

# City of Flint Final RTCR Coliform Monitoring Plan

February, 2018

## Table of Contents

- A. Introduction and Objectives ..... 2
- B. Coliform Monitoring Requirements..... 2
- C. System Information..... 3
- D. Key Contacts..... 4
- E. Sample Locations and Schedule ..... 4
  - Repeat Sample Sites..... 7
- F. Sampling and Reporting SOP ..... 8
  - Monthly Monitoring..... 8
  - Sample Instructions ..... 8
  - Procedure When Sample Result Is POSITIVE ..... 9
- G. Coliform Violations..... 10
  - E. coli* MCL Violations ..... 10
  - Other Types of Violations..... 10
- H. Assessments..... 11
  - Level 1 Assessment ..... 11
  - Level 2 Assessment ..... 11

RTCR and Chlorine Sample Siting Map  
Appendix A – MDEQ Level 1 and 2 Assessment Forms

## **A. Introduction and Objectives**

This Coliform Monitoring Plan (Plan) has been developed for the City of Flint (City) to meet requirements of the Revised Total Coliform Rule (RTCR) and R 325.10704c of Michigan's rules for public water supplies. This February, 2018 Plan includes updates in sampling locations, sampling schedule, and contact information.

Drinking water systems conduct total coliform monitoring with the objective of evaluating microbial water quality to ensure water provided to consumers is free of disease-causing organisms. While drinking water systems can't evaluate the microbial quality of all water in all locations of their distribution system in a cost-effective manner, a coliform monitoring program allows systems to evaluate water quality in many locations throughout their system on a monthly basis.

This Plan has been developed to meet the following objectives:

- Update the City's coliform monitoring plan to comply with requirements of the RTCR.
- Ensure representative routine coliform sampling in the City's system by expanding the number of routine samples collected.
- Provide Standard Operating Procedures (SOPs) for coliform sampling and regulatory reporting.
- Summarize emergency response and public notification procedures in the event of a total coliform or *E. coli* positive sample.
- Provide information for the completion of Level 1 and Level 2 system assessments.
- Enhance water quality surveillance.

## **B. Coliform Monitoring Requirements**

The following sub-sections outline coliform monitoring requirements which apply to the City.

According to the 2015 American Community Survey (ACS-2015), the City serves a population estimated to be 98,310. SDWIS records have recently been updated to reflect this population. According to requirements in R 325.10704g, the City is required to collect at least 100 coliform samples throughout their distribution system each month. Samples are analyzed by the City's certified laboratory. The City may, with DEQ approval, decrease sample collection to 90 samples per month if the population drops below 96,000. The City will be required to increase sample collection to 120 per month if the population served by the City increases to more than 130,000.

Coliform samples are analyzed for the presence or absence of total coliform. A satisfactory test indicates no coliform are present. An unsatisfactory test is positive for the presence of coliform bacteria. Further testing is conducted on unsatisfactory samples to determine if *E. coli* is present.

Repeat samples are required if the routine sample is unsatisfactory. Three repeat samples are required at the following locations:

- The same tap as the original unsatisfactory Routine sample.
- An active service within five active connections upstream from where the original unsatisfactory sample was taken\*.
- An active service within five active connections downstream from where the original unsatisfactory sample was taken\*.

\*If sample sites are not available within five connections up or downstream of the routine sample location, alternative sites may be selected that represent the up or downstream water quality. MDEQ should be notified if this occurs.

### C. System Information

Flint purchases treated surface water (finished water) from the Great Lakes Water Authority to serve a population of approximately 98,310 (per 2015 census). Finished water enters the system at the water treatment plant and is continuously monitored for free chlorine residual. Chlorine, caustic soda (as needed), and orthophosphate are supplemented at this location (CSII). The water is then distributed to the City's system via one transmission line. The City has four reservoirs for a total of 58 MG of storage capacity. The City is comprised of a single pressure zone, although there is a small pumped pressure district in the southwest region of the City. Approximately 90% of the City's distribution system is comprised of unlined cast iron pipe.

**Table 1. System Information**

<b>Water System Name:</b>	City of Flint
<b>Address:</b>	4500 North Dort Highway Flint, MI 48505
<b>County:</b>	Genesee
<b>WSSN:</b>	2310
<b>Population Served:</b>	98,310 (2015 census)

## D. Key Contacts

As of February 2018, the following are the key contacts from the City, DEQ, County, and local news media for RTCR monitoring and emergency response activities.

