Illicit Discharge Detection and Elimination (IDDE) Plan

PREPARED FOR

dcr
Massachusetts

PREPARED BY

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June 30, 2023

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1

Introduction

1.1 MS4 Program

This Illicit Discharge Detection and Elimination (IDDE) Plan has been developed by the Department of Conservation and Recreation (DCR) to address the requirements of the United States Environmental Protection Agency's (EPA) 2016 National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (MS4) in Massachusetts, hereafter referred to as the "2016 Massachusetts MS4 Permit" or "MS4 Permit."

The 2016 Massachusetts MS4 Permit requires that each permittee, or regulated community, address six Minimum Control Measures. These measures include the following:

1. Public Education and Outreach
2. Public Involvement and Participation
3. Illicit Discharge Detection and Elimination Program
4. Construction Site Stormwater Runoff Control
5. Stormwater Management in New Development and Redevelopment (Post Construction Stormwater Management); and
6. Good Housekeeping and Pollution Prevention for Permittee Owned Operations.

Under Minimum Control Measure 3, the permittee is required to implement an IDDE program to systematically find and eliminate sources of non-stormwater discharges to its municipal separate storm sewer system and implement procedures to prevent such discharges. The IDDE program must also be recorded in a written (hardcopy or electronic) document. This IDDE Plan has been prepared to address this requirement.

1.2 Illicit Discharges

An "illicit discharge" is any discharge to a drainage system that is not composed entirely of stormwater, with the exception of discharges pursuant to a NPDES permit (other than the NPDES permit for discharges from the MS4) and discharges resulting from fire-fighting activities.

Illicit discharges may take a variety of forms. Illicit discharges may enter the drainage system through direct or indirect connections. Direct connections may be relatively obvious, such as cross-connections of sewer services to the storm drain system. Indirect illicit discharges may be more difficult to detect or address, such as failing septic systems that discharge untreated sewage to a ditch within the MS4, or a sump pump that discharges contaminated water on an intermittent basis.

Some discharges are intentional, such as residents dumping used oil into catch basins or contractors tapping a new sewer lateral into a storm drain pipe to avoid the costs of a sewer connection fee and service.

Some illicit discharges are related to the unsuitability of original infrastructure to the modern regulatory environment. Examples of illicit discharges in this category include connected floor drains in old buildings, as well as sanitary sewer overflows that enter the drainage system. Sump pumps legally connected to the storm drain system may be used inappropriately, such as for the disposal of floor washwater or old household products, in many cases due to a lack of understanding on the part of the homeowner.

1.3 Allowable Non-Stormwater Discharges

The following categories of non-stormwater discharges are allowed under the 2016 MS4 Permit unless the permittee, EPA or Massachusetts Department of Environmental Protection (MassDEP) identifies any category or individual discharge of non-stormwater discharge as a significant contributor of pollutants to the MS4:

- Water line flushing
- Discharge from potable water sources
- Landscape irrigation or lawn watering
- Diverted stream flows
- Rising ground water
- Uncontaminated ground water infiltration (as defined at 40 CFR 35.2005(20))
- Uncontaminated pumped groundwater
- Foundation drains or footing drains (not including active groundwater dewatering systems)
- Water from crawl space pumps
- Air conditioning condensation
- Springs
- Individual (non-commercial) resident car washing

- Natural riparian habitat or wetland flows
- De-chlorinated swimming pool discharges
- Fire-fighting activities
- Street wash waters
- Residential building wash waters without detergents
- Other water source not containing pollutants

If these discharges are identified as significant contributors to the MS4, they must be considered an "illicit discharge" and addressed in this IDDE Plan (i.e., control these sources so they are no longer significant contributors of pollutants, and/or eliminate them entirely).

1.4 Receiving Waters and Impairments

Appendix A lists the "impaired waters" that DCR's regulated outfalls discharge to, based on the most recent (2018/2020) final Massachusetts Integrated List of Waters produced by MassDEP and DCR's current permit year regulated outfall layer. Since MassDEP updates the receiving waters list periodically and DCR is continuously updating the drainage infrastructure mapping including regulated outfall designations this list is updated each permit year to reflect the current status of DCR's system. Impaired waters are water bodies that do not meet water quality standards for one or more designated use(s) such as recreation or aquatic habitat.

1.5 IDDE Program Goals, Framework, and Timeline

The goals of the IDDE program are to find and eliminate illicit discharges to municipal separate storm sewer systems and to prevent illicit discharges from happening in the future. The program consists of the following major components as outlined in the MS4 Permit:

- Legal authority and regulatory mechanism to prohibit illicit discharges and enforce this prohibition
- Storm system mapping
- Inventory and ranking of outfalls
- Dry weather outfall screening
- Wet weather screening
- Catchment investigations
- Identification/confirmation of illicit sources
- Illicit discharge removal
- Follow-up screening
- Employee training

The IDDE investigation procedure framework is shown in **Figure 1-1**. The required timeline for implementing the IDDE program is shown in **Table 1-1**.

Figure 1-1. IDDE Investigation Procedure Framework

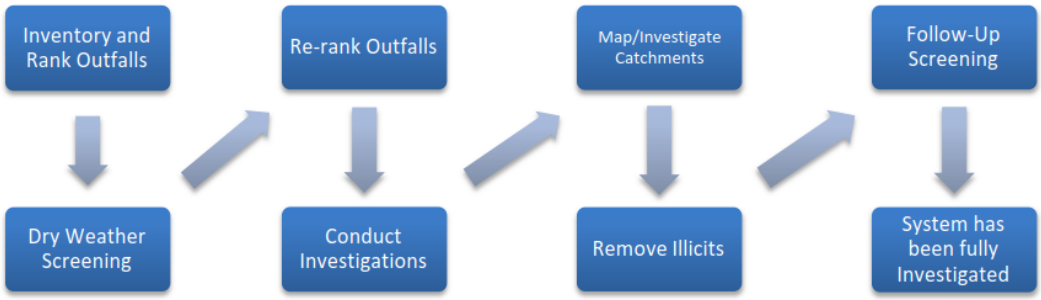

Table 1-1 DCR IDDE Program Implementation Timeline

	Completion Date from Effective Date of Permit (June 2018)					
IDDE Program Requirement	**1 Year**	**1.5 Years**	**2 Years**	**3 Years**	**7 Years**	**10 Years**
Written IDDE Program Plan	X					
Sanitary Sewer Overflow (SSO) Inventory	X					
Written Catchment Investigation Procedure		X				
Phase I Mapping			X			
Phase II Mapping						X
IDDE Regulatory Mechanism or By-law (if not already in place)				X		
Dry Weather Outfall Screening				X		
Follow-up Ranking of Outfalls and Interconnections				X		
Catchment Investigations – Problem & Highest Priority Outfalls					X	
Catchment Investigations – all Problem, Highest, High and Low Priority Outfalls						X

1.6 Work Completed to Date

The 2003 MS4 Permit required each MS4 permittee to develop a plan to detect illicit discharges using a combination of storm system mapping, adopting a regulatory mechanism to prohibit illicit discharges and enforce this prohibition, and identifying tools and methods to investigate suspected illicit discharges. Each MS4 permittee was also required to define how confirmed discharges would be eliminated and how the removal would be documented. DCR has also completed 2016 MS4 Permit requirements for the first four years of the permit.

DCR has completed the following IDDE program activities consistent with the 2003 MS4 Permit and the 2016 MS4 Permit requirements:

- Developed a map of outfalls and receiving waters;
- Developed a draft internal IDDE disconnection policy that is used for IDDE follow-up;
- Completed additional storm system mapping, including the locations of catch basins, manholes, and some pipe connectivity;
- Developed procedures for locating the source of the discharge;
- Developed procedures for removal of the source of an illicit discharge;
- Developed a written IDDE Plan in June 2019 and update annually (most recently updated in June 2023);
- Developed a written catchment investigation procedure as part of the IDDE Plan and update annually (most recently updated in June 2023);
- Completed Phase I mapping requirements;
- Updated outfall prioritization;
- Continued catchment investigations for known problem outfalls;
- Began wet weather screening;
- Began catchment investigations for highest priority outfalls;
- Completed dry weather screening for known outfalls;
- Continued dry weather screening for newly identified outfalls;
- Finalized IDDE procedures to enforce instances of illegal connections or flows to its system.

2

Authority and Statement of IDDE Responsibilities

2.1 Legal Authority

DCR developed an Illicit Discharge Disconnection Procedure (**Appendix B**) to provide DCR with adequate legal authority to:

- Prohibit illicit discharges;
- Investigate suspected illicit discharges;
- Eliminate illicit discharges, including discharges from properties not owned by or controlled by the MS4 that discharge into the MS4 system; and
- Implement appropriate enforcement procedures and actions.

The Illicit Discharge Disconnection Procedure is consistent with the 2016 MS4 Permit. In addition to the procedure, DCR is in the process of drafting regulations which will provide DCR further legal authority to enforce removal of illegal connections or flows to its system.

2.2 Statement of Responsibilities

The Division of Design & Engineering is the lead division within DCR responsible for implementing the IDDE program pursuant to the provisions of the Illicit Discharge Disconnection Procedure. Other agencies or departments with responsibility for aspects of the program include:

- DCR General Counsel's Office – DCR's General Counsel will contact landowners with illicit discharges to request they remove the illicit discharge and set a deadline for response.

› Massachusetts Attorney General's Office - If a landowner does not remove the illicit discharge within the set deadlines, DCR General Counsel's Office will pursue legal action with the Massachusetts Attorney General's Office.

3

Stormwater System Mapping

DCR originally developed mapping of its stormwater system to meet the mapping requirements of the 2003 MS4 Permit. The 2016 MS4 Permit requires a more detailed storm system map than was required by the 2003 MS4 Permit. The revised mapping is intended to facilitate the identification of key infrastructure, factors influencing proper system operation, and the potential for illicit discharges.

The 2016 MS4 Permit requires the storm system map to be updated in two phases as outlined below. DCR completed its Phase I mapping (see Section 3.1) as of June 30, 2020. DCR will report on the progress towards completion of the storm system map in each annual report.

DCR's most recent storm system map is available at this link: http://vhb.maps.arcgis.com/apps/webappviewer/index.html?id=1fffa8d7b9e144e793dcffb0445846e2.

3.1 Phase I Mapping

Phase I mapping was required to be completed within two (2) years of the effective date of the permit (June 30, 2020) and include the following information:

- Outfalls;
- Open channel conveyances (swales, ditches, etc.);
- Interconnections with other MS4s and other storm sewer systems;
- DCR owned stormwater treatment structures;
- Water bodies identified by name and indication of all use impairments as identified on the most recent EPA approved Massachusetts Integrated List of Waters report;
- Surface public drinking water supplies, watersheds, and protection zones; and

- Initial catchment delineations. Topographic contours and drainage system information may be used to produce initial catchment delineations.

DCR completed initial Phase 1 mapping in June of 2020.

DCR's drainage system includes assets statewide and often includes complex interconnections with many other parties. DCR has begun to review and identify interconnections in the field and continues to work with municipalities and other agencies to identify additional interconnections. The interconnections flagged by the field crews have not been reviewed yet and so, at this time, interconnections are not provided in the public facing storm system map. If entities are interested in determining if a drainage system includes identified interconnections, please request them from DCR Stormwater.

DCR has approximately 1,500 regulated outfalls mapped statewide. Hand delineating draft catchments to each outfall was deemed infeasible. DCR has created draft catchments using an automated approach based on topography, however these catchments are rough and are being refined individually through desktop analysis ahead of the field component of catchment investigations. Since the catchment delineations are draft, they are not provided in the public facing storm system map at this time. If entities are interested in receiving the draft catchments, please request them from DCR Stormwater.

3.2 Phase II Mapping

Phase II mapping must be completed within ten (10) years of the effective date of the permit (June 30, 2028) and include the following information:

- Outfall spatial location (latitude and longitude with a minimum accuracy of +/-30 feet);
- Pipes;
- Manholes;
- Catch basins; and
- Refined catchment delineations. Catchment delineations must be updated to reflect information collected during catchment investigations.

Since DCR does not own sanitary sewer systems or combined sewer systems these elements are not included in our mapping.

DCR is in the process of updating each of these components and is actively mapping their comprehensive drainage systems with DCR crews. This has included refining catchment delineations as part of Problem and Highest Priority Outfall reviews. DCR also began refining catchment delineations as part of High Priority Outfall catchment investigations that were initiated in Permit Year 3 and additional high and low priority catchments where municipal drainage data is currently available to DCR.

4

Sanitary Sewer Overflows (SSOs)

The 2016 MS4 Permit requires permittees to prohibit illicit discharges, including sanitary sewer overflows (SSOs), to the separate storm sewer system. SSOs are discharges of untreated sanitary wastewater from a municipal sanitary sewer that can contaminate surface waters, cause serious water quality problems and property damage, and threaten public health. SSOs can be caused by blockages, line breaks, sewer defects that allow stormwater and groundwater to overload the system, power failures, improper sewer design, and vandalism.

While DCR does not own sanitary sewer lines, beyond sewer laterals for their facilities, and is therefore not usually directly responsible for SSOs, DCR has completed an inventory of SSOs that have discharged from DCR laterals (**Table 4-1**) or from other entities onto DCR properties (**Table 4-2**) within the five (5) years prior to the effective date of the 2016 MS4 Permit, based on review of available documentation pertaining to SSOs and in coordination with those entities responsible for the respective sanitary sewer systems (e.g., municipalities). The inventory includes all SSOs that occurred during wet or dry weather resulting from inadequate conveyance capacities or where interconnectivity of the storm and sanitary sewer infrastructure allows for transfer of flow between systems.

Upon detection of an SSO, DCR will coordinate with those entities responsible for the sanitary sewer system to eliminate it as expeditiously as possible and take interim measures to minimize the discharge of pollutants to and from its MS4 until the SSO is eliminated. Upon becoming aware of an SSO to the MS4, DCR will provide oral notice to MassDEP, EPA and the entity responsible for the sanitary sewer system within 24 hours and written notice to the responsible entity, EPA, and MassDEP within five (5) days of becoming aware of the SSO occurrence following MassDEP's Sanitary Sewer Overflow (SSO)/Bypass notification form.

MassDEP 24-hour Emergency Line: 1-888-304-1133			
EPA New England: 1-617-918-1510 5 Post Office Square Boston, MA 02109			
DEP Northeast Region (978) 694-3215 205B Lowell Street Wilmington, MA 01887	DEP Central Region (508) 792-7650 8 New Bond Street Worcester, MA 01606	DEP Southeast Region (508) 946-2750 20 Riverside Drive Lakeville, MA 02347	DEP Western Region (413) 784-1100 436 Dwight Street Springfield, MA 01103

The inventory in **Table 4-1** will be updated by the DCR Engineering Division when new SSOs are detected. The SSO inventory will be included in the annual report, including the status of mitigation and corrective measures to address each identified SSO.

Table 4-1 SSO Inventory – DCR Owned Sewer Discharges Since 2011

Last Revision Date: June 30, 2023

SSO Location[1]	Discharge Statement[2]	Date/ Time[3]	Estimated Volume[4]	Description[5]	Mitigation Completed[6]	Mitigation Planned[7]
Union St. Hingham	Sewer discharge to Weir River	April, 2015	n/a	Force main sewer discharge – from Wompatuck State Park Campgrounds sewer lateral	Replacement of force main under Weir River	No additional mitigation needed
Pond St. – Corner of Woodland Rd. Stoneham	Sewer manhole surcharge from DCR force main servicing Stoneham Zoo & DCR Labor Yard	November, 2018	n/a	Pump Station temporarily off-line, when turned back on, sewer line overflowed gravity mainline	Sewer main inspected, water jetted & cleaned	No additional mitigation needed
695 Hillside Ave – Blue Hills Headquaters	Sewer discharge from injector pit	March 17, 2022	n/a	Blockage in 2" force main & disfunctional back flow preventor caused minor surcharge from injector pump chamber	Jetted force main to clear blockage and replaced backflow preventer in injector chamber	No additional mitigation needed

[1] Location (approximate street crossing/address and receiving water, if any)
[2] A clear statement of whether the discharge entered a surface water directly or entered the MS4
[3] Date(s) and time(s) of each known SSO occurrence (i.e., beginning and end of any known discharge)
[4] Estimated volume(s) of the occurrence
[5] Description of the occurrence indicating known or suspected cause(s)
[6] Mitigation and corrective measures completed with dates implemented
[7] Mitigation and corrective measures planned with implementation schedules

Table 4-2 SSO Inventory – Other Entity Owned Sewer Discharges onto DCR Property Since 2011[1]

Last Revision Date: June 30, 2023

SSO Location[1]	Sewer System Owner[2]	Discharge Statement[3]	Date[4]	Estimated Volume[6]	Description[6]
Nonantum Rd. Boston	Boston Water & Sewer Department	Surcharged Manhole from Daily Rink	Feb. 2017	n/a	Blocked or clogged line in main. BWSC addressed clog and notified DCR of overflow
Storrow Dr.	MWRA	Surcharge of BMC into DCR infrastructure under Mass Ave. Bridge on Storrow Dr. prior to discharging to the Charles River.	Aug. 2019	n/a	Due to Rain Event. MWRA notified DEP of the overflow
Essex Street	City of Quincy	City staff observed the SSO from the sewer manhole entering the nearby tidal fingers owned by DCR.	Jan. 21, 2020	n/a	A formerly stubbed and capped clay pipe connected to the manhole was resulting in the discharge. This collapse has been fixed.
East Squantum Street	City of Quincy	The City suspected that there was a collapse/blockage on East Squantum Street	Jan. 21, 2020	n/a	Using their vactor/jetter, the City has been able to restore functional conditions to this sewer line, so that the bypassed flows from Aberdeen can be safely conveyed into the sewer system
Ravine Rd. Stoneham	Private owner	Sewer manhole discharge from private gravity sewer flowing into Virginia Woods	Nov. 2020	n/a	Sewer manhole discharge flowing into Virginia Woods, owned by hospital complex at 3 Woodland Rd. Stoneham. DCR and MWRA worked to clear blockage from sewer manhole discharge. Clean-up mitigation

[1] Last revision date June 30, 2023

Last Revision Date: June 30, 2023

SSO Location[1]	Sewer System Owner[2]	Discharge Statement[3]	Date[4]	Estimated Volume[6]	Description[6]
					conducted by private owner.
161 Granite Ave - Neponset Park	BWSC	Surcharging SMH	Sept. 9, 2021	n/a	Bolting cover installed to control SMH surcharge
Big Blue Dr.	Town of Milton	Blockage occurred between the Milton & Boston (BWSC) connection.	Jan. 10, 2022	n/a	BWSC responded, jetted line and cleared blockage
430A Canterbury St. Boston	Boston Light (City of Boston)	20-gal discharge from septic tank on property	Jan. 25, 2023	n/a	Discharge from private septic tank in a yard next to 430A Canterbury Street. BWSC crew disinfected impacted area. Property owner is responsible for getting a plumber to clean/repair the blocked/broken private septic tank. No impacts to any catch basins or waterbodies, SSO contained to private yard area.

[1] Location (approximate street crossing/address and receiving water, if any)
[2] Entity that owns or is otherwise responsible for sewer system where SSO occurred
[3] A clear statement of whether the discharge entered a surface water directly or entered the MS4
[4] Date(s) of each known SSO occurrence
[5] Estimated volume of sewage discharge, if known
[6] Description of the occurrence indicating known or suspected cause(s)

5

Assessment and Priority Ranking of Outfalls

The 2016 MS4 Permit requires an assessment and priority ranking of outfalls in terms of their potential to have illicit discharges and SSOs and the related public health significance. The ranking helps determine the priority order for performing IDDE investigations and meeting permit milestones.

5.1 Outfall Catchment Delineations

A catchment is the area that drains to an individual outfall[2] or interconnection.[3] The catchments for each of the MS4 outfalls will be delineated to define contributing areas for investigation of potential sources of illicit discharges. Catchments are typically delineated based on mapped drainage infrastructure and supplemented using topographic contours as needed and where available. As described in Section 3, initial catchment delineations will be completed as part of the Phase I mapping, and refined catchment delineations will be completed as part of the Phase II mapping to reflect information collected during catchment investigations.

[2] **Outfall** means a point source as defined by 40 CFR § 122.2 as the point where the municipal separate storm sewer discharges to waters of the United States. An outfall does not include open conveyances connecting two municipal separate storm sewers or pipes, tunnels or other conveyances that connect segments of the same stream or other waters of the United States and that are used to convey waters of the United States. Culverts longer than a simple road crossing shall be included in the inventory unless the permittee can confirm that they are free of any connections and simply convey waters of the United States.

[3] **Interconnection** means the point (excluding sheet flow over impervious surfaces) where the permittee's MS4 discharges to another MS4 or other storm sewer system, through which the discharge is conveyed to waters of the United States or to another storm sewer system and eventually to a water of the United States.

5.2 Outfall and Interconnection Inventory and Initial Ranking

The DCR Division of Design & Engineering completed an initial outfall and interconnection inventory and priority ranking to assess illicit discharge potential based on existing information.

The outfall and interconnection inventory identifies each outfall and interconnection discharging from the MS4, records its location and condition, and provides a framework for tracking inspections, screenings and other IDDE program activities.

Outfalls and interconnections were initially classified into one of the following categories by Permit Year 1 based on the description in the permit:

1. **Problem Outfalls**: Outfalls/interconnections with known or suspected contributions of illicit discharges based on existing information shall be designated as Problem Outfalls. This shall include any outfalls/interconnections where previous screening indicates likely sewer input. Likely sewer input indicators are any of the following:
    a) Olfactory or visual evidence of sewage;
    b) Ammonia ≥ 0.5 mg/L, surfactants ≥ 0.25 mg/L, and bacteria levels greater than the water quality criteria applicable to the receiving water; or
    c) Ammonia ≥ 0.5 mg/L, surfactants ≥ 0.25 mg/L, and detectable levels of chlorine.

    Dry weather screening and sampling, as described in **Section 6** of this IDDE Plan and Part 2.3.4.7.b of the MS4 Permit, is not required for Problem Outfalls. Instead, DCR will move right to investigating the discharge and trying to identify the source. Once the source is removed and follow up sampling indicates no potential illicit connections, the Problem Outfall shall be re-ranked as a High or Low Priority Outfall.
2. **High Priority Outfalls:** Outfalls/interconnections that have not been classified as Problem Outfalls and that are:
    a) Discharging to an area of concern to public health due to proximity of public beaches, recreational areas, surface water supplies, or shellfish beds; or
    b) Discharging to waterbodies impaired for bacteria or pathogens.
3. **Low Priority Outfalls:** Outfalls/interconnections determined by the permittee as low priority based on the ranking characteristics listed below or other available information.
4. **Excluded Outfalls:** Outfalls/interconnections with no potential for illicit discharges may be excluded from the IDDE program. The permit identifies that drainage from the following categories below can be excluded:
    a) Roadway drainage in undeveloped areas with no dwellings and no sanitary sewers;

b) Drainage for athletic fields, parks, or undeveloped green space and associated parking without services; or

c) Cross-country drainage alignments (that neither cross nor are in proximity to sanitary sewer alignments) through undeveloped land."

DCR has identified approximately 225 outfalls to be excluded from the IDDE program as they are located away from presumed sanitary sewer systems, in undeveloped areas based on land use, and not in proximity to DCR building with restrooms. DCR will continue to refine excluded outfall status through catchment investigations.

Ranking Characteristics

Outfalls were ranked into the above priority categories based on the following characteristics of the defined initial catchment areas, where information is available. As additional information becomes available, DCR may include additional relevant characteristics, including location-specific characteristics, as part of the ranking and will document the characteristics in this IDDE Plan. The characteristics below provide an overview.

- **Previous screening results** – previous screening/sampling results indicate likely sewer input (see criteria above for Problem Outfalls).
- **Past discharge complaints and reports.**
- **Discharging to Area of Concern to Public Health** – outfalls or interconnections that discharge to public beaches, recreational areas, surface water supplies and/or shellfish beds.
- **Impaired Waterbodies** – discharges to waters impaired for bacteria according to the most recent 303(d) list.
- **TMDL Watershed** – discharges to waters with an approved TMDL where illicit discharges may contribute to the pollutant of concern.
- **Density of generating sites within catchment** – outfalls or interconnections where known high-density generating sites are present within the drainage area. For DCR, this includes all labor yards and areas where fueling operations occur.

5.3 Follow-up Ranking of Outfalls and Interconnections

An updated inventory and ranking will be provided in each annual report. The inventory will be updated annually to include data collected in connection with dry weather screening and other relevant inspections. Based on guidance in the permit, the outfalls identified as Problem Outfalls in Permit Year 1 prioritization remain problem outfalls for the permit requirements. Outfalls/interconnections where screening information was found indicating sewer input to the MS4, or sampling results indicated sewer input, will be considered likely to contain illicit discharges from sanitary sources and will be ranked as Highest Priority Outfalls category for investigation.

Appendix C includes DCR's current outfall inventory and priority ranking matrix.

6

Dry Weather Outfall Screening and Sampling

Dry weather flow is a common indicator of potential illicit connections. The MS4 Permit requires all outfalls/interconnections (excluding Problem and Excluded Outfalls) to be inspected for the presence of dry weather flow. The Division of Engineering is responsible for conducting dry weather outfall screening, starting with Highest and High Priority outfalls, followed by Low Priority outfalls, based on the initial priority rankings described in the previous section. While DCR performed outfall screening/sampling conducted under the 2003 MS4 Permit for their whole system, the list of analytes sampled was different and the results were not logged in a database for reference. Therefore, DCR is retesting the outfalls as described in this section.

6.1 Weather Conditions

Dry weather outfall screening and sampling may occur when no more than 0.1 inches of rainfall has occurred in the previous 24-hour period and no significant snow melt is occurring. DCR will use precipitation data from the nearest accurate weather station from the Weather Underground website[4] or similar data source for each property for determining dry weather conditions. DCR will identify at least one back-up station for each site also, as needed.

[4] https://www.wunderground.com/weatherstation/overview.asp

6.2 Dry Weather Screening/Sampling Procedure

6.2.1 General Procedure

6.2.1.1 Documents and Records

Sampling Records

All samples must be clearly labeled with a unique identifier provided for each site, the date and time of collection, and the analysis required. This information must also be listed on the chain of custody. Additionally, all samples must identify the sampler using their initials.

Field Records

Field notes will be collected using a mobile data collection application. The sampling team will record the results of the field test kit analyses for ammonia, surfactants, and chlorine and field measurements for pH, temperature, salinity, and specific conductivity. Additionally, flow velocity, approximate depth of water, water color, odor, observed floatables and sediment or debris deposits will be noted. A photo of the structure should be taken and added to the database. A chain of custody form will be filled out at the time of sampling by the field crew. A carbon copy of the chain of custody will be retained by the field crew after the samples are delivered to the laboratory.

