

**Massachusetts Department of Environmental Protection
Bureau of Water Resources – Wastewater Management Program
Combined Sewer Overflow Final Public Notification Plan**

1. Facility Information

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



City of Worcester Department of Public Works & Parks

Name of Permittee (Facility or System)

David Harris

harrisd@worcesterma.gov

508-929-1300x49001

Permittee Contact Name

Email Address

Phone number

20 East Worcester Street, Worcester, MA 01604

Permittee Mailing Address

MA0102997

NPDES Permit #

System contains (check all that apply):

- Collection system Pump station(s) above 1MGD Wastewater treatment plant

Location of WWTP discharge, if applicable:

60 Quinsigamond Ave CSO Treatment Facility; outfall 001 to Mill Brook

applicable:

Attach a map with locations of discharges and affected waterbodies. Include other supporting information as needed.

2. Identification of Environmental Justice Populations

Are there Environmental Justice (EJ) populations that would potentially be affected by your wastewater treatment plant discharge(s) or a combined sewer overflow? See the Instructions file for more detail.

Yes No

If there are EJ populations that would potentially be affected, do 25% or more of households lack English-language proficiency, and at least 5% of the population self-identify as "do not speak English very well"? See the Instructions file for more detail.

Yes No

Provide a list of all languages that notifications will be translated into:

Spanish, Vietnamese

Attach a description of how translations of public advisory notification and signage required by these regulations will be provided to EJ populations in the languages listed above. Include:

- A description of the third party or internal resource used to produce the translations
- A description of how the translation will be accessed by a public advisory notification recipient
- A description of how the translation will be accessed by someone reading the signage at CSO outfalls and public access points

3. Discharges, Overflows, and Public Notification Content

When public notification is required: (check box to affirm)

- Permittee is aware that all events covered under 314 CMR 16.03(1)(a-e) require a public notification.

Required content of public notification: (check box to affirm)

- Permittee is aware of all required information for public notifications under 314 CMR 16.04(10)

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Attach a description of how the permittee will meet the requirements under 314 CMR 16.04(10), including the following:

- How the permittee will determine or discover that an event has occurred
- How the permittee will estimate the volume of discharges or overflows
- How the permittee will estimate the commencement times, cessation times, and duration of discharges or overflows
- A list of the waters and land areas affected by the permittee's discharges or overflows

Permittee can meet all requirements of 314 CMR 16.04(10) Yes No

If no, please describe in detail which components the permittee is not able to meet and the measures needed to comply. Include a schedule for compliance.

Components that cannot be met

Schedule for compliance

4. Discovery and Required Timeline for Notification Following Discharge or Overflow

Requesting approval of an alternative method:

Is the permittee requesting approval to use a method other than metering to detect a discharge? (Requires approval of MassDEP Commissioner) Yes No

If yes, **attach** additional information on the method to detect a discharge

If yes, **attach** a letter to the Commissioner with the approval request

Discovery of a Discharge or Overflow:

Attach a description of the steps the permittee will take to determine or discover that a discharge or overflow from its outfall or sewer system is occurring

Can the permittee discover an event under 314 CMR 16.04(5)(a), (b) & (c) within the required timeline? Yes No

If no, **attach** a description specifying the limitations to meeting these requirements and potential remedies. Include and a schedule for implementing potential remedies.

Issuance of Public Notification:

Permittee can meet the notification requirements in 314 CMR 16.04(4) to notify as soon as possible, but no later than two hours after discovery. Yes No

If no, **attach** a description specifying the limitations, potential remedies, and a schedule for implementing potential remedies.

If no, **attach** a letter to the Commissioner requesting approval for a longer time period for notification.

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Continuation of Public Notification:

Permittee can meet the notification requirements in 314 CMR 16.04(7) to issue an update 8 hours after the public advisory notification, if the initial notification does not indicate that the event has ceased. Yes No

If no, **attach** a description of which requirement cannot be met, what measures are needed for compliance, and a schedule for compliance.

Cessation of Public Notification:

Permittee can meet the notification requirements in 314 CMR 16.04(8) to continue issuing 8 hour updates for ongoing events, and notify within 2 hours of when the event ceases or is projected to cease. Yes No

If no, **attach** a description of which requirement cannot be met, what measures are needed for compliance, and a schedule for compliance.

Retraction of Public Notification:

Permittee can meet the notification requirements in 314 CMR 16.04(9) to issue a retraction if the permittee becomes aware within 48 hours of issuing the public advisory notification that no discharge or overflow actually occurred. Yes No

If no, **attach** a description of which requirement cannot be met, what measures are needed for compliance, and a schedule for compliance.

5. CSO Permittee Website

Does the permittee/sewer authority have an existing website or web page where relevant information is posted? Yes No

If yes, provide the URL:

www.worcesterma.gov/water-sewer

Describe the subscriber-based system where the public can sign up to receive your notifications.

Subscribers can sign up via email on the City website. Sign-ups and email notifications managed through Constant Contact

Permittee's website is able to meet the requirements under 314 CMR 16.04(3) Yes No

Permittee's website is able to meet the requirements under 314 CMR 16.05(1)(a-e) Yes No

If any website requirements can not be met, specify limitations to meeting these requirements, potential remedies, and a schedule for compliance:

Attach a description of how the Permittee will update the website with requirements under 314 CMR 16.04(3) and 314 CMR 16.05(1)(a-e)

6. Signage

Permittee has consulted with the Board of Health/Health Departments in municipalities affected by their discharges for public access sign location points as required by 314 CMR 16.05(3)? Yes No

Attach a list of locations where signs will be installed and dates when signs will be installed.