**Table 2. Key Contact Information**

Name	Title	E-mail	Phone number(s)
<b>City of Flint – Water System</b>			
Rob Bincsik	Public Works Director	<a href="mailto:rbincsik@cityofflint.com">rbincsik@cityofflint.com</a>	(810) 787-6537
Vacant (duties assigned to F&V, contact is Rob Jones)	Water Plant Supervisor	<a href="http://www.fv-operations.com">www.fv-operations.com</a>	(616) 588-2900
Vacant (duties assigned to F&V, contact is Kirk Tews)	Lab Supervisor	<a href="http://www.fv-operations.com">www.fv-operations.com</a>	(616) 588-2900
<b>Michigan DEQ</b>			
Bob London (primary contact for RTCR)	DEQ Drinking Water	<a href="mailto:londonr@michigan.gov">londonr@michigan.gov</a>	(989) 450-7834
Jon Bloemker	DEQ Drinking Water	<a href="mailto:bloemkerj@michigan.gov">bloemkerj@michigan.gov</a>	(989) 460-7254
Brian Thurston	DEQ Drinking Water	<a href="mailto:thurstonb@michigan.gov">thurstonb@michigan.gov</a>	(231) 590-3430
Pollution Emergency Alerting System			1-800-292-4706
<b>City of Flint</b>			
Dr. Karen Weaver	Mayor	<a href="mailto:kweaver@cityofflint.com">kweaver@cityofflint.com</a>	(810) 766-7346
Sylvester Jones	City Administrator	<a href="mailto:sjones@cityofflint.com">sjones@cityofflint.com</a>	(810) 237-2057
Kristin Moore	Public Relations Director	<a href="mailto:kmoore@cityofflint.com">kmoore@cityofflint.com</a>	(810) 875-2576
Dr. Pamela Pugh	Chief Public Health Advisor	<a href="mailto:ppugh@cityofflint.com">ppugh@cityofflint.com</a>	(810) 237-2041
<b>Genesee County Health Department</b>			
Jim Henry	Environmental Health Director	<a href="mailto:jhenry@gchd.us">jhenry@gchd.us</a>	(810) 257-3612 (517) 404-8401 (cell)
Mark Valacak	Health Officer	<a href="mailto:mvalacak@gchd.us">mvalacak@gchd.us</a>	(810) 257-3588
<b>Public Notification - Media</b>			
mlive – Flint Journal		<a href="mailto:flnews@mlive.com">flnews@mlive.com</a>	(810) 766-6100
Channel 25 - WEYI			(810) 687-9612

## E. Sample Locations and Schedule

The RTCR requires systems to identify sample sites that are representative of the system. Features that should be represented through coliform monitoring include pressure zones, unique sources, areas served by reservoirs, and vulnerable conditions such as dead ends, transient usage, high water age, high hazard cross connections, and sensitive populations. Under this revised plan, a minimum of 25 samples are collected each week from 23 unique locations. Site 11, West Side Reservoir, formally served as a 24<sup>th</sup> site, but the reservoir is no longer in service. The City is currently working to identify two additional .

accessible routine sites with adequate upstream/downstream repeat sampling locations.

Prior to 2017, the City collected coliform samples from 10 unique locations. While the ten historical coliform sample sites are geographically spread throughout the system, past water quality concerns and identification of newer areas of low chlorine residual in 2016 prompted a re-evaluation of the sample sites under the RTCR. The City's 10 existing TCR sites have been retained (however, West Side Reservoir, Site 11, is currently not in service). Fourteen new sites were selected in 2017 to capture a variety of conditions to ensure that microbiological water quality is maintained throughout the system. These sites were selected with input from Flint staff, EPA, MDEQ and Arcadis staff after consideration for site accessibility, upstream/downstream access, and safety.

The sample sites are presented geographically on the attached RTCR Sample Site Map. Site nos. 21-25 are monitored for chlorine residual (not coliform). Site 25 was converted to a new RTCR site in September 2017, but issues with premise plumbing have prompted the City to replace this site with new Site 30. The repeat sample locations originally designated for Site 25 have been retained for Site 30. Site 25 will be retained for chlorine surveillance monitoring. Additionally, Site 27 is no longer available to the City, per request of the property manager.

Table 3 lists the City's historical (pre-2018) and new routine coliform sampling locations, surveillance monitoring locations, sampling schedule, and repeat sample site locations for coliform sites. Sampling will occur on the days indicated in the third column when possible and adjustments will be made on an as-needed basis for holidays and irregular months.

**Table 3. Monthly Total Coliform and Chlorine Monitoring Locations**

Dist. Site #	Routine Site Address	Sampled on Which Days	Sampling Site History/ Current Uses	Planned Upstream Site Address <sup>1</sup>	Planned Downstream Site Address <sup>1</sup>
1	2501 Flushing Rd University Market	M, Th	TCR <sup>2,5*</sup>	2702 Flushing	1117 N. Chevrolet Ave
2	1621 Saginaw Street Ten Fu Chinese Gourmet	M, Th	RTCR <sup>4</sup>	1638 Saginaw St	1709 Saginaw St
3	3609 Beecher Palace Liquor Store	M, Th	EPA Chlorine Monitoring <sup>3</sup>	3617 Beecher Rd	3505 Beecher Rd
4	3521 Corunna Rite-Aid	M, Th	Former Taco Bell site upstream <sup>2,</sup>	3606 Corunna*	3409 Corunna
5	1100 Cedar Cedar St Reservoir	M, Th	TCR <sup>2</sup>	702 12th St	1035 Ann Arbor
6	611 W. Court Street, Ste. 200 Dean T. Yeotis Law Offices	M	RTCR <sup>4</sup>	620 W. Court	521 W. Court

