — °C

Temp should be above freezing to 6°C

Comments:	Yes	No	N/A	pH paper Lot# 1004281 / Date and initials of person examining contents: ET 5-31-19
Chain of Custody Present:	✓			1.
Chain of Custody Filled Out:	✓			2.
Chain of Custody Relinquished:	✓			3.
Sampler Name & Signature on COC:		✓		4.
Sample Labels match COC: -Includes date/time/ID Matrix: WT	✓			5.
Samples Arrived within Hold Time:	✓			6.
Short Hold Time Analysis (<72hr remaining):		✓		7.
Rush Turn Around Time Requested:		✓		8.
Sufficient Volume:	✓			9.
Correct Containers Used: -Pace Containers Used:	✓			10.
Containers Intact:	✓			11.
Orthophosphate field filtered			✓	12.
Hex Cr Aqueous sample field filtered			✓	13.
Organic Samples checked for dechlorination:			✓	14.
Filtered volume received for Dissolved tests			✓	15.
All containers have been checked for preservation. exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix	✓			16. pH<2
All containers meet method preservation requirements.	✓			Initial when completed ET / Date/time of preservation / Lot # of added preservative
Headspace in VOA Vials (>6mm):			✓	17.
Trip Blank Present:		✓		18.
Trip Blank Custody Seals Present			✓	
Rad Samples Screened < 0.5 mrem/hr	✓			Initial when completed: ET / Date: 5-31-19

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

☐ **A check in this box indicates that additional information has been stored in ereports.**

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

***PM review** is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

14-Jun-2019

Jennifer Anderson
Pace Analytical Services, LLC
1700 Elm Street
Suite 200
Minneapolis, MN 55414

Re: **10476817** Work Order: **19052116**

Dear Jennifer,

ALS Environmental received 3 samples on 31-May-2019 10:30 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental - Holland and for only the analyses requested.

Sample results are compliant with industry accepted practices and Quality Control results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 10.

If you have any questions regarding this report, please feel free to contact me:

ADDRESS: 3352 128th Avenue, Holland, MI, USA
PHONE: +1 (616) 399-6070 FAX: +1 (616) 399-6185

Sincerely,

Electronically approved by: Chad Whelton

Chad Whelton
Project Manager

ALS Group, USA

Date: 14-Jun-19

Client: Pace Analytical Services, LLC
Project: 10476817
Work Order: **19052116**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
19052116-01	Seep 1	Water		5/29/2019 09:40	5/31/2019 10:30	☐
19052116-02	Discharge 01	Water		5/29/2019 10:30	5/31/2019 10:30	☐
19052116-03	Duplicate	Water		5/29/2019 10:40	5/31/2019 10:30	☐

Client: Pace Analytical Services, LLC
Project: 10476817
Work Order: 19052116

Case Narrative

Batch R262499, Method CNF_9014_W, Sample 19052116-01A MSD: The RPD between the MS and MSD was outside the control limit for Free Cyanide. The corresponding result in the parent sample should be considered estimated.

Client: Pace Analytical Services, LLC
Project: 10476817
WorkOrder: **19052116**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
**	Estimated Value
a	Analyte is non-accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
Hr	BOD/CBOD - Sample was reset outside Hold Time, value should be considered estimated.
J	Analyte is present at an estimated concentration between the MDL and Report Limit
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and Reporting Limit, sample results may exhibit background or reagent contamination at the observed level.

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

Units Reported	Description
µg/L	Micrograms per Liter

ALS Group, USA

Date: *14-Jun-19*

Client:	Pace Analytical Services, LLC		
Project:	10476817	**Work Order:**	19052116
Sample ID:	Seep 1	**Lab ID:**	19052116-01
Collection Date:	5/29/2019 09:40 AM	**Matrix:**	WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
CYANIDE, FREE			**SW9014**			Analyst: **RZM**
Cyanide, Free	ND		20	µg/L	1	6/12/2019 02:05 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Pace Analytical Services, LLC
Project: 10476817 **Work Order:** 19052116
Sample ID: Discharge 01 **Lab ID:** 19052116-02
Collection Date: 5/29/2019 10:30 AM **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
CYANIDE, FREE			**SW9014**			Analyst: **RZM**
Cyanide, Free	ND		20	µg/L	1	6/12/2019 02:05 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *14-Jun-19*

Client:	Pace Analytical Services, LLC		
Project:	10476817	**Work Order:**	19052116
Sample ID:	Duplicate	**Lab ID:**	19052116-03
Collection Date:	5/29/2019 10:40 AM	**Matrix:**	WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
CYANIDE, FREE			**SW9014**			Analyst: **RZM**
Cyanide, Free	ND		20	µg/L	1	6/12/2019 02:05 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Pace Analytical Services, LLC

QC BATCH REPORT

Work Order: 19052116

Project: 10476817

Batch ID: **R262499** Instrument ID **WETCHEM** Method: **SW9014**

MBLK Sample ID: **MB-R262499-R262499** Units: **µg/L** Analysis Date: **6/12/2019 02:05 PM**

Client ID: Run ID: **WETCHEM_190612U** SeqNo: **5711012** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Free	ND	20								

LCS Sample ID: **LCS-R262499-R262499** Units: **µg/L** Analysis Date: **6/12/2019 02:05 PM**

Client ID: Run ID: **WETCHEM_190612U** SeqNo: **5711013** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Free	271.2	20	250	0	108	81-119	0			

MS Sample ID: **19052116-01A MS** Units: **µg/L** Analysis Date: **6/12/2019 02:05 PM**

Client ID: **Seep 1** Run ID: **WETCHEM_190612U** SeqNo: **5711015** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Free	112.1	20	250	-11.2	49.3	81-119	0			S

MSD Sample ID: **19052116-01A MSD** Units: **µg/L** Analysis Date: **6/12/2019 02:05 PM**

Client ID: **Seep 1** Run ID: **WETCHEM_190612U** SeqNo: **5711016** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Free	77.26	20	250	-11.2	35.4	81-119	112.1	36.8	20	SR

The following samples were analyzed in this batch:

19052116-01A	19052116-02A	19052116-03A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

19052116

Chain of Custody

Pace Analytical®
www.pacelabs.com

Workorder: 10476817 **Workorder Name:** 19-02057 MPCAKraemersMineSpr19 **Results Requested By:** 6/19/2019

Report / Invoice To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6436 Email: jennifer.anderson@pacelabs.com	ALS 3352 128th Avenue Holland, MI 49424

P.O. 10476817

State of Sample Origin: MN

Item	Sample ID	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Other BP3A	Free Cyanide	LAB USE ONLY
1	Seep 01	5/29/2019 09:40	10476817001	Water	1	X	
2	Discharge 01	5/29/2019 10:30	10476817002	Water	1	X	
3	Duplicate	5/29/2019 10:40	10476817003	Water	1	X	
4							
5							

Comments

Transfers	Released By	Date/Time	Received By	Date/Time
1				5/31/19 1030
2				
3				

Cooler Temperature on Receipt 4.6 °C | **Custody Seal** Y or N | **Received on Ice** Y or N | **Samples Intact** Y or N

SR2

ALS Group, USA

Sample Receipt Checklist

Client Name: **PACE_MN** Date/Time Received: **31-May-19 10:30**

Work Order: **19052116** Received by: **DS**

Checklist completed by Diane Shaw (eSignature) 31-May-19 (Date) Reviewed by: Chad Whelton (eSignature) 31-May-19 (Date)

Matrices: Water

Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Sample(s) received on ice?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	4.6/4.6 c	SR2	
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	5/31/2019 1:10:48 PM		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

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June 18, 2019

Jennifer Anderson
Pace Analytical
1700 Elm Street, Suite 200
Minneapolis, MN 55414

RE: MPCA Kraemers

Enclosed are the analytical results for the samples received by the laboratory on 05/31/2019.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. These results are in compliance with the 2009 NELAC Standards and the appropriate agencies listed below, unless otherwise noted in the case narrative. This analytical report should be reproduced in its entirety.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jessica Esser

Project Manager

Certification List			Expires
DODELAP	DOD ELAP Accreditation (A2LA)	3269.01	03/31/2020
ILEPA	Illinois Secondary NELAP Accreditation	004366	04/30/2020
KDHE	Kansas Secondary NELAP Accreditation	E-10384	04/30/2020
LELAP	Louisiana Primary NELAP Accreditation	04165	06/30/2019
NCDEQ	North Carolina Dept. of Environmental Quality Accreditation	688	12/31/2019
NJDEP	New Jersey Secondary NELAP Accreditation	WI004	06/30/2019
ODEQ	Oklahoma Department of Environmental Quality Accreditation	2018-087	08/31/2019
TCEQ	Texas Secondary NELAP Accreditation	T104704504-16-7	11/30/2019
WDNR	Wisconsin Certification under NR 149	113289110	08/31/2019

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Pace Analytical	Project: MPCA Kraemers
1700 Elm Street, Suite 200	Project Number: 10476817
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Seep 01	A192214-01	Water	05/29/2019	05/31/2019
Discharge 01	A192214-02	Water	05/29/2019	05/31/2019
Duplicate	A192214-03	Water	05/29/2019	05/31/2019

CASE NARRATIVE

Sample Receipt Information:
3 samples were received on 05/31/2019. Samples were received at 3.2 degrees Celsius. Samples were received in acceptable condition.

Please see the chain of custody (COC) document at the end of this report for additional information.

Laboratory Control Samples (LCS):
The LCS recovery indicates a potential high bias for ethalfluralin, fonofos, propachlor and triallate for samples A192214-01 through A192214-03. Samples were less than the reporting limit for these analytes so no further action is required.

Continuing Calibration Verification (CCV):
The LC footnote on samples A192214-01 through A192214-03 states that there was a low CCV recovery for bentazon. The lower control limit is 80% and the lowest recovery was 73.5%.

CCV indicates a potential high bias for 2,4,5-T for samples A192214-01 through A192214-03. Samples were less than the reporting limit for this analyte so no further action is required.

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Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Seep 01

A192214-01 (Water)

Date Sampled
05/29/2019 09:40

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Base Neutral Pesticides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A906159**			
Acetochlor	ND	0.50	ug/L	1	06/04/2019	06/06/2019 03:52	EPA 8270D	
Alachlor	ND	0.50	ug/L	1	06/04/2019	06/06/2019 03:52	EPA 8270D	
Atrazine	ND	0.50	ug/L	1	06/04/2019	06/06/2019 03:52	EPA 8270D	
Chlorpyrifos	ND	0.50	ug/L	1	06/04/2019	06/06/2019 03:52	EPA 8270D	
Cyanazine	ND	0.20	ug/L	1	06/04/2019	06/06/2019 03:52	EPA 8270D	
Desethylatrazine	ND	0.50	ug/L	1	06/04/2019	06/06/2019 03:52	EPA 8270D	
Deisopropylatrazine	ND	0.50	ug/L	1	06/04/2019	06/06/2019 03:52	EPA 8270D	
Dimethenamid	ND	0.50	ug/L	1	06/04/2019	06/06/2019 03:52	EPA 8270D	
EPTC	ND	0.50	ug/L	1	06/04/2019	06/06/2019 03:52	EPA 8270D	
Ethalfluralin	ND	0.50	ug/L	1	06/04/2019	06/06/2019 03:52	EPA 8270D	
Fonofos	ND	0.50	ug/L	1	06/04/2019	06/06/2019 03:52	EPA 8270D	
Metolachlor	ND	0.50	ug/L	1	06/04/2019	06/06/2019 03:52	EPA 8270D	
Metribuzin	ND	0.50	ug/L	1	06/04/2019	06/06/2019 03:52	EPA 8270D	
Pendimethalin	ND	0.50	ug/L	1	06/04/2019	06/06/2019 03:52	EPA 8270D	
Phorate	ND	0.30	ug/L	1	06/04/2019	06/06/2019 03:52	EPA 8270D	
Prometon	ND	0.50	ug/L	1	06/04/2019	06/06/2019 03:52	EPA 8270D	
Propachlor	ND	0.50	ug/L	1	06/04/2019	06/06/2019 03:52	EPA 8270D	
Propazine	ND	0.50	ug/L	1	06/04/2019	06/06/2019 03:52	EPA 8270D	
Simazine	ND	0.50	ug/L	1	06/04/2019	06/06/2019 03:52	EPA 8270D	
Terbufos	ND	0.20	ug/L	1	06/04/2019	06/06/2019 03:52	EPA 8270D	
Triallate	ND	0.50	ug/L	1	06/04/2019	06/06/2019 03:52	EPA 8270D	
Trifluralin	ND	0.50	ug/L	1	06/04/2019	06/06/2019 03:52	EPA 8270D	
Surrogate: Atrazine-d5		*86.4 %*		*56.9-123*	*06/04/2019*	*06/06/2019 03:52*	*EPA 8270D*	
Surrogate: Parathion-d10		*95.6 %*		*23.8-169*	*06/04/2019*	*06/06/2019 03:52*	*EPA 8270D*	
Surrogate: Triphenyl phosphate		*114 %*		*50.5-178*	*06/04/2019*	*06/06/2019 03:52*	*EPA 8270D*	
Acid Herbicides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A906158**			
2,4-D	ND	0.50	ug/L	1	06/04/2019	06/12/2019 19:59	EPA 8151A	
2,4-DB	ND	0.50	ug/L	1	06/04/2019	06/12/2019 19:59	EPA 8151A	
2,4,5-T	ND	0.50	ug/L	1	06/04/2019	06/12/2019 19:59	EPA 8151A	
2,4,5-TP (Silvex)	ND	0.50	ug/L	1	06/04/2019	06/12/2019 19:59	EPA 8151A	
Bentazon	ND	0.50	ug/L	1	06/04/2019	06/12/2019 19:59	EPA 8151A	LC
Dicamba	ND	0.50	ug/L	1	06/04/2019	06/12/2019 19:59	EPA 8151A	
MCPA	ND	0.30	ug/L	1	06/04/2019	06/12/2019 19:59	EPA 8151A	
Picloram	ND	0.50	ug/L	1	06/04/2019	06/12/2019 19:59	EPA 8151A	
Triclopyr	ND	0.50	ug/L	1	06/04/2019	06/12/2019 19:59	EPA 8151A	
Surrogate: 2,4-D-d5		*79.9 %*		*43.1-133*	*06/04/2019*	*06/12/2019 19:59*	*EPA 8151A*	

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Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Discharge 01

A192214-02 (Water)

Date Sampled
05/29/2019 10:30

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Base Neutral Pesticides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A906159**			
Acetochlor	ND	0.50	ug/L	1	06/04/2019	06/06/2019 04:21	EPA 8270D	
Alachlor	ND	0.50	ug/L	1	06/04/2019	06/06/2019 04:21	EPA 8270D	
Atrazine	ND	0.50	ug/L	1	06/04/2019	06/06/2019 04:21	EPA 8270D	
Chlorpyrifos	ND	0.50	ug/L	1	06/04/2019	06/06/2019 04:21	EPA 8270D	
Cyanazine	ND	0.20	ug/L	1	06/04/2019	06/06/2019 04:21	EPA 8270D	
Desethylatrazine	ND	0.50	ug/L	1	06/04/2019	06/06/2019 04:21	EPA 8270D	
Deisopropylatrazine	ND	0.50	ug/L	1	06/04/2019	06/06/2019 04:21	EPA 8270D	
Dimethenamid	ND	0.50	ug/L	1	06/04/2019	06/06/2019 04:21	EPA 8270D	
EPTC	ND	0.50	ug/L	1	06/04/2019	06/06/2019 04:21	EPA 8270D	
Ethalfluralin	ND	0.50	ug/L	1	06/04/2019	06/06/2019 04:21	EPA 8270D	
Fonofos	ND	0.50	ug/L	1	06/04/2019	06/06/2019 04:21	EPA 8270D	
Metolachlor	ND	0.50	ug/L	1	06/04/2019	06/06/2019 04:21	EPA 8270D	
Metribuzin	ND	0.50	ug/L	1	06/04/2019	06/06/2019 04:21	EPA 8270D	
Pendimethalin	ND	0.50	ug/L	1	06/04/2019	06/06/2019 04:21	EPA 8270D	
Phorate	ND	0.30	ug/L	1	06/04/2019	06/06/2019 04:21	EPA 8270D	
Prometon	ND	0.50	ug/L	1	06/04/2019	06/06/2019 04:21	EPA 8270D	
Propachlor	ND	0.50	ug/L	1	06/04/2019	06/06/2019 04:21	EPA 8270D	
Propazine	ND	0.50	ug/L	1	06/04/2019	06/06/2019 04:21	EPA 8270D	
Simazine	ND	0.50	ug/L	1	06/04/2019	06/06/2019 04:21	EPA 8270D	
Terbufos	ND	0.20	ug/L	1	06/04/2019	06/06/2019 04:21	EPA 8270D	
Triallate	ND	0.50	ug/L	1	06/04/2019	06/06/2019 04:21	EPA 8270D	
Trifluralin	ND	0.50	ug/L	1	06/04/2019	06/06/2019 04:21	EPA 8270D	
Surrogate: Atrazine-d5		*85.4 %*		*56.9-123*	*06/04/2019*	*06/06/2019 04:21*	*EPA 8270D*	
Surrogate: Parathion-d10		*113 %*		*23.8-169*	*06/04/2019*	*06/06/2019 04:21*	*EPA 8270D*	
Surrogate: Triphenyl phosphate		*105 %*		*50.5-178*	*06/04/2019*	*06/06/2019 04:21*	*EPA 8270D*	
Acid Herbicides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A906158**			
2,4-D	ND	0.50	ug/L	1	06/04/2019	06/12/2019 20:34	EPA 8151A	
2,4-DB	ND	0.50	ug/L	1	06/04/2019	06/12/2019 20:34	EPA 8151A	
2,4,5-T	ND	0.50	ug/L	1	06/04/2019	06/12/2019 20:34	EPA 8151A	
2,4,5-TP (Silvex)	ND	0.50	ug/L	1	06/04/2019	06/12/2019 20:34	EPA 8151A	
Bentazon	ND	0.50	ug/L	1	06/04/2019	06/12/2019 20:34	EPA 8151A	LC
Dicamba	ND	0.50	ug/L	1	06/04/2019	06/12/2019 20:34	EPA 8151A	
MCPA	ND	0.30	ug/L	1	06/04/2019	06/12/2019 20:34	EPA 8151A	
Picloram	ND	0.50	ug/L	1	06/04/2019	06/12/2019 20:34	EPA 8151A	
Triclopyr	ND	0.50	ug/L	1	06/04/2019	06/12/2019 20:34	EPA 8151A	
Surrogate: 2,4-D-d5		*78.8 %*		*43.1-133*	*06/04/2019*	*06/12/2019 20:34*	*EPA 8151A*	

