

LABORATORY REPORT

If you have any questions concerning this report, please do not hesitate to call us at (800) 332-4345 or (574) 233-4777.

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STATE CERTIFICATION LIST

State	Certification	State	Certification
Alabama	40700	Missouri	880
Alaska	IN00035	Montana	CERT0026
Arizona	AZ0432	Nebraska	NE-OS-05-04
Arkansas	IN00035	Nevada	IN00035
California	2920	New Hampshire*	2124
Colorado	IN00035	New Jersey*	IN598
Colorado Radiochemistry	IN00035	New Mexico	IN00035
Connecticut	PH-0132	New York*	11398
Delaware	IN035	North Carolina	18700
Florida*	E87775	North Dakota	R-035
Georgia	929	Ohio	87775
Hawaii	IN035	Oklahoma	D9508
Idaho	IN00035	Oregon (Primary AB)*	4074
Illinois*	200001	Pennsylvania*	68-00466
Illinois Microbiology	17767	Puerto Rico	IN00035
Illinois Radiochemistry	IN00035	Rhode Island	LAO00343
Indiana Chemistry	C-71-01	South Carolina	95005
Indiana Microbiology	M-76-07	South Dakota	IN00035
Iowa	098	Tennessee	TN02973
Kansas*	E-10233	Texas*	T104704187-18-12
Kentucky	90056	Texas/TCEQ	TX207
Louisiana*	LA014	Utah*	IN00035
Maine	IN00035	Vermont	VT-8775
Maryland	209	Virginia*	460275
Massachusetts	M-IN035	Washington	C837
Michigan	9926	West Virginia	9927 C
Minnesota*	018-999-338	Wisconsin	999766900
Mississippi	IN035	Wyoming	IN035
EPA	IN00035		

*NELAP/TNI Recognized Accreditation Bodies

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 South Bend, IN 46617
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 Fax: (574) 233-8207
 1 800 332 4345

Laboratory Report

Client: Great Lakes Water Authority
 Attn: Mary Lynn Semegen
 10100 East Jefferson Avenue
 Detroit, MI 48214

Report: 473611
 Priority: Rush Written
 Status: Final
 PWS ID: MI2838

Sample Information					
EEA ID #	Client ID	Method	Collected Date / Time	Collected By:	Received Date / Time
4513317	Southwest Raw	200.8	12/12/19 10:56	Client	12/13/19 09:30
4513317	Southwest Raw	245.1	12/12/19 10:56	Client	12/13/19 09:30
4513318	Southwest Tap	200.8	12/12/19 11:10	Client	12/13/19 09:30
4513318	Southwest Tap	245.1	12/12/19 11:10	Client	12/13/19 09:30
4513319	SouthwestFilterWashWater	200.8	12/12/19 10:15	Client	12/13/19 09:30
4513319	SouthwestFilterWashWater	245.1	12/12/19 10:15	Client	12/13/19 09:30

Report Summary

Note: In the Method 200.8 analysis, the Zinc recovery in the DRL at 5.0 ug/L (177%) was outside the acceptance limits of 50-150%.

Detailed quantitative results are presented on the following pages. The results presented relate only to the samples provided for analysis.

We appreciate the opportunity to provide you with this analysis. If you have any questions concerning this report, please do not hesitate to call Karen Fullmer at (574) 233-4777.

Note: This report may not be reproduced, except in full, without written approval from EEA.