Dist. Site #	Routine Site Address	Sampled on Which Days	Sampling Site History/ Current Uses	Planned Upstream Site Address <sup>1</sup>	Planned Downstream Site Address <sup>1</sup>
7	1159 Foss Ave. Foss Avenue Church	Tu	EPA Chlorine Monitoring <sup>3</sup>	1185 Foss Ave	1164 E. Holbrook Ave.
8	6204 N. Saginaw St North Flint Automotive	Tu	TCR <sup>2,5*</sup>	6101 N. Saginaw St	6509 N. Saginaw St
9	5018 Clio Rd Rite-Aid	Tu	TCR <sup>2,5*</sup>	5005 Cloverlawn Rd	4825 Clio Rd
10	4090 Clio Road Auto Zone	Tu	RTCR <sup>4</sup>	4117 Clio Rd	4006 Clio Rd
11	1416 Dupont St West Side Reservoir	Out of Service	TCR <sup>2</sup>	1360 Dupont St	1430 Dupont St
12	503 Garland Street Hoffman's Deco Deli & Café	Tu	RTCR <sup>4</sup>	605 Garland	401 Garland
13	3538 Richfield Rd Grandma Recipes	Tu	Quarterly (DBP) <sup>5</sup>	3246 Richfield Rd	3702 Richfield Rd
14	3802 Davison Rd Admiral	W	Former Arby's TCR site downstream <sup>2</sup>	3719 Davison Rd*	3835 Davison Rd
15	2132 Davison Road Luigi's Restaurant	W	RTCR <sup>4</sup>	2320 Davison Rd	2100 Davison Rd
16	2838 E. Court St Rite-Aid	W, F	TCR <sup>2,5*</sup>	905 S. Dort Hwy	2845 E. Court St
17	3302 S. Dort Hwy Liquor Palace	W, F	TCR <sup>2,5*</sup>	3124 S. Dort Hwy	3316 S. Dort Hwy
18	3717 Fenton Rd Rite-Aid	W, F	Historical DBP <sup>5</sup>	3708 Fenton Rd	3621 Fenton Rd
19	3216 MLK Blvd Neighborhood Engagement Hub	W, F	TCR <sup>2,5*</sup>	3110 MLK Ave	3317 MLK Ave
20	1525 MLK Fire House #3	Th	RTCR <sup>4</sup>	1402 MLK	1602 Oren Ave
21	510 Leta Avenue Don's Market CHLORINE ONLY	M	Former Surveillance Chlorine Monitoring <sup>3</sup>	Not applicable	Not applicable
22	1002 W. Home Ave Hasselbring senior center CHLORINE ONLY	Tu	Former Surveillance Chlorine Monitoring <sup>3</sup>	Not applicable	Not applicable
23	4612 Western Rd Sam's Rollingwood	W	Former Surveillance	Not applicable	Not applicable

Dist. Site #	Routine Site Address	Sampled on Which Days	Sampling Site History/ Current Uses	Planned Upstream Site Address <sup>1</sup>	Planned Downstream Site Address <sup>1</sup>
	Market CHLORINE ONLY		Chlorine Monitoring <sup>3</sup>		
24	3109 Kleinpell St Genesee Community Health	Th	Surveillance Chlorine Monitoring <sup>3</sup>	Not applicable	Not applicable
25	3402 Western Rd Fire House #5 CHLORINE ONLY	F	Surveillance Chlorine Monitoring <sup>3,6,7</sup>	Not Applicable	Not Applicable
26	4301 Dupont St Pro Clean Cleaners	Tu	New <sup>5,6</sup>	701 Stewart	4311 Dupont St.
27	3311 Saginaw St. Post Office	-	Site No Longer Available <sup>5,6</sup>	Not Applicable	Not Applicable
28	Flint Institute of Arts 1120 E Kearsley St	M	New <sup>5,6</sup>	1026 E Kearsley St	1025 E Kearsley St
29	3440 Lapeer Rd. Maxi Quality Meats	W	New <sup>5,6</sup>	3329 Lapeer Rd.	3502 Lapeer Rd.
30	ADESA 3711 Western Rd	F	New <sup>8</sup>	3415 Western Rd	3220 Western Rd

<sup>1</sup>When a routine sample is positive for total coliform or *E.coli*, collect samples from repeat sites in the distribution system. Supplies that purchase their source water must notify their supplier of water within 24 hours of a positive routine sample result. Surface water supplies are not required to sample their source water.

<sup>2</sup>Sample site was previously used for the Total Coliform Rule monitoring plan.

<sup>3</sup>Sample site was previously used for surveillance chlorine monitoring.

<sup>4</sup>Sample site was a new site used for RTCR monitoring beginning in January 2017.

<sup>5</sup>Sample site is currently used for expanded water quality parameter (EWQP) and disinfection byproduct monitoring (DBP)\*.

<sup>6</sup>RTCR sample site added in August 2017.

<sup>7</sup>Converted to chlorine only in February, 2018.

<sup>8</sup>New site to replace previous Site 25. City has been referring to this site as 25A. Records to be updated to designate as Site 30. Repeat sites retained.

### Repeat Sample Sites

Most of the repeat sample sites shown in Table 3 are within five active connections up/downstream of the routine sample site. The City will attempt to use the repeat sample locations shown in Table 3 for repeat coliform sample collection; however, because they are not routine sample locations, there are times when they may be unavailable. In that case, the City will use an alternate site that is representative of the water quality for the routine sample site. If an alternative site is needed, the City will send a written justification to DEQ for use of the alternative site.

## F. Sampling and Reporting SOP

### Monthly Monitoring

1. Collect samples at regular time intervals throughout the month.
2. Failure to collect all required routine samples in a monitoring period is a violation. Another total coliform monitoring violation in the following 12 months will result in a fine. Notify the DEQ if monitoring was not performed as required.

### Sample Instructions

Sample Containers – Sample containers used for microbiological examination are collected in plastic or glass bottles that have been cleansed, carefully rinsed, and sterilized. For drinking water samples containing chlorine, the sample bottles should contain a dechlorinating agent. The dechlorinating is added prior to sterilization.

Sample Collection Procedure – **Overview:** When collecting a sample leave ample air space in the bottle to allow for mixing before examination. When using Idexx 120mL sample bottles, fill bottle to 100mL line. Flush and disinfect sample port and use aseptic techniques to avoid sample contamination. The sample should be representative of the water being tested. If the sample is taken from a distribution system tap, select a tap that is water from a service pipe directly connected with the water main.