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Permittee is able to meet the signage requirements under 314 CMR 16.05(2)? Yes No

If no, specify limitations to meeting these requirements, potential remedies, and a schedule for compliance:

Permittee is able to meet the signage requirements under 314 CMR 16.05(3)? Yes No

If no, specify limitations to meeting these requirements, potential remedies, and a schedule for compliance:

7. Public Notification Recipients

Media Outlets

List the two media outlets serving the area near the discharge or outfall that the permittee will contact to provide a public notification. Include name of organization, name of contact, and contact's email address or fax number.

Worcester Telegram & Gazette newstips@telegram.com

Name of media outlet #1

Spectrum News 1: Spectrumnews1ma@charter.com

Name of media outlet #2

If permittee has determined that an EJ population could potentially be affected by a discharge or overflow, which of these media outlets serves the EJ population? If neither does, then provide at least one additional news organization that primarily serves the EJ population(s) within the impacted municipalities. (Include name of organization, name of contact, and contact's email address or fax number.)

Vocero hispano newspaper: news@vocerohispano.com

Name of additional media outlet serving EJ population if neither media outlet above serves EJ population

Attach a description explaining how the identified media outlets serve potentially affected EJ populations.

See Instructions for list of **Required Public Notification Recipients** (314 CMR 16.04(4)(a)).

Attach a list of your required contacts.

8. Detection method maintenance

If metering is used, will the Permittee perform the requirements in 314 CMR 16.06(2)(b) below?

Calibrate metering equipment on an annual basis, at minimum Yes No

Properly maintain metering equipment Yes No

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If models are used and approved, will the Permittee perform the following requirements in 314 CMR 16.06(2)(d) below?

- | | | |
|---------------------------------------------------------------------------------------------------|------------------------------|-----------------------------|
| Review and update the model input data as needed | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Maintain any data collection equipment providing critical input to the model | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Assess model predictions annually, at a minimum | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Provide a description of actions taken in writing on or before March 1 st of each year | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

9. Public Notice

Submit a public notice to the Environmental Monitor at the same time this plan is submitted to MassDEP. Indicate below that the permittee will submit the public notice as follows:

- Email the public notice to MEPA@mass.gov at the same time the plan is submitted to MassDEP
- Include in the body of the email, "Please publish the attached public notice as 'Notice of Combined Sewer Overflow (CSO) Final Public Notification Plan.'"
- Attach the public notice to the email as a PDF

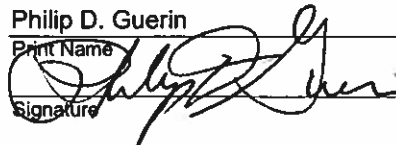
Permittee will place a public notice in at least one media outlet that serves the EJ population(s) in the municipalities impacted by the discharge. Indicate media outlet(s) below:
 Vocero hispano newspaper

Include the following in the Public Notice, required under 314 CMR 16.06(2):

- A statement that a CSO Public Notification Plan has been prepared and submitted to the Department
- A link to a website where an interested party can review the plan
- A statement that written comments on the plan can be submitted to MassDEP and the permittee for a period of 30 days after the date of publication in the Environmental Monitor or media outlet, whichever date is later. Explicitly list the end date for submission of public comments
- Translations of the Public Notice in languages most appropriate for neighborhoods within the impacted municipalities that are identified as environmental justice populations due to lacking English language proficiency

Certification

I attest that I have examined and am familiar with the information contained in this submittal, including any and all documents accompanying this certifying statement. The information contained in this submittal is, to the best of my knowledge, true, accurate, and complete. I am fully authorized to make this attestation on behalf of the facility.