Laboratory Records

Upon completion of laboratory analysis, the laboratory will issue a full report in an electronic format describing the results of analysis for each sample submitted. This will include; a case narrative, sample results, quality control measures taken, information on the condition of the samples upon arrival at the lab and the sampling methodologies. A copy of the chain of custody will also be included by the laboratory with the laboratory report.

All data will be evaluated to confirm that it meets the quality control goals and that it is consistent with results typical for this type of work. Additional data collection will be scheduled if multiple data points do not meet the data quality objectives.

6.2.1.2 Quality Objectives, Criteria and Control

Data quality objectives are as follows:

- Data must have sufficient detail in order to assess water quality at each of the sampling locations.
- Data should be representative of the actual conditions at the sampling location.
- Data should be generated through accepted sampling methodologies.
- Data must be duplicable and accurate.

Precision: Precision is the ability of a measurement to be consistently reproduced. The overall sampling precision will be determined by the collection and analysis of field duplicate samples that are not identified as such to the analytical laboratory. Duplicate samples will be taken every twentieth sample and are to be collected at the same time as the parent sample

and will be assigned a unique identifier. Due to the living nature of bacteria they may reproduce and die after sample collection. With this in mind, a degree of disparity that remains within the established data quality objectives, between the duplicate sample and the original sample is expected and is not necessarily reflective of sample collection or laboratory error.

Accuracy: Accuracy is the degree to which the result of a measurement, calculation, or specification conforms to its "true" value. In order to provide sufficient accuracy, minimization of false positive and false negative analytical data is attempted. The potential for false positive data values will be assessed through the analysis of laboratory blanks. All samples will be analyzed with a laboratory blank. Blank samples must have results of less than the method detection limit (MDL) or instrument detection limit. Laboratory control samples and calibration standards will be used by the laboratory, as needed.

Representativeness: Sample collection is intended to provide data representative of actual conditions at particular sampling locations. To achieve representativeness, sampling is carried out so as to eliminate, as much as possible, the possibility of cross contamination between the sampled locations and non-sampled locations as well as between multiple sampling locations. However, grab samples are only representative of a snapshot of water quality conditions at a given time. As such, they may not be representative of long-term conditions. Data collected must be evaluated with this limitation in mind.

Trip Blank: One blank sample will be collected per trip to the laboratory. Before any samples are taken, a trip blank will be created, by collecting a sample of distilled water using the field sampling equipment. It will remain in the same cooler as the samples for the duration of their trip to the laboratory.

QC Criteria: QC criteria are specified in **Table 6-1**. Data not meeting the criteria will be reviewed by the Project Manager. Data that does not meet laboratory QA/QC criteria will be flagged by the laboratory.

Instrument/Equipment Testing and Maintenance: Sampling supplies will be inspected prior to mobilization to ensure that everything is in good working order and that it is properly calibrated.

The pH, temperature, and specific conductivity measurements will be collected using an Oakton Multi-Parameter PCTSTestr 50 Series. Meters are calibrated on a monthly schedule. Calibration instructions for each parameter are below.

pH Calibration:

For best results, calibrate with certified accurate pH calibration standards (buffers). You may calibrate up to five points with the USA (1.68, 4.01, 7.00, 10.1, 12.45) or the NIST (1.68, 4.01, 6.86, 9.18, 12.45) buffer group.

1. Press ON/OFF to turn meter on and MODE ENT to select pH mode as needed.
2. Rinse the sensor with clean water. Immerse the sensor into your pH buffer and press ▲ CAL. The primary display will show the un-calibrated pH value, while the secondary display should search for and lock on the closest automatic calibration value.

3. Allow the primary display to stabilize, then press MODE ENT to confirm the calibration value. The primary value will blink briefly before the secondary value automatically scrolls through the remaining pH buffers available for calibration.
4. Repeat steps 2 & 3 with additional buffers or press ▲ CAL to return to measurement mode.

Temperature Calibration:

The factory temperature should last for the life of the original sensor since it doesn't normally drift.

Conductivity Calibration (Automatic):

For best results, calibrate with certified accurate conductivity calibration standards. Selection of multi-point calibration will allow up to three of the following values, while single-point calibration will allow only one; choose 84 µS, 1413 µS, or 12.88 µS.

Conductivity Range	Automatic Calibration Value	Available With
0.0 – 200.0 µS	84 µS	PCS only
201 – 2000 µS	1413 µS	PC or PCS
2.01 – 20.00 mS	12.88 mS	PC or PCS

1. Press ON/OFF to turn meter on and MODE ENT to select conductivity mode as needed.
2. Rinse the sensor with clean water. Immerse the sensor into your standard and press ▲CAL. The primary display will show the un-calibrated value, while the secondary display should search for and lock on the closest automatic calibration value.
3. Allow the primary display to stabilize, then press MODE ENT to confirm the calibration value. The primary value will blink briefly before returning to measurement mode.
4. Repeat steps 2 & 3 with additional calibrations standards if desired.

Table 6-1 Analytical References and Quality Control Goals

Parameter	Lab/Equipment	Reporting Limits	Method	Water Quality Criteria or Guidelines	Precision	Accuracy	Completeness
pH	Oakton Multi-Parameter PCTSTestr 50	0 - 14	NA	6.5 – 8.3	0.02	+/- 0.1	90%
Temperature	Oakton Multi-Parameter PCTSTestr 50	0 – 50 °C	NA	28.3	0.1 °C	+/- 0.5 °C	90%
Specific Conductivity	Oakton Multi-Parameter PCTSTestr 50	0 – 1,999 µS/cm 2.00 to 20.00 mS/cm	NA	NA	5 µS/cm	+/- 1% F.S.	90%
Salinity	Oakton Multi-Parameter PCTSTestr 50	0 – 999 ppm 1.00 – 10.00 ppt	NA	NA	30% RPD	+/- 1% F.S.	90%
Ammonia	CHEMets Kit K-1510	0.02 mg/L	NA	0.5 mg/L	0.05 mg/L	+/- 20%	90%
Chlorine	CHEMets Kit I-2001	0.02 mg/L	NA	NA	0.02 mg/L	+/- 20%	90%
Surfactants	CHEMets Kit K-9400	0.125 mg/L	NA	0.25 mg/L	0.125 mg/L	+/- 20%	90%
E. Coli	Laboratory	>10 CFU/ 100 mL	1,603	235 CFU/100 mL	30% RPD	NA	90%
Enterococcus	Laboratory	10 CFU / 100 mL	1,600	104 CFU/100 mL	30% RPD	NA	90%

NA = Not Applicable
CFU = Colony Forming Unit
F.S. = Full scale
mL = Milliliter
mg/L = Milligrams per Liter
NTU = Nephelometric Turbidity Units
RPD = Relative Percent Difference

Each sample collected will be stored in the appropriate container for the specific parameter being analyzed. The appropriate containers for all parameters being analyzed are shown in **Table 6-2**. Each sample will be labeled with the sample ID, date and time of collection, sampler collector's initials and the parameter to be tested.

Table 6-2 Bottle List

Parameter	Lab	Bottle	Preservation
E. coli	Laboratory	120 mL sterile	Ice
Enterococci	Laboratory	120 mL sterile	Ice

A laboratory-specific chain of custody (COC) will also be completed. Each time the samples change hands (from the sampler to the courier, courier to laboratory, etc.), the sample labels will be checked against the COC to verify that all information matches. If discrepancies are found, actions will be taken to confirm the correct information is displayed and that all samples are accounted for. The laboratory will perform QA/QC procedures consistent with the standard operating procedures (SOPs) for the sampling methodology for each parameter.

Any inaccurate or incomplete field data will be discussed and re-measured before leaving the monitoring location. Inaccurate or incomplete information will be corrected before the files are finalized.

The laboratory will follow QA/QC procedures described in the attached SOP including initial calibration, the use of duplicates and laboratory control samples. Once sampling results are distributed by the laboratory, a Project Manager will review the results to confirm that they are consistent with the quality control goals listed in **Table 6-1**. Any discrepancies will be discussed with the laboratory.

6.2.1.3 General Steps

The dry weather outfall inspection and sampling procedure consists of the following general steps:

1. Identify outfall(s) to be screened/sampled based on initial outfall inventory and priority ranking.
    a) High and low ranked outfalls and interconnects need screening.
    b) Problem and excluded outfalls and interconnections do not need screening.
2. Acquire the necessary staff, mapping, and field equipment (see **Appendix D** for list of potential field equipment).
3. Conduct the outfall inspection during dry weather:
    a) Locate the outfall. If the outfall is not found, proceed to the next upstream structure. If an upstream structure is not found, update the database accordingly.

b) In the event that an outfall is submerged, either partially or completely, or is inaccessible, field staff will proceed to the first accessible upstream manhole or structure for the observation and sampling and report the location with the screening results. Field staff will continue to the next upstream structure until there is no longer an influence from the receiving water on the visual inspection or sampling. (Note, field staff may need to capture samples from multiple sampling points to capture a representative sample of the incoming flow.)

c) Mark and photograph the outfall or structure in the database.

d) Record the inspection information and outfall characteristics using DCR's mobile data collection. Inspectors will use ArcGIS Field Maps to gather screening and sampling data against mapped assets. Look for and record visual/olfactory evidence of pollutants in flowing outfalls including odor, color, turbidity, and floatable matter (suds, bubbles, excrement, toilet paper or sanitary products). Also observe outfalls for deposits and stains, vegetation, and damage to outfall structures.

4. If flow is observed, sample and test the flow following the procedures described in the following sections.
5. If no flow is observed, but evidence of illicit flow exists (illicit discharges are often intermittent or transitory), place a sandbag if the forecast for the next 48 hours shows dry weather. If the forecast does not show dry weather, revisit the outfall when there is 48 hours of dry weather as soon as possible after the initial observation and place a sandbag or sample flow if observed.
6. Input lab results from screening and sampling into DCR's database. Data captured through the mobile ArcGIS Field Maps will be automatically saved to the database.
7. Conduct review of all data entered into the database against lab reports and field notes for quality assurance purposes.
8. Analyze whether screening and sampling results require further follow up measures or indicate no signs of illicit discharges in the flow.
9. Include all screening data in the annual report.

6.2.2 Field Equipment

Appendix D includes a checklist of field equipment commonly used for dry weather (and wet weather) outfall screening and sampling. The listed items are suggested and should be updated as needed, based on specific samples and tests to be conducted and/or conditions. At the discretion of the sampling team, additional items can be added to the list at the end, and duplicative or unnecessary items can be removed or crossed out.

6.2.3 Sample Collection and Analysis

If flow is present during a dry weather outfall inspection, a sample will be collected and analyzed for the required permit parameters[5] listed in **Table 6-1** plus pollutants of concern for the receiving water body. The general procedure for collection of outfall samples is as follows:

1. At least one day prior to sampling, coordinate with appropriate laboratory to schedule the laboratory analysis. This coordination will include the time of delivery and number of samples expected to be sent for analysis.
2. Visit the designated location(s) provided in two-person field crew.
3. Prior to the start of sampling, create a trip blank by filling a laboratory provided container with clean bottled water. The trip blank will have its own unique label and will be kept in a cooler with all other samples collected during that sampling event.
4. Upon arrival at an approved sampling location, record all pertinent observations in electronic format. Pertinent observations include but are not limited to: flow velocity, approximate depth of water, water color, odor, observed floatables, and sediment or debris deposits. Fill out comments section with any observations which cannot adequately be described using predefined categories on the field form.
5. If using bottle labels, fill out all sample information on sample bottle labels and field sheets. Make sure sample bottles are clean. If writing directly on lab sample bottle, skip to Step 6.
6. Put on protective gloves (nitrile/latex/other) before sampling. If writing directly on lab sample bottles, label sampling container. Collect sample with dipper or directly in sample containers. To sample, place a clean grab container in the approximate middle of observed flow. After the container has been filled, retrieve and swirl its contents to ensure that all surfaces of the container are covered and rinsed thoroughly and then dump out downstream of the sampling location. Follow this method a total of three times, to ensure that the grab container is fully rinsed.
7. Use grab container a fourth time to collect a final sample for analysis. If possible, collect water from the flow directly in the sample bottle. Be careful not to disturb sediments.
8. For samples requiring laboratory analyses, open a sterile container, provided by the laboratory. Use caution to ensure that only the outside of the container and its cap are handled to prevent contamination. Fill the sterile container with the sampled water and then seal. Take care to confirm that the sample container is

[5] Other potentially useful parameters, although not required by the MS4 Permit, include **fluoride** (indicator of potable water sources in areas where water supplies are fluoridated), **potassium** (high levels may indicate the presence of sanitary wastewater), and **optical brighteners** (indicative of laundry detergents).

sealed properly and does not leak. Label the container with a unique identifier, the date and time the sample was taken and the analysis that is required.

9. Place laboratory samples on ice in a cooler for analysis of bacteria and pollutants of concern.
10. Fill out chain-of-custody form for laboratory samples, including the unique identifier, date, time, sample matrix, sampler's initials, and required test information. The chain of custody form will remain with the samples at all times.
11. Conduct in-situ field tests using the remaining water in the grab container. Use test strips, test kits, and field meters (rinse similar to dipper) for most parameters (see **Table 6-3**). All results will be recorded.
12. Samples will remain on ice until they are accepted by the laboratory. Samples must be analyzed by the laboratory within 8 hours of their collection. Any violation of this hold time is required to be documented in the laboratory's final report.
13. Upon completion of all sampling, or portion of sampling as the 8 hour bacteria hold time allows, deliver the samples to the laboratory identified in the Health and Safety Plan (HASP) Appendix A: Individual Site Pre-Sampling Safety Plan. The samples must be signed over to the laboratory using the chain of custody form. Retain a carbon copy of the chain of custody from while the original remains with the samples. Follow the handling and chain of custody procedures described in the following section.
14. Dispose of used test strips and test kit ampules properly.
15. Decontaminate all testing personnel and equipment, following HASP guidance.

6.2.3.1 Field Kits

Field test kits or field instrumentation are permitted for all parameters except indicator bacteria and some pollutants of concern. Field kits need to have appropriate detection limits and ranges. **Table 6-3** lists various field test kits and field instruments that can be used for outfall sampling associated with the 2016 MS4 Permit parameters, other than indicator bacteria and any pollutants of concern. Analytic procedures and user's manuals for field test kits and field instrumentation are provided in **Appendix E**.

Testing for indicator bacteria and any pollutants of concern must be conducted using analytical methods and procedures found in 40 CFR § 136.[6] Samples for laboratory analysis must also be stored and preserved in accordance with procedures found in 40 CFR § 136. Methods will vary by laboratory. **Table 6-4** lists analytical methods, detection limits, hold times, and preservatives for laboratory analysis of dry weather sampling parameters.

[6] 40 CFR § 136: http://www.ecfr.gov/cgi-bin/text-idx?SID=b3b41fdea0b7b0b8cd6c4304d86271b7&mc=true&node=pt40.25.136&rgn=div5

Table 6-3 Sampling Parameters and Analysis Methods

Analyte or Parameter	Instrumentation (Portable Meter)	Field Test Kit
Ammonia	CHEMetrics™ V-2000 Colorimeter Hach™ DR/890 Colorimeter Hach™ Pocket Colorimeter™ II	CHEMetrics™ K-1410 CHEMetrics™ K-1510 (series) Hach™ NI-SA Hach™ Ammonia Test Strips
Surfactants (Detergents)	CHEMetrics™ I-2017	CHEMetrics™ K-9400 and K-9404 Hach™ DE-2
Chlorine	CHEMetrics™ V-2000, K-2513, I-2001 Hach™ Pocket Colorimeter™ II	NA
Conductivity	CHEMetrics™ I-1200 YSI Pro30 YSI EC300A Oakton 450 Oakton PCTSTestr 50	NA
Temperature	YSI Pro30 YSI EC300A Oakton 450 Oakton PCTSTestr 50	NA
Salinity	YSI Pro30 YSI EC300A Oakton 450 Oakton PCTSTestr 50	NA
pH	YSI Pro30 YSI EC300A Oakton 450 Oakton PCTSTestr 50	NA
Indicator Bacteria: *E. coli* (freshwater) or Enterococcus (saline water)	EPA certified laboratory procedure (40 CFR § 136)	NA
Pollutants of Concern[7]	EPA certified laboratory procedure (40 CFR § 136) or approved field meter	NA

Table 6-4 Required Analytical Methods, Detection Limits, Hold Times, and Preservatives

Analyte or Parameter	Analytical Method	Detection Limit	Max. Hold Time	Preservative
Ammonia	Direct Nesslerization	0.05 mg/L	28 days	Cool ≤6°C, H_2SO_4 to pH <2, No preservative required if analyzed immediately
Surfactants	Methylene Blue	0.01 mg/L	48 hours	Cool ≤6°C

[7] Where the discharge is directly into a water quality limited water or a water subject to an approved TMDL, the sample must be analyzed for the pollutant(s) of concern identified as the cause of the water quality impairment.

Analyte or Parameter	Analytical Method	Detection Limit	Max. Hold Time	Preservative
Chlorine	DPD	0.02 mg/L	Analyze within 15 minutes	None Required
Temperature	N/A	N/A	Immediate	None Required
Specific Conductance	N/A	0.2 µs/cm	28 days	Cool ≤6°C
Salinity	N/A	-	28 days	Cool ≤6°C
Indicator Bacteria: *E. coli* *Enterococcus*	*E. coli* **EPA**: 1603 **SM**: 9221B, 9221F , 9223 B **Other**: Colilert ®, Colilert-18® *Enterococcus* **EPA**: 1600 **SM**: 9230 C **Other**: Enterolert®	*E. coli* **EPA**: 1 cfu/100mL **SM**: 2 MPN/100mL **Other**: 1 MPN/100mL *Enterococcus* **EPA**: 1 cfu/100mL **SM**: 1 MPN/100mL **Other**: 1 MPN/100mL	8 hours	Cool ≤10°C, 0.0008% $Na_2S_2O_3$
Total Phosphorus	**EPA**: Manual-365.3, Automated Ascorbic acid digestion-365.1 Rev. 2, ICP/AES4-200.7 Rev. 4.4 **SM**: 4500-P E-F	**EPA**: 0.01 mg/L **SM** : 0.01 mg/L	28 days	Cool ≤6°C, H_2SO_4 to pH <2
Total Nitrogen*	**EPA**: Cadmium reduction (automated)-353.2 Rev. 2.0, **SM**: 4500-NO_3 E-F	**EPA**: 0.05 mg/L **SM**: 0.05 mg/L	28 days	Cool ≤6°C, H_2SO_4 to pH <2

SM = Standard Methods

* - Ammonia + Nitrate/Nitrite, methods are for Nitrate-Nitrite and need to be combined with Ammonia listed above.

6.2.4 Sandbagging

This technique can be particularly useful when attempting to isolate intermittent illicit discharges or those with very little perceptible flow. The technique involves placing sandbags or similar barriers (e.g., caulking, weirs/plates, or other temporary barriers) within outlets to manholes to form a temporary dam that collects any intermittent flows that may occur. Sandbags are typically left in place for 48 hours, and should only be installed when dry weather is forecast. If flow has collected behind the sandbags/barriers after 48 hours it can be assessed using visual observations or by sampling. If no flow collects behind the sandbag, the upstream pipe network can be ruled out as a source of the intermittent discharge. The challenge with this method can be finding appropriate durations of dry weather and the need for multiple trips to each manhole.

6.3 Interpreting Outfall Sampling Results

Outfall analytical data from dry weather sampling can be used to help identify the major type or source of discharge. **Table 6-5** shows values identified by the U.S. EPA and the Center for Watershed Protection as typical screening values for select parameters. These represent the typical concentration (or value) of each parameter expected to be found in stormwater. Screening values that exceed these benchmarks may be indicative of pollution and/or illicit discharges.

Table 6-5 Benchmark Field Measurements for Select Parameters

Analyte or Parameter	Benchmark
Ammonia	>0.5 mg/L
Conductivity	>2,000 µS/cm
Surfactants	>0.25 mg/L
Chlorine	>0.02 mg/L (detectable levels per the 2016 MS4 Permit)
Indicator Bacteria: *E. coli* *Enterococcus*	 E. coli: 235 cfu/100ml Enterococcus: 104 cfu/100ml

According to the 2016 MS4 Permit Part 2.3.4.7c.ii, likely sewer input indicators are any of the following:

- Olfactory or visual evidence of sewage;
- Ammonia ≥0.5 mg/L, surfactants ≥0.25 mg/L, and bacteria levels greater than the water quality criteria applicable to the receiving water; or
- Ammonia ≥0.5 mg/L, surfactants ≥0.25 mg/L, and detectable levels of chlorine.

6.4 Follow-up Ranking of Outfalls and Interconnections

Since the dry weather screening task was completed in Permit Year 3, DCR updated and re-prioritized the initial outfall and interconnection rankings based on information gathered during dry weather screening. Outfalls/interconnections where relevant information was found indicating sewer input to the MS4 or where sampling results indicated sewer input to the MS4 were ranked as Highest Priority, at the top of the High Priority Outfalls category, for investigation.

The rankings may be updated periodically as additional outfalls are identified and dry weather screening is performed or follow up work is performed for Problem Outfalls and will be summarized in each annual report.

7

Catchment Investigations

Once stormwater outfalls with evidence of illicit discharges have been identified, various methods can be used to trace the source of the potential discharge within the outfall catchment area. Catchment investigation techniques include but are not limited to review of maps, historic plans, and records; manhole observation; dry and wet weather sampling; video inspection; smoke testing; and dye testing. This section outlines a systematic procedure to investigate outfall catchments to trace the source of potential illicit discharges. All data collected as part of the catchment investigations will be recorded and reported in each annual report.

7.1 System Vulnerability Factors

While DCR does not generally own sewer systems, where available DCR will review relevant mapping and historic plans and records to identify areas within the catchment with higher potential for illicit connections. The following information will be reviewed, if readily available:

- Plans related to the construction of the DCR drainage network;
- Plans related to the construction of the sewer drainage network on DCR property; and
- Prior work on the DCR storm drains or sewer lines on DCR property.

The presence of the following **System Vulnerability Factors (SVFs)** may be identified for each catchment, as available:

- Crossings of storm and sanitary sewer alignments where the sanitary system is shallower than the storm drain system;
    - Sanitary sewer infrastructure defects such as leaking service laterals, cracked, broken, or offset sanitary infrastructure, directly piped connections between

storm drain and sanitary sewer infrastructure, or other vulnerability factors identified through Inflow/Infiltration Analyses, Sanitary Sewer Evaluation Surveys, or other infrastructure investigations shared by sanitary sewer owners/ operators and shared with DCR; or

- Sewer pump/lift stations, siphons, or known sanitary sewer restrictions where power/equipment failures or blockages could readily result in SSOs, as identified by sanitary sewer owners/ operators and shared with DCR.

DCR maintains an SVF inventory for each catchment in its database. If entities are interested in receiving the SVF inventory, please request from DCR Stormwater.

7.2 Catchment Investigations

The Division of Design & Engineering and/or subcontractors will be responsible for implementing catchment investigations and will systematically investigate each catchment associated with an outfall or interconnection within their MS4 system. All catchment investigations will be completed during dry weather and will involve systematically and progressively observing, sampling, and evaluating key junction manholes in the MS4. For outfalls/interconnections with dry weather screening results indicating sewer input, additional steps will be taken during the catchment investigation (as outlined below) to determine the approximate location of suspected illicit discharges or SSOs.

Infrastructure information will be incorporated into the storm system map, and catchment delineations will be refined based on the field investigation, where necessary. The SVF inventory will also be updated based on information obtained during catchment layer development and the field investigations, where necessary.

Important terms related to catchment investigations are defined by the MS4 Permit as follows:

- **Junction Manhole** is a manhole or structure with two or more inlets accepting flow from two or more MS4 alignments. Manholes with inlets solely from private storm drains, individual catch basins, or both are not considered junction manholes for these purposes.
- **Key Junction Manholes** are those junction manholes that can represent one or more junction manholes without compromising adequate implementation of the illicit discharge program. Adequate implementation of the illicit discharge program would not be compromised if the exclusion of a particular junction manhole as a key junction manhole would not affect the permittee's ability to determine the possible presence of an upstream illicit discharge. A permittee may exclude a junction manhole located upstream from another located in the immediate vicinity or that is serving a drainage alignment with no potential for illicit connections.

For all catchments identified for investigation, during dry weather, field crews will systematically inspect all **key junction manholes** for evidence of illicit discharges. This program involves progressive inspection and sampling at manholes in the storm drain network to isolate and eliminate illicit discharges.

The manhole inspection methodology will be conducted in one of two ways (or a combination of both):

- By working progressively up from the outfall and inspecting key junction manholes along the way; or
- By working progressively down from the upper parts of the catchment toward the outfall.

The decision to move up or down the system depends on the nature of the drainage system and the surrounding land use and the availability of information on the catchment and drainage system. Moving up the system can begin immediately when an illicit discharge is detected at an outfall, and only a map of the storm drain system is required. Moving down the system requires more advanced preparation and reliable drainage system information on the upstream segments of the storm drain system, but may be more efficient if the sources of illicit discharges are believed to be located in the upstream portions of the catchment area. Once a manhole inspection methodology has been selected, investigations will continue systematically through the catchment.

For most catchments, manhole inspections will proceed from the upper parts of the catchment and proceed down towards the outfall. For outfalls/interconnections with sampling results indicating sewer input, manhole inspections will typically proceed up from the outfall.

Inspection of key junction manholes will proceed as follows:

1. Manholes will be opened and inspected for visual and olfactory evidence of illicit connections.
2. If flow is observed, a sample will be collected and analyzed at a minimum for ammonia, chlorine, and surfactants. Sampling and analysis will be in accordance with procedures outlined in **Section 6**. Additional indicator sampling may assist in determining potential sources (e.g., bacteria for sanitary flows, conductivity to detect tidal backwater, etc.).
3. If flow is not observed, the next step will vary depending on the following:
    3.1. Catchments with likely sewer input: an obstruction (sandbag) will be placed in the manhole to capture intermittent flows. After at least 48 hours of dry weather, the sandbag will be checked. If flow is captured, a sample will be collected and analyzed for the same parameters as listed in #2.
    3.2. All other catchments: proceed to the next key junction manhole without placing a sandbag.
4. Where sampling results or visual or olfactory evidence indicate potential illicit discharges or SSOs, the area draining to the junction manhole will be flagged for further upstream manhole investigation and/or isolation and confirmation of sources.
    4.1. Subsequent key junction manhole inspections will proceed until the location of suspected illicit discharges or SSOs can be isolated to the

shortest segment of pipe possible, ideally a single pipe between two manholes (proceed to Section 7.4).

4.2. Should inspections proceed to the edge of the DCR system and/or a perceived municipal interconnection to the DCR MS4 without identifying the location of suspected illicit discharges or SSO source, the investigator will note the potential source and notify the municipality and/or private land owner in accordance with DCR's Illicit Drainage Disconnection Procedure for alerting the owner of the upstream system.

