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ILLICIT DISCHARGE DETECTION AND ELIMINATION (IDDE) PLAN

For

BRIDGEWATER STATE UNIVERSITY
Bridgewater, Massachusetts

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APPENDICES

1.0 INTRODUCTION

1.1 Massachusetts 2016 Small MS4 Permit Program

This Illicit Discharge Detection and Elimination (IDDE) Plan has been developed by Bridgewater State University (BSU) 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 Small MS4 Permit" or "the Permit."

In compliance with the provisions of the Clean Water Act (CWA) and the Massachusetts Clean Waters Act, as amended (M.G.L. Chap.21 §§ 26-53), the 2016 Small MS4 Permit was signed by EPA and the Massachusetts Department of Environmental Protection (MassDEP) on April 4, 2016 and became effective on July 1, 2018. The 2016 Small MS4 Permit replaces the 2003 Small MS4 Permit to regulate activities related to stormwater discharges and requires significantly more detail than the previous permit.

As a University owned and operated by the Commonwealth of Massachusetts, BSU is considered a non-traditional MS4. The requirements for non-traditional MS4s vary slightly from municipal MS4s as outlined in Section 5.0 of the 2016 Small MS4 permit. This IDDE Plan was developed to align with the intent of the Permit for non-traditional MS4s.

The 2016 Small MS4 Permit requires that BSU address six (6) Minimum Control Measures. These measures include the following:

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

Under Minimum Control Measure 3, BSU is required to develop and implement an IDDE program to systematically find and eliminate sources of non-stormwater discharges to BSU's 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

As defined by the 2016 Small MS4 Permit, an illicit discharge is defined as *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, entering the drainage system through direct connections or indirect discharges:

- **Direct illicit 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 a sump pump that discharges contaminated water on an intermittent basis.

When not addressed, illicit discharges can contribute high levels of pollutants, such as heavy metals, toxics, oil, grease, solvents, nutrients, and pathogens to surface waters.

1.2.1 Allowable Non-Stormwater Discharges

Per Section 2.3.4.3 of the Permit, the following categories of non-storm water discharges are not considered illicit discharges and are allowed under the MS4 Permit unless BSU, EPA, or MassDEP identifies any category or individual discharge of non-stormwater discharge as a significant contributor of pollutants to the MS4:

- Water line flushing
- Landscape irrigation
- Diverted stream flows
- Rising ground water
- Uncontaminated ground water infiltration (as defined at 40 CFR 35.2005(20))
- Uncontaminated pumped groundwater
- Discharge from potable water sources
- Foundation drains
- Air conditioning condensation
- Irrigation water, springs
- Water from crawl space pumps
- Footing drains
- Lawn watering
- Individual resident car washing
- Flows from riparian habitats and wetlands
- De-chlorinated swimming pool discharges
- Street wash waters
- Residential building wash waters without detergents

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

1.3 IDDE Program Goals, Framework, and Timeline

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

- IDDE Policy to prohibit illicit discharges and enforce this prohibition
- Storm system mapping
- Inventory and ranking of outfalls and interconnections
- Dry weather outfall and interconnection screening and sampling
- 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

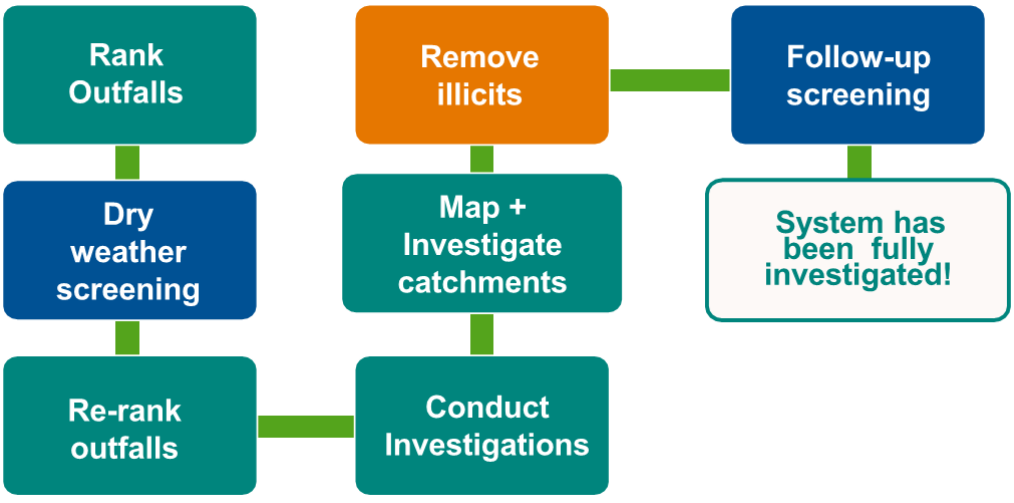


Table 1-1. IDDE Program Implementation Timeline

IDDE Program Requirement	Completion Date from Effective Date of Permit					
	1 Year	1.5 Years	2 Years	3 Years	7 Years	10 Years
Written IDDE Program Plan	X					
SSO Inventory	X					
Outfall and Interconnection Inventory and Ranking	X					
Written Catchment Investigation Procedure		X				
Phase I Mapping			X			
Phase II Mapping						X
IDDE Policy	X					
Dry Weather Outfall and Interconnection Screening and Sampling				X		
Follow-up Ranking of Outfalls and Interconnections				X		
Catchment Investigations – Problem Outfalls and Interconnections					X	
Catchment Investigations – all Problem, High and Low Priority Outfalls and Interconnections						X

1.4 Receiving Waters and Impairments

Table 1-2 lists the "impaired waters" that stormwater runoff near BSU's regulated area discharge to according to the Massachusetts Year 2016 Integrated List of Waters, which is produced by MassDEP every two (2) years. The Integrated List of Waters is the proposed listing of the condition of Massachusetts' waters pursuant to Sections 305(b), 314 and 303(d) of the Clean Water Act. Impaired waters are waterbodies that do not meet water quality standards for one (1) or more designated use(s) such as recreation or aquatic habitat.

Table 1-2. Impaired Waters (per 2016 List finalized December 2019)

Water Body Name	Segment ID	Category*	Impairment(s)
South Brook (Tributary to Town River)	N/A	N/A	N/A
Town River (Tributary to Taunton River)	MA62-13	3	
Taunton River (Flows into Mount Hope Bay)	MA62-02	4a	Enterococcus, Fecal Coliform
	MA62-03 MA62-04	5	Dissolved Oxygen, Fecal Coliform, Enterococcus, Fish Bioassessments
Mount Hope Bay	MA61-06	5	Chlorophyll-a, Enterococcus, Fecal Coliform, Fish Bioassessments, Total Nitrogen, Temperature

*Category 3 Waters – Waterbodies with insufficient information to make assessments for any designated uses, or for which assessments are determined to be insufficient for 303(d) listing.
Category 4a Waters – Waters for which the required TMDL(s) have already been completed and approved by the EPA.
Category 5 Waters – Impaired waterbodies for one or more intended uses that require one or more TMDLs.
"Approved TMDLs" are those that have been approved by EPA as of the date of issuance of the 2016 MS4 Permit.

The Taunton River and Mount Hope Bay have EPA TMDL numbers of 40310 and 38908, respectively, both for Enterococcus and Fecal Coliform. A Final Pathogen TMDL for the Taunton River Watershed was issued in June 2011 (Control Number: CN 0256.0).

Mapping of the outfall locations is provided in Appendix B.

1.5 Work Completed to Date

BSU began their IDDE program under the 2003 Massachusetts Small MS4 Permit and had completed the following IDDE program activities:

- Prepared campus mapping and surveys that included the sewer and stormwater system, along with the locations of outfalls to receiving waters (2003 – Present)
  - The BSU sewer and stormwater systems are separated systems
  - The BSU campus sewer system discharges into the City of Bridgewater collection system for treatment
  - The BSU campus stormwater system has piped interconnections with the City of Bridgewater and Massachusetts Bay Transportation Authority (MBTA) stormwater systems, as well as outfalls that discharge towards wetlands and streams tributary to South Brook and Town River. These are being further documented in the updated campus mapping for the 2016 Small MS4 permit (Appendix B)
- Performed an *Infiltration and Inflow Analysis – Sewer System Evaluation Survey*[1] (2009-2010), which was a comprehensive review and inventory of campus sewer and drain infrastructure that was prepared to identify and remove interconnections between the drainage and sewer system and included:
  - An inventory of the structures and conduits that collect and convey sewage to various points along the City of Bridgewater collections system
  - Dye testing to identify the actual pathway of roof runoff
    - One (1) roof was found to discharge into the sewer system and this connection was redirected into the stormwater system
    - There were no illicit sewer connections into the drainage system identified in this study
  - Comprehensive mapping of the sewer and stormwater systems
- Tracked Sanitary System Overflows (SSOs), however there are no known SSOs on the campus within the last 20 years
- Reviewed new development and redevelopment projects for potential illicit connections and prohibited such connections
- Required appropriate protections to existing drainage systems and receiving waters to prohibit illicit discharges through construction activities, consistent with local, state, and federal regulations including the NPDES Construction General Permit and the Wetlands Protection Act (310 CMR 10.00)

1.6 Legal Authority

In compliance with Section 2.3.4 of the 2016 Small MS4 Permit, this IDDE program includes 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
- Implement appropriate enforcement procedures and actions

[1] *Infiltration and Inflow Analysis, Sewer System Evaluation Survey, Bridgewater State College*, prepared by Silva Engineering Associates, updated February 25, 2010.

As allowed under Section 5.1.2 of the 2016 Small MS4 Permit, non-traditional MS4s without the authority to enact an ordinance shall ensure that written policies or procedures are in place to address the requirements of Section 2.3.4. Accordingly, BSU has compiled their current internal policies related to the IDDE program requirements and has formalized these as their IDDE Policy (Appendix A).

1.7 Statement of Responsibilities

BSU has identified Environmental Health and Safety (EH&S) as the primary lead responsible for implementing the IDDE Program pursuant to the provisions of the adopted policy. Facilities Management will also have responsibility for aspects of the program.

EH&S and Facilities Maintenance report to the Operations Department; therefore, the process for coordination and data sharing between the respective units within Operations are anticipated to occur at regular and targeted Stormwater Management Committee (SMC) meetings. Data will also be accessible to all program participants by way of the department-wide shared server.

2.0 Stormwater System Mapping

BSU originally developed mapping of its stormwater system to meet the mapping requirements of the 2003 MS4 Permit. The 2016 MS4 Permit requires the storm system map to be updated in two (2) phases as outlined below. EH&S will update the stormwater system mapping. EH&S will report on the progress towards completion of the storm system map in each annual report. Updates to the stormwater mapping will be included in **Appendix B**. The revised mapping is intended to facilitate the identification of key infrastructure, factors influencing proper system operation, and the potential for illicit discharges. The mapping will serve as a planning tool for the implementation and phasing of the IDDE program and demonstration of the extent of complete and planned investigations and corrections. EH&S will update the mapping as necessary to reflect newly discovered information and required corrections or modifications.

2.1 Phase I Mapping

Phase I mapping must be completed within two (2) years of the effective date of the permit (July 1, 2020), and the stormwater system mapping must include:

- Outfalls and receiving waters (previously required by the MS4-2003 permit)
- Open channel conveyances (swales, ditches, etc.)
- Interconnections with other MS4s and other storm sewer systems
- University-owned stormwater treatment structures (e.g., detention and retention basins, infiltration systems, bioretention areas, water quality swales, gross particle separators, oil/water separators, or other proprietary systems)
- Waterbodies identified by name and indication of all use impairments as identified on the most recent EPA approved Massachusetts Integrated List of Waters report pursuant to Clean Water Act section 303(d) and 305(b)
- Initial catchment delineations. Topographic contours and drainage system information may be used to produce initial catchment delineations

BSU is compiling the storm system map using available campus mapping, existing conditions surveys, and as-built surveys from recent projects on the BSU campus. In addition to reviewing record drawings and survey, on-site observations field verify the available mapping. Incoming interconnections from adjacent MS4 communities, including the City of Bridgewater and the MBTA, were observed and noted on the mapping as observable points for coordination.

2.2 Phase II Mapping

Phase II mapping must be completed within 10 years of the effective date of the permit (July 1, 2028) and include the following information:

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

2.3 Additional Recommended Mapping Elements

Although not a requirement of the 2016 MS4 Permit, BSU plans to include the following recommended elements in its storm system mapping where possible:

- Storm sewer material, size (pipe diameter), age
- Topography
- Orthophotography
- Alignments, dates, and representation of work completed (with legend) of past illicit discharge investigations (e.g., flow isolation, dye testing, CCTV)
- Locations of suspected confirmed and corrected illicit discharges (with dates and flow estimates)

3.0 Sanitary Sewer Overflows (SSOs)

The 2016 MS4 Permit prohibits illicit discharges, including sanitary sewer overflows (SSOs), to the storm sewer system. SSOs are discharges of untreated sanitary wastewater from a 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.

The sanitary sewer system that serves the BSU campus is owned by the City of Bridgewater. BSU coordinates with and provides access to the City of Bridgewater for any sanitary sewer improvements required on campus.

In compliance with Section 2.3.4.4 of the Permit, BSU has confirmed that there are no known SSOs that have discharged to BSU's separate storm sewer system within the previous five (5) years. EH&S will continue to review the system for signs of SSOs and report any evidence of SSOs to the City of Bridgewater.

Upon detection of an SSO, EH&S will coordinate with the City of Bridgewater to eliminate it as expeditiously as possible and assist the City with interim measures to minimize the discharge of pollutants to and from BSU's storm sewer system until the SSO is eliminated. Upon becoming aware of an SSO, EH&S will coordinate with the City to provide oral notice to EPA within 24 hours and written notice to EPA and MassDEP within five (5) days of becoming aware of the SSO occurrence. EH&S will assist the City with providing the following information in the notice:

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 BSU's storm sewer system
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

4.0 Assessment and Priority Ranking of Outfalls and Interconnections

The 2016 MS4 Permit requires an assessment and priority ranking of outfalls and interconnections 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.

4.1 Outfall and Interconnection Catchment Delineations

A catchment is the area that drains to an individual outfall[2] or interconnection.[3] The catchments for each of BSU's storm sewer system outfalls and interconnections will be delineated to define contributing areas for investigation of potential sources of illicit discharges. Catchments are typically delineated based on topographic contours and mapped drainage infrastructure, where available. As described in **Section 2**, 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.

4.2 Outfall and Interconnection Inventory and Initial Ranking

In compliance with Section 2.3.4.7 of the Permit, BSU has completed an initial outfall and interconnection inventory and priority ranking to assess illicit discharge potential based on existing information. The inventory will be updated annually to include data collected in connection with dry weather screening and other relevant inspections. An updated inventory and ranking will be provided in each annual report.

The outfall and interconnection inventory identifies each outfall and interconnection discharging from BSU's storm sewer system, records its location and condition, and provides a framework for tracking inspections, screenings and other IDDE program activities.

[2] **Outfall** means a point source as defined by 40 CFR § 122.2 as the point where BSU's separate storm sewer system discharges to waters of the United States. An outfall does not include open conveyances connecting two university 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 BSU's separate storm sewer system 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.

Classification of outfalls and interconnections include the following categories:

1. **Problem Outfalls/Interconnections**: Outfalls and interconnections with known or suspected contributions of illicit discharges based on existing information. This includes any outfalls and interconnections where previous screening indicated likely sewer input. 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
   - 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/Interconnections.

2. **High Priority Outfalls/Interconnections**: Outfalls and interconnections that have not been classified as Problem Outfalls/Interconnections and that are:
   - Discharging to an area of concern to public health due to proximity of public beaches, recreational areas, drinking water supplies or shellfish beds
   - Determined as high priority based on the characteristics listed below or other available information

3. **Low Priority Outfalls/Interconnections**: Outfalls and interconnections determined as low priority based on the characteristics listed below or other available information.

4. **Excluded Outfalls/Interconnections**: Outfalls and interconnections with no potential for illicit discharges may be excluded from the IDDE program. This category is limited to roadway drainage in undeveloped areas with no residences and no sanitary sewers; drainage for athletic fields, parks or undeveloped green space and associated parking without services; cross-country drainage alignments (that neither cross nor are in proximity to sanitary sewer alignments) through undeveloped land.

Without the presence of known or suspected contributions of illicit discharges since the previous IDDE program was completed throughout campus, no outfalls or interconnections were classified as **Problem** in the initial priority ranking. Since all catchments eventually discharge to the Taunton River, which is impaired for Enterococcus and Fecal Coliform, all outfalls and interconnections in the inventory were designated as **High Priority**.

The following characteristics were considered in further prioritizing the outfalls and interconnections for dry weather screening based on approximated initial catchment areas, where information is available:

- **Past discharge complaints and reports**

- **Poor receiving water quality** – the following guidelines are recommended to identify waters as having a high illicit discharge potential:
  - Exceeding water quality standards for bacteria
  - Ammonia levels above 0.5 mg/l
  - Surfactants levels greater than or equal to 0.25 mg/l

- **Density of generating sites** – Generating sites are those places, including institutional, commercial, or industrial sites, with a potential to generate pollutants that could contribute to illicit discharges. Examples of these sites include, but are not limited to: car dealers, car washes, gas stations, garden centers, and industrial manufacturing areas

- **Age of development and infrastructure** – Industrial areas greater than 40 years old and areas where the sanitary sewer system is more than 40 years old will probably have a high illicit discharge potential. Developments 20 years or younger will probably have a low illicit discharge potential

- **Sewer conversion** – Contributing catchment areas that were once serviced by septic systems but have been converted to sewer connections may have a high illicit discharge potential

- **Historic combined sewer systems** – Contributing areas that were once serviced by a combined sewer system but have been separated may have a high illicit discharge potential

- **Culverted streams** – Any river or stream that is culverted for distances greater than a simple roadway crossing may have a high illicit discharge potential

- **Impaired waters** – Water quality limited waterbodies or waters with approved TMDLs that receive a discharge from BSU's separate storm sewer system, where illicit discharges have the potential to contain the pollutant identified as the cause of the water quality impairment

Additional relevant characteristics, including location-specific characteristics, may be added to this IDDE Plan for consideration as information is collected during catchment investigations.

These characteristics will be revisited in updating the ranking for each annual report as new information becomes available each year.

Table 4-1 provides the outfall and interconnection inventory and priority ranking matrix.

Table 4-1. Outfall and Interconnection Inventory and Priority Ranking Matrix

Outfall/ Interconnection ID	Receiving Water / MS4	Previous Screening Results Indicate Likely Sewer Input? [1]	Discharging to Area of Concern to Public Health? [2]	Frequency of Past Discharge Complaints	Receiving Water Quality [3]	Land Use of Generating Sites [4]	Age of Development/ Infrastructure [5]	Historic Combined Sewers or Septic? [6]	Culverted Streams? [7]	Priority Ranking*	Score <u>Gradient</u> < 5 Low 6-7 Med 8-9 High
Information Source		Outfall inspections and sample results	GIS Maps	Facilities Maintenance (FM) Staff	Impaired Waters List	Land Use/GIS Maps, Aerial Photography	Land Use Information, Visual Observation	FM Staff, GIS Maps	GIS and Storm System Maps		
Scoring Criteria		Yes = 3 (**Problem**) No = 0	Yes = 3 No = 0	Frequent = 3 Occasional = 2 None = 0	Poor = 3 Fair = 2 Good = 0	High = 3 Medium = 2 Low = 1	High = 3 Medium = 2 Low = 1	Yes = 3 No = 0	Yes = 3 No = 0		
Outfall 01	Town of Bridgewater	0	0	0	3	1	1	0	0	Excluded	-
Outfall 2	Town of Bridgewater	0	0	0	3	1	1	0	0	Excluded	-
Outfall 03	Town of Bridgewater	0	0	0	3	1	1	0	3	Excluded	-
Outfall 04	Town River	0	0	0	3	1	1	0	0	Excluded	-
Outfall 05	Town of Bridgewater	0	0	0	3	1	1	0	0	Excluded	-
Outfall 06	MBTA	0	0	0	3	1	1	0	0	High	5
Outfall 07	MBTA	0	0	0	3	1	1	0	3	High	8
Outfall 07A	MBTA	0	0	0	3	1	1	0	0	High	5
Outfall 07B	MBTA	0	0	0	3	1	1	0	0	High	5
Outfall 08	MBTA	0	0	0	3	1	2	0	0	High	6
Outfall 08A	MBTA	0	0	0	3	1	2	0	0	High	6
Outfall 08B	MBTA	0	0	0	3	1	2	0	0	High	6
Outfall 09	Town of Bridgewater	0	0	0	3	1	1	0	0	High	5
Outfall 10	Town of Bridgewater	0	0	0	3	2	1	0	0	High	6
Outfall 11	Town of Bridgewater	0	0	0	3	2	1	0	0	High	6
Outfall 12	Town of Bridgewater	0	0	0	3	1	1	0	0	Excluded	-
Outfall 13	Town of Bridgewater	0	0	0	3	1	1	0	0	Excluded	-
Outfall 14	Town of Bridgewater	0	0	0	3	1	3	0	0	High	7
Outfall 15	Town River	0	0	0	3	1	1	0	0	Excluded	-
Outfall 16	South Brook	0	0	0	3	1	1	0	0	High	5

Table 4-1. Outfall and Interconnection Inventory and Priority Ranking Matrix (continued)

Outfall/ Interconnection ID	Receiving Water / MS4	Previous Screening Results Indicate Likely Sewer Input? [1]	Discharging to Area of Concern to Public Health? [2]	Frequency of Past Discharge Complaints	Receiving Water Quality [3]	Land Use of Generating Sites [4]	Age of Development/ Infrastructure [5]	Historic Combined Sewers or Septic? [6]	Culverted Streams? [7]	Priority Ranking*	Score Gradient < 5 Low 6-7 Med 8-9 High
Information Source		Outfall inspections and sample results	GIS Maps	Facilities Maintenance (FM) Staff	Impaired Waters List	Land Use/GIS Maps, Aerial Photography	Land Use Information, Visual Observation	FM Staff, GIS Maps	GIS and Storm System Maps		
Scoring Criteria		Yes = 3 (**Problem**) No = 0	Yes = 3 No = 0	Frequent = 3 Occasional = 2 None = 0	Poor = 3 Fair = 2 Good = 0	High = 3 Medium = 2 Low = 1	High = 3 Medium = 2 Low = 1	Yes = 3 No = 0	Yes = 3 No = 0		
Outfall 17	South Brook	0	0	0	3	1	1	0	0	High	5
Outfall 18	South Brook	0	0	0	3	1	1	0	0	High	5
Outfall 19	South Brook	0	0	0	3	1	1	0	0	High	5
Outfall 20	Town River	0	0	0	3	1	1	0	0	Excluded	-
Outfall 21	Town River	0	0	0	3	1	1	0	0	Excluded	-
Outfall 22	Town River	0	0	0	3	1	1	0	0	Excluded	-
Outfall 23	Town River	0	0	0	3	1	1	0	0	Excluded	-
Outfall 24	Town of Bridgewater	0	0	0	3	1	3	0	0	High	7
Outfall 25	MBTA	0	0	0	3	1	1	0	0	High	5
Outfall 25A	MBTA	0	0	0	3	1	2	0	0	High	6
Outfall 25B	MBTA	0	0	0	3	1	1	0	0	High	5
Outfall 26	MBTA	0	0	0	3	1	1	0	0	High	5
Outfall 27	Town River	0	0	0	3	1	2	0	0	Excluded	-
Outfall 28	Town River	0	0	0	3	1	2	0	0	Excluded	-
Outfall 29	Town River	0	0	0	3	1	2	0	0	High	6
Outfall 30	Town River	0	0	0	3	1	2	0	0	High	6
Outfall 31	MBTA	0	0	0	3	1	2	0	0	High	6
Outfall 32	Town of Bridgewater	0	0	0	3	1	2	0	0	High	6
Outfall 33	Town of Bridgewater	0	0	0	3	1	2	0	0	High	6
Outfall 34	Town of Bridgewater	0	0	0	3	1	2	0	0	High	6
Outfall 35	Town of Bridgewater	0	0	0	3	1	2	0	0	High	6

Table 4-1. Outfall and Interconnection Inventory and Priority Ranking Matrix (continued)

Outfall/ Interconnection ID	Receiving Water / MS4	Previous Screening Results Indicate Likely Sewer Input? [1]	Discharging to Area of Concern to Public Health? [2]	Frequency of Past Discharge Complaints	Receiving Water Quality [3]	Land Use of Generating Sites [4]	Age of Development/ Infrastructure [5]	Historic Combined Sewers or Septic? [6]	Culverted Streams? [7]	Priority Ranking*	Score Gradient < 5 Low 6-7 Med 8-9 High
Information Source		Outfall inspections and sample results	GIS Maps	Facilities Maintenance (FM) Staff	Impaired Waters List	Land Use/GIS Maps, Aerial Photography	Land Use Information, Visual Observation	FM Staff, GIS Maps	GIS and Storm System Maps		
Scoring Criteria		Yes = 3 (**Problem**) No = 0	Yes = 3 No = 0	Frequent = 3 Occasional = 2 None = 0	Poor = 3 Fair = 2 Good = 0	High = 3 Medium = 2 Low = 1	High = 3 Medium = 2 Low = 1	Yes = 3 No = 0	Yes = 3 No = 0		
Outfall 36	Town of Bridgewater	0	0	0	3	1	2	0	0	High	6
Outfall 37	South Brook	0	0	0	3	1	1	0	0	High	5
Outfall 38	South Brook	0	0	0	3	1	1	0	0	High	5
Outfall 39	South Brook	0	0	0	3	1	1	0	0	High	5
Outfall 40	South Brook	0	0	0	3	1	1	0	0	Excluded	-
Outfall 41	MBTA	0	0	0	3	1	2	0	0	High	6

MS4 Scoring Criteria:

[1] Previous screening results indicate likely sewer input if any of the following are true:

- 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
- Ammonia ≥ 0.5 mg/L, surfactants ≥ 0.25 mg/L, and detectable levels of chlorine

[2] Outfalls/interconnections that discharge to or in the vicinity of any of the following areas: public beaches, recreational areas, drinking water supplies, or shellfish beds

[3] Receiving water quality based on latest version of MassDEP Integrated List of Waters.