Philip D. Guerin
 Print Name

 Signature

Assistant Commissioner of Water & Sewer
 Title
 1/12/2023
 Date

CSO and SSO Notification Plan

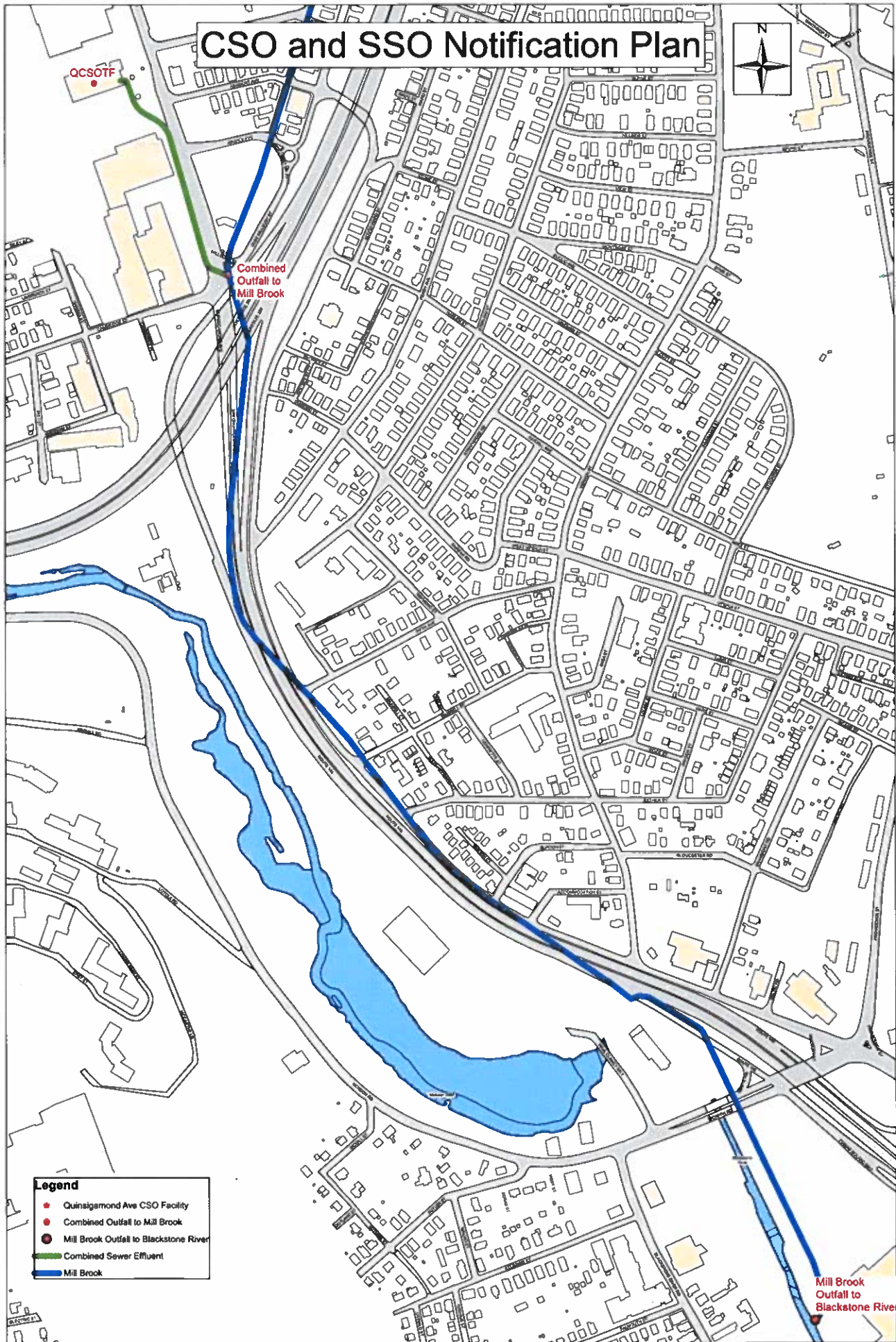


QCSOTF

Combined
Outfall to
Mill Brook

- Legend**
- Quinsigamond Ave CSO Facility
 - Combined Outfall to Mill Brook
 - Mill Brook Outfall to Blackstone River
 - Combined Sewer Effluent
 - Mill Brook

Mill Brook
Outfall to
Blackstone River



City of Worcester
Department of Public Works & Parks
Final CSO Public Notification Plan Attachments and Details

Combined Sewer Overflows

Introduction

The City of Worcester has a single combined sewer overflow (CSO) into the Blackstone River. Under all but the highest flow conditions that CSO receives treatment in the form of screening, settling, disinfection and dechlorination at the Quinsigamond Ave CSO Treatment Facility. The treated discharge then flows to the Mill Brook, an underground conduit which discharges into the Blackstone River behind the WalMart shopping plaza on Tobias Boland Way. During extreme wet weather conditions the CSO treatment facility can be bypassed, either automatically or manually, in which case the combined sewage is not treated but enters the Mill Brook and Blackstone River just as the treated CSO would do. The Quinsigamond Ave CSO Treatment Facility is subject to National Pollution Discharge Elimination System (NPDES) Permit # MA0102997. The facility is designed to pump low flows (during dry weather) to the Upper Blackstone Clean Water wastewater treatment plant. During wet weather the facility can store flows and later pump them to the Upper Blackstone. Higher intensity and long duration rainfall may cause flows to increase beyond the storage capacity of the CSO Treatment Facility which then triggers the activation of the treatment mode and discharge to Mill Brook.

2. Identification of Environmental Justice Communities

A review of Environmental Justice (EJ) Community mapping indicates there are no EJ Communities with English proficiency limitations in the downstream communities which may be impacted by a CSO. Within a one mile radius of the CSO outfall there are designated EJ communities with English proficiency limitations, in particular Spanish-speaking communities. There may also be a Vietnamese community with English proficiency limitations in the general vicinity of the Quinsigamond Ave CSO Treatment Facility. CSO notifications are therefore translated into Spanish and Vietnamese.

- **The City of Worcester has a translation service, Language Line Solutions, that has been utilized for document translation.**
- **Each notification is issued as a single email to subscribers that includes English, Spanish and Vietnamese versions.**
- **Signage at the CSO outfall is as required by the City of Worcester's NPDES Permit. No translation is needed. There are no downstream public access points and therefore no additional signage needed.**

3. Discharges, Overflows and Public Notification Content

A CSO occurs when the effluent gates at the CSO Treatment Facility open. Combined sewage can flow into the facility and be stored with no discharge. It is only when the effluent gates open that a CSO occurs. The treatment facility is generally unmanned from 4 PM to 7:30 AM and on weekends. However, a high water level in the wet well/influent channel will call out an alarm to a 24/7 manned location at the Worcester Department of Public Works & Parks (DPWP). When a high level alarm is received a call is made to staff or a contractor who would then report to the treatment facility. Depending on the nature of the storm and flows this automated facility may already be treating flows before the staff person arrives and the effluent gate may be open or may have opened and closed. All operations are monitored by a Supervisory Control and Data Acquisition (SCADA) computer system, so a CSO, activated by the opening of the effluent gates, will be recorded.