### Detailed Instructions:

- 1) Remove any tap attachments such as aerators or filters.
- 2) If tap cleanliness is questionable, apply disinfectant (100 mg/L solution of sodium hypochlorite or alcohol wipes) to sample tap before flushing service line.
- 3) Open tap fully and let water run until the water is cold, to permit turnover of the water in the service line and premise plumbing prior to the sample point.
- 4) When sampling from a mixing faucet, run hot water for 2 to 3 minutes, then cold water until cold.
- 5) Flush the tap until you measure a temperature change, then record the chlorine residual level. Measure and record the chlorine residual at the same time and place as every routine and repeat sample collected.
- 6) Reduce water flow to permit filling of sample bottle without splashing, and to prevent over filling.
- 7) Remove cap from bottle and hold cap with the inner surface facing downward. Do not set cap down. Dust-like particles in the bottle are a preservative; do not empty out or rinse out this preservative.
- 8) Fill the bottle to 100 mL line. Avoid contact with sample tap or other surfaces. Do not overfill or underfill.



- 9) Recap the sample bottle before turning off the water.
- 10) Complete the laboratory chain of custody form and attach it to the sample bottle.

#### **Procedure When Sample Result Is POSITIVE**

- 1) If a distribution system sample result is positive for total coliform bacteria or *E.coli*, then collect repeat samples **within 24 hours** of learning of the positive result from all of the following sites:
  - a. The site of the positive sample result; and
  - b. An upstream site within five service connections of the original positive site; and
  - c. A downstream site within five service connections of the original positive site; and

Note: If approved by the DEQ, when an upstream repeat site is temporarily not available, sample the closest available location to the repeat site that is also upstream of the routine site and similarly for the downstream side.

- 2) Notify the DEQ District Office **within 24 hours** to learn what further action is required when greater than 5.0 percent are positive. Follow up action includes a formalized assessment of the water supply.
- 3) Notify the DEQ District Office **by the end of the day** if any sample result is positive for *E.coli*.
- 4) For an *E. coli* MCL Violation, public notification is required within 24 hours. Due to the public health risk, a boil-water advisory will typically be issued in response to an *E. coli* MCL violation. An *E. coli* MCL violation will trigger a Level 2 Assessment, which is to be completed by DEQ.

### City of Flint *E. coli* Response Plan

If we have *E. coli* in our distribution system we will immediately:

1. Call Lab Supervisor and MDEQ by end of the day that the City is notified of positive sample.
2. Contact GLWA
  - Review source water data
  - Identify operational changes
3. Contact Genesee County Public Health
4. Collect repeat samples outlined in Section E or alternate locations that are expected to represent pathways of contamination into the distribution system.
  - Collect investigative samples as needed.
5. Inspection of potential pathways and correct as needed:
  - Review SCADA records for pressure irregularities.
  - Reservoir inspection for potential pathways; screens, hatches, locks, etc.
  - Interview staff for operational changes, water main breaks, pressure outages, etc.
  - Review cross connection program and status.
  - Review construction activities.

*See Appendix A for MDEQ Level 1 and 2 Assessment Forms*

6. Implement health advisory as directed by MDEQ if deemed necessary.
7. Review repeat sample results.
  - Any repeat samples unsatisfactory: Issue health advisory. Work with MDEQ to Conduct Level 2 Assessment
  - Establish criteria for lifting health advisory.

## G. Coliform Violations

Under the RTCR, the non-acute MCL violation (when greater than 5% of monthly samples are positive for total coliform) has been removed. Instead, a Level 1 Assessment must be performed. An MCL violation is issued when the *E. coli* MCL is not met. In this case a Level 2 Assessment must be performed. Information on Assessments is provided in Section H and Appendix A.

### *E. coli* MCL Violations

An *E. coli* MCL violation occurs if a routine sample and at least one related repeat sample both have coliform bacteria present and one of the samples is positive for the presence of *E. coli*. If this occurs, contamination is confirmed in the water supply.

If an *E. coli* MCL violation occurs, follow the steps outlined in Section F.

### Other Types of Violations

Other types of violations related to RTCR compliance include treatment technique violations, monitoring

violations, and reporting violations:

- **Treatment Technique (TT) violations** result from failure to perform appropriate assessments or correction actions. TT violations require Tier 2 public notification (public notice as soon as practicable, but not later than 30 days following the violation).
- **Monitoring violations** result from a failure to collect any coliform sample (routine or repeat) or a failure to analyze an unsatisfactory total coliform positive sample for *E. coli* bacteria. Tier 3 public notification is required for monitoring violations. For this type of notification, the City must communicate the violation to customers within 12 months of the violation, which could be included in the Consumer Confidence Report (if it is issued within 12 months).
- **Reporting violations** result from failure to submit a monitoring report or completed assessment form in a timely manner or failure to notify MDEQ following an *E. coli* positive sample in a timely manner. Reporting violations require Tier 3 public notification.

## H. Assessments

A key component of the RTCR is to require a system assessment when triggered by results from coliform monitoring. The two types of assessments are described below.

### Level 1 Assessment

A Level 1 Assessment is triggered when more than 5% of monthly samples are TC+ or when the system fails to collect any required repeat samples following a TC+. The assessment is an evaluation intended to identify possible presence of sanitary defects, defects in DS coliform monitoring practices, and (when possible) the likely reason that the supply triggered the assessment. The Level 1 Assessment is conducted by the system's owner and/or operator. Information gathered in the assessment is described on the *MDEQ Level 1 Assessment Form for Community Water Supplies* (included in Appendix A) and submitted to MDEQ for review within 30 days of learning that the assessment was triggered. The form must identify any sanitary defects found during the investigation and provide a list of corrective actions that were completed during the investigation and/or a proposed time table for completing corrective actions.