- Poor = Waters with approved TMDLs where illicit discharges have the potential to contain the pollutant identified as the cause of the impairment
- Fair = Water quality limited waterbodies that receive a discharge from BSU's separate storm sewer system
- Good = No water quality impairments

[4] Generating sites are institutional, municipal, commercial, or industrial sites with a potential to contribute to illicit discharges (e.g., car dealers, car washes, gas stations, garden centers, industrial manufacturing, etc.)

[5] Age of development and infrastructure:

- High = Industrial areas greater than 40 years old and areas where the sanitary sewer system is more than 40 years old
- Medium = Developments 20-40 years old
- Low = Developments less than 20 years old

[6] Areas once served by combined sewers and but have been separated, or areas once served by septic systems but have been converted to sanitary sewers.

[7] Any river or stream that is culverted for distance greater than a simple roadway crossing.

BSU Notes:

***All outfalls/interconnections are classified as high priority because they are tributary to Taunton River (approved TMDL for fecal coliform). unless previous screening results indicate likely sewer input (then change to Problem) or no potential for illicit discharges (then changes to Excluded). Note the category for excluded outfalls/interconnections is limited to roadway drainage in undeveloped areas with no dwellings and no sanitary sewers; drainage for athletic fields, parks or undeveloped green space and associated parking without services; cross-country drainage alignments (that neither cross nor are in proximity to sanitary sewer alignments) through undeveloped lands.**

5.0 Dry Weather Outfall and Interconnection Screening and Sampling

Dry weather flow is a common indicator of potential illicit connections. The MS4 Permit requires all outfalls and interconnections (excluding those ranked as Problem and Excluded) to be inspected for the presence of dry weather flow. EH&S and Facilities Management are responsible for conducting dry weather screening for all **High Priority** outfalls and interconnections as prioritized in the previous section.

5.1 Weather Conditions

Dry weather outfall and interconnection 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. For purposes of determining dry weather conditions, program staff will use precipitation data from the BSU Weather Station (http://bsuweather.bridgew.edu/).

BSU Weather Station Location

If the BSU Weather Station is not available or not reporting current weather data, then the National Weather Service's Taunton Weather Station located at the Taunton Municipal Airport will be used as a back-up (https://forecast.weather.gov/MapClick.php?lat=41.9&lon=-71.09#.XRY-5-hKhPY).

5.2 Dry Weather Screening/Sampling Procedure

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

1. Identify outfalls and interconnections to be screened/sampled based on the outfall and interconnection inventory and priority ranking.

2. Acquire the necessary staff, mapping, and field equipment (see **Table 6-1** for list of potential field equipment).

3. Research laboratories close to the BSU campus that can perform the required EPA-certified laboratory procedures. Coordinate with the selected laboratory to determine the facility's specific procedures, requirements, and schedule for field samples requiring laboratory analysis.

4. Conduct the inspection during dry weather:
   a. Mark and photograph the outfall/interconnection
   b. Locate the outfall/interconnection using Global Positioning System (GPS)
   c. Record the inspection information and outfall/interconnection characteristics (using paper forms or a digital form using a tablet or similar device) (see inspection forms in **Appendix C**)
   d. Look for and record visual/olfactory evidence of pollutants in flowing outfalls and interconnections 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

5. If flow is observed, sample and test the flow following the procedures described in the following sections.

6. If no flow is observed, but evidence of illicit flow exists (illicit discharges are often intermittent or transitory), revisit the outfall/interconnection during dry weather within one (1) week of the initial observation, if practicable, to perform a second dry weather screening and sample any observed flow. Other techniques can be used to detect intermittent or transitory flows including conducting inspections during evenings or weekends and using optical brighteners.

7. Input results from screening and sampling into spreadsheet/database. Include pertinent information in the outfall and interconnection inventory and priority ranking.

8. Include all screening data in the annual report.

5.3 Dry Weather Screening/Sampling Field Equipment

Table 5-1 lists field equipment commonly used for dry weather screening and sampling.

Table 5-1. Field Equipment – Dry Weather Outfall/Interconnection Screening and Sampling

Equipment	Use/Notes
Clipboard	For organization of field sheets and writing surface
Field Sheets	Field sheets for both dry weather inspection and dry weather sampling should be available with extras
Chain of Custody Forms	To ensure proper handling of all samples
Pens/Pencils/Permanent Markers/Write-in-Rain Pens	For proper labeling
Powder-Free Gloves	To protect the sampler as well as the sample from contamination
Flashlight/Headlamp with Batteries	For looking in outfalls or manholes, helpful in early mornings as well
Cooler with Ice and Required Preservatives	For preserving and transporting samples to the laboratory
Squirt Bottle of Distilled Water	For triple rinsing dipper/meter probe prior to sampling
Digital Camera	For documenting field conditions at time of inspection
Personal Protective Equipment (PPE)	Reflective vest, safety glasses and boots at a minimum
GPS Receiver	For taking spatial location data
Water Quality Sonde	If needed, for sampling conductivity, temperature, pH
Water Quality Meter	Handheld meter, if available, for testing for various water quality parameters such as ammonia, surfactants, and chlorine
Test Kits	Have extra kits on hand to sample more outfalls than are anticipated to be screened in a single day
Label Tape	For labeling sample containers
Sample Containers	Make sure all sample containers are clean, keep extra sample containers on hand at all times, and make sure there are proper sample containers for what is being sampled for (i.e., bacteria requires sterile containers)
Paper Towels	For drying wet surfaces 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
Measuring Tape	Measuring distances and depth of flow
Safety Cones	Safety
Hand Sanitizer	Disinfectant/decontaminant
Zip Ties/Duct Tape	For making immediate, temporary field repairs

Equipment	Use/Notes
Rubber Boots/Waders	For accessing shallow streams/areas
Sampling Pole/Dipper/Sampling Cage	For accessing hard to reach outfalls and manholes
Waste Bag/Container	For used test strip and test kit waste

5.4 Dry Weather Screening/Sampling Sample Collection and Analysis

If flow is present during a dry weather inspection, a sample will be collected and analyzed for the required permit parameters[4] listed in **Table 6-2**. The general procedure for collection of samples is as follows:

1. Fill out all sample information on sample bottles and inspection forms (obtain sample labels from the selected laboratory and see **Appendix C** for inspection forms).

2. Put on protective gloves (nitrile/latex/other) before sampling.

3. Collect samples as close to the outfall opening as possible, directly from the flow, in sample bottles. Be careful not to disturb sediments or collect surface debris/scum. The bacterial sample should be collected first followed by samples for any pollutants of concern. Samples for bacteria and pollutants of concern should be placed on ice.

4. For field measured parameters using test strips or test kits, a separate bottle should be used to collect a single sample from which aliquots are analyzed for ammonia, chlorine, and surfactants. If using a dipper or other device, triple rinse the device with distilled water and then in the water to be sampled. Analyze the sample aliquots using test strips or test kits from the field kit bottle as soon as reasonably possible. When concurrent analyses are not possible, ammonia and chlorine samples should be processed first, followed by surfactant analysis. Record all results.

5. For field measured parameters using instrumentation, use a properly calibrated meter to record all parameters directly from the stream or outfall. Triple rinse the meter probe with distilled water prior to immersing the probe in the water to be sampled. When flow volume or depth is insufficient to immerse the meter probe, a clean sample bottle may be utilized to collect a sufficient volume of water to immerse the probe. In such instances, meter readings should be taken immediately. Record all results.

6. Fill out a chain-of-custody form for the laboratory samples (obtain chain-of-custody forms from the selected laboratory).

7. Deliver samples to the selected laboratory.

[4] 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).

8. Dispose of used test strips and test kit ampules properly according to manufacture instructions.

9. Decontaminate all testing personnel and equipment.

If an outfall or interconnection is submerged, either partially or completely, or 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.

Field test kits or field instrumentation are permitted for all parameters except indicator bacteria and any pollutants of concern. Field kits need to have appropriate detection limits and ranges. **Table 5-2** lists various field test kits and field instruments that can be used for 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 will be included in **Appendix D**.

Table 5-2. Sampling Parameters and Analysis Methods

Analyte or Parameter	Instrumentation (Portable Meter)	Field Test Kit
Ammonia	CHEMetrics® V-2000 Colorimeter Hach® Pocket Colorimeter™ II	Hach® NI-SA Hach® Ammonia Test Strips
Chlorine	CHEMetrics® V-2000, K-2513 Hach® Pocket Colorimeter™ II Hanna HI761 Checker® HC	Hach® CN-66F
Conductivity	YSI Pro30 YSI EC300A Oakton® CON 450 HydroLab Minisonde 5	NA
Salinity	YSI Pro30 YSI EC300A Oakton® CON 450 HydroLab Minisonde 5	NA
Surfactants (Detergents)	CHEMetrics® I-2017	CHEMetrics® K-9400 Hach™ DE-2
Temperature	YSI Pro30 YSI EC300A Oakton® CON 450 HydroLab Minisonde 5	NA
Indicator Bacteria: E. coli (freshwater)	EPA-certified laboratory procedure (40 CFR § 136)	NA
Pollutants of Concern[1] Total Nitrogen	EPA-certified laboratory procedure (40 CFR § 136)	NA

[1] 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.

Field testing requires trained staff to effectively utilize field test kits and instrumentation. Although the initial purchase costs of field test kits are low, field test kits can have a limited shelf life and limited useful detection range, and the steps and processes for each kit can vary widely, resulting in errors. Conversely, portable instrumentation has the benefit of providing accurate readings and measure to low detection limits; however, portable instrumentation can have high initial purchase costs, require ongoing calibration and maintenance, and individual probes may require periodic replacement.

Testing for indicator bacteria and any pollutants of concern must be conducted using analytical methods and procedures found in 40 CFR § 136.[5] Samples for laboratory analysis must also be stored and preserved in accordance with procedures found in 40 CFR § 136. **Table 5-3** lists analytical methods, detection limits, hold times, and preservatives for laboratory analysis of dry weather sampling parameters.

[5] 40 CFR § 136: http://www.ecfr.gov/cgi-bin/text-idx?SID=b3b41fdea0b7b0b8cd6c4304d86271b7&mc=true&node=pt40.25.136&rgn=div5

Table 5-3. Required Analytical Methods, Hold Times, and Preservatives[4]

Analyte or Parameter	Analytical Method	Max. Hold Time	Preservation[1 2]
Ammonia (as N)	**EPA**: 350.1, Rev. 2.0 (1993), **SM**: 4500-NH_3 (B-C)-2011	28 days	Cool ≤6°C (ice) + H_2SO_4 to pH <2, None required if analyzed immediately (<15 minutes)
Chlorine	**SM**: Spectrophotometric, DPD- 4500-Cl G-2011	Immediate or Analyze within 15 minutes	None required
Specific Conductance	**EPA**: 120.1 (Rev. 1982), **SM**: 2510 B-2011	28 days	Cool ≤6°C (ice), None required if analyzed immediately
Salinity	**SM**: 2520	Immediate	None required
Surfactants	**SM**: 5540 C-2011	48 hours	Cool ≤6°C (ice), None required if analyzed immediately (<15 minutes)
Temperature	**SM**: 2550 B-2010	Immediate	None required
Indicator Bacteria: E. coli	**EPA**: Single step- 1603 **SM**: MPN, multiple tube- 9221 B.2-2006, 9221 F-2006, Multiple tube/multiple well- 9223 B-2004 **Other**: Multiple tube/multiple well- Colilert®, Colilert-18®	8 hours	Cool <10°C (ice) + 0.008% $Na_2S_2O_3$
Pollutants of Concern: Total Nitrogen (Ammonia + Nitrate/Nitrite, methods are for Nitrate-Nitrite and need to be combined with Ammonia listed above)	**EPA**: Cadmium reduction (Automated)-353.2 Rev. 2.0 (1993) **SM**: 4500-NO_3 F-2011, Cadmium reduction (Manual)- 4500-NO_3 E-2011	28 days	Cool ≤6°C (ice) + H_2SO_4 to pH <2

SM = Standard Methods
[1] Preserve each sample within 15 minutes of collection.
[2] Add the preservative to the sample container prior to sample collection when the preservative will not compromise the integrity of a grab sample or a composite sample.

5.5 Interpreting Outfall/Interconnection Sampling Results

Analytical data from dry weather sampling can be used to help identify the major type or source of discharge from the outfall/interconnection. **Table 5-4** shows values identified by the 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 or may help flag instances for false negative results due to chemical action or interferences. Salinity levels greater than one (1) part per thousand may cause elevated surfactant readings. In addition, elevated chlorine from leaking drinking water infrastructure or contained in the illicit wastewater discharge may inhibit bacterial growth and cause very low bacterial concentrations.

Table 5-4. Benchmark Field Measurements for Select Parameters

Analyte or Parameter	Benchmark
Ammonia	>0.5 mg/L
Chlorine	>0.02 mg/L (detectable levels per the 2016 MS4 Permit)
Surfactants	>0.25 mg/L
Indicator Bacteria[6]: E. coli	235 colonies per 100 ml (Taunton River, MA62-01, Class B)

(Ref: 2016 Small MS4 Permit Section 2.3.4.7(b))

5.6 Follow-up Ranking of Outfalls and Interconnections

BSU will update and reprioritize the initial outfall and interconnection rankings based on information gathered during dry weather screening. The rankings will be updated periodically as dry weather screening information becomes available but will be completed within three (3) years of the effective date of the permit (July 1, 2021).

Outfalls and interconnections where relevant information was found indicating sewer input to BSU's storm sewer system, or sampling results indicating sewer input, are highly likely to contain illicit discharges from sanitary sources. Likely sewer input indicators include olfactory or visual evidence of sewage, as well as either of the following combinations of sampling results detected:

- Ammonia ≥ 0.5 mg/L, surfactants ≥ 0.25 mg/L, and bacteria levels greater than the water quality criteria applicable to the receiving water
- Ammonia ≥ 0.5 mg/L, surfactants ≥ 0.25 mg/L, and detectable levels of chlorine

Such outfalls and interconnections will be re-ranked at the top of the **High Priority** category for investigation. Other outfalls and interconnections may be re-ranked based on any new information from the dry weather screening.

[6] Massachusetts Water Quality Standards (314 CM$ 04): http://www.mass.gov/eea/docs/dep/service/regulations/314cmr04.pdf

6.0 Catchment Investigation Procedure

Following the Dry Weather Screening performed under Section 2.3.4.7 of the Permit (and Section 5 of this IDDE Plan), the procedure outlined within this Catchment Investigation Procedure will be used to trace the source of the potential discharge within the catchment area stormwater outfalls and interconnections that were identified to have evidence of illicit discharges. Dry weather screening was performed in Spring 2020; therefore, required catchment investigations will begin in Year 3 of the Permit and will be completed by Year 7 as required in Section 2.3.4.8 of the Permit.

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 and interconnection 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.

6.1 System Vulnerability Factors

EH&S 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:

- Plans related to the construction of the drainage network
- Plans related to the construction of the sewer drainage network
- Prior work on storm drains or sewer lines
- Complaint records related to SSOs and sanitary sewer surcharges

Based on the review of this information, the presence of any of the following **System Vulnerability Factors (SVFs)** will be identified for each catchment:

- History of SSOs, including, but not limited to, those resulting from wet weather, high water table, or fat/oil/grease blockages
- Common or twin-invert manholes serving storm and sanitary sewer alignments
- Common trench construction serving both storm and sanitary sewer alignments
- Crossings of storm and sanitary sewer alignments where the sanitary system is shallower than the storm drain system
- Sanitary sewer alignments known or suspected to have been constructed with an underdrain system
- Inadequate sanitary sewer level of service (LOS) resulting in regular surcharging, customer back-ups, or frequent customer complaints
- Areas formerly served by combined sewer systems
- 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
- Sewer pump/lift stations, siphons, or known sanitary sewer restrictions where power/equipment failures or blockages could readily result in SSOs
- Any sanitary sewer and storm drain infrastructure greater than 40 years old

An SVF inventory will be documented for each catchment (see **Table 6-1**), retained as part of this IDDE Plan, and included in the Annual Report.

Table 6-1. Outfall Catchment System Vulnerability Factor (SVF) Inventory

Outfall ID	Receiving Water	Preliminary Review Following Year 2 Dry Weather Screening			System Vulnerability Factors									
		Priority Ranking (High or Excluded)	Dry Weather Flow Observed? (Spring 2020, Year 2) (Yes/No)	Junction Manhole Located Upstream? (Yes/No)	1 History of SSOs (Yes/No)	2 Common or Twin Invert Manholes (Yes/No)	3 Common Trench Construction (Yes/No)	4 Storm/ Sanitary Crossings (Sanitary Above) (Yes/No)	5 Sanitary Lines with Underdrains (Yes/No)	6 Inadequate Sanitary Level of Service (Yes/No)	7 Areas Formerly Served by Combined Sewers (Yes/No)	8 Sanitary Infrastructure Defects (Yes/No)	9 SSO Potential In Event of System Failures (Yes/No)	10 Sanitary and Storm Drain Infrastructure >40 years Old (Yes/No)
Outfall 01	Town of Bridgewater	Excluded			No						No			
Outfall 2	Town of Bridgewater	Excluded			No									
Outfall 03	Town of Bridgewater	Excluded			No									
Outfall 04	Town River	Excluded			No									
Outfall 05	Town of Bridgewater	Excluded			No									
Outfall 06	MBTA	High	No	Yes	No									
Outfall 07A	MBTA	High	No	Yes	No									
Outfall 07B	MBTA	High	Yes	Yes	No									
Outfall 08A	MBTA	High	No	Yes	No									
Outfall 08B	MBTA	High	No	Yes	No									
Outfall 09	Town of Bridgewater	High	Yes	Yes	No									
Outfall 10	Town of Bridgewater	High	Yes	No	No									
Outfall 11	Town of Bridgewater	High	No	No	No									
Outfall 12	Town of Bridgewater	Excluded			No									
Outfall 13	Town of Bridgewater	Excluded			No									
Outfall 14	Town of Bridgewater	High	Yes	Yes	No									
Outfall 15	Town River	Excluded			No									
Outfall 16	South Brook	High	No	Yes	No									
Outfall 17	South Brook	High	No	No	No									
Outfall 18	South Brook	High	No	Yes	No									

Outfall 19	South Brook	High	No	No	No										
Outfall 20	Town River	Excluded			No										
Outfall 21	Town River	Excluded			No										
Outfall 22	Town River	Excluded			No										
Outfall 23	Town River	Excluded			No										
Outfall 24	Town of Bridgewater	High	Yes	Yes	No										
Outfall 25A	MBTA	High	Yes	Yes	No										
Outfall 25B	MBTA	High	Yes	Yes	No										
Outfall 26	MBTA	High	No	No	No										
Outfall 27	Town River	Excluded			No										
Outfall 28	Town River	Excluded			No										
Outfall 29	Town River	High	No		No										
Outfall 30	Town River	High	Yes	Yes	No										
Outfall 31	MBTA	High	No	Yes	No										
Outfall 32	Town of Bridgewater	High	Yes	Yes	No										
Outfall 33	Town of Bridgewater	High	No	Yes	No										
Outfall 34	Town of Bridgewater	High	No	Yes	No										
Outfall 35	Town of Bridgewater	High	No	Yes	No										
Outfall 37	South Brook	High	No	No	No										
Outfall 38	South Brook	High	No	No	No										
Outfall 39	South Brook	High	No	Yes	No										
Outfall 40	South Brook	Excluded			No										
Outfall 41	MBTA	High	No	Yes	No										

Presence/Absence Evaluation Criteria:

1. History of SSOs, including, but not limited to, those resulting from wet weather, high water table, or fat/oil/grease blockages
2. Common or twin-invert manholes serving storm and sanitary sewer alignments
3. Common trench construction serving both storm and sanitary sewer alignments
4. Crossings of storm and sanitary sewer alignments where the sanitary system is shallower than the storm drain system
5. Sanitary sewer alignments known or suspected to have been constructed with an underdrain system
6. Inadequate sanitary sewer level of service (LOS) resulting in regular surcharging, customer back-ups, or frequent customer complaints
7. Areas formerly served by combined sewer systems
8. 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
9. Sewer pump/lift stations, siphons, or known sanitary sewer restrictions where power/equipment failures or blockages could readily result in SSOs
10. Any sanitary sewer and storm drain infrastructure greater than 40 years old

6.2 Dry Weather Manhole Inspections

BSU will implement a dry weather storm drain network investigation that involves systematically and progressively observing, sampling and evaluating key junction manholes in BSU's storm sewer system to determine the approximate location of suspected illicit discharges or SSOs. Dry weather manhole inspections should be coordinated with the catch basin inspection and cleaning procedure.

Facilities Management will be responsible for implementing the dry weather manhole inspection program and EH&S will make updates to documentation as necessary. Infrastructure information will be incorporated into the storm system map, and catchment delineations will be refined based on the field investigation, where appropriate. The SVF inventory will also be updated based on information collected during the field investigations.

Important terms related to the dry weather manhole inspection program are defined by the MS4 Permit as follows:

- **Junction Manhole** is a manhole or structure with two (2) or more inlets accepting flow from two (2) or more storm sewer 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 (1) 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

During dry weather, field crews will systematically investigate each **key junction manhole** within BSU's storm sewer system 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 dry weather manhole inspection program will proceed, in order, based on the updated outfall and interconnection priority ranking for all catchments even where no evidence of an illicit discharge is observed at the outfall or interconnection during dry weather screening and sampling as described in **Section 6** of this IDDE Plan.

The manhole inspection methodology will be conducted in one (1) of two (2) ways (or a combination of both):

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

For most catchments, manhole inspections will proceed from the outfall/interconnection moving up into the system. Inspection of the system should be coordinated with the inspection portion of the catch basin inspection and cleaning procedure.

However, 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 or interconnection, and only a map of the storm drain system is required. Moving down the system requires more advance 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.

Inspection of key junction manholes will proceed as follows:

1. Manholes will be opened and inspected for visual and olfactory evidence of illicit connections. A sample field inspection form is provided in **Appendix C**.

2. If flow is observed, a sample will be collected and analyzed at a minimum for ammonia, chlorine, and surfactants. Field kits can be used for these analyses. 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, etc.).

3. 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. If contamination is suspected, notify EH&S. Chemical analysis will be required to determine if the materials comply with MassDEP Hazardous Waste Regulations, 310 CMR 30.000. Chemical analysis required will depend on suspected contaminants. Note the identification number of the catch basin on the sample label and note sample collection on the Catch Basin Inspection Form.

5. Key junction and subsequent manhole inspections will proceed until the location of suspected illicit discharges or SSOs can be isolated to a pipe segment between two (2)manholes.

6. If no evidence of an illicit discharge is found, catchment investigations will be considered complete upon completion of key junction manhole sampling.

Where catchments do not contain junction manholes, the dry weather screening and sampling as described in Section 6 will be considered as meeting the manhole inspection requirement. Investigations in these catchments may be considered complete where dry weather screening reveals no flow, no evidence of illicit discharges or SSOs is indicated through sampling results or visual or olfactory means, and no wet weather SVF are identified.

6.3 Wet Weather Outfall/Interconnection Sampling

Where a minimum of one (1) System Vulnerability Factor (SVF) is identified based on previous information or the catchment investigation, a wet weather investigation must also be conducted at the associated outfall/interconnection. EH&S will be responsible for implementing the wet weather outfall/interconnection sampling program and making updates as necessary.

Outfalls and interconnections will be inspected and sampled under wet weather conditions, to the extent necessary, to determine whether wet weather-induced high flows in sanitary sewers result in discharges of sanitary flow to BSU's storm sewer system.

Wet weather sampling will proceed as follows:

1. At least one (1) wet weather sample will be collected at the outfall/interconnection for the same parameters required during dry weather screening.

2. Wet weather sampling and screening will occur during or after a storm event of sufficient depth or intensity to produce a stormwater discharge at the outfall/interconnection. The MS4 Permit does not require a minimum rainfall event to trigger wet weather sampling. To the extent feasible, sampling should occur during the spring (March through June) when groundwater levels are relatively high.

3. If wet weather 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 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.

6.4 Source Isolation and Confirmation

Once the source of an illicit discharge is approximated between two (2) 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) for these and other IDDE methods will be provided in **Appendix F**.

Public notification is an important aspect of a detailed source investigation program. Prior to smoke testing, dye testing, or TV inspections, EH&S will notify faculty, staff, and students in the affected area by sending emails and hanging notifications in building lobbies.

For outfalls and interconnections that contain evidence of an illicit discharge, catchment investigations will be considered complete upon confirmation of all illicit sources.