- **A discharge can be confirmed within 4 hours by the arriving operator checking the SCADA or visibly seeing the effluent gate position upon arrival.**
- **The CSO Treatment Facility effluent flow is metered so the discharge volume is measured.**
- **The SCADA system will record commencement times, cessation times and the duration of discharges**

Bypass of the CSO Treatment Facility can occur under certain infrequent situations. In extreme wet weather conditions the capacity of the facility can be overwhelmed leading to automatic opening of the bypass gates based on water elevations in the wet well/influent channel. The bypass gates can also be manually opened when extreme flows occur that lead to flooding of the Green Island area around the facility. Opening the bypass can help reduce area flooding at times and help protect the facility from flood damage. The bypass gates are also designed to be overtopped in some extreme flow conditions or if the influent channel is blocked, restricting flow into the facility.

The bypass channel is not metered. Bypasses achieved through opening of the bypass gates would be recorded on SCADA thus allowing the operator to note the time and respond accordingly for notifications. Bypasses that occur via overtopping the bypass gates would not be captured by SCADA. To monitor and measure bypass flows through or over the bypass gates, the City proposes to install ultrasonic level sensors on both the upstream and downstream side of the bypass gate. These sensors will detect any flow through or over the bypass gate and will be linked to the SCADA system. SCADA will be programmed to calculate flow rates based on an empirical relationship between the water level differences above and below the bypass gate when the gate is open and by using a weir formula and upstream water level when the bypass gate is closed. (See attachment for further details). The level sensors and SCADA programming are planned to be operational by July 1, 2023, assuming supply chain issues do not delay the acquisition of the equipment. It should be noted that to the best of our knowledge, any past bypass of the CSO Treatment Facility has occurred while the facility was in operation. Thus, under the notification regulations, a notification of the CSO would already be triggered before the bypass occurs.

In the course of a rain event, the CSO Treatment Facility effluent gates may open and close repeatedly as they are controlled by water levels. To avoid overwhelming the public with notifications of the start and end of a CSO, some discretion will be used. In most circumstances, once the facility has ceased operating for 8 hours after the effluent gates close, the CSO event will be determined to have ended.

However, if weather conditions indicate a resumption of heavy rains with a likelihood of the CSO recurring within 10 hours of the effluent gates closing, the event will be considered to be continuing and notification updates will be issued as per the regulations.

Based on review of the City's single CSO point and how that discharge joins with the flow of the Blackstone River, it has been determined that downstream notification will be provided to Worcester, Millbury, Sutton and Grafton. Based on conversations with Boards of Health and others in these communities, there are no public access points on the Blackstone River in these municipalities. Worcester DPWP is not planning to install any public notice signage.

The single Worcester CSO only activates during wet weather and is treated as previously described to remove trash and floatables, solids and bacteria. The discharge from the CSO Treatment Facility joins the flow in Mill Brook, an underground conduit carrying surface water collected from most of the center of Worcester and as far north as parts of Holden. Mill Brook, during wet weather events that trigger a CSO, carries very high flows from a large, urbanized watershed. These flows provide dilution to the treated combined sewage discharge from the CSO Treatment Facility. Mill Brook then joins the Middle River behind WalMart Plaza on Tobias Boland Way. The Middle River drains another large watershed including parts of Holden, Paxton, Leicester, Auburn and Millbury as well as the western third of Worcester. This flow further dilutes the CSO. Just south of the CSO outfall at the Middle River is the discharge from Upper Blackstone Clean Water, the regional wastewater treatment plant that provides high quality water to further dilute the CSO. Immediately below the Upper Blackstone effluent discharge channel is the Worcester Diversion Channel. During very intense or long duration rain events, the Diversion channel intercepts flows from Kettle Brook and directs them to the Blackstone River, bypassing portions of Worcester for flood control purposes. When activated, the Diversion Channel flows constitute a major input of dilution to the CSO. From this point the Blackstone River flows a turbulent path southward, with rapids adding aeration to the flow. In Sutton, at Depot Road, the River drops over the Singing Dam where it is highly aerated and turbulent, adding to "in-river" treatment of the diluted CSO. Finally, in Grafton, the first major tributary to the Blackstone River, the Quinsigamond River, joins the flow with additional waters adding to further dilution of the CSO. Because of the high levels of dilution and aeration occurring between the CSO outfall in Worcester and the inflow from the Quinsigamond River in Grafton, no communities beyond Grafton are considered to be impacted by the Worcester CSO.

- **The treated CSO discharges to the Mill Brook, an underground box culvert, which also conveys surface waters (Mill Brook), then travels to the outfall where Mill Brook joins the Middle River to form the Blackstone River.**

4. Discovery and Required Timeline for Notification Following Discharge or Overflow

Because the flow over or through the bypass gate is unmetered a request for approval of a method other than metering was emailed to MassDEP Commissioner Martin Suuberg on June 14, 2022. A copy of that request is attached. MassDEP issued a notice of approval of the request dated July 1, 2022, which is also attached. A description/design of the proposed alternative to metering for bypass flows, as

prepared by Kleinfelder and previously described in section 2, is attached for MassDEP review and approval. The level sensors and SCADA programming are planned to be operational by July 1, 2023, assuming supply chain issues do not delay the acquisition of the equipment.