### Level 2 Assessment

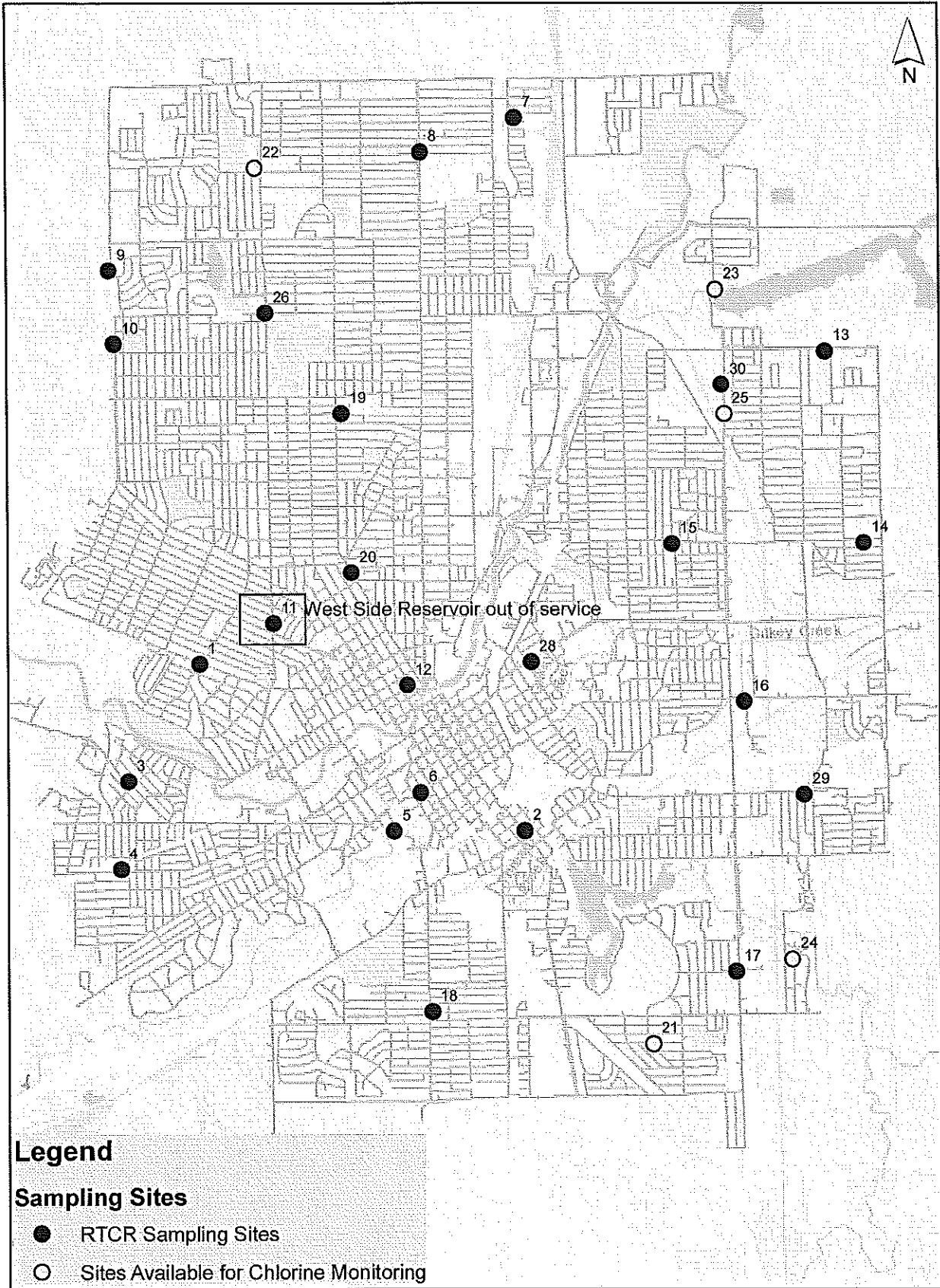
A Level 2 Assessment is triggered by an *E. Coli* MCL violation or when two Level 1 Assessments are triggered within a rolling 12-month period. A Level 2 Assessment is a more detailed evaluation than a Level 1 Assessment and is conducted by the State. MDEQ will send a team of staff members to Flint to complete the assessment. The team will conduct the assessment as soon as practicable and generally within one week of being notified of the violation. An example Level 2 Assessment Form is provided in Appendix A.

Table 5 provides a basic comparison of Level 1 and Level 2 Assessments.

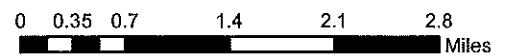
**Table 5. Comparison of Level 1 and Level 2 Assessment Requirements**

	<b>Level 1 Assessment</b>	<b>Level 2 Assessment</b>
Trigger for assessment	<ul style="list-style-type: none"> <li>• TC+ in &gt;5% of monthly samples, or</li> <li>• Failure to collect any repeat samples following TC+ sample</li> </ul>	<ul style="list-style-type: none"> <li>• <i>E. Coli</i> MCL violation, or</li> <li>• Two Level 1 Assessments required within 12-month period</li> </ul>
Party responsible for completing assessment	Supply owner or operator	MDEQ
Assessment Deadline	<ul style="list-style-type: none"> <li>• City to initiate assessment as soon as practicable after learning of trigger</li> <li>• Submit assessment form to DEQ <b>within 30 days</b> of learning that a trigger was exceeded</li> </ul>	<ul style="list-style-type: none"> <li>• MDEQ to initiate assessment as soon as practicable after learning of trigger</li> <li>• Correct sanitary defects as soon as practicable or on State-approved timeline identified in form</li> </ul>
Assessment Form	Level 1 assessment form for community water supplies (Appendix A)	Level 2 assessment form for community water supplies (Appendix A)
Minimum assessment elements	<ul style="list-style-type: none"> <li>• Review and identification of atypical events that could have affected or impaired distributed water quality</li> <li>• Changes in DS O&amp;M that could affect DS water quality (inc. storage)</li> <li>• Source and treatment considerations affecting DS water quality</li> <li>• Review of water quality data</li> <li>• Inadequacies in sample sites, sampling protocols, and sample processing</li> <li>• Form describing sanitary defects detected, corrective actions completed, and a proposed timetable for each corrective action not already completed</li> </ul>	