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Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Duplicate

A192214-03 (Water)

Date Sampled
05/29/2019 10:40

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Base Neutral Pesticides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A906159**			
Acetochlor	ND	0.50	ug/L	1	06/04/2019	06/06/2019 06:43	EPA 8270D	
Alachlor	ND	0.50	ug/L	1	06/04/2019	06/06/2019 06:43	EPA 8270D	
Atrazine	ND	0.50	ug/L	1	06/04/2019	06/06/2019 06:43	EPA 8270D	
Chlorpyrifos	ND	0.50	ug/L	1	06/04/2019	06/06/2019 06:43	EPA 8270D	
Cyanazine	ND	0.20	ug/L	1	06/04/2019	06/06/2019 06:43	EPA 8270D	
Desethylatrazine	ND	0.50	ug/L	1	06/04/2019	06/06/2019 06:43	EPA 8270D	
Deisopropylatrazine	ND	0.50	ug/L	1	06/04/2019	06/06/2019 06:43	EPA 8270D	
Dimethenamid	ND	0.50	ug/L	1	06/04/2019	06/06/2019 06:43	EPA 8270D	
EPTC	ND	0.50	ug/L	1	06/04/2019	06/06/2019 06:43	EPA 8270D	
Ethalfluralin	ND	0.50	ug/L	1	06/04/2019	06/06/2019 06:43	EPA 8270D	
Fonofos	ND	0.50	ug/L	1	06/04/2019	06/06/2019 06:43	EPA 8270D	
Metolachlor	ND	0.50	ug/L	1	06/04/2019	06/06/2019 06:43	EPA 8270D	
Metribuzin	ND	0.50	ug/L	1	06/04/2019	06/06/2019 06:43	EPA 8270D	
Pendimethalin	ND	0.50	ug/L	1	06/04/2019	06/06/2019 06:43	EPA 8270D	
Phorate	ND	0.30	ug/L	1	06/04/2019	06/06/2019 06:43	EPA 8270D	
Prometon	ND	0.50	ug/L	1	06/04/2019	06/06/2019 06:43	EPA 8270D	
Propachlor	ND	0.50	ug/L	1	06/04/2019	06/06/2019 06:43	EPA 8270D	
Propazine	ND	0.50	ug/L	1	06/04/2019	06/06/2019 06:43	EPA 8270D	
Simazine	ND	0.50	ug/L	1	06/04/2019	06/06/2019 06:43	EPA 8270D	
Terbufos	ND	0.20	ug/L	1	06/04/2019	06/06/2019 06:43	EPA 8270D	
Triallate	ND	0.50	ug/L	1	06/04/2019	06/06/2019 06:43	EPA 8270D	
Trifluralin	ND	0.50	ug/L	1	06/04/2019	06/06/2019 06:43	EPA 8270D	
Surrogate: Atrazine-d5		*77.5 %*		*56.9-123*	*06/04/2019*	*06/06/2019 06:43*	*EPA 8270D*	
Surrogate: Parathion-d10		*122 %*		*23.8-169*	*06/04/2019*	*06/06/2019 06:43*	*EPA 8270D*	
Surrogate: Triphenyl phosphate		*99.4 %*		*50.5-178*	*06/04/2019*	*06/06/2019 06:43*	*EPA 8270D*	
Acid Herbicides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A906158**			
2,4-D	ND	0.50	ug/L	1	06/04/2019	06/12/2019 21:09	EPA 8151A	
2,4-DB	ND	0.50	ug/L	1	06/04/2019	06/12/2019 21:09	EPA 8151A	
2,4,5-T	ND	0.50	ug/L	1	06/04/2019	06/12/2019 21:09	EPA 8151A	
2,4,5-TP (Silvex)	ND	0.50	ug/L	1	06/04/2019	06/12/2019 21:09	EPA 8151A	
Bentazon	ND	0.50	ug/L	1	06/04/2019	06/12/2019 21:09	EPA 8151A	LC
Dicamba	ND	0.50	ug/L	1	06/04/2019	06/12/2019 21:09	EPA 8151A	
MCPA	ND	0.30	ug/L	1	06/04/2019	06/12/2019 21:09	EPA 8151A	
Picloram	ND	0.50	ug/L	1	06/04/2019	06/12/2019 21:09	EPA 8151A	
Triclopyr	ND	0.50	ug/L	1	06/04/2019	06/12/2019 21:09	EPA 8151A	
Surrogate: 2,4-D-d5		*76.0 %*		*43.1-133*	*06/04/2019*	*06/12/2019 21:09*	*EPA 8151A*	

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Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Base Neutral Pesticides by Gas Chromatography/Mass Spectrometry - Quality Control

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A906159 - EPA 3510C										
Blank (A906159-BLK1)				Prepared: 06/04/2019 Analyzed: 06/06/2019 00:05						
Acetochlor	ND	0.50	ug/L							
Alachlor	ND	0.50	ug/L							
Atrazine	ND	0.50	ug/L							
Chlorpyrifos	ND	0.50	ug/L							
Cyanazine	ND	0.20	ug/L							
Desethylatrazine	ND	0.50	ug/L							
Deisopropylatrazine	ND	0.50	ug/L							
Dimethenamid	ND	0.50	ug/L							
EPTC	ND	0.50	ug/L							
Ethalfluralin	ND	0.50	ug/L							
Fonofos	ND	0.50	ug/L							
Metolachlor	ND	0.50	ug/L							
Metribuzin	ND	0.50	ug/L							
Pendimethalin	ND	0.50	ug/L							
Phorate	ND	0.30	ug/L							
Prometon	ND	0.50	ug/L							
Propachlor	ND	0.50	ug/L							
Propazine	ND	0.50	ug/L							
Simazine	ND	0.50	ug/L							
Terbufos	ND	0.20	ug/L							
Triallate	ND	0.50	ug/L							
Trifluralin	ND	0.50	ug/L							
Surrogate: Atrazine-d5	*0.450*		*ug/L*	*0.5250*		*85.8*	*56.9-123*			
Surrogate: Parathion-d10	*1.09*		*ug/L*	*0.5445*		*200*	*23.8-169*			*S*
Surrogate: Triphenyl phosphate	*0.466*		*ug/L*	*0.5000*		*93.3*	*50.5-178*			
LCS (A906159-BS1)				Prepared: 06/04/2019 Analyzed: 06/06/2019 00:34						
Acetochlor	0.861	0.50	ug/L	1.000		86.1	67.8-122			
Alachlor	0.870	0.50	ug/L	1.000		87.0	68.6-119			
Atrazine	0.892	0.50	ug/L	1.000		89.2	68.6-115			
Chlorpyrifos	0.886	0.50	ug/L	1.000		88.6	63.1-120			
Cyanazine	0.922	0.20	ug/L	1.000		92.2	55.3-143			
Desethylatrazine	0.884	0.50	ug/L	1.000		88.4	67.8-115			
Deisopropylatrazine	0.677	0.50	ug/L	1.000		67.7	50.1-100			
Dimethenamid	0.876	0.50	ug/L	1.000		87.6	70.3-121			
EPTC	0.795	0.50	ug/L	1.000		79.5	50.4-101			
Ethalfluralin	1.63	0.50	ug/L	1.000		163	42.6-121			
Fonofos	1.71	0.50	ug/L	1.000		171	56.6-119			
Metolachlor	0.926	0.50	ug/L	1.000		92.6	71.3-128			
Metribuzin	0.833	0.50	ug/L	1.000		83.3	64.9-120			
Pendimethalin	0.845	0.50	ug/L	1.000		84.5	60.9-128			
Phorate	0.697	0.30	ug/L	1.000		69.7	37.3-112			
Prometon	0.864	0.50	ug/L	1.000		86.4	67.1-120			
Propachlor	1.90	0.50	ug/L	1.000		190	66.2-127			
Propazine	0.879	0.50	ug/L	1.000		87.9	68.2-118			
Simazine	0.898	0.50	ug/L	1.000		89.8	67.2-117			

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Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Base Neutral Pesticides by Gas Chromatography/Mass Spectrometry - Quality Control

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A906159 - EPA 3510C										
LCS (A906159-BS1)				Prepared: 06/04/2019 Analyzed: 06/06/2019 00:34						
Terbufos	0.615	0.20	ug/L	1.000		61.5	34.3-111			
Triallate	1.79	0.50	ug/L	1.000		179	53-121			
Trifluralin	0.786	0.50	ug/L	1.000		78.6	45.9-116			
Surrogate: Atrazine-d5	*0.426*		*ug/L*	*0.5250*		*81.2*	*56.9-123*			
Surrogate: Parathion-d10	*0.896*		*ug/L*	*0.5445*		*165*	*23.8-169*			
Surrogate: Triphenyl phosphate	*0.447*		*ug/L*	*0.5000*		*89.5*	*50.5-178*			
LCS Dup (A906159-BSD1)				Prepared: 06/04/2019 Analyzed: 06/06/2019 01:02						
Acetochlor	0.956	0.50	ug/L	1.000		95.6	67.8-122	10.5	20	
Alachlor	0.961	0.50	ug/L	1.000		96.1	68.6-119	9.91	20	
Atrazine	1.01	0.50	ug/L	1.000		101	68.6-115	12.0	20	
Chlorpyrifos	0.943	0.50	ug/L	1.000		94.3	63.1-120	6.23	20	
Cyanazine	0.983	0.20	ug/L	1.000		98.3	55.3-143	6.39	20	
Desethylatrazine	0.928	0.50	ug/L	1.000		92.8	67.8-115	4.85	20	
Deisopropylatrazine	0.685	0.50	ug/L	1.000		68.5	50.1-100	1.26	20	
Dimethenamid	0.976	0.50	ug/L	1.000		97.6	70.3-121	10.8	20	
EPTC	0.816	0.50	ug/L	1.000		81.6	50.4-101	2.56	20	
Ethalfluralin	1.13	0.50	ug/L	1.000		113	42.6-121	36.6	20	X
Fonofos	1.19	0.50	ug/L	1.000		119	56.6-119	36.0	20	X
Metolachlor	1.00	0.50	ug/L	1.000		100	71.3-128	7.69	20	
Metribuzin	0.925	0.50	ug/L	1.000		92.5	64.9-120	10.4	20	
Pendimethalin	0.881	0.50	ug/L	1.000		88.1	60.9-128	4.13	20	
Phorate	0.751	0.30	ug/L	1.000		75.1	37.3-112	7.50	20	
Prometon	0.949	0.50	ug/L	1.000		94.9	67.1-120	9.37	20	
Propachlor	1.33	0.50	ug/L	1.000		133	66.2-127	35.1	20	X
Propazine	0.979	0.50	ug/L	1.000		97.9	68.2-118	10.7	20	
Simazine	1.01	0.50	ug/L	1.000		101	67.2-117	11.7	20	
Terbufos	0.766	0.20	ug/L	1.000		76.6	34.3-111	21.8	20	X
Triallate	1.14	0.50	ug/L	1.000		114	53-121	44.4	20	X
Trifluralin	0.824	0.50	ug/L	1.000		82.4	45.9-116	4.78	20	
Surrogate: Atrazine-d5	*0.474*		*ug/L*	*0.5250*		*90.3*	*56.9-123*			
Surrogate: Parathion-d10	*0.598*		*ug/L*	*0.5445*		*110*	*23.8-169*			
Surrogate: Triphenyl phosphate	*0.487*		*ug/L*	*0.5000*		*97.4*	*50.5-178*			

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608.221.4889 Fax

Pace Analytical	Project: MPCA Kraemers
1700 Elm Street, Suite 200	Project Number: 10476817
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Acid Herbicides by Gas Chromatography/Mass Spectrometry - Quality Control

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A906158 - EPA 3510C										
Blank (A906158-BLK1)				Prepared: 06/04/2019 Analyzed: 06/12/2019 17:38						
2,4-D	ND	0.50	ug/L							
2,4-DB	ND	0.50	ug/L							
2,4,5-T	ND	0.50	ug/L							
2,4,5-TP (Silvex)	ND	0.50	ug/L							
Bentazon	ND	0.50	ug/L							
Dicamba	ND	0.50	ug/L							
MCPA	ND	0.30	ug/L							
Picloram	ND	0.50	ug/L							
Triclopyr	ND	0.50	ug/L							
Surrogate: 2,4-D-d5	*1.36*		*ug/L*	*2.006*		*68.0*	*43.1-133*			
LCS (A906158-BS1)				Prepared: 06/04/2019 Analyzed: 06/12/2019 21:44						
2,4-D	1.53	0.50	ug/L	2.000		76.7	51.7-152			
2,4-DB	1.65	0.50	ug/L	2.000		82.5	51.5-146			
2,4,5-T	1.57	0.50	ug/L	2.000		78.6	55.4-138			
2,4,5-TP (Silvex)	1.50	0.50	ug/L	2.000		75.1	47.2-152			
Bentazon	0.819	0.50	ug/L	1.000		81.9	48.9-146			
Dicamba	1.50	0.50	ug/L	2.000		75.0	41-149			
MCPA	1.46	0.30	ug/L	2.000		73.2	32.6-148			
Picloram	0.609	0.50	ug/L	1.000		60.9	37.8-121			
Triclopyr	1.54	0.50	ug/L	2.000		76.9	49.9-149			
Surrogate: 2,4-D-d5	*1.39*		*ug/L*	*2.006*		*69.3*	*43.1-133*			
LCS Dup (A906158-BSD1)				Prepared: 06/04/2019 Analyzed: 06/12/2019 22:19						
2,4-D	1.62	0.50	ug/L	2.000		81.2	51.7-152	5.73	20	
2,4-DB	1.70	0.50	ug/L	2.000		85.1	51.5-146	3.09	20	
2,4,5-T	1.56	0.50	ug/L	2.000		77.8	55.4-138	1.03	20	
2,4,5-TP (Silvex)	1.60	0.50	ug/L	2.000		79.8	47.2-152	6.06	20	
Bentazon	0.825	0.50	ug/L	1.000		82.5	48.9-146	0.791	20	
Dicamba	1.58	0.50	ug/L	2.000		79.0	41-149	5.25	20	
MCPA	1.45	0.30	ug/L	2.000		72.3	32.6-148	1.20	20	
Picloram	0.509	0.50	ug/L	1.000		50.9	37.8-121	17.9	20	
Triclopyr	1.52	0.50	ug/L	2.000		76.1	49.9-149	1.10	20	
Surrogate: 2,4-D-d5	*1.35*		*ug/L*	*2.006*		*67.3*	*43.1-133*			

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Pace Analytical	Project: MPCA Kraemers
1700 Elm Street, Suite 200	Project Number: 10476817
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Notes and Definitions

X	Precision for the matrix spike duplicate, laboratory control sample duplicate or lab duplicate was outside of control limits.
S	Surrogate recovery was outside of laboratory control limits due to an apparent matrix effect.
LC	Results may be biased low because of low continuing calibration verification (CCV).
ND	Analyte NOT DETECTED at or above the reporting limit or limit of detection (if listed).
NR	Not Reported
dry	Sample results reported on a dry weight basis. If the word 'dry' does not appear after the units, results are reported on an as-is basis.
RPD	Relative Percent Difference

Chain of Custody A192214

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☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN
Cert. Needed: ☒ Yes ☐ No

Workorder: 10476817 **Workorder Name:** 19-02057 MPCAKraemersMineSpr19 **Owner Received Date:** 5/29/2019 **Results Requested By:** 6/19/2019

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6436	Pace Analytical Madison 2525 Advance Road Madison, WI 53718 Phone (608)221-8700

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved AG1U						Requested Analysis: MDA List 1	MDA List 2										LAB USE ONLY
1	Seep 01	PS	5/29/2019 09:40	10476817001	Water	4						X	X										01
2	Discharge 01	PS	5/29/2019 10:30	10476817002	Water	4						X	X										02
3	Duplicate	PS	5/29/2019 10:40	10476817003	Water	4						X	X										03
4																							
5																							

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature]	5/30/19 1540	[signature]	5/31/19 1100
2				
3				

Comments

Need MPCA Equis EDD and Barr Equis 5 EDD

Cooler Temperature on Receipt 3.2 °C | **Custody Seal** Y or N | **Received on Ice** (Y) or N | **Samples Intact** (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.*

1601423274 exp 7/13/19

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

June 25, 2019

Mr. Brad Jacobson
Pace Analytical Services, LLC..
1700 Elm Street
Suite 200
Minneapolis, MN 55414

RE: Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10477453

Dear Mr. Jacobson:
Enclosed are the analytical results for sample(s) received by the laboratory on June 03, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Some analyses have been subcontracted outside of the Pace Network. The subcontracted laboratory report has been attached.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jennifer Anderson
jennifer.anderson@pacelabs.com
(612)607-6436
Project Manager

Enclosures

cc: Tom Halverson, Pace Analytical Field Services
Chris Pelosi, Pace Analytical Services - Field Services

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CERTIFICATIONS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10477453