Karen Fullmer ASM

Authorized Signature

Title

12/20/2019

Date

Client Name: Great Lakes Water Authority

Report #: 473611

Sampling Point: Southwest Raw

PWS ID: MI2838

Metals									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
7429-90-5	Aluminum \$	200.8	50 ^	2.0	72	ug/L	---	12/16/19 11:36	4513317
7440-36-0	Antimony	200.8	6 *	1.0	< 1.0	ug/L	---	12/16/19 11:36	4513317
7440-38-2	Arsenic	200.8	10 *	1.0	< 1.0	ug/L	---	12/16/19 11:36	4513317
7440-39-3	Barium	200.8	2000 *	2.0	15	ug/L	---	12/16/19 11:36	4513317
7440-41-7	Beryllium	200.8	4 *	0.3	< 0.3	ug/L	---	12/16/19 11:36	4513317
7440-42-8	Boron \$	200.8	---	5.0	15	ug/L	---	12/16/19 11:36	4513317
7440-43-9	Cadmium	200.8	5 *	1.0	< 1.0	ug/L	---	12/16/19 11:36	4513317
7440-47-3	Chromium	200.8	100 *	0.9	< 0.9	ug/L	---	12/16/19 11:36	4513317
7440-48-4	Cobalt \$	200.8	---	2.0	< 2.0	ug/L	---	12/16/19 11:36	4513317
7440-50-8	Copper	200.8	1300 !	1.0	27	ug/L	---	12/16/19 11:36	4513317
7439-92-1	Lead	200.8	15 !	1.0	< 1.0	ug/L	---	12/16/19 11:36	4513317
7439-93-2	Lithium \$	200.8	---	2.0	< 2.0	ug/L	---	12/16/19 11:36	4513317
7439-96-5	Manganese \$	200.8	50 ^	2.0	< 2.0	ug/L	---	12/16/19 11:36	4513317
7439-98-7	Molybdenum \$	200.8	---	2.0	< 2.0	ug/L	---	12/16/19 11:36	4513317
7440-02-0	Nickel	200.8	---	1.0	< 1.0	ug/L	---	12/16/19 11:36	4513317
7782-49-2	Selenium	200.8	50 *	2.0	< 2.0	ug/L	---	12/16/19 11:36	4513317
7440-22-4	Silver \$	200.8	100 ^	2.0	< 2.0	ug/L	---	12/16/19 11:36	4513317
7440-24-6	Strontium \$	200.8	---	2.0	98	ug/L	---	12/16/19 11:36	4513317
7440-28-0	Thallium	200.8	2 *	0.3	< 0.3	ug/L	---	12/16/19 11:36	4513317
7440-29-1	Thorium \$	200.8	---	5.0	< 5.0	ug/L	---	12/16/19 11:36	4513317
7440-31-5	Tin \$	200.8	---	2.0	< 2.0	ug/L	---	12/16/19 11:36	4513317
7440-32-6	Titanium \$	200.8	---	5.0	< 5.0	ug/L	---	12/16/19 11:36	4513317
7440-61-1	Uranium	200.8	30 *	1.0	< 1.0	ug/L	---	12/16/19 11:36	4513317
7440-62-2	Vanadium \$	200.8	---	2.0	< 2.0	ug/L	---	12/16/19 11:36	4513317
7440-66-6	Zinc \$	200.8	5000 ^	5.0	< 5.0	ug/L	---	12/16/19 11:36	4513317
7439-97-6	Mercury	245.1	2 *	0.1	< 0.1	ug/L	12/16/19 16:05	12/17/19 14:29	4513317

\$ The state of origin does not offer certification for this parameter.

Sampling Point: Southwest Tap

PWS ID: MI2838

Metals									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
7429-90-5	Aluminum \$	200.8	50 ^	2.0	28	ug/L	---	12/16/19 12:41	4513318
7440-36-0	Antimony	200.8	6 *	1.0	< 1.0	ug/L	---	12/16/19 12:41	4513318
7440-38-2	Arsenic	200.8	10 *	1.0	< 1.0	ug/L	---	12/16/19 12:41	4513318
7440-39-3	Barium	200.8	2000 *	2.0	14	ug/L	---	12/16/19 12:41	4513318
7440-41-7	Beryllium	200.8	4 *	0.3	< 0.3	ug/L	---	12/16/19 12:41	4513318
7440-42-8	Boron \$	200.8	---	5.0	15	ug/L	---	12/16/19 12:41	4513318
7440-43-9	Cadmium	200.8	5 *	1.0	< 1.0	ug/L	---	12/16/19 12:41	4513318
7440-47-3	Chromium	200.8	100 *	0.9	< 0.9	ug/L	---	12/16/19 12:41	4513318
7440-48-4	Cobalt \$	200.8	---	2.0	< 2.0	ug/L	---	12/16/19 12:41	4513318
7440-50-8	Copper	200.8	1300 !	1.0	< 1.0	ug/L	---	12/16/19 12:41	4513318
7439-92-1	Lead	200.8	15 !	1.0	< 1.0	ug/L	---	12/16/19 12:41	4513318
7439-93-2	Lithium \$	200.8	---	2.0	< 2.0	ug/L	---	12/16/19 12:41	4513318
7439-96-5	Manganese \$	200.8	50 ^	2.0	< 2.0	ug/L	---	12/16/19 12:41	4513318
7439-98-7	Molybdenum \$	200.8	---	2.0	< 2.0	ug/L	---	12/16/19 12:41	4513318
7440-02-0	Nickel	200.8	---	1.0	< 1.0	ug/L	---	12/16/19 12:41	4513318
7782-49-2	Selenium	200.8	50 *	2.0	< 2.0	ug/L	---	12/16/19 12:41	4513318
7440-22-4	Silver \$	200.8	100 ^	2.0	< 2.0	ug/L	---	12/16/19 12:41	4513318
7440-24-6	Strontium \$	200.8	---	2.0	100	ug/L	---	12/16/19 12:41	4513318
7440-28-0	Thallium	200.8	2 *	0.3	< 0.3	ug/L	---	12/16/19 12:41	4513318
7440-29-1	Thorium \$	200.8	---	5.0	< 5.0	ug/L	---	12/16/19 12:41	4513318
7440-31-5	Tin \$	200.8	---	2.0	< 2.0	ug/L	---	12/16/19 12:41	4513318
7440-32-6	Titanium \$	200.8	---	5.0	< 5.0	ug/L	---	12/16/19 12:41	4513318
7440-61-1	Uranium	200.8	30 *	1.0	< 1.0	ug/L	---	12/16/19 12:41	4513318
7440-62-2	Vanadium \$	200.8	---	2.0	< 2.0	ug/L	---	12/16/19 12:41	4513318
7440-66-6	Zinc \$	200.8	5000 ^	5.0	< 5.0	ug/L	---	12/16/19 12:41	4513318
7439-97-6	Mercury	245.1	2 *	0.1	< 0.1	ug/L	12/16/19 16:05	12/17/19 14:32	4513318