# City of Flint RTCR Sample Sites



February 2018



## **Appendix A - Level 1 and 2 Assessment Forms**



## LEVEL 1 ASSESSMENT FORM FOR COMMUNITY WATER SUPPLIES

Issued under authority of the Safe Drinking Water Act, 1976 PA 399, as amended,  
MCL 325.1001 et seq., and its Administrative Rules (Act 399).

This form must be completed and submitted to the appropriate DEQ District Office as soon as possible, but no later than 30 days after the supply triggered the assessment. It should be completed by the Operator In Charge, Water Supply Owner, or a knowledgeable representative of the water system.

1. General Information	
CWS Name:	WSSN:
Assessor Name:	Assessor Title:
Phone Number:	E-mail:
Trigger Event: Greater Than 5% Total Coliform Positives <input type="checkbox"/> or Failure to Collect All Repeat Samples <input type="checkbox"/>	
Date Assessment Triggered:	Date Assessment Completed:

2. Bacteriological Sample Summary (Include all results associated with monitoring period, add additional pages if necessary)					
Date & Time	Location	Purpose (Routine, Repeat, Triggered, Construction, Repair)	Result (ND, TC+, EC+, invalid, interference)	Collected By	Laboratory

**3. Assessment Questions:** Answer each question in Subsections A - G either Yes, No or Not Applicable (NA). Review and evaluate each question for potential causes of contamination. If the answer to any of these questions is unknown, leave blank and indicate on a separate sheet what actions will be taken to determine the necessary information.

A. Sample Site Selection and Sample Collection	Answer		
	Yes	No	NA
Were the samples collected in accordance with the Sample Site Plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Was the location and condition of the sample tap sanitary?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were proper sample collection procedures followed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were the samples submitted to the lab in a timely & acceptable manner?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

B. Source - Wells (if wells are not used check here <input type="checkbox"/> and go to subsection C)	Answer		
	Yes	No	NA
Do the wells have a proper well cap, sanitary seal and vent screens?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have the wells/pumps undergone any recent repairs or maintenance activities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the exposed portion of the casing (including electrical conduit) in good condition?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the area near the well cap/casing free of insects, bugs, brush and vegetation?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is there standing water or other unsanitary conditions near the wells?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Any signs of vandalism to wells or forced entry into well houses?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

C. Source – Surface Water (if surface water is not used check here <input type="checkbox"/> and go to subsection D)	Answer		
	Yes	No	NA
Are there any new potential contamination sources, or visible signs of unsanitary conditions near the raw water intake?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Any signs of vandalism or unauthorized access to source facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Was there any heavy precipitation, rapid snowmelt or flooding recently?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Any unusual changes to quality of the raw water like a spike in turbidity, sudden change in pH or very high heterotrophic plate counts?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

D. Treatment (if no treatment check here <input type="checkbox"/> and go to subsection E)	Answer		
	Yes	No	NA
Have there been additions or modifications to any treatment process?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have there been interruptions in any treatment process?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Any signs of vandalism or unauthorized access to treatment equipment or facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are there any issues with operation or maintenance of treatment equipment, units or processes?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is there any water quality data that indicates treatment is ineffective?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

E. Storage (if no water storage tank check here <input type="checkbox"/> and go to subsection F)	Answer		
	Yes	No	NA
Are there any holes, leaks or other structural problems?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are access hatches and manhole openings tightly covered and secured?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are all vents and overflow pipes screened?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
For hydropneumatic tanks, is the tank waterlogged?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Any signs of vandalism or unauthorized access to storage facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have the tank(s) been recently drained, cleaned or inspected?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

F. Distribution System	Answer		
	Yes	No	NA
Have there been any low pressure events ( $\leq 20$ psi)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have there been any water main breaks, repairs, or new main installations?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have there been any recent fires or hydrant flushing?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have there been any booster pump issues, repairs or new installations?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the supply actively performing cross connection control inspections, including frequent testing of all testable backflow preventers?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have there been other construction activities like hydrant or valve replacement that could have introduced contamination into the system?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If samples were collected from inside a building, has there been any recent plumbing work performed within the building?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

G. Operation and Maintenance (O & M)	Answer		
	Yes	No	NA
Any changes in procedures or staff effecting O & M activities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Any water quality data collected from the treated water tap or distribution system show results are indicative of an issue?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Any complaints from customers related to water quality or low pressure?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Any other issues or items that may have caused bacteriological contamination?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



**4. Issue Description:** For any answer in Part 2, Subsections A - G that are in a shaded box, use this space to describe the event and provide additional information on potential causes of contamination identified during the assessment. Include corresponding dates with your findings. Attach additional page(s) if needed. Include date(s) of low pressure events, water main breaks, maintenance activities, etc. with your findings.

**5. Corrective Actions Taken or to be Taken for any Issues Identified in Part 3:** Use this space to describe corrective actions already taken and date(s) completed; or a proposed timetable for corrective actions not yet completed. Attach additional page(s) if needed.

**6. Certification:** I hereby certify that the information contained herein is true, accurate and complete to the best of my knowledge and information.