Minnesota Certification IDs

1700 Elm Street SE, Minneapolis, MN 55414-2485
A2LA Certification #: 2926.01
Alabama Certification #: 40770
Alaska Contaminated Sites Certification #: 17-009
Alaska DW Certification #: MN00064
Arizona Certification #: AZ0014
Arkansas DW Certification #: MN00064
Arkansas WW Certification #: 88-0680
California Certification #: 2929
CNMI Saipan Certification #: MP0003
Colorado Certification #: MN00064
Connecticut Certification #: PH-0256
EPA Region 8+Wyoming DW Certification #: via MN 027-053-137
Florida Certification #: E87605
Georgia Certification #: 959
Guam EPA Certification #: MN00064
Hawaii Certification #: MN00064
Idaho Certification #: MN00064
Illinois Certification #: 200011
Indiana Certification #: C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky DW Certification #: 90062
Kentucky WW Certification #: 90062
Louisiana DEQ Certification #: 03086
Louisiana DW Certification #: MN00064
Maine Certification #: MN00064
Maryland Certification #: 322
Massachusetts Certification #: M-MN064
Michigan Certification #: 9909
Minnesota Certification #: 027-053-137
Minnesota Dept of Ag Certifcation #: via MN 027-053-137
Minnesota Petrofund Certification #: 1240
Mississippi Certification #: MN00064
Missouri Certification #: 10100
Montana Certification #: CERT0092
Nebraska Certification #: NE-OS-18-06
Nevada Certification #: MN00064
New Hampshire Certification #: 2081
New Jersey Certification #: MN002
New York Certification #: 11647
North Carolina DW Certification #: 27700
North Carolina WW Certification #: 530
North Dakota Certification #: R-036
Ohio DW Certification #: 41244
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Primary Certification #: MN300001
Oregon Secondary Certification #: MN200001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification #: MN00064
South Carolina Certification #:74003001
Tennessee Certification #: TN02818
Texas Certification #: T104704192
Utah Certification #: MN00064
Vermont Certification #: VT-027053137
Virginia Certification #: 460163
Washington Certification #: C486
West Virginia DEP Certification #: 382
West Virginia DW Certification #: 9952 C
Wisconsin Certification #: 999407970
Wyoming UST Certification #: via A2LA 2926.01

Virginia Minnesota Certification ID's

315 Chestnut Street, Virginia, MN 55792
Montana Certificate #CERT0103
Alaska Certification UST-107
Minnesota Dept of Health Certification #: 027-137-445
North Dakota Certification: # R-203
Wisconsin DNR Certification # : 998027470
WA Department of Ecology Lab ID# C1007

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Florida: Cert E871149 SEKS WET
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221

REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10477453

Pennsylvania Certification IDs

KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

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SAMPLE SUMMARY

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10477453

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10477453001	**FB-3**	Water	06/03/19 13:50	06/03/19 16:20
10477453002	**603282**	Water	06/03/19 15:30	06/03/19 16:20
10477453003	**M-3**	Water	06/03/19 15:35	06/03/19 16:20

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SAMPLE ANALYTE COUNT

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10477453

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10477453001	**FB-3**	EPA 8082A	RAG	11	PASI-M
		EPA 200.7	DM	9	PASI-M
		EPA 200.8	RH1	12	PASI-M
		EPA 8270D	STB	38	PASI-M
		EPA 900.0	NEG	2	PASI-PA
		EPA 300.0	KEO	1	PASI-M
		SM 3500-Cr B Modified	JFP	1	PASI-M
		EPA 350.1 rev. 2 (1993)	DMB	1	PASI-V
		SM 4500-CN-E	DCL	1	PASI-M
10477453002	**603282**	EPA 8082A	RAG	11	PASI-M
		EPA 200.7	DM	9	PASI-M
		EPA 200.8	RH1	12	PASI-M
		EPA 8270D	STB	38	PASI-M
			CLJ	16	PASI-V
		EPA 900.0	NEG	2	PASI-PA
		EPA 300.0	KEO	1	PASI-M
		SM 3500-Cr B Modified	JFP	1	PASI-M
		EPA 350.1	CLJ	1	PASI-V
		EPA 350.1 rev. 2 (1993)	DMB	1	PASI-V
		SM 4500-CN-E	DCL	1	PASI-M
10477453003	**M-3**	EPA 8082A	RAG	11	PASI-M
		EPA 200.7	DM	9	PASI-M
		EPA 200.8	RH1	12	PASI-M
		EPA 8270D	STB	38	PASI-M
			CLJ	4	PASI-V
		EPA 900.0	NEG	2	PASI-PA
		EPA 300.0	KEO	1	PASI-M
		SM 3500-Cr B Modified	JFP	1	PASI-M
		EPA 350.1	CLJ	1	PASI-V
		EPA 350.1 rev. 2 (1993)	DMB	1	PASI-V
		SM 4500-CN-E	DCL	1	PASI-M

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10477453

Sample: FB-3 **Lab ID: 10477453001** Collected: 06/03/19 13:50 Received: 06/03/19 16:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA Mod. 3510C							
PCB-1016 (Aroclor 1016)	ND	ug/L	0.11	1	06/06/19 18:14	06/11/19 01:47	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/L	0.11	1	06/06/19 18:14	06/11/19 01:47	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/L	0.11	1	06/06/19 18:14	06/11/19 01:47	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/L	0.11	1	06/06/19 18:14	06/11/19 01:47	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/L	0.11	1	06/06/19 18:14	06/11/19 01:47	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/L	0.11	1	06/06/19 18:14	06/11/19 01:47	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/L	0.11	1	06/06/19 18:14	06/11/19 01:47	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/L	0.11	1	06/06/19 18:14	06/11/19 01:47	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/L	0.11	1	06/06/19 18:14	06/11/19 01:47	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	69	%.	30-125	1	06/06/19 18:14	06/11/19 01:47	877-09-8	
Decachlorobiphenyl (S)	99	%.	30-125	1	06/06/19 18:14	06/11/19 01:47	2051-24-3	CH
200.7 MET ICP, Dissolved	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Aluminum, Dissolved	ND	ug/L	200	1	06/11/19 08:26	06/12/19 13:58	7429-90-5	
Barium, Dissolved	ND	ug/L	10.0	1	06/11/19 08:26	06/12/19 13:58	7440-39-3	
Copper, Dissolved	ND	ug/L	10.0	1	06/11/19 08:26	06/12/19 13:58	7440-50-8	
Manganese, Dissolved	ND	ug/L	5.0	1	06/11/19 08:26	06/12/19 13:58	7439-96-5	
Nickel, Dissolved	ND	ug/L	20.0	1	06/11/19 08:26	06/12/19 13:58	7440-02-0	
Silver, Dissolved	ND	ug/L	10.0	1	06/11/19 08:26	06/12/19 13:58	7440-22-4	
Tin, Dissolved	ND	ug/L	75.0	1	06/11/19 08:26	06/12/19 13:58	7440-31-5	
Total Hardness by 2340B, Dissolved	ND	ug/L	3300	1	06/11/19 08:26	06/12/19 13:58		
Zinc, Dissolved	ND	ug/L	20.0	1	06/11/19 08:26	06/12/19 13:58	7440-66-6	
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Dissolved	ND	ug/L	0.50	1	06/11/19 08:26	06/14/19 22:55	7440-36-0	
Arsenic, Dissolved	ND	ug/L	0.50	1	06/11/19 08:26	06/14/19 22:55	7440-38-2	
Beryllium, Dissolved	ND	ug/L	0.20	1	06/11/19 08:26	06/17/19 14:54	7440-41-7	
Boron, Dissolved	ND	ug/L	10.0	1	06/11/19 08:26	06/17/19 14:54	7440-42-8	
Cadmium, Dissolved	ND	ug/L	0.080	1	06/11/19 08:26	06/14/19 22:55	7440-43-9	
Chromium, Dissolved	ND	ug/L	0.50	1	06/11/19 08:26	06/14/19 22:55	7440-47-3	
Cobalt, Dissolved	ND	ug/L	0.50	1	06/11/19 08:26	06/14/19 22:55	7440-48-4	
Lead, Dissolved	ND	ug/L	0.10	1	06/11/19 08:26	06/14/19 22:55	7439-92-1	
Selenium, Dissolved	ND	ug/L	0.50	1	06/11/19 08:26	06/14/19 22:55	7782-49-2	
Thallium, Dissolved	ND	ug/L	0.10	1	06/11/19 08:26	06/14/19 22:55	7440-28-0	
Uranium, Dissolved	ND	ug/L	0.50	1	06/11/19 08:26	06/14/19 22:55	7440-61-1	
Vanadium, Dissolved	ND	ug/L	1.0	1	06/11/19 08:26	06/14/19 22:55	7440-62-2	
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
Acenaphthene	ND	ug/L	10.5	1	06/05/19 18:26	06/09/19 22:02	83-32-9	
Anthracene	ND	ug/L	10.5	1	06/05/19 18:26	06/09/19 22:02	120-12-7	
Benzo(a)pyrene	ND	ug/L	10.5	1	06/05/19 18:26	06/09/19 22:02	50-32-8	
Benzoic acid	ND	ug/L	52.6	1	06/05/19 18:26	06/09/19 22:02	65-85-0	
4-Bromophenylphenyl ether	ND	ug/L	10.5	1	06/05/19 18:26	06/09/19 22:02	101-55-3	
Butylbenzylphthalate	ND	ug/L	10.5	1	06/05/19 18:26	06/09/19 22:02	85-68-7	
bis(2-Chloroethyl) ether	ND	ug/L	10.5	1	06/05/19 18:26	06/09/19 22:02	111-44-4	

REPORT OF LABORATORY ANALYSIS

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1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10477453

Sample: FB-3 **Lab ID: 10477453001** Collected: 06/03/19 13:50 Received: 06/03/19 16:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
2-Chlorophenol	ND	ug/L	10.5	1	06/05/19 18:26	06/09/19 22:02	95-57-8	
3,3'-Dichlorobenzidine	ND	ug/L	52.6	1	06/05/19 18:26	06/09/19 22:02	91-94-1	
2,4-Dichlorophenol	ND	ug/L	10.5	1	06/05/19 18:26	06/09/19 22:02	120-83-2	
Diethylphthalate	ND	ug/L	10.5	1	06/05/19 18:26	06/09/19 22:02	84-66-2	
2,4-Dimethylphenol	ND	ug/L	10.5	1	06/05/19 18:26	06/09/19 22:02	105-67-9	
Dimethylphthalate	ND	ug/L	10.5	1	06/05/19 18:26	06/09/19 22:02	131-11-3	
Di-n-butylphthalate	ND	ug/L	10.5	1	06/05/19 18:26	06/09/19 22:02	84-74-2	
2,4-Dinitrophenol	ND	ug/L	10.5	1	06/05/19 18:26	06/09/19 22:02	51-28-5	
Di-n-octylphthalate	ND	ug/L	10.5	1	06/05/19 18:26	06/09/19 22:02	117-84-0	
bis(2-Ethylhexyl)phthalate	ND	ug/L	10.5	1	06/05/19 18:26	06/09/19 22:02	117-81-7	
Fluoranthene	ND	ug/L	10.5	1	06/05/19 18:26	06/09/19 22:02	206-44-0	
Fluorene	ND	ug/L	10.5	1	06/05/19 18:26	06/09/19 22:02	86-73-7	
Hexachlorobenzene	ND	ug/L	10.5	1	06/05/19 18:26	06/09/19 22:02	118-74-1	
Hexachlorocyclopentadiene	ND	ug/L	52.6	1	06/05/19 18:26	06/09/19 22:02	77-47-4	L2
Hexachloroethane	ND	ug/L	10.5	1	06/05/19 18:26	06/09/19 22:02	67-72-1	L2
Isophorone	ND	ug/L	10.5	1	06/05/19 18:26	06/09/19 22:02	78-59-1	
2-Methylnaphthalene	ND	ug/L	10.5	1	06/05/19 18:26	06/09/19 22:02	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/L	10.5	1	06/05/19 18:26	06/09/19 22:02	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/L	10.5	1	06/05/19 18:26	06/09/19 22:02		
N-Nitrosodimethylamine	ND	ug/L	10.5	1	06/05/19 18:26	06/09/19 22:02	62-75-9	
Pentachlorophenol	ND	ug/L	21.1	1	06/05/19 18:26	06/09/19 22:02	87-86-5	
Phenanthrene	ND	ug/L	10.5	1	06/05/19 18:26	06/09/19 22:02	85-01-8	
Phenol	ND	ug/L	10.5	1	06/05/19 18:26	06/09/19 22:02	108-95-2	
Pyrene	ND	ug/L	10.5	1	06/05/19 18:26	06/09/19 22:02	129-00-0	
2,4,6-Trichlorophenol	ND	ug/L	10.5	1	06/05/19 18:26	06/09/19 22:02	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	69	%.	55-125	1	06/05/19 18:26	06/09/19 22:02	4165-60-0	
2-Fluorobiphenyl (S)	70	%.	52-125	1	06/05/19 18:26	06/09/19 22:02	321-60-8	
p-Terphenyl-d14 (S)	77	%.	57-125	1	06/05/19 18:26	06/09/19 22:02	1718-51-0	
Phenol-d6 (S)	75	%.	30-125	1	06/05/19 18:26	06/09/19 22:02	13127-88-3	
2-Fluorophenol (S)	77	%.	30-125	1	06/05/19 18:26	06/09/19 22:02	367-12-4	
2,4,6-Tribromophenol (S)	86	%.	52-125	1	06/05/19 18:26	06/09/19 22:02	118-79-6	
300.0 IC Anions	Analytical Method: EPA 300.0							
Chloride	ND	mg/L	1.2	1		06/15/19 11:48	16887-00-6	
Chromium, Hexavalent	Analytical Method: SM 3500-Cr B Modified							
Chromium, Hexavalent	ND	mg/L	0.010	1		06/04/19 11:29		
350.1 Ammonia, Distilled	Analytical Method: EPA 350.1 rev. 2 (1993) Preparation Method: EPA 350.1 rev. 2 (1993)							
Nitrogen, Ammonia	ND	mg/L	0.11	1	06/17/19 10:04	06/18/19 11:29	7664-41-7	
SM4500CN-E Cyanide	Analytical Method: SM 4500-CN-E Preparation Method: SM 4500-CN-E							
Cyanide	ND	ug/L	20.0	1	06/14/19 10:28	06/14/19 12:44	57-12-5	

REPORT OF LABORATORY ANALYSIS

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1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10477453

Sample: 603282 **Lab ID: 10477453002** Collected: 06/03/19 15:30 Received: 06/03/19 16:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA Mod. 3510C							
PCB-1016 (Aroclor 1016)	ND	ug/L	0.097	1	06/06/19 18:14	06/11/19 02:03	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/L	0.097	1	06/06/19 18:14	06/11/19 02:03	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/L	0.097	1	06/06/19 18:14	06/11/19 02:03	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/L	0.097	1	06/06/19 18:14	06/11/19 02:03	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/L	0.097	1	06/06/19 18:14	06/11/19 02:03	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/L	0.097	1	06/06/19 18:14	06/11/19 02:03	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/L	0.097	1	06/06/19 18:14	06/11/19 02:03	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/L	0.097	1	06/06/19 18:14	06/11/19 02:03	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/L	0.097	1	06/06/19 18:14	06/11/19 02:03	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	69	%.	30-125	1	06/06/19 18:14	06/11/19 02:03	877-09-8	
Decachlorobiphenyl (S)	104	%.	30-125	1	06/06/19 18:14	06/11/19 02:03	2051-24-3	CH
200.7 MET ICP, Dissolved	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Aluminum, Dissolved	ND	ug/L	200	1	06/11/19 08:26	06/12/19 14:00	7429-90-5	
Barium, Dissolved	**76.6**	ug/L	10.0	1	06/11/19 08:26	06/12/19 14:00	7440-39-3	
Copper, Dissolved	ND	ug/L	10.0	1	06/11/19 08:26	06/12/19 14:00	7440-50-8	
Manganese, Dissolved	**667**	ug/L	5.0	1	06/11/19 08:26	06/12/19 14:00	7439-96-5	
Nickel, Dissolved	ND	ug/L	20.0	1	06/11/19 08:26	06/12/19 14:00	7440-02-0	
Silver, Dissolved	ND	ug/L	10.0	1	06/11/19 08:26	06/12/19 14:00	7440-22-4	
Tin, Dissolved	ND	ug/L	75.0	1	06/11/19 08:26	06/12/19 14:00	7440-31-5	
Total Hardness by 2340B, Dissolved	**992000**	ug/L	3300	1	06/11/19 08:26	06/12/19 14:00		
Zinc, Dissolved	ND	ug/L	20.0	1	06/11/19 08:26	06/12/19 14:00	7440-66-6	
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Dissolved	ND	ug/L	0.50	1	06/11/19 08:26	06/14/19 23:07	7440-36-0	
Arsenic, Dissolved	**0.90**	ug/L	0.50	1	06/11/19 08:26	06/14/19 23:07	7440-38-2	
Beryllium, Dissolved	ND	ug/L	50.0	250	06/11/19 08:26	06/17/19 15:06	7440-41-7	D3
Boron, Dissolved	**32700**	ug/L	2500	250	06/11/19 08:26	06/17/19 15:06	7440-42-8	
Cadmium, Dissolved	ND	ug/L	0.080	1	06/11/19 08:26	06/14/19 23:07	7440-43-9	
Chromium, Dissolved	ND	ug/L	0.50	1	06/11/19 08:26	06/14/19 23:07	7440-47-3	
Cobalt, Dissolved	**3.8**	ug/L	0.50	1	06/11/19 08:26	06/14/19 23:07	7440-48-4	
Lead, Dissolved	ND	ug/L	0.10	1	06/11/19 08:26	06/14/19 23:07	7439-92-1	
Selenium, Dissolved	**3.5**	ug/L	0.50	1	06/11/19 08:26	06/14/19 23:07	7782-49-2	
Thallium, Dissolved	**0.76**	ug/L	0.10	1	06/11/19 08:26	06/14/19 23:07	7440-28-0	
Uranium, Dissolved	**15.9**	ug/L	0.50	1	06/11/19 08:26	06/14/19 23:07	7440-61-1	
Vanadium, Dissolved	ND	ug/L	1.0	1	06/11/19 08:26	06/14/19 23:07	7440-62-2	
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
Acenaphthene	ND	ug/L	9.8	1	06/05/19 18:26	06/09/19 22:28	83-32-9	
Anthracene	ND	ug/L	9.8	1	06/05/19 18:26	06/09/19 22:28	120-12-7	
Benzo(a)pyrene	ND	ug/L	9.8	1	06/05/19 18:26	06/09/19 22:28	50-32-8	
Benzoic acid	ND	ug/L	49.0	1	06/05/19 18:26	06/09/19 22:28	65-85-0	
4-Bromophenylphenyl ether	ND	ug/L	9.8	1	06/05/19 18:26	06/09/19 22:28	101-55-3	
Butylbenzylphthalate	ND	ug/L	9.8	1	06/05/19 18:26	06/09/19 22:28	85-68-7	
bis(2-Chloroethyl) ether	ND	ug/L	9.8	1	06/05/19 18:26	06/09/19 22:28	111-44-4	