5. If a minimum of one (1) System Vulnerability Factor (SVF) is identified based on previous information or this catchment investigation, DCR will flag this outfall for a wet weather investigation in the database, which must occur before the catchment investigation can be considered complete.
6. If no evidence of an illicit discharge is found and there are no SVFs identified, catchment investigations will be considered complete upon finishing review/sampling of key junction manholes.

7.3 Wet Weather Outfall Sampling

Where a minimum of one (1) System Vulnerability Factor (SVF) is identified based on information previously gathered or the catchment investigation, wet weather outfall sampling must also be conducted at the associated outfall. The Division of Design & Engineering will be responsible for implementing the wet weather outfall sampling program and updating its database with wet weather sampling results.

Outfalls will be inspected and sampled under wet weather conditions, to the extent necessary, to determine whether wet weather-induced high flows in sanitary sewers or high groundwater in areas served by septic systems result in discharges of sanitary flow to the MS4.

Wet weather outfall sampling will proceed as follows:

1. At least one wet weather sample will be collected at the outfall for the same parameters required during dry weather screening provided in **Section 6**.
2. Wet weather sampling will occur during or after a storm event of sufficient depth or intensity to produce runoff. Wet weather sampling decisions will be at the discretion of the sampling team. Wet weather screening will be conducted if there is at least 0.25 inches of rainfall, or enough rain to induce runoff. Field crews will sample within 24 hours after the rainfall event. Field crews will strive to sample during active rain as much as possible. To the extent feasible, sampling should occur during the spring (March through June) when groundwater levels are relatively high.
3. If wet weather outfall sampling indicates a potential illicit discharge, then additional wet weather source sampling will be performed, as warranted, or source isolation and confirmation procedures will be followed as described in **Section 7.4**.

4. If wet weather outfall sampling does not identify evidence of illicit discharges, and no evidence of an illicit discharge is found during dry weather manhole inspections, catchment investigations will be considered complete.

7.4 Source Isolation and Confirmation

Once the source of an illicit discharge is approximated between two manholes, more detailed investigation techniques will be used to isolate and confirm the source of the illicit discharge. The following methods may be used in isolating and confirming the source of illicit discharges:

- Sandbagging
- Smoke Testing
- Dye Testing
- CCTV/Video Inspections
- Optical Brightener Monitoring
- IDDE Canines

These methods are described in the sections below. Instructions and Standard Operating Procedures (SOPs) will be developed as they are needed.

7.4.1 Sandbagging

This technique can be particularly useful when attempting to isolate intermittent illicit discharges or those with very little perceptible flow. The technique involves placing sandbags or similar barriers (e.g., caulking, weirs/plates, or other temporary barriers) within outlets to manholes to form a temporary dam that collects any intermittent flows that may occur. Sandbags are typically left in place for 48 hours, and should only be installed when dry weather is forecast. If flow has collected behind the sandbags/barriers after 48 hours it can be assessed using visual observations or by sampling. If no flow collects behind the sandbag, the upstream pipe network can be ruled out as a source of the intermittent discharge. The challenge with this method can be finding appropriate durations of dry weather and the need for multiple trips to each manhole.

7.4.2 Smoke Testing

Smoke testing involves injecting non-toxic smoke into drain lines and noting the emergence of smoke from sanitary sewer vents in illegally connected buildings or from cracks and leaks in the system itself. Typically a smoke bomb or smoke generator is used to inject the smoke into the system at a catch basin or manhole and air is then forced through the system. Test personnel are placed in areas where there are suspected illegal connections or cracks/leaks, noting any escape of smoke (indicating an illicit connection or damaged storm drain infrastructure). It is important when using this technique to make proper notifications to area residents and business owners as well as local police and fire departments.

If the initial test of the storm drain system is unsuccessful then a more thorough smoke-test of the sanitary sewer lines can also be performed. Unlike storm drain smoke tests, buildings that do not emit smoke during sanitary sewer smoke tests may have problem connections and may also have sewer gas venting inside, which is hazardous.

It should be noted that smoke may cause minor irritation of respiratory passages. Residents with respiratory conditions may need to be monitored or evacuated from the area of testing altogether to ensure safety during testing.

7.4.3 Dye Testing

Dye testing involves flushing non-toxic dye into plumbing fixtures such as toilets, showers, and sinks and observing nearby storm drains and sewer manholes as well as stormwater outfalls for the presence of the dye. Similar to smoke testing, it is important to inform local residents and business owners. Police, fire, and local public health staff should also be notified prior to testing in preparation of responding to citizen phone calls concerning the dye and their presence in local surface waters.

A team of two or more people is needed to perform dye testing (ideally, all with two-way communication devices, such as cell phones or radios). One person is inside the building, while the others are stationed at the appropriate storm sewer and sanitary sewer manholes (which should be opened) and/or outfalls. The person inside the building adds dye into a plumbing fixture (i.e., toilet or sink) and runs a sufficient amount of water to move the dye through the plumbing system. The person inside the building then radios to the outside crew that the dye has been dropped, and the outside crew watches for the dye in the storm sewer, recording the presence or absence of the dye.

The test can be relatively quick (about 30 minutes per test), effective (results are usually definitive), and inexpensive. Dye testing is best used when the likely source of an illicit discharge has been narrowed down to a few specific houses or businesses.

7.4.4 CCTV/Video Inspection

Another method of source isolation involves the use of mobile video cameras that are guided remotely through stormwater drain lines to observe possible illicit discharges. IDDE program staff can review the videos and note any visible illicit discharges. While this tool is both effective and usually definitive when an active flush with sewage entering into the drain is visible, it can be costly and time consuming when compared to other source isolation techniques. When an active flush is not visible, follow-up with dye testing to confirm illicit connections will be needed.

7.4.5 Optical Brightener Monitoring

Optical brighteners are fluorescent dyes that are used in detergents and paper products to enhance their appearance. The presence of optical brighteners in surface waters or dry weather discharges suggests there is a possible illicit discharge or insufficient removal through adsorption in nearby septic systems or wastewater treatment. Optical brightener

monitoring can be done in two ways. The most common, and least expensive, methodology involves placing a cotton pad in a wire cage and securing it in a pipe, manhole, catch basin, or inlet to capture intermittent dry weather flows. The pad is retrieved at a later date and placed under UV light to determine the presence/absence of brighteners during the monitoring period. A second methodology uses handheld fluorometers to detect optical brighteners in water sample collected from outfalls or ambient surface waters. Use of a fluorometer, while more quantitative, is typically more costly and is not as effective at isolating intermittent discharges as other source isolation techniques.

7.4.6 IDDE Canines

Dogs specifically trained to smell human related sewage are becoming a cost-effective way to isolate and identify sources of illicit discharges. While not widespread at the moment, the use of IDDE canines is growing as is their accuracy. The use of IDDE canines is not recommended as a standalone practice for source identification; rather it is recommended as a tool to supplement other conventional methods, such as dye testing, in order to fully verify sources of illicit discharges.

Public notification is an important aspect of a detailed source investigation program. Prior to smoke testing, dye testing, or TV inspections, the Division of Engineering will notify visitors with temporary signage in the vicinity of the testing and/or inspections.

7.5 Illicit Discharge Removal

When the specific source of an illicit discharge is identified, DCR will exercise its authority as necessary to require its removal within 60 days. Where elimination of an illicit discharge is not possible within 60 days of its identification, DCR will create an expeditious schedule for its elimination. The annual report will include the status of IDDE investigation and removal activities including the following information for each confirmed source:

- The location of the discharge and its source(s);
- A description of the discharge;
- The method of discovery;
- Date of discovery;
- Date of elimination, mitigation or enforcement action, OR planned corrective measures and a schedule for completing the illicit discharge removal; and
- Estimate of the volume of flow removed.

7.5.1 Confirmatory Outfall Screening

Within one (1) year of removal of all identified illicit discharges within a catchment area, confirmatory outfall or interconnection screening will be conducted. The confirmatory screening will be conducted in dry weather unless System Vulnerability Factors have been identified, in which case both dry weather and wet weather confirmatory screening will be

conducted. If confirmatory screening indicates evidence of additional illicit discharges, the catchment will be scheduled for additional investigation.

7.6 Ongoing Screening

Upon completion of all catchment investigations and illicit discharge removal and confirmation (if necessary), each outfall or interconnection will be re-prioritized for screening and scheduled for ongoing screening once every five (5) years. Ongoing screening will consist of dry weather screening and sampling consistent with the procedures described in **Section 6** of this plan. Ongoing wet weather screening and sampling will also be conducted at outfalls where wet weather screening was required due to System Vulnerability Factors and will be conducted in accordance with the procedures described in **Section 7.3**. All sampling results will be reported in the annual report.

8

Training

Annual IDDE training will be made available to all employees involved in the IDDE program. This training will, at a minimum, include information on how to identify illicit discharges and SSOs and may also include additional training specific to the functions of particular personnel and their function within the framework of the IDDE program. Training records will be maintained in **Appendix F**. The frequency and type of training will be included in the annual report.

9

Progress Reporting

The progress and success of the IDDE program will be evaluated on an annual basis. The evaluation will be documented in the annual report and will include the following indicators of program progress:

- Number of SSOs and illicit discharges identified and removed;
- Number and percent of total outfall catchments served by the MS4 evaluated using the catchment investigation procedure;
- Number of dry weather outfall inspections/screenings;
- Number of wet weather outfall inspections/sampling events;
- Number of enforcement notices issued;
- All dry weather and wet weather screening and sampling results;
- Status of on-going investigations of suspect flows and source identification;
- Estimate of the volume of sewage removed, as applicable; and
- Number of employees trained annually.

The success of the IDDE program will be measured by the IDDE activities completed within the required permit timelines.

Appendix A – Impaired Receiving Waters and Impairments

List of Receiving Waters for Regulated Outfalls

Receiving Water	Waterbody IDs	Number of Regulated Outfalls	Impaired For:
	Ocean	30	N/A: Waterbody Not Impaired
	ULT_MA34-27	2	N/A: Waterbody Not Impaired
	ULT_MA72-11	1	N/A: Waterbody Not Impaired
Aberjona River	MA71-01	16	Ammonia, Un-ionized; Arsenic In Sediment; Benthic Macroinvertebrates; Chloride; Dissolved Oxygen; Fish Bioassessments; Phosphorus, Total; Physical Substrate Habitat Alterations; Sediment Bioassay [Chronic Toxicity Freshwater]; Escherichia Coli (E. Coli)
Alewife Brook	MA71-20	22	Debris; Flocculant Masses; Odor; Oil And Grease; Scum/foam; Transparency / Clarity; Trash; Pcbs In Fish Tissue; Chloride; Copper In Sediment; Dissolved Oxygen; Lead In Sediment; Phosphorus, Total; Sediment Bioassay [Chronic Toxicity Freshwater]; Water Chestnut; Escherichia Coli (E. Coli)
Ashland Reservoir	MA82003	15	Mercury In Fish Tissue; Non-native Aquatic Plants
Beaver Brook	MA62-09	8	Escherichia Coli (E. Coli); Fecal Coliform
Beaver Brook	MA72-28	14	Algae; Chloride; Dissolved Oxygen; Flow Regime Modification; Organic Enrichment (Sewage) Biological Indicators; Other Anthropogenic Substrate Alterations; Phosphorus, Total; Sedimentation/siltation; Water Chestnut; Escherichia Coli (E. Coli)
Bennetts Pond Brook	MA93-48	30	Escherichia Coli (E. Coli); Fecal Coliform
Blackstone River	MA51-05	5	Algae; Aquatic Plants (Macrophytes); Non-native Aquatic Plants; Nutrient/eutrophication Biological Indicators; Odor; Phosphorus, Total; Turbidity; Benthic Macroinvertebrates; Cadmium; Copper; Flow Regime Modification; Lead; Polychlorinated Biphenyls (Pcbs); Total Suspended Solids (Tss); Escherichia Coli (E. Coli)
Blue Hill River	MA74-25	6	N/A: Waterbody Not Impaired
Boston Inner Harbor	MA70-02	2	Cause Unknown [Contaminants In Fish And/or Shellfish]; Pcbs In Fish Tissue; Dissolved Oxygen; Enterococcus; Fecal Coliform
Cape Cod Canal	MA95-14	3	Fecal Coliform
Charles River	MA72-07	50	Curly-leaf Pondweed; Eurasian Water Milfoil, Myriophyllum Spicatum; Harmful Algal Blooms; Water Chestnut; Ddt In Fish Tissue; Pcbs In Fish Tissue; Benthic Macroinvertebrates; Fish Bioassessments; Fish Passage Barrier; Flow Regime Modification; Nutrient/eutrophication Biological Indicators; Phosphorus, Total; Temperature; Escherichia Coli (E. Coli)
Charles River	MA72-33	4	Nutrient/eutrophication Biological Indicators; Physical Substrate Habitat Alterations; Escherichia Coli (E. Coli)

* TMDL not required (Non-pollutant)
<Null> = No impairment

Receiving Water	Waterbody IDs	Number of Regulated Outfalls	Impaired For:
Charles River	MA72-36	218	Harmful Algal Blooms; Oil And Grease; Transparency / Clarity; Ddt In Fish Tissue; Pcbs In Fish Tissue; Chlorophyll-a; Dissolved Oxygen; Fish Bioassessments; Fish Passage Barrier; Flow Regime Modification; Non-native Fish/shellfish/zooplankton; Nutrient/eutrophication Biological Indicators; Ph, High; Phosphorus, Total; Sediment Bioassay [Acute Toxicity Freshwater]; Unspecified Metals In Sediment; Water Chestnut; Escherichia Coli (E. Coli)
Charles River	MA72-38	87	Harmful Algal Blooms; Odor; Oil And Grease; Transparency / Clarity; Ddt In Fish Tissue; Pcbs In Fish Tissue; Cause Unknown [Sediment Screening Value (Exceedance)]; Chlorophyll-a; Combined Biota/habitat Bioassessments; Dissolved Oxygen; Dissolved Oxygen Supersaturation; Fish Passage Barrier; Flow Regime Modification; Nutrient/eutrophication Biological Indicators; Phosphorus, Total; Salinity; Temperature; Escherichia Coli (E. Coli)
Chicopee Reservoir	MA36033	5	Non-native Aquatic Plants
Coachlace Pond	MA81019	1	Curly-leaf Pondweed; Hydrilla; Non-native Aquatic Plants
Connecticut River	MA34-04	2	Pcbs In Fish Tissue; Water Chestnut; Escherichia Coli (E. Coli)
Dorchester Bay	MA70-03	16	Cause Unknown [Contaminants In Fish And/or Shellfish]; Pcbs In Fish Tissue; Enterococcus; Fecal Coliform
Dunn Pond	MA35021	3	N/A: Waterbody Not Impaired
Ell Pond	MA71014	2	Harmful Algal Blooms; Phosphorus, Total; Total Suspended Solids (Tss); Transparency / Clarity; Chlorophyll-a; Fecal Coliform
Emerson Brook Reservoir (Forest Street Pond)	MA92021	7	N/A: Waterbody Not Impaired
Fellsmere Pond	MA71016	7	Harmful Algal Blooms
Flint Pond	MA51188	3	Aquatic Plants (Macrophytes); Nutrient/eutrophication Biological Indicators; Eurasian Water Milfoil, Myriophyllum Spicatum; Fanwort; Non-native Aquatic Plants
Furnace Brook	MA74-10	47	Benthic Macroinvertebrates; Dissolved Oxygen; Escherichia Coli (E. Coli)
Gloucester Harbor	MA93-18	2	Combined Biota/habitat Bioassessments; Dissolved Oxygen; Enterococcus; Fecal Coliform
Hammond Pond	MA72044	4	N/A: Waterbody Not Impaired
Hoosicwhisick Pond	MA74015	19	N/A: Waterbody Not Impaired
Hull Bay	MA70-09	1	Cause Unknown [Contaminants In Fish And/or Shellfish]; Pcbs In Fish Tissue; Estuarine Bioassessments; Fecal Coliform
Jamaica Pond	MA72052	15	Dissolved Oxygen; Eurasian Water Milfoil, Myriophyllum Spicatum; Phosphorus, Total

* TMDL not required (Non-pollutant)
<Null> = No impairment

Receiving Water	Waterbody IDs	Number of Regulated Outfalls	Impaired For:
Lake Cochituate	MA82020	1	Pcbs In Fish Tissue; Dissolved Oxygen; Eurasian Water Milfoil, Myriophyllum Spicatum
Lake Cochituate	MA82125	5	Pcbs In Fish Tissue; Curly-leaf Pondweed; Dissolved Oxygen; Eurasian Water Milfoil, Myriophyllum Spicatum; Non-native Aquatic Plants; Non-native Fish/shellfish/zooplankton; Enterococcus
Lake Quinsigamond	MA51125	16	Algae; Curly-leaf Pondweed; Dissolved Oxygen; Eurasian Water Milfoil, Myriophyllum Spicatum; Fanwort; Non-native Aquatic Plants; Water Chestnut; Enterococcus
Lower Mystic Lake	MA71027	18	Ddt In Fish Tissue; Pcbs In Fish Tissue; Dissolved Oxygen; Hydrogen Sulfide; Salinity; Sediment Bioassay [Chronic Toxicity Freshwater]
Lower Pond	MA93044	7	N/A: Waterbody Not Impaired
Lynn Harbor	MA93-52	30	Enterococcus; Fecal Coliform
Lynn Harbor	MA93-53	87	Fecal Coliform
Malden River	MA71-05	23	Debris; Flocculant Masses; Odor; Oil And Grease; Scum/foam; Transparency / Clarity; Trash; Chlordane In Fish Tissue; Ddt In Fish Tissue; Pcbs In Fish Tissue; Dissolved Oxygen; Dissolved Oxygen Supersaturation; Ph, High; Phosphorus, Total; Sediment Bioassay [Chronic Toxicity Freshwater]; Temperature; Total Suspended Solids (Tss); Water Chestnut; Escherichia Coli (E. Coli); Fecal Coliform
Merrimack River	MA84A-01	39	Mercury In Fish Tissue; Fish Passage Barrier; Escherichia Coli (E. Coli); Fecal Coliform
Merrimack River	MA84A-03	4	Mercury In Fish Tissue; Fish Passage Barrier; Pcbs In Fish Tissue; Phosphorus, Total; Escherichia Coli (E. Coli)
Merrimack River	MA84A-06	2	Pcbs In Fish Tissue; Enterococcus; Fecal Coliform
Middle River	MA51-02	2	Debris; Trash; Turbidity; Benthic Macroinvertebrates; Non-native Aquatic Plants; Nutrient/eutrophication Biological Indicators; Physical Substrate Habitat Alterations; Escherichia Coli (E. Coli)
Mill Brook	MA71-07	1	Benthic Macroinvertebrates; Physical Substrate Habitat Alterations; Escherichia Coli (E. Coli)
Mill River	MA93-31	2	Turbidity; Dissolved Oxygen; Escherichia Coli (E. Coli); Fecal Coliform
Miller Brook	MA32-27	7	Escherichia Coli (E. Coli)
Mine Brook	MA72-14	2	Habitat Assessment; Temperature; Escherichia Coli (E. Coli)
Mother Brook	MA73-28	16	Color; Debris; Odor; Trash; Ddt In Fish Tissue; Mercury In Fish Tissue; Pcbs In Fish Tissue; Dissolved Oxygen; Flow Regime Modification; Phosphorus, Total; Escherichia Coli (E. Coli); Fecal Coliform
Muddy River	MA72-11	75	Odor; Oil And Grease; Turbidity; Ddt In Fish Tissue; Pcbs In Fish Tissue; Bottom Deposits; Dissolved Oxygen; Flow Regime Modification; Non-native Aquatic Plants; Phosphorus, Total; Physical Substrate Habitat Alterations; Unspecified Metals In Sediment; Escherichia Coli (E. Coli)

* TMDL not required (Non-pollutant)
<Null> = No impairment

Receiving Water	Waterbody IDs	Number of Regulated Outfalls	Impaired For:
Mystic River	MA71-02	141	Non-native Aquatic Plants; Transparency / Clarity; Chlordane In Fish Tissue; Ddt In Fish Tissue; Pcbs In Fish Tissue; Arsenic; Chlorophyll-a; Dissolved Oxygen; Dissolved Oxygen Supersaturation; Eurasian Water Milfoil, Myriophyllum Spicatum; Ph, High; Phosphorus, Total; Sediment Bioassay [Chronic Toxicity Freshwater]; Water Chestnut; Escherichia Coli (E. Coli)
Mystic River	MA71-03	9	Flocculant Masses; Odor; Oil And Grease; Scum/foam; Cause Unknown [Contaminants In Fish And/or Shellfish; Sediment Screening Value (Exceedance)]; Pcbs In Fish Tissue; Ammonia, Un-ionized; Dissolved Oxygen; Nutrient/eutrophication Biological Indicators; Petroleum Hydrocarbons; Fecal Coliform
Nahant Bay	MA93-24	12	Enterococcus; Fecal Coliform
Neponset River	MA73-02	32	Debris; Flocculant Masses; Oil And Grease; Scum/foam; Trash; Turbidity; Ddt In Fish Tissue; Pcbs In Fish Tissue; Dissolved Oxygen; Fish Passage Barrier; Metals; Unspecified Metals In Sediment; Escherichia Coli (E. Coli); Fecal Coliform
Neponset River	MA73-03	35	Debris; Flocculant Masses; Oil And Grease; Scum/foam; Trash; Ddt In Fish Tissue; Pcbs In Fish Tissue; Curly-leaf Pondweed; Fish Passage Barrier; Metals; Pcbs In Sediment; Polychlorinated Biphenyls (Pcbs); Unspecified Metals In Sediment; Enterococcus; Escherichia Coli (E. Coli); Fecal Coliform
Neponset River	MA73-04	7	Debris; Trash; Turbidity; Cause Unknown [Contaminants In Fish And/or Shellfish]; Pcbs In Fish Tissue; Enterococcus; Fecal Coliform
North Nashua River	MA81-02	1	Ambient Bioassays - Chronic Aquatic Toxicity; Benthic Macroinvertebrates; Fish Bioassessments; Lead; Escherichia Coli (E. Coli)
Old Quincy Reservoir	MA74017	4	N/A: Waterbody Not Impaired
Outer New Bedford Harbor	MA95-63	3	Pcbs In Fish Tissue; Dissolved Oxygen; Metals; Nitrogen, Total; Other Organics; Enterococcus; Fecal Coliform
Pine Tree Brook	MA73-29	22	Aquatic Plants (Macrophytes); Turbidity; Dissolved Oxygen; Physical Substrate Habitat Alterations; Escherichia Coli (E. Coli); Fecal Coliform
Pleasure Bay	MA70-11	1	Cause Unknown [Contaminants In Fish And/or Shellfish]; Pcbs In Fish Tissue; Fecal Coliform
Plymouth Harbor	MA94-16	6	Estuarine Bioassessments; Fecal Coliform
Ponkapoag Pond	MA73043	3	Mercury In Fish Tissue; Eurasian Water Milfoil, Myriophyllum Spicatum; Fanwort; Non-native Aquatic Plants
Ponkapog Brook	MA73-27	5	Escherichia Coli (E. Coli); Fecal Coliform
Quincy Bay	MA70-04	26	Cause Unknown [Contaminants In Fish And/or Shellfish]; Pcbs In Fish Tissue; Enterococcus; Fecal Coliform

* TMDL not required (Non-pollutant)
<Null> = No impairment

Receiving Water	Waterbody IDs	Number of Regulated Outfalls	Impaired For:
Quincy Bay	MA70-05	2	Cause Unknown [Contaminants In Fish And/or Shellfish]; Pcbs In Fish Tissue; Enterococcus; Fecal Coliform
Russell Millpond	MA94132	3	Algae; Dissolved Oxygen
Sales Creek	MA71-12	3	N/A: Waterbody Not Impaired
Saugus River	MA93-35	5	Alteration In Stream-side Or Littoral Vegetative Covers; Benthic Macroinvertebrates; Dewatering; Fish Passage Barrier; Escherichia Coli (E. Coli); Fecal Coliform
Saugus River	MA93-44	1	Oil And Grease; Flow Regime Modification; Temperature; Enterococcus; Fecal Coliform
Sawmill Brook	MA72-23	23	Organic Enrichment (Sewage) Biological Indicators; Chloride; Dissolved Oxygen; Phosphorus, Total; Escherichia Coli (E. Coli)
Shawsheen River	MA83-19	1	Escherichia Coli (E. Coli); Fecal Coliform
Spicket River	MA84A-10	1	Debris; Trash; Ddt In Fish Tissue; Mercury In Fish Tissue; Benthic Macroinvertebrates; Copper; Fish Passage Barrier; Nutrients; Physical Substrate Habitat Alterations; Escherichia Coli (E. Coli)
Spot Pond	MA71039	34	N/A: Waterbody Not Impaired
Spot Pond Brook	MA71-17	3	N/A: Waterbody Not Impaired
Stearns Pond	MA92061	4	N/A: Waterbody Not Impaired
Stony Brook	MA72-37	39	N/A: Waterbody Not Impaired
Taunton River	MA62-04	7	Dissolved Oxygen; Fish Bioassessments; Nitrogen, Total; Enterococcus; Fecal Coliform
Unnamed Tributary	MA71-13	3	Escherichia Coli (E. Coli)
Unnamed Tributary	MA72-31	1	Bottom Deposits; Debris; Flocculant Masses; Odor; Oil And Grease; Scum/foam; Trash; Turbidity; Habitat Assessment; Petroleum Hydrocarbons; Polychlorinated Biphenyls (Pcbs); Polycyclic Aromatic Hydrocarbons (Pahs) (Aquatic Ecosystems); Sedimentation/siltation; Unspecified Metals In Sediment
Unnamed Tributary	MA72-32	5	Escherichia Coli (E. Coli)
Upper Mystic Lake	MA71043	10	Curly-leaf Pondweed; Dissolved Oxygen; Dissolved Oxygen Supersaturation; Enterococcus
Wachusett Reservoir	MA81147	5	Mercury In Fish Tissue; Brittle Naiad, Najas Minor; Eurasian Water Milfoil, Myriophyllum Spicatum; Fanwort; Non-native Aquatic Plants
Weir River	MA74-11	5	Cause Unknown [Contaminants In Fish And/or Shellfish]; Pcbs In Fish Tissue; Fecal Coliform
West Meadow Pond	MA62208	1	Non-native Aquatic Plants
Westfield River	MA32-07	19	N/A: Waterbody Not Impaired
Weymouth Back River	MA74-13	12	Cause Unknown [Contaminants In Fish And/or Shellfish]; Pcbs In Fish Tissue; Fecal Coliform
Weymouth Fore River	MA74-14	4	Cause Unknown [Contaminants In Fish And/or Shellfish]; Pcbs In Fish Tissue; Enterococcus; Fecal Coliform
White Brook	MA32-28	10	Escherichia Coli (E. Coli)

* TMDL not required (Non-pollutant)
<Null> = No impairment

Appendix B – Illicit Drainage Disconnection Procedure

dcr
Massachusetts

Illicit Discharge Procedure

Date: June 30, 2022

Table of Contents

Purpose

This Ilicit Discharge Detection and Elimination (IDDE) Procedure was developed for Massachusetts Department of Conservation and Recreation's (MassDCR's) facilities, infrastructure, and other assets to:

- Protect the natural resources and infrastructure of the Commonwealth of Massachusetts from contamination in Stormwater Discharges;
- Protect the public health, safety, welfare and environment by regulating the direct and indirect Discharge of water and Pollutants to the Stormwater Drainage System;
- Prohibit, detect and eliminate Illicit Discharges and Sanitary Sewer Overflows to the Stormwater Drainage System; and
- Document the procedures for carrying out inspections, monitoring, investigations, and enforcement procedures in furtherance of maintaining clean waters and compliance with federal and Commonwealth legal requirements.