- **A treated discharge can be confirmed within 4 hours by the arriving operator checking the SCADA or visibly seeing the effluent gate position upon arrival.**
- **A discharge through the open bypass gate can be determined from SCADA**
- **Upon installation of the proposed level sensors and SCADA programming, a discharge through or over the bypass gate can be determined through SCADA**

5. CSO Permittee Website

The City of Worcester website, www.worcesterma.gov/water-sewer, is utilized for all CSO & SSO notifications postings and related documents. A page was established dedicated to the CSO and SSO information. Notification subscriptions are also handled through the website utilizing Constant Contact as a service to manage subscriptions and email notifications. DPWP worked with the City's Technical Services Department to set up the webpage, create an on-line "sign up" for notifications, and manage the updates and information posting required by the regulations. The updated website and subscription system have been in use since July 1, 2022. Updates are made by the City's Technical Services Department with information and data supplied by the Department of Public Works & Parks, Sewer Operations Division. The compilation of discharge notifications is automatically updated with each notification email sent.

- **The City of Worcester Department of Public Works & Parks, Sewer Operations staff works with the City's Technical Services Department to maintain the City website. The website includes:**
 - **links to subscribe to the email notification system**
 - **links to the 3 most recent CSO Annual Reports required under the City's NPDES permit**
 - **a map showing the CSO Treatment Facility and outfall**
 - **a compilation of all CSO discharge notifications issued since July 1, 2022**
 - **mention of the City's Long Term Control Plan now under development and will include future updates.**

6. Signage

- **Signage at the CSO outfall has been installed in accordance with NPDES permit requirements**
- **As no public access points were identified by downstream impacted communities, no additional signage will be installed**

7. Public Notification Recipients

- **Vocero Hispano newspaper was identified by the City of Worcester's Communications Office as the primary newspaper serving the Hispanic community in Worcester. There were no known media outlets serving the Vietnamese community.**

Sanitary Sewer Overflows

Sanitary Sewer Overflows (SSOs) in Worcester subject to 314 CMR 16.00 include:

- SSO's caused by capacity limitations in the collection system during wet weather conditions (high flows). These are known as wet weather SSOs.
- SSO's due to failure of a sewer pumping station or associated force main at the following pumping stations which are designed to convey peak flows of 1 MGD or greater:
 - Lake Ave Pumping Station
 - Whitla Drive Pumping Station
 - Dunkirk Ave Pumping Station

Wet weather SSO's can potentially happen anywhere in the collection system in Worcester. In most cases a wet weather SSO would be conveyed to a surface water through the separate stormwater system (MS4). The MS4 includes 350 stormwater outfalls which discharge to numerous surface waters throughout the City. Wet weather SSOs would be reported by residents or individuals noting odors or other sewage evidence or by DPWP Sewer Operations staff during routine monitoring or maintenance activities.

Because wet weather SSOs are generally unpredictable, with the potential to occur in many places throughout the City, public notification will be as specific as possible based on the location. All notifications would be posted on the City website and emailed to all subscribers to the notification program and relevant contacts on the Required Notification List. Translations for the general language in the notification would be provided in Spanish and Vietnamese, the two languages identified for EJ communities lacking English proficiency in Worcester. However, notifications to downstream communities would be specific to the location of the wet weather SSO. Similarly, downstream public water systems might need to be notified of a wet weather SSO depending on where the SSO occurs. The SSO Notification Plan Required Notification List identifies the Boards of Health and Public Water Systems that may need to be notified of a wet weather SSO.

Sewer Pumping Station/Force Main SSOs for 1MGD stations could occur at the three stations previously mentioned. The Lake Ave and Whitla Drive stations are situated near Lake Quinsigamond, though at different locations along the Lake. A SSO from Lake Ave Pumping Station would require notification to the Shrewsbury Board of Health. A SSO from Whitla Drive Pumping Station would require notification to Shrewsbury and Grafton due to it being at the south end of the Lake and close to Flint Pond, which is partially in Grafton. Note that Lake Quinsigamond is a lake, not a river. Though there is a net

movement of water from north to south, this occurs over months, not hours or days. Past investigations of major SSOs from the Lake Ave Sewer Pumping Station indicate that the extent of bacterial contamination is confined to the area around the pump station. A SSO associated with the Whitla Drive Pumping Station **force main** could occur near Broad Meadow Brook at Route 20. In that case, Millbury would also be notified. A SSO from the Dunkirk Ave Sewer Pumping Station might also impact Broad Meadow Brook and would therefore also include Millbury as a potential downstream impacted community.

SSO notifications for all events covered by 314 CMR 16.00 would follow the same process as CSO notifications. A SSO/CSO notification page has been established on the City of Worcester website and the subscription process will be identical. The intent is to use a single subscription process and email notification for all regulated SSOs and CSOs. A subscriber will be notified of each event, regardless of their interest or location, with the exception of downstream communities and water systems only receiving site specific SSO notification.