6.5 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., caulk of 2 inches in height, weirs/plates, or other temporary barriers) within manholes to form a temporary dam that collects any intermittent flows that may occur. Care should be taken not to fully block pipe openings in the event it rains before the sandbags/barriers are retrieved. Sandbags/barriers are typically left in place for no more than 48 hours and should only be installed when dry weather is forecast. Any flow that has collected behind the sandbags/barriers within the 48-hour period can be assessed using visual observations or by sampling. If no flow collects behind the sandbags/barriers, the sandbags/barriers are removed and the upstream pipe network can be ruled out as a source of the intermittent discharge. Finding appropriate durations of dry weather and the need for multiple trips to each manhole makes this method both time-consuming and somewhat limiting.

6.6 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, from internal plumbing fixtures, 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 faculty, staff, students, area residents and business owners, as well as the campus Police and the Bridgewater Fire Department. The smoke used is non-toxic but may cause minor irritation of respiratory passages. Building users with respiratory conditions may need to be monitored or evacuated from the area of testing altogether to ensure safety during testing.

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.

This technique works best when the discharge is confined to the upper reaches of the storm drain network, where pipe diameters are too small for video inspection, and where gaining access to multiple properties makes dye testing problematic.

6.7 Dye Testing

Dye testing involves flushing non-toxic dye into plumbing fixtures such as toilets, showers, sinks, and shop drains, and observing nearby storm drains and sewer manholes as well as stormwater outfalls for the presence of the dye. The discovery of dye in the storm drain, rather than the sanitary sewer, conclusively determines that the illicit connection exists. Like smoke testing, it is important to inform faculty, staff, and students. Campus Police, the Bridgewater Fire Department, campus Health Services, and the Bridgewater Health Department 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 (2) or more people is needed to perform dye testing (ideally, all with two-way radios). One (1) 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 and sanitary 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 buildings.

6.8 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 flows and leaks within the pipe that may indicate an illicit discharge, as well as cracks and other pipe damage that may enable sewage or contaminated water to flow into the storm drain pipe. While this tool is both effective and usually definitive, it can be costly and time-consuming when compared to other source isolation techniques. Video inspection will not detect all types of discharges, particularly when the illicit connection is not flowing at the time of the video survey (intermittent illicit discharges) and oftentimes when the illicit connection is submerged. Standing water and debris in the storm drainpipe may limit the length of pipe that can be easily inspected using this method.

6.9 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 dry weather discharges suggests there is a possible illicit discharge. Optical brightener monitoring involves placing an absorbent, unbleached cotton pad in a wire mesh trap and securing it in a pipe, manhole, catch basin, or inlet to capture intermittent dry weather flows. The pad is retrieved after several days of dry weather and observed under fluorescent light to determine the presence/absence of brighteners during the monitoring period. This method is most reliable for undiluted wash waters.

6.10 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.

6.11 Illicit Discharge Removal

When the specific source of an illicit discharge is identified, BSU will exercise its authority as necessary to require its removal as expeditiously as possible. 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
- Estimate of the volume of flow removed

6.12 Confirmatory Outfall/Interconnection 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.

6.13 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. After re-prioritization, dry weather screening will be conducted, starting with **High Priority** outfalls/interconnections, followed by **Low Priority** outfalls/interconnections. Ongoing wet weather screening and sampling will also be conducted at outfalls and interconnections 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.

7.0 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 E**. The frequency and type of training will be included in the Annual Report.

8.0 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:

- Progress on Mapping Storm Sewer System
- Number of SSOs and illicit discharges identified and removed
- Number and percent of total outfall and interconnection catchments served by BSU's storm sewer system evaluated using the catchment investigation procedure
- Number of dry weather outfall/interconnection inspections/screenings
- Number of wet weather outfall/interconnection inspections/sampling events
- Number of enforcement notices issued
- All dry weather and wet weather screening and sampling results
- Estimate of the volume of sewage removed, as applicable
- 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

IDDE LEGAL AUTHORITY (BSU IDDE POLICY)

Bridgewater State University

Illicit Discharge Detection and Elimination (IDDE) Policy

June 2019

Responsible Officer: Environmental Health and Safety Officer

1. PURPOSE

The purpose of this policy is to establish methods for controlling the introduction of pollutants into the Bridgewater State University (BSU) separate storm sewer system to comply with requirements of the 2016 National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (MS4) in Massachusetts, as implemented through the United States Environmental Protection Agency (EPA). The 2016 Small MS4 Permit was signed by EPA and the Massachusetts Department of Environmental Protection (MassDEP) on April 4, 2016 and became effective on July 1, 2018 in compliance with the provisions of the Clean Water Act (CWA) and the Massachusetts Clean Waters Act, as amended (M.G.L. Chap.21 §§ 26-53).

2. AUTHORITY

The President has the authority to manage Bridgewater State University.

3. DEFINITIONS

Best Management Practices (BMPs): Schedules of activities, prohibitions of practices, general good housekeeping practices, pollution prevention and educational practices, maintenance procedures, and other management practices, including both structural and nonstructural practices, to prevent or reduce the discharge of pollutants directly or indirectly to stormwater, receiving waters, or stormwater conveyance systems. BMPs also include treatment practices, operating procedures, and practices to control site runoff, spillage or leaks, sludge or water disposal, or drainage from raw materials storage.

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

Contractor: An individual or company, including a subcontractor, hired to perform services on BSU property.

Illicit Discharge: Any discharge to the separate storm sewer system that is not comprised entirely of stormwater, except for the allowed discharges provided in the 2016 Small MS4 Permit.

Pollutant: Anything which causes or contributes to pollution. Pollutants may include, but are not limited to: paints, varnishes, and solvents; oil and other automotive fluids; non-hazardous liquid and solid wastes and yard wastes; refuse, rubbish, garbage, litter, or other discarded or abandoned objects, ordinances, and accumulations, so that same may cause or contribute to pollution; floatables; pesticides, herbicides, and fertilizers; hazardous substances and wastes; sewage, fecal

coliform and pathogens; dissolved and particulate metals; animal wastes; wastes and residues that result from constructing a building or structure; and noxious or offensive matter of any kind.

Sanitary Sewer Overflow (SSO): A discharge of untreated sanitary wastewater from a sanitary sewer.

Storm Drain System: Facilities by which storm water is collected and/or conveyed, including but not limited to any roads with drainage systems, streets, gutters, curbs, inlets, piped storm drains, pumping facilities, retention and detention basins, natural and human-made or altered drainage channels, reservoirs, and other drainage structures.

Storm Water: Any surface flow, runoff, and drainage consisting entirely of water from any form of natural precipitation and resulting from such precipitation.

Visitor: A person who is not enrolled at or compensated by BSU.

Wastewater: Any water or other liquid, other than uncontaminated storm water, discharged from a facility.

4. APPLICABILITY

This policy is applicable to all students, faculty, staff, contractors, and visitors of BSU.

5. POLICY

No employee, student, visitor, contractor or department at BSU shall cause or allow discharges into BSU's storm drain system or watercourses which are not composed entirely of stormwater, except for the allowed discharges provided in the 2016 Small MS4 Permit (see Section 9 for exclusions).

Prohibited discharges include, but are not limited to: oil, anti-freeze, grease, chemicals, wash water, paint, animal waste, garbage, and litter. The spilling, dumping, or disposal of materials other than stormwater to the storm drain system is prohibited.

6. PROCEDURES

a. Field Screening

Field observations of outfalls and interconnections shall be conducted at least once every five (5) years during dry weather conditions. Observations shall be recorded using the current inspection form and information entered into a tracking database.

If flow is observed, or evidence suggests that illicit discharges may exist, further investigation shall be administered by any of the following methods:

i. Tracing discharge up storm drain system;

ii. Taking a sample of discharge for analysis in order to determine if a pollutant is present and identify the pollutant;
iii. Implement best management practices to eliminate illicit discharges;
iv. Scheduling follow up observations; and
v. Any other appropriate measures deemed necessary.

b. Notification of Spills and Illicit Discharges

Once a spill or illicit discharge has been observed, the incident shall be reported to the Environmental Health and Safety Officer. If unavailable, contact Facilities Management. Failure to provide notification of the incident shall be a violation of this policy.

Once notified, BSU shall take immediate action to perform an initial investigation and take appropriate measures to prevent further discharge and begin remediation of pollution.

c. Elimination of Illicit Discharges

Upon detection of an illicit discharge, the illicit discharge shall be located, identified and eliminated as expeditiously as possible. The illicit discharge shall be eliminated within 60 days of its identification. If this schedule is not possible, an expeditious schedule for its elimination shall be established and actions necessary for elimination shall be immediately commenced. All reasonable and prudent measures to minimize the discharge of pollutants to and from BSU shall be taken.

The period between identification and elimination of an illicit discharge is not a grace period. Discharges from BSU that are mixed with an illicit discharge are not authorized and remain unlawful until eliminated.

d. Illicit Discharge Tracking

The following information shall be tracked for each confirmed source:

i. Location of the discharge and its source(s)
ii. Description of the discharge
iii. Method of discovery
iv. Date of discovery
v. Date of elimination, mitigation or enforcement action OR planned corrective measures and a schedule for completing the illicit discharge removal
vi. Estimate of the volume of flow removed

e. Elimination of Sanitary Sewer Overflows (SSOs)

The sanitary sewer system that serves BSU is owned by the Town of Bridgewater. SSOs have not observed on campus for at least the past ten (10) years. Therefore, SSOs are not a high concern for BSU, although they have measures in place in the case of an incident or line break. Upon detection of an SSO, BSU shall notify the Town of Bridgewater immediately and coordinate with the Town to eliminate the SSO as expeditiously as possible. BSU shall assist the Town with taking interim mitigation measures to minimize the discharge of pollutants to and from BSU until elimination is completed.

The period between detection and elimination of a discharge from the SSO is not a grace period. Discharges that are mixed with an SSO are not authorized and remain unlawful until eliminated.

f. Sanitary Sewer Overflow Reporting

Upon becoming aware of an SSO to the storm drain system, BSU shall coordinate with the Town of Bridgewater to provide oral notice to EPA within 24 hours, and written notice to EPA and MassDEP within five (5) days.

BSU shall assist the Town of Bridgewater with providing the following information that shall be contained in the notice:

i. Location (approximate street crossing/address and receiving water, if any)
ii. Clear statement of whether the discharge entered a surface water directly or entered the MS4
iii. Date(s) and time(s) of each known SSO occurrence (i.e., beginning and end of any known discharge)
iv. Estimated volume(s) of the occurrence
v. Description of the occurrence indicating known or suspected cause(s)
vi. Mitigation and corrective measures completed with dates implemented
vii. Mitigation and corrective measures planned with implementation schedules

g. Enforcement

When a violation of this policy has been detected, BSU may order compliance, by either verbal notice or written notice, to the responsible party. Such notice may require without limitation:

i. The performance of monitoring, analyses, and reporting;
ii. The elimination of illicit connections or discharges;
iii. Cessation of any violating discharges, practices, or operations;
iv. The abatement or remediation of stormwater pollution or contamination hazards and the restoration of any affected property;

v. Payment of any fee, penalty, or fine assessed against BSU to cover remediation cost;
vi. The implementation of source control or treatment BMPs; and
vii. Disciplinary action up to and including dismissal, where appropriate.

The listed requirements will be at the expense of the responsible party.

In the event that adequate measures are not initiated, BSU may issue work orders to correct the violation and bill the responsible party for expenses incurred.

If additional measures are required for enforcement, the President will be notified.

h. Training/Education

A training program for Stormwater Pollution Prevention/Good Housekeeping and Illicit Discharge Detection & Elimination (IDDE) will be presented for Facilities Management employees as well as during new employee orientation for Facilities Management staff.

Educational materials for Stormwater Pollution Prevention and Illicit Discharge Detection & Elimination will be distributed through various forms of media to the members of the BSU community.

7. RESPONSIBILITIES

Environmental Health and Safety Officer: Responsible for administration, implementation and enforcement of this policy.

All students, faculty, staff, contractors, and visitors of BSU are responsible for abiding by this policy and reporting illicit discharges to the proper authority.

8. SANCTIONS

Pending collective bargaining with relevant Unions representing BSU employees, sanctions may be commensurate with the severity and/or frequency of the offense and may include termination of employment.

Regarding students, sanctions will be commensurate with the severity and/or frequency of the offense and may include suspension or expulsion.

9. EXCLUSIONS

The following categories of non-stormwater discharges to BSU's storm drain system are allowed under the 2016 Small MS4 Permit as they are not considered illicit discharges unless BSU, EPA or MassDEP identifies any category or individual discharge of non-stormwater discharges as a significant contributor of pollutants to the storm drain system:

a. Water line flushing
b. Landscape irrigation
c. Diverted stream flows
d. Rising ground water
e. Uncontaminated ground water infiltration (as defined at 40 CFR 35.2005(20))
f. Uncontaminated pumped ground water
g. Discharge from potable water sources
h. Foundation drains
i. Air conditioning condensation
j. Irrigation water, springs
k. Water from crawl space pumps
l. Footing drains
m. Lawn watering
n. Individual resident car washing
o. Flows from riparian habitats and wetlands
p. De-chlorinated swimming pool discharges
q. Street wash water
r. Residential building wash waters without detergents

Discharges or flows from firefighting activities are allowed and need only be addressed where they are identified as significant sources of pollutants to waters of the United States.

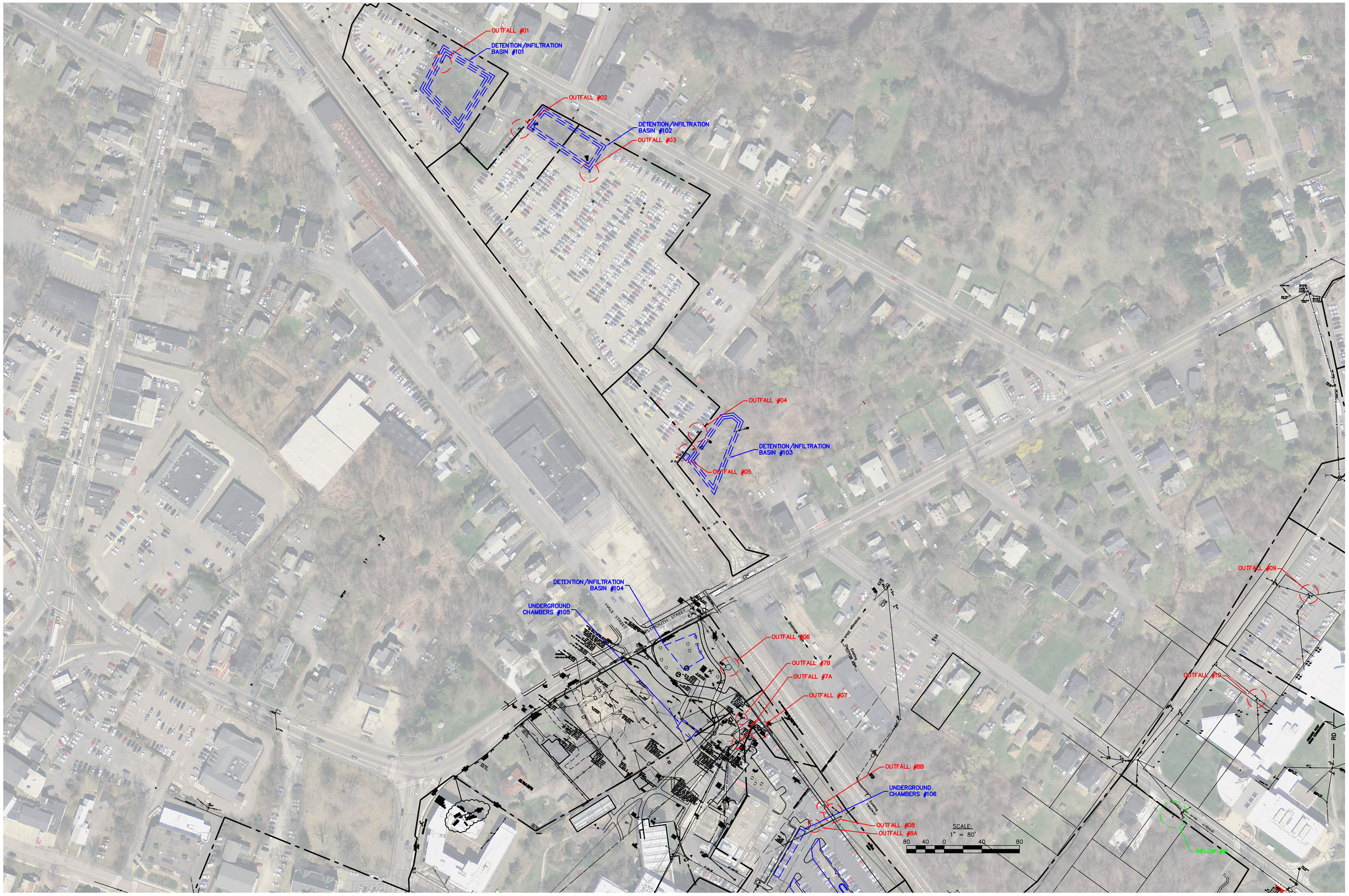
Discharges that are covered under a separate individual or general NPDES permit for non-stormwater discharges are also allowed.

10. INTERPRETATION

Authority to interpret this policy rests with the President and is generally delegated to the Vice President of Operations.

APPENDIX B

BSU STORM SYSTEM MAPPING



Nitsch Engineering

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2 Center Plaza, Suite 430
Boston, MA 02108
T: (617) 338-0063
F: (617) 338-6472

- Civil Engineering
- Land Surveying
- Transportation Engineering
- Structural Engineering
- Green Infrastructure
- Planning
- GIS

NITSCH PROJECT #	11917
FILE:	11917.DWG
SCALE:	1"=
DATE:	06/26/2020
PROJECT MANAGER:	JLJ
SURVEYOR:	
DRAFTED BY:	AMM
CHECKED BY:	JLJ

REV.	COMMENTS	DATE
	REVISIONS	

OUTFALL AND BMP MAPPING - NORTHWEST

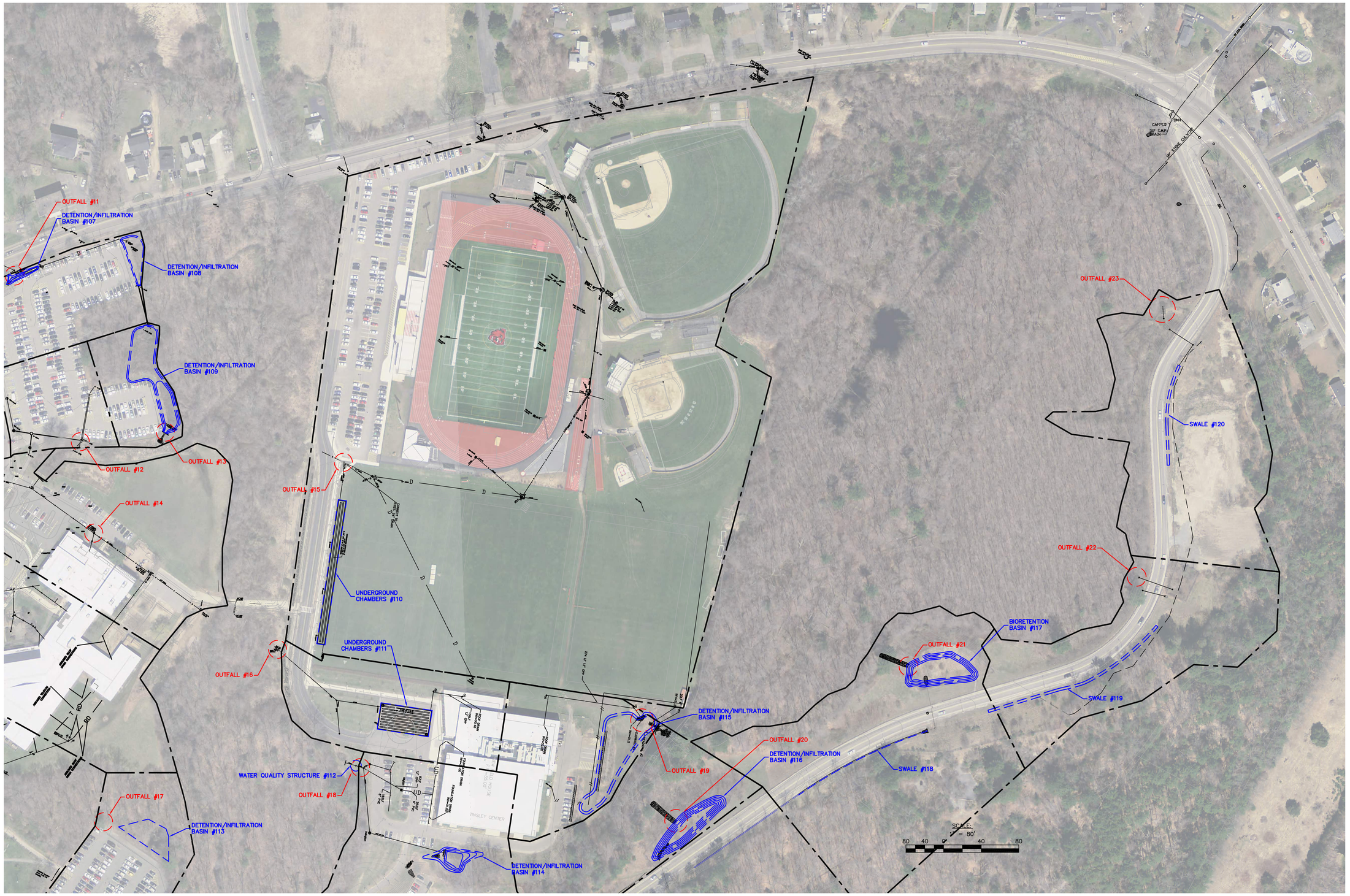
Bridgewater State University
131 Summer St. Bridgewater, MA 02324

PREPARED FOR:
Bridgewater State University
131 Summer St. Bridgewater, MA 02324

SHEET: 2

1.1

OF 5 REV.



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DATE:	06/26/2020
PROJECT MANAGER:	JLJ
SURVEYOR:	
DRAFTED BY:	AMM
CHECKED BY:	JLJ

REV.	COMMENTS	DATE
	REVISIONS	

OUTFALL AND BMP MAPPING - NORTHEAST

BRIDGEWATER STATE UNIVERSITY
131 SUMMER STREET, BRIDGEWATER, MA 02324

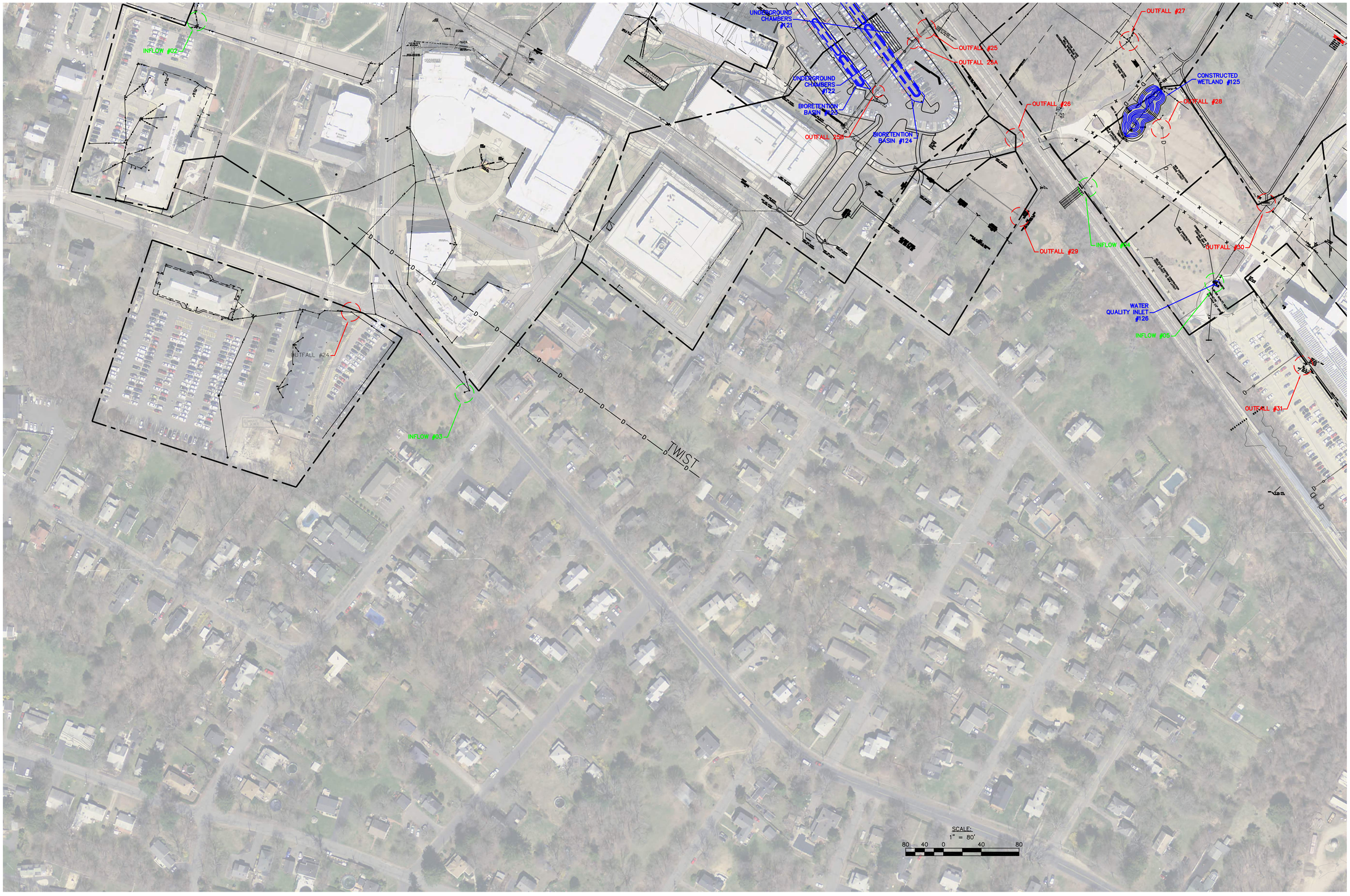
PREPARED FOR:

BRIDGEWATER STATE UNIVERSITY
131 SUMMER ST, BRIDGEWATER, MA 02324

SHEET: 3

1.2

OF 5 REV.