Assessor's Name (printed):

Assessor's Signature:

Date:

**DEQ USE ONLY: This section is to be completed by DEQ.**

Reviewer Name:

Date Reviewed:

Date Received:

Within 30 days of trigger: Yes  No

Assessment Complete: Yes  No

Likely Reason for Positive Samples Identified:  
Yes  No

Corrective Actions Completed:

Yes  No  NA

Proposed Schedule Acceptable:

Yes  No  NA

Assessment Level Reset Yes  No

Comments:



## LEVEL 2 ASSESSMENT FORM FOR COMMUNITY WATER SUPPLIES

Issued under authority of the Safe Drinking Water Act, 1976 PA 399, as amended,  
MCL 325.1001 et seq., and its Administrative Rules (Act 399).

This form must be completed as soon as possible, but no later than 30 days after the supply triggered the assessment. It must be completed by DEQ - Office of Drinking Water & Municipal Assistance staff.

1. General Information	
CWS Name:	WSSN:
DEQ Staff Completing Assessment:	
Name & Title of Person Representing the CWS During Assessment:	
Level 2 Trigger: <i>E. coli</i> MCL <input type="checkbox"/> <b>or</b> 2 <sup>nd</sup> Level 1 Assessment in 12 months <input type="checkbox"/>	
Date Assessment Triggered:	Date Assessment Completed:

2. Bacteriological Sample Summary (Include all results associated with monitoring period; add additional pages if necessary)					
Date & Time	Location	Purpose (Routine, Repeat, Triggered, Construction, Repair)	Result (ND, TC+, EC+, invalid, interference)	Collected By	Laboratory

**3. Assessment Questions:** Answer each question in Subsections A - H either Yes, No or Not Applicable (NA) - Review and evaluate each question for potential causes of contamination. If the answer to any of these questions is unknown, leave blank and indicate on a separate sheet what actions will be taken to determine the necessary information, including any supplemental information that needs to be provided by the water supply.

A. Sample Site Selection and Sample Collection	Answer		
	Yes	No	NA
Were the samples collected in accordance with the Sample Site Plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
For positive samples, were the taps used in appropriate condition for collection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
For positive samples, were the taps used on a regular basis?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Did someone other than a regular sample collector collect the samples?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were proper sample collection procedures followed? (tap flushed, aerator removed, cap properly handled, clean and sealed sample bottles used, bottles not rinsed, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were the samples kept cool and delivered to the lab within 30 hours of collection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have there been any recent plumbing changes or construction at the site?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Any identified cross connections near the sample tap or premise plumbing?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is there any Point of Entry (POE) treatment units after the service line connection or in the premise?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is there any Point of Use (POU) treatment units at the sample tap(s) location?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

B. Source – Wells (if wells are not used check here <input type="checkbox"/> and go to subsection C)	Answer		
	Yes	No	NA
Do the wells have approved and secured well caps or sanitary seals?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are the well caps or sanitary seals vented and screened?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the top of the well head at least 12-inches above grade?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

B. Source – Wells (if wells are not used check here <input type="checkbox"/> and go to subsection C)	Answer		
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the electrical conduit damaged or not sealed to the well cap?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the ground graded to prevent water flow towards the wells?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is there standing water or other unsanitary conditions near the wells?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have any wells/pumps undergone any recent repairs or maintenance activities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do the wells have adequate isolation distances from sources of contamination?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does the raw water quality data indicate changes to the source water quality?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Has the pumping capacity of the well(s) changed recently?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have there been any sewer or chemicals spills, or other disturbances near the wells?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have any backup or emergency wells been placed into service?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

C. Source – Surface Water (if surface water is not used check here <input type="checkbox"/> and go to subsection D)	Answer		
	Yes	No	NA
Is the intake screened and in good condition?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Any signs of vandalism or unauthorized access to source facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does the raw water quality data indicate changes to the source water?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are there any obvious sources of contamination in the source?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have there been any sewer or chemicals spills, or other disturbances in the area of the source?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Any signs of Algal blooms?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Was there any heavy precipitation, rapid snowmelt or flooding recently?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Any signs of drought or low water levels in the source?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Has source water turnover occurred?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

D. Well House or other Low or High Service Pump House (if there are no well/pump houses, check here <input type="checkbox"/> and go to subsection E)	Answer		
	Yes	No	NA
Are there unsanitary conditions?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Any openings where animals may enter?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are there signs of animal activity?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are air/vacuum relief valves properly screened and air gapped?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are any vents/reliefs associated with control valves air gapped and not subject to flooding?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Any cross-connections (piping in drains, chemical feed, irrigation, fire suppression)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the pump-to-waste piping capped and air gapped?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the well/pump house subject to flooding?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the well/pump house used for any other purposes such as storage or maintenance activities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is there evidence of unauthorized entry?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

E. Treatment (if no treatment check here <input type="checkbox"/> and go to subsection F)	Answer		
	Yes	No	NA
Have there been additions or modifications to any treatment process?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have there been interruptions in any chemical feed, treatment unit or process?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have there been any recent maintenance or repair of treatment equipment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are all treatment devices and processes operational and properly maintained?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Any signs of vandalism or unauthorized access to treatment equipment or facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are there any signs that the chemicals being fed have been contaminated (discoloration, unusual odors, suspended particles, etc.)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If chlorine is used, was there a detectable residual at the sample sites where the positive samples occurred?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If chlorine is used, is a residual currently being detected at the plant tap and within the distribution system?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were there any instances where C*T was not properly maintained?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does water quality data indicate inadequate or inappropriate treatment of water?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