From: [Guerin, Phillip D.](#)
To: ["martin.suuberg@mass.gov"](mailto:martin.suuberg@mass.gov)
Cc: ["Boyer, David \(DEP\)"; "Langley, Lealdon \(DEP\)"; King, Susannah \(DEP\)](#)
Subject: Worcester CSO Notification Plan-Request for approval of method other than metering for certain CSOs
Date: Tuesday, June 14, 2022 3:26:00 PM

Dear Commissioner

The City of Worcester requests approval to use a method other than or in addition to metering to determine or discover a combined sewer discharge from the bypass at the Quinsigamond Avenue Combined Sewer Overflow Treatment Facility at 60 Quinsigamond Ave in Worcester. This request is being made in accordance with the CSO public advisory notification regulations at 314CMR16.00 and related instructions. Further details in support of this request are provided below.

In the late 1980's, the City of Worcester consolidated all of its CSOs to a single location and provided treatment in the form of screening, settling, disinfection and dechlorination prior to that discharge. Treatment is provided at the Quinsigamond Avenue Combined Sewer Overflow Treatment Facility. Treated flows from the facility are still subject to the CSO public notification requirements at 314CMR16.00. A CSO begins when the effluent gates at the facility open. Those flows are metered and SCADA at the facility captures the opening of the gates to indicate the start of a CSO. High water alarms are called out to a 24-hour manned location at Worcester DPWP before the effluent gates open and a pump station operator or contractor is dispatched to the facility. On rare occasion, flows are too high for the facility to process and may be diverted through a bypass channel. Bypass gates can open automatically based on water level, manually if necessary and also can be overtopped if flows dictate and the gates do not open. The bypass gates and channel are not metered. Instead, a bypass via opening of the bypass gates would be captured on SCADA. A bypass over the bypass gates would be picked up by a water level indicator which is also tied to SCADA. A check of the SCADA system would provide a start time and end time for the bypass, though it would not provide the volume discharged. In the 35 plus year history of the CSO Treatment Facility, bypasses have only occurred during high flows when the facility is already discharging. Under today's notification requirements, the treated CSO discharge would require notification so that the public would know of the discharge regardless of whether the bypass was activated or not. Public health protection would not be lessened by not having a metered bypass.

For these reasons, the expense and difficulty of installing a meter for the bypass does not appear justified. The SCADA system and water level indicator are sufficient to provide timely information about the start of a CSO through the bypass. Worcester DPW&P will explore options for estimating bypass flows based on calculations that consider the bypass channel and gates configuration and water level.

Thank you for your consideration.

Philip D. Guerin
Director of Water & Sewer Operations
Worcester Department of Public Works & Parks
18 East Worcester Street



Department of Environmental Protection

Charles D. Baker
Governor

Karyn E. Polito
Lieutenant Governor

Bethany A. Card
Secretary

Martin Suuberg
Commissioner

7/1/2022

Dear City of Worcester,

In accordance with 314 CMR 16.04(2) use of any method other than, or in addition to, metering to determine or discover a CSO or Partially Treated discharge requires approval from the Commissioner.

According to Department records, you proposed the following:

1. Alternative to metering:

City of Worcester Department of Public Works & Parks, Quinsigamond Avenue CSO Treatment Facility requests approval from the Commissioner to use a method other than or in addition to metering to determine or discover a discharge to issue the Public Advisory Notification. The City owns and operates a CSO facility located on Quinsigamond Avenue that partially treats combined sewage and discharges to the Blackstone River during heavy precipitation events. In extreme rainfall events when combined sewage flows are too high for the facility to process, flow may be diverted through a bypass channel. Bypass gates can be opened automatically based on water level or manually. The bypass gates can also be overtopped. This untreated flow would discharge to the Blackstone River.

The bypass channel is unmetered, and the city does not have an existing or proposed method for determining the volume of untreated sewage that enters the Blackstone River. The City claims that installing a meter is not justified, but the City will explore options for estimating bypass flows. No timeline was provided as to when the City would complete that investigation or when the method would be in place.

Your request for permission to use an alternative to metering has been reviewed and approved for use with your Preliminary CSO Public Notification Plan, **with the following modifications:**

The city did not provide an alternative method for estimating the volume of the discharge per 314 CMR 16.04; therefore, the city shall submit a proposal of an alternative method for estimating the volume of discharge as part of the final CSO Public Notification Plan

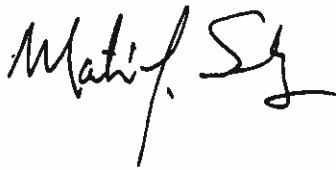
due January 12, 2023, per 314 CMR 16.06(2). The final CSO Notification Plan shall include a definitive schedule as to when the alternative method shall be implemented and online. The city shall comply with the final plan and schedule as approved by MassDEP.

This is an interim approval, which is in effect as of the date of this letter, and it will remain in effect until your final CSO Public Notification Plan is approved by MassDEP. A further request for approval of a method other than, or in addition to, metering must be submitted with your proposed final CSO Public Notification Plan.

This interim approval may be modified, suspended, or revoked for cause, included but not limited to violation of any terms of this approval, 314 CMR 16.00, or the Massachusetts Clean Waters Act, G.L. c. 21 §§ 26-53.

For further information, please contact David Boyer at david.boyer@mass.gov.