This procedure establishes methods for controlling the introduction of pollutants into the municipal separate storm sewer system (MS4) in order to comply with requirements of the National Pollutant Discharge Elimination System (NPDES) General Permits for Stormwater Discharges from Small MS4s in Massachusetts process. The objectives of this procedure are:

- To regulate the contribution of pollutants to DCR's MS4 by stormwater discharges by any user
- To prohibit illicit connections and discharges to DCR's separate storm sewer system
- To establish legal authority to carry out all inspection, surveillance, and monitoring procedures necessary to ensure compliance with this procedure

Therefore, effective immediately, DCR prohibits the connection of illicit and unauthorized discharges to DCR drainage system and requires the disconnection of all such existing connections. This prohibition expressly includes, without limitation, illicit connections made in the past, regardless of whether the connection was permissible under law or practices applicable or prevailing at the time of connection. A person or other entity (e.g., municipality) is considered to be in violation of this procedure if it connects a line conveying non-stormwater dsicharges to the MS4 or allows such a connection to continue.

Definitions

The following words and phrases shall have the meanings respectively ascribed to them in this procedure, except in those instances where the context clearly indicates a different meaning or is otherwise stated. Whenever any words and phrases used in this procedure are not defined in this document, such word or phrase shall be construed according to its generally accepted meaning as noted in a dictionary of general usage.

Authorized Enforcement Agency. Employees or designees of the Commissioner of the Department of Conservation and Recreation designated to enforce this procedure.

Best Management Practices (BMPs). Activities, practices, structures, vegetation, maintenance procedures, and other management practices to prevent or reduce the discharge of Pollutants to waters of the United States. BMPs also include, but are not limited to, treatment requirements, operating procedures, and practices to control site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

Blind Connection. A connection to the Stormwater Drainage System without a drainage structure, such as a manhole or catch basin, that allows the Department access to the connection.

Clean Water Act. The federal Water Pollution Control Act (33 U.S.C. §1251, et seq.), and any subsequent amendments thereto.

Commissioner. The Commissioner of the Massachusetts Department of Conservation and Recreation or his or her designee.

Commonwealth. The Commonwealth of Massachusetts.

Construction Access Permit (CAP). A permit issued by the Department pursuant to 302 CMR 11.06, as such regulations may be amended from time to time.

Department. The Massachusetts Department of Conservation and Recreation.

Discharge. When used without qualification, means the "discharge of a pollutant."

Discharge of a Pollutant. Any addition of any "pollutant" or combination of pollutants to "waters of the United States" from any "point source," or any addition of any pollutant or combination of pollutants to the waters of the "contiguous zone" or the ocean from any point source other than a vessel or other floating craft which is being used as a means of transportation. This includes additions of pollutants into waters of the United States from surface runoff which is collected or channeled by man; or discharges through pipes, sewers, or other conveyances, leading into privately owned treatment works.

Groundwater. Fresh water (from rain or melting ice and snow that soaks into the soil and is stored between rocks and particles of soil.

Hazardous Materials and Wastes. Any material, waste or substance, which because of its quantity, concentration, chemical, corrosive, flammable, reactive, toxic, infectious or radioactive characteristics, either separately or in combination with any substance or substances, constitutes a present or potential threat to human health, safety, welfare, or to the environment. Hazardous materials and wastes include without limitation any synthetic organic chemical, oil, petroleum product or byproduct, heavy metal, radioactive or infectious waste, acid and alkali, and any substance defined as toxic or hazardous under Massachusetts General Law chapter 21C or 21E or the Massachusetts Contingency Plan (310 CMR 40.0000).

Illicit Discharge. Any discharge to a municipal separate storm sewer that is not composed entirely of stormwater except discharges listed as allowed non-stormwater discharges in this document and those resulting from firefighting activities and other exempt activities.

Impervious Surface. Any surface that prevents or significantly impedes the infiltration of water into the underlying soil including, but not limited to, roads, driveways, parking areas and other areas created using non-porous material; buildings, rooftops, structures, artificial turf and compacted gravel or soil.

Interconnection. The point (excluding sheet flow over impervious surfaces) where an entity discharges to another storm sewer system, through which the discharge is eventually conveyed to a water of the United States. The interconnection shall include, but is not limited to, all drain pipes, conduits, culverts, structural controls, manholes, catch basins, inlet and outlet structures, improved channels, structural stormwater basins, and other appurtenances.

MA MS4 General Permit. The National Pollutant Discharge Elimination System (NPDES) General Permits for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems in Massachusetts, issued by the United States Environmental Protection Agency (or by the Commonwealth under authority delegated pursuant to 33 U.S.C. § 1342(b)), that authorizes and regulates the discharge of pollutants to

the waters of the United States from small municipal storm sewer systems in Massachusetts including DCR.

Non-Stormwater Discharge. Any discharge to the Stormwater Drainage System that is not entirely composed of stormwater. The MA MS4 General Permit includes categories of non-stormwater discharges allowed under the permit in Section 1.4 of the permit.

Owner or Operator. The owner or operator of any "facility or activity" subject to regulation under the NPDES program.

Person. An individual, association, partnership, corporation, municipality, State or Federal agency, or an agent or employee thereof.

Point Source. Any discernible, confined, and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel, or other floating craft from which pollutants are or may be discharged.

Pollutant. Any material identified in Appendix G of the MA MS4 General Permit or by any federal or state law or regulation as a pollutant. Pollutants include dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt, and industrial, municipal, and agricultural waste discharged into water.

Sanitary Sewer Overflow. A discharge of untreated sanitary wastewater from a municipal sanitary sewer. A Sanitary Sewer Overflow is a type of Illicit Discharge.

Stormwater. Any water resulting from rainfall, snow melt runoff, or other precipitation that runs off surfaces, including but not limited to roofs and roads, or infiltrates into the ground during or after a precipitation event.

Stormwater Drainage System. The totality of the stormwater collection system under the jurisdiction, care, custody or control of the Department, including but not limited to any pipe, conduit, drain, inlet, outlet, manhole, control, pump, equipment, works and appurtenances, parkway or other way under the care, control, custody or jurisdiction of the Department, gutter or any natural or man-made watercourse, pond, reservoir, impoundment, stream, canal, channel, swale, ditch, culvert, catch basin, detention basin or other drainage structure, to or through which Stormwater or Groundwater flows or otherwise designed for or used in the collection and/or transport of Stormwater or Groundwater and runoff.

Unpermitted Discharge. Any direct or indirect Non-Stormwater, Stormwater, or Groundwater Discharge to the Stormwater Drainage System without a Construction Access Permit, except as expressly exempted, allowed or permitted by 302 CMR 20.03(4).

Applicability

Every Person who directly or indirectly Discharges water or other matter to the Stormwater Drainage System shall ensure that such Discharge complies with this procedure.

Unauthorized Interconnections and Discharges

The Department prohibits the connection of unauthorized Interconnections and discharges to Stormwater Drainage System and requires the disconnection of all such existing Interconnections or filing for a Construction

Access Permit. This prohibition expressly includes, without limitation, connections made in the past, regardless of whether the connection was permissible under law or practices applicable or prevailing at the time of connection including having received prior written permission of the Department or its predecessor agencies for connection.

Non-Stormwater Discharges

The following Non-Stormwater Discharges are allowed by the MA MS4 permit, provided such discharges do not contain any Pollutant or Discharge, release or convey any Pollutant to the Stormwater Drainage System, and all Owners and Persons making or contributing to such discharges are otherwise in full compliance with this procedure:

- water line flushing,
- landscape irrigation,
- diverted stream flows,
- rising Groundwater,
- uncontaminated ground water infiltration, as defined by 40 CFR 35.2005(20),
- discharge from potable water sources,
- foundation drains,
- air conditioning condensation,
- irrigation water, springs,
- water from crawl space pumps,
- footing drains,
- lawn watering,
- individual car washing,
- flows from riparian habitat and wetlands,
- de-chlorinated swimming pool discharges,
- street wash waters,
- residential building wash waters without detergents, or
- firefighting activity flows or discharges (unless identified as significant sources of Pollutant to water of the United States).

Prohibited Discharges

The Department will not under any circumstances allow the connection or Discharge of drainage from a non-DCR facility or property for any of the following types of connections:

- Connections that do not fully comply with the MA MS4 General Permit or other environmental permits or state and federal regulations.
- Connections of sump pump discharges.
- Connections of building floor drains.
- Interconnection which would create a Blind Connection to the Stormwater Drainage System.
- Discharges from dewatering activities or Non-Stormwater Discharges including discharges from private construction sites and Department construction and maintenance projects, unless the Discharge is allowed under the MA MS4 Permit and the Discharge is permitted through a Construction Access Permit or the applicant is in compliance with the conditions of a NPDES permit.

- Connection or Discharge that in the opinion of the Department may have an adverse impact on the Stormwater Drainage System in terms of pipe or conveyance capacity, the ability of existing Best Management Practices (BMPs) to effectively treat the Discharge/conveyance, or that will require additional maintenance of the Department's Stormwater Drainage System.

Suspension of MS4 Access

Suspension in Emergency Situations

The Department may, without prior notice, order or cause any Discharge or access to the Stormwater Drainage System to be suspended immediately when such suspension is, in the Department's discretion, necessary to stop an actual or threatened Discharge or when there is a present or imminent danger to the environment, the health or welfare of Persons, the Stormwater Drainage System or the waters or resources of the Commonwealth or United States. If a Person fails to comply with a suspension order issued in an emergency, then the Department may take such steps as the Department deems necessary to prevent or minimize damage to the environment, the health or welfare of Persons, the Stormwater Drainage System or the waters or resources of the Commonwealth or United States.

Suspension Due to the Detection of Unpermitted Discharge

Any Person or other entity (e.g., municipality) discharging to the Stormwater Drainage System in violation of this procedure may have their drainage system access terminated if such termination would abate or reduce the violation. The Department will notify a violator of the proposed termination of its Stormwater Drainage System access. The violator may petition the Department for a reconsideration and hearing.

Inspection

The Department shall be permitted to enter all properties as often as necessary for the purposes of inspection, observation, measurement, sampling and testing to determine compliance with this procedure. To determine the presence or absence of an Interconnection and potential Illicit Discharge the Department will be permitted to perform the following:

- Access Interconnection locations by opening manholes and other portions of the storm drainage system.

- Conduct sampling of any flows entering the Department's Storm Drainage System. Sampling results indicating likely sewer input, as defined by the MA MS4 permit, will be considered to have a suspected Illicit Discharge.

- Conduct catchment investigations to pinpoint the source of the Illicit Discharge. To thoroughly inspect a catchment with a suspected Illicit Discharge, the Department will be permitted to open manholes, record observations, and sample stormwater flow from any properties discharging to the Department's Stormwater Drainage System (in accordance with DCR's Stormwater Management Plan and the MA MS4 General Permit). The Department shall also be permitted to place an obstruction (sandbag) in the manhole to

capture intermittent flows, conduct video inspection, conduct dye testing or perform other necessary measures to confirm or rule out an Illicit Discharge.

Enforcement Procedures

When Department staff become aware of an Illicit Discharge, regardless of the Construction Access Permit status, they will notify and work with the Department's Legal Department and Stormwater Section to take the necessary steps to disconnect the Illicit Discharge.

Notice of Unpermitted Discharge

When Department staff become aware of an Unpermitted Discharge, the Department shall provide the Person responsible with a written notice and require actions to be taken, including filing for a Construction Access Permit, to remedy the violation. The Department may, per such notice and without limitation, require:

- the implementation and performance of monitoring, analyses, and reporting,
- the filing of a request for Construction Access Permit within thirty (30) days of receipt of a notice of violation (unless a shorter time is specified in the notice) or submittal of a schedule to submit such a request.

Should the violator fail to remediate or restore by the established deadline, the work may be completed by the Department and expenses thereof shall be the responsibility of the violator.

Notice of Violation

Whenever any Person is found to have violated or to be violating any provision of this procedure, the Department shall provide that Person with a written notice of the nature of the violation and specify those actions to be taken to remedy any violation. Whenever the DCR Division of Engineering finds a violation of this procedure, including, but not limited an illicit connection, the DCR Stormwater Manager shall notify the landowner by formal letter that person must remove the connection. A copy of the letter shall be forwarded to DCR Chief Engineer and DCR General Counsel's Office. It shall be the responsibility of the landowner to propose a schedule for the removal of the discharge. The notice may require without limitation:

- The performance of monitoring, analyses, and reporting;
- Securing a sewer connection permit from the local authority;
- The elimination of illicit connections or discharges;
- That violating discharges, practices, or operations shall cease and desist;
- The abatement or remediation of stormwater pollution or contamination hazards and the restoration of any affected property;
- Payment of a fine to cover administrative and remediation costs; and

- The implementation of source control or treatment BMPs.

Corrective Actions

If the landowner cannot remove the discharge within the time frame indicated in the letter (maximum of 60 days from the date of the letter), as demonstrated by evidence required in the letter and presented to DCR, the landowner must propose an expeditious plan and schedule for its elimination for DCR's review and approval within that timeframe. If the landowner does not respond within the timeframe or if DCR and the landowner cannot agree to a plan and schedule, DCR will pursue legal action with the Massachusetts Attorney General's Office.

Termination of Access to Stormwater Drainage System

Any Persons discharging to or using the Stormwater Drainage System in violation of this procedure or otherwise failing to comply with any notice from the Department may have their access and use of the Stormwater Drainage System access terminated if such termination would abate or reduce an Illicit Discharge. DCR will notify a violator of the proposed termination of its Stormwater Drainage System access. The violator may petition DCR for a reconsideration and hearing.

Appendix C – Outfall and Interconnection Inventory and Priority Ranking

Outfall Inventory and Priority Ranking

Last Revision Date: 6/12/2023

Outfall ID	Receiving Waterbody	Receiving Waterbody Name	IDDE Priority
34507.3	MA70-05	Quincy Bay	Problem
34509.3	MA70-05	Quincy Bay	Problem
19105	MA72-36	Charles River	Problem
19377	MA72-36	Charles River	Problem
19379	MA72-36	Charles River	Problem
17289	MA73-02	Neponset River	Problem
18257	MA73-04	Neponset River	Problem
21850	MA73-04	Neponset River	Problem
19378	MA72-36	Charles River	Problem^
37114.1	MA93-24	Nahant Bay	Problem*
38017	MA93-24	Nahant Bay	Problem*
21979	MA71-02	Mystic River	Highest
22021	MA71-02	Mystic River	Highest
22724	MA71-02	Mystic River	Highest
27645	MA71-05	Malden River	Highest
22018	MA71-13	Unnamed Tributary	Highest
19326	MA72-38	Charles River	Highest
666666991	MA73-02	Neponset River	Highest
666667157	MA93-52	Lynn Harbor	Highest
24553	MA32-27	Miller Brook	High
24554	MA32-27	Miller Brook	High
24573	MA32-27	Miller Brook	High
24583	MA32-27	Miller Brook	High
24584	MA32-27	Miller Brook	High
37280.6	MA32-27	Miller Brook	High
37283.6	MA32-27	Miller Brook	High
24536	MA32-28	White Brook	High
24537	MA32-28	White Brook	High
24538	MA32-28	White Brook	High
24539	MA32-28	White Brook	High
24540	MA32-28	White Brook	High
24541	MA32-28	White Brook	High
24542	MA32-28	White Brook	High
24543	MA32-28	White Brook	High
24546	MA32-28	White Brook	High
24503	MA34-04	Connecticut River	High
24515	MA34-04	Connecticut River	High
666667298	MA51-02	Middle River	High
666667299	MA51-02	Middle River	High
24259	MA51-05	Blackstone River	High
24260	MA51-05	Blackstone River	High
24431	MA51-05	Blackstone River	High
24432	MA51-05	Blackstone River	High

Last Revision Date: 6/12/2023

Outfall ID	Receiving Waterbody	Receiving Waterbody Name	IDDE Priority
24434	MA51-05	Blackstone River	High
24273	MA51125	Lake Quinsigamond	High
24352	MA51125	Lake Quinsigamond	High
24368	MA51125	Lake Quinsigamond	High
24405	MA51125	Lake Quinsigamond	High
24406	MA51125	Lake Quinsigamond	High
13696	MA51125	Lake Quinsigamond	High
24418	MA51125	Lake Quinsigamond	High
24420	MA51125	Lake Quinsigamond	High
24423	MA51125	Lake Quinsigamond	High
24451	MA51125	Lake Quinsigamond	High
666667297	MA51125	Lake Quinsigamond	High
24108	MA62-04	Taunton River	High
24118	MA62-04	Taunton River	High
24213	MA62-04	Taunton River	High
24214	MA62-04	Taunton River	High
24215	MA62-04	Taunton River	High
24216	MA62-04	Taunton River	High
24220	MA62-04	Taunton River	High
24071	MA62-09	Beaver Brook	High
14465	MA62-09	Beaver Brook	High
24073	MA62-09	Beaver Brook	High
14463	MA62-09	Beaver Brook	High
14467	MA62-09	Beaver Brook	High
24077	MA62-09	Beaver Brook	High
14468	MA62-09	Beaver Brook	High
18992	MA70-02	Boston Inner Harbor	High
21248	MA70-02	Boston Inner Harbor	High
17671	MA70-03	Dorchester Bay	High
17672	MA70-03	Dorchester Bay	High
17673	MA70-03	Dorchester Bay	High
17674	MA70-03	Dorchester Bay	High
17881	MA70-03	Dorchester Bay	High
17890	MA70-03	Dorchester Bay	High
17903	MA70-03	Dorchester Bay	High
18300	MA70-03	Dorchester Bay	High
18302	MA70-03	Dorchester Bay	High
18358	MA70-03	Dorchester Bay	High
18359	MA70-03	Dorchester Bay	High
18362	MA70-03	Dorchester Bay	High
18364	MA70-03	Dorchester Bay	High
28109	MA70-03	Dorchester Bay	High
666667869	MA70-03	Dorchester Bay	High

Last Revision Date: 6/12/2023

Outfall ID	Receiving Waterbody	Receiving Waterbody Name	IDDE Priority
18290	MA70-03	Dorchester Bay	High
17664	MA70-04	Quincy Bay	High
17665	MA70-04	Quincy Bay	High
17668	MA70-04	Quincy Bay	High
17669	MA70-04	Quincy Bay	High
13844	MA70-04	Quincy Bay	High
13846	MA70-04	Quincy Bay	High
13841	MA70-04	Quincy Bay	High
17885	MA70-04	Quincy Bay	High
13839	MA70-04	Quincy Bay	High
13837	MA70-04	Quincy Bay	High
13835	MA70-04	Quincy Bay	High
13833	MA70-04	Quincy Bay	High
17900	MA70-04	Quincy Bay	High
18911	MA70-04	Quincy Bay	High
18913	MA70-04	Quincy Bay	High
18914	MA70-04	Quincy Bay	High
32261	MA70-04	Quincy Bay	High
37217	MA70-04	Quincy Bay	High
38019	MA70-04	Quincy Bay	High
666666838	MA70-04	Quincy Bay	High
21743	MA70-09	Hull Bay	High
17662	MA70-11	Pleasure Bay	High
14342	MA71-01	Aberjona River	High
22548	MA71-01	Aberjona River	High
22549	MA71-01	Aberjona River	High
14364	MA71-01	Aberjona River	High
22553	MA71-01	Aberjona River	High
14158	MA71-01	Aberjona River	High
22779	MA71-01	Aberjona River	High
22781	MA71-01	Aberjona River	High
14319	MA71-01	Aberjona River	High
14129	MA71-01	Aberjona River	High
14142	MA71-01	Aberjona River	High
14153	MA71-01	Aberjona River	High
22826	MA71-01	Aberjona River	High
22827	MA71-01	Aberjona River	High
22828	MA71-01	Aberjona River	High
666667178	MA71-01	Aberjona River	High
34695.3	MA71014	Ell Pond	High
21901	MA71-02	Mystic River	High
14619	MA71-02	Mystic River	High
14613	MA71-02	Mystic River	High

Last Revision Date: 6/12/2023

Outfall ID	Receiving Waterbody	Receiving Waterbody Name	IDDE Priority
21959	MA71-02	Mystic River	High
21966	MA71-02	Mystic River	High
21970	MA71-02	Mystic River	High
21973	MA71-02	Mystic River	High
21980	MA71-02	Mystic River	High
22011	MA71-02	Mystic River	High
22015	MA71-02	Mystic River	High
22022	MA71-02	Mystic River	High
22023	MA71-02	Mystic River	High
22025	MA71-02	Mystic River	High
22185	MA71-02	Mystic River	High
22187	MA71-02	Mystic River	High
22188	MA71-02	Mystic River	High
14591	MA71-02	Mystic River	High
14625	MA71-02	Mystic River	High
14945	MA71-02	Mystic River	High
14994	MA71-02	Mystic River	High
22324	MA71-02	Mystic River	High
22325	MA71-02	Mystic River	High
22326	MA71-02	Mystic River	High
22327	MA71-02	Mystic River	High
22328	MA71-02	Mystic River	High
22329	MA71-02	Mystic River	High
22330	MA71-02	Mystic River	High
22331	MA71-02	Mystic River	High
22332	MA71-02	Mystic River	High
22333	MA71-02	Mystic River	High
22334	MA71-02	Mystic River	High
22336	MA71-02	Mystic River	High
22354	MA71-02	Mystic River	High
22355	MA71-02	Mystic River	High
16356	MA71-02	Mystic River	High
22420	MA71-02	Mystic River	High
22421	MA71-02	Mystic River	High
22422	MA71-02	Mystic River	High
22425	MA71-02	Mystic River	High
22427	MA71-02	Mystic River	High
22435	MA71-02	Mystic River	High
15507	MA71-02	Mystic River	High
15503	MA71-02	Mystic River	High
22508	MA71-02	Mystic River	High
22511	MA71-02	Mystic River	High
22522	MA71-02	Mystic River	High

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Outfall ID	Receiving Waterbody	Receiving Waterbody Name	IDDE Priority
22523	MA71-02	Mystic River	High
14482	MA71-02	Mystic River	High
14680	MA71-02	Mystic River	High
14677	MA71-02	Mystic River	High
14673	MA71-02	Mystic River	High
14669	MA71-02	Mystic River	High
14661	MA71-02	Mystic River	High
22533	MA71-02	Mystic River	High
22683	MA71-02	Mystic River	High
15491	MA71-02	Mystic River	High
22721	MA71-02	Mystic River	High
22722	MA71-02	Mystic River	High
22723	MA71-02	Mystic River	High
22726	MA71-02	Mystic River	High
22739	MA71-02	Mystic River	High
22742	MA71-02	Mystic River	High
14041	MA71-02	Mystic River	High
22743	MA71-02	Mystic River	High
22747	MA71-02	Mystic River	High
22749	MA71-02	Mystic River	High
14884	MA71-02	Mystic River	High
22750	MA71-02	Mystic River	High
22753	MA71-02	Mystic River	High
22754	MA71-02	Mystic River	High
22755	MA71-02	Mystic River	High
22756	MA71-02	Mystic River	High
22759	MA71-02	Mystic River	High
22763	MA71-02	Mystic River	High
14621	MA71-02	Mystic River	High
14620	MA71-02	Mystic River	High
14641	MA71-02	Mystic River	High
22766	MA71-02	Mystic River	High
22776	MA71-02	Mystic River	High
22783	MA71-02	Mystic River	High
22787	MA71-02	Mystic River	High
23866	MA71-02	Mystic River	High
23868	MA71-02	Mystic River	High
23869	MA71-02	Mystic River	High
23905	MA71-02	Mystic River	High
23938	MA71-02	Mystic River	High
23940	MA71-02	Mystic River	High
23941	MA71-02	Mystic River	High
23942	MA71-02	Mystic River	High

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Outfall ID	Receiving Waterbody	Receiving Waterbody Name	IDDE Priority
23962	MA71-02	Mystic River	High
23963	MA71-02	Mystic River	High
23964	MA71-02	Mystic River	High
14632	MA71-02	Mystic River	High
14631	MA71-02	Mystic River	High
14655	MA71-02	Mystic River	High
14676	MA71-02	Mystic River	High
15130	MA71-02	Mystic River	High
15450	MA71-02	Mystic River	High
16352	MA71-02	Mystic River	High
30342	MA71-02	Mystic River	High
30601	MA71-02	Mystic River	High
30955	MA71-02	Mystic River	High
30956	MA71-02	Mystic River	High
34469.2	MA71-02	Mystic River	High
34478.2	MA71-02	Mystic River	High
34486.2	MA71-02	Mystic River	High
34492.1	MA71-02	Mystic River	High
34684.3	MA71-02	Mystic River	High
35939.2	MA71-02	Mystic River	High
37112.7	MA71-02	Mystic River	High
666666973	MA71-02	Mystic River	High
666667004	MA71-02	Mystic River	High
666667005	MA71-02	Mystic River	High
666667006	MA71-02	Mystic River	High
666667012	MA71-02	Mystic River	High
666667013	MA71-02	Mystic River	High
666667014	MA71-02	Mystic River	High
666667147	MA71-02	Mystic River	High
666667155	MA71-02	Mystic River	High
666667154	MA71-02	Mystic River	High
666667218	MA71-02	Mystic River	High
666667322	MA71-02	Mystic River	High
14930	MA71027	Lower Mystic Lake	High
666666993	MA71027	Lower Mystic Lake	High
23904	MA71-03	Mystic River	High
23943	MA71-03	Mystic River	High
23944	MA71-03	Mystic River	High
23945	MA71-03	Mystic River	High
24978	MA71-03	Mystic River	High
36883	MA71-03	Mystic River	High
666667733	MA71-03	Mystic River	High
666667734	MA71-03	Mystic River	High