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10477453

Sample: 603282 **Lab ID: 10477453002** Collected: 06/03/19 15:30 Received: 06/03/19 16:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
2-Chlorophenol	ND	ug/L	9.8	1	06/05/19 18:26	06/09/19 22:28	95-57-8	
3,3'-Dichlorobenzidine	ND	ug/L	49.0	1	06/05/19 18:26	06/09/19 22:28	91-94-1	
2,4-Dichlorophenol	ND	ug/L	9.8	1	06/05/19 18:26	06/09/19 22:28	120-83-2	
Diethylphthalate	ND	ug/L	9.8	1	06/05/19 18:26	06/09/19 22:28	84-66-2	
2,4-Dimethylphenol	ND	ug/L	9.8	1	06/05/19 18:26	06/09/19 22:28	105-67-9	
Dimethylphthalate	ND	ug/L	9.8	1	06/05/19 18:26	06/09/19 22:28	131-11-3	
Di-n-butylphthalate	ND	ug/L	9.8	1	06/05/19 18:26	06/09/19 22:28	84-74-2	
2,4-Dinitrophenol	ND	ug/L	9.8	1	06/05/19 18:26	06/09/19 22:28	51-28-5	
Di-n-octylphthalate	ND	ug/L	9.8	1	06/05/19 18:26	06/09/19 22:28	117-84-0	
bis(2-Ethylhexyl)phthalate	ND	ug/L	9.8	1	06/05/19 18:26	06/09/19 22:28	117-81-7	
Fluoranthene	ND	ug/L	9.8	1	06/05/19 18:26	06/09/19 22:28	206-44-0	
Fluorene	ND	ug/L	9.8	1	06/05/19 18:26	06/09/19 22:28	86-73-7	
Hexachlorobenzene	ND	ug/L	9.8	1	06/05/19 18:26	06/09/19 22:28	118-74-1	
Hexachlorocyclopentadiene	ND	ug/L	49.0	1	06/05/19 18:26	06/09/19 22:28	77-47-4	L2
Hexachloroethane	ND	ug/L	9.8	1	06/05/19 18:26	06/09/19 22:28	67-72-1	L2
Isophorone	ND	ug/L	9.8	1	06/05/19 18:26	06/09/19 22:28	78-59-1	
2-Methylnaphthalene	ND	ug/L	9.8	1	06/05/19 18:26	06/09/19 22:28	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/L	9.8	1	06/05/19 18:26	06/09/19 22:28	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/L	9.8	1	06/05/19 18:26	06/09/19 22:28		
N-Nitrosodimethylamine	ND	ug/L	9.8	1	06/05/19 18:26	06/09/19 22:28	62-75-9	
Pentachlorophenol	ND	ug/L	19.6	1	06/05/19 18:26	06/09/19 22:28	87-86-5	
Phenanthrene	ND	ug/L	9.8	1	06/05/19 18:26	06/09/19 22:28	85-01-8	
Phenol	ND	ug/L	9.8	1	06/05/19 18:26	06/09/19 22:28	108-95-2	
Pyrene	ND	ug/L	9.8	1	06/05/19 18:26	06/09/19 22:28	129-00-0	
2,4,6-Trichlorophenol	ND	ug/L	9.8	1	06/05/19 18:26	06/09/19 22:28	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	77	%.	55-125	1	06/05/19 18:26	06/09/19 22:28	4165-60-0	
2-Fluorobiphenyl (S)	76	%.	52-125	1	06/05/19 18:26	06/09/19 22:28	321-60-8	
p-Terphenyl-d14 (S)	84	%.	57-125	1	06/05/19 18:26	06/09/19 22:28	1718-51-0	
Phenol-d6 (S)	78	%.	30-125	1	06/05/19 18:26	06/09/19 22:28	13127-88-3	
2-Fluorophenol (S)	79	%.	30-125	1	06/05/19 18:26	06/09/19 22:28	367-12-4	
2,4,6-Tribromophenol (S)	98	%.	52-125	1	06/05/19 18:26	06/09/19 22:28	118-79-6	
Field Data	Analytical Method:							
Collected Date	**06/03/19**			1		06/03/19 15:30		
Collected Time	**1530**			1		06/03/19 15:30		
Field pH	**7.0**	Std. Units		1		06/03/19 15:30		
Field Temperature	**10.0**	deg C		1		06/03/19 15:30		
Field Specific Conductance	**1870**	umhos/cm		1		06/03/19 15:30		
Oxygen, Dissolved	**0.5**	mg/L		1		06/03/19 15:30	7782-44-7	
REDOX	**-8**	mV		1		06/03/19 15:30		
Turbidity	**25.6**	NTU		1		06/03/19 15:30		
Apparent Color	**Clear**			1		06/03/19 15:30		
Odor	**No**			1		06/03/19 15:30		
Well Locked	**No-but bolted**			1		06/03/19 15:30		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10477453

Sample: 603282 **Lab ID: 10477453002** Collected: 06/03/19 15:30 Received: 06/03/19 16:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:							
Purge Method	**Whale Pump**			1		06/03/19 15:30		
Total Well Depth	**32.12**	feet		1		06/03/19 15:30		
Depth of Water	**12.30**			1		06/03/19 15:30		
Well Volume Purged	**90.0**			1		06/03/19 15:30		
Purge Rate	**1.3**			1		06/03/19 15:30		
300.0 IC Anions	Analytical Method: EPA 300.0							
Chloride	**98.1**	mg/L	1.2	1		06/15/19 23:10	16887-00-6	
Chromium, Hexavalent	Analytical Method: SM 3500-Cr B Modified							
Chromium, Hexavalent	ND	mg/L	0.010	1		06/04/19 11:29		
350.1 Ammonia, Unionized	Analytical Method: EPA 350.1							
Nitrogen, Ammonia (Unionized)	ND	mg/L	0.010	1		06/25/19 12:57		
350.1 Ammonia, Distilled	Analytical Method: EPA 350.1 rev. 2 (1993) Preparation Method: EPA 350.1 rev. 2 (1993)							
Nitrogen, Ammonia	**0.15**	mg/L	0.11	1	06/17/19 10:04	06/18/19 11:30	7664-41-7	
SM4500CN-E Cyanide	Analytical Method: SM 4500-CN-E Preparation Method: SM 4500-CN-E							
Cyanide	ND	ug/L	20.0	1	06/14/19 10:28	06/14/19 12:47	57-12-5	

Sample: M-3 **Lab ID: 10477453003** Collected: 06/03/19 15:35 Received: 06/03/19 16:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8082A GCS PCB	Analytical Method: EPA 8082A Preparation Method: EPA Mod. 3510C							
PCB-1016 (Aroclor 1016)	ND	ug/L	0.098	1	06/06/19 18:14	06/11/19 02:19	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/L	0.098	1	06/06/19 18:14	06/11/19 02:19	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/L	0.098	1	06/06/19 18:14	06/11/19 02:19	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/L	0.098	1	06/06/19 18:14	06/11/19 02:19	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/L	0.098	1	06/06/19 18:14	06/11/19 02:19	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/L	0.098	1	06/06/19 18:14	06/11/19 02:19	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/L	0.098	1	06/06/19 18:14	06/11/19 02:19	11096-82-5	
PCB-1262 (Aroclor 1262)	ND	ug/L	0.098	1	06/06/19 18:14	06/11/19 02:19	37324-23-5	
PCB-1268 (Aroclor 1268)	ND	ug/L	0.098	1	06/06/19 18:14	06/11/19 02:19	11100-14-4	
Surrogates								
Tetrachloro-m-xylene (S)	72	%.	30-125	1	06/06/19 18:14	06/11/19 02:19	877-09-8	
Decachlorobiphenyl (S)	109	%.	30-125	1	06/06/19 18:14	06/11/19 02:19	2051-24-3	CH
200.7 MET ICP, Dissolved	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Aluminum, Dissolved	ND	ug/L	200	1	06/11/19 08:26	06/12/19 14:02	7429-90-5	
Barium, Dissolved	**76.5**	ug/L	10.0	1	06/11/19 08:26	06/12/19 14:02	7440-39-3	
Copper, Dissolved	ND	ug/L	10.0	1	06/11/19 08:26	06/12/19 14:02	7440-50-8	
Manganese, Dissolved	**672**	ug/L	5.0	1	06/11/19 08:26	06/12/19 14:02	7439-96-5	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10477453

Sample: M-3 **Lab ID: 10477453003** Collected: 06/03/19 15:35 Received: 06/03/19 16:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 MET ICP, Dissolved	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Nickel, Dissolved	ND	ug/L	20.0	1	06/11/19 08:26	06/12/19 14:02	7440-02-0	
Silver, Dissolved	ND	ug/L	10.0	1	06/11/19 08:26	06/12/19 14:02	7440-22-4	
Tin, Dissolved	ND	ug/L	75.0	1	06/11/19 08:26	06/12/19 14:02	7440-31-5	
Total Hardness by 2340B, Dissolved	**984000**	ug/L	3300	1	06/11/19 08:26	06/12/19 14:02		
Zinc, Dissolved	ND	ug/L	20.0	1	06/11/19 08:26	06/12/19 14:02	7440-66-6	
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Dissolved	ND	ug/L	0.50	1	06/11/19 08:26	06/14/19 23:10	7440-36-0	
Arsenic, Dissolved	**0.91**	ug/L	0.50	1	06/11/19 08:26	06/14/19 23:10	7440-38-2	
Beryllium, Dissolved	ND	ug/L	50.0	250	06/11/19 08:26	06/17/19 15:09	7440-41-7	D3
Boron, Dissolved	**28900**	ug/L	2500	250	06/11/19 08:26	06/17/19 15:09	7440-42-8	
Cadmium, Dissolved	ND	ug/L	0.080	1	06/11/19 08:26	06/14/19 23:10	7440-43-9	
Chromium, Dissolved	ND	ug/L	0.50	1	06/11/19 08:26	06/14/19 23:10	7440-47-3	
Cobalt, Dissolved	**3.9**	ug/L	0.50	1	06/11/19 08:26	06/14/19 23:10	7440-48-4	
Lead, Dissolved	ND	ug/L	0.10	1	06/11/19 08:26	06/14/19 23:10	7439-92-1	
Selenium, Dissolved	**3.3**	ug/L	0.50	1	06/11/19 08:26	06/14/19 23:10	7782-49-2	
Thallium, Dissolved	**0.74**	ug/L	0.10	1	06/11/19 08:26	06/14/19 23:10	7440-28-0	
Uranium, Dissolved	**16.2**	ug/L	0.50	1	06/11/19 08:26	06/14/19 23:10	7440-61-1	
Vanadium, Dissolved	ND	ug/L	1.0	1	06/11/19 08:26	06/14/19 23:10	7440-62-2	
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
Acenaphthene	ND	ug/L	9.9	1	06/05/19 18:26	06/09/19 22:54	83-32-9	
Anthracene	ND	ug/L	9.9	1	06/05/19 18:26	06/09/19 22:54	120-12-7	
Benzo(a)pyrene	ND	ug/L	9.9	1	06/05/19 18:26	06/09/19 22:54	50-32-8	
Benzoic acid	ND	ug/L	49.5	1	06/05/19 18:26	06/09/19 22:54	65-85-0	
4-Bromophenylphenyl ether	ND	ug/L	9.9	1	06/05/19 18:26	06/09/19 22:54	101-55-3	
Butylbenzylphthalate	ND	ug/L	9.9	1	06/05/19 18:26	06/09/19 22:54	85-68-7	
bis(2-Chloroethyl) ether	ND	ug/L	9.9	1	06/05/19 18:26	06/09/19 22:54	111-44-4	
2-Chlorophenol	ND	ug/L	9.9	1	06/05/19 18:26	06/09/19 22:54	95-57-8	
3,3'-Dichlorobenzidine	ND	ug/L	49.5	1	06/05/19 18:26	06/09/19 22:54	91-94-1	
2,4-Dichlorophenol	ND	ug/L	9.9	1	06/05/19 18:26	06/09/19 22:54	120-83-2	
Diethylphthalate	ND	ug/L	9.9	1	06/05/19 18:26	06/09/19 22:54	84-66-2	
2,4-Dimethylphenol	ND	ug/L	9.9	1	06/05/19 18:26	06/09/19 22:54	105-67-9	
Dimethylphthalate	ND	ug/L	9.9	1	06/05/19 18:26	06/09/19 22:54	131-11-3	
Di-n-butylphthalate	ND	ug/L	9.9	1	06/05/19 18:26	06/09/19 22:54	84-74-2	
2,4-Dinitrophenol	ND	ug/L	9.9	1	06/05/19 18:26	06/09/19 22:54	51-28-5	
Di-n-octylphthalate	ND	ug/L	9.9	1	06/05/19 18:26	06/09/19 22:54	117-84-0	
bis(2-Ethylhexyl)phthalate	ND	ug/L	9.9	1	06/05/19 18:26	06/09/19 22:54	117-81-7	
Fluoranthene	ND	ug/L	9.9	1	06/05/19 18:26	06/09/19 22:54	206-44-0	
Fluorene	ND	ug/L	9.9	1	06/05/19 18:26	06/09/19 22:54	86-73-7	
Hexachlorobenzene	ND	ug/L	9.9	1	06/05/19 18:26	06/09/19 22:54	118-74-1	
Hexachlorocyclopentadiene	ND	ug/L	49.5	1	06/05/19 18:26	06/09/19 22:54	77-47-4	L2
Hexachloroethane	ND	ug/L	9.9	1	06/05/19 18:26	06/09/19 22:54	67-72-1	L2
Isophorone	ND	ug/L	9.9	1	06/05/19 18:26	06/09/19 22:54	78-59-1	
2-Methylnaphthalene	ND	ug/L	9.9	1	06/05/19 18:26	06/09/19 22:54	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/L	9.9	1	06/05/19 18:26	06/09/19 22:54	95-48-7	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10477453

Sample: M-3 **Lab ID: 10477453003** Collected: 06/03/19 15:35 Received: 06/03/19 16:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV	Analytical Method: EPA 8270D Preparation Method: EPA 3520							
3&4-Methylphenol(m&p Cresol)	ND	ug/L	9.9	1	06/05/19 18:26	06/09/19 22:54		
N-Nitrosodimethylamine	ND	ug/L	9.9	1	06/05/19 18:26	06/09/19 22:54	62-75-9	
Pentachlorophenol	ND	ug/L	19.8	1	06/05/19 18:26	06/09/19 22:54	87-86-5	
Phenanthrene	ND	ug/L	9.9	1	06/05/19 18:26	06/09/19 22:54	85-01-8	
Phenol	ND	ug/L	9.9	1	06/05/19 18:26	06/09/19 22:54	108-95-2	
Pyrene	ND	ug/L	9.9	1	06/05/19 18:26	06/09/19 22:54	129-00-0	
2,4,6-Trichlorophenol	ND	ug/L	9.9	1	06/05/19 18:26	06/09/19 22:54	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	73	%.	55-125	1	06/05/19 18:26	06/09/19 22:54	4165-60-0	
2-Fluorobiphenyl (S)	68	%.	52-125	1	06/05/19 18:26	06/09/19 22:54	321-60-8	
p-Terphenyl-d14 (S)	79	%.	57-125	1	06/05/19 18:26	06/09/19 22:54	1718-51-0	
Phenol-d6 (S)	75	%.	30-125	1	06/05/19 18:26	06/09/19 22:54	13127-88-3	
2-Fluorophenol (S)	74	%.	30-125	1	06/05/19 18:26	06/09/19 22:54	367-12-4	
2,4,6-Tribromophenol (S)	96	%.	52-125	1	06/05/19 18:26	06/09/19 22:54	118-79-6	
Field Data	Analytical Method:							
Collected Date	**06/03/19**			1		06/03/19 15:35		
Collected Time	**1535**			1		06/03/19 15:35		
Field pH	**7.0**	Std. Units		1		06/03/19 15:35		
Field Temperature	**10.0**	deg C		1		06/03/19 15:35		
300.0 IC Anions	Analytical Method: EPA 300.0							
Chloride	**96.0**	mg/L	1.2	1		06/15/19 23:25	16887-00-6	
Chromium, Hexavalent	Analytical Method: SM 3500-Cr B Modified							
Chromium, Hexavalent	ND	mg/L	0.010	1		06/04/19 11:29		
350.1 Ammonia, Unionized	Analytical Method: EPA 350.1							
Nitrogen, Ammonia (Unionized)	ND	mg/L	0.010	1		06/25/19 12:57		
350.1 Ammonia, Distilled	Analytical Method: EPA 350.1 rev. 2 (1993) Preparation Method: EPA 350.1 rev. 2 (1993)							
Nitrogen, Ammonia	**0.16**	mg/L	0.11	1	06/17/19 10:04	06/18/19 11:32	7664-41-7	
SM4500CN-E Cyanide	Analytical Method: SM 4500-CN-E Preparation Method: SM 4500-CN-E							
Cyanide	ND	ug/L	20.0	1	06/14/19 10:28	06/14/19 12:47	57-12-5	