Yours truly,

A handwritten signature in black ink, appearing to read "Martin Suuberg". The signature is written in a cursive style with a large, stylized "S" at the end.

Martin Suuberg
Commissioner



TECHNICAL MEMORANDUM

DATE: January 10, 2023
SUBJECT: Quinsigamond Avenue Combined Sewer Overflow Storage and Treatment Facility:
Bypass Flow Monitoring Approach
City of Worcester, Massachusetts

OVERVIEW

This memo is prepared for the City of Worcester Department of Public Works & Parks (City) as a supplement to the City's letter sent to MassDEP on June 14, 2022, requesting approval to use a method other than metering to estimate discharge volume during bypass events at the Quinsigamond Avenue Combined Sewer Overflow Storage and Treatment Facility. MassDEP provided the City with interim approval for this approach in their July 1, 2022 letter pending the following additional information (emphasis added):

The city did not provide an alternative method for estimating the volume of the discharge per 314 CMR 16.04; therefore, **the city shall submit a proposal of an alternative method for estimating the volume of discharge** as part of the final CSO Public Notification Plan due January 12, 2023, per 314 CMR 16.06(2). **The final CSO Notification Plan shall include a definitive schedule as to when the alternative method shall be implemented and online.** The city shall comply with the final plan and schedule as approved by MassDEP.

The intent of this memo is to provide the additional information requested by MassDEP detailing the alternative method to be used and a definitive implementation schedule.

There are two bypass gates at the facility and the configuration of the gates allows for flow to overtop them if the water level exceeds the height of the gates within the bypass conduit. Consequently, there are two flow conditions that can occur during a bypass event, and each will require a distinct approach to estimating discharge volume. These include the following:

1. Bypass gates are open.
2. Bypass gates are closed, and flow overtops them.

In both conditions, the alternative method for estimating the discharge volume during a bypass event will rely on existing empirical relationships (two total) between flow rate and water levels upstream and/or downstream of the bypass gates. Two new water level sensors will be installed on each side of the bypass gates to measure the water level. The water level sensors will also be integrated with the facility's existing

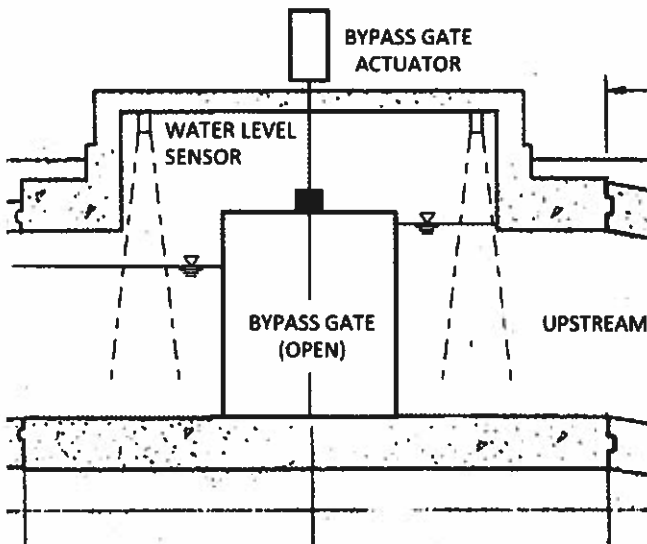


SCADA system. The SCADA system will be programmed with each empirical relationship to calculate the bypass flow rates. The two bypass gates are electrically actuated butterfly style, each 7' wide and 9' high, and the SCADA system tracks a "percent open" value for each gate. Both bypass gates are typically called to open during a bypass event, which takes approximately 90 seconds to fully open or close.

To estimate total volume of bypass flow during an event, the event duration will be tracked and recorded. The bypass event start and end time criteria will depend on which flow condition(s) occur and are described below for each condition.

Ultrasonic level sensors are proposed for this application because they can be quickly installed and mounting them above the flow channel enables easier access for maintenance. The sensors will always be online and recording water surface elevations, so the City can readily detect and correct failures before bypass events occur. Flow monitoring sensors which are installed below the water surface, such as flow-area sensors, are more difficult to install and maintain. Failures of these sensors may be more difficult to detect, as they do not provide meaningful measurements when the bypass conduit is empty. When these sensor failures are detected, corrective maintenance may be delayed due to the confined space entry requirements of the bypass conduit. If corrective maintenance is required during a storm event, the ultrasonic sensors would be accessible while any sensor installed below the water level would not.

Condition 1 Diagram (not to scale):
Bypass gates are open.

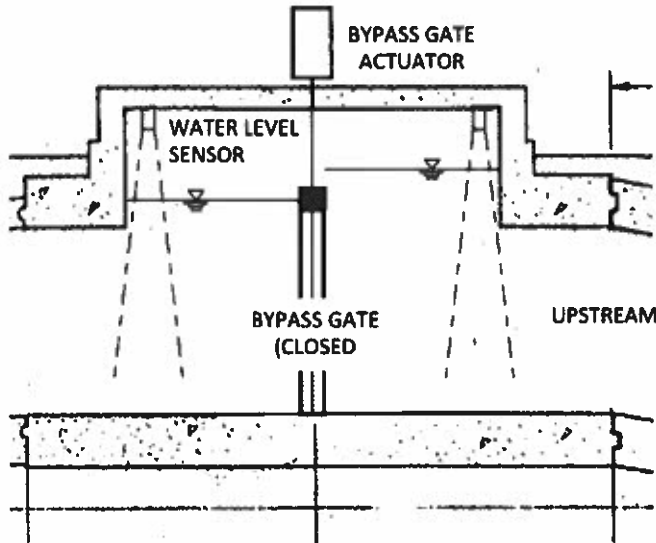


In Condition 1, shown in the diagram above, an existing empirical relationship between flow and head loss through a 7' wide butterfly gate will be used to estimate the bypass flow rate. The head loss through the gate will be estimated using the difference in water level measured by the upstream and downstream water level sensors. To maintain a conservative estimate, gates will be considered fully open for the entire period from when they are called to open to when they fully close. Under this condition, the facility's