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Outfall ID	Receiving Waterbody	Receiving Waterbody Name	IDDE Priority
666667145	MA71039	Spot Pond	High
14599	MA71043	Upper Mystic Lake	High
14517	MA71043	Upper Mystic Lake	High
14332	MA71043	Upper Mystic Lake	High
14515	MA71043	Upper Mystic Lake	High
14507	MA71043	Upper Mystic Lake	High
23961	MA71043	Upper Mystic Lake	High
34474.2	MA71043	Upper Mystic Lake	High
34510.1	MA71043	Upper Mystic Lake	High
34637.3	MA71043	Upper Mystic Lake	High
666667121	MA71043	Upper Mystic Lake	High
21917	MA71-05	Malden River	High
22044	MA71-05	Malden River	High
22050	MA71-05	Malden River	High
13508	MA71-05	Malden River	High
22633	MA71-05	Malden River	High
22784	MA71-05	Malden River	High
22801	MA71-05	Malden River	High
22824	MA71-05	Malden River	High
22825	MA71-05	Malden River	High
15562	MA71-05	Malden River	High
23528	MA71-05	Malden River	High
23587	MA71-05	Malden River	High
5807.9	MA71-05	Malden River	High
666667143	MA71-05	Malden River	High
666667142	MA71-05	Malden River	High
666667215	MA71-05	Malden River	High
22802	MA71-05	Malden River	High
666667214	MA71-07	Mill Brook	High
666667632	MA71-12	Sales Creek	High
22020	MA71-13	Unnamed Tributary	High
22290	MA71-13	Unnamed Tributary	High
666667747	MA71-17	Spot Pond Brook	High
17654	MA72052	Jamaica Pond	High
16337	MA72052	Jamaica Pond	High
18504	MA72052	Jamaica Pond	High
18921	MA72052	Jamaica Pond	High
18922	MA72052	Jamaica Pond	High
29515	MA72052	Jamaica Pond	High
34450.3	MA72052	Jamaica Pond	High
666667114	MA72052	Jamaica Pond	High
666667113	MA72052	Jamaica Pond	High
18988	MA72-07	Charles River	High

Last Revision Date: 6/12/2023

Outfall ID	Receiving Waterbody	Receiving Waterbody Name	IDDE Priority
18989	MA72-07	Charles River	High
18990	MA72-07	Charles River	High
19131	MA72-07	Charles River	High
19132	MA72-07	Charles River	High
19157	MA72-07	Charles River	High
21268	MA72-07	Charles River	High
26463	MA72-07	Charles River	High
16422	MA72-07	Charles River	High
26467	MA72-07	Charles River	High
26468	MA72-07	Charles River	High
26469	MA72-07	Charles River	High
26491	MA72-07	Charles River	High
26871	MA72-07	Charles River	High
10803	MA72-07	Charles River	High
26879	MA72-07	Charles River	High
26882	MA72-07	Charles River	High
26884	MA72-07	Charles River	High
26885	MA72-07	Charles River	High
16414	MA72-07	Charles River	High
16417	MA72-07	Charles River	High
26892	MA72-07	Charles River	High
26895	MA72-07	Charles River	High
26897	MA72-07	Charles River	High
26898	MA72-07	Charles River	High
26916	MA72-07	Charles River	High
26917	MA72-07	Charles River	High
26929	MA72-07	Charles River	High
26930	MA72-07	Charles River	High
27546	MA72-07	Charles River	High
27548	MA72-07	Charles River	High
27552	MA72-07	Charles River	High
27553	MA72-07	Charles River	High
27555	MA72-07	Charles River	High
16419	MA72-07	Charles River	High
27629	MA72-07	Charles River	High
35264	MA72-07	Charles River	High
35284.2	MA72-07	Charles River	High
35918.1	MA72-07	Charles River	High
35934.1	MA72-07	Charles River	High
35937.1	MA72-07	Charles River	High
35939.1	MA72-07	Charles River	High
35942.1	MA72-07	Charles River	High
666667122	MA72-07	Charles River	High

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Outfall ID	Receiving Waterbody	Receiving Waterbody Name	IDDE Priority
666667123	MA72-07	Charles River	High
666667124	MA72-07	Charles River	High
666667126	MA72-07	Charles River	High
666667138	MA72-07	Charles River	High
666667139	MA72-07	Charles River	High
666667228	MA72-07	Charles River	High
16423	MA72-07	Charles River	High
666667752	MA72-07	Charles River	High
666667755	MA72-07	Charles River	High
18458	MA72-11	Muddy River	High
18522	MA72-11	Muddy River	High
13161	MA72-11	Muddy River	High
13238	MA72-11	Muddy River	High
18556	MA72-11	Muddy River	High
18932	MA72-11	Muddy River	High
18933	MA72-11	Muddy River	High
18934	MA72-11	Muddy River	High
18935	MA72-11	Muddy River	High
19153	MA72-11	Muddy River	High
19154	MA72-11	Muddy River	High
19320	MA72-11	Muddy River	High
19338	MA72-11	Muddy River	High
19352	MA72-11	Muddy River	High
19353	MA72-11	Muddy River	High
19355	MA72-11	Muddy River	High
19373	MA72-11	Muddy River	High
14208	MA72-11	Muddy River	High
19374	MA72-11	Muddy River	High
19375	MA72-11	Muddy River	High
21323	MA72-11	Muddy River	High
666666921	MA72-11	Muddy River	High
14188	MA72-11	Muddy River	High
27586	MA72-11	Muddy River	High
27587	MA72-11	Muddy River	High
27588	MA72-11	Muddy River	High
27589	MA72-11	Muddy River	High
27590	MA72-11	Muddy River	High
27591	MA72-11	Muddy River	High
27592	MA72-11	Muddy River	High
27594	MA72-11	Muddy River	High
27595	MA72-11	Muddy River	High
3623	MA72-11	Muddy River	High
14200	MA72-11	Muddy River	High

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Outfall ID	Receiving Waterbody	Receiving Waterbody Name	IDDE Priority
27841	MA72-11	Muddy River	High
29552	MA72-11	Muddy River	High
34398.1	MA72-11	Muddy River	High
34487.2	MA72-11	Muddy River	High
34599.3	MA72-11	Muddy River	High
35822.1	MA72-11	Muddy River	High
35825.1	MA72-11	Muddy River	High
35834.1	MA72-11	Muddy River	High
35836.1	MA72-11	Muddy River	High
35837.1	MA72-11	Muddy River	High
35838.1	MA72-11	Muddy River	High
35914.1	MA72-11	Muddy River	High
38009	MA72-11	Muddy River	High
38021	MA72-11	Muddy River	High
21413	MA72-11	Muddy River	High
666666923	MA72-11	Muddy River	High
666666924	MA72-11	Muddy River	High
666667115	MA72-11	Muddy River	High
666667118	MA72-11	Muddy River	High
666667149	MA72-11	Muddy River	High
666667150	MA72-11	Muddy River	High
666667151	MA72-11	Muddy River	High
666667282	MA72-11	Muddy River	High
666667284	MA72-11	Muddy River	High
666667283	MA72-11	Muddy River	High
666667573	MA72-11	Muddy River	High
666667137	MA72-11	Muddy River	High
21318	MA72-11	Muddy River	High
14191	MA72-11	Muddy River	High
34389.2	MA72-11	Muddy River	High
34485.2	MA72-11	Muddy River	High
666667131	MA72-11	Muddy River	High
666667579	MA72-11	Muddy River	High
666667572	MA72-11	Muddy River	High
19152	MA72-11	Muddy River	High
666667079	MA72-11	Muddy River	High
666667019	MA72-11	Muddy River	High
666667092	MA72-11	Muddy River	High
666667729	MA72-11	Muddy River	High
666667793	MA72-11	Muddy River	High
666667795	MA72-11	Muddy River	High
666667866	MA72-11	Muddy River	High
24202	MA72-14	Mine Brook	High

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Outfall ID	Receiving Waterbody	Receiving Waterbody Name	IDDE Priority
24236	MA72-14	Mine Brook	High
26477	MA72-23	Sawmill Brook	High
26480	MA72-23	Sawmill Brook	High
26921	MA72-23	Sawmill Brook	High
26923	MA72-23	Sawmill Brook	High
26934	MA72-23	Sawmill Brook	High
26935	MA72-23	Sawmill Brook	High
26936	MA72-23	Sawmill Brook	High
26937	MA72-23	Sawmill Brook	High
26962	MA72-23	Sawmill Brook	High
26965	MA72-23	Sawmill Brook	High
4697	MA72-23	Sawmill Brook	High
4698	MA72-23	Sawmill Brook	High
4699	MA72-23	Sawmill Brook	High
34562.2	MA72-23	Sawmill Brook	High
35932.2	MA72-23	Sawmill Brook	High
35933.2	MA72-23	Sawmill Brook	High
666666940	MA72-23	Sawmill Brook	High
666667075	MA72-23	Sawmill Brook	High
666667076	MA72-23	Sawmill Brook	High
666667077	MA72-23	Sawmill Brook	High
666667078	MA72-23	Sawmill Brook	High
666667082	MA72-23	Sawmill Brook	High
23899	MA72-28	Beaver Brook	High
23900	MA72-28	Beaver Brook	High
23902	MA72-28	Beaver Brook	High
23907	MA72-28	Beaver Brook	High
34763.3	MA72-28	Beaver Brook	High
666667828	MA72-28	Beaver Brook	High
666667830	MA72-28	Beaver Brook	High
666667832	MA72-28	Beaver Brook	High
666667833	MA72-28	Beaver Brook	High
666667834	MA72-28	Beaver Brook	High
666667835	MA72-28	Beaver Brook	High
666667837	MA72-28	Beaver Brook	High
19066	MA72-32	Unnamed Tributary	High
21433	MA72-32	Unnamed Tributary	High
21443	MA72-32	Unnamed Tributary	High
21445	MA72-32	Unnamed Tributary	High
34484.1	MA72-32	Unnamed Tributary	High
24191	MA72-33	Charles River	High
24192	MA72-33	Charles River	High
24194	MA72-33	Charles River	High

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Outfall ID	Receiving Waterbody	Receiving Waterbody Name	IDDE Priority
24196	MA72-33	Charles River	High
18947	MA72-36	Charles River	High
18948	MA72-36	Charles River	High
18949	MA72-36	Charles River	High
18952	MA72-36	Charles River	High
18956	MA72-36	Charles River	High
18957	MA72-36	Charles River	High
16765	MA72-36	Charles River	High
18959	MA72-36	Charles River	High
18960	MA72-36	Charles River	High
18962	MA72-36	Charles River	High
18963	MA72-36	Charles River	High
18965	MA72-36	Charles River	High
16622	MA72-36	Charles River	High
16506	MA72-36	Charles River	High
18973	MA72-36	Charles River	High
18974	MA72-36	Charles River	High
18978	MA72-36	Charles River	High
18984	MA72-36	Charles River	High
18985	MA72-36	Charles River	High
18997	MA72-36	Charles River	High
19000	MA72-36	Charles River	High
19028	MA72-36	Charles River	High
19031	MA72-36	Charles River	High
19034	MA72-36	Charles River	High
19038	MA72-36	Charles River	High
19041	MA72-36	Charles River	High
19045	MA72-36	Charles River	High
19061	MA72-36	Charles River	High
19062	MA72-36	Charles River	High
19063	MA72-36	Charles River	High
19067	MA72-36	Charles River	High
19071	MA72-36	Charles River	High
19073	MA72-36	Charles River	High
19074	MA72-36	Charles River	High
19075	MA72-36	Charles River	High
19077	MA72-36	Charles River	High
7490	MA72-36	Charles River	High
19081	MA72-36	Charles River	High
19082	MA72-36	Charles River	High
14326	MA72-36	Charles River	High
19083	MA72-36	Charles River	High
19087	MA72-36	Charles River	High

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Outfall ID	Receiving Waterbody	Receiving Waterbody Name	IDDE Priority
19091	MA72-36	Charles River	High
19096	MA72-36	Charles River	High
19098	MA72-36	Charles River	High
19110	MA72-36	Charles River	High
19113	MA72-36	Charles River	High
19114	MA72-36	Charles River	High
19115	MA72-36	Charles River	High
19117	MA72-36	Charles River	High
19118	MA72-36	Charles River	High
19119	MA72-36	Charles River	High
19122	MA72-36	Charles River	High
19124	MA72-36	Charles River	High
19125	MA72-36	Charles River	High
19126	MA72-36	Charles River	High
19127	MA72-36	Charles River	High
19129	MA72-36	Charles River	High
11916	MA72-36	Charles River	High
11920	MA72-36	Charles River	High
19130	MA72-36	Charles River	High
19133	MA72-36	Charles River	High
19135	MA72-36	Charles River	High
19136	MA72-36	Charles River	High
19138	MA72-36	Charles River	High
19139	MA72-36	Charles River	High
19140	MA72-36	Charles River	High
19144	MA72-36	Charles River	High
19145	MA72-36	Charles River	High
19149	MA72-36	Charles River	High
19150	MA72-36	Charles River	High
19155	MA72-36	Charles River	High
19161	MA72-36	Charles River	High
19163	MA72-36	Charles River	High
2721	MA72-36	Charles River	High
19167	MA72-36	Charles River	High
19168	MA72-36	Charles River	High
19170	MA72-36	Charles River	High
19171	MA72-36	Charles River	High
19238	MA72-36	Charles River	High
19240	MA72-36	Charles River	High
19262	MA72-36	Charles River	High
19264	MA72-36	Charles River	High
19266	MA72-36	Charles River	High
19282	MA72-36	Charles River	High

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Outfall ID	Receiving Waterbody	Receiving Waterbody Name	IDDE Priority
19283	MA72-36	Charles River	High
19284	MA72-36	Charles River	High
19287	MA72-36	Charles River	High
19288	MA72-36	Charles River	High
19289	MA72-36	Charles River	High
19290	MA72-36	Charles River	High
19292	MA72-36	Charles River	High
19313	MA72-36	Charles River	High
19314	MA72-36	Charles River	High
19321	MA72-36	Charles River	High
19341	MA72-36	Charles River	High
19342	MA72-36	Charles River	High
19343	MA72-36	Charles River	High
19351	MA72-36	Charles River	High
19356	MA72-36	Charles River	High
19360	MA72-36	Charles River	High
19361	MA72-36	Charles River	High
11960	MA72-36	Charles River	High
11902	MA72-36	Charles River	High
11904	MA72-36	Charles River	High
11905	MA72-36	Charles River	High
19364	MA72-36	Charles River	High
11942	MA72-36	Charles River	High
11912	MA72-36	Charles River	High
19365	MA72-36	Charles River	High
19366	MA72-36	Charles River	High
19376	MA72-36	Charles River	High
19380	MA72-36	Charles River	High
19381	MA72-36	Charles River	High
19382	MA72-36	Charles River	High
19384	MA72-36	Charles River	High
19390	MA72-36	Charles River	High
19392	MA72-36	Charles River	High
19393	MA72-36	Charles River	High
19394	MA72-36	Charles River	High
19397	MA72-36	Charles River	High
19400	MA72-36	Charles River	High
19401	MA72-36	Charles River	High
19402	MA72-36	Charles River	High
19403	MA72-36	Charles River	High
19404	MA72-36	Charles River	High
19405	MA72-36	Charles River	High
19408	MA72-36	Charles River	High

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Outfall ID	Receiving Waterbody	Receiving Waterbody Name	IDDE Priority
19409	MA72-36	Charles River	High
19410	MA72-36	Charles River	High
19411	MA72-36	Charles River	High
19413	MA72-36	Charles River	High
19414	MA72-36	Charles River	High
19415	MA72-36	Charles River	High
19417	MA72-36	Charles River	High
19418	MA72-36	Charles River	High
19421	MA72-36	Charles River	High
19424	MA72-36	Charles River	High
19426	MA72-36	Charles River	High
12522	MA72-36	Charles River	High
19428	MA72-36	Charles River	High
19430	MA72-36	Charles River	High
19432	MA72-36	Charles River	High
19433	MA72-36	Charles River	High
19435	MA72-36	Charles River	High
19436	MA72-36	Charles River	High
19437	MA72-36	Charles River	High
16754	MA72-36	Charles River	High
16669	MA72-36	Charles River	High
19438	MA72-36	Charles River	High
3173	MA72-36	Charles River	High
21250	MA72-36	Charles River	High
21261	MA72-36	Charles River	High
16497	MA72-36	Charles River	High
21625	MA72-36	Charles River	High
21626	MA72-36	Charles River	High
21627	MA72-36	Charles River	High
21629	MA72-36	Charles River	High
21630	MA72-36	Charles River	High
21720	MA72-36	Charles River	High
21736	MA72-36	Charles River	High
16771	MA72-36	Charles River	High
30832	MA72-36	Charles River	High
34281.1	MA72-36	Charles River	High
34302.1	MA72-36	Charles River	High
34304.1	MA72-36	Charles River	High
34337.2	MA72-36	Charles River	High
34353.2	MA72-36	Charles River	High
34414.1	MA72-36	Charles River	High
35293	MA72-36	Charles River	High
35310	MA72-36	Charles River	High

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Outfall ID	Receiving Waterbody	Receiving Waterbody Name	IDDE Priority
35319	MA72-36	Charles River	High
35427	MA72-36	Charles River	High
34537.3	MA72-36	Charles River	High
35697.2	MA72-36	Charles River	High
35757.1	MA72-36	Charles River	High
35761.1	MA72-36	Charles River	High
35762.1	MA72-36	Charles River	High
34464.1	MA72-36	Charles River	High
34466.1	MA72-36	Charles River	High
34473.1	MA72-36	Charles River	High
34476.1	MA72-36	Charles River	High
34603.3	MA72-36	Charles River	High
34624.3	MA72-36	Charles River	High
34632.3	MA72-36	Charles River	High
36345.2	MA72-36	Charles River	High
38010	MA72-36	Charles River	High
666666962	MA72-36	Charles River	High
666666997	MA72-36	Charles River	High
666666999	MA72-36	Charles River	High
666667001	MA72-36	Charles River	High
666667002	MA72-36	Charles River	High
666667003	MA72-36	Charles River	High
666667007	MA72-36	Charles River	High
666667008	MA72-36	Charles River	High
666667103	MA72-36	Charles River	High
666667104	MA72-36	Charles River	High
666667133	MA72-36	Charles River	High
666667638	MA72-36	Charles River	High
666667112	MA72-36	Charles River	High
34523.3	MA72-36	Charles River	High
34280.1	MA72-36	Charles River	High
18996	MA72-36	Charles River	High
19291	MA72-36	Charles River	High
21714	MA72-36	Charles River	High
19297	MA72-36	Charles River	High
19044	MA72-36	Charles River	High
18953	MA72-36	Charles River	High
19322	MA72-36	Charles River	High
19104	MA72-36	Charles River	High
666667776	MA72-36	Charles River	High
666667777	MA72-36	Charles River	High
10745	MA72-37	Stony Brook	High
18937	MA72-38	Charles River	High

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Outfall ID	Receiving Waterbody	Receiving Waterbody Name	IDDE Priority
18938	MA72-38	Charles River	High
18939	MA72-38	Charles River	High
18940	MA72-38	Charles River	High
18941	MA72-38	Charles River	High
18954	MA72-38	Charles River	High
18955	MA72-38	Charles River	High
18976	MA72-38	Charles River	High
18977	MA72-38	Charles River	High
18983	MA72-38	Charles River	High
18993	MA72-38	Charles River	High
19005	MA72-38	Charles River	High
19008	MA72-38	Charles River	High
19010	MA72-38	Charles River	High
19011	MA72-38	Charles River	High
19012	MA72-38	Charles River	High
19013	MA72-38	Charles River	High
19111	MA72-38	Charles River	High
19134	MA72-38	Charles River	High
15763	MA72-38	Charles River	High
19228	MA72-38	Charles River	High
19231	MA72-38	Charles River	High
19232	MA72-38	Charles River	High
19234	MA72-38	Charles River	High
19235	MA72-38	Charles River	High
19272	MA72-38	Charles River	High
15749	MA72-38	Charles River	High
19276	MA72-38	Charles River	High
15766	MA72-38	Charles River	High
15769	MA72-38	Charles River	High
19300	MA72-38	Charles River	High
19302	MA72-38	Charles River	High
19304	MA72-38	Charles River	High
19307	MA72-38	Charles River	High
19308	MA72-38	Charles River	High
19309	MA72-38	Charles River	High
19310	MA72-38	Charles River	High
19318	MA72-38	Charles River	High
19329	MA72-38	Charles River	High
19330	MA72-38	Charles River	High
19336	MA72-38	Charles River	High
19337	MA72-38	Charles River	High
19340	MA72-38	Charles River	High
19345	MA72-38	Charles River	High

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Outfall ID	Receiving Waterbody	Receiving Waterbody Name	IDDE Priority
19346	MA72-38	Charles River	High
19347	MA72-38	Charles River	High
19348	MA72-38	Charles River	High
19349	MA72-38	Charles River	High
19368	MA72-38	Charles River	High
19370	MA72-38	Charles River	High
19385	MA72-38	Charles River	High
19386	MA72-38	Charles River	High
19387	MA72-38	Charles River	High
19388	MA72-38	Charles River	High
19389	MA72-38	Charles River	High
19395	MA72-38	Charles River	High
19634	MA72-38	Charles River	High
21236	MA72-38	Charles River	High
15756	MA72-38	Charles River	High
21392	MA72-38	Charles River	High
15748	MA72-38	Charles River	High
15745	MA72-38	Charles River	High
15742	MA72-38	Charles River	High
15733	MA72-38	Charles River	High
15736	MA72-38	Charles River	High
31264	MA72-38	Charles River	High
32634	MA72-38	Charles River	High
34362.2	MA72-38	Charles River	High
35681	MA72-38	Charles River	High
35710.2	MA72-38	Charles River	High
38016	MA72-38	Charles River	High
666666839	MA72-38	Charles River	High
666666986	MA72-38	Charles River	High
666667349	MA72-38	Charles River	High
666667487	MA72-38	Charles River	High
21300	MA72-38	Charles River	High
21299	MA72-38	Charles River	High
21303	MA72-38	Charles River	High
666667728	MA72-38	Charles River	High
21633	MA72-38	Charles River	High
666667787	MA72-38	Charles River	High
666667788	MA72-38	Charles River	High
666667798	MA72-38	Charles River	High
666667873	MA72-38	Charles River	High
16993	MA73-02	Neponset River	High
17011	MA73-02	Neponset River	High
17012	MA73-02	Neponset River	High

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Outfall ID	Receiving Waterbody	Receiving Waterbody Name	IDDE Priority
17029	MA73-02	Neponset River	High
17030	MA73-02	Neponset River	High
17031	MA73-02	Neponset River	High
17032	MA73-02	Neponset River	High
17034	MA73-02	Neponset River	High
17035	MA73-02	Neponset River	High
17037	MA73-02	Neponset River	High
17298	MA73-02	Neponset River	High
17299	MA73-02	Neponset River	High
17300	MA73-02	Neponset River	High
17301	MA73-02	Neponset River	High
52156.065	MA73-02	Neponset River	High
38006	MA73-02	Neponset River	High
12.0895	MA73-02	Neponset River	High
666666969	MA73-02	Neponset River	High
666666970	MA73-02	Neponset River	High
666666989	MA73-02	Neponset River	High
666666990	MA73-02	Neponset River	High
666667226	MA73-02	Neponset River	High
17033	MA73-02	Neponset River	High
17018	MA73-02	Neponset River	High
666667325	MA73-02	Neponset River	High
16982	MA73-02	Neponset River	High
16983	MA73-02	Neponset River	High
16996	MA73-02	Neponset River	High
666667757	MA73-02	Neponset River	High
666667321	MA73-03	Neponset River	High
17110	MA73-03	Neponset River	High
17113	MA73-03	Neponset River	High
17125	MA73-03	Neponset River	High
17133	MA73-03	Neponset River	High
17135	MA73-03	Neponset River	High
17136	MA73-03	Neponset River	High
17290	MA73-03	Neponset River	High
17291	MA73-03	Neponset River	High
17294	MA73-03	Neponset River	High
17296	MA73-03	Neponset River	High
17638	MA73-03	Neponset River	High
17681	MA73-03	Neponset River	High
17687	MA73-03	Neponset River	High
17688	MA73-03	Neponset River	High
17689	MA73-03	Neponset River	High
17690	MA73-03	Neponset River	High

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Outfall ID	Receiving Waterbody	Receiving Waterbody Name	IDDE Priority
17691	MA73-03	Neponset River	High
17692	MA73-03	Neponset River	High
17693	MA73-03	Neponset River	High
17694	MA73-03	Neponset River	High
17695	MA73-03	Neponset River	High
17696	MA73-03	Neponset River	High
17697	MA73-03	Neponset River	High
17698	MA73-03	Neponset River	High
17699	MA73-03	Neponset River	High
17892	MA73-03	Neponset River	High
17893	MA73-03	Neponset River	High
17895	MA73-03	Neponset River	High
17897	MA73-03	Neponset River	High
17898	MA73-03	Neponset River	High
18459	MA73-03	Neponset River	High
666666992	MA73-03	Neponset River	High
666666995	MA73-03	Neponset River	High
666667140	MA73-03	Neponset River	High
17286	MA73-03	Neponset River	High
17707	MA73-04	Neponset River	High
18175	MA73-04	Neponset River	High
27761	MA73-04	Neponset River	High
18173	MA73-04	Neponset River	High
37129.7	MA73043	Ponkapoag Pond	High
666667171	MA73-27	Ponkapog Brook	High
26841	MA73-28	Mother Brook	High
26848	MA73-28	Mother Brook	High
27562	MA73-28	Mother Brook	High
27564	MA73-28	Mother Brook	High
27609	MA73-28	Mother Brook	High
27610	MA73-28	Mother Brook	High
27612	MA73-28	Mother Brook	High
27613	MA73-28	Mother Brook	High
27631	MA73-28	Mother Brook	High
35245	MA73-28	Mother Brook	High
14045.6	MA73-28	Mother Brook	High
14048.1	MA73-28	Mother Brook	High
666666912	MA73-28	Mother Brook	High
666666913	MA73-28	Mother Brook	High
666666974	MA73-28	Mother Brook	High
17128	MA73-29	Pine Tree Brook	High
17190	MA73-29	Pine Tree Brook	High
17288	MA73-29	Pine Tree Brook	High