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10477453

QC Batch: 610848 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 MET Dissolved
Associated Lab Samples: 10477453001, 10477453002, 10477453003

METHOD BLANK: 3300567 Matrix: Water
Associated Lab Samples: 10477453001, 10477453002, 10477453003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum, Dissolved	ug/L	ND	200	06/12/19 13:38	
Barium, Dissolved	ug/L	ND	10.0	06/12/19 13:38	
Copper, Dissolved	ug/L	ND	10.0	06/12/19 13:38	
Manganese, Dissolved	ug/L	ND	5.0	06/12/19 13:38	
Nickel, Dissolved	ug/L	ND	20.0	06/12/19 13:38	
Silver, Dissolved	ug/L	ND	10.0	06/12/19 13:38	
Tin, Dissolved	ug/L	ND	75.0	06/12/19 13:38	
Zinc, Dissolved	ug/L	ND	20.0	06/12/19 13:38	

LABORATORY CONTROL SAMPLE: 3300568

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum, Dissolved	ug/L	20000	22100	111	85-115	
Barium, Dissolved	ug/L	1000	1040	104	85-115	
Copper, Dissolved	ug/L	1000	1000	100	85-115	
Manganese, Dissolved	ug/L	1000	1050	105	85-115	
Nickel, Dissolved	ug/L	1000	1030	103	85-115	
Silver, Dissolved	ug/L	500	522	104	85-115	
Tin, Dissolved	ug/L	1000	1030	103	85-115	
Zinc, Dissolved	ug/L	1000	1050	105	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3300569 3300570

Parameter	Units	10477507001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum, Dissolved	ug/L	<21.4	20000	20000	23500	23400	118	117	70-130	1	20	
Barium, Dissolved	ug/L	413	1000	1000	1480	1480	107	106	70-130	0	20	
Copper, Dissolved	ug/L	6.3J	1000	1000	1070	1070	107	106	70-130	0	20	
Manganese, Dissolved	ug/L	136	1000	1000	1220	1200	108	107	70-130	1	20	
Nickel, Dissolved	ug/L	2.6J	1000	1000	1030	1020	102	102	70-130	0	20	
Silver, Dissolved	ug/L	<0.40	500	500	561	559	112	112	70-130	0	20	
Tin, Dissolved	ug/L	<3.2	1000	1000	1040	1050	104	105	70-130	1	20	
Zinc, Dissolved	ug/L	47.4	1000	1000	1090	1080	104	104	70-130	0	20	

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10477453

QC Batch: 610854 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET Dissolved
Associated Lab Samples: 10477453001, 10477453002, 10477453003

METHOD BLANK: 3300595 Matrix: Water
Associated Lab Samples: 10477453001, 10477453002, 10477453003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony, Dissolved	ug/L	ND	0.50	06/14/19 22:48	
Arsenic, Dissolved	ug/L	ND	0.50	06/14/19 22:48	
Beryllium, Dissolved	ug/L	ND	0.20	06/17/19 14:29	
Boron, Dissolved	ug/L	ND	10.0	06/17/19 14:29	
Cadmium, Dissolved	ug/L	ND	0.080	06/14/19 22:48	
Chromium, Dissolved	ug/L	ND	0.50	06/14/19 22:48	
Cobalt, Dissolved	ug/L	ND	0.50	06/14/19 22:48	
Lead, Dissolved	ug/L	ND	0.10	06/14/19 22:48	
Selenium, Dissolved	ug/L	ND	0.50	06/14/19 22:48	
Thallium, Dissolved	ug/L	ND	0.10	06/14/19 22:48	
Uranium, Dissolved	ug/L	ND	0.50	06/14/19 22:48	
Vanadium, Dissolved	ug/L	ND	1.0	06/14/19 22:48	

LABORATORY CONTROL SAMPLE: 3300596

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony, Dissolved	ug/L	100	105	105	85-115	
Arsenic, Dissolved	ug/L	100	94.3	94	85-115	
Beryllium, Dissolved	ug/L	100	99.3	99	85-115	
Boron, Dissolved	ug/L	100	95.2	95	85-115	
Cadmium, Dissolved	ug/L	100	102	102	85-115	
Chromium, Dissolved	ug/L	100	102	102	85-115	
Cobalt, Dissolved	ug/L	100	103	103	85-115	
Lead, Dissolved	ug/L	100	106	106	85-115	
Selenium, Dissolved	ug/L	100	99.4	99	85-115	
Thallium, Dissolved	ug/L	100	102	102	85-115	
Uranium, Dissolved	ug/L	100	96.6	97	85-115	
Vanadium, Dissolved	ug/L	100	104	104	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3300597 3300598

Parameter	Units	10477453001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony, Dissolved	ug/L	ND	100	100	103	104	103	104	70-130	1	20	
Arsenic, Dissolved	ug/L	ND	100	100	93.0	97.6	93	98	70-130	5	20	
Beryllium, Dissolved	ug/L	ND	100	100	98.0	102	98	102	70-130	4	20	
Boron, Dissolved	ug/L	ND	100	100	93.5	99.2	93	99	70-130	6	20	
Cadmium, Dissolved	ug/L	ND	100	100	103	106	103	106	70-130	3	20	

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10477453

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3300597 3300598

Parameter	Units	10477453001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Dissolved	ug/L	ND	100	100	102	104	101	104	70-130	3	20	
Cobalt, Dissolved	ug/L	ND	100	100	102	105	102	105	70-130	3	20	
Lead, Dissolved	ug/L	ND	100	100	103	110	103	110	70-130	7	20	
Selenium, Dissolved	ug/L	ND	100	100	98.8	103	99	103	70-130	4	20	
Thallium, Dissolved	ug/L	ND	100	100	98.5	105	98	105	70-130	7	20	
Uranium, Dissolved	ug/L	ND	100	100	97.3	100	97	100	70-130	3	20	
Vanadium, Dissolved	ug/L	ND	100	100	103	107	103	107	70-130	4	20	

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10477453

QC Batch: 611018 Analysis Method: EPA 8082A
QC Batch Method: EPA Mod. 3510C Analysis Description: 8082A GCS PCB
Associated Lab Samples: 10477453001, 10477453002, 10477453003

METHOD BLANK: 3301148 Matrix: Water
Associated Lab Samples: 10477453001, 10477453002, 10477453003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
PCB-1016 (Aroclor 1016)	ug/L	ND	0.10	06/10/19 23:57	
PCB-1221 (Aroclor 1221)	ug/L	ND	0.10	06/10/19 23:57	
PCB-1232 (Aroclor 1232)	ug/L	ND	0.10	06/10/19 23:57	
PCB-1242 (Aroclor 1242)	ug/L	ND	0.10	06/10/19 23:57	
PCB-1248 (Aroclor 1248)	ug/L	ND	0.10	06/10/19 23:57	
PCB-1254 (Aroclor 1254)	ug/L	ND	0.10	06/10/19 23:57	
PCB-1260 (Aroclor 1260)	ug/L	ND	0.10	06/10/19 23:57	
PCB-1262 (Aroclor 1262)	ug/L	ND	0.10	06/10/19 23:57	
PCB-1268 (Aroclor 1268)	ug/L	ND	0.10	06/10/19 23:57	
Decachlorobiphenyl (S)	%.	121	30-125	06/10/19 23:57	CH
Tetrachloro-m-xylene (S)	%.	74	30-125	06/10/19 23:57	

LABORATORY CONTROL SAMPLE & LCSD: 3301149 3301150

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
PCB-1016 (Aroclor 1016)	ug/L	20	17.4	17.2	87	86	45-125	1	20	
PCB-1260 (Aroclor 1260)	ug/L	20	18.5	18.4	93	92	49-125	1	20	
Decachlorobiphenyl (S)	%.				116	92	30-125			CH
Tetrachloro-m-xylene (S)	%.				63	56	30-125			

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10477453

QC Batch: 610683 Analysis Method: EPA 8270D
QC Batch Method: EPA 3520 Analysis Description: 8270D Water MSSV
Associated Lab Samples: 10477453001, 10477453002, 10477453003

METHOD BLANK: 3299553 Matrix: Water
Associated Lab Samples: 10477453001, 10477453002, 10477453003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
2,4,6-Trichlorophenol	ug/L	ND	10.0	06/09/19 17:17	
2,4-Dichlorophenol	ug/L	ND	10.0	06/09/19 17:17	
2,4-Dimethylphenol	ug/L	ND	10.0	06/09/19 17:17	
2,4-Dinitrophenol	ug/L	ND	10.0	06/09/19 17:17	
2-Chlorophenol	ug/L	ND	10.0	06/09/19 17:17	
2-Methylnaphthalene	ug/L	ND	10.0	06/09/19 17:17	
2-Methylphenol(o-Cresol)	ug/L	ND	10.0	06/09/19 17:17	
3&4-Methylphenol(m&p Cresol)	ug/L	ND	10.0	06/09/19 17:17	
3,3'-Dichlorobenzidine	ug/L	ND	50.0	06/09/19 17:17	
4-Bromophenylphenyl ether	ug/L	ND	10.0	06/09/19 17:17	
Acenaphthene	ug/L	ND	10.0	06/09/19 17:17	
Anthracene	ug/L	ND	10.0	06/09/19 17:17	
Benzo(a)pyrene	ug/L	ND	10.0	06/09/19 17:17	
Benzoic acid	ug/L	ND	50.0	06/09/19 17:17	
bis(2-Chloroethyl) ether	ug/L	ND	10.0	06/09/19 17:17	
bis(2-Ethylhexyl)phthalate	ug/L	ND	10.0	06/09/19 17:17	
Butylbenzylphthalate	ug/L	ND	10.0	06/09/19 17:17	
Di-n-butylphthalate	ug/L	ND	10.0	06/09/19 17:17	
Di-n-octylphthalate	ug/L	ND	10.0	06/09/19 17:17	
Diethylphthalate	ug/L	ND	10.0	06/09/19 17:17	
Dimethylphthalate	ug/L	ND	10.0	06/09/19 17:17	
Fluoranthene	ug/L	ND	10.0	06/09/19 17:17	
Fluorene	ug/L	ND	10.0	06/09/19 17:17	
Hexachlorobenzene	ug/L	ND	10.0	06/09/19 17:17	
Hexachlorocyclopentadiene	ug/L	ND	50.0	06/09/19 17:17	
Hexachloroethane	ug/L	ND	10.0	06/09/19 17:17	
Isophorone	ug/L	ND	10.0	06/09/19 17:17	
N-Nitrosodimethylamine	ug/L	ND	10.0	06/09/19 17:17	
Pentachlorophenol	ug/L	ND	20.0	06/09/19 17:17	
Phenanthrene	ug/L	ND	10.0	06/09/19 17:17	
Phenol	ug/L	ND	10.0	06/09/19 17:17	
Pyrene	ug/L	ND	10.0	06/09/19 17:17	
2,4,6-Tribromophenol (S)	%.	72	52-125	06/09/19 17:17	
2-Fluorobiphenyl (S)	%.	36	52-125	06/09/19 17:17	S0
2-Fluorophenol (S)	%.	57	30-125	06/09/19 17:17	
Nitrobenzene-d5 (S)	%.	56	55-125	06/09/19 17:17	
p-Terphenyl-d14 (S)	%.	67	57-125	06/09/19 17:17	
Phenol-d6 (S)	%.	59	30-125	06/09/19 17:17	

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10477453

LABORATORY CONTROL SAMPLE & LCSD: 3299554 3299555

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
2,4,6-Trichlorophenol	ug/L	50	39.3	45.2	79	90	60-125	14	20	
2,4-Dichlorophenol	ug/L	50	35.4	40.9	71	82	56-125	14	20	
2,4-Dimethylphenol	ug/L	50	32.2	34.4	64	69	33-125	7	20	
2,4-Dinitrophenol	ug/L	50	29.3	35.3	59	71	32-125	19	20	
2-Chlorophenol	ug/L	50	33.5	37.1	67	74	52-125	10	20	
2-Methylnaphthalene	ug/L	50	29.2	34.8	58	70	52-125	18	20	
2-Methylphenol(o-Cresol)	ug/L	50	35.9	40.2	72	80	55-125	11	20	
3&4-Methylphenol(m&p Cresol)	ug/L	50	36.0	40.5	72	81	57-125	12	20	
3,3'-Dichlorobenzidine	ug/L	50	39.8J	45.5J	80	91	39-150		20	
4-Bromophenylphenyl ether	ug/L	50	35.7	43.9	71	88	61-125	21	20	R1
Acenaphthene	ug/L	50	35.8	42.5	72	85	59-125	17	20	
Anthracene	ug/L	50	38.1	46.1	76	92	64-125	19	20	
Benzo(a)pyrene	ug/L	50	38.3	45.2	77	90	63-125	17	20	
Benzoic acid	ug/L	50	29.1J	32J	58	64	30-125		20	
bis(2-Chloroethyl) ether	ug/L	50	34.4	38.4	69	77	49-125	11	20	
bis(2-Ethylhexyl)phthalate	ug/L	50	39.0	47.2	78	94	68-125	19	20	
Butylbenzylphthalate	ug/L	50	37.9	45.5	76	91	67-125	18	20	
Di-n-butylphthalate	ug/L	50	39.1	46.0	78	92	67-125	16	20	
Di-n-octylphthalate	ug/L	50	36.7	46.0	73	92	67-125	23	20	R1
Diethylphthalate	ug/L	50	38.4	46.8	77	94	64-125	20	20	
Dimethylphthalate	ug/L	50	40.7	45.8	81	92	65-125	12	20	
Fluoranthene	ug/L	50	39.7	46.5	79	93	64-125	16	20	
Fluorene	ug/L	50	36.4	44.8	73	90	63-125	21	20	R1
Hexachlorobenzene	ug/L	50	36.5	43.8	73	88	61-125	18	20	
Hexachlorocyclopentadiene	ug/L	50	ND	ND	13	13	30-125		20	L2
Hexachloroethane	ug/L	50	14.2	17.5	28	35	30-125	21	20	L2,R1
Isophorone	ug/L	50	38.1	43.3	76	87	59-125	13	20	
N-Nitrosodimethylamine	ug/L	50	33.8	36.4	68	73	43-125	7	20	
Pentachlorophenol	ug/L	50	35.0	41.9	70	84	35-125	18	20	
Phenanthrene	ug/L	50	38.9	45.6	78	91	65-125	16	20	
Phenol	ug/L	50	34.1	37.4	68	75	54-125	9	20	
Pyrene	ug/L	50	38.2	47.9	76	96	65-125	23	20	R1
2,4,6-Tribromophenol (S)	%.				74	87	52-125			
2-Fluorobiphenyl (S)	%.				63	76	52-125			
2-Fluorophenol (S)	%.				65	69	30-125			
Nitrobenzene-d5 (S)	%.				67	73	55-125			
p-Terphenyl-d14 (S)	%.				72	85	57-125			
Phenol-d6 (S)	%.				63	68	30-125			

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REPORT OF LABORATORY ANALYSIS

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1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10477453

QC Batch: 612881 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 10477453001, 10477453002, 10477453003

METHOD BLANK: 3311550 Matrix: Water
Associated Lab Samples: 10477453001, 10477453002, 10477453003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.2	06/15/19 12:03	

LABORATORY CONTROL SAMPLE: 3311551

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	12.5	12.1	97	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3311552 3311553

Parameter	Units	10478124001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	6.2	12.5	12.5	16.9	16.6	86	83	90-110	2	20	M1

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3311554 3311555

Parameter	Units	10478124002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	9.0	12.5	12.5	19.3	20.0	83	88	90-110	4	20	M1

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10477453

QC Batch: 610273 Analysis Method: SM 3500-Cr B Modified
QC Batch Method: SM 3500-Cr B Modified Analysis Description: Chromium, Hexavalent by 3500
Associated Lab Samples: 10477453001, 10477453002, 10477453003

METHOD BLANK: 3297870 Matrix: Water
Associated Lab Samples: 10477453001, 10477453002, 10477453003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium, Hexavalent	mg/L	ND	0.010	06/04/19 11:29	

LABORATORY CONTROL SAMPLE: 3297871

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/L	0.2	0.19	95	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3297872 3297873

Parameter	Units	10477314001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Hexavalent	mg/L	ND	0.2	0.2	0.18	0.19	88	89	85-115	1	20	H3

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10477453

QC Batch: 168227 Analysis Method: EPA 350.1 rev. 2 (1993)
QC Batch Method: EPA 350.1 rev. 2 (1993) Analysis Description: 350.1 Ammonia Distilled
Associated Lab Samples: 10477453001, 10477453002, 10477453003

METHOD BLANK: 663794 Matrix: Water
Associated Lab Samples: 10477453001, 10477453002, 10477453003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, Ammonia	mg/L	ND	0.11	06/18/19 11:10	

LABORATORY CONTROL SAMPLE: 663795

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Ammonia	mg/L	5	4.6	92	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 663796 663797

Parameter	Units	12130248002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, Ammonia	mg/L	0.19	5	5	4.8	4.7	92	91	90-110	1	10	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 663798 663799

Parameter	Units	12130437002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, Ammonia	mg/L	<0.11	5	5	4.6	4.7	89	92	90-110	3	10	M1

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QUALITY CONTROL DATA

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10477453

QC Batch: 612850 Analysis Method: SM 4500-CN-E
QC Batch Method: SM 4500-CN-E Analysis Description: SM4500CN-E Cyanide
Associated Lab Samples: 10477453001, 10477453002, 10477453003

METHOD BLANK: 3311476 Matrix: Water
Associated Lab Samples: 10477453001, 10477453002, 10477453003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cyanide	ug/L	ND	20.0	06/14/19 12:26	

LABORATORY CONTROL SAMPLE: 3311477

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cyanide	ug/L	250	238	95	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3311478 3311479

Parameter	Units	10478055001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cyanide	ug/L	ND	250	250	224	239	85	91	80-120	6	30	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3311480 3311481

Parameter	Units	10478819001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cyanide	ug/L	ND	250	250	246	241	95	94	80-120	2	30	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10477453

Sample: FB-3 **Lab ID: 10477453001** Collected: 06/03/19 13:50 Received: 06/03/19 16:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 900.0	**-0.177 ± 0.292 (0.659) C:NA T:NA**	pCi/L	06/11/19 19:41	12587-46-1	
Gross Beta	EPA 900.0	**-0.092 ± 0.420 (0.852) C:NA T:NA**	pCi/L	06/11/19 19:41	12587-47-2	

Sample: 603282 **Lab ID: 10477453002** Collected: 06/03/19 15:30 Received: 06/03/19 16:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 900.0	**16.8 ± 5.79 (6.97) C:NA T:NA**	pCi/L	06/11/19 19:41	12587-46-1	
Gross Beta	EPA 900.0	**10.8 ± 3.79 (5.43) C:NA T:NA**	pCi/L	06/11/19 19:41	12587-47-2	

Sample: M-3 **Lab ID: 10477453003** Collected: 06/03/19 15:35 Received: 06/03/19 16:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 900.0	**17.0 ± 5.59 (6.41) C:NA T:NA**	pCi/L	06/11/19 19:41	12587-46-1	
Gross Beta	EPA 900.0	**5.43 ± 2.76 (4.49) C:NA T:NA**	pCi/L	06/11/19 19:41	12587-47-2	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10477453

QC Batch: 346398 Analysis Method: EPA 900.0
QC Batch Method: EPA 900.0 Analysis Description: 900.0 Gross Alpha/Beta
Associated Lab Samples: 10477453001, 10477453002, 10477453003

METHOD BLANK: 1685375 Matrix: Water
Associated Lab Samples: 10477453001, 10477453002, 10477453003

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Gross Alpha	1.23 ± 0.820 (1.20) C:NA T:NA	pCi/L	06/12/19 08:34	
Gross Beta	1.12 ± 0.930 (1.82) C:NA T:NA	pCi/L	06/12/19 08:34	

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(612)607-1700

QUALIFIERS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10477453

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-M	Pace Analytical Services - Minneapolis
PASI-PA	Pace Analytical Services - Greensburg
PASI-V	Pace Analytical Services - Virginia

WORKORDER QUALIFIERS

WO: 10477453

[1] Samples were received outside of the recommended temperature range of 0-6 degrees Celsius. The samples were received from the field on ice.