SCADA system will track the time when the given bypass gate is called to open and when the gate subsequently closes fully, the difference of which will be recorded as the duration of the bypass event.

Condition 2 Diagram (not to scale):
Bypass gates are closed, and flow overtops them.



Under Condition 2, shown in the diagram above, data from the upstream water level sensor will be used to estimate the bypass flow rate. The flow during such a bypass event will be estimated using a broad-crested weir condition where the height of water above the weir is provided by the upstream water level sensor. The bypass event start time will be recorded as the moment the upstream water elevation first exceeds the top of the gates and the bypass event will end when the water elevation has fallen below the top of the gates.

Total volume discharged during the bypass event can be determined by multiplying the average flow during the bypass event with the event duration. If multiple flow conditions occur during a single bypass event, the earliest bypass start time and latest bypass end time will be used to estimate the bypass event duration.

The City plans to complete the proposed project according to the following schedule, as developed for the City's recent Sewage Notification Assistance Grant application to MassDEP:

1. Engineering Design (6 weeks):	February 13 to March 24, 2023
2. Coordinate scope of work, pricing, and schedule with City on-call vendors (3 weeks)	March 27 to April 14, 2023
3. Lead time for vendors to procure materials and schedule personnel (4 weeks)	April 10 to May 5, 2023
4. Installation, programming, and testing (4 weeks)	May 8 to June 2, 2023

CSO Notification Plan

Required Notification List

- MassDEP: massdep.sewagenotification@mass.gov ; david.boyer@mass.gov
- U.S. Environmental Protection Agency: R1.EPANotifications@epa.gov
- Massachusetts Department of Public Health: DPHToxicology@mass.gov
- the municipal board of health or the health department where the outfall or overflow is located:
 - Worcester Department of Inspectional Services: wilsona@worcesterma.gov
- the board of health or the health department for any municipality directly impacted by the discharge or overflow:
 - Millbury Board of Health: millburyboh@townofmillbury.net
 - Sutton Board of Health: C.Rawinski@town.sutton.ma.us
 - Grafton Board of Health
- any person who subscribed to receive such public advisory notifications by email or text messaging:
 - To be determined
- the public water supplier(s) where drinking water supplies may be affected:
 - Aquarion Water Company (Millbury)
 - South Grafton Water District
- the Massachusetts Department of Conservation and Recreation when its water recreation properties may be affected; MEMA.StateControl@mass.gov
- the Massachusetts Division of Fisheries and Wildlife when its boat ramps and fishing piers may be affected; doug.cameron@mass.gov
- Operators of any potentially affected bathing beaches, as defined in 105 CMR 445.00: *Minimum Standards for Bathing Beaches (State Sanitary Code: Chapter VII)*. • Not Applicable-no beaches

SSO Notification Plan

Required Notification List

- MassDEP: massdep.sewagenotification@mass.gov ; david.boyer@mass.gov
- U.S. Environmental Protection Agency: R1.EPANotifications@epa.gov
- Massachusetts Department of Public Health: DPHToxicology@mass.gov
- the municipal board of health or the health department where the outfall or overflow is located:
 - Worcester Department of Inspectional Services: wilsona@worcesterma.gov
- the board of health or the health department for any municipality directly impacted by the discharge or overflow:
 - Millbury Board of Health millburyboh@townofmillbury.net 508-865-4721
 - Sutton Board of Health: C.Rawinski@town.sutton.ma.us
 - Grafton Board of Health
 - Shrewsbury Board of Health kstockwell@shrewsburyma.gov
 - Auburn Board of Health
 - West Boylston Board of Health
- any person who subscribed to receive such public advisory notifications by email or text messaging:
 - Enrollment list maintained by Constant Contact
- the public water supplier(s) where drinking water supplies may be affected:
 - Aquarion Water Company (Millbury) (SSO to Broad Meadow Brook, Blackstone River)
 - Auburn Water District (SSO to Kettle Brook near James St)
 - South Grafton Water District (SSO to Blackstone River)
 - Shrewsbury Water Department (SSO to Poor Farm Brook)
- the Massachusetts Department of Conservation and Recreation when its water recreation properties may be affected; MEMA.StateControl@mass.gov (Lake Quinsigamond)
- the Massachusetts Division of Fisheries and Wildlife when its boat ramps and fishing piers may be affected; doug.cameron@mass.gov (Lake Quinsigamond/Flint Pond)
- Operators of any potentially affected bathing beaches, as defined in 105 CMR 445.00: *Minimum Standards for Bathing Beaches (State Sanitary Code: Chapter VII)*. ▪ Lake Quinsigamond, Coes Reservoir, Indian Lake, Bell Pond