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SCALE:	1"=
DATE:	06/26/2020
PROJECT MANAGER:	JLJ
SURVEYOR:	
DRAFTED BY:	AMM
CHECKED BY:	JLJ

REV.	COMMENTS	DATE
	REVISIONS	

OUTFALL AND BMP MAPPING - SOUTHWEST

BRIDGEWATER STATE UNIVERSITY
131 SUMMER ST. BRIDGEWATER, MA 02324

PREPARED FOR:

BRIDGEWATER STATE UNIVERSITY
131 SUMMBER ST. BRIDGEWATER, MA 02324

SHEET: 4

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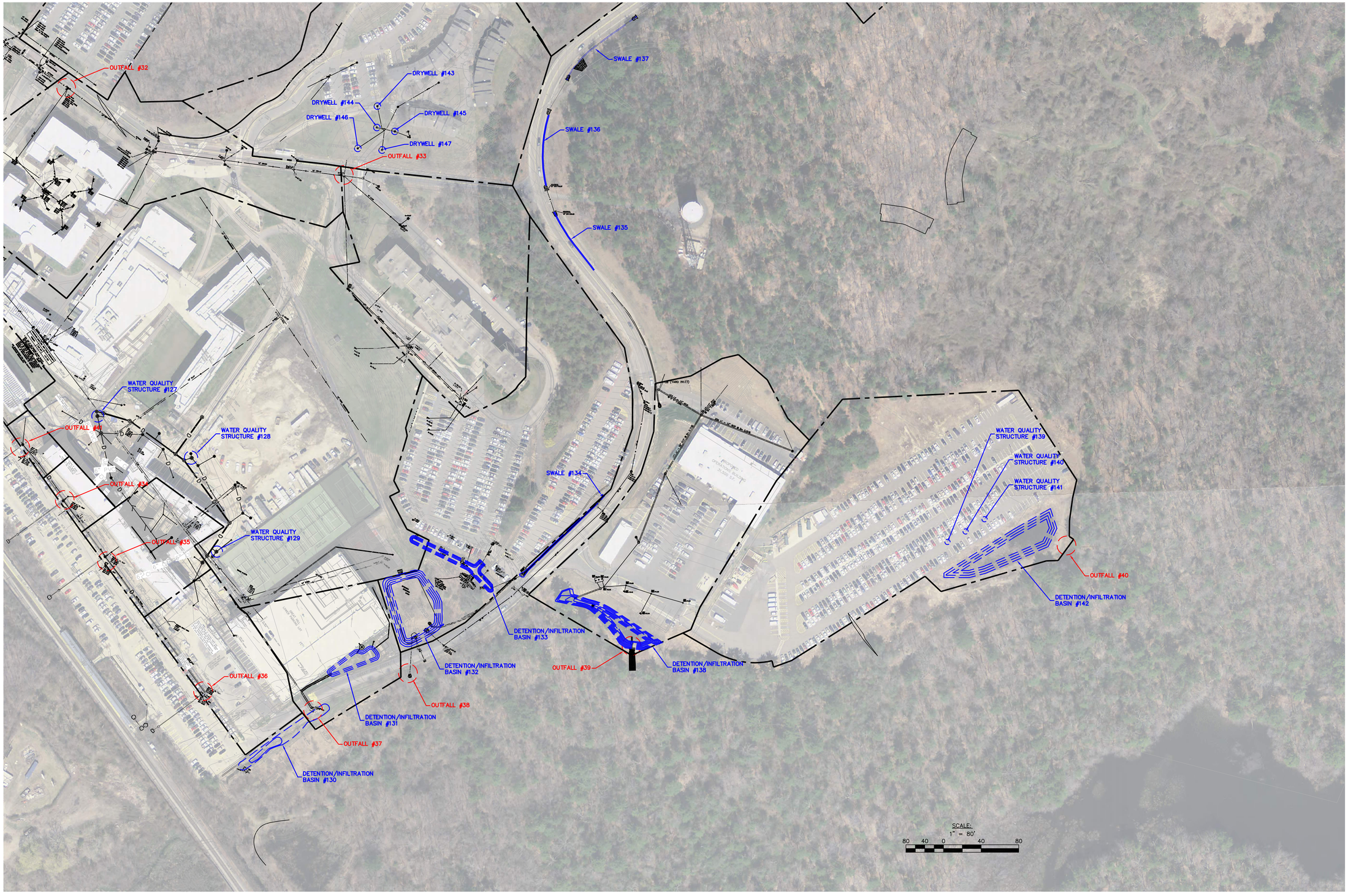
OF 5 REV.



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SURVEYOR:	
DRAFTED BY:	AMM
CHECKED BY:	JLJ

REV.	COMMENTS	DATE
	REVISIONS	

OUTFALL AND BMP MAPPING - SOUTHEAST

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131 SUMMER ST. BRIDGEWATER, MA 02324

SHEET: 5

1.4

OF 5 REV.

APPENDIX C

FIELD FORMS
SAMPLE BOTTLE LABELS (To be provided by laboratory once selected)
CHAIN OF CUSTODY FORMS (To be provided by laboratory once selected)

GENERAL OUTFALL INFORMATION						DRY WEATHER SCREENING 6/9/2020					Maintenance Needs
OUTFALL NUMBER	LOCATION	OUTFALL TYPE	RECEIVING SYSTEM / WATER	MAP SHEET	OUTFALL LOCATION NOTES	CATEGORY	DRY WEATHER SCREENING REQUIRED?	VISUALLY SCREENED	WATER QUALITY SAMPLE TAKEN	NOTES/OBSERVATIONS	
1	SPRING STREET LOT	PIPE DISCHARGE	SURFACE WATER	1.1 NW		EXCLUDED	NO				
2	SPRING STREET LOT	PIPE DISCHARGE	TOWN MS4	1.1 NW	Outfall location adjusted to basin inlet due to limited access to basin outlet	EXCLUDED	NO				
3	SPRING STREET LOT	PIPE DISCHARGE	TOWN MS4	1.1 NW	Outfall location adjusted to basin inlet due to limited access to basin outlet	EXCLUDED	NO				
4	SPRING STREET LOT	PIPE DISCHARGE	SURFACE WATER	1.1 NW	Outfall location adjusted to basin inlet due to limited access to basin outlet	EXCLUDED	NO				
5	SPRING STREET LOT	PIPE DISCHARGE	SURFACE WATER	1.1 NW	Outfall location adjusted to basin inlet due to limited access to basin outlet	EXCLUDED	NO				
6	WEST CAMPUS LOT	PIPE DISCHARGE	SURFACE WATER / MBTA	1.1 NW	Discharge location is swale along MBTA tracks - confirm this is part of MBTA right-of-way and associated MS4 system	HIGH PRIORITY	YES	X		Outfall dry - no flow observed.	
7	WEST CAMPUS LOT	MANHOLE	SURFACE WATER / MBTA	1.1 NW	Discharge location is swale along MBTA tracks - confirm this is part of MBTA right-of-way and associated MS4 system	HIGH PRIORITY	YES			Not screened, screened two upstream manholes that only contain flow from campus instead (7A and 7B)	
7A	WEST CAMPUS LOT	MANHOLE	SURFACE WATER / MBTA	1.1 NW	In the parking lot in front of the guard shack. Manhole cover says sewer but it is drain.	HIGH PRIORITY	YES	X			
7B	WEST CAMPUS LOT	MANHOLE	SURFACE WATER / MBTA	1.1 NW	In the lawn, across the parking lot from outfall 7	HIGH PRIORITY	YES	X	X		
8	WEST CAMPUS LOT	MANHOLE	SURFACE WATER / MBTA	1.1 NW	Discharge location is swale along MBTA tracks - confirm this is part of MBTA right-of-way and associated MS4 system	HIGH PRIORITY	YES	X		Visually screened only - flow observed. Not sampled, two upstream manholes that only contain flow from campus were screened instead (8a and 8b)	
8A	WEST CAMPUS LOT	MANHOLE	SURFACE WATER / MBTA	1.1 NW	Discharge from underground chambers in the parking lot	HIGH PRIORITY	YES	X		Standing water in manhole, no flow	
8B	WEST CAMPUS LOT	MANHOLE	SURFACE WATER / MBTA	1.1 NW	Discharge from pipe running through campus	HIGH PRIORITY	YES	X		Standing water in manhole, no flow	
9	BURNELL & HART HALLS	MANHOLE	TOWN MS4	1.1 NW	Connection to the right of way in Hooper Street	HIGH PRIORITY	YES	X	X	Incoming flow observed in manhole - Refer to Dry Weather Screening Sheet for field and lab testing results	
10	BURNELL & HART HALLS	MANHOLE	TOWN MS4	1.1 NW	Connection to the right of way in Hooper Street	HIGH PRIORITY	YES	X	X	Incoming flow observed in manhole - Refer to Dry Weather Screening Sheet for field and lab testing results	
11	HOOPER STREET LOT	CATCH BASIN	TOWN MS4	1.2 NE	Catch basin connection to Town MS4, located in BSU swale	HIGH PRIORITY	NO	X		No flow observed in swale. Catch basin sump held standing water, but no active flow observed.	
12	HOOPER STREET LOT	PIPE DISCHARGE	SURFACE WATER / TOWN	1.2 NE		EXCLUDED	YES				

OUTFALL NUMBER	LOCATION	OUTFALL TYPE	RECEIVING SYSTEM / WATER	MAP SHEET	OUTFALL LOCATION NOTES	CATEGORY	DRY WEATHER SCREENING REQUIRED?	VISUALLY SCREENED	WATER QUALITY SAMPLE TAKEN	NOTES/OBSERVATIONS	
13	HOOPER STREET LOT	WEIR OVERFLOW	SURFACE WATER / TOWN	1.2 NE		EXCLUDED	YES				
14	BURNELL HALL	CATCH BASIN	TOWN MS4	1.2 NE	Catch basin located adjacent to loading dock	HIGH PRIORITY	YES	X	X	Flow observed in catch basin - piped flow in from direction of building - Refer to Dry Weather Screening Sheet for field and lab testing results	
15	ATHLETICS	MANHOLE	SURFACE WATER?	1.2 NE	Underground detention and field drainage appear to tie in here	EXCLUDED	NO				
16	ATHLETICS	PIPE DISCHARGE	SURFACE WATER	1.2 NE		HIGH PRIORITY	YES	X		Manhole outlet partially submerged but no active flow observed. Downstream outfall appears to be partially collapsed with no active flow observed.	
17	MOAKLEY CENTER LOT	PIPE DISCHARGE	SURFACE WATER	1.2 NE		HIGH PRIORITY	YES	X		Parking lot discharges by surface flow to curb cuts at the north end of the parking lot. There is a wetland area at the north end of the site with a natural pond that appears to have no outlet	
18	ATHLETICS	PIPE DISCHARGE	SURFACE WATER	1.2 NE		HIGH PRIORITY	YES	X		Outfall partially submerged, but no active flow observed.	
19	ATHLETICS	PIPE DISCHARGE	SURFACE WATER	1.2 NE	Outlet of pond behind Tinsley Center	HIGH PRIORITY	YES	X		Outfall dry - no flow observed.	
20	GREAT HILL DRIVE	PIPE DISCHARGE	SURFACE WATER	1.2 NE	Outlet of pond along Great Hill Road	EXCLUDED	NO				
21	GREAT HILL DRIVE	PIPE DISCHARGE	SURFACE WATER	1.2 NE	Outlet of pond along Great Hill Road	EXCLUDED	NO				
22	GREAT HILL DRIVE	PIPE DISCHARGE	SURFACE WATER	1.2 NE	Outlet of pond along Great Hill Road	EXCLUDED	NO				
23	GREAT HILL DRIVE	PIPE DISCHARGE	SURFACE WATER	1.2 NE	Outlet of pond along Great Hill Road	EXCLUDED	NO				
24	WOODWARD HALL / GROVE STREET	MANHOLE	TOWN MS4	1.3 SW	Piped connection to Grove Street	HIGH PRIORITY	YES	X	X	Screened, relatively heavy flow, brown water	
25	WEST CAMPUS LOT	MANHOLE	SURFACE WATER / MBTA	1.3 SW	Discharge location is swale along MBTA tracks - confirm this is part of MBTA right-of-way and associated MS4 system	HIGH PRIORITY	YES	X		Visually screened only - sampled, two upstream manholes that only contain flow from campus were screened instead (25a and 25b).	
25A	WEST CAMPUS LOT	MANHOLE	SURFACE WATER / MBTA	1.3 SW	Discharge from rain gardens and underground chambers	HIGH PRIORITY	YES	X	X	Moderate clear flow	
25B	WEST CAMPUS LOT	MANHOLE	SURFACE WATER / MBTA	1.3 SW	Discharge from pipes from the rest of campus	HIGH PRIORITY	YES	X	X	Moderate clear flow	
26	WEST CAMPUS LOT	CATCH BASIN	SURFACE WATER / MBTA	1.3 SW		HIGH PRIORITY	YES	X		Catch basin sump held standing water, but no active flow observed.	
27	UNIVERSITY PARK	PIPE DISCHARGE	SURFACE WATER	1.3 SW		EXCLUDED	NO				
28	UNIVERSITY PARK	PIPE DISCHARGE	SURFACE WATER	1.3 SW		EXCLUDED	NO				
29	WEST CAMPUS LOT	PIPE DISCHARGE	SURFACE WATER	1.3 SW	Apparent discharge into ditch - confirm	HIGH PRIORITY	YES	X		Catch basin sump held standing water, but no active flow observed.	
30	UNIVERSITY PARK	MANHOLE	SURFACE WATER	1.3 SW	Monitoring location moved upstream to next manhole due to partially buried outfall.	HIGH PRIORITY	YES	X	X	Incoming flow observed in manhole - Refer to Dry Weather Screening Sheet for field and lab testing results	
31	WEYGAND & CRIMSON HALLS	TRENCH DRAIN	MBTA MS4	1.3 SW	Trench drain system on BSU campus connects to DMH that discharges to MBTA property	HIGH PRIORITY	YES	X		Trench drain dry - no flow observed.	
32	BURRILL AVENUE	MANHOLE	TOWN MS4	1.4 SE	Piped connection to Burrill Ave	HIGH PRIORITY	YES	X	X	moderate clear flow - unclear where flow is coming from. Need more information about East Campus Commons and Stonehouse Hall connections.	
33	BURRILL AVENUE	MANHOLE	TOWN MS4	1.4 SE	Piped connection to Burrill Ave	HIGH PRIORITY	YES	X		Dry	
34	WEYGAND & CRIMSON HALLS	MANHOLE	MBTA MS4	1.4 SE	Manhole collects roof drain and infiltration trench underdrains, discharges to MBTA property	HIGH PRIORITY	YES	X		Manhole outlet partially submerged but no active incoming flow observed.	
35	WEYGAND & CRIMSON HALLS	MANHOLE	MBTA MS4	1.4 SE	Manhole collects roof drain and infiltration trench underdrains, discharges to MBTA property	HIGH PRIORITY	YES	X		Manhole outlet partially submerged but no active incoming flow observed.	
36	WEYGAND & CRIMSON HALLS	TRENCH DRAIN	MBTA MS4	1.4 SE	Trench drain in parking lot located adjacent to parking garage, unknown discharge location due to buried outlet	HIGH PRIORITY	YES	X		Trench drain dry - no flow observed.	
37	GREAT HILL DRIVE	PIPE DISCHARGE	SURFACE WATER	1.4 SE		HIGH PRIORITY	YES	X		Outfall dry - no flow observed.	
38	GREAT HILL DRIVE	PIPE DISCHARGE	SURFACE WATER	1.4 SE		HIGH PRIORITY	YES	X		Outfall dry - no flow observed.	

OUTFALL NUMBER	LOCATION	OUTFALL TYPE	RECEIVING SYSTEM / WATER	MAP SHEET	OUTFALL LOCATION NOTES	CATEGORY	DRY WEATHER SCREENING REQUIRED?	VISUALLY SCREENED	WATER QUALITY SAMPLE TAKEN	NOTES/OBSERVATIONS	
39	OPERATIONS CENTER LOT	PIPE DISCHARGE	SURFACE WATER	1.4 SE		HIGH PRIORITY	YES	X		Outfall dry - no flow observed.	
40	TOWER LOT	PIPE DISCHARGE	SURFACE WATER	1.4 SE	Piped outlet from detention basin	EXCLUDED	NO				
41	WEYGAND & CRIMSON HALLS	MANHOLE	MBTA MS4	1.4 SE		HIGH PRIORITY	YES	X		Manhole outlet partially submerged but no active incoming flow observed.	

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OUTFALL INSPECTION FORM

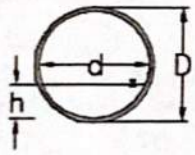
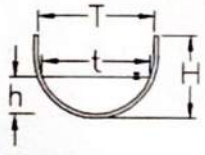
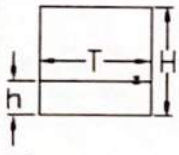
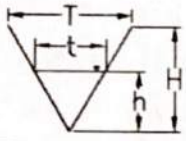
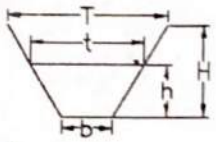
DRY

ID #: 06 **GPS Location:** _____ **Date/Time:** _____

Inspector: _____ **Last rainfall event:** _____ **Weather:** _____

Type of Outfall (check one):			**Pipe Outfall** ☑	**Open Swale Outfall** ☐
Outfall Label:	**Stencil** ☐ **Ground Inset** ☐ **Sign** ☐ **None** ☑ **Other**_____			
Photos of outfall/interconnection taken: ☐				
Pipe Material:	Concrete ☐ Corrugated metal ☐ Clay Tile ☐ Plastic ☑ Other: _____ ☐		**Pipe Condition:**	Good ☐ Poor ☐ Fair ☐ Crumbling ☐
Swale Material:	Paved (asphalt) ☐ Concrete ☐ Earthen ☐ Stone ☐ Other: _____ ☐		**Swale Condition:**	Good ☐ Poor ☐ Fair ☐ Crumbling ☐

Shape of Pipe/Swale (check one)

 ☐	 ☐	 ☐	 ☐	 ☐
Rounded Pipe/Swale		**Rectangular Pipe/Swale**	**Triangular Swale**	**Trapezoidal Swale**

Pipe Measurements: Inner Dia. (in): d=_____ Outer Dia. (in): D=_____ Pipe Width (in): T=_____ Pipe Height (in): H=_____ Flow Height (in): h=_____*	**Swale Measurements:** Swale Width (in): T=_____ Flow Width (in): t =_____ Swale Height (in): H=_____ Flow Height (in): h=_____* Bottom Width (in): b=_____	**Is there a headwall?** Yes ☐ No ☐ flared end **Headwall Condition:** Good ☐ Poor ☐ Fair ☐ Crumbling ☐	

If the outlet is submerged indicate approximate height of water above the outlet invert. h above invert (in):	**Required Maintenance:**	
Is riprap present? Yes ☐ No ☐ **Has channelization occurred?** Yes ☐ No ☐ **Has scouring occurred below the outlet?** Yes ☐ No ☐ **Is there excessive vegetation?** Yes ☐ No ☐ **Is there orange staining?** Yes ☐ No ☐	○ Tree Work ○ Ditch Work ○ Structural Corrosion ○ Erosion at Structure	○ Remove Trash/Debris ○ Blocked Pipe ○ N/A ○ Other _____

Comments (include precipitation in previous 48 hours):

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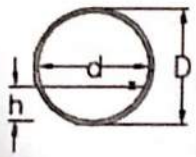
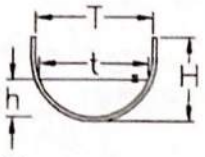
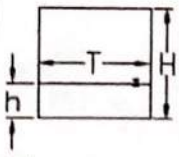
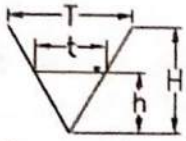
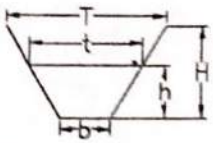
OUTFALL INSPECTION FORM dry

ID #: 11 **GPS Location:** _____ **Date/Time:** _____

Inspector: _____ **Last rainfall event:** _____ **Weather:** _____

Type of Outfall (check one):		**Pipe Outfall** ☐	**Open Swale Outfall** ☐
Outfall Label:	**Stencil** ☐ **Ground Inset** ☐ **Sign** ☐ **None** ☐ **Other**_____		
Photos of outfall/interconnection taken: ☐			
Pipe Material:	Concrete ☐ Corrugated metal ☐ Clay Tile ☐ Plastic ☐ Other: _____ ☐	**Pipe Condition:**	Good ☐ Poor ☐ Fair ☐ Crumbling ☐
Swale Material:	Paved (asphalt) ☐ Concrete ☐ Earthen ☐ Stone ☐ Other: _____ ☐	**Swale Condition:**	Good ☐ Poor ☐ Fair ☐ Crumbling ☐

Shape of Pipe/Swale (check one)

 ☐	 ☐	 ☐	 ☐	 ☐
Rounded Pipe/Swale		**Rectangular Pipe/Swale**	**Triangular Swale**	**Trapezoidal Swale**

Pipe Measurements: Inner Dia. (in): d=_____ Outer Dia. (in): D=_____ Pipe Width (in): T=_____ Pipe Height (in): H=_____ Flow Height (in): h=_____*	**Swale Measurements:** Swale Width (in): T=_____ Flow Width (in): t =_____ Swale Height (in): H=_____ Flow Height (in): h=_____* Bottom Width (in): b=_____	**Is there a headwall?** Yes ☐ No ☐ **Headwall Condition:** Good ☐ Poor ☐ Fair ☐ Crumbling ☐

If the outlet is submerged indicate approximate height of water above the outlet invert. h above invert (in):		**Required Maintenance:**
Is riprap present? Yes ☐ No ☐ **Has channelization occurred?** Yes ☐ No ☐ **Has scouring occurred below the outlet?** Yes ☐ No ☐ **Is there excessive vegetation?** Yes ☐ No ☐ **Is there orange staining?** Yes ☐ No ☐		○ Tree Work ○ Ditch Work ○ Structural Corrosion ○ Erosion at Structure ○ Remove Trash/Debris ○ Blocked Pipe ○ N/A ○ Other _____

Comments (include precipitation in previous 48 hours):

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OUTFALL INSPECTION FORM

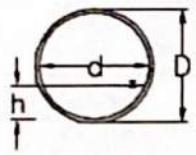
ID #: 18 **GPS Location:** _____ **Date/Time:** _____

Inspector: _____ **Last rainfall event:** _____ **Weather:** _____

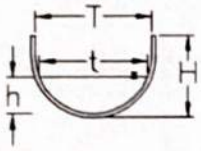
standing water no flow

Type of Outfall (check one):			**Pipe Outfall** ☑	**Open Swale Outfall** ☐
Outfall Label:	**Stencil** ☐ **Ground Inset** ☐ **Sign** ☐ **None** ☑ **Other**_____			
Photos of outfall/interconnection taken: ☐				
Pipe Material:	Concrete ☑ Corrugated metal ☐ Clay Tile ☐ Plastic ☐ Other: _____ ☐		**Pipe Condition:**	Good ☐ Poor ☐ Fair ☐ Crumbling ☐
Swale Material:	Paved (asphalt) ☐ Concrete ☐ Earthen ☐ Stone ☐ Other: _____ ☐		**Swale Condition:**	Good ☐ Poor ☐ Fair ☐ Crumbling ☐

Shape of Pipe/Swale (check one)



☐ **Rounded Pipe/Swale**



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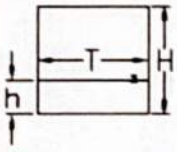
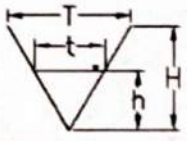
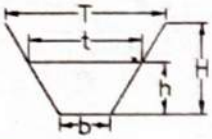


☐ **Rectangular Pipe/Swale**



☐ **Triangular Swale**



☐ **Trapezoidal Swale**

Pipe Measurements: Inner Dia. (in): d=_____ Outer Dia. (in): D=_____ Pipe Width (in): T=_____ Pipe Height (in): H=_____ Flow Height (in): h=_____*	**Swale Measurements:** Swale Width (in): T=_____ Flow Width (in): t =_____ Swale Height (in): H=_____ Flow Height (in): h=_____* Bottom Width (in): b=_____	**Is there a headwall?** Yes ☐ No ☐ **Headwall Condition:** Good ☐ Poor ☐ Fair ☐ Crumbling ☐

If the outlet is submerged indicate approximate height of water above the outlet invert. h above invert (in):	**Required Maintenance:**