\$ The state of origin does not offer certification for this parameter.

Lab Definitions

Continuing Calibration Check Standard (CCC) / Continuing Calibration Verification (CCV) / Initial Calibration Verification Standard (ICV) / Initial Performance Check (IPC) - is a standard containing one or more of the target analytes that is prepared from the same standards used to calibrate the instrument. This standard is used to verify the calibration curve at the beginning of each analytical sequence, and may also be analyzed throughout and at the end of the sequence. The concentration of continuing standards may be varied, when prescribed by the reference method, so that the range of the calibration curve is verified on a regular basis. CCL, CCM, and CCH are the CCC standards at low, mid, and high concentration levels, respectively.

Internal Standards (IS) - are pure compounds with properties similar to the analytes of interest, which are added to field samples or extracts, calibration standards, and quality control standards at a known concentration. They are used to measure the relative responses of the analytes of interest and surrogates in the sample, calibration standard or quality control standard.

Laboratory Duplicate (LD) - is a field sample aliquot taken from the same sample container in the laboratory and analyzed separately using identical procedures. Analysis of laboratory duplicates provides a measure of the precision of the laboratory procedures.

Laboratory Fortified Blank (LFB) / Laboratory Control Sample (LCS) - is an aliquot of reagent water to which known concentrations of the analytes of interest are added. The LFB is analyzed exactly the same as the field samples. LFBs are used to determine whether the method is in control. FBL, FBM, and FBH are the LFB samples at low, mid, and high concentration levels, respectively.

Laboratory Method Blank (LMB) / Laboratory Reagent Blank (LRB) - is a sample of reagent water included in the sample batch analyzed in the same way as the associated field samples. The LMB is used to determine if method analytes or other background contamination have been introduced during the preparation or analytical procedure. The LMB is analyzed exactly the same as the field samples.

Laboratory Trip Blank (LTB) / Field Reagent Blank (FRB) - is a sample of laboratory reagent water placed in a sample container in the laboratory and treated as a field sample, including storage, preservation, and all analytical procedures. The FRB/LTB container follows the collection bottles to and from the collection site, but the FRB/LTB is not opened at any time during the trip. The FRB/LTB is primarily a travel blank used to verify that the samples were not contaminated during shipment.

Matrix Spike Duplicate Sample (MSD) / Laboratory Fortified Sample Matrix Duplicate (LFSMD) - is a sample aliquot taken from the same field sample source as the Matrix Spike Sample to which known quantities of the analytes of interest are added in the laboratory. The MSD is analyzed exactly the same as the field samples. Analysis of the MSD provides a measure of the precision of the laboratory procedures in a specific matrix. SDL, SDM, and SDH / LFSMDL, LFSMDM, and LFSMDH are the MSD or LFSMD at low, mid, and high concentration levels, respectively.

Matrix Spike Sample (MS) / Laboratory Fortified Sample Matrix (LFSM) - is a sample aliquot taken from field sample source to which known quantities of the analytes of interest are added in the laboratory. The MS is analyzed exactly the same as the field samples. The purpose is to demonstrate recovery of the analytes from a sample matrix to determine if the specific matrix contributes bias to the analytical results. MSL, MSM, and MSH / LFSML, LFSMM, and LFSMH are the MS or LFSM at low, mid, and high concentration levels, respectively.