BATCH QUALIFIERS

Batch: 611418

[M5] A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

REPORT OF LABORATORY ANALYSIS

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(612)607-1700

QUALIFIERS

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10477453

ANALYTE QUALIFIERS

CH	The continuing calibration for this compound is outside of Pace Analytical acceptance limits. The results may be biased high.
D3	Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
H3	Sample was received or analysis requested beyond the recognized method holding time.
L2	Analyte recovery in the laboratory control sample (LCS) was below QC limits. Results for this analyte in associated samples may be biased low.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
R1	RPD value was outside control limits.
S0	Surrogate recovery outside laboratory control limits.

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(612)607-1700

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 19-01567 MPCA Freeway LF 19 WT
Pace Project No.: 10477453

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10477453001	**FB-3**	EPA Mod. 3510C	611018	EPA 8082A	611418
10477453002	**603282**	EPA Mod. 3510C	611018	EPA 8082A	611418
10477453003	**M-3**	EPA Mod. 3510C	611018	EPA 8082A	611418
10477453001	**FB-3**	EPA 200.7	610848	EPA 200.7	612165
10477453002	**603282**	EPA 200.7	610848	EPA 200.7	612165
10477453003	**M-3**	EPA 200.7	610848	EPA 200.7	612165
10477453001	**FB-3**	EPA 200.8	610854	EPA 200.8	612825
10477453002	**603282**	EPA 200.8	610854	EPA 200.8	612825
10477453003	**M-3**	EPA 200.8	610854	EPA 200.8	612825
10477453001	**FB-3**	EPA 3520	610683	EPA 8270D	611521
10477453002	**603282**	EPA 3520	610683	EPA 8270D	611521
10477453003	**M-3**	EPA 3520	610683	EPA 8270D	611521
10477453002	**603282**				
10477453003	**M-3**				
10477453001	**FB-3**	EPA 900.0	346398		
10477453002	**603282**	EPA 900.0	346398		
10477453003	**M-3**	EPA 900.0	346398		
10477453001	**FB-3**	EPA 300.0	612881		
10477453002	**603282**	EPA 300.0	612881		
10477453003	**M-3**	EPA 300.0	612881		
10477453001	**FB-3**	SM 3500-Cr B Modified	610273		
10477453002	**603282**	SM 3500-Cr B Modified	610273		
10477453003	**M-3**	SM 3500-Cr B Modified	610273		
10477453002	**603282**	EPA 350.1			
10477453003	**M-3**	EPA 350.1			
10477453001	**FB-3**	EPA 350.1 rev. 2 (1993)	168227	EPA 350.1 rev. 2 (1993)	168372
10477453002	**603282**	EPA 350.1 rev. 2 (1993)	168227	EPA 350.1 rev. 2 (1993)	168372
10477453003	**M-3**	EPA 350.1 rev. 2 (1993)	168227	EPA 350.1 rev. 2 (1993)	168372
10477453001	**FB-3**	SM 4500-CN-E	612850	SM 4500-CN-E	612958
10477453002	**603282**	SM 4500-CN-E	612850	SM 4500-CN-E	612958
10477453003	**M-3**	SM 4500-CN-E	612850	SM 4500-CN-E	612958

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WO# : 10477453

10477453

Minnesota Pollution Control Agency

Chain-of-Custody Form revision 2013.0909

Work Order

Turnarou...

Page: 1 of 1

FOR LAB USE ONLY

Lab Work Order Sticker

PROJECT/CLIENT INFO				LABORATORY			
Facility Code:	MNSW-057	Program Code (MDH Lab Only):		Lab Name:	Pace Analytical - Minneapolis, MN		
Project Name:	19-01567 MPCA Freeway Landfill 2019 Waters	Project Task Code:	PRJ07786	Address:	1700 SE Elm Street		
Project Manager:	Brad Jacobson	612-607-6375	EPIC PROFILE #: 38716 Line 2		Minneapolis	MN	55414
Potential Hazard?	If yes, add information to Sampler Comments Section			Phone No:	612-607-6400		

SAMPLE DETAILS

SAMPLE TYPE CODES
Sample=Routine Sample
S-IVP=Integrated Vertical Profile Sample
S-CWOP=Composite Sample
QC-FB=Field Blank Sample
QC-FR=Field Replicate Sample
QC-TB=Trip Blank Sample

LAB MATRIX CODES
DW=Drinking Water
NW=Non-potable Water
SD=Soil/Solid
WP=Wipe
AR=Air
BL=Biological Material
OT=Other
TS=Tissue

FIELD MATRIX CODES
Wtr-Ground=Groundwater
Wtr-Surf=Surface Water
QC-BLANK=Artificial Blank Water
Leachate=Leachate Sample

ANALYSIS REQUESTED

Location Identifier	Sample Type	Date	Time	Start Depth, in meters	End Depth, in meters	Grab (G) or Composite (C)	Lab Matrix Code	Field Matrix Code	AIS	Sampler Comments (filter volume, special handling, etc.)	DJA 6/3/19 # of Cont	ANALYSIS PRESERV.	Field Parameters: SWL, Temp, pH, DO, Cond, Eh, Turbidity	Metals 200.7 / 200.8 / Gross Alpha/Beta - QAPP Table 3a	300.0 / HexCr - QAPP Table 3a	Ammonia/ Unionized NH3 - QAPP Table 3a	Total Cyanide / Free Cyanide - QAPP Table 3a	8270 SVOC, 8082, MDA1, MDA2 - QAPP Table 3a	Lab Sample No.	#
												None		HNO3	None	H2SO4	NaOH	None		
FB-3	QC-FB	6/3/19	1350			G	NW	QC-BLANK	N	(Field Blank 3)	13 ~~17~~	~~DJA 6/3~~		X	X	X	X	X		1
603282	Sample	6/3/19	1530			G	NW	Wtr-Ground	N	(MW-97-2)	14		X	X	X	X	X	X		2
MW-3	QC-FR	6/3/19	1535			G	NW	Wtr-Ground	N	(Duplicate 3)	14		X	X	X	X	X	X		3
									N											4
									N											5
									N											6
									N											7
									N											8
									N											9
									N											10

~~DJA 6/3/19~~

MW
MW2
MW3

Sampled By: David Anderson

Sampler's Signature: David Anderson

Phone #:

Receiving Comments:

Relinquished By/Affiliation	Date/Time	Accepted By/ Affiliation	Date/Time
(Sampler) David Anderson / Pace Analytical	6/3/19 / 1620	Elizabeth R3 Lowery PACE	~~6/4/19 0939~~ 6/3/19 1620

ERZ 6/4/19

Pace Analytical	Document Name: **Sample Condition Upon Receipt Form**	Document Revised: 09May2019 Page 1 of 1
	Document No.: **F-MN-L-213-rev.28**	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Minnesota Pollution Control Agency

Project #: **WO#: 10477453**

PM: JMA **Due Date: 06/17/19**

CLIENT: PASI-MNFLD

Courier: ☐Fed Ex ☐UPS ☐USPS ☐Client ☒Pace ☐SpeeDee ☐Commercial **See Exception** ☐

Tracking Number: _____

Custody Seal on Cooler/Box Present? ☐Yes ☒No **Seals Intact?** ☐Yes ☒No **Biological Tissue Frozen?** ☐Yes ☐No ☒N/A

Packing Material: ☐Bubble Wrap ☐Bubble Bags ☐None ☒Other: PB **Temp Blank?** ☒Yes ☐No

Thermometer: ☐T1(0461) ☐T2(1336) ☐T3(0459) ☒T4(0254) ☐T5(0489) **Type of Ice:** ☒Wet ☐Blue ☐None ☐Dry ☐Melted

Note: Each West Virginia Sample must have temp taken (no temp blanks)

Temp should be above freezing to 6°C **Cooler Temp Read w/temp blank:** 4.5, 2.7, 3.8 °C **Average Corrected Temp (no temp blank only):** _____ °C **See Exceptions** ☐

Correction Factor: TRUE **Cooler Temp Corrected w/temp blank:** 4.5, 2.7, 3.8 °C

USDA Regulated Soil: (☒N/A, water sample/Other: _____) **Date/Initials of Person Examining Contents:** ERZ 6/4/19

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA. MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐Yes ☐No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐Yes ☐No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present and Filled Out?	☒Yes	☐No		1.
Chain of Custody Relinquished?	☒Yes	☐No		2.
Sampler Name and/or Signature on COC?	☒Yes	☐No	☐N/A	3.
Samples Arrived within Hold Time?	☒Yes	☐No		4.
Short Hold Time Analysis (<72 hr)?	☒Yes	☐No		5. ☐Fecal Coliform ☐HPC ☐Total Coliform/E coli ☐BOD/cBOD ☒Hex Chrome ☐Turbidity ☐Nitrate ☒Nitrite ☐Orthophos ☐Other
Rush Turn Around Time Requested?	☐Yes	☒No		6.
Sufficient Volume?	☒Yes	☐No		7.
Correct Containers Used? -Pace Containers Used?	☒Yes ☒Yes	☐No ☐No		8.
Containers Intact?	☒Yes	☐No		9.
Field Filtered Volume Received for Dissolved Tests?	☒Yes	☐No	☐N/A	10. Is sediment visible in the dissolved container? ☐Yes ☒No
Is sufficient information available to reconcile the samples to the COC? Matrix: ☒Water ☐Soil ☐Oil ☐Other	☒Yes	☐No		11. **If no, write ID/ Date/Time on Container Below:** **See Exception** ☐
All containers needing acid/base preservation have been checked?	☒Yes	☐No	☐N/A	12. Sample #
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>12 Cyanide)	☒Yes	☐No	☐N/A	☒NaOH ☒HNO_3 ☒H_2SO_4 ☐Zinc Acetate 1-3: 2/2 2/2 1/1
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin/PFAS	☐Yes	☐No	☒N/A	Positive for Res. Chlorine? ☐Yes ☒No **pH Paper Lot#** **See Exception** ☐
				Res. Chlorine 9016 | 0-6 Roll 203619 | 0-6 Strip | 0-14 Strip 10D2981
Headspace in VOA Vials (greater than 6mm)?	☐Yes	☐No	☒N/A	13. **See Exception** ☐
Trip Blank Present?	☐Yes	☐No	☒N/A	14.
Trip Blank Custody Seals Present?	☐Yes	☐No	☒N/A	Pace Trip Blank Lot # (if purchased): _____

CLIENT NOTIFICATION/RESOLUTION

Person Contacted: _____ Date/Time: _____ **Field Data Required?** ☐Yes ☐No

Comments/Resolution: _____

Project Manager Review: _____ **Date:** 06/04/2019

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers).

Labeled by: RE

WO# : 12125872

12125872

Chain of Custody

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN

Cert. Needed: ☐ Yes ☐

Workorder: 10477453 **Workorder Name:** 19-01567 MPCA Freeway LF 19 WT **Owner Received Date:** 6/3/2019 **Results Requested By:** 6/24/2019

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6436	Pace Analytical Virginia MN 315 Chestnut Street Virginia, MN 55792 Phone (218)742-1042

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: H2SO4	Preserved Containers:					Requested Analysis: 350.1 Ammonia	Requested Analysis: Unionized Ammonia											LAB USE ONLY
1	FB-3	PS	6/3/2019 13:50	10477453001	Water	1						X												
2	603282	PS	6/3/2019 15:30	10477453002	Water	1						X	X											
3	M-3	PS	6/3/2019 15:35	10477453003	Water	1						X	X											
4																								
5																								

Transfers	Released By	Date/Time	Received By	Date/Time
1	[illegible]	06/03/19 1730	RCC 6.4.19	1815
2	RCC 6.4.19	2245	K Mathus	6/5/19 0830
3				

Comments

Cooler Temperature on Receipt 3.4 °C | **Custody Seal** (Y) or N | **Received on Ice** (Y) or N | **Samples Intact** (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.*

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 30Apr2019 Page 1 of 1
	Document No.: F-VM-C-001-rev.13	Issuing Authority: Pace Virginia Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Pace MN

Project #: WO#: 12125872

PM: CLJ Due Date: 06/24/19

CLIENT: PACE MPLS

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☒ Pace ☐ Other:

Tracking Number:

Custody Seal on Cooler/Box Present? ☒ Yes ☐ No Seals Intact? ☒ Yes ☐ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☒ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other: Temp Blank? ☒ Yes ☐ No

Thermometer Used: ☒ 140792808 Type of Ice: ☐ Wet ☐ Blue ☐ None ☒ Samples on ice, cooling process has begun

Cooler Temp Read °C: 3.1 Cooler Temp Corrected °C: 3.4 Biological Tissue Frozen? ☐ Yes ☐ No ☒ NA

Temp should be above freezing to 6 °C Correction Factor: 0.3 Date and Initials of Person Examining Contents: 6/4/19 AC BM 6/4/19

				Comments:
Chain of Custody Present?	☑ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☑ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☑ Yes	☐ No	☐ N/A	3.
Sampler Name and Signature on COC?	☐ Yes	☑ No	☐ N/A	4.
Samples Arrived within Hold Time?	☑ Yes	☐ No	☐ N/A	5. If Fecal: ☐ <8 hours ☐ >8, <24 hours ☐ >24 hours
Short Hold Time Analysis (<72 hr)?	☐ Yes	☑ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☑ No	☐ N/A	7.
Sufficient Volume?	☑ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☑ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☑ Yes	☐ No	☐ N/A	
Containers Intact?	☑ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☑ N/A	11. Note if sediment is visible in the dissolved containers.
Sample Labels Match COC?	☑ Yes	☐ No	☐ N/A	12.
-Includes Date/Time/ID/Analysis Matrix: WT				
All containers needing acid/base preservation properly preserved?	☑ Yes	☐ No	☐ N/A	13. Note samples needing adjustment:
Headspace in Methyl Mercury Container	☐ Yes	☐ No	☑ N/A	14.
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☑ N/A	15.
Trip Blank Present?	☐ Yes	☐ No	☑ N/A	16.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☑ N/A	
Pace Trip Blank Lot # (if purchased):				

CLIENT NOTIFICATION/RESOLUTION Field Data Required? ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

FECAL WAIVER ON FILE Y N TEMPERATURE WAIVER ON FILE Y N

Project Manager Review: Nikki Jarve Date: 6/5/19

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Chain of Custody

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN
Cert. Needed: ☐ Yes ☐ No

Pace Analytical®
www.pacelabs.com

Workorder: 10477453 **Workorder Name:** 19-01567 MPCA Freeway LF 19 WT **Owner Received Date:** 6/3/2019 **Results Requested By:** 6/24/2019

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6436	Pace Analytical Pittsburgh 1638 Roseytown Road Suites 2,3 & 4 Greensburg, PA 15601 Phone (724)850-5600

Requested Analysis

WO# : 30297978

30297978

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: HNO3 BP1N	Gross Alpha/Beta	LAB USE ONLY
1	FB-3	PS	6/3/2019 13:50	10477453001	Water	1	X	001
2	603282	PS	6/3/2019 15:30	10477453002	Water	1	X	002
3	M-3	PS	6/3/2019 15:35	10477453003	Water	1	X	003
4								
5								

Comments

Transfers	Released By	Date/Time	Received By	Date/Time
1	Emily Fuchs PACE	06/04/19 0650	Emily	6-5-19 0930
2				
3				

Cooler Temperature on Receipt 3.1 °C | **Custody Seal** (Y) or N | **Received on Ice** (Y) or N | **Samples Intact** (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.*
This chain of custody is considered complete as is since this information is available in the owner laboratory.