Is riprap present?	Yes ☐	No ☐
Has channelization occurred?	Yes ☐	No ☐
Has scouring occurred below the outlet?	Yes ☐	No ☐
Is there excessive vegetation?	Yes ☐	No ☐
Is there orange staining?	Yes ☐	No ☐

○ Tree Work	○ Remove Trash/Debris
○ Ditch Work	○ Blocked Pipe
○ Structural Corrosion	○ N/A
○ Erosion at Structure	○ Other _____

Comments (include precipitation in previous 48 hours):

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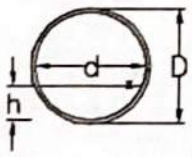
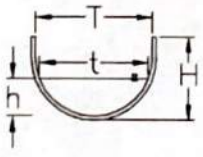
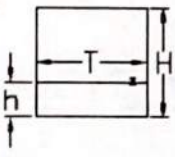
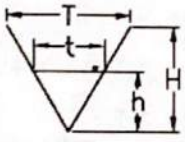
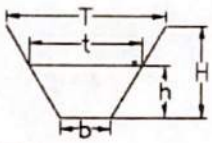
OUTFALL INSPECTION FORM NO flow

ID #: 19 **GPS Location:** _____ **Date/Time:** _____

Inspector: _____ **Last rainfall event:** _____ **Weather:** _____

Type of Outfall (check one):		**Pipe Outfall** ☑	**Open Swale Outfall** ☐
Outfall Label:	**Stencil** ☐ **Ground Inset** ☐ **Sign** ☐ **None** ☐ **Other**_____		
Photos of outfall/interconnection taken: ☐			
Pipe Material:	Concrete ☐ Corrugated metal ☐ Clay Tile ☐ Plastic ☐ Other: _____ ☐	**Pipe Condition:**	Good ☐ Poor ☐ Fair ☐ Crumbling ☐
Swale Material:	Paved (asphalt) ☐ Concrete ☐ Earthen ☐ Stone ☐ Other: _____ ☐	**Swale Condition:**	Good ☐ Poor ☐ Fair ☐ Crumbling ☐

Shape of Pipe/Swale (check one)

 ☐  ☐	 ☐	 ☐	 ☐
Rounded Pipe/Swale	**Rectangular Pipe/Swale**	**Triangular Swale**	**Trapezoidal Swale**

Pipe Measurements: Inner Dia. (in): d=_____ Outer Dia. (in): D=_____ Pipe Width (in): T=_____ Pipe Height (in): H=_____ Flow Height (in): h=_____*	**Swale Measurements:** Swale Width (in): T=_____ Flow Width (in): t =_____ Swale Height (in): H=_____ Flow Height (in): h=_____* Bottom Width (in): b=_____	**Is there a headwall?** Yes ☑ No ☐ **Headwall Condition:** Good ☐ Poor ☐ Fair ☐ Crumbling ☐

If the outlet is submerged indicate approximate height of water above the outlet invert. h above invert (in):	**Required Maintenance:**
Is riprap present? Yes ☐ No ☐ **Has channelization occurred?** Yes ☐ No ☐ **Has scouring occurred below the outlet?** Yes ☐ No ☐ **Is there excessive vegetation?** Yes ☐ No ☐ **Is there orange staining?** Yes ☐ No ☐	○ Tree Work ○ Remove Trash/Debris ○ Ditch Work ○ Blocked Pipe ○ Structural Corrosion ○ N/A ○ Erosion at Structure ○ Other _____

Comments (include precipitation in previous 48 hours):

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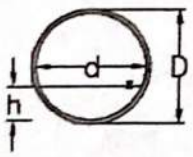
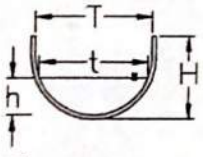
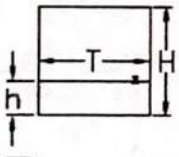
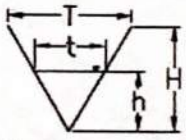
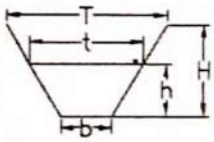
OUTFALL INSPECTION FORM

ID #: 32 **GPS Location:** _____ **Date/Time:** 6/21

Inspector: _____ **Last rainfall event:** _____ **Weather:** _____

Type of Outfall (check one):		**Pipe Outfall** ☐	**Open Swale Outfall** ☐
Outfall Label:	**Stencil** ☐ **Ground Inset** ☐ **Sign** ☐ **None** ☐ **Other**_____		
Photos of outfall/interconnection taken: ☐			
Pipe Material:	Concrete ☑ Corrugated metal ☐ Clay Tile ☐ Plastic ☐ Other: _____ ☐	**Pipe Condition:**	Good ☐ Poor ☐ Fair ☐ Crumbling ☐
Swale Material:	Paved (asphalt) ☐ Concrete ☐ Earthen ☐ Stone ☐ Other: _____ ☐	**Swale Condition:**	Good ☐ Poor ☐ Fair ☐ Crumbling ☐

Shape of Pipe/Swale (check one)

 ☐	 ☐	 ☐	 ☐	 ☐
Rounded Pipe/Swale		**Rectangular Pipe/Swale**	**Triangular Swale**	**Trapezoidal Swale**

Pipe Measurements: Inner Dia. (in): d=_____ Outer Dia. (in): D=_____ Pipe Width (in): T=_____ Pipe Height (in): H=_____ Flow Height (in): h=_____*	**Swale Measurements:** Swale Width (in): T=_____ Flow Width (in): t =_____ Swale Height (in): H=_____ Flow Height (in): h=_____* Bottom Width (in): b=_____	**Is there a headwall?** Yes ☐ No ☐ **Headwall Condition:** Good ☐ Poor ☐ Fair ☐ Crumbling ☐

If the outlet is submerged indicate approximate height of water above the outlet invert. h above invert (in):	**Required Maintenance:**
Is riprap present? Yes ☐ No ☐ **Has channelization occurred?** Yes ☐ No ☐ **Has scouring occurred below the outlet?** Yes ☐ No ☐ **Is there excessive vegetation?** Yes ☐ No ☐ **Is there orange staining?** Yes ☐ No ☐	○ Tree Work ○ Remove Trash/Debris ○ Ditch Work ○ Blocked Pipe ○ Structural Corrosion ○ N/A ○ Erosion at Structure ○ Other _____

Comments (include precipitation in previous 48 hours):

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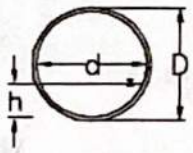
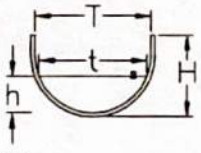
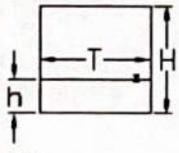
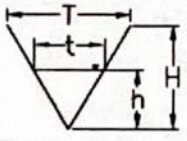
OUTFALL INSPECTION FORM Dry

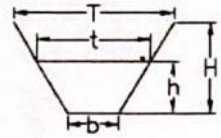
ID #: 37 **GPS Location:** _____ **Date/Time:** _____

Inspector: _____ **Last rainfall event:** _____ **Weather:** _____

Type of Outfall (check one):		**Pipe Outfall** ☑	**Open Swale Outfall** ☐
Outfall Label:	**Stencil** ☐ **Ground Inset** ☐ **Sign** ☐ **None** ☐ **Other**_____		
Photos of outfall/interconnection taken: ☑			
Pipe Material:	Concrete ☐ Corrugated metal ☐ Clay Tile ☐ Plastic ☐ Other: _____ ☐	**Pipe Condition:**	Good ☐ Poor ☐ Fair ☐ Crumbling ☐
Swale Material:	Paved (asphalt) ☐ Concrete ☐ Earthen ☐ Stone ☐ Other: _____ ☐	**Swale Condition:**	Good ☐ Poor ☐ Fair ☐ Crumbling ☐

Shape of Pipe/Swale (check one)

 ☐	 ☐	 ☐	 ☐
Rounded Pipe/Swale	**Rectangular Pipe/Swale**	**Triangular Swale**	**Trapezoidal Swale**



☐

Trapezoidal Swale

Pipe Measurements: Inner Dia. (in): d=_____ Outer Dia. (in): D=_____ Pipe Width (in): T=_____ Pipe Height (in): H=_____ Flow Height (in): h=_____*	**Swale Measurements:** Swale Width (in): T=_____ Flow Width (in): t =_____ Swale Height (in): H=_____ Flow Height (in): h=_____* Bottom Width (in): b=_____	**Is there a headwall?** Yes ☐ No ☑ **Headwall Condition:** NA Good ☐ Poor ☐ Fair ☐ Crumbling ☐

If the outlet is submerged indicate approximate height of water above the outlet invert. h above invert (in): DRY	**Required Maintenance:**
Is riprap present? Yes ☐ No ☐ **Has channelization occurred?** Yes ☐ No ☐ **Has scouring occurred below the outlet?** Yes ☐ No ☐ **Is there excessive vegetation?** Yes ☐ No ☐ **Is there orange staining?** Yes ☐ No ☐	○ Tree Work ○ Remove Trash/Debris ○ Ditch Work ○ Blocked Pipe ○ Structural Corrosion ○ N/A ○ Erosion at Structure ○ Other _____

Comments (include precipitation in previous 48 hours):

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Dry

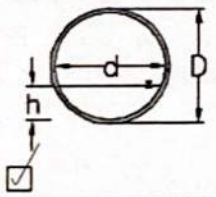
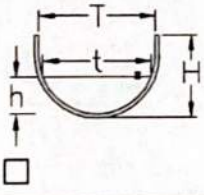
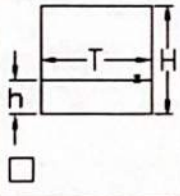
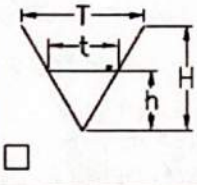
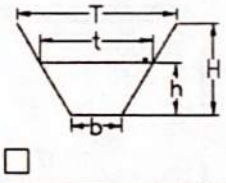
OUTFALL INSPECTION FORM

ID #: 38 **GPS Location:** _____ **Date/Time:** _____

Inspector: _____ **Last rainfall event:** _____ **Weather:** _____

Type of Outfall (check one):		**Pipe Outfall** ☑	**Open Swale Outfall** ☐
Outfall Label:	**Stencil** ☐ **Ground Inset** ☐ **Sign** ☐ **None** ☑ **Other**_____		
Photos of outfall/interconnection taken: ☑			
Pipe Material:	Concrete ☑ Corrugated metal ☐ Clay Tile ☐ Plastic ☐ Other: _____ ☐	**Pipe Condition:**	Good ☑ Poor ☐ Fair ☐ Crumbling ☐
Swale Material:	Paved (asphalt) ☐ Concrete ☐ Earthen ☐ Stone ☐ Other: _____ ☐	**Swale Condition:**	Good ☐ Poor ☐ Fair ☐ Crumbling ☐

Shape of Pipe/Swale (check one)

 ☑	 ☐	 ☐	 ☐	 ☐
Rounded Pipe/Swale		**Rectangular Pipe/Swale**	**Triangular Swale**	**Trapezoidal Swale**

Pipe Measurements: Inner Dia. (in): d=_____ Outer Dia. (in): D=_____ Pipe Width (in): T=_____ Pipe Height (in): H=_____ Flow Height (in): h=_____*	**Swale Measurements:** Swale Width (in): T=_____ Flow Width (in): t =_____ Swale Height (in): H=_____ Flow Height (in): h=_____* Bottom Width (in): b=_____	**Is there a headwall?** Yes ☐ No ☑ **Headwall Condition:** NA Good ☐ Poor ☐ Fair ☐ Crumbling ☐

If the outlet is submerged indicate approximate height of water above the outlet invert. h above invert (in): Dry

Is riprap present?	Yes ☐	No ☐	**Required Maintenance:**
Has channelization occurred?	Yes ☐	No ☐	○ Tree Work ○ Remove Trash/Debris
Has scouring occurred below the outlet?	Yes ☐	No ☐	○ Ditch Work ○ Blocked Pipe
Is there excessive vegetation?	Yes ☐	No ☐	○ Structural Corrosion ○ N/A
Is there orange staining?	Yes ☐	No ☐	○ Erosion at Structure ○ Other _____

Comments (include precipitation in previous 48 hours):

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MANHOLE (INTERCONNECTION) INSPECTION FORM

Manhole #: 7A **GPS Location:** standing **Date/Time:** _____

Inspector: _____ **Last rainfall event:** _____ **Weather:** _____

Inspection:	**Not Found** ☐ **Surface** ☐ **Internal** ☐ **Follow-up Required** ☐		
Photos of manhole taken: ☐			
Manhole Material:	Concrete ☐ Corrugated metal ☐ Stone ☐ Brick ☐ Other: _____ ☐	**Manhole Condition:**	Good ☐ Poor ☐ Fair ☐ Crumbling ☐ Comments: _____
Pipe Material:	Concrete ☐ HDPE ☐ PVC ☐ Clay Tile ☐ Other: _____ ☐	**Pipe Measurements:**	Inlet 1 Dia. (in): d1 = _____ Inlet 2 Dia. (in): d2 = _____ Inlet 3 Dia. (in): d3 = _____ Outlet Dia. (in): D = _____

Required Maintenance/Problems (check all that apply):

- ☐ Tree Work Required
- ☐ New Cover is Required
- ☐ Frame Maintenance is Required
- ☐ Pipe is Blocked
- ☐ Remove Accumulated Sediment
- ☐ Pipe Maintenance is Required
- ☐ Manhole Undermined or Bypassed
- ☐ Cannot Remove Cover
- ☐ Corrosion at Structure
- ☐ Erosion Around Structure
- ☐ Remove Trash and Debris
- ☐ Need Cement Around Cover
- ☐ Pavement Maintenance is Required

Other: _____

Standing Water in Manhole? Yes ☐ No ☐ **Color of Water:** Clear ☐ Cloudy ☐ Other: _____ ☐ Depth above outlet invert: ____	**Flow in Manhole?** Yes ☐ No ☐ **Description of Flow:** Heavy: ☐ Moderate: ☐ Trickling: ☐ Dry: ☐	**Color of Flow:** Clear ☐ Cloudy ☐ Suspended Solids ☐ Other: ____ ☐ **Odor:** None ☐ Sewage ☐ Oil ☐ Other: ____ ☐

If sediment in manhole indicate percent of pipe filled: **%**

Interconnection: Yes ☐ No ☐

If Yes, Interconnection ID #: _____
Continue to **Dry Weather Outfall/Interconnection Inspection Form**
If No, indicate if Sample of Flow Collected for Analysis:
Yes ☐ No ☐

Check those present:

- ○ Foam
- ○ Sanitary Waste
- ○ Orange Staining
- ○ Optical Enhancers
- ○ Floatables
- ○ Oil Sheen
- ○ Bacterial Sheen
- ○ Other: _____

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MANHOLE (INTERCONNECTION) INSPECTION FORM SC WTR COVER

Manhole #: 7B **GPS Location:** _____ **Date/Time:** _____

Inspector: _____ **Last rainfall event:** _____ **Weather:** _____

Inspection: **Not Found** ☐ **Surface** ☐ **Internal** ☑ **Follow-up Required** ☐

Photos of manhole taken: ☐

Manhole Material:	Concrete ☑ Corrugated metal ☐ Stone ☐ Brick ☐ Other: _____ ☐	**Manhole Condition:**	Good ☐ Poor ☐ Fair ☐ Crumbling ☐ Comments: _____
Pipe Material:	Concrete ☐ HDPE ☑ PVC ☐ Clay Tile ☐ Other: _____ ☐	**Pipe Measurements:**	Inlet 1 Dia. (in): d1 = _____ Inlet 2 Dia. (in): d2 = _____ Inlet 3 Dia. (in): d3 = _____ Outlet Dia. (in): D = _____

Required Maintenance/Problems (check all that apply):

- ☐ Tree Work Required
- ☐ New Cover is Required
- ☐ Frame Maintenance is Required
- ☐ Pipe is Blocked
- ☐ Remove Accumulated Sediment
- ☐ Pipe Maintenance is Required
- ☐ Manhole Undermined or Bypassed
- ☐ Cannot Remove Cover
- ☐ Corrosion at Structure
- ☐ Erosion Around Structure
- ☐ Remove Trash and Debris
- ☐ Need Cement Around Cover
- ☐ Pavement Maintenance is Required
- ☐ **Other:** _____

Standing Water in Manhole? Yes ☐ No ☑

Color of Water: Clear ☐ Cloudy ☐ Other: _____ ☐ Depth above outlet invert: ____

Flow in Manhole? Yes ☑ No ☐

Description of Flow: Heavy: ☐ Moderate: ☑ Trickling: ☐ Dry: ☐

Color of Flow: Clear ☑ Cloudy ☐ Suspended Solids ☐ Other: ____ ☐

Odor: None ☑ Sewage ☐ Oil ☐ Other: ____ ☐

If sediment in manhole indicate percent of pipe filled: ____ %

Interconnection: Yes ☐ No ☐

If Yes, Interconnection ID #: _____

Continue to **Dry Weather Outfall/Interconnection Inspection Form**

If No, indicate if Sample of Flow Collected for Analysis:

Yes ☐ No ☐

Check those present:

- ○ Foam
- ○ Sanitary Waste
- ○ Orange Staining
- ○ Optical Enhancers
- ○ Floatables
- ○ Oil Sheen
- ○ Bacterial Sheen
- ○ Other: _____

Outfall 7B

temp: 19.95
pH: 7.27
dO: 8.66 95.8%
Salinity 1.19
conductants: 2219.7
chlorine = 0
ammonia = 0
surfactants = .25

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MANHOLE (INTERCONNECTION) INSPECTION FORM

Manhole #: SA **GPS Location:** standing water **Date/Time:** _____

Inspector: _____ **Last rainfall event:** _____ **Weather:** _____

Inspection:	**Not Found** ☐ **Surface** ☐ **Internal** ☐ **Follow-up Required** ☐		
Photos of manhole taken: ☐			
Manhole Material:	Concrete ☐ Corrugated metal ☐ Stone ☐ Brick ☐ Other: _____ ☐	**Manhole Condition:**	Good ☐ Poor ☐ Fair ☐ Crumbling ☐ Comments: _____
Pipe Material:	Concrete ☐ HDPE ☐ PVC ☐ Clay Tile ☐ Other: _____ ☐	**Pipe Measurements:**	Inlet 1 Dia. (in): d1 = _____ Inlet 2 Dia. (in): d2 = _____ Inlet 3 Dia. (in): d3 = _____ Outlet Dia. (in): D = _____

Required Maintenance/Problems (check all that apply):

☐ Tree Work Required	☐ Cannot Remove Cover
☐ New Cover is Required	☐ Corrosion at Structure
☐ Frame Maintenance is Required	☐ Erosion Around Structure
☐ Pipe is Blocked	☐ Remove Trash and Debris
☐ Remove Accumulated Sediment	☐ Need Cement Around Cover
☐ Pipe Maintenance is Required	☐ Pavement Maintenance is Required
☐ Manhole Undermined or Bypassed	**Other:** _____

Standing Water in Manhole? Yes ☐ No ☐ **Color of Water:** Clear ☐ Cloudy ☐ Other: _____ ☐ Depth above outlet invert: ____	**Flow in Manhole?** Yes ☐ No ☐ **Description of Flow:** Heavy: ☐ Moderate: ☐ Trickling: ☐ Dry: ☐	**Color of Flow:** Clear ☐ Suspended Solids ☐ Cloudy ☐ Other: ____ ☐ **Odor:** None ☐ Oil ☐ Sewage ☐ Other: ____ ☐

If sediment in manhole indicate percent of pipe filled: **%**

Interconnection: Yes ☐ No ☐

If Yes, Interconnection ID #: _____

Continue to **Dry Weather Outfall/Interconnection Inspection Form**

If No, indicate if Sample of Flow Collected for Analysis:

Yes ☐ No ☐

Check those present:

- ○ Foam
- ○ Sanitary Waste
- ○ Orange Staining
- ○ Optical Enhancers
- ○ Floatables
- ○ Oil Sheen
- ○ Bacterial Sheen
- ○ Other: _____

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MANHOLE (INTERCONNECTION) INSPECTION FORM

Manhole #: 8B **GPS Location:** standing water **Date/Time:** _____

Inspector: _____ **Last rainfall event:** _____ **Weather:** _____

Inspection:	**Not Found** ☐ **Surface** ☐ **Internal** ☐ **Follow-up Required** ☐		
Photos of manhole taken: ☐			
Manhole Material:	Concrete ☐ Corrugated metal ☐ Stone ☐ Brick ☐ Other: _____ ☐	**Manhole Condition:**	Good ☐ Poor ☐ Fair ☐ Crumbling ☐ Comments: _____
Pipe Material:	Concrete ☐ HDPE ☐ PVC ☐ Clay Tile ☐ Other: _____ ☐	**Pipe Measurements:**	Inlet 1 Dia. (in): d1 = _____ Inlet 2 Dia. (in): d2 = _____ Inlet 3 Dia. (in): d3 = _____ Outlet Dia. (in): D = _____

Required Maintenance/Problems (check all that apply):

☐ Tree Work Required	☐ Cannot Remove Cover
☐ New Cover is Required	☐ Corrosion at Structure
☐ Frame Maintenance is Required	☐ Erosion Around Structure
☐ Pipe is Blocked	☐ Remove Trash and Debris
☐ Remove Accumulated Sediment	☐ Need Cement Around Cover
☐ Pipe Maintenance is Required	☐ Pavement Maintenance is Required
☐ Manhole Undermined or Bypassed	**Other:** _____

Standing Water in Manhole? Yes ☐ No ☐ **Color of Water:** Clear ☐ Cloudy ☐ Other: _____ ☐ Depth above outlet invert: ____	**Flow in Manhole?** Yes ☐ No ☐ **Description of Flow:** Heavy: ☐ Moderate: ☐ Trickling: ☐ Dry: ☐	**Color of Flow:** Clear ☐ Suspended Solids ☐ Cloudy ☐ Other: ____ ☐ **Odor:** None ☐ Oil ☐ Sewage ☐ Other: ____ ☐

If sediment in manhole indicate percent of pipe filled: **%**

Interconnection: Yes ☐ No ☐ If Yes, Interconnection ID #: _____ Continue to **Dry Weather Outfall/Interconnection Inspection Form** If No, indicate if Sample of Flow Collected for Analysis: Yes ☐ No ☐	**Check those present:** ○ Foam ○ Sanitary Waste ○ Orange Staining ○ Optical Enhancers ○ Floatables ○ Oil Sheen ○ Bacterial Sheen ○ Other: _____

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MANHOLE (INTERCONNECTION) INSPECTION FORM

Manhole #: 09 **GPS Location:** _____ **Date/Time:** _____

Inspector: _____ **Last rainfall event:** _____ **Weather:** _____

Inspection: **Not Found** ☐ **Surface** ☐ **Internal** ☑ **Follow-up Required** ☐

Photos of manhole taken: ☐

Manhole Material:	Concrete ☐ Corrugated metal ☐ Stone ☐ Brick ☑ Other: _____ ☐	**Manhole Condition:**	Good ☑ Poor ☐ Fair ☐ Crumbling ☐ Comments: _____
Pipe Material:	Concrete ☐ HDPE ☐ PVC ☐ Clay Tile ☐ Other: unknown ☐	**Pipe Measurements:**	Inlet 1 Dia. (in): d1 = _____ Inlet 2 Dia. (in): d2 = _____ Inlet 3 Dia. (in): d3 = _____ Outlet Dia. (in): D = _____

Required Maintenance/Problems (check all that apply):

- ☐ Tree Work Required
- ☐ New Cover is Required
- ☐ Frame Maintenance is Required
- ☐ Pipe is Blocked
- ☐ Remove Accumulated Sediment
- ☐ Pipe Maintenance is Required
- ☐ Manhole Undermined or Bypassed
- ☐ Cannot Remove Cover
- ☐ Corrosion at Structure
- ☐ Erosion Around Structure
- ☐ Remove Trash and Debris
- ☐ Need Cement Around Cover
- ☐ Pavement Maintenance is Required

Other: _____

Standing Water in Manhole? Yes ☑ No ☐

Color of Water:
Clear ☑
Cloudy ☐
Other: _____ ☐
Depth above outlet invert: _____

Flow in Manhole? Yes ☑ No ☐

Description of Flow:
Heavy: ☐
Moderate: ☑
Trickling: ☐
Dry: ☐

Color of Flow:
Clear ☑ Suspended Solids ☐
Cloudy ☐ Other: _____ ☐

Odor:
None ☑ Oil ☐
Sewage ☐ Other: _____ ☐

If sediment in manhole indicate percent of pipe filled: _____ %

Interconnection: Yes ☐ No ☐

If Yes, Interconnection ID #: _____
Continue to **Dry Weather Outfall/Interconnection Inspection Form**
If No, indicate if Sample of Flow Collected for Analysis:
Yes ☐ No ☐

Check those present:

- ○ Foam
- ○ Sanitary Waste
- ○ Orange Staining
- ○ Optical Enhancers
- ○ Floatables
- ○ Oil Sheen
- ○ Bacterial Sheen
- ○ Other: _____

Outfall 09

temp = 16.87
ph = 6.40
dO = 6.71
specific conductants = 964 micro siemens
Salinity = .50

Chlorine 41 ppb
Surfactant = 0.25

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MANHOLE (INTERCONNECTION) INSPECTION FORM

Manhole #: 10 **GPS Location:** _____ **Date/Time:** _____

Inspector: _____ **Last rainfall event:** _____ **Weather:** _____

Inspection: **Not Found** ☐ **Surface** ☐ **Internal** ☐ **Follow-up Required** ☐