Quality Control Standard (QCS) / Second Source Calibration Verification (SSCV) - is a solution containing known concentrations of the analytes of interest prepared from a source different from the source of the calibration standards. The solution is obtained from a second manufacturer or lot if the lot can be demonstrated by the manufacturer as prepared independently from other lots. The QCS sample is analyzed using the same procedures as field samples. The QCS is used as a check on the calibration standards used in the method on a routine basis.

Reporting Limit Check (RLC) / Initial Calibration Check Standard (ICCS) - is a procedural standard that is analyzed each day to evaluate instrument performance at or below the minimum reporting limit (MRL).

Surrogate Standard (SS) / Surrogate Analyte (SUR) - is a pure compound with properties similar to the analytes of interest, which is highly unlikely to be found in any field sample, that is added to the field samples, calibration standards, blanks and quality control standards before sample preparation. The SS is used to evaluate the efficiency of the sample preparation process.



Eaton Analytical

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CHAIN OF CUSTODY RECORD

Page **1** of **1**

REPORT TO:		SAMPLER (Signature)		PWS ID#	STATE (of sample origin)	PROJECT NAME	PO#	# OF CONTAINERS	MATRIX CODE	TURNAROUND TIME
Great Lakes Water Authority., Mary Lynn Semegen 10100 E. Jefferson Avenue, Detroit, MI 48214		<i>Fred Collins</i>		2838	Michigan	Water Works Park Bromate / Bromide	0015286			
Bill To:		Compliance Monitoring		POPULATION SERVED:	SOURCE WATER:	CHLORINATED		YES	NO	
Water Board Building 73 5 Randolph, Detroit, MI 48226		Yes <input type="checkbox"/> NO <input type="checkbox"/> X		3,700,000	Detroit River					
Lab Number	COLLECTION DATE	COLLECTION TIME		SAMPLING SITE	TEST NAME	SAMPLE REMARKS				
1 <i>4513317</i>	12/12/19	10:50	AM	Southwest Raw	Complete Metals			X		1 SW RW
2	12/12/19	10:59	AM	Southwest Raw	Radiologicals			X		1 SW SW
3	12/12/19	10:50	AM	Southwest Raw	PAHs			X		SW SW
4	12/12/19	11:05	AM	Southwest Raw	PCBs			X		SW SW
5 <i>4513318</i>	12/12/19	11:10	AM	Southwest Tap	Complete Metals		X			DW RW
6	12/12/19	11:22	AM	Southwest Tap	Radiologicals		X			DW SW
7	12/12/19	11:34	AM	Southwest Tap	PAHs		X			DW SW
8	12/12/19	11:07	AM	Southwest Tap	PCBs		X			DW SW
9 <i>4513319</i>	12/12/19	10:15	AM	Southwest Filter Wash Water	Complete Metals		X			FB RW
10	12/12/19	10:30	AM	Southwest Filter Wash Water	Radiologicals		X			FB SW
11			AM	PM						
12			AM	PM						
13			AM	PM						
14			AM	PM						

SEP Batches SS 12-13-19

RUSH WRITTEN

RELINQUISHED BY: (Signature) <i>F. Collins</i>	DATE 12-12-19	TIME 2:00P	RECEIVED BY: (Signature)	DATE	TIME	LAB COMMENTS <i>Liters Received = 2x4L jugs each site</i> <i>Rads Ambient</i> <i>Metals Ambient</i>
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE	TIME	
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED FOR LABORATORY	DATE	TIME	

CONDITIONS UPON RECEIPT (check one):
 Iced Ambient or 0.2 °C Upon Receipt

MATRIX CODES: DW = DRINKING WATER SW = SURFACE WATER FB = FILTER BACKWASH WATER	TURN-AROUND TIME (TAT) - SURCHARGES SW = Standard Written (15 working days) 0% RV* = Rush Verbal (5 Working days) 50% RW* = Rush Written (5 working days) 75% * Please call, Expedited service not available for all services.	IV* = Immediate Verbal (3 working days) 100% IW* = Immediate Written (3 working days) 125% SP* = Weekend, Holiday CALL STAT* = Less than 48 hours CALL	Samples received unannounced with less than 48 hours holding time remaining may be subject to additional charges. 06-LO-F0435 Issue 4.0 Effective Date: 2014-05-01
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Sample analysis will be provided according to the standard EEA Water Services Terms, which are available upon request. Any other terms proposed by Customer are deemed material alterations and are rejected unless expressly agreed to in writing by EEA.