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Outfall ID	Receiving Waterbody	Receiving Waterbody Name	IDDE Priority
27881	MA73-29	Pine Tree Brook	High
34377.3	MA73-29	Pine Tree Brook	High
666666950	MA73-29	Pine Tree Brook	High
666666966	MA73-29	Pine Tree Brook	High
666667346	MA73-29	Pine Tree Brook	High
17051	MA74015	Hoosicwhisick Pond	High
17054	MA74015	Hoosicwhisick Pond	High
17056	MA74015	Hoosicwhisick Pond	High
17057	MA74015	Hoosicwhisick Pond	High
17058	MA74015	Hoosicwhisick Pond	High
17059	MA74015	Hoosicwhisick Pond	High
17302	MA74015	Hoosicwhisick Pond	High
17303	MA74015	Hoosicwhisick Pond	High
17636	MA74015	Hoosicwhisick Pond	High
666667317	MA74015	Hoosicwhisick Pond	High
17304	MA74015	Hoosicwhisick Pond	High
17305	MA74015	Hoosicwhisick Pond	High
34482	MA74015	Hoosicwhisick Pond	High
666666933	MA74015	Hoosicwhisick Pond	High
17062	MA74-10	Furnace Brook	High
17655	MA74-10	Furnace Brook	High
17656	MA74-10	Furnace Brook	High
13671	MA74-10	Furnace Brook	High
13673	MA74-10	Furnace Brook	High
17883	MA74-10	Furnace Brook	High
17884	MA74-10	Furnace Brook	High
13819	MA74-10	Furnace Brook	High
17891	MA74-10	Furnace Brook	High
18903	MA74-10	Furnace Brook	High
13807	MA74-10	Furnace Brook	High
13810	MA74-10	Furnace Brook	High
13812	MA74-10	Furnace Brook	High
13532	MA74-10	Furnace Brook	High
13814	MA74-10	Furnace Brook	High
27660	MA74-10	Furnace Brook	High
4106.7	MA74-10	Furnace Brook	High
666667087	MA74-10	Furnace Brook	High
666667088	MA74-10	Furnace Brook	High
666667089	MA74-10	Furnace Brook	High
666667090	MA74-10	Furnace Brook	High
666667091	MA74-10	Furnace Brook	High
666667093	MA74-10	Furnace Brook	High
666667096	MA74-10	Furnace Brook	High

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Outfall ID	Receiving Waterbody	Receiving Waterbody Name	IDDE Priority
666667097	MA74-10	Furnace Brook	High
666667094	MA74-10	Furnace Brook	High
666667099	MA74-10	Furnace Brook	High
666667174	MA74-10	Furnace Brook	High
666667183	MA74-10	Furnace Brook	High
666667184	MA74-10	Furnace Brook	High
666667185	MA74-10	Furnace Brook	High
666667288	MA74-10	Furnace Brook	High
666667309	MA74-10	Furnace Brook	High
21763	MA74-11	Weir River	High
21817	MA74-11	Weir River	High
21818	MA74-11	Weir River	High
27787	MA74-11	Weir River	High
666667253	MA74-11	Weir River	High
21741	MA74-13	Weymouth Back River	High
21830	MA74-13	Weymouth Back River	High
21833	MA74-13	Weymouth Back River	High
27831	MA74-13	Weymouth Back River	High
21742	MA74-14	Weymouth Fore River	High
27834	MA74-14	Weymouth Fore River	High
27835	MA74-14	Weymouth Fore River	High
27837	MA74-14	Weymouth Fore River	High
17050	MA74-25	Blue Hill River	High
17218	MA74-25	Blue Hill River	High
24955	MA81019	Coachlace Pond	High
666667765	MA81-02	North Nashua River	High
12777.03	MA81147	Wachusett Reservoir	High
12870.03	MA81147	Wachusett Reservoir	High
21781.03	MA81147	Wachusett Reservoir	High
26248	MA82125	Lake Cochituate	High
26342	MA82125	Lake Cochituate	High
35947.1	MA82125	Lake Cochituate	High
35950.1	MA82125	Lake Cochituate	High
25672	MA83-19	Shawsheen River	High
14237	MA84A-01	Merrimack River	High
25963	MA84A-01	Merrimack River	High
25964	MA84A-01	Merrimack River	High
25965	MA84A-01	Merrimack River	High
14246	MA84A-01	Merrimack River	High
25966	MA84A-01	Merrimack River	High
25967	MA84A-01	Merrimack River	High
25975	MA84A-01	Merrimack River	High
25977	MA84A-01	Merrimack River	High

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Outfall ID	Receiving Waterbody	Receiving Waterbody Name	IDDE Priority
26197	MA84A-01	Merrimack River	High
26207	MA84A-01	Merrimack River	High
26215	MA84A-01	Merrimack River	High
26216	MA84A-01	Merrimack River	High
26249.1	MA84A-01	Merrimack River	High
26259.1	MA84A-01	Merrimack River	High
26263.1	MA84A-01	Merrimack River	High
26269.1	MA84A-01	Merrimack River	High
26275.1	MA84A-01	Merrimack River	High
26283.1	MA84A-01	Merrimack River	High
26290.1	MA84A-01	Merrimack River	High
26294.1	MA84A-01	Merrimack River	High
25667	MA84A-03	Merrimack River	High
25668	MA84A-03	Merrimack River	High
25687	MA84A-06	Merrimack River	High
25688	MA84A-06	Merrimack River	High
26241.1	MA84A-10	Spicket River	High
666666976	MA92021	Emerson Brook Reservoir (Forest Street Pond)	High
666666977	MA92021	Emerson Brook Reservoir (Forest Street Pond)	High
666666978	MA92021	Emerson Brook Reservoir (Forest Street Pond)	High
666666979	MA92021	Emerson Brook Reservoir (Forest Street Pond)	High
666666980	MA92021	Emerson Brook Reservoir (Forest Street Pond)	High
666666981	MA92021	Emerson Brook Reservoir (Forest Street Pond)	High
666667775	MA92021	Emerson Brook Reservoir (Forest Street Pond)	High
666666983	MA92061	Stearns Pond	High
666666984	MA92061	Stearns Pond	High
666666985	MA92061	Stearns Pond	High
25665	MA93-18	Gloucester Harbor	High
25666	MA93-18	Gloucester Harbor	High
24958	MA93-24	Nahant Bay	High
24959	MA93-24	Nahant Bay	High
24960	MA93-24	Nahant Bay	High
24961	MA93-24	Nahant Bay	High
25377	MA93-24	Nahant Bay	High
25380	MA93-24	Nahant Bay	High
25387	MA93-24	Nahant Bay	High
25391	MA93-24	Nahant Bay	High
25409	MA93-24	Nahant Bay	High
25411	MA93-24	Nahant Bay	High
37120.1	MA93-24	Nahant Bay	High
37122.1	MA93-24	Nahant Bay	High
37123.1	MA93-24	Nahant Bay	High
37093.1	MA93-24	Nahant Bay	High

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Outfall ID	Receiving Waterbody	Receiving Waterbody Name	IDDE Priority
666667750	MA93-31	Mill River	High
666667751	MA93-31	Mill River	High
666667204	MA93-35	Saugus River	High
32807.85	MA93-44	Saugus River	High
22554	MA93-48	Bennetts Pond Brook	High
13851	MA93-48	Bennetts Pond Brook	High
22733	MA93-48	Bennetts Pond Brook	High
22734	MA93-48	Bennetts Pond Brook	High
22735	MA93-48	Bennetts Pond Brook	High
13627	MA93-48	Bennetts Pond Brook	High
23845	MA93-48	Bennetts Pond Brook	High
23876	MA93-48	Bennetts Pond Brook	High
23879	MA93-48	Bennetts Pond Brook	High
23909	MA93-48	Bennetts Pond Brook	High
13595	MA93-48	Bennetts Pond Brook	High
23910	MA93-48	Bennetts Pond Brook	High
23911	MA93-48	Bennetts Pond Brook	High
23946	MA93-48	Bennetts Pond Brook	High
13619	MA93-48	Bennetts Pond Brook	High
13623	MA93-48	Bennetts Pond Brook	High
34720.3	MA93-48	Bennetts Pond Brook	High
34740.3	MA93-48	Bennetts Pond Brook	High
34742.3	MA93-48	Bennetts Pond Brook	High
34854.3	MA93-48	Bennetts Pond Brook	High
666666845	MA93-48	Bennetts Pond Brook	High
666666847	MA93-48	Bennetts Pond Brook	High
666667303	MA93-48	Bennetts Pond Brook	High
666667302	MA93-48	Bennetts Pond Brook	High
666667304	MA93-48	Bennetts Pond Brook	High
666667193	MA93-48	Bennetts Pond Brook	High
666667301	MA93-48	Bennetts Pond Brook	High
666667199	MA93-48	Bennetts Pond Brook	High
666667198	MA93-48	Bennetts Pond Brook	High
666667300	MA93-48	Bennetts Pond Brook	High
24963	MA93-52	Lynn Harbor	High
24964	MA93-52	Lynn Harbor	High
24965	MA93-52	Lynn Harbor	High
24979	MA93-52	Lynn Harbor	High
25059	MA93-52	Lynn Harbor	High
25063	MA93-52	Lynn Harbor	High
25064	MA93-52	Lynn Harbor	High
15055	MA93-52	Lynn Harbor	High
36081.1	MA93-52	Lynn Harbor	High

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Outfall ID	Receiving Waterbody	Receiving Waterbody Name	IDDE Priority
36082.1	MA93-52	Lynn Harbor	High
36096.1	MA93-52	Lynn Harbor	High
36097.1	MA93-52	Lynn Harbor	High
666667156	MA93-52	Lynn Harbor	High
666667686	MA93-52	Lynn Harbor	High
10645	MA93-53	Lynn Harbor	High
24970	MA93-53	Lynn Harbor	High
4624	MA93-53	Lynn Harbor	High
24971	MA93-53	Lynn Harbor	High
24972	MA93-53	Lynn Harbor	High
24973	MA93-53	Lynn Harbor	High
10948	MA93-53	Lynn Harbor	High
24977	MA93-53	Lynn Harbor	High
24984	MA93-53	Lynn Harbor	High
24985	MA93-53	Lynn Harbor	High
24986	MA93-53	Lynn Harbor	High
24987	MA93-53	Lynn Harbor	High
24988	MA93-53	Lynn Harbor	High
24989	MA93-53	Lynn Harbor	High
24990	MA93-53	Lynn Harbor	High
24991	MA93-53	Lynn Harbor	High
24992	MA93-53	Lynn Harbor	High
24993	MA93-53	Lynn Harbor	High
24994	MA93-53	Lynn Harbor	High
24995	MA93-53	Lynn Harbor	High
25001	MA93-53	Lynn Harbor	High
25002	MA93-53	Lynn Harbor	High
25003	MA93-53	Lynn Harbor	High
25005	MA93-53	Lynn Harbor	High
25006	MA93-53	Lynn Harbor	High
25007	MA93-53	Lynn Harbor	High
25008	MA93-53	Lynn Harbor	High
25009	MA93-53	Lynn Harbor	High
25010	MA93-53	Lynn Harbor	High
25011	MA93-53	Lynn Harbor	High
25060	MA93-53	Lynn Harbor	High
11971	MA93-53	Lynn Harbor	High
25072	MA93-53	Lynn Harbor	High
25076	MA93-53	Lynn Harbor	High
25077	MA93-53	Lynn Harbor	High
25426	MA93-53	Lynn Harbor	High
25428	MA93-53	Lynn Harbor	High
11424	MA93-53	Lynn Harbor	High

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Outfall ID	Receiving Waterbody	Receiving Waterbody Name	IDDE Priority
25429	MA93-53	Lynn Harbor	High
10943	MA93-53	Lynn Harbor	High
10946	MA93-53	Lynn Harbor	High
25434	MA93-53	Lynn Harbor	High
11167	MA93-53	Lynn Harbor	High
11999	MA93-53	Lynn Harbor	High
12000	MA93-53	Lynn Harbor	High
37141.1	MA93-53	Lynn Harbor	High
37168.1	MA93-53	Lynn Harbor	High
38007	MA93-53	Lynn Harbor	High
38008	MA93-53	Lynn Harbor	High
38018	MA93-53	Lynn Harbor	High
666666922	MA93-53	Lynn Harbor	High
666667047	MA93-53	Lynn Harbor	High
666667048	MA93-53	Lynn Harbor	High
666667049	MA93-53	Lynn Harbor	High
666667050	MA93-53	Lynn Harbor	High
666667051	MA93-53	Lynn Harbor	High
666667052	MA93-53	Lynn Harbor	High
666667053	MA93-53	Lynn Harbor	High
666667054	MA93-53	Lynn Harbor	High
666667055	MA93-53	Lynn Harbor	High
666667056	MA93-53	Lynn Harbor	High
666667057	MA93-53	Lynn Harbor	High
666667058	MA93-53	Lynn Harbor	High
666667059	MA93-53	Lynn Harbor	High
666667060	MA93-53	Lynn Harbor	High
666667111	MA93-53	Lynn Harbor	High
666667257	MA93-53	Lynn Harbor	High
666667258	MA93-53	Lynn Harbor	High
666667261	MA93-53	Lynn Harbor	High
666667262	MA93-53	Lynn Harbor	High
666667274	MA93-53	Lynn Harbor	High
666667275	MA93-53	Lynn Harbor	High
666667280	MA93-53	Lynn Harbor	High
666667259	MA93-53	Lynn Harbor	High
666667260	MA93-53	Lynn Harbor	High
666667267	MA93-53	Lynn Harbor	High
666667263	MA93-53	Lynn Harbor	High
666667265	MA93-53	Lynn Harbor	High
666667264	MA93-53	Lynn Harbor	High
666667266	MA93-53	Lynn Harbor	High
666667278	MA93-53	Lynn Harbor	High

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Outfall ID	Receiving Waterbody	Receiving Waterbody Name	IDDE Priority
666667276	MA93-53	Lynn Harbor	High
666667268	MA93-53	Lynn Harbor	High
666667270	MA93-53	Lynn Harbor	High
666667272	MA93-53	Lynn Harbor	High
666667269	MA93-53	Lynn Harbor	High
666667273	MA93-53	Lynn Harbor	High
666667279	MA93-53	Lynn Harbor	High
666667281	MA93-53	Lynn Harbor	High
24093	MA94132	Russell Millpond	High
24094	MA94132	Russell Millpond	High
24096	MA94132	Russell Millpond	High
23991	MA94-16	Plymouth Harbor	High
24066	MA94-16	Plymouth Harbor	High
24069	MA94-16	Plymouth Harbor	High
666666750.1	MA95-14	Cape Cod Canal	High
666666764.1	MA95-14	Cape Cod Canal	High
666667624	MA95-14	Cape Cod Canal	High
24115	MA95-63	Outer New Bedford Harbor	High
24234	MA95-63	Outer New Bedford Harbor	High
666667342	MA95-63	Outer New Bedford Harbor	High
27668	NA	Stony Brook	High
21857	Ocean	<Null>	High
12455	Ocean	<Null>	High
27796	Ocean	<Null>	High
666667020	Ocean	<Null>	High
666667021	Ocean	<Null>	High
666667022	Ocean	<Null>	High
666667023	Ocean	<Null>	High
666667024	Ocean	<Null>	High
666667025	Ocean	<Null>	High
666667026	Ocean	<Null>	High
666667027	Ocean	<Null>	High
666667028	Ocean	<Null>	High
666667029	Ocean	<Null>	High
666667030	Ocean	<Null>	High
666667031	Ocean	<Null>	High
666667032	Ocean	<Null>	High
666667033	Ocean	<Null>	High
666667034	Ocean	<Null>	High
666667035	Ocean	<Null>	High
666667036	Ocean	<Null>	High
666667037	Ocean	<Null>	High
666667038	Ocean	<Null>	High

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Outfall ID	Receiving Waterbody	Receiving Waterbody Name	IDDE Priority
666667039	Ocean	<Null>	High
666667040	Ocean	<Null>	High
666667041	Ocean	<Null>	High
666667042	Ocean	<Null>	High
666667043	Ocean	<Null>	High
666667044	Ocean	<Null>	High
666667045	Ocean	<Null>	High
666667046	Ocean	<Null>	High
666667808	ULT_MA34-27	<Null>	High
666667809	ULT_MA34-27	<Null>	High
666667814	ULT_MA72-11	<Null>	High
24549	MA32-07	Westfield River	Low
24550	MA32-07	Westfield River	Low
24585	MA32-07	Westfield River	Low
24589	MA32-07	Westfield River	Low
24595	MA32-07	Westfield River	Low
24596	MA32-07	Westfield River	Low
24598	MA32-07	Westfield River	Low
24599	MA32-07	Westfield River	Low
24602	MA32-07	Westfield River	Low
24605	MA32-07	Westfield River	Low
24608	MA32-07	Westfield River	Low
24882	MA35021	Dunn Pond	Low
666667219	MA35021	Dunn Pond	Low
24883	MA35021	Dunn Pond	Low
34541.3	MA36033	Chicopee Reservoir	Low
34542.3	MA36033	Chicopee Reservoir	Low
34546.3	MA36033	Chicopee Reservoir	Low
34549.3	MA36033	Chicopee Reservoir	Low
34550.3	MA36033	Chicopee Reservoir	Low
24395	MA51188	Flint Pond	Low
24396	MA51188	Flint Pond	Low
24397	MA51188	Flint Pond	Low
666667136	MA62208	West Meadow Pond	Low
22836	MA71016	Fellsmere Pond	Low
22837	MA71016	Fellsmere Pond	Low
30947	MA71016	Fellsmere Pond	Low
30948	MA71016	Fellsmere Pond	Low
666667152	MA71016	Fellsmere Pond	Low
666667239	MA71016	Fellsmere Pond	Low
666667567	MA71-02	Mystic River	Low
21913	MA71027	Lower Mystic Lake	Low
22195	MA71027	Lower Mystic Lake	Low

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Outfall ID	Receiving Waterbody	Receiving Waterbody Name	IDDE Priority
14493	MA71027	Lower Mystic Lake	Low
14490	MA71027	Lower Mystic Lake	Low
14533	MA71027	Lower Mystic Lake	Low
14922	MA71027	Lower Mystic Lake	Low
14628	MA71027	Lower Mystic Lake	Low
22495	MA71027	Lower Mystic Lake	Low
22527	MA71027	Lower Mystic Lake	Low
14526	MA71027	Lower Mystic Lake	Low
14926	MA71027	Lower Mystic Lake	Low
14589	MA71027	Lower Mystic Lake	Low
14596	MA71027	Lower Mystic Lake	Low
34467.2	MA71027	Lower Mystic Lake	Low
34494.1	MA71027	Lower Mystic Lake	Low
666667010	MA71027	Lower Mystic Lake	Low
15594	MA71039	Spot Pond	Low
23574	MA71039	Spot Pond	Low
15596	MA71039	Spot Pond	Low
666667176	MA71039	Spot Pond	Low
666667704	MA71-05	Malden River	Low
25363	MA71-12	Sales Creek	Low
38015	MA71-12	Sales Creek	Low
21906	MA71-20	Alewife Brook	Low
22035	MA71-20	Alewife Brook	Low
22530	MA71-20	Alewife Brook	Low
22531	MA71-20	Alewife Brook	Low
22532	MA71-20	Alewife Brook	Low
22768	MA71-20	Alewife Brook	Low
22769	MA71-20	Alewife Brook	Low
22771	MA71-20	Alewife Brook	Low
22772	MA71-20	Alewife Brook	Low
22775	MA71-20	Alewife Brook	Low
23955	MA71-20	Alewife Brook	Low
23956	MA71-20	Alewife Brook	Low
23957	MA71-20	Alewife Brook	Low
23958	MA71-20	Alewife Brook	Low
23959	MA71-20	Alewife Brook	Low
23960	MA71-20	Alewife Brook	Low
23968	MA71-20	Alewife Brook	Low
34663.3	MA71-20	Alewife Brook	Low
666667015	MA71-20	Alewife Brook	Low
666667141	MA71-20	Alewife Brook	Low
666667333	MA71-20	Alewife Brook	Low
666667397	MA71-20	Alewife Brook	Low

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Outfall ID	Receiving Waterbody	Receiving Waterbody Name	IDDE Priority
26926	MA72044	Hammond Pond	Low
26931	MA72044	Hammond Pond	Low
26932	MA72044	Hammond Pond	Low
26933	MA72044	Hammond Pond	Low
18507	MA72052	Jamaica Pond	Low
18564	MA72052	Jamaica Pond	Low
18584	MA72052	Jamaica Pond	Low
16340	MA72052	Jamaica Pond	Low
27803	MA72052	Jamaica Pond	Low
666667107	MA72052	Jamaica Pond	Low
666667687	MA72-23	Sawmill Brook	Low
666667790	MA72-31	Unnamed Tributary	Low
26481	MA72-37	Stony Brook	Low
26485	MA72-37	Stony Brook	Low
26783	MA72-37	Stony Brook	Low
26875	MA72-37	Stony Brook	Low
26876	MA72-37	Stony Brook	Low
27089	MA72-37	Stony Brook	Low
27246	MA72-37	Stony Brook	Low
27616	MA72-37	Stony Brook	Low
30188	MA72-37	Stony Brook	Low
35247	MA72-37	Stony Brook	Low
34527.1	MA72-37	Stony Brook	Low
35258.2	MA72-37	Stony Brook	Low
35259.2	MA72-37	Stony Brook	Low
35273.2	MA72-37	Stony Brook	Low
35276.2	MA72-37	Stony Brook	Low
37122.3	MA72-37	Stony Brook	Low
3.0857	MA72-37	Stony Brook	Low
666667307	MA72-37	Stony Brook	Low
666667681	MA72-37	Stony Brook	Low
666667555	MA73-28	Mother Brook	Low
666667605	MA73-29	Pine Tree Brook	Low
17129	MA74-10	Furnace Brook	Low
666667671	MA74-10	Furnace Brook	Low
26227	MA82003	Ashland Reservoir	Low
26230	MA82003	Ashland Reservoir	Low
26231	MA82003	Ashland Reservoir	Low
26232	MA82003	Ashland Reservoir	Low
26233	MA82003	Ashland Reservoir	Low
26416	MA82003	Ashland Reservoir	Low
26417	MA82003	Ashland Reservoir	Low
26418	MA82003	Ashland Reservoir	Low

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Outfall ID	Receiving Waterbody	Receiving Waterbody Name	IDDE Priority
26420	MA82003	Ashland Reservoir	Low
26423	MA82003	Ashland Reservoir	Low
26435	MA82003	Ashland Reservoir	Low
26436	MA82003	Ashland Reservoir	Low
37300.5	MA82020	Lake Cochituate	Low
666667818	ULT_MA74-25	Blue Hill River	Low
24529	MA32-07	Westfield River	Excluded
24568	MA32-07	Westfield River	Excluded
24588	MA32-07	Westfield River	Excluded
24606	MA32-07	Westfield River	Excluded
24620	MA32-07	Westfield River	Excluded
24622	MA32-07	Westfield River	Excluded
24623	MA32-07	Westfield River	Excluded
37287.6	MA32-07	Westfield River	Excluded
24548	MA32-28	White Brook	Excluded
666667820	MA35021	Dunn Pond	Excluded
24272	MA51125	Lake Quinsigamond	Excluded
666667221	MA51125	Lake Quinsigamond	Excluded
666667289	MA51125	Lake Quinsigamond	Excluded
666667290	MA51125	Lake Quinsigamond	Excluded
666667291	MA51125	Lake Quinsigamond	Excluded
24084	MA62-09	Beaver Brook	Excluded
30091	MA70-04	Quincy Bay	Excluded
32250	MA70-04	Quincy Bay	Excluded
34466.3	MA70-04	Quincy Bay	Excluded
37215	MA70-04	Quincy Bay	Excluded
37216	MA70-04	Quincy Bay	Excluded
666666837	MA70-04	Quincy Bay	Excluded
666667188	MA71014	Ell Pond	Excluded
666667242	MA71016	Fellsmere Pond	Excluded
22516	MA71-02	Mystic River	Excluded
22528	MA71-02	Mystic River	Excluded
22529	MA71-02	Mystic River	Excluded
22542	MA71-02	Mystic River	Excluded
22719	MA71-02	Mystic River	Excluded
22762	MA71-02	Mystic River	Excluded
22764	MA71-02	Mystic River	Excluded
22765	MA71-02	Mystic River	Excluded
22791	MA71-02	Mystic River	Excluded
23110	MA71-02	Mystic River	Excluded
14099	MA71-02	Mystic River	Excluded
30936	MA71-02	Mystic River	Excluded
666667153	MA71-02	Mystic River	Excluded

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Outfall ID	Receiving Waterbody	Receiving Waterbody Name	IDDE Priority
666667159	MA71-02	Mystic River	Excluded
666667244	MA71-02	Mystic River	Excluded
666667816	MA71-02	Mystic River	Excluded
666667339	MA71-03	Mystic River	Excluded
22509	MA71039	Spot Pond	Excluded
16155	MA71039	Spot Pond	Excluded
22543	MA71039	Spot Pond	Excluded
16174	MA71039	Spot Pond	Excluded
22546	MA71039	Spot Pond	Excluded
16176	MA71039	Spot Pond	Excluded
13485	MA71039	Spot Pond	Excluded
22740	MA71039	Spot Pond	Excluded
22741	MA71039	Spot Pond	Excluded
22745	MA71039	Spot Pond	Excluded
22746	MA71039	Spot Pond	Excluded
22793	MA71039	Spot Pond	Excluded
22795	MA71039	Spot Pond	Excluded
22796	MA71039	Spot Pond	Excluded
22965	MA71039	Spot Pond	Excluded
22966	MA71039	Spot Pond	Excluded
22967	MA71039	Spot Pond	Excluded
22977	MA71039	Spot Pond	Excluded
22978	MA71039	Spot Pond	Excluded
22979	MA71039	Spot Pond	Excluded
13481	MA71039	Spot Pond	Excluded
34581.3	MA71039	Spot Pond	Excluded
38001	MA71039	Spot Pond	Excluded
666667144	MA71039	Spot Pond	Excluded
666667146	MA71039	Spot Pond	Excluded
666667162	MA71039	Spot Pond	Excluded
666667545	MA71039	Spot Pond	Excluded
666667702	MA71039	Spot Pond	Excluded
666667759	MA71039	Spot Pond	Excluded
22054	MA71-05	Malden River	Excluded
36288.1	MA71-05	Malden River	Excluded
666667210	MA71-05	Malden River	Excluded
666667216	MA71-05	Malden River	Excluded
666667741	MA71-17	Spot Pond Brook	Excluded
666667742	MA71-17	Spot Pond Brook	Excluded
17641	MA72-07	Charles River	Excluded
26462	MA72-07	Charles River	Excluded
26492	MA72-07	Charles River	Excluded
666667829	MA72-28	Beaver Brook	Excluded