Photos of manhole taken: ☐

Manhole Material:	Concrete ☑ Corrugated metal ☐ Stone ☐ Brick ☐ Other: _____ ☐	**Manhole Condition:**	Good ☐ Poor ☐ Fair ☑ Crumbling ☐ Comments: _____
Pipe Material:	Concrete ☐ HDPE ☑ PVC ☐ Clay Tile ☐ Other: _____ ☐	**Pipe Measurements:**	Inlet 1 Dia. (in): d1 = _____ Inlet 2 Dia. (in): d2 = _____ Inlet 3 Dia. (in): d3 = _____ Outlet Dia. (in): D = _____

Required Maintenance/Problems (check all that apply):

- ☐ Tree Work Required
- ☐ New Cover is Required
- ☐ Frame Maintenance is Required
- ☐ Pipe is Blocked
- ☐ Remove Accumulated Sediment
- ☐ Pipe Maintenance is Required
- ☐ Manhole Undermined or Bypassed
- ☐ Cannot Remove Cover
- ☐ Corrosion at Structure
- ☐ Erosion Around Structure
- ☐ Remove Trash and Debris
- ☐ Need Cement Around Cover
- ☐ Pavement Maintenance is Required

Other: _____

Standing Water in Manhole? Yes ☑ No ☐

Color of Water:
Clear ☑
Cloudy ☐
Other: _____ ☐
Depth above outlet invert: _____

Flow in Manhole? Yes ☑ No ☐

Description of Flow:
Heavy: ☐
Moderate: ☐
Trickling: ☑
Dry: ☐

Color of Flow:
Clear ☑ Suspended Solids ☐
Cloudy ☐ Other: _____ ☐

Odor:
None ☑ Oil ☐
Sewage ☐ Other: _____ ☐

If sediment in manhole indicate percent of pipe filled: _____ %

Interconnection: Yes ☐ No ☐

If Yes, Interconnection ID #: _____
Continue to **Dry Weather Outfall/Interconnection Inspection Form**
If No, indicate if Sample of Flow Collected for Analysis:
Yes ☐ No ☐

Check those present:

- ○ Foam
- ○ Sanitary Waste
- ○ Orange Staining
- ○ Optical Enhancers
- ○ Floatables
- ○ Oil Sheen
- ○ Bacterial Sheen
- ○ Other: _____

Outfall 10

temp = 19.63
pH = 7.15
dO = 4.5
Specific conductants = 1236.4
salinity = 0.65
total chlorine = 33 ppb

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MANHOLE (INTERCONNECTION) INSPECTION FORM

Manhole #: (CB) 14 **GPS Location:** _____ **Date/Time:** _____

Inspector: _____ **Last rainfall event:** _____ **Weather:** _____

Inspection:	**Not Found** ☐ **Surface** ☐ **Internal** ☑ **Follow-up Required** ☐		
Photos of manhole taken: ☑			
Manhole Material:	Concrete ☑ Corrugated metal ☐ Stone ☐ Brick ☐ Other: _____ ☐	**Manhole Condition:**	Good ☐ Poor ☐ Fair ☑ Crumbling ☐ Comments: _____
Pipe Material:	Concrete ☐ HDPE ☑ PVC ☐ Clay Tile ☐ Other: _____ ☐	**Pipe Measurements:**	Inlet 1 Dia. (in): d1 = _____ Inlet 2 Dia. (in): d2 = _____ Inlet 3 Dia. (in): d3 = _____ Outlet Dia. (in): D = _____

Required Maintenance/Problems (check all that apply):

- ☐ Tree Work Required
- ☐ New Cover is Required
- ☐ Frame Maintenance is Required
- ☐ Pipe is Blocked
- ☐ Remove Accumulated Sediment
- ☐ Pipe Maintenance is Required
- ☐ Manhole Undermined or Bypassed
- ☐ Cannot Remove Cover
- ☐ Corrosion at Structure
- ☐ Erosion Around Structure
- ☐ Remove Trash and Debris
- ☐ Need Cement Around Cover
- ☐ Pavement Maintenance is Required

Other: _____

Standing Water in Manhole? Yes ☑ No ☐

Color of Water: Clear ☐ Cloudy ☐ Other: _____ ☐

Depth above outlet invert: ____

Flow in Manhole? Yes ☑ No ☐

Description of Flow: Heavy: ☐ Moderate: ☑ Trickling: ☐ Dry: ☐

Color of Flow: Clear ☐ Cloudy ☑ Suspended Solids ☐ Other: ____ ☐

Odor: None ☑ Oil ☐ Sewage ☐ Other: ____ ☐

If sediment in manhole indicate percent of pipe filled: ____ %

Interconnection: Yes ☐ No ☐

If Yes, Interconnection ID #: _____

Continue to **Dry Weather Outfall/Interconnection Inspection Form**

If No, indicate if Sample of Flow Collected for Analysis:

Yes ☐ No ☐

Check those present:

- ○ Foam
- ○ Sanitary Waste
- ○ Orange Staining
- ○ Optical Enhancers
- ○ Floatables
- ○ Oil Sheen
- ○ Bacterial Sheen
- ○ Other: _____

Outfall 14

temp = 16.65
pH = 6.31
DO = 4.64
conductivity 979.9
Salinity = 0.51

surfactants > 3
total chlorine = invalid

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collapsed outfall

MANHOLE (INTERCONNECTION) INSPECTION FORM

Manhole #: 16 **GPS Location:** _____ **Date/Time:** 6/9 11:45

Inspector: _____ **Last rainfall event:** _____ **Weather:** _____

, Standing water - partially submerged

Inspection: **Not Found** ☐ **Surface** ☐ **Internal** ☑ **Follow-up Required** ☐

Photos of manhole taken: ☑

Manhole Material:	Concrete ☑ Corrugated metal ☐ Stone ☐ Brick ☐ Other: _____ ☐	**Manhole Condition:**	Good ☑ Poor ☐ Fair ☐ Crumbling ☐ Comments: _____
Pipe Material:	Concrete ☐ HDPE ☑ PVC ☐ Clay Tile ☐ Other: _____ ☐	**Pipe Measurements:**	Inlet 1 Dia. (in): d1 = _____ Inlet 2 Dia. (in): d2 = _____ Inlet 3 Dia. (in): d3 = _____ Outlet Dia. (in): D = _____

Required Maintenance/Problems (check all that apply):

- ☐ Tree Work Required
- ☐ New Cover is Required
- ☐ Frame Maintenance is Required
- ☐ Pipe is Blocked
- ☐ Remove Accumulated Sediment
- ☐ Pipe Maintenance is Required
- ☐ Manhole Undermined or Bypassed
- ☐ Cannot Remove Cover
- ☐ Corrosion at Structure
- ☐ Erosion Around Structure
- ☐ Remove Trash and Debris
- ☐ Need Cement Around Cover
- ☐ Pavement Maintenance is Required
- ☐ **Other:** _____

Standing Water in Manhole? Yes ☑ No ☐
Color of Water:
Clear ☐
Cloudy ☐
Other: pollen ☐
Depth above outlet invert: ____

Flow in Manhole? Yes ☐ No ☑ no flow
Description of Flow:
Heavy: ☐
Moderate: ☐
Trickling: ☐
Dry: ☐

Color of Flow:
Clear ☐ Suspended Solids ☐
Cloudy ☐ Other: pollen ☑

Odor:
None ☐ Oil ☐
Sewage ☐ Other: ____ ☐

If sediment in manhole indicate percent of pipe filled: ____ %

Interconnection: Yes ☐ No ☐

If Yes, Interconnection ID #: _____
Continue to **Dry Weather Outfall/Interconnection Inspection Form**
If No, indicate if Sample of Flow Collected for Analysis:
Yes ☐ No ☐

Check those present:

- ○ Foam
- ○ Sanitary Waste
- ○ Orange Staining
- ○ Optical Enhancers
- ○ Floatables
- ○ Oil Sheen
- ○ Bacterial Sheen
- ○ Other: _____

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MANHOLE (INTERCONNECTION) INSPECTION FORM

Manhole #: 24 **GPS Location:** _____ **Date/Time:** _____

Inspector: _____ **Last rainfall event:** _____ **Weather:** _____

Inspection: **Not Found** ☐ **Surface** ☐ **Internal** ☑ **Follow-up Required** ☐

Photos of manhole taken: ☐

Manhole Material:	Concrete ☑ Corrugated metal ☐ Stone ☐ Brick ☐ Other: _____ ☐	**Manhole Condition:**	Good ☐ Poor ☐ Fair ☑ Crumbling ☐ Comments: _____
Pipe Material:	Concrete ☑ HDPE ☐ PVC ☐ Clay Tile ☐ Other: _____ ☐	**Pipe Measurements:**	Inlet 1 Dia. (in): d1 = _____ Inlet 2 Dia. (in): d2 = _____ Inlet 3 Dia. (in): d3 = _____ Outlet Dia. (in): D = _____

Required Maintenance/Problems (check all that apply):

- ☐ Tree Work Required
- ☐ New Cover is Required
- ☐ Frame Maintenance is Required
- ☐ Pipe is Blocked
- ☐ Remove Accumulated Sediment
- ☐ Pipe Maintenance is Required
- ☐ Manhole Undermined or Bypassed
- ☐ Cannot Remove Cover
- ☐ Corrosion at Structure
- ☐ Erosion Around Structure
- ☐ Remove Trash and Debris
- ☐ Need Cement Around Cover
- ☐ Pavement Maintenance is Required

Other: _____

Standing Water in Manhole? Yes ☑ No ☐

Color of Water:
Clear ☐
Cloudy ☑ Brown
Other: _____ ☐
Depth above outlet invert: _____

Flow in Manhole? Yes ☑ No ☐

Description of Flow:
Heavy: ☐
Moderate: ☑
Trickling: ☐
Dry: ☐

Color of Flow:
Clear ☐ Suspended Solids ☐
Cloudy ☑ Brown Other: _____ ☐

Odor:
None ☑ Oil ☐
Sewage ☐ Other: _____ ☐

If sediment in manhole indicate percent of pipe filled: _____ %

Interconnection: Yes ☐ No ☐

If Yes, Interconnection ID #: _____
Continue to **Dry Weather Outfall/Interconnection Inspection Form**
If No, indicate if Sample of Flow Collected for Analysis:
Yes ☐ No ☐

Check those present:

- ○ Foam
- ○ Sanitary Waste
- ○ Orange Staining
- ○ Optical Enhancers
- ○ Floatables
- ○ Oil Sheen
- ○ Bacterial Sheen
- ○ Other: _____

Outfall 24

conduct: 2627.4
temp: 20.36
ph: 6.72
DO = 4.91 54.8
salinity = 1.41
ammonia: 0
Chlorine: 0
Surfactants: 0.5

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MANHOLE (INTERCONNECTION) INSPECTION FORM

Manhole #: 25 A (Chumbley) **GPS Location:** _____ **Date/Time:** 6/23

Inspector: _____ **Last rainfall event:** _____ **Weather:** _____

Inspection: **Not Found** ☐ **Surface** ☐ **Internal** ☑ **Follow-up Required** ☐

Photos of manhole taken: ☐

Manhole Material:	Concrete ☑ Corrugated metal ☐ Stone ☐ Brick ☐ Other: _____ ☐	**Manhole Condition:**	Good ☑ Poor ☐ Fair ☐ Crumbling ☐ Comments: _____
Pipe Material:	Concrete ☐ HDPE ☐ PVC ☑ Clay Tile ☐ Other: _____ ☐	**Pipe Measurements:**	Inlet 1 Dia. (in): d1 = _____ Inlet 2 Dia. (in): d2 = _____ Inlet 3 Dia. (in): d3 = _____ Outlet Dia. (in): D = _____

Required Maintenance/Problems (check all that apply):

- ☐ Tree Work Required
- ☐ New Cover is Required
- ☐ Frame Maintenance is Required
- ☐ Pipe is Blocked
- ☐ Remove Accumulated Sediment
- ☐ Pipe Maintenance is Required
- ☐ Manhole Undermined or Bypassed
- ☐ Cannot Remove Cover
- ☐ Corrosion at Structure
- ☐ Erosion Around Structure
- ☐ Remove Trash and Debris
- ☐ Need Cement Around Cover
- ☐ Pavement Maintenance is Required
- **Other:** _____

Standing Water in Manhole? Yes ☑ No ☐

Color of Water:
Clear ☐
Cloudy ☐
Other: _____ ☐
Depth above outlet invert: ____

Flow in Manhole? Yes ☑ No ☐

Description of Flow:
Heavy: ☐
Moderate: ☑
Trickling: ☐
Dry: ☐

Color of Flow:
Clear ☐ Suspended Solids ☑
Cloudy ☐ Other: ____ ☐

Odor:
None ☑ Oil ☐
Sewage ☐ Other: ____ ☐

If sediment in manhole indicate percent of pipe filled: %

Interconnection: Yes ☐ No ☐

If Yes, Interconnection ID #: _____
Continue to **Dry Weather Outfall/Interconnection Inspection Form**
If No, indicate if Sample of Flow Collected for Analysis:
Yes ☐ No ☐

Check those present:

- ○ Foam
- ○ Sanitary Waste
- ○ Orange Staining
- ○ Optical Enhancers
- ○ Floatables
- ○ Oil Sheen
- ○ Bacterial Sheen
- ○ Other: _____

Outfall 25A

temp = 15.44
pH = 6.52
do = 7.28 mg/L % sat = 78.2
cond. = 2127.7 mS
Salinity = 1.14
chlorine = 27 ppb
surfactents = .25
ammonia = 0

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MANHOLE (INTERCONNECTION) INSPECTION FORM

Manhole #: 2SB (campus) **GPS Location:** _____ **Date/Time:** _____

Inspector: _____ **Last rainfall event:** _____ **Weather:** _____

Inspection:	**Not Found** ☐ **Surface** ☐ **Internal** ☑ **Follow-up Required** ☐		
Photos of manhole taken: ☐			
Manhole Material:	Concrete ☑ Corrugated metal ☐ Stone ☐ Brick ☐ Other: _____ ☐	**Manhole Condition:**	Good ☐ Poor ☐ Fair ☑ Crumbling ☐ Comments: _____
Pipe Material:	Concrete ☐ HDPE ☐ PVC ☑ Clay Tile ☐ Other: _____ ☐	**Pipe Measurements:**	Inlet 1 Dia. (in): d1 = _____ Inlet 2 Dia. (in): d2 = _____ Inlet 3 Dia. (in): d3 = _____ Outlet Dia. (in): D = _____

Required Maintenance/Problems (check all that apply):

- ☐ Tree Work Required
- ☐ New Cover is Required
- ☐ Frame Maintenance is Required
- ☐ Pipe is Blocked
- ☐ Remove Accumulated Sediment
- ☐ Pipe Maintenance is Required
- ☐ Manhole Undermined or Bypassed
- ☐ Cannot Remove Cover
- ☐ Corrosion at Structure
- ☐ Erosion Around Structure
- ☐ Remove Trash and Debris
- ☐ Need Cement Around Cover
- ☐ Pavement Maintenance is Required

Other: _____

Standing Water in Manhole? Yes ☐ No ☑ **Color of Water:** Clear ☐ Cloudy ☐ Other: _____ ☐ Depth above outlet invert: ____	**Flow in Manhole?** Yes ☑ No ☐ **Description of Flow:** Heavy: ☐ Moderate: ☑ Trickling: ☐ Dry: ☐	**Color of Flow:** Clear ☑ Suspended Solids ☐ Cloudy ☐ Other: ____ ☐ **Odor:** None ☑ Oil ☐ Sewage ☐ Other: ____ ☐

If sediment in manhole indicate percent of pipe filled: **%**

Interconnection: Yes ☐ No ☐

If Yes, Interconnection ID #: _____
Continue to **Dry Weather Outfall/Interconnection Inspection Form**
If No, indicate if Sample of Flow Collected for Analysis:
Yes ☐ No ☐

Check those present:

- ○ Foam
- ○ Sanitary Waste
- ○ Orange Staining
- ○ Optical Enhancers
- ○ Floatables
- ○ Oil Sheen
- ○ Bacterial Sheen
- ○ Other: _____

Outfall 25B

temp: 25.55
ptt: 7.21
dO: 7.77 65.5%
conductants: 2193.6
chlorine: 55
surfactnts: .25
ammonia = 0
Salinity = 1.16

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MANHOLE (INTERCONNECTION) INSPECTION FORM

Standing water, no flow

Manhole #: 26 **GPS Location:** _____ **Date/Time:** _____

Inspector: _____ **Last rainfall event:** _____ **Weather:** _____

Inspection:	**Not Found** ☐ **Surface** ☐ **Internal** ☐ **Follow-up Required** ☐		
Photos of manhole taken: ☐			
Manhole Material:	Concrete ☐ Corrugated metal ☐ Stone ☐ Brick ☐ Other: _____ ☐	**Manhole Condition:**	Good ☐ Poor ☐ Fair ☐ Crumbling ☐ Comments: _____
Pipe Material:	Concrete ☐ HDPE ☐ PVC ☐ Clay Tile ☐ Other: _____ ☐	**Pipe Measurements:**	Inlet 1 Dia. (in): d1 = _____ Inlet 2 Dia. (in): d2 = _____ Inlet 3 Dia. (in): d3 = _____ Outlet Dia. (in): D = _____

Required Maintenance/Problems (check all that apply):

- ☐ Tree Work Required
- ☐ New Cover is Required
- ☐ Frame Maintenance is Required
- ☐ Pipe is Blocked
- ☐ Remove Accumulated Sediment
- ☐ Pipe Maintenance is Required
- ☐ Manhole Undermined or Bypassed
- ☐ Cannot Remove Cover
- ☐ Corrosion at Structure
- ☐ Erosion Around Structure
- ☐ Remove Trash and Debris
- ☐ Need Cement Around Cover
- ☐ Pavement Maintenance is Required
- ☐ **Other:** _____

Standing Water in Manhole? Yes ☐ No ☐

Color of Water:
Clear ☐
Cloudy ☐
Other: _____ ☐
Depth above outlet invert: ____

Flow in Manhole? Yes ☐ No ☐

Description of Flow:
Heavy: ☐
Moderate: ☐
Trickling: ☐
Dry: ☐

Color of Flow:
Clear ☐ Suspended Solids ☐
Cloudy ☐ Other: ____ ☐

Odor:
None ☐ Oil ☐
Sewage ☐ Other: ____ ☐

If sediment in manhole indicate percent of pipe filled: %

Interconnection: Yes ☐ No ☐

If Yes, Interconnection ID #: _____
Continue to **Dry Weather Outfall/Interconnection Inspection Form**
If No, indicate if Sample of Flow Collected for Analysis:
Yes ☐ No ☐

Check those present:

- ○ Foam
- ○ Sanitary Waste
- ○ Orange Staining
- ○ Optical Enhancers
- ○ Floatables
- ○ Oil Sheen
- ○ Bacterial Sheen
- ○ Other: _____

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MANHOLE (INTERCONNECTION) INSPECTION FORM

Manhole #: 30 **GPS Location:** _____ **Date/Time:** _____

Inspector: _____ **Last rainfall event:** _____ **Weather:** _____

Inspection: Not Found ☐ Surface ☐ Internal ☑ Follow-up Required ☐

Photos of manhole taken: ☑

Manhole Material:	Concrete ☐ Corrugated metal ☐ Stone ☐ Brick ☐ Other: _____ ☐	**Manhole Condition:**	Good ☐ Poor ☐ Fair ☑ Crumbling ☐ Comments: _____
Pipe Material:	Concrete ☐ HDPE ☑ PVC ☐ Clay Tile ☐ Other: _____ ☐	**Pipe Measurements:**	Inlet 1 Dia. (in): d1 = _____ Inlet 2 Dia. (in): d2 = _____ Inlet 3 Dia. (in): d3 = _____ Outlet Dia. (in): D = 24~

Required Maintenance/Problems (check all that apply):

- ☐ Tree Work Required
- ☐ New Cover is Required
- ☐ Frame Maintenance is Required
- ☐ Pipe is Blocked
- ☐ Remove Accumulated Sediment
- ☐ Pipe Maintenance is Required
- ☐ Manhole Undermined or Bypassed
- ☐ Cannot Remove Cover
- ☐ Corrosion at Structure
- ☐ Erosion Around Structure
- ☐ Remove Trash and Debris
- ☐ Need Cement Around Cover
- ☐ Pavement Maintenance is Required

Other: _____

Standing Water in Manhole? Yes ☐ No ☐

Color of Water:
Clear ☐
Cloudy ☑
Other: _____ ☐
Depth above outlet invert: ____

Flow in Manhole? Yes ☑ No ☐

Description of Flow:
Heavy: ☐
Moderate: ☐
Trickling: ☑
Dry: ☐

Color of Flow:
Clear ☐ Suspended Solids ☐
Cloudy ☑ Other: _____ ☐

Odor:
None ☑ Oil ☐
Sewage ☐ Other: _____ ☐

If sediment in manhole indicate percent of pipe filled: %

Interconnection: Yes ☐ No ☐

If Yes, Interconnection ID #: _____
Continue to **Dry Weather Outfall/Interconnection Inspection Form**
If No, indicate if Sample of Flow Collected for Analysis:
Yes ☐ No ☐

Check those present:

- ○ Foam
- ○ Sanitary Waste
- ○ Orange Staining
- ○ Optical Enhancers
- ○ Floatables
- ○ Oil Sheen
- ○ Bacterial Sheen
- ○ Other: _____

Outfall 30

temp. = 15.69

pH = 6.95

Specific conductants = 1297.3 microsemens/cm
milisemens/cm

Salinity = 0.68 ppt

dO = 7.0 mg/L

total chlorine = 29 ppb

detergents = .25 ppm (crimson hall)

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MANHOLE (INTERCONNECTION) INSPECTION FORM

Manhole #: 32 **GPS Location:** _____ **Date/Time:** 6/23

Inspector: _____ **Last rainfall event:** _____ **Weather:** _____

Inspection: Not Found ☐ Surface ☐ Internal ☑ Follow-up Required ☐

Photos of manhole taken: ☐

Manhole Material:	Concrete ☐ Corrugated metal ☐ Stone ☐ Brick ☑ Other: _____ ☐	**Manhole Condition:**	Good ☐ Poor ☑ Fair ☐ Crumbling ☐ Comments: _____
Pipe Material:	Concrete ☑ HDPE ☐ PVC ☐ Clay Tile ☐ Other: _____ ☐	**Pipe Measurements:**	Inlet 1 Dia. (in): d1 = _____ Inlet 2 Dia. (in): d2 = _____ Inlet 3 Dia. (in): d3 = _____ Outlet Dia. (in): D = _____

Required Maintenance/Problems (check all that apply):

- ☐ Tree Work Required
- ☐ New Cover is Required
- ☐ Frame Maintenance is Required
- ☐ Pipe is Blocked
- ☐ Remove Accumulated Sediment
- ☐ Pipe Maintenance is Required
- ☐ Manhole Undermined or Bypassed
- ☐ Cannot Remove Cover
- ☐ Corrosion at Structure
- ☐ Erosion Around Structure
- ☐ Remove Trash and Debris
- ☐ Need Cement Around Cover
- ☐ Pavement Maintenance is Required

Other: _____

Standing Water in Manhole? Yes ☐ No ☑

Color of Water:
Clear ☑
Cloudy ☐
Other: _____ ☐
Depth above outlet invert: ____

Flow in Manhole? Yes ☑ No ☐

Description of Flow:
Heavy: ☐
Moderate: ☑
Trickling: ☐
Dry: ☐

Color of Flow:
Clear ☑ Suspended Solids ☐
Cloudy ☐ Other: ____ ☐

Odor:
None ☑ Oil ☐
Sewage ☐ Other: ____ ☐

If sediment in manhole indicate percent of pipe filled: %

Interconnection: Yes ☐ No ☐

If Yes, Interconnection ID #: _____
Continue to **Dry Weather Outfall/Interconnection Inspection Form**
If No, indicate if Sample of Flow Collected for Analysis:
Yes ☐ No ☐

Check those present:

- ○ Foam
- ○ Sanitary Waste
- ○ Orange Staining
- ○ Optical Enhancers
- ○ Floatables
- ○ Oil Sheen
- ○ Bacterial Sheen
- ○ Other: _____

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MANHOLE (INTERCONNECTION) INSPECTION FORM

Manhole #: 33 **GPS Location:** DRY **Date/Time:** 6/23

Inspector: _____ **Last rainfall event:** _____ **Weather:** _____

Inspection:	**Not Found** ☐ **Surface** ☐ **Internal** ☐ **Follow-up Required** ☐		
Photos of manhole taken: ☐			
Manhole Material:	Concrete ☐ Corrugated metal ☐ Stone ☐ Brick ☐ Other: _____ ☐	**Manhole Condition:**	Good ☐ Poor ☐ Fair ☐ Crumbling ☐ Comments: _____
Pipe Material:	Concrete ☐ HDPE ☐ PVC ☐ Clay Tile ☐ Other: _____ ☐	**Pipe Measurements:**	Inlet 1 Dia. (in): d1 = _____ Inlet 2 Dia. (in): d2 = _____ Inlet 3 Dia. (in): d3 = _____ Outlet Dia. (in): D = _____

Required Maintenance/Problems (check all that apply):