Pittsburgh Lab Sample Condition Upon Receipt

Pace Analytical

Client Name: Pace MN Project# 30297978

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Label ET
LIMS Login ET

Tracking #: 4638 0197 0406

Custody Seal on Cooler/Box Present: ☑ yes ☐ no Seals intact: ☑ yes ☐ no

Thermometer Used 11 Type of Ice: (Wet) Blue None

Cooler Temperature Observed Temp 3.1 °C Correction Factor: 0.0 °C Final Temp: 3.1 °C

Temp should be above freezing to 6°C

pH paper Lot# 1003581 Date and Initials of person examining contents: ET 6-5-19

Comments:	Yes	No	N/A	
Chain of Custody Present:	✓			1.
Chain of Custody Filled Out:	✓			2.
Chain of Custody Relinquished:	✓			3.
Sampler Name & Signature on COC:		✓		4.
Sample Labels match COC: -Includes date/time/ID Matrix: WT	✓			5.
Samples Arrived within Hold Time:	✓			6.
Short Hold Time Analysis (<72hr remaining):		✓		7.
Rush Turn Around Time Requested:		✓		8.
Sufficient Volume:	✓			9.
Correct Containers Used: -Pace Containers Used:	✓			10.
Containers Intact:	✓			11.
Orthophosphate field filtered			✓	12.
Hex Cr Aqueous sample field filtered			✓	13.
Organic Samples checked for dechlorination:			✓	14.
Filtered volume received for Dissolved tests			✓	15.
All containers have been checked for preservation. exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix	✓			16. pHLZ
All containers meet method preservation requirements.	✓			Initial when completed ET Date/time of preservation
				Lot # of added preservative
Headspace in VOA Vials (>6mm):			✓	17.
Trip Blank Present:		✓		18.
Trip Blank Custody Seals Present			✓	
Rad Samples Screened < 0.5 mrem/hr	✓			Initial when completed: ET Date: 6-5-19

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

☐ **A check in this box indicates that additional information has been stored in ereports.**

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

***PM review** is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

19-Jun-2019

Jennifer Anderson
Pace Analytical Services, LLC
1700 Elm Street
Suite 200
Minneapolis, MN 55414

Re: **10477453** Work Order: **19060283**

Dear Jennifer,

ALS Environmental received 3 samples on 05-Jun-2019 09:30 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental - Holland and for only the analyses requested.

Sample results are compliant with industry accepted practices and Quality Control results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 9.

If you have any questions regarding this report, please feel free to contact me:

ADDRESS: 3352 128th Avenue, Holland, MI, USA
PHONE: +1 (616) 399-6070 FAX: +1 (616) 399-6185

Sincerely,

Electronically approved by: Chad Whelton

Chad Whelton
Project Manager

ALS Group, USA

Date: 19-Jun-19

Client: Pace Analytical Services, LLC
Project: 10477453
Work Order: **19060283**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
19060283-01	FB-3	Water		6/3/2019 13:50	6/5/2019 09:30	☐
19060283-02	603282	Water		6/3/2019 15:30	6/5/2019 09:30	☐
19060283-03	M-3	Water		6/3/2019 15:35	6/5/2019 09:30	☐

Client: Pace Analytical Services, LLC
Project: 10477453
WorkOrder: **19060283**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
**	Estimated Value
a	Analyte is non-accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
Hr	BOD/CBOD - Sample was reset outside Hold Time, value should be considered estimated.
J	Analyte is present at an estimated concentration between the MDL and Report Limit
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and Reporting Limit, sample results may exhibit background or reagent contamination at the observed level.

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

Units Reported	Description
µg/L	Micrograms per Liter

ALS Group, USA

Date: *19-Jun-19*

Client:	Pace Analytical Services, LLC		
Project:	10477453	**Work Order:**	19060283
Sample ID:	FB-3	**Lab ID:**	19060283-01
Collection Date:	6/3/2019 01:50 PM	**Matrix:**	WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
CYANIDE, FREE			**SW9014**			Analyst: **RZM**
Cyanide, Free	ND		20	µg/L	1	6/12/2019 02:05 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *19-Jun-19*

Client:	Pace Analytical Services, LLC		
Project:	10477453	**Work Order:**	19060283
Sample ID:	603282	**Lab ID:**	19060283-02
Collection Date:	6/3/2019 03:30 PM	**Matrix:**	WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
CYANIDE, FREE			**SW9014**			Analyst: **RZM**
Cyanide, Free	ND		20	µg/L	1	6/12/2019 02:05 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *19-Jun-19*

Client:	Pace Analytical Services, LLC		
Project:	10477453	**Work Order:**	19060283
Sample ID:	M-3	**Lab ID:**	19060283-03
Collection Date:	6/3/2019 03:35 PM	**Matrix:**	WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
CYANIDE, FREE			**SW9014**			Analyst: **RZM**
Cyanide, Free	ND		20	µg/L	1	6/12/2019 02:05 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

QC BATCH REPORT

Batch ID: **R262499** Instrument ID **WETCHEM** Method: **SW9014**

MBLK Sample ID: **MB-R262499-R262499** Units: **µg/L** Analysis Date: **6/12/2019 02:05 PM**

Client ID: Run ID: **WETCHEM_190612U** SeqNo: **5711012** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Free	ND	20								

LCS Sample ID: **LCS-R262499-R262499** Units: **µg/L** Analysis Date: **6/12/2019 02:05 PM**

Client ID: Run ID: **WETCHEM_190612U** SeqNo: **5711013** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Free	271.2	20	250	0	108	81-119	0			

MS Sample ID: **19052116-01A MS** Units: **µg/L** Analysis Date: **6/12/2019 02:05 PM**

Client ID: Run ID: **WETCHEM_190612U** SeqNo: **5711015** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Free	112.1	20	250	-11.2	49.3	81-119	0			S

MSD Sample ID: **19052116-01A MSD** Units: **µg/L** Analysis Date: **6/12/2019 02:05 PM**

Client ID: Run ID: **WETCHEM_190612U** SeqNo: **5711016** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Free	77.26	20	250	-11.2	35.4	81-119	112.1	36.8	20	SR

The following samples were analyzed in this batch:

19060283-01A	19060283-02A	19060283-03A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

19060283

Chain of Custody

Pace Analytical®
www.pacelabs.com

Workorder: 10477453 **Workorder Name:** 19-01567 MPCA Freeway LF 19 WT **Results Requested By:** 6/24/2019

Report / Invoice To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6436 Email: jennifer.anderson@pacelabs.com	ALS 3352 128th Avenue Holland, MI 49424 P.O. 10477453

State of Sample Origin: MN

Item	Sample ID	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Other BP3A	Requested Analysis: Free Cyanide	LAB USE ONLY
1	FB-3	6/3/2019 13:50	10477453001	Water	1	X	
2	603282	6/3/2019 15:30	10477453002	Water	1	X	
3	M-3	6/3/2019 15:35	10477453003	Water	1	X	
4							
5							

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature] FED EX	06/04/19 1400	FED EX	
2		6/5/19 0930	[signature]	
3				

Comments

Cooler Temperature on Receipt 4.0 °C SR2 **Custody Seal** Y or N **Received on Ice** Y or N **Samples Intact** Y or N

ALS Group, USA

Sample Receipt Checklist

Client Name: **PACE_MN** Date/Time Received: **05-Jun-19 09:30**

Work Order: **19060283** Received by: **DS**

Checklist completed by Diane Shaw (eSignature) 05-Jun-19 (Date) Reviewed by: Chad Whelton (eSignature) 06-Jun-19 (Date)

Matrices: Water

Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Sample(s) received on ice?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	4.0/4.0 c	SR2	
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	6/5/2019 3:44:27 PM		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

Pace Analytical®
ECCS Mobile Lab Services

2525 Advance Road
Madison, WI 53718
608.221.8700 Phone
608.221.4889 Fax

June 18, 2019

Jennifer Anderson
Pace Analytical
1700 Elm Street, Suite 200
Minneapolis, MN 55414

RE: MPCA Freeway LF Water - MN

Enclosed are the analytical results for the samples received by the laboratory on 06/05/2019.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. These results are in compliance with the 2009 NELAC Standards and the appropriate agencies listed below, unless otherwise noted in the case narrative. This analytical report should be reproduced in its entirety.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jessica Esser

Project Manager

Certification List			Expires
DODELAP	DOD ELAP Accreditation (A2LA)	3269.01	03/31/2020
ILEPA	Illinois Secondary NELAP Accreditation	004366	04/30/2020
KDHE	Kansas Secondary NELAP Accreditation	E-10384	04/30/2020
LELAP	Louisiana Primary NELAP Accreditation	04165	06/30/2019
NCDEQ	North Carolina Dept. of Environmental Quality Accreditation	688	12/31/2019
NJDEP	New Jersey Secondary NELAP Accreditation	WI004	06/30/2019
ODEQ	Oklahoma Department of Environmental Quality Accreditation	2018-087	08/31/2019
TCEQ	Texas Secondary NELAP Accreditation	T104704504-16-7	11/30/2019
WDNR	Wisconsin Certification under NR 149	113289110	08/31/2019

Pace Analytical®
ECCS Mobile Lab Services

2525 Advance Road
Madison, WI 53718
608.221.8700 Phone
608.221.4889 Fax

Pace Analytical	Project: MPCA Freeway LF Water - MN
1700 Elm Street, Suite 200	Project Number: 10477453
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FB-3	A192308-01	Water	06/03/2019	06/05/2019
603282	A192308-02	Water	06/03/2019	06/05/2019
M-3	A192308-03	Water	06/03/2019	06/05/2019

CASE NARRATIVE

Sample Receipt Information:
3 samples were received on 06/05/2019. Samples were received at 1.9 degrees Celsius. Samples were received in acceptable condition.

Please see the chain of custody (COC) document at the end of this report for additional information.

Laboratory Control Samples (LCS):
The E1 footnote on samples A192308-01 through A192308-03 indicates that there were quality control sample exceedances for bentazon. The LCS and LCS duplicate recoveries were below acceptable limits. Please see the quality control section of the report for more information.

The LCS or LCS duplicate recoveries indicate a potential high bias for desethylatrazine, ethalfluralin, fonofos, propachlor and triallate for samples A192308-01 through A192308-03. Samples were less than the reporting limit for these analytes so no further action is required.

Continuing Calibration Verification (CCV):
CCV indicates a potential high bias for bentazon for samples A192308-01 through A192308-03. Samples were less than the reporting limit for this analyte so no further action is required.

Pace Analytical®
ECCS Mobile Lab Services

2525 Advance Road
Madison, WI 53718
608.221.8700 Phone
608.221.4889 Fax

Pace Analytical	Project: MPCA Freeway LF Water - MN
1700 Elm Street, Suite 200	Project Number: 10477453
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

FB-3

A192308-01 (Water)

Date Sampled
06/03/2019 13:50

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Base Neutral Pesticides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A906179**			
Acetochlor	ND	0.50	ug/L	1	06/06/2019	06/08/2019 09:34	EPA 8270D	
Alachlor	ND	0.50	ug/L	1	06/06/2019	06/08/2019 09:34	EPA 8270D	
Atrazine	ND	0.50	ug/L	1	06/06/2019	06/08/2019 09:34	EPA 8270D	
Chlorpyrifos	ND	0.50	ug/L	1	06/06/2019	06/08/2019 09:34	EPA 8270D	
Cyanazine	ND	0.20	ug/L	1	06/06/2019	06/08/2019 09:34	EPA 8270D	
Desethylatrazine	ND	0.50	ug/L	1	06/06/2019	06/08/2019 09:34	EPA 8270D	
Deisopropylatrazine	ND	0.50	ug/L	1	06/06/2019	06/08/2019 09:34	EPA 8270D	
Dimethenamid	ND	0.50	ug/L	1	06/06/2019	06/08/2019 09:34	EPA 8270D	
EPTC	ND	0.50	ug/L	1	06/06/2019	06/08/2019 09:34	EPA 8270D	
Ethalfluralin	ND	0.50	ug/L	1	06/06/2019	06/08/2019 09:34	EPA 8270D	
Fonofos	ND	0.50	ug/L	1	06/06/2019	06/08/2019 09:34	EPA 8270D	
Metolachlor	ND	0.50	ug/L	1	06/06/2019	06/08/2019 09:34	EPA 8270D	
Metribuzin	ND	0.50	ug/L	1	06/06/2019	06/08/2019 09:34	EPA 8270D	
Pendimethalin	ND	0.50	ug/L	1	06/06/2019	06/08/2019 09:34	EPA 8270D	
Phorate	ND	0.30	ug/L	1	06/06/2019	06/08/2019 09:34	EPA 8270D	
Prometon	ND	0.50	ug/L	1	06/06/2019	06/08/2019 09:34	EPA 8270D	
Propachlor	ND	0.50	ug/L	1	06/06/2019	06/08/2019 09:34	EPA 8270D	
Propazine	ND	0.50	ug/L	1	06/06/2019	06/08/2019 09:34	EPA 8270D	
Simazine	ND	0.50	ug/L	1	06/06/2019	06/08/2019 09:34	EPA 8270D	
Terbufos	ND	0.20	ug/L	1	06/06/2019	06/08/2019 09:34	EPA 8270D	
Triallate	ND	0.50	ug/L	1	06/06/2019	06/08/2019 09:34	EPA 8270D	
Trifluralin	ND	0.50	ug/L	1	06/06/2019	06/08/2019 09:34	EPA 8270D	
Surrogate: Atrazine-d5		*89.2 %*		*56.9-123*	*06/06/2019*	*06/08/2019 09:34*	*EPA 8270D*	
Surrogate: Parathion-d10		*350 %*		*23.8-169*	*06/06/2019*	*06/08/2019 09:34*	*EPA 8270D*	*S*
Surrogate: Triphenyl phosphate		*104 %*		*50.5-178*	*06/06/2019*	*06/08/2019 09:34*	*EPA 8270D*	
Acid Herbicides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A906185**			
2,4-D	ND	0.50	ug/L	1	06/10/2019	06/13/2019 02:26	EPA 8151A	
2,4-DB	ND	0.50	ug/L	1	06/10/2019	06/13/2019 02:26	EPA 8151A	
2,4,5-T	ND	0.50	ug/L	1	06/10/2019	06/13/2019 02:26	EPA 8151A	
2,4,5-TP (Silvex)	ND	0.50	ug/L	1	06/10/2019	06/13/2019 02:26	EPA 8151A	
Bentazon	ND	0.50	ug/L	1	06/10/2019	06/13/2019 02:26	EPA 8151A	E1
Dicamba	ND	0.50	ug/L	1	06/10/2019	06/13/2019 02:26	EPA 8151A	
MCPA	ND	0.30	ug/L	1	06/10/2019	06/13/2019 02:26	EPA 8151A	
Picloram	ND	0.50	ug/L	1	06/10/2019	06/13/2019 02:26	EPA 8151A	
Triclopyr	ND	0.50	ug/L	1	06/10/2019	06/13/2019 02:26	EPA 8151A	
Surrogate: 2,4-D-d5		*67.6 %*		*43.1-133*	*06/10/2019*	*06/13/2019 02:26*	*EPA 8151A*	

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Pace Analytical	Project: MPCA Freeway LF Water - MN
1700 Elm Street, Suite 200	Project Number: 10477453
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

603282

A192308-02 (Water)

Date Sampled
06/03/2019 15:30

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Base Neutral Pesticides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A906179**			
Acetochlor	ND	0.50	ug/L	1	06/06/2019	06/08/2019 10:02	EPA 8270D	
Alachlor	ND	0.50	ug/L	1	06/06/2019	06/08/2019 10:02	EPA 8270D	
Atrazine	ND	0.50	ug/L	1	06/06/2019	06/08/2019 10:02	EPA 8270D	
Chlorpyrifos	ND	0.50	ug/L	1	06/06/2019	06/08/2019 10:02	EPA 8270D	
Cyanazine	ND	0.20	ug/L	1	06/06/2019	06/08/2019 10:02	EPA 8270D	
Desethylatrazine	ND	0.50	ug/L	1	06/06/2019	06/08/2019 10:02	EPA 8270D	
Deisopropylatrazine	ND	0.50	ug/L	1	06/06/2019	06/08/2019 10:02	EPA 8270D	
Dimethenamid	ND	0.50	ug/L	1	06/06/2019	06/08/2019 10:02	EPA 8270D	
EPTC	ND	0.50	ug/L	1	06/06/2019	06/08/2019 10:02	EPA 8270D	
Ethalfluralin	ND	0.50	ug/L	1	06/06/2019	06/08/2019 10:02	EPA 8270D	
Fonofos	ND	0.50	ug/L	1	06/06/2019	06/08/2019 10:02	EPA 8270D	
Metolachlor	ND	0.50	ug/L	1	06/06/2019	06/08/2019 10:02	EPA 8270D	
Metribuzin	ND	0.50	ug/L	1	06/06/2019	06/08/2019 10:02	EPA 8270D	
Pendimethalin	ND	0.50	ug/L	1	06/06/2019	06/08/2019 10:02	EPA 8270D	
Phorate	ND	0.30	ug/L	1	06/06/2019	06/08/2019 10:02	EPA 8270D	
Prometon	ND	0.50	ug/L	1	06/06/2019	06/08/2019 10:02	EPA 8270D	
Propachlor	ND	0.50	ug/L	1	06/06/2019	06/08/2019 10:02	EPA 8270D	
Propazine	ND	0.50	ug/L	1	06/06/2019	06/08/2019 10:02	EPA 8270D	
Simazine	ND	0.50	ug/L	1	06/06/2019	06/08/2019 10:02	EPA 8270D	
Terbufos	ND	0.20	ug/L	1	06/06/2019	06/08/2019 10:02	EPA 8270D	
Triallate	ND	0.50	ug/L	1	06/06/2019	06/08/2019 10:02	EPA 8270D	
Trifluralin	ND	0.50	ug/L	1	06/06/2019	06/08/2019 10:02	EPA 8270D	
Surrogate: Atrazine-d5		*87.6 %*		*56.9-123*	*06/06/2019*	*06/08/2019 10:02*	*EPA 8270D*	
Surrogate: Parathion-d10		*194 %*		*23.8-169*	*06/06/2019*	*06/08/2019 10:02*	*EPA 8270D*	*S*
Surrogate: Triphenyl phosphate		*98.5 %*		*50.5-178*	*06/06/2019*	*06/08/2019 10:02*	*EPA 8270D*	
Acid Herbicides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A906185**			
2,4-D	ND	0.50	ug/L	1	06/10/2019	06/13/2019 03:02	EPA 8151A	
2,4-DB	ND	0.50	ug/L	1	06/10/2019	06/13/2019 03:02	EPA 8151A	
2,4,5-T	ND	0.50	ug/L	1	06/10/2019	06/13/2019 03:02	EPA 8151A	
2,4,5-TP (Silvex)	ND	0.50	ug/L	1	06/10/2019	06/13/2019 03:02	EPA 8151A	
Bentazon	ND	0.50	ug/L	1	06/10/2019	06/13/2019 03:02	EPA 8151A	E1
Dicamba	ND	0.50	ug/L	1	06/10/2019	06/13/2019 03:02	EPA 8151A	
MCPA	ND	0.30	ug/L	1	06/10/2019	06/13/2019 03:02	EPA 8151A	
Picloram	ND	0.50	ug/L	1	06/10/2019	06/13/2019 03:02	EPA 8151A	
Triclopyr	ND	0.50	ug/L	1	06/10/2019	06/13/2019 03:02	EPA 8151A	
Surrogate: 2,4-D-d5		*75.7 %*		*43.1-133*	*06/10/2019*	*06/13/2019 03:02*	*EPA 8151A*	