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Outfall ID	Receiving Waterbody	Receiving Waterbody Name	IDDE Priority
18986	MA72-36	Charles River	Excluded
19094	MA72-36	Charles River	Excluded
19298	MA72-36	Charles River	Excluded
666666927	MA72-36	Charles River	Excluded
666667236	MA72-36	Charles River	Excluded
27092	MA72-37	Stony Brook	Excluded
27098	MA72-37	Stony Brook	Excluded
27275	MA72-37	Stony Brook	Excluded
27618	MA72-37	Stony Brook	Excluded
27619	MA72-37	Stony Brook	Excluded
35267.2	MA72-37	Stony Brook	Excluded
35269.2	MA72-37	Stony Brook	Excluded
35271.2	MA72-37	Stony Brook	Excluded
36268.2	MA72-37	Stony Brook	Excluded
666667312	MA72-37	Stony Brook	Excluded
666667373	MA72-37	Stony Brook	Excluded
666667546	MA72-37	Stony Brook	Excluded
666667551	MA72-37	Stony Brook	Excluded
666667554	MA72-37	Stony Brook	Excluded
666667557	MA72-37	Stony Brook	Excluded
666667548	MA72-37	Stony Brook	Excluded
666667549	MA72-37	Stony Brook	Excluded
666667550	MA72-37	Stony Brook	Excluded
666667556	MA72-37	Stony Brook	Excluded
666666994	MA72-38	Charles River	Excluded
666667394	MA72-38	Charles River	Excluded
666667395	MA72-38	Charles River	Excluded
666667396	MA72-38	Charles River	Excluded
21298	MA72-38	Charles River	Excluded
666667330	MA72-38	Charles River	Excluded
17120	MA73-02	Neponset River	Excluded
17514	MA73-02	Neponset River	Excluded
666667227	MA73-02	Neponset River	Excluded
27852	MA73-04	Neponset River	Excluded
37131.7	MA73043	Ponkapoag Pond	Excluded
37133.7	MA73043	Ponkapoag Pond	Excluded
666666842	MA73-27	Ponkapog Brook	Excluded
666666841	MA73-27	Ponkapog Brook	Excluded
666666844	MA73-27	Ponkapog Brook	Excluded
666666843	MA73-27	Ponkapog Brook	Excluded
17637	MA73-29	Pine Tree Brook	Excluded
666667582	MA73-29	Pine Tree Brook	Excluded
666667583	MA73-29	Pine Tree Brook	Excluded

Last Revision Date: 6/12/2023

Outfall ID	Receiving Waterbody	Receiving Waterbody Name	IDDE Priority
666667586	MA73-29	Pine Tree Brook	Excluded
666667588	MA73-29	Pine Tree Brook	Excluded
666667589	MA73-29	Pine Tree Brook	Excluded
666667591	MA73-29	Pine Tree Brook	Excluded
666667593	MA73-29	Pine Tree Brook	Excluded
666667594	MA73-29	Pine Tree Brook	Excluded
666667595	MA73-29	Pine Tree Brook	Excluded
666667602	MA73-29	Pine Tree Brook	Excluded
666667601	MA73-29	Pine Tree Brook	Excluded
666667604	MA73-29	Pine Tree Brook	Excluded
17210	MA74015	Hoosicwhisick Pond	Excluded
17307	MA74015	Hoosicwhisick Pond	Excluded
34384.3	MA74015	Hoosicwhisick Pond	Excluded
666667083	MA74015	Hoosicwhisick Pond	Excluded
666667105	MA74015	Hoosicwhisick Pond	Excluded
16968	MA74017	Old Quincy Reservoir	Excluded
666667674	MA74017	Old Quincy Reservoir	Excluded
666667675	MA74017	Old Quincy Reservoir	Excluded
666667677	MA74017	Old Quincy Reservoir	Excluded
16969	MA74-10	Furnace Brook	Excluded
16970	MA74-10	Furnace Brook	Excluded
16972	MA74-10	Furnace Brook	Excluded
16973	MA74-10	Furnace Brook	Excluded
3315	MA74-10	Furnace Brook	Excluded
4108.7	MA74-10	Furnace Brook	Excluded
666666849	MA74-10	Furnace Brook	Excluded
666667061	MA74-10	Furnace Brook	Excluded
666667062	MA74-10	Furnace Brook	Excluded
666667070	MA74-10	Furnace Brook	Excluded
666667252	MA74-10	Furnace Brook	Excluded
666667287	MA74-10	Furnace Brook	Excluded
21840	MA74-13	Weymouth Back River	Excluded
21820	MA74-13	Weymouth Back River	Excluded
21837	MA74-13	Weymouth Back River	Excluded
21838	MA74-13	Weymouth Back River	Excluded
21841	MA74-13	Weymouth Back River	Excluded
21844	MA74-13	Weymouth Back River	Excluded
21846	MA74-13	Weymouth Back River	Excluded
21847	MA74-13	Weymouth Back River	Excluded
666667080	MA74-25	Blue Hill River	Excluded
666667085	MA74-25	Blue Hill River	Excluded
666667084	MA74-25	Blue Hill River	Excluded
12930.03	MA81147	Wachusett Reservoir	Excluded

Last Revision Date: 6/12/2023

Outfall ID	Receiving Waterbody	Receiving Waterbody Name	IDDE Priority
21783.03	MA81147	Wachusett Reservoir	Excluded
26228	MA82003	Ashland Reservoir	Excluded
26426	MA82003	Ashland Reservoir	Excluded
26428	MA82003	Ashland Reservoir	Excluded
26430	MA82125	Lake Cochituate	Excluded
25968	MA84A-01	Merrimack River	Excluded
25970	MA84A-01	Merrimack River	Excluded
25971	MA84A-01	Merrimack River	Excluded
26184	MA84A-01	Merrimack River	Excluded
26185	MA84A-01	Merrimack River	Excluded
26186	MA84A-01	Merrimack River	Excluded
26187	MA84A-01	Merrimack River	Excluded
26188	MA84A-01	Merrimack River	Excluded
26189	MA84A-01	Merrimack River	Excluded
26190	MA84A-01	Merrimack River	Excluded
26191	MA84A-01	Merrimack River	Excluded
26192	MA84A-01	Merrimack River	Excluded
26193	MA84A-01	Merrimack River	Excluded
26194	MA84A-01	Merrimack River	Excluded
26195	MA84A-01	Merrimack River	Excluded
26200	MA84A-01	Merrimack River	Excluded
26202	MA84A-01	Merrimack River	Excluded
37272.6	MA84A-01	Merrimack River	Excluded
25685	MA84A-03	Merrimack River	Excluded
25686	MA84A-03	Merrimack River	Excluded
666667872	MA92061	Stearns Pond	Excluded
23890	MA93044	Lower Pond	Excluded
34589.3	MA93044	Lower Pond	Excluded
34591.3	MA93044	Lower Pond	Excluded
34594.3	MA93044	Lower Pond	Excluded
34595.3	MA93044	Lower Pond	Excluded
37098.1	MA93044	Lower Pond	Excluded
38004	MA93044	Lower Pond	Excluded
23891	MA93-35	Saugus River	Excluded
37096.1	MA93-35	Saugus River	Excluded
38003	MA93-35	Saugus River	Excluded
38005	MA93-35	Saugus River	Excluded
24962	MA93-52	Lynn Harbor	Excluded
24982	MA93-52	Lynn Harbor	Excluded
25061	MA93-52	Lynn Harbor	Excluded
25625	MA93-52	Lynn Harbor	Excluded
36062.1	MA93-52	Lynn Harbor	Excluded
36064.1	MA93-52	Lynn Harbor	Excluded

Last Revision Date: 6/12/2023

Outfall ID	Receiving Waterbody	Receiving Waterbody Name	IDDE Priority
36065.1	MA93-52	Lynn Harbor	Excluded
36071.1	MA93-52	Lynn Harbor	Excluded
36073.1	MA93-52	Lynn Harbor	Excluded
36074.1	MA93-52	Lynn Harbor	Excluded
36075.1	MA93-52	Lynn Harbor	Excluded
36076.1	MA93-52	Lynn Harbor	Excluded
36077.1	MA93-52	Lynn Harbor	Excluded
36080.1	MA93-52	Lynn Harbor	Excluded
36083.1	MA93-52	Lynn Harbor	Excluded
36084.1	MA93-52	Lynn Harbor	Excluded
23979	MA94-16	Plymouth Harbor	Excluded
23993	MA94-16	Plymouth Harbor	Excluded
24012	MA94-16	Plymouth Harbor	Excluded

Last Revision Date: 6/12/2023

Outfall ID	Receiving Waterbody	Receiving Waterbody Name	IDDE Priority

Scoring Criteria:

Initial outfall prioritization was completed using the criteria listed below to categorize outfalls as problem, high, low, or excluded based on the number of criteria that the outfall meets. Outfalls are reprioritized to "Highest" priority annually if there was an exceedance in sampling results.

- Previous reports of dumping, failing septic systems, odors, or other indications of potential illicit discharges.
- Outfalls/interconnections that discharge to or in the vicinity of any of the following areas, as determined via GIS evaluation of the following datalayers. Note: Discharges to an area of concern to public health will automatically be considered High Priority if they are not Problem outfalls.
  a. Public Beaches: https://www.mass.gov/info-details/massgis-data-marine-beaches
  b. Recreational Areas (note: query layer for only PRIM_PURP = "R" to only review areas protected for recreation primarily): https://www.mass.gov/info-details/massgis-data-protected-and-recreational-openspace
  c. Surface Water Supply Watersheds: https://www.mass.gov/info-details/massgis-data-public-water-supplies
  d. Shellfish Beds: https://www.mass.gov/info-details/massgis-data-designated-shellfish-growing-areas
- Receiving water quality based on latest version of MassDEP Integrated List of Waters: https://www.mass.gov/lists/integrated-lists-of-waters-related-reports
  - Bacteria: Discharges to waters or their tributaries listed as impaired for bacteria (Category 4a or 5 Waters). This may include waters impaired for Fecal Coliform or Escherichia coli. Note: Discharges to bacteria impaired waters will automatically be considered High Priority if they are not Problem outfalls, based on guidance provided in Appendix H of the 2016 Permit
  - Other: Discharges to waters or their tributaries listed as impaired for pollutants other than bacteria (Category 4a or 5 Waters). This does not include waters impaired for non-pollutants.
  - None: Discharges to waters or their tributaries with no water quality impairments (Category 2 or 3 Waters)
- Discharges to waters with an approved TMDL, where illicit discharges have the potential to contain the pollutant identified as the cause of the impairment. Listing of approved TMDLs can be found here: https://www.mass.gov/lists/total-maximum-daily-loads-by-watershed
- Density of generating sites based on DCR internal knowledge
  - Yes = DCR Labor yard or fueling area within 1,000 feet of the outfall
  - No = No known high pollutant generating sites within 1,000 feet of the outfall
- Outfalls with screening results that indicate likely sewer input are based on sampling results that meet or exceed the likely sewer input indicators described in the MS4 permit.

^ This outfall was ranked as problem during the initial outfall ranking but has since been determined to be a duplicate GIS point of Outfall 19377 and has been removed from DCR's database but remains in the Outfall Ranking for consistency.

* This outfall was ranked as problem during the initial outfall ranking but has since been determined to be owned by a municipality. It remains in the Outfall Ranking for consistency.

Appendix D – Field Equipment Checklist

Field staff can use the following checklist to ensure adequate equipment before field sampling. Items can be added or removed at the discretion of the field sampling team.

Testing Equipment Checklist		
Check	**Equipment**	**Use/Notes**
	Ammonia test strips (or kits)	Have extra kits on hand to sample more outfalls than are anticipated to be screened in a single day
	Chlorine test strips (or kits)	Have extra kits on hand to sample more outfalls than are anticipated to be screened in a single day
	Surfactants test kit	Have extra kits on hand to sample more outfalls than are anticipated to be screened in a single day
	Photometer	For chlorine test kit, as needed
	Conductivity, salinity, pH and temperature meter	Handheld meter, if available, for testing for various water quality parameters such as ammonia, surfactants and chlorine and if needed, for sampling conductivity, temperature, pH

Sampling Equipment Checklist		
Check	**Equipment**	**Use/Notes**
	Mobile data collector (tablet)	Collect dry weather inspection and dry weather sampling results
	Map with sampling location and Facility ID's (if not using tablet)	For orientation
	GPS receiver (tablet or handheld GPS)	For taking spatial location data
	Clipboard (if not using tablet)	For organization of field sheets and writing surface
	100 ml pre-labeled laboratory bacteria sample bottles (bacteria)	Make sure all sample containers are clean. Keep extra sample containers on hand at all times. Make sure there are proper sample containers for what is being sampled for (i.e., bacteria requires sterile containers).
	500 ml pre-labeled laboratory bacteria sample bottles (other laboratory analysis)	
	125 ml pre-labeled laboratory sample bottles (for on-site testing and BBAC off-site testing)	
	Additional sample containers as needed	
	Data sheet and chain of custody forms	Field sheets for both dry weather inspection and dry weather sampling should be available with extras. Chain of custody form is needed to

Sampling Equipment Checklist		
Check	**Equipment**	**Use/Notes**
		ensure proper handling of all samples
	De-ionized water or laboratory purified water and extra bottles as necessary	For sample procedures
	Pens, pencils, and/or permanent markers	For proper labeling
	Label tape	For labeling sample containers
	Sampling pole, dipper, sampling cage, and/or hand-held vacuum pump	For accessing hard to reach outfalls and manholes
	Disinfecting (wet) wipes and/or hand sanitizer	Disinfectant/decontaminant

Sample Transport Checklist		
Check	**Equipment**	**Use/Notes**
	Coolers	For transporting samples to the laboratory
	Frozen blue ice, ice, and/or cold packs	

Tools Checklist		
Check	**Equipment**	**Use/Notes**
	Flashlight and/or headlamp with extra batteries	For looking in outfalls or manholes, helpful in early mornings as well
	Manhole hook (from local DPW)	For opening manholes
	Measuring tape and/or carpenters' ruler	Measuring distances and depth of flow
	Shovel (from local DPW)	For opening, propping, prying as needed
	Pry bar or pick	For opening catch basins and manholes when necessary
	Sandbags	For damming low flows in order to take samples
	Small Mallet or Hammer	Helping to free stuck manhole and catch basin covers
	Utility Knife	Multiple uses
	Zip ties and/or duct tape	Field repairs
	Safety glasses	Personal Protective Equipment (PPE). Staff should review the project-specific Health and Safety Plan (HASP) for a complete list of PPE.
	Safety vests	
	Rubber knee boots and/or waders for accessing shallow streams/areas	
	Safety (traffic) cones	Safety

Other Checklist		
Check	**Equipment**	**Use/Notes**
	Bug spray (the CDC recommends products with: DEET (exposed skin and clothing) or Permethrin (on clothing)	Protection
	Poison ivy wash (e.g., Tecnu, Zanfel)	Protection (especially if allergic to poison ivy)
	Water (drinking water quality)	For drinking, washing as needed
	Digital camera (smartphone or tablet)	For documenting field conditions at time of inspection
	Field log books	Documentation
	Nitrile gloves	To protect the sampler as well as the sample from contamination
	Paper towels	Cleaning
	Sealable bags	Miscellaneous storage, organization

Additional Equipment (as needed)		
Check	**Equipment**	**Use/Notes**
	Safety equipment, such as a face covering, for compliance with State of Massachusetts COVID-19 guidelines	Staff should review the project-specific Health and Safety Plan (HASP) for a complete guidance on COVID-19 guidelines.

Appendix E – Water Quality Sampling Equipment User Manuals

Ammonia CHEMets® Kit

K-1510/R-1501: 0 - 1 & 1 - 10 ppm N

Safety Information

Read SDS (available at www.chemetrics.com) before performing this test procedure. Wear safety glasses and protective gloves.

Non-Seawater Test Procedure

1. Fill the sample cup to the 25 mL mark with the sample to be tested (fig. 1).
2. Add 2 drops of A-1500 Stabilizer Solution (fig. 2). Stir to mix the contents of the cup.
3. Place the CHEMet ampoule, tip first, into the sample cup. Snap the tip. The ampoule will fill leaving a bubble for mixing (fig. 3).
4. To mix the ampoule, invert it several times, allowing the bubble to travel from end to end.
5. Dry the ampoule and wait **1 minute** for color development.
6. Obtain a test result using the appropriate comparator.
   a. **Low Range Comparator (fig. 4):** Place the ampoule, flat end first, into the comparator. Hold the comparator up toward a source of light and view from the bottom. Rotate the comparator until the best color match is found.

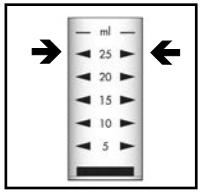

Figure 1


Figure 2

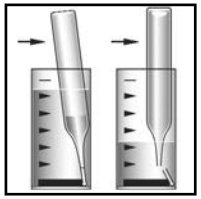
Figure 3


Figure 4

   b. **High Range Comparator (fig. 5):** Place the ampoule between the color standards until the best color match is found.

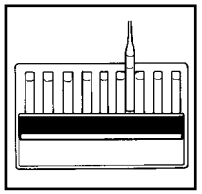
Figure 5

Seawater Test Procedure

1. Using the syringe, add 1.0 mL of A-1501 Stabilizer Solution to the sample cup.
2. Fill the sample cup to the 25 mL mark with the seawater sample to be tested (fig 1).
3. Perform the Test Procedure above, beginning with Step 3.

Test Method

The Ammonia CHEMets®[1] test kit employs direct nesslerization.[2,3] In a strongly alkaline solution, ammonia reacts with Nessler Reagent (K_2HgI_4) to produce a yellow-colored complex in direct proportion to the ammonia concentration.

This method is applicable to drinking water, clean surface water, good quality nitrified wastewater effluent and seawater. Other types of samples may require a preliminary distillation step. Ketones, alcohols, and aldehydes may cause off-color test results. Glycine and hydrazine will cause high test results. Aromatic and aliphatic amines, iron, sulfide, calcium and magnesium may cause turbidity.

1. CHEMets is a registered trademark of CHEMetrics, Inc. U.S. Patent No. 3,634,038
2. APHA Standard Methods, 18th ed., Method 4500-NH_3 C - 1988
3. ASTM D 1426 - 08, Ammonia Nitrogen in Water, Test Method A

Visit www.chemetrics.com to view product demonstration videos.
Always follow the test procedure above to perform a test.

CHEMetrics
Simplicity in Water Analysis

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Phone: (800) 356-3072; Fax: (540) 788-4856
E-Mail: orders@chemetrics.com
Feb. 18, Rev. 13

Chlorine SAM

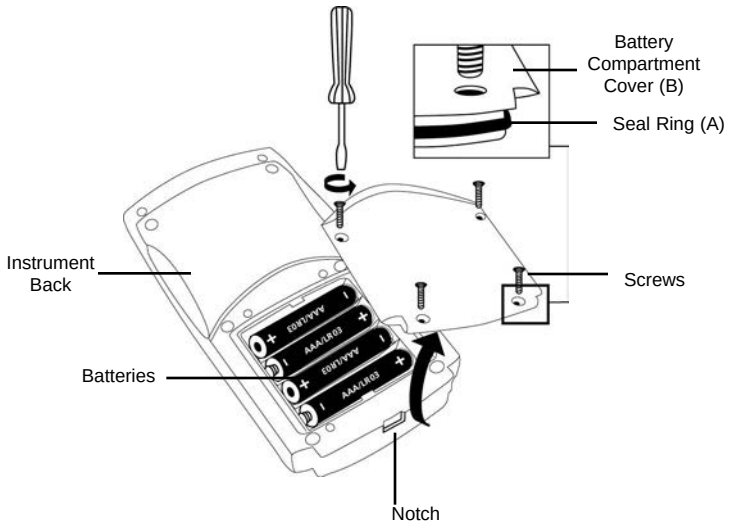
I-2001

0 to 5.00
PPM (mg/Liter)

CHEMetrics

Simplicity in Water Analysis

Battery Replacement



To ensure that the instrument is waterproof:

- seal ring (A) must be in position
- battery compartment cover (B) must be fixed with the four screws

To Set Zero

1. Press the Power key.
2. The display will show "CL".
3. Insert the ZERO ampoule (supplied in Vacu-vials® kit), flat end first, into the sample cell compartment (with mild downward pressure), making sure that it is fully seated.
4. Place the light shield over the ZERO ampoule.
5. Press the Zero/Test key. The "CL" symbol will flash for approximately 8 seconds, then the display will show "0.0.0".

To Make a Measurement

1. Follow the Test Procedure in the Chlorine Vacu-vials test kit (Cat. # K-2513).
2. Insert the resulting Chlorine Vacu-vial ampoule, flat end first, into the sample cell compartment (with mild downward pressure), making sure that it is fully seated.
3. Place the light shield over the test ampoule.
4. Press the Zero/Test key. The "CL" symbol will flash for approximately 3 seconds, then the sample test result will appear in the display as ppm (mg/Liter).

Operating Tips

- Upon startup, the photometer automatically proceeds to the zeroing process. Every time the photometer powers on, it must be re-zeroed.
- To re-zero the photometer, it must be turned off and back on again.
- A series of readings can be taken without re-zeroing, as long as the photometer stays on during the series.
- Protect photometer from extreme humidity, corrosive fumes and dusty areas. Store in a cool, dry place.
- Remove the batteries when photometer is not in use.
- Press the **!** key to turn the display back light on or off.
- When moving the photometer from one temperature extreme to another, wait at least 10 minutes before use to allow photometer to come to temperature equilibrium.
- Contamination of the optics in the sample chamber will result in incorrect measurements. The windows in the sample chamber should be checked at regular intervals and cleaned as necessary. Use a soft moist cloth or cotton swab for cleaning purposes.
- If the sample cell adapter has been removed, it must be replaced with proper orientation, aligning the triangle on the adapter with the triangle on the photometer.
- The SAM calibration is factory set and the LED should not change under normal use conditions. However, it is good quality protocol to routinely verify the performance of any LED photometer. A verification kit (Cat. No I-0003) that can be used to verify the performance of this photometer is sold separately.

Displays and Troubleshooting

E01: Light absorption too great (dirty optics)
E20/E21: Too much light reaching detector
E22 or Battery Icon: Battery should be replaced
E27/E28/E29: Instrument zeroed incorrectly, misaligned adapter, vial not properly seated, dirty optics or failing light source.
Hi/E03: Measuring range exceeded or excessive turbidity
Lo: Test result has a negative value (less than 0 ppm)

Specifications

Auto Shutoff: After 15 minutes of non-use
Optics: 530 nm LED/interference filter and photosensor in transparent sample chamber
Operating Temp.: 5 to 40°C (41 to 104°F)
Battery: 4 AAA batteries (approx. 5,000 tests or 17 hours)
Waterproof: Floating, IP68 (1 hour at 0.1 meter)
Wavelength Accuracy: ± 1 nm
Photometric Accuracy: 3% full scale (T = 20 - 25° C / 68 - 77° F)
Photometric Resolution: 0.01 A
Ambient Conditions: Temperature 5 - 40° C / 41 - 104° F
Rel. humidity 30 - 90 % (non-condensing)
CE: Certificate of Declaration of CE-Conformity available upon request.

Menu Selection

Setting Date and Time

Upon initial start-up, the SAM will display "Set", "dAtE", and "YYYY", then a 4 digit number. Proceed to Step 4 in the procedure below to set the date and time, or power the instrument off and on again to bypass this process. At any time that the time and/or data need to be reset, follow steps 1-6 of the procedure below.

1. Press the Mode key and hold. Turn the instrument on by pressing and releasing the Power key. Once three decimal points appear in the display, release the Mode key. The display will show "di 5".
2. Press and release the ! key until the display shows arrows in the upper right and lower left corners of the display, pointing to "Time" and "Date".
3. Press the Mode key. "Set", "dAtE" will briefly appear in the display.
4. Date and time settings are displayed in the following order: Year ("YYYY"), Month ("MM"), Day ("dd"), Hour ("hh"), Minutes ("mm"). Increase the displayed value for each setting by pressing the Mode key or decrease the value by pressing the Zero/Test key until the desired value is displayed.
5. Press the ! key to save the displayed value and to proceed to the next setting.
6. After setting the minutes, press the ! key. The display will flash "iS" "SEt" and then will return to the measurement mode.

Recall of Stored Data

The SAM photometer automatically stores the last 15 data sets. To recall stored data:

1. Press the Mode key and hold. Turn the instrument on by pressing and releasing the Power key. Once three decimal points appear in the display, release the Mode key. The display will show "di 5".
   Note: If the instrument is already on, press and hold the ! key for at least 4 seconds and release to access the stored data.
2. Press the Mode key. The photometer will display the stored data sets in the following format:
   a. Sample Number: nXX (e.g. n15, n14, … n1)
   b. Year: XXXX (e.g. 2017)
   c. Date: mm.dd (e.g. 03.15)
   d. Time: hh.mm (e.g. 12:05)
   e. Analyte
   f. Result
3. Press the Zero/Test key to repeat the current data set.
4. Press the Mode key to proceed to the next data set.
5. Press the ! key to return to the measurement mode.

Chlorine Vacu-vials® Kit

K-2513: 0 - 5.00 ppm (Prog. # 32)

K-2523: 0 - 5.00 ppm (Prog. # 32 or 33)

Instrument Set-up

For CHEMetrics photometers, follow the **Setup and Measurement Procedures** in the operator's manual.

For spectrophotometers, follow the manufacturer's instructions to set the wavelength to 515 nm and to zero the instrument using the ZERO ampoule supplied.

Safety Information

Read SDS (available at www.chemetrics.com) before performing this test procedure. Wear safety glasses and protective gloves.

Free Chlorine Procedure

1. Fill the sample cup to the 25 mL mark with the sample to be tested (fig 1).
2. Place the Vacu-vial ampoule, tip first, into the sample cup. Snap the tip. The ampoule will fill leaving a bubble for mixing (fig 2).
3. To mix the ampoule, invert it several times, allowing the bubble to travel from end to end. Tap the bottom of the ampoule on a hard surface to cause any tiny bubbles that have collected on the ampoule wall to rise to the top of the liquid in the ampoule.
4. Dry the ampoule and wait **1 minute** for color development.
5. Insert the Vacu-vial ampoule into the photometer, flat end first, and obtain a reading in ppm (mg/Liter) chlorine (Cl_2).

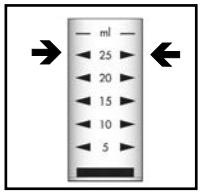


Figure 1

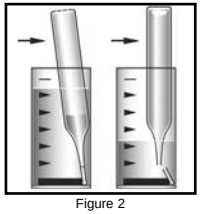


Figure 2

NOTE: **If using a spectrophotometer** that is not pre-calibrated for CHEMetrics products, then use the **equation below** or the **Concentration Calculator** found under the Support tab at *www.chemetrics.com*.

$$ppm = 0.50\ (abs)^2 + 3.54\ (abs) - 0.02$$

Total Chlorine Procedure (K-2513 only)

1. Add 5 drops of A-2500 Activator Solution to the empty sample cup.
2. Fill the sample cup to the 25 mL mark with the sample to be tested.
3. Immediately perform the **Free Chlorine Procedure** starting with Step 2.