- ☐ Tree Work Required
- ☐ New Cover is Required
- ☐ Frame Maintenance is Required
- ☐ Pipe is Blocked
- ☐ Remove Accumulated Sediment
- ☐ Pipe Maintenance is Required
- ☐ Manhole Undermined or Bypassed
- ☐ Cannot Remove Cover
- ☐ Corrosion at Structure
- ☐ Erosion Around Structure
- ☐ Remove Trash and Debris
- ☐ Need Cement Around Cover
- ☐ Pavement Maintenance is Required

Other: _____

Standing Water in Manhole? Yes ☐ No ☐

Color of Water: Clear ☐ Cloudy ☐ Other: _____ ☐

Depth above outlet invert: ____

Flow in Manhole? Yes ☐ No ☐

Description of Flow: Heavy: ☐ Moderate: ☐ Trickling: ☐ Dry: ☐

Color of Flow: Clear ☐ Cloudy ☐ Suspended Solids ☐ Other: ____ ☐

Odor: None ☐ Sewage ☐ Oil ☐ Other: ____ ☐

If sediment in manhole indicate percent of pipe filled: ____ %

Interconnection: Yes ☐ No ☐

If Yes, Interconnection ID #: _____

Continue to **Dry Weather Outfall/Interconnection Inspection Form**

If No, indicate if Sample of Flow Collected for Analysis:

Yes ☐ No ☐

Check those present:

- ○ Foam
- ○ Sanitary Waste
- ○ Orange Staining
- ○ Optical Enhancers
- ○ Floatables
- ○ Oil Sheen
- ○ Bacterial Sheen
- ○ Other: _____

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MANHOLE (INTERCONNECTION) INSPECTION FORM

Manhole #: 34 **GPS Location:** _____ **Date/Time:** _____

Inspector: _____ **Last rainfall event:** _____ **Weather:** _____

Inspection: Not Found ☐ Surface ☐ Internal ☑ Follow-up Required ☐

Photos of manhole taken: ☐

Manhole Material:	Concrete ☑ Corrugated metal ☐ Stone ☐ Brick ☐ Other: _____ ☐	**Manhole Condition:**	Good ☐ Poor ☐ Fair ☑ Crumbling ☐ Comments: _____
Pipe Material:	Concrete ☐ HDPE ☑ PVC ☐ Clay Tile ☐ Other: _____ ☐	**Pipe Measurements:**	Inlet 1 Dia. (in): d1 = _____ Inlet 2 Dia. (in): d2 = _____ Inlet 3 Dia. (in): d3 = _____ Outlet Dia. (in): D = _____

Required Maintenance/Problems (check all that apply):

- ☐ Tree Work Required
- ☐ New Cover is Required
- ☐ Frame Maintenance is Required
- ☐ Pipe is Blocked
- ☐ Remove Accumulated Sediment
- ☐ Pipe Maintenance is Required
- ☐ Manhole Undermined or Bypassed
- ☐ Cannot Remove Cover
- ☐ Corrosion at Structure
- ☐ Erosion Around Structure
- ☐ Remove Trash and Debris
- ☐ Need Cement Around Cover
- ☐ Pavement Maintenance is Required

Other: _____

Standing Water in Manhole? Yes ☑ No ☐

Color of Water:
Clear ☐
Cloudy ☑
Other: _____ ☐
Depth above outlet invert: ____

Flow in Manhole? Yes ☐ No ☑ standing

Description of Flow:
Heavy: ☐
Moderate: ☐
Trickling: ☐
Dry: ☐

Color of Flow:
Clear ☐ Suspended Solids ☐
Cloudy ☑ Other: _____ ☐

Odor:
None ☑ Oil ☐
Sewage ☐ Other: _____ ☐

If sediment in manhole indicate percent of pipe filled: %

Interconnection: Yes ☐ No ☐

If Yes, Interconnection ID #: _____
Continue to **Dry Weather Outfall/Interconnection Inspection Form**
If No, indicate if Sample of Flow Collected for Analysis:
Yes ☐ No ☐

Check those present:

- ○ Foam
- ○ Sanitary Waste
- ○ Orange Staining
- ○ Optical Enhancers
- ○ Floatables
- ○ Oil Sheen
- ○ Bacterial Sheen
- ○ Other: _____

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MANHOLE (INTERCONNECTION) INSPECTION FORM

Manhole #: 35 **GPS Location:** _____ **Date/Time:** 6/9

Inspector: _____ **Last rainfall event:** _____ **Weather:** _____

Inspection: **Not Found** ☐ **Surface** ☐ **Internal** ☑ **Follow-up Required** ☐

Photos of manhole taken: ☑

Manhole Material:	Concrete ☐ Corrugated metal ☐ Stone ☐ Brick ☐ Other: _____ ☐	**Manhole Condition:**	Good ☐ Fair ☑ Poor ☐ Crumbling ☐ Comments: _____
Pipe Material:	Concrete ☐ HDPE ☑ PVC ☐ Clay Tile ☐ Other: _____ ☐	**Pipe Measurements:**	Inlet 1 Dia. (in): d1 = _____ Inlet 2 Dia. (in): d2 = _____ Inlet 3 Dia. (in): d3 = _____ Outlet Dia. (in): D = _____

Required Maintenance/Problems (check all that apply):

- ☐ Tree Work Required
- ☐ New Cover is Required
- ☐ Frame Maintenance is Required
- ☐ Pipe is Blocked
- ☐ Remove Accumulated Sediment
- ☐ Pipe Maintenance is Required
- ☐ Manhole Undermined or Bypassed
- ☐ Cannot Remove Cover
- ☐ Corrosion at Structure
- ☐ Erosion Around Structure
- ☐ Remove Trash and Debris
- ☐ Need Cement Around Cover
- ☐ Pavement Maintenance is Required

Other: _____

Standing Water in Manhole? Yes ☑ No ☐

Color of Water: Clear ☑ Cloudy ☐ Other: _____ ☐

Depth above outlet invert: _____

Flow in Manhole? Yes ☐ No ☑ (Standing Water)

Description of Flow: Heavy: ☐ Moderate: ☐ Trickling: ☐ Dry: ☐

Color of Flow: Clear ☑ Cloudy ☐ Suspended Solids ☐ Other: _____ ☐

Odor: None ☑ Sewage ☐ Oil ☐ Other: _____ ☐

If sediment in manhole indicate percent of pipe filled: _____ %

Interconnection: Yes ☐ No ☐

If Yes, Interconnection ID #: _____

Continue to **Dry Weather Outfall/Interconnection Inspection Form**

If No, indicate if Sample of Flow Collected for Analysis:

Yes ☐ No ☐

Check those present:

- ○ Foam
- ○ Sanitary Waste
- ○ Orange Staining
- ○ Optical Enhancers
- ○ Floatables
- ○ Oil Sheen
- ○ Bacterial Sheen
- ○ Other: _____

Outfall 35

temp : 21.12

plt : 6.81

dO : 8.62 mg/L

conductivity : ~~1488~~ 1413 mS

salinity : 0.76 ppt

nitrogen = 0

surfactents = 2.0 ppm

chlorine = 0

Nitsch Engineering

2 Center Plaza, Suite 430
Boston, MA 02108-1928
T: 617-338-0063
F: 617-338-6472
www.nitscheng.com

MANHOLE (INTERCONNECTION) INSPECTION FORM

Manhole #: 41 **GPS Location:** _____ **Date/Time:** _____

Inspector: _____ **Last rainfall event:** _____ **Weather:** _____

Inspection: Not Found ☐ Surface ☐ Internal ☐ Follow-up Required ☐

Photos of manhole taken: ☐

Manhole Material:	Concrete ☑ / Corrugated metal ☐ / Stone ☐ / Brick ☐ / Other: _____ ☐	**Manhole Condition:**	Good ☐ Poor ☐ / Fair ☑ Crumbling ☐ / Comments: _____
Pipe Material:	Concrete ☑ / HDPE ☐ / PVC ☐ / Clay Tile ☐ / Other: _____ ☐	**Pipe Measurements:**	Inlet 1 Dia. (in): d1 = _____ / Inlet 2 Dia. (in): d2 = _____ / Inlet 3 Dia. (in): d3 = _____ / Outlet Dia. (in): D = _____

Required Maintenance/Problems (check all that apply):

- ☐ Tree Work Required
- ☐ New Cover is Required
- ☐ Frame Maintenance is Required
- ☐ Pipe is Blocked
- ☐ Remove Accumulated Sediment
- ☐ Pipe Maintenance is Required
- ☐ Manhole Undermined or Bypassed
- ☐ Cannot Remove Cover
- ☐ Corrosion at Structure
- ☐ Erosion Around Structure
- ☐ Remove Trash and Debris
- ☐ Need Cement Around Cover
- ☐ Pavement Maintenance is Required

Other: _____

Standing Water in Manhole? Yes ☑ No ☐

Color of Water: Clear ☐ / Cloudy ☑ / Other: _____ ☐

Depth above outlet invert: _____

Flow in Manhole? Yes ☐ No ☑ Standing

Description of Flow: Heavy: ☐ / Moderate: ☐ / Trickling: ☐ / Dry: ☐

Color of Flow: Clear ☐ / Cloudy ☑ / Suspended Solids ☐ / Other: _____ ☐

Odor: None ☑ / Sewage ☐ / Oil ☐ / Other: _____ ☐

If sediment in manhole indicate percent of pipe filled: _____ %

Interconnection: Yes ☐ No ☐

If Yes, Interconnection ID #: _____

Continue to **Dry Weather Outfall/Interconnection Inspection Form**

If No, indicate if Sample of Flow Collected for Analysis:

Yes ☐ No ☐

Check those present:

- ○ Foam
- ○ Sanitary Waste
- ○ Orange Staining
- ○ Optical Enhancers
- ○ Floatables
- ○ Oil Sheen
- ○ Bacterial Sheen
- ○ Other: _____

Environmental Chemistry
Site Assessment
Quality Assurance Services

Environmental Services
Site Sampling
Data Auditing

CERTIFICATE OF ANALYSIS

Patricia Delaney
Bridgewater State University
200 Great Hill Drive
Bridgewater, MA 02325

COLLECTED BY: P. Delaney
TIME: 10:22
LOCATION: Outfall Manhole 30
Grab

REPORTED: 06/23/2020
ORDER #: G2047944
SAMPLE DATE: 6/9/2020
DATE RECEIVED: 6/9/2020
SAMPLE ID: Stormwater Management
DESCRIPTION: WATER

RESULTS OF ANALYSIS

Parameter	Analytical Method	Date Analyzed	Units	Det. Limit*	Result
Test Parameters				**LAB-ID#:** **2047944-01**	
Ammonia, Nitrogen 350.1	EPA 350.1	06/11/2020	mg/L	0.10	**0.70**
E.Coli(MF)1604	EPA 1604	06/09/2020	CFU/100 mL	1	**6**
Kjeldahl, Nitrogen	EPA 351.2	06/22/2020	mg/L	0.50	**1.35**
Nitrate, Nitrogen 4110B	SM 4110 B	06/10/2020	mg/L	0.50	**1.73**
Nitrite, Nitrogen 4110B	SM 4110 B	06/10/2020	mg/L	0.25	**ND**
Nitrogen, Total	Calculation	06/22/2020	mg/L	1.0	**3.08**

Unless otherwise noted, all analyses were conducted by Analytical Balance Corp. (M-MA022).

CERTIFICATE OF ANALYSIS

Patricia Delaney
Bridgewater State University
200 Great Hill Drive
Bridgewater, MA 02325

COLLECTED BY: P. Delaney
TIME: 11:45
LOCATION: Outfall Manhole 14
Grab

REPORTED: 06/23/2020
ORDER #: G2047944
SAMPLE DATE: 6/9/2020
DATE RECEIVED: 6/9/2020
SAMPLE ID: Stormwater Management
DESCRIPTION: WATER

RESULTS OF ANALYSIS

Parameter	Analytical Method	Date Analyzed	Units	Det. Limit*	Result
Test Parameters				**LAB-ID#:** **2047944-02**	
Ammonia, Nitrogen 350.1	EPA 350.1	06/11/2020	mg/L	0.10	**0.37**
Chlorine, Residual	SM4500-Cl G	06/09/2020	mg/L	0.01	**ND**
E.Coli(MF)1604	EPA 1604	06/09/2020	CFU/100 mL	1	**57**
Kjeldahl, Nitrogen	EPA 351.2	06/22/2020	mg/L	0.50	**3.76**
Nitrate, Nitrogen 4110B	SM 4110 B	06/10/2020	mg/L	0.50	**ND**
Nitrite, Nitrogen 4110B	SM 4110 B	06/10/2020	mg/L	0.25	**ND**
Nitrogen, Total	Calculation	06/22/2020	mg/L	1.0	**3.76**

Unless otherwise noted, all analyses were conducted by Analytical Balance Corp. (M-MA022).

CERTIFICATE OF ANALYSIS

Patricia Delaney
Bridgewater State University
200 Great Hill Drive
Bridgewater, MA 02325

COLLECTED BY: P. Delaney
TIME: 12:44
LOCATION: Outfall Manhole 9
Grab

REPORTED: 06/23/2020
ORDER #: G2047944
SAMPLE DATE: 6/9/2020
DATE RECEIVED: 6/9/2020
SAMPLE ID: Stormwater Management
DESCRIPTION: WATER

RESULTS OF ANALYSIS

Parameter	Analytical Method	Date Analyzed	Units	Det. Limit*	Result
Test Parameters				**LAB-ID#:** **2047944-03**	
Ammonia, Nitrogen 350.1	EPA 350.1	06/11/2020	mg/L	0.10	**0.33**
E.Coli(MF)1604	EPA 1604	06/09/2020	CFU/100 mL	1	**<1**
Kjeldahl, Nitrogen	EPA 351.2	06/22/2020	mg/L	0.50	**1.11**
Nitrate, Nitrogen 4110B	SM 4110 B	06/10/2020	mg/L	0.50	**ND**
Nitrite, Nitrogen 4110B	SM 4110 B	06/10/2020	mg/L	0.25	**ND**
Nitrogen, Total	Calculation	06/22/2020	mg/L	1.0	**1.11**

Unless otherwise noted, all analyses were conducted by Analytical Balance Corp. (M-MA022).

CERTIFICATE OF ANALYSIS

Patricia Delaney
Bridgewater State University
200 Great Hill Drive
Bridgewater, MA 02325

COLLECTED BY: P. Delaney
TIME: 13:02
LOCATION: Outfall Manhole 10
Grab

REPORTED: 06/23/2020
ORDER #: G2047944
SAMPLE DATE: 6/9/2020
DATE RECEIVED: 6/9/2020
SAMPLE ID: Stormwater Management
DESCRIPTION: WATER

RESULTS OF ANALYSIS

Parameter	Analytical Method	Date Analyzed	Units	Det. Limit*	Result
Test Parameters				**LAB-ID#:** **2047944-04**	
Ammonia, Nitrogen 350.1	EPA 350.1	06/11/2020	mg/L	0.10	**0.26**
E.Coli(MF)1604	EPA 1604	06/09/2020	CFU/100 mL	1	**2**
Kjeldahl, Nitrogen	EPA 351.2	06/22/2020	mg/L	0.50	**1.54**
Nitrate, Nitrogen 4110B	SM 4110 B	06/10/2020	mg/L	0.50	**1.08**
Nitrite, Nitrogen 4110B	SM 4110 B	06/10/2020	mg/L	0.25	**ND**
Nitrogen, Total	Calculation	06/22/2020	mg/L	1.0	**2.62**

Unless otherwise noted, all analyses were conducted by Analytical Balance Corp. (M-MA022).

NA = Not Applicable
ND = Not Detected
'<' = Less Than
'*' = Detection Limit

Approved By: _____
Lab Manager / Date

Analytical Balance CORPORATION

CERTIFICATE OF ANALYSIS

Patricia Delaney
Bridgewater State University
200 Great Hill Drive
Bridgewater, MA 02325

COLLECTED BY: P. Delaney
TIME: 9:50
LOCATION: Outfall Manhole 23
Grab

REPORTED: 07/14/2020
ORDER #: G2048415
SAMPLE DATE: 6/23/2020
DATE RECEIVED: 6/23/2020
SAMPLE ID: Storm Water Management
DESCRIPTION: WATER

RESULTS OF ANALYSIS

Parameter	Analytical Method	Date Analyzed	Units	Det. Limit*	Result
Test Parameters				**LAB-ID#:** **2048415-01**	
E.Coli(MF)1604	EPA 1604	06/23/2020	CFU/100 mL	1	**<1**
Kjeldahl, Nitrogen	EPA 351.2	07/13/2020	mg/L	0.50	**ND**
Nitrate, Nitrogen 4110B	SM 4110 B	06/23/2020	mg/L	0.50	**2.36**
Nitrite, Nitrogen 4110B	SM 4110 B	06/23/2020	mg/L	0.25	**0.36**
Nitrogen, Total	Calculation	07/13/2020	mg/L	1.0	**2.72**

Unless otherwise noted, all analyses were conducted by Analytical Balance Corp. (M-MA022).

CERTIFICATE OF ANALYSIS

Patricia Delaney
Bridgewater State University
200 Great Hill Drive
Bridgewater, MA 02325

COLLECTED BY: P. Delaney
TIME: 10:35
LOCATION: Outfall Manhole 25A
Grab

REPORTED: 07/14/2020
ORDER #: G2048415
SAMPLE DATE: 6/23/2020
DATE RECEIVED: 6/23/2020
SAMPLE ID: Storm Water Management
DESCRIPTION: WATER

RESULTS OF ANALYSIS

Parameter	Analytical Method	Date Analyzed	Units	Det. Limit*	Result
Test Parameters				**LAB-ID#:** **2048415-02**	
E.Coli(MF)1604	EPA 1604	06/23/2020	CFU/100 mL	1	**1**
Kjeldahl, Nitrogen	EPA 351.2	07/13/2020	mg/L	0.50	**ND**
Nitrate, Nitrogen 4110B	SM 4110 B	06/23/2020	mg/L	0.50	**2.17**
Nitrite, Nitrogen 4110B	SM 4110 B	06/23/2020	mg/L	0.25	**ND**
Nitrogen, Total	Calculation	07/13/2020	mg/L	1.0	**2.17**

Unless otherwise noted, all analyses were conducted by Analytical Balance Corp. (M-MA022).

CERTIFICATE OF ANALYSIS

Patricia Delaney
Bridgewater State University
200 Great Hill Drive
Bridgewater, MA 02325

COLLECTED BY: P. Delaney
TIME: 11:48
LOCATION: Outfall Manhole 7B
Grab

REPORTED: 07/14/2020
ORDER #: G2048415
SAMPLE DATE: 6/23/2020
DATE RECEIVED: 6/23/2020
SAMPLE ID: Storm Water Management
DESCRIPTION: WATER

RESULTS OF ANALYSIS

Parameter	Analytical Method	Date Analyzed	Units	Det. Limit*	Result
Test Parameters				**LAB-ID#:** **2048415-03**	
E.Coli(MF)1604	EPA 1604	06/23/2020	CFU/100 mL	1	**<1**
Kjeldahl, Nitrogen	EPA 351.2	07/13/2020	mg/L	0.50	**ND**
Nitrate, Nitrogen 4110B	SM 4110 B	06/23/2020	mg/L	0.50	**3.93**
Nitrite, Nitrogen 4110B	SM 4110 B	06/23/2020	mg/L	0.25	**ND**
Nitrogen, Total	Calculation	07/13/2020	mg/L	1.0	**3.93**

Unless otherwise noted, all analyses were conducted by Analytical Balance Corp. (M-MA022).

CERTIFICATE OF ANALYSIS

Patricia Delaney
Bridgewater State University
200 Great Hill Drive
Bridgewater, MA 02325

COLLECTED BY: P. Delaney
TIME: 10:54
LOCATION: Outfall Manhole 25B
Grab

REPORTED: 07/14/2020
ORDER #: G2048415
SAMPLE DATE: 6/23/2020
DATE RECEIVED: 6/23/2020
SAMPLE ID: Storm Water Management
DESCRIPTION: WATER

RESULTS OF ANALYSIS

Parameter	Analytical Method	Date Analyzed	Units	Det. Limit*	Result
Test Parameters				**LAB-ID#:** **2048415-04**	
E.Coli(MF)1604	EPA 1604	06/23/2020	CFU/100 mL	1	**36**
Kjeldahl, Nitrogen	EPA 351.2	07/13/2020	mg/L	0.50	**ND**
Nitrate, Nitrogen 4110B	SM 4110 B	06/23/2020	mg/L	0.50	**3.21**
Nitrite, Nitrogen 4110B	SM 4110 B	06/23/2020	mg/L	0.25	**ND**
Nitrogen, Total	Calculation	07/13/2020	mg/L	1.0	**3.21**

Unless otherwise noted, all analyses were conducted by Analytical Balance Corp. (M-MA022).

CERTIFICATE OF ANALYSIS

Patricia Delaney
Bridgewater State University
200 Great Hill Drive
Bridgewater, MA 02325

COLLECTED BY: P. Delaney
TIME: 12:12
LOCATION: Outfall Manhole 24
Grab

REPORTED: 07/14/2020
ORDER #: G2048415
SAMPLE DATE: 6/23/2020
DATE RECEIVED: 6/23/2020
SAMPLE ID: Storm Water Management
DESCRIPTION: WATER

RESULTS OF ANALYSIS

Parameter	Analytical Method	Date Analyzed	Units	Det. Limit*	Result
Test Parameters				**LAB-ID#:** **2048415-05**	
E.Coli(MF)1604	EPA 1604	06/23/2020	CFU/100 mL	1	**<1**
Kjeldahl, Nitrogen	EPA 351.2	07/13/2020	mg/L	0.50	**1.02**
Nitrate, Nitrogen 4110B	SM 4110 B	06/23/2020	mg/L	0.50	**2.05**
Nitrite, Nitrogen 4110B	SM 4110 B	06/23/2020	mg/L	0.25	**ND**
Nitrogen, Total	Calculation	07/13/2020	mg/L	1.0	**3.07**

Unless otherwise noted, all analyses were conducted by Analytical Balance Corp. (M-MA022).

NA = Not Applicable
ND = Not Detected
'<' = Less Than
'*' = Detection Limit

Approved By: _____
Lab Manager / Date

APPENDIX D

WATER QUALITY ANALYSIS INSTRUCTIONS, USER'S MANUALS
AND STANDARD OPERATING PROCEDURES

Bridgewater State University Watershed Access Lab performed all field testing for Dry Weather Screening. Laboratory operating procedures, including equipment analysis instructions, are maintained at the BSU Lab and consistent with EPA requirements. These can be made available upon request.

APPENDIX E

IDDE EMPLOYEE TRAINING RECORD
Year 2

Nitsch Engineering
Celebrating 30 Years!