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1700 Elm Street, Suite 200	Project Number: 10477453
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

M-3

A192308-03 (Water)

Date Sampled
06/03/2019 15:35

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Base Neutral Pesticides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A906179**			
Acetochlor	ND	0.50	ug/L	1	06/06/2019	06/08/2019 10:29	EPA 8270D	
Alachlor	ND	0.50	ug/L	1	06/06/2019	06/08/2019 10:29	EPA 8270D	
Atrazine	ND	0.50	ug/L	1	06/06/2019	06/08/2019 10:29	EPA 8270D	
Chlorpyrifos	ND	0.50	ug/L	1	06/06/2019	06/08/2019 10:29	EPA 8270D	
Cyanazine	ND	0.20	ug/L	1	06/06/2019	06/08/2019 10:29	EPA 8270D	
Desethylatrazine	ND	0.50	ug/L	1	06/06/2019	06/08/2019 10:29	EPA 8270D	
Deisopropylatrazine	ND	0.50	ug/L	1	06/06/2019	06/08/2019 10:29	EPA 8270D	
Dimethenamid	ND	0.50	ug/L	1	06/06/2019	06/08/2019 10:29	EPA 8270D	
EPTC	ND	0.50	ug/L	1	06/06/2019	06/08/2019 10:29	EPA 8270D	
Ethalfluralin	ND	0.50	ug/L	1	06/06/2019	06/08/2019 10:29	EPA 8270D	
Fonofos	ND	0.50	ug/L	1	06/06/2019	06/08/2019 10:29	EPA 8270D	
Metolachlor	ND	0.50	ug/L	1	06/06/2019	06/08/2019 10:29	EPA 8270D	
Metribuzin	ND	0.50	ug/L	1	06/06/2019	06/08/2019 10:29	EPA 8270D	
Pendimethalin	ND	0.50	ug/L	1	06/06/2019	06/08/2019 10:29	EPA 8270D	
Phorate	ND	0.30	ug/L	1	06/06/2019	06/08/2019 10:29	EPA 8270D	
Prometon	ND	0.50	ug/L	1	06/06/2019	06/08/2019 10:29	EPA 8270D	
Propachlor	ND	0.50	ug/L	1	06/06/2019	06/08/2019 10:29	EPA 8270D	
Propazine	ND	0.50	ug/L	1	06/06/2019	06/08/2019 10:29	EPA 8270D	
Simazine	ND	0.50	ug/L	1	06/06/2019	06/08/2019 10:29	EPA 8270D	
Terbufos	ND	0.20	ug/L	1	06/06/2019	06/08/2019 10:29	EPA 8270D	
Triallate	ND	0.50	ug/L	1	06/06/2019	06/08/2019 10:29	EPA 8270D	
Trifluralin	ND	0.50	ug/L	1	06/06/2019	06/08/2019 10:29	EPA 8270D	
Surrogate: Atrazine-d5		*90.8 %*		*56.9-123*	*06/06/2019*	*06/08/2019 10:29*	*EPA 8270D*	
Surrogate: Parathion-d10		*158 %*		*23.8-169*	*06/06/2019*	*06/08/2019 10:29*	*EPA 8270D*	
Surrogate: Triphenyl phosphate		*108 %*		*50.5-178*	*06/06/2019*	*06/08/2019 10:29*	*EPA 8270D*	
Acid Herbicides by Gas Chromatography/Mass Spectrometry					**Preparation Batch: A906185**			
2,4-D	ND	0.50	ug/L	1	06/10/2019	06/13/2019 03:37	EPA 8151A	
2,4-DB	ND	0.50	ug/L	1	06/10/2019	06/13/2019 03:37	EPA 8151A	
2,4,5-T	ND	0.50	ug/L	1	06/10/2019	06/13/2019 03:37	EPA 8151A	
2,4,5-TP (Silvex)	ND	0.50	ug/L	1	06/10/2019	06/13/2019 03:37	EPA 8151A	
Bentazon	ND	0.50	ug/L	1	06/10/2019	06/13/2019 03:37	EPA 8151A	E1
Dicamba	ND	0.50	ug/L	1	06/10/2019	06/13/2019 03:37	EPA 8151A	
MCPA	ND	0.30	ug/L	1	06/10/2019	06/13/2019 03:37	EPA 8151A	
Picloram	ND	0.50	ug/L	1	06/10/2019	06/13/2019 03:37	EPA 8151A	
Triclopyr	ND	0.50	ug/L	1	06/10/2019	06/13/2019 03:37	EPA 8151A	
Surrogate: 2,4-D-d5		*75.9 %*		*43.1-133*	*06/10/2019*	*06/13/2019 03:37*	*EPA 8151A*	

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1700 Elm Street, Suite 200	Project Number: 10477453
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Base Neutral Pesticides by Gas Chromatography/Mass Spectrometry - Quality Control

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A906179 - EPA 3510C										
Blank (A906179-BLK1)				Prepared: 06/06/2019 Analyzed: 06/08/2019 17:05						
Acetochlor	ND	0.50	ug/L							
Alachlor	ND	0.50	ug/L							
Atrazine	ND	0.50	ug/L							
Chlorpyrifos	ND	0.50	ug/L							
Cyanazine	ND	0.20	ug/L							
Desethylatrazine	ND	0.50	ug/L							
Deisopropylatrazine	ND	0.50	ug/L							
Dimethenamid	ND	0.50	ug/L							
EPTC	ND	0.50	ug/L							
Ethalfluralin	ND	0.50	ug/L							
Fonofos	ND	0.50	ug/L							
Metolachlor	ND	0.50	ug/L							
Metribuzin	ND	0.50	ug/L							
Pendimethalin	ND	0.50	ug/L							
Phorate	ND	0.30	ug/L							
Prometon	ND	0.50	ug/L							
Propachlor	ND	0.50	ug/L							
Propazine	ND	0.50	ug/L							
Simazine	ND	0.50	ug/L							
Terbufos	ND	0.20	ug/L							
Triallate	ND	0.50	ug/L							
Trifluralin	ND	0.50	ug/L							
Surrogate: Atrazine-d5	*0.434*		*ug/L*	*0.5250*		*82.7*	*56.9-123*			
Surrogate: Parathion-d10	*1.16*		*ug/L*	*0.5445*		*214*	*23.8-169*			*S*
Surrogate: Triphenyl phosphate	*0.553*		*ug/L*	*0.5000*		*111*	*50.5-178*			
LCS (A906179-BS1)				Prepared: 06/06/2019 Analyzed: 06/08/2019 19:55						
Acetochlor	1.03	0.50	ug/L	1.000		103	67.8-122			
Alachlor	1.08	0.50	ug/L	1.000		108	68.6-119			
Atrazine	1.12	0.50	ug/L	1.000		112	68.6-115			
Chlorpyrifos	1.11	0.50	ug/L	1.000		111	63.1-120			
Cyanazine	1.15	0.20	ug/L	1.000		115	55.3-143			
Desethylatrazine	1.12	0.50	ug/L	1.000		112	67.8-115			
Deisopropylatrazine	0.902	0.50	ug/L	1.000		90.2	50.1-100			
Dimethenamid	1.08	0.50	ug/L	1.000		108	70.3-121			
EPTC	0.879	0.50	ug/L	1.000		87.9	50.4-101			
Ethalfluralin	2.46	0.50	ug/L	1.000		246	42.6-121			
Fonofos	2.46	0.50	ug/L	1.000		246	56.6-119			
Metolachlor	1.15	0.50	ug/L	1.000		115	71.3-128			
Metribuzin	1.04	0.50	ug/L	1.000		104	64.9-120			
Pendimethalin	1.07	0.50	ug/L	1.000		107	60.9-128			
Phorate	0.822	0.30	ug/L	1.000		82.2	37.3-112			
Prometon	1.06	0.50	ug/L	1.000		106	67.1-120			
Propachlor	2.69	0.50	ug/L	1.000		269	66.2-127			
Propazine	1.05	0.50	ug/L	1.000		105	68.2-118			
Simazine	1.08	0.50	ug/L	1.000		108	67.2-117			

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1700 Elm Street, Suite 200	Project Number: 10477453
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Base Neutral Pesticides by Gas Chromatography/Mass Spectrometry - Quality Control

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A906179 - EPA 3510C										
LCS (A906179-BS1)				Prepared: 06/06/2019 Analyzed: 06/08/2019 19:55						
Terbufos	0.643	0.20	ug/L	1.000		64.3	34.3-111			
Triallate	2.63	0.50	ug/L	1.000		263	53-121			
Trifluralin	0.954	0.50	ug/L	1.000		95.4	45.9-116			
Surrogate: Atrazine-d5	*0.475*		*ug/L*	*0.5250*		*90.5*	*56.9-123*			
Surrogate: Parathion-d10	*1.35*		*ug/L*	*0.5445*		*247*	*23.8-169*			*S*
Surrogate: Triphenyl phosphate	*0.550*		*ug/L*	*0.5000*		*110*	*50.5-178*			
LCS Dup (A906179-BSD1)				Prepared: 06/06/2019 Analyzed: 06/08/2019 20:23						
Acetochlor	1.07	0.50	ug/L	1.000		107	67.8-122	3.44	20	
Alachlor	1.09	0.50	ug/L	1.000		109	68.6-119	0.900	20	
Atrazine	1.10	0.50	ug/L	1.000		110	68.6-115	1.93	20	
Chlorpyrifos	1.14	0.50	ug/L	1.000		114	63.1-120	2.73	20	
Cyanazine	1.16	0.20	ug/L	1.000		116	55.3-143	0.695	20	
Desethylatrazine	1.16	0.50	ug/L	1.000		116	67.8-115	3.37	20	
Deisopropylatrazine	0.721	0.50	ug/L	1.000		72.1	50.1-100	22.3	20	X
Dimethenamid	1.12	0.50	ug/L	1.000		112	70.3-121	4.27	20	
EPTC	0.892	0.50	ug/L	1.000		89.2	50.4-101	1.46	20	
Ethalfluralin	3.25	0.50	ug/L	1.000		325	42.6-121	27.4	20	X
Fonofos	3.42	0.50	ug/L	1.000		342	56.6-119	32.5	20	X
Metolachlor	1.19	0.50	ug/L	1.000		119	71.3-128	3.11	20	
Metribuzin	1.06	0.50	ug/L	1.000		106	64.9-120	1.77	20	
Pendimethalin	1.10	0.50	ug/L	1.000		110	60.9-128	2.73	20	
Phorate	0.926	0.30	ug/L	1.000		92.6	37.3-112	11.9	20	
Prometon	1.11	0.50	ug/L	1.000		111	67.1-120	4.50	20	
Propachlor	3.74	0.50	ug/L	1.000		374	66.2-127	32.5	20	X
Propazine	1.09	0.50	ug/L	1.000		109	68.2-118	4.00	20	
Simazine	1.14	0.50	ug/L	1.000		114	67.2-117	5.28	20	
Terbufos	0.643	0.20	ug/L	1.000		64.3	34.3-111	0.0622	20	
Triallate	3.50	0.50	ug/L	1.000		350	53-121	28.1	20	X
Trifluralin	0.986	0.50	ug/L	1.000		98.6	45.9-116	3.33	20	
Surrogate: Atrazine-d5	*0.506*		*ug/L*	*0.5250*		*96.4*	*56.9-123*			
Surrogate: Parathion-d10	*1.74*		*ug/L*	*0.5445*		*319*	*23.8-169*			*S*
Surrogate: Triphenyl phosphate	*0.569*		*ug/L*	*0.5000*		*114*	*50.5-178*			

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1700 Elm Street, Suite 200	Project Number: 10477453
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Acid Herbicides by Gas Chromatography/Mass Spectrometry - Quality Control

Pace Analytical - Madison

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A906185 - EPA 3510C										
Blank (A906185-BLK1)				Prepared: 06/10/2019 Analyzed: 06/13/2019 01:50						
2,4-D	ND	0.50	ug/L							
2,4-DB	ND	0.50	ug/L							
2,4,5-T	ND	0.50	ug/L							
2,4,5-TP (Silvex)	ND	0.50	ug/L							
Bentazon	ND	0.50	ug/L							
Dicamba	ND	0.50	ug/L							
MCPA	ND	0.30	ug/L							
Picloram	ND	0.50	ug/L							
Triclopyr	ND	0.50	ug/L							
Surrogate: 2,4-D-d5	*1.54*		*ug/L*	*2.006*		*76.8*	*43.1-133*			
LCS (A906185-BS1)				Prepared: 06/10/2019 Analyzed: 06/13/2019 05:23						
2,4-D	1.63	0.50	ug/L	2.000		81.3	51.7-152			
2,4-DB	1.87	0.50	ug/L	2.000		93.6	51.5-146			
2,4,5-T	1.81	0.50	ug/L	2.000		90.5	55.4-138			
2,4,5-TP (Silvex)	1.77	0.50	ug/L	2.000		88.7	47.2-152			
Bentazon	0.0991	0.50	ug/L	1.000		9.91	48.9-146			
Dicamba	1.64	0.50	ug/L	2.000		81.9	41-149			
MCPA	0.954	0.30	ug/L	2.000		47.7	32.6-148			
Picloram	0.822	0.50	ug/L	1.000		82.2	37.8-121			
Triclopyr	1.65	0.50	ug/L	2.000		82.7	49.9-149			
Surrogate: 2,4-D-d5	*1.49*		*ug/L*	*2.006*		*74.2*	*43.1-133*			
LCS Dup (A906185-BSD1)				Prepared: 06/10/2019 Analyzed: 06/13/2019 05:58						
2,4-D	2.00	0.50	ug/L	2.000		100	51.7-152	20.8	20	X
2,4-DB	2.13	0.50	ug/L	2.000		107	51.5-146	13.1	20	
2,4,5-T	1.92	0.50	ug/L	2.000		95.9	55.4-138	5.80	20	
2,4,5-TP (Silvex)	1.94	0.50	ug/L	2.000		97.0	47.2-152	8.97	20	
Bentazon	0.131	0.50	ug/L	1.000		13.1	48.9-146	27.6	20	X
Dicamba	1.87	0.50	ug/L	2.000		93.3	41-149	13.1	20	
MCPA	0.991	0.30	ug/L	2.000		49.6	32.6-148	3.77	20	
Picloram	0.844	0.50	ug/L	1.000		84.4	37.8-121	2.62	20	
Triclopyr	1.93	0.50	ug/L	2.000		96.4	49.9-149	15.3	20	
Surrogate: 2,4-D-d5	*1.66*		*ug/L*	*2.006*		*82.8*	*43.1-133*			

Pace Analytical®
ECCS Mobile Lab Services

2525 Advance Road
Madison, WI 53718
608.221.8700 Phone
608.221.4889 Fax

Pace Analytical	Project: MPCA Freeway LF Water - MN
1700 Elm Street, Suite 200	Project Number: 10477453
Minneapolis MN, 55414	Project Manager: Jennifer Anderson

Notes and Definitions

X	Precision for the matrix spike duplicate, laboratory control sample duplicate or lab duplicate was outside of control limits.
S	Surrogate recovery was outside of laboratory control limits due to an apparent matrix effect.
E1	Estimated value because of quality control sample exceedances.
ND	Analyte NOT DETECTED at or above the reporting limit or limit of detection (if listed).
NR	Not Reported
dry	Sample results reported on a dry weight basis. If the word 'dry' does not appear after the units, results are reported on an as-is basis.
RPD	Relative Percent Difference

Chain of Custody

A192308

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☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: MN
Cert. Needed: ☐ Yes ☐ No

Workorder: 10477453 **Workorder Name:** 19-01567 MPCA Freeway LF 19 WT **Owner Received Date:** 6/3/2019 **Results Requested By:** 6/24/2019

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6436	Pace Analytical Madison 2525 Advance Road Madison, WI 53718 Phone (608)221-8700

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved AG1U						Requested Analysis: MDA List 1	MDA List 2										LAB USE ONLY
1	FB-3	PS	6/3/2019 13:50	10477453001	Water	4						X	X										01
2	603282	PS	6/3/2019 15:30	10477453002	Water	4						X	X										02
3	M-3	PS	6/3/2019 15:35	10477453003	Water	4						X	X										03
4																							
5																							

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature] POET	06/04/19 1540	[signature]	6/5/19 0940
2				
3				

Comments

Need MPCA Equis EDD and Barr Equis 5 EDD

Cooler Temperature on Receipt 1.9 °C | **Custody Seal** (Y) or N | **Received on Ice** (Y) or N | **Samples Intact** (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.*

1601142274 exp 7/13/19

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