Test Method

The Chlorine Vacu-vials®[1] test kit employs the DPD chemistry.[2,3] Free chlorine oxidizes DPD (N,N-diethyl-p-phenylenediamine) to form a pink colored species in direct proportion to the chlorine concentration. Other halogens, ozone and halogenating agents will produce high test results. Chlorine at concentrations significantly above the test range may prevent proper color development causing low test results.

K-2513 only: Total chlorine, the sum of free and combined chlorine, is determined by adding an excess of potassium iodide to the sample. Chloramines (combined chlorine) oxidize the iodide to iodine. The iodine then oxidizes DPD to the pink colored species.

1. Vacu-vials is a registered trademark of CHEMetrics, Inc. U.S. Patent No. 3,634,038
2. APHA Standard Methods, 22nd ed., Method 4500-Cl G - 2000
3. EPA Methods for Chemical Analysis of Water and Wastes, Method 330.5 (1983)

Visit www.chemetrics.com to view product demonstration videos.
Always follow the test procedure above to perform a test.

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Feb. 18, Rev. 23

Operating Instructions

OAKTON®

PCTSTestr™ 50 Pocket Tester

CE

Applications

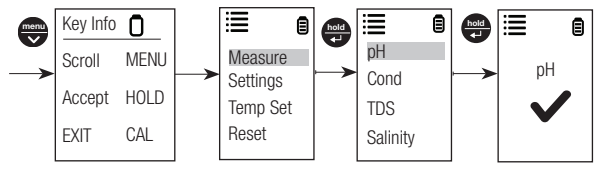
- Agriculture
- Aquaculture
- Aquariums and fish farms
- Boiler blow-down
- Car washes
- Drinking water
- Ecology
- Electroplating rinse tanks
- Food sectors
- Hydroponics
- Labs
- Printing industry
- Swimming pools
- Verification of reverse osmosis system operation
- Water and waste-water treatment

Getting Started

The PCTSTestr 50 Pocket Tester has been factory calibrated and usually works well out of the box. However, after extended periods of non-use, it is best to remove the sensor cap and soak the sensor in warm tap water for 10 minutes or so. Prior to taking the measurements, periodic calibration with certified standards is recommended for best accuracy.

Measurement Parameter Setting

1. Press ON/OFF (⏻) to power on the tester.
2. Press MENU/∨ to enter setup window. Press HOLD/↵ to select Measure. The display shows pH, Cond, TDS and Salinity.
3. Scroll down by pressing MENU/∨ to toggle between pH, Cond, TDS and Salinity. Press HOLD/↵ to select pH.
4. The display shows the selected parameter with a ✔.

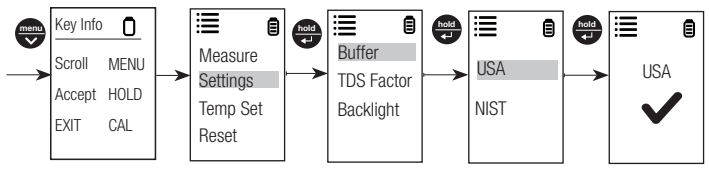


pH Buffer Set Selection

PCTSTestr 50 Pocket Tester features USA (pH 4.01, pH 7.00 and pH 10.01) or NIST (pH 4.01, pH 6.86, and pH 9.18) standards. Select either one to suit your requirements.

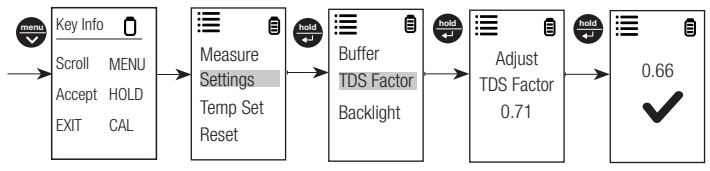
1. Press MENU/∨ to enter setup window. Press HOLD/↵ to select Settings. The display shows Buffer, TDS Factor and Backlight.

2. Press HOLD/↵ to select Buffer. Display shows USA and NIST.
3. Press HOLD/↵ to select USA or scroll down by pressing MENU/∨ to toggle between the two buffer standards.
4. The display shows the selected buffer standard with a ✔.



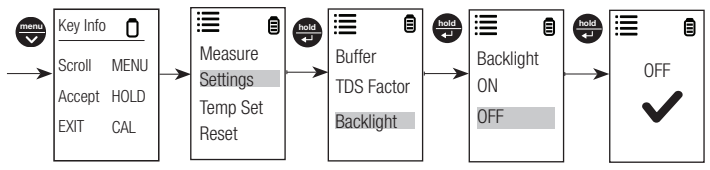
TDS Factor Setting

1. Press MENU/∨ to enter setup window. Scroll down by pressing MENU/∨ to select Settings.
2. Press HOLD/↵ to select Settings. The display shows Buffer, TDS Factor and Backlight.
3. Scroll down by pressing MENU/∨ to toggle between the Buffer, TDS Factor and Backlight. Press HOLD/↵ to select the TDS Factor.
4. Press HOLD/↵ to select the default TDS factory setting or MENU/∨ to adjust the setting.
5. Press HOLD/↵ to confirm the selection of the setting. The display shows the selected value (TDS factor) with a ✔.



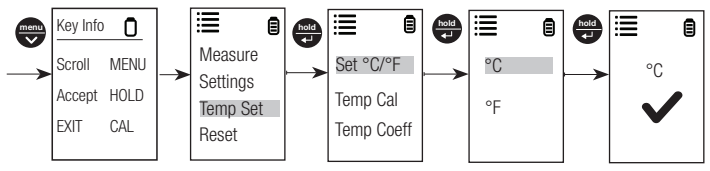
Backlight Settings

1. Press MENU/∨ to enter setup window. Scroll down by pressing MENU/∨ to select Settings.
2. Press HOLD/↵ to select Settings. The display shows Buffer, TDS Factor and Backlight.
3. Scroll down by pressing MENU/∨ to toggle between Buffer, TDS Factor and Backlight. Press HOLD/↵ to select Backlight.
4. The display shows ON and OFF. Scroll down by pressing MENU/∨ to toggle between ON and OFF. Backlight ON increases readability in low-light conditions.
5. Press HOLD/↵ to select the desired backlight option. The display shows the selected backlight option with a ✔.



Temperature Settings

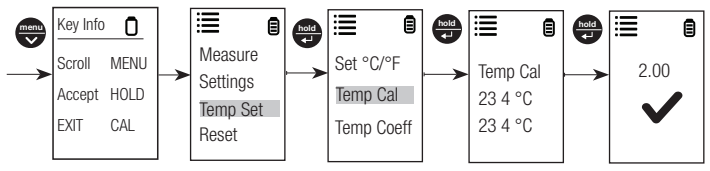
1. Press MENU/∨ to enter setup window. Scroll down by pressing MENU/∨ to select Temp Set. Press HOLD/↵ to select Temp Set. The display shows Set °C/°F, Temp Cal and Temp Coeff.
2. Press HOLD/↵ to select Set °C/°F. Scroll down by pressing MENU/∨ to toggle between °C and °F.
3. Press HOLD/↵ to select temperature unit. The display shows the selected temperature setting with a ✔.



Temperature Calibration

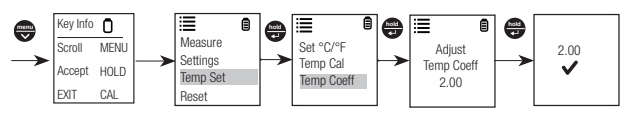
1. Press MENU/∨ to enter setup window. Scroll down by pressing MENU/∨ to select Temp Set.
2. Press HOLD/↵ to select Temp Set. The display shows Set °C/°F, Temp Cal and Temp Coeff.
3. Scroll down by pressing MENU/∨ to toggle between Set °C/°F, Temp Cal and Temp Coeff. Press HOLD/↵ to select Temp Cal.
4. The lower display shows the current measured temperature reading based on the last set offset and the upper display shows the current measured temperature reading based on factory default calibration.
5. Dip the tester into a solution of known temperature and allow time for the built-in temperature sensor to stabilize.
6. Press MENU/∨ to adjust the temperature value or press the HOLD/↵ to confirm the calibrated value as the new temperature value of the solution.

Note: To exit this program without confirming the calibration, press CAL/ESC.



Temperature Coefficient

1. Pres MENU/∨ to enter setup window. Scroll down by pressing MENU/∨ to select Temp Set.
2. Press HOLD/↵ to select Temp Set. The display shows Set °C/°F, Temp Cal and Temp Coeff.
3. Scroll down by pressing MENU/∨ to toggle between Set °C/°F, Temp Cal and Temp Coeff.
4. Press HOLD/↵ to select Temp Coeff or MENU/∨ to adjust the Temp Coeff.
5. Press HOLD/↵ to confirm the Temp Coeff value. The new value is automatically confirmed with a ✔.



pH Calibration

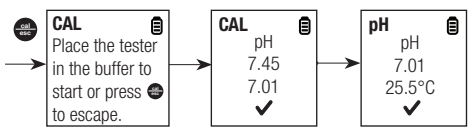
Calibration should be done regularly, recommended once a week. Calibrate up to three points using either the USA or the NIST buffer set standards.

1. Press ON/OFF (⏻) to power on the tester if needed.
2. Dip electrode about 2 cm to 3 cm into the pH standard buffer solution.
3. Stir gently and press CAL/ESC to enter calibration mode. The CAL indicator will be displayed. The upper display will show the measured reading based on the last calibration while the lower display will indicate the pH standard buffer solution.

Note: To abort calibration, press CAL/ESC to escape.

4. Allow about 2 minutes for the tester reading to stabilize. The timer icon blinks during this time. Once the reading is stabilized, the timer stops blinking. Automatic confirmation happens when the buffer is found and the display returned to measurement window with reading calibrated to pH standard buffer solution.
5. Repeat with other buffers if necessary. Rinse electrode before dipping into next buffer.

Note: The calibration mode allows you to perform up to three calibration points. Calibration is automatically confirmed with the buffer identification. No user interaction is required after starting the calibration by pressing CAL/ESC.

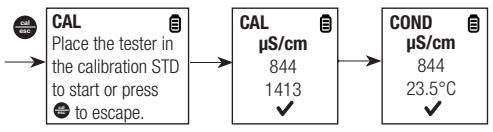


Calibration for Conductivity, TDS, or Salinity

For best results, periodic calibration with an accurate standard is recommended prior to measurement. Use the calibration standard value that is close to your intended sample value. The tester will retain one calibration value in each mode (conductivity, TDS, salinity) when the instrument is powered off. The conductivity value can be calibrated automatically or manually, while the TDS & salinity values require manual calibration. The tester will begin in the measurement mode that was used when it was powered off. See "Measurement Parameter Setting" to change the desired parameter.

Automatic Calibration for Conductivity

1. Remove the cap and press ON/OFF (⏻) to power on.
2. Dip the sensor in at least 30 mm of calibration standard.
3. Stir gently and press CAL/ESC to begin the calibration.
4. The display will show CAL followed by the default value. CAL is indicated on the display during calibration mode.
5. If the reading is within the calibration range of the automatically recognized standards; 80 (84 µS/cm), 1410 (1413 µS/cm), or 12.90 (12.88 mS/cm), the ✔ icon is displayed when the automatic calibration standard value has been detected.
6. Press HOLD/↵ to accept the auto conductivity standard and finish the calibration.
7. Display returns to Measurement window.



Manual Calibration

When the conductivity reading is outside calibration range of the automatic conductivity standards or when TDS or salinity is used, the tester will require manual adjustment.

1. Repeat steps 1 to 4 from "Automatic Calibration for Conductivity".
2. Press MENU/∨ to manually adjust the value to the desired reading.

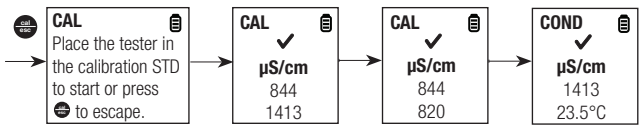
Note: The adjustment will decrease only, however the adjustment will eventually cycle to the highest available value after decreasing by 40% of the initial value.

3. Press HOLD/↵ to accept and finish the calibration when the desired value is selected.

Note: To abort calibration, press CAL/ESC to escape.

4. Once the calibration is finished and user has accepted the changes, measurement window will now show the calibrated reading.

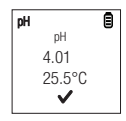
Note: The auto conductivity standards are 84 µS/cm, 1413 µS/cm & 12.88 mS/cm.



Measurement

1. Press ON/OFF (⏻) to power on the tester if needed.
2. Dip the electrode in about 2 cm to 3 cm into the test solution. Stir and let the reading stabilize. The timer icon will blink during this time. Once the reading is stabilized, the timer stops blinking and ✔ will appear to indicate the stability of the reading.

CAUTION: Testing dry samples is not accurate and can lead to sensor damage or breakage. Soils must be wet and free of particulates that may scratch the glass sensor. Excessive force into dry samples can cause glass breakage.

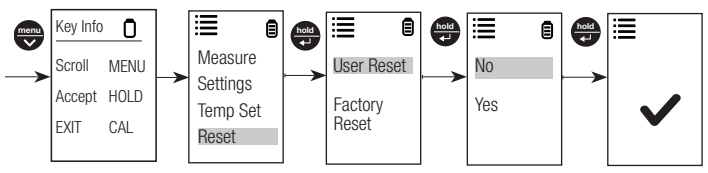


3. Note the value or press HOLD/↵ to freeze the reading. To release the reading, press HOLD/↵ again.
4. Press ON/OFF (⏻) for 3 seconds to turn off tester. If you do not press a button for 8.5 minutes, the tester will automatically shut off to conserve batteries.

User Reset

Reset to the user's default settings by using the User Reset function. Buffer selection and user temperature calibration are not affected by the user reset function.

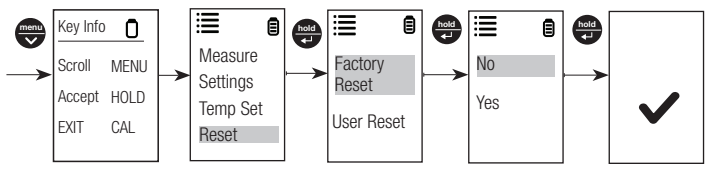
1. Press MENU/∨ to enter setup window. Scroll down by pressing MENU/∨ to select Reset. Press HOLD/↵ to select Reset. The display shows User Reset and Factory Reset.
2. Press HOLD/↵ to select User Reset.
3. The display automatically shows No and Yes. Scroll down by pressing MENU/∨ to toggle between No and Yes.
4. Press HOLD/↵ to confirm either No or Yes. The display shows the User Reset option with a ✔.



Factory Reset

Reset to the Factory Default Settings by using the Factory Reset function.

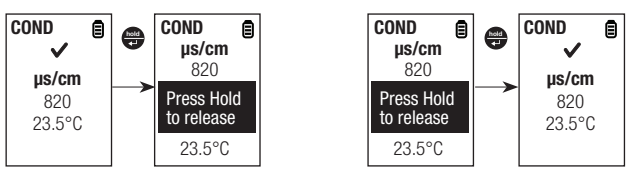
1. Press MENU/v to enter setup window. Scroll down by pressing MENU/v to select Reset. Press HOLD/↵ to select Reset. The display shows User Reset and Factory Reset.
2. Scroll down by pressing MENU/v to toggle between the resets. Press HOLD/↵ to select Factory Reset.
3. The display automatically shows No and Yes. Scroll down by pressing MENU/v to toggle between No and Yes.
4. Press HOLD/↵ to confirm either No or Yes. The display shows the Factory Reset option with a ✔.



HOLD Function

This feature lets you freeze the display for a delayed observation.

1. Press HOLD/↵ button to freeze the measurement.
2. Press HOLD/↵ again to release the measurement.



Sensor Maintenance

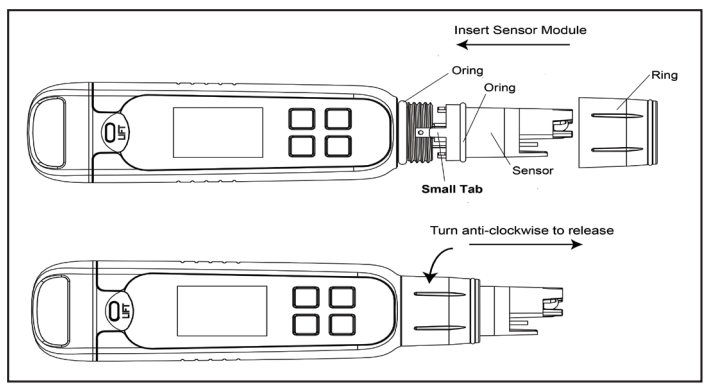
1. Always keep the sensor electrodes clean. Rinse the electrodes with de-ionized water and wipe them dry with clean cloth before storing with its protective cap. For cup type electrodes, remove the white plastic cup and insert to thoroughly clean viscous solutions. **Note:** Never scratch electrodes with a hard substance.
2. For better performance, soak the electrode in alcohol for 10 to 15 minutes and rinse with de-ionized water before starting any measurement process. This is to remove dirt and oil stains on the electrode, which may affect the accuracy of the measurements.

Sensor Replacement

You can replace the sensor module at a fraction of the cost of a new tester. When the tester fails to calibrate or gives fluctuating readings in calibration standards, you need to change the electrode.

1. With dry hands, grip the ring with sensor facing you. Twist the ring counterclockwise. Save the ring for later use.
2. Pull the old sensor module away from the tester.
3. Align the four tabs on the new module so that they match the four slots on the tester.
4. Gently push the module onto the slots to sit it in position. Push the smaller O-ring fully onto the new sensor module. Push the other O-ring over the module and thread it into place by firmly twisting clockwise.

Note: It is necessary that you recalibrate your tester prior to measurement after a sensor replacement.



Replacing the Batteries

The PCTSTestr 50 Pocket Tester uses four AAA 1.5 V batteries.

1. To remove the battery cover, see Figure 1. Clear the front catch and then the back catch, before sliding the cover off.
2. To remove the battery plate, push the center tab towards the front of the tester as shown in Figure 2. Once unlocked, remove the plate to access the batteries.
3. Invert the tester upside down to remove the batteries. Each side uses two AAA batteries. Orient each battery with positive terminal facing downward.
4. To lock the battery place, align the small tabs (Figure 3) into the guide ribs on the housing and then press down. See Figure 4.

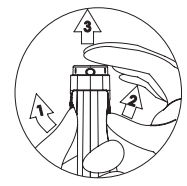


Fig. 1: Removing battery cover

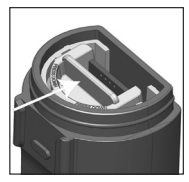


Fig. 2: Push to unlock

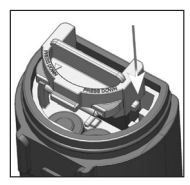


Fig. 3: Align tabs


Fig. 4: Push down to lock

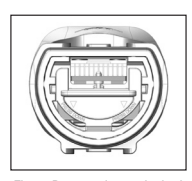


Fig. 5: Battery plate unlocked

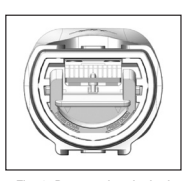


Fig. 6: Battery plate locked

Warranty

This instrument is supplied with a warranty against manufacturing defects for a period of one year from the date of purchase.

Return of Items

Authorization must be obtained from your distributor before returning items for any reason. When applying for authorization, please include information regarding the reason the item(s) are to be returned.

We reserve the right to make improvements in design, construction and appearance of products without notice. Prices are subject to change without notice.

Self-Diagnostic Messages

🔋	Batteries are weak and need replacement soon.
stable error	Appears when calibration is attempted but the reading is not yet stable. Wait for the reading to stabilize or manually confirm the calibration by pressing enter.
buffer error	The buffer is outside of the calibration range.
slope error	The 2nd and 3rd calibration point is not within 80% to 120% slope range.
over range	The reading is above the measuring range of tester.
under range	The reading is below the measuring range of tester.

Specifications

Specifications	PCTSTestr 50
pH	
pH range	–1.00 to 15.00 pH
Resolution	0.01 pH
Relative accuracy	±0.01 pH
Calibration points	Up to 3 points
Buffer set standard selection	USA: 4.01/7.00/10.01 NIST: 4.01/6.86/9.18
Calibration window	±1.00 pH
Calibration type	Point to point
Conductivity	
Conductivity range	0.0 to 200.0 µS, 200 to 2000 µS, 2.00 to 20.00 mS
Resolution	0.1 µS, 1 µS, 0.01 mS
Relative accuracy	±1% full scale
Normalization temperature	25.0ºC (77ºF)
Temperature co-efficient	0.0% to 10.0%
Calibration points	Up to 3 points
TDS	
TDS range	0.0 to 100.0 ppm, 100 to 1000 ppm, 0.10 to 10.00 ppt (TDS factor 0.5)
Resolution	0.1 ppm, 1 ppm, 0.01 ppt
Relative accuracy	±1% full scale
Calibration points	Up to 3 points
TDS factor	0.40 to 1.00 (selectable)
Salinity	
Salinity range	0.00 to 10.00 ppt
Resolution	0.10 ppt
Relative accuracy	±1% full scale
Calibration points	1

Specifications (cont.)	PCTSTestr 50
Temperature	
Temperature range	0 to 60°C (32.0 to 140.0°F)
Temperature resolution	0.1°C / 0.1°F
Temperature accuracy	From 0 to 50ºC (±0.5°C / ±0.9°F + 1 LSD); from 50 to 60°C (±1.0ºC / ±1.8°F + 1 LSD)
Temperature compensation	Yes (Automatic Temperature Compensation)
General	
Display	Graphics, dot matrix 80 x 100 pixel
Backlight	Yes, selectable (30 sec from last key press)
Auto off	8.5 minutes (from last key press)
Reset	User / Factory
Power requirement	Four AAA 1.5 V batteries
Battery life	>150 hours
Water proofing	IP67
Regulatory certifications	CE, FCC
Environmental Operating Conditions	
Ambient operating temperature	5 to 45°C / 41 to 113°F
Relative humidity	5% to 85% noncondensing
Storage temperature	–20 to 60°C / –4 to 140°F
Storage humidity	5% to 85% noncondensing

Accessories

Ordering Code	Product Description
35634-35	PCTSTestr 50 pocket tester with case, lanyard, and batteries
35634-37	Replacement sensor module for PCTSTestr 50
35634-09	Replacement sensor cap
09376-00	Replacement alkaline batteries; AAA, 1.5 V. Pack of 12
17101-45	NIST-traceable calibration with data for pocket testers

OAKTON® INSTRUMENTS

www.4oakton.com

1065O100_MAN_35634-35 August, 2017

Detergents CHEMets Kit

K-9400/R-9400: 0 - 3 ppm

Test Procedure

1. Rinse the reaction tube with the sample to be tested, and then fill it to the 5 mL mark with the sample.
2. While holding the double-tipped ampoule in a vertical position, snap the upper tip using the tip breaking tool (fig. 1).
3. Invert the ampoule and position the open end over the reaction tube. Snap the upper tip and allow the contents to drain into the reaction tube (fig. 1).
4. Cap the reaction tube and shake it vigorously for **30 seconds**. Allow the tube to stand undisturbed for **1 minute**.
5. Make sure that the flexible tubing is firmly attached to the CHEMet ampoule tip.
6. Insert the CHEMet assembly (tubing first) into the reaction tube making sure that the end of the flexible tubing is at the bottom of the tube. Break the tip of the CHEMet ampoule by gently pressing it against the side of the reaction tube (fig. 2). The ampoule should draw in fluid only from the organic phase (bottom layer).
7. When filling is complete, remove the CHEMet assembly from the reaction tube.

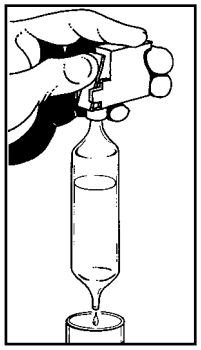


Figure 1

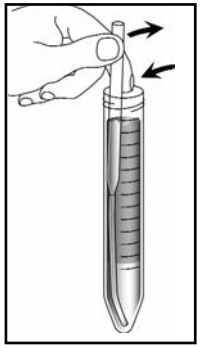


Figure 2

8. Remove the flexible tubing from the CHEMet ampoule and wipe all liquid from the exterior of the ampoule. Place an ampoule cap firmly onto the tip of the CHEMet ampoule. Invert the ampoule several times, allowing the bubble to travel from end to end.
9. Obtain a test result by placing the ampoule, flat end first, into the comparator. Hold the comparator up toward a source of light and view from the bottom. Rotate the comparator until the best color match is found (fig. 3).

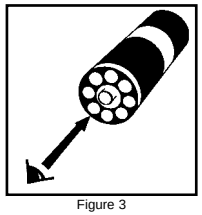


Figure 3

Tip Breaker

The tip breaker opens for easy disposal of the glass tips (pull lever away from body of tip breaker or pull open the side wall). The tip breaker will work most effectively if the tips are emptied out frequently.

Test Method

The Detergents CHEMets®[1] test kit employs the methylene blue extraction method[2,3,4]. Anionic detergents react with methylene blue to form a blue complex that is extracted into an immiscible organic solvent. The intensity of the blue color is directly related to the concentration of "methylene blue active substances (MBAS)" in the sample. Anionic detergents are one of the most prominent methylene blue active substances. Test results are expressed in ppm (mg/Liter) linear alkylbenzene sulfonate (equivalent weight 325).

1. CHEMets is a registered trademark of CHEMetrics, Inc. U.S. Patent No. 3,634,038
2. APHA Standard Methods, 22nd ed., Method 5540 C - 2000
3. EPA Methods for Chemical Analysis of Water and Wastes, Method 425.1 (1983)
4. ASTM D 2330-02, Methylene Blue Active Substances

Safety Information

Read SDS (available at www.chemetrics.com) before performing this test procedure. Wear safety glasses and protective gloves.

CHEMetrics

Simplicity in Water Analysis

www.chemetrics.com
4295 Catlett Road, Midland, VA 22728 U.S.A.
Phone: (800) 356-3072; Fax: (540) 788-4856
E-Mail: orders@chemetrics.com

Feb. 18, Rev. 10

Appendix F – IDDE Employee Training Record

Illicit Discharge Detection and Elimination (IDDE)

Employee Training Record

Date of Training: April 4, 2023

Duration of Training: 4 hours

Name	Title	Signature
Charles Greene	GIS Specialist	Charles Greene
Joeseph McCrann	Construction Coordinator	Joseph McCrann
Sarina Guerrero	Resident Engineer	Sarina Guerrero
Essam Tazi	Heavy Equipment Operator	Essam Tazi
Alex Fishman	Resident Engineer	Alex Fishman
Gail Mazzio	Engineering Aide	Gail Mazzio
Alan Pulisciano	Engineering Aide	Alan Pulisciano