E. Treatment (if no treatment check here <input type="checkbox"/> and go to subsection F)	Answer		
	Yes	No	NA
If sand/gravel or other mixed media filtration is used, are the media depths near the original design depths and are the underdrains in good condition?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Did the plant flow exceed the state rated treatment capacity?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
For surface water plants, did a review of the turbidity data reveal any anomalies?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
For membrane plants, is daily integrity testing being performed every 24 hours of operation and do the results indicate that the membranes are in good condition?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

F. Storage (if no water storage tank check here <input type="checkbox"/> and go to subsection G)	Answer		
	Yes	No	NA
Are there any holes, leaks, cracks or other structural problems that could be a source of contamination?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are access hatches and manhole openings tightly covered, and secured?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do the access hatches/openings have a tightly fitted, rim overlapped cover and non-deteriorated gasket?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are all vents and overflow pipes properly screened?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are the vents turned downward with an adequate air gap at the termination point?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do the overflow pipes have at least a 12-inch air gap at the outlet?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do overflow pipes and downspouts drain water away from the structure?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
For hydropneumatic storage, is the tank maintaining adequate minimum pressure?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
For hydropneumatic storage, is the tank waterlogged?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are the storage facilities secured to prevent unauthorized access?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Any signs of vandalism or unauthorized access visible?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is there evidence of bird activity on the storage tank roof (nests, droppings, feathers, etc.)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is any portion of the storage facilities buried or installed below grade?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Has there been any tank maintenance or recent work?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Any recent inspections indicating sanitary deficiencies or recommended repairs?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If the tank has been inspected or removed from service recently, was it properly disinfected and sampled?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If chlorine is used, is there a detectable residual in or leaving the tank(s)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

G. Distribution System	Answer		
	Yes	No	NA
Is there any evidence the system experienced low (< 20 psi) or negative pressure?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have there been any water main breaks, repairs, or new main installations?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have there been any firefighting, system flushing or other high demand events recently?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have there been any distribution system booster pump issues, repairs or new installations?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have there been other construction activities like hydrant or valve replacement that could have introduced contamination into the system?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are there hydrants or blow-offs with unplugged weep/drain holes located in areas of high water table or poorly draining soils?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are there any dead-ends that are not flushed on a regular basis?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are there any air relief valves located in vaults where the vent terminates below grade or are not properly air gapped above grade?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the supply actively performing cross connection control inspections, including regular testing of all testable backflow preventers including those at residential accounts?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is there any evidence of intentional contamination in the distribution system?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are there any control or altitude valves subject to flooding?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

H. Operation and Maintenance (O & M)	Answer		
	Yes	No	NA
Any changes in procedures or staff effecting O & M activities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is maintenance of all facilities and equipment being performed per appropriate schedule?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Any recent interruptions to electrical power?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have there been any automation/control system interruptions recently?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

H. Operation and Maintenance (O & M)	Answer		
	Yes	No	NA
Any complaints from customers related to water quality or low pressure?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have there been any illnesses reported or suspected of being waterborne?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Any other issues that could have contributed to bacteriological contamination?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**4. Issue Description:** For any answer in Part 3 that is in a shaded box, use this space to describe the event and provide additional information on potential causes of contamination identified during the assessment. Include corresponding dates with your findings. Attach additional pages if needed. Include dates of sample collection, water main breaks, maintenance activities, etc. with your findings.

**5. Corrective Actions Taken or to be Taken for any Issues Identified in Part 3:** Use this space to describe corrective actions already taken and date completed; and/or a proposed timetable for corrective actions not yet completed. Attach additional pages if needed.

**6. Certification:** I hereby certify that the information contained herein is true, accurate and complete to the best of my knowledge and information. Must be DEQ - ODWMA staff.

Assessor's Name (printed): \_\_\_\_\_

Assessor's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

**7. DEQ District Supervisor Review:** This section is to be completed by DEQ District Supervisor.

Supervisors Name:	Date Reviewed:
Date Received:	Within 30 days of trigger: Yes <input type="checkbox"/> No <input type="checkbox"/>
Assessment Complete: Yes <input type="checkbox"/> No <input type="checkbox"/>	Likely Reason for Positive Samples Identified: Yes <input type="checkbox"/> No <input type="checkbox"/>
Corrective Actions Completed: Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/>	Proposed Schedule Acceptable: Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/>
Assessment Level Reset: Yes <input type="checkbox"/> No <input type="checkbox"/>	
Comments:	



## London, Bob (DEQ)

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**From:** Melinda Friedman <melinda@confluence-engineering.com>  
**Sent:** Monday, February 19, 2018 3:22 PM  
**To:** London, Bob (DEQ)  
**Cc:** 'Kirk Tews'; 'Robert Bincsik'; 'Slabaugh, Rebecca'; 'Hill, Christopher'  
**Subject:** Flint RTCR Plan - February 2018  
**Attachments:** Flint Revised Total Coliform Rule Monitoring Plan-Final February 2018.docx; Flint RTCR Plan Package\_Feb 2018.pdf

Hi Bob-

Attached please find the City of Flint's updated RTCR Plan. An editable Word version is included, as well as a PDF of the package which includes the Map and Appendix A (Level 1 and 2 Assessment Forms). I have been working with Kirk Tews at F&V to complete this. One important item to note: while the City does have 24 accessible and approved TCR sites, since West Side Reservoir (Site 11) is no longer in service, they are currently monitoring from 23 active sites. Thus, this Plan reflects only 23 active sites. They are working to identify 2 more sites to bring the total to 25 active sites. Kirk will work directly with you to update this document once the 2 additional sites are located and approved. Please let us know if you have any questions on this submittal. Thank you!

**Melinda Friedman, P.E.**

President

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