2 Center Plaza, Suite 430
Boston, MA 02108-1928
T: 617-338-0063
F: 617-338-6472
www.nitscheng.com

Bridgewater State University
Massachusetts Small MS4 Permit – Annual Training
March 10, 2020

Sign-In Sheet

Name	Department	Position
Patty Delaney	EH&S	EH&S officer
Greg Folsom	FMP	chief engineer
Melinda Lamoureux	FMP	Director, ~~Asst~~ FM
MARK CARNODY	~~Asst~~ Operations	Asst VP Ops
Tyson Davis	FM	Assistant Director
Mike Murphy	FMP	Maintainer III
Philip Laliberte	Grounds (FMP)	Head of Grounds
David Sarsa	Grounds	Equipment oper.
MARK McISAAC	GROUNDS	EQUIP OPER
Robbie Gomes	GROUNDS	SKILLED LABORER
NICK MONTVILLE	GROUNDS	MAINTAINER II
BILL HOWES	PLBG	PLUMBER
Frank Goulart	Garage	Mechanic
MARK Holmes	Garage	mechanic
MATT Kirkland	Garage	Mechanic
DAN ROSE	VM	FARMAT

2016 Massachusetts Small MS4 Permit
Annual Training

Presenters:

Patricia Delaney, Bridgewater State University

Jennifer Johnson, Nitsch Engineering

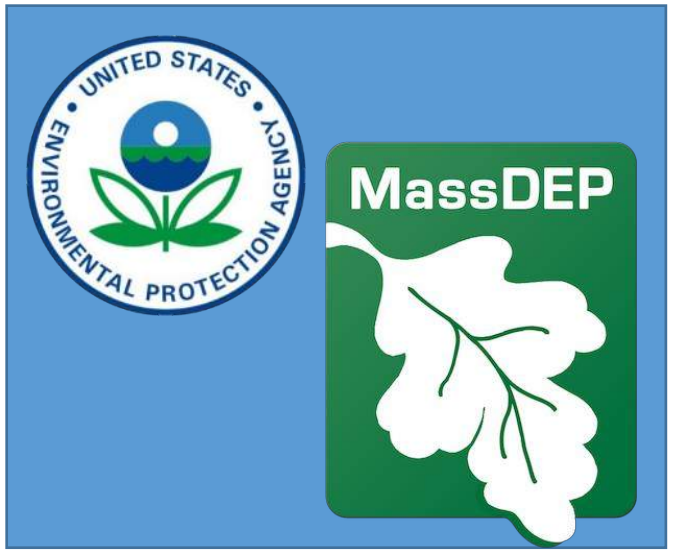
March 10, 2020

@nitscheng

Building better communities with you

Today's Presentation

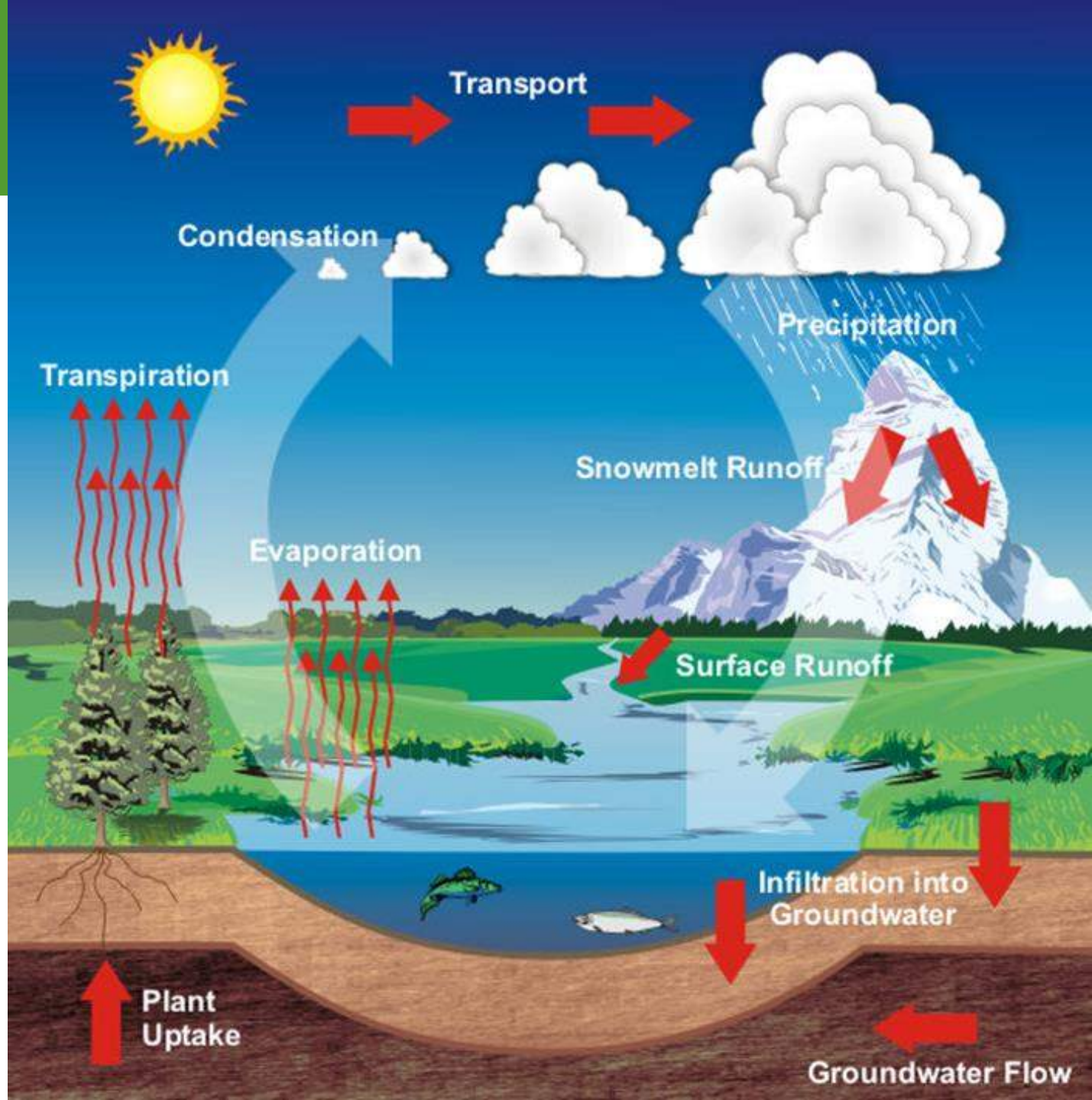
- What is Stormwater?
- 2016 Small MS4 Permit Program Overview
- BSU Stormwater Management Program



What is Stormwater?

The Water Cycle

Stormwater = Surface Runoff



Water Balance and Development

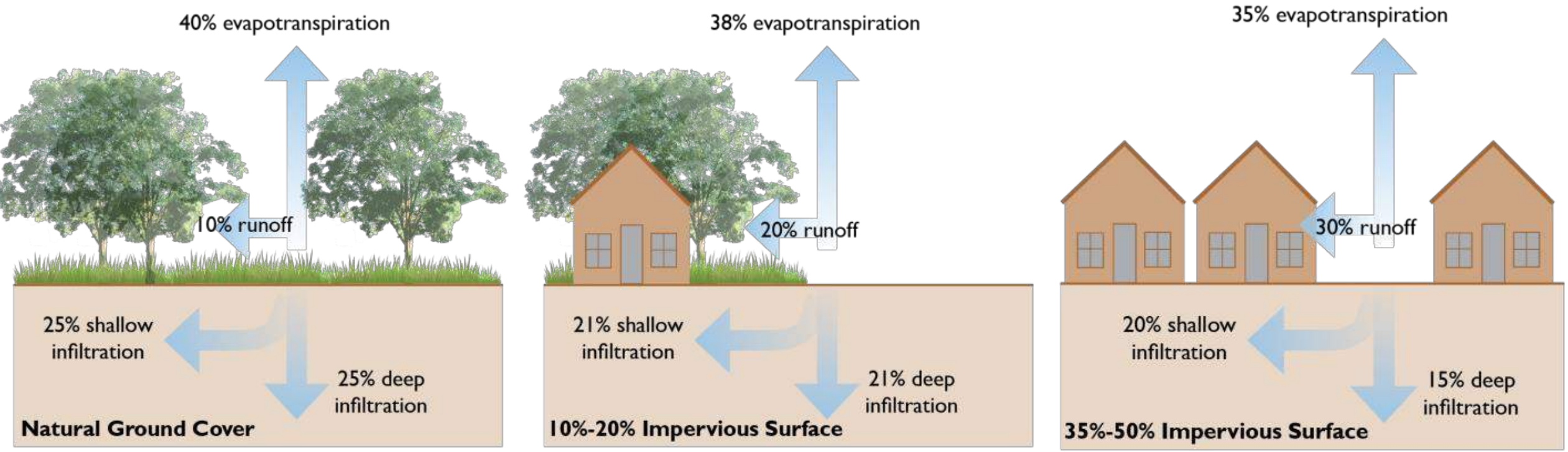
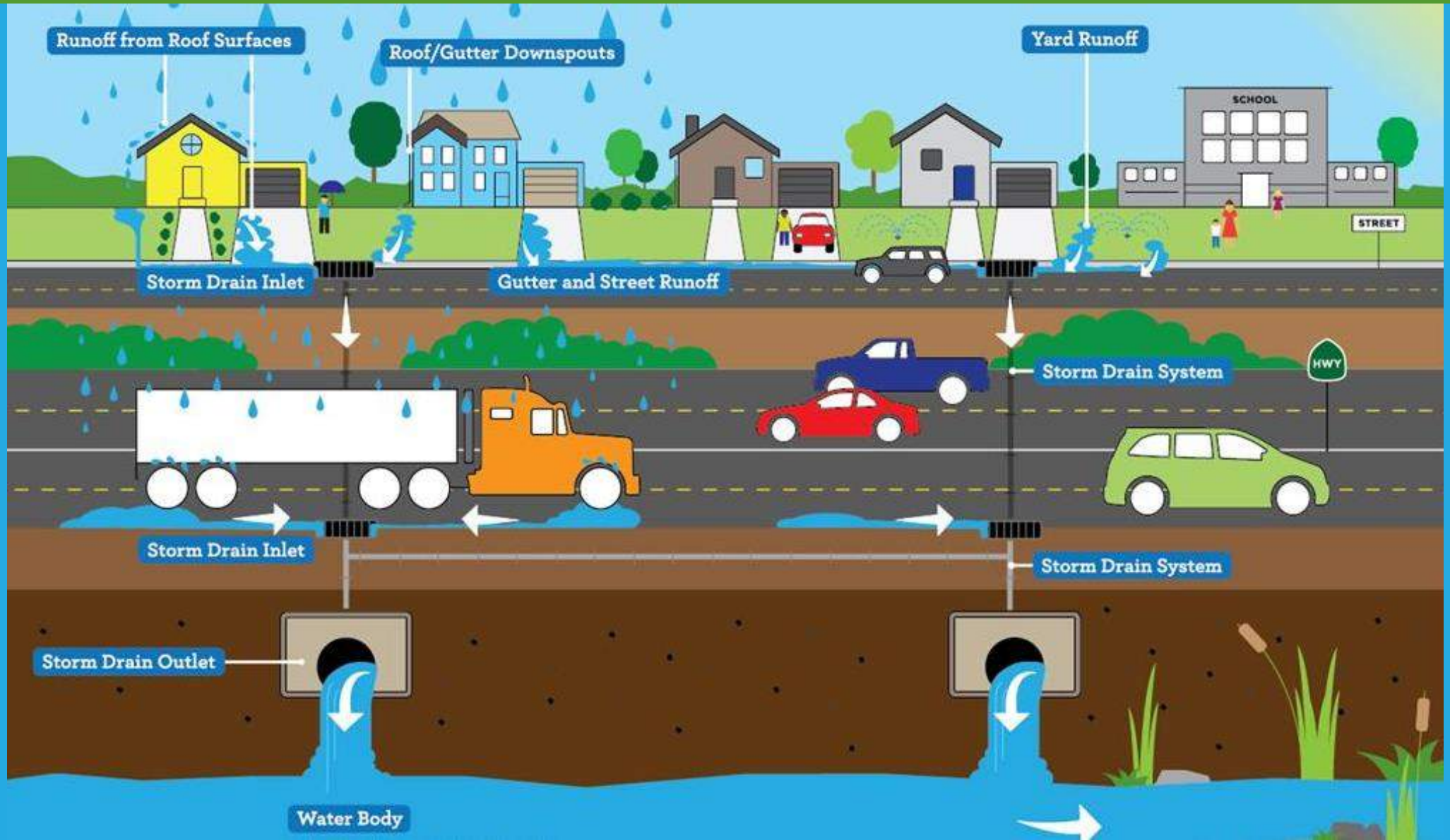
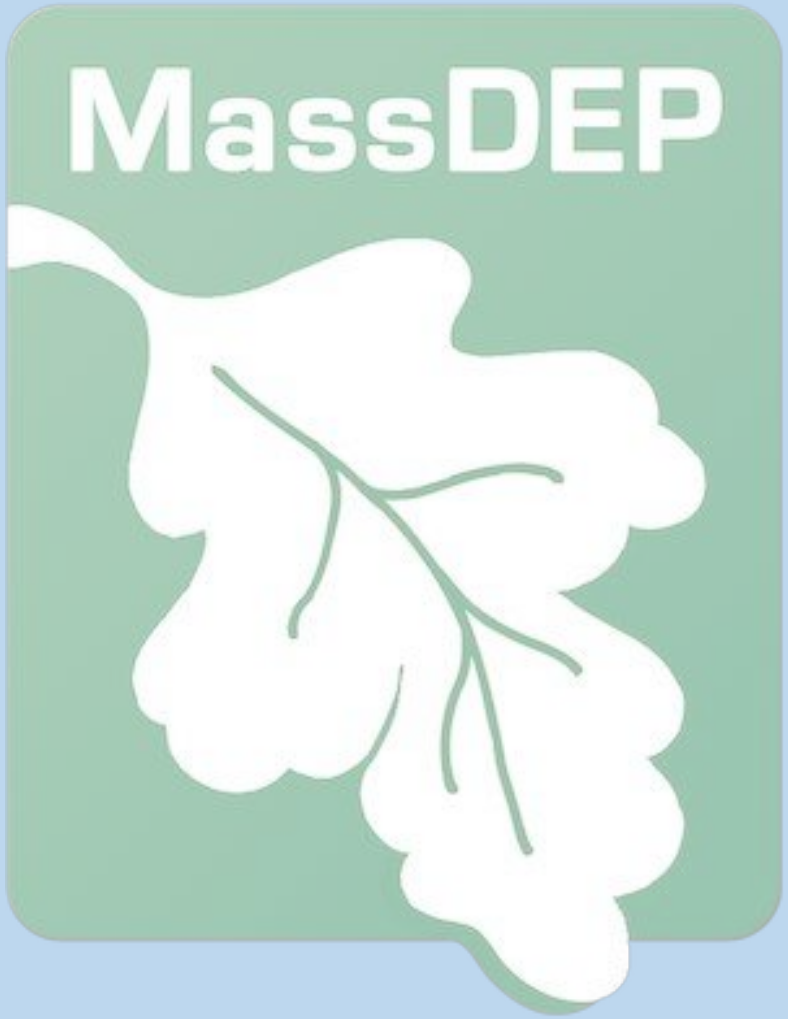


Diagram inspired by a graphic produced by the Federal Interagency Stream Restoration Working Group (FISRWG)

Stormwater Runoff



2016 Small MS4 Permit Program Overview



Six Minimum Control Measures

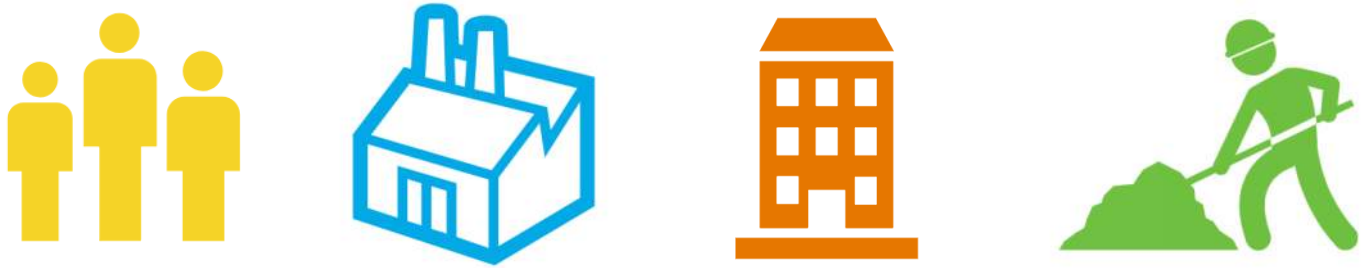
The MS4 Permit requires BSU to meet specific requirements under the six minimum control measures:

1. Pubic Education and Outreach
2. Public Participation
3. Illicit Discharge Detection and Elimination
4. Management of Construction Site Runoff
5. Management of Post-Construction Site Runoff
6. Good Housekeeping in Campus Operations

1 Public Education and Outreach

Provide educational material about stormwater to four audiences:

Residents *Industry* *Commercial* *Construction*



Provide the targeted audience information about stormwater and how their actions may impact it

For BSU, this includes employees (faculty and staff), students, visitors, and contractors

2 Public Participation

BSU is required to at least annually **provide an opportunity for the public to participate in the development/ implementation of their Stormwater Management Program (SWMP).**

3 Illicit Discharge Detection and Elimination

Illicit Discharge = Any discharge to an MS4 that is not comprised entirely of stormwater is an illicit discharge (ID).

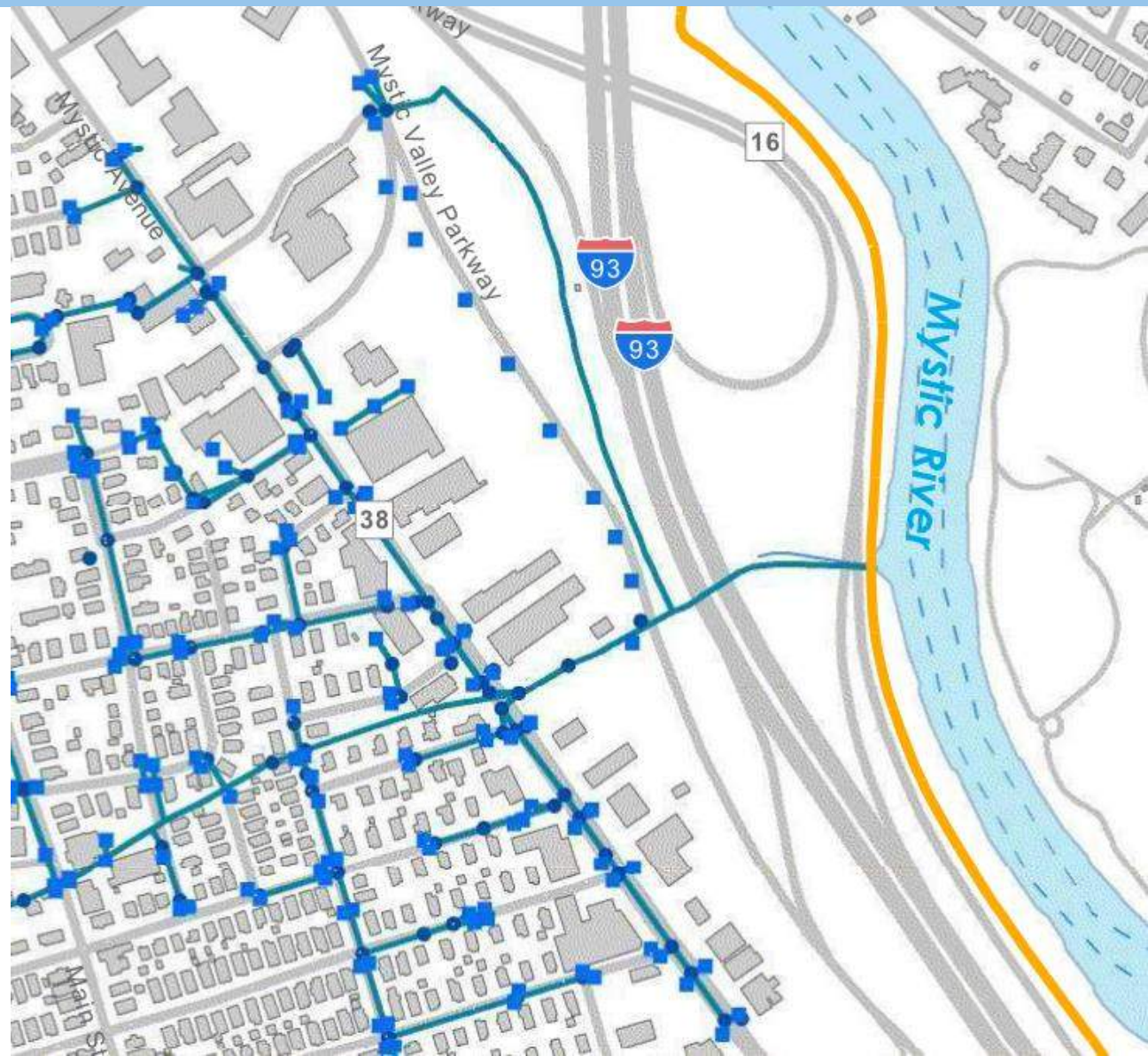
IDs can be caused by a variety of sources:

- Leaking sanitary sewers or water mains;
- Illegal sewage connections;
- Illegal floor drain connections;
- Seasonal draining of swimming pools; breakout from failing septic systems; and
- Spills and dumping.

3 Illicit Discharge Detection and Elimination

BSU is required to proactively and systematically **find and eliminate sources of non-stormwater from its storm sewer system.**

Part of this requirement includes the development of a **system wide storm sewer system map.**



4 Management of Construction Site Runoff

BSU is required to have a **policy for the management of stormwater discharges from construction sites** that disturb one or more acres of land.

Requirements

- Policy
- Site Inspection Procedures
- Sediment Control Requirements
- Requirements To Control Waste
- Site Plan Review

5 Management of Post Construction Site Runoff
(New Development and Redevelopment)

BSU is required to address stormwater runoff from new development and redevelopment that disturb one or more acres of land.

This control measure encourages the use of low impact design techniques and requires the retention or treatment of runoff on site using green infrastructure practices.

6 Good Housekeeping in Campus Operations

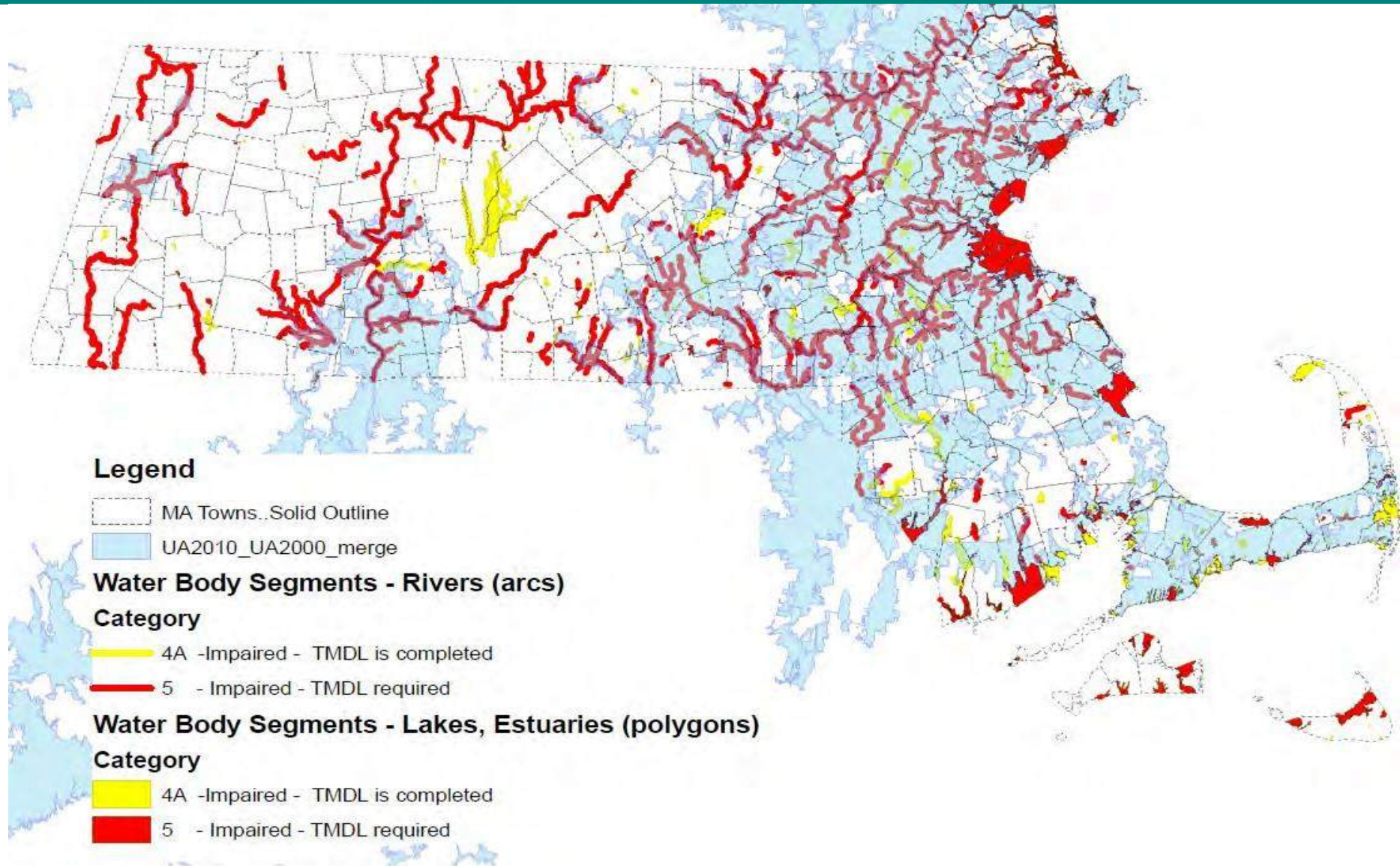
BSU is required to implement **good housekeeping practices in campus operations** such as vehicle maintenance, open space, buildings and infrastructure.

Requirements

- O&M Procedures
- Catch Basin Cleaning
- Street Sweeping
- SWPPP

Impaired Water Requirements

- **Nitrogen**
- Phosphorus
- Metals
- Solids
- **Bacteria or Pathogens**
- Chloride
- Oil And Grease



BSU Stormwater Management Program

BSU Stormwater Management Program: Year 1

Formed Stormwater Committee

Developed Stormwater Management Plan

Focused on Meeting Year 1 Permit Requirements

Submitted Year 1 Annual Report

10/1/2018	Notice of Intent (NOI)
6/30/2019	Prepare Stormwater Management Plan (SWMP)
6/30/2019 **MCM 3**	Illicit Discharge Detection and Elimination (IDDE)
6/30/2019 **MCM 4**	Construction Site Runoff Control

6/30/2019 **MCM 6**	Catch Basin Cleaning
6/30/2019 **MCM 6**	Street Sweeping
6/30/2019 **MCM 6**	Winter Road Maintenance
6/30/2019 **MCM 6**	Stormwater infrastructure maintenance

BSU Stormwater Management Committee

Patricia Delaney, Assistant Director, Environmental Health and Safety Officer

Karen Jason, Vice President of Operations

Melinda Lamoureux, Director of Facilities Management

Thomas O'Connor, Director of Capital Planning for Operations

Jayson Davis, Assistant Director of Facilities Management

Phil Laliberte, Building Maintenance Supervisor II

Kevin Curry, Professor and Faculty Coordinator of the Watershed Access Lab

John Kucich, Coordinator, Center for Sustainability

1 Public Education and Outreach

Provide educational material about stormwater

Nitrogen messaging

Stormwater Pollution: Landscape Education flyer was distributed last spring

Reminder for how landscape activities impact our stormwater system and the waters that receive our stormwater discharges

Employees ***Students*** ***Visitors*** ***Contractors***

What can I do? Review and follow BSU guidelines for proper landscaping practices

- Fertilizer use
- Composting grass clippings in spring/summer and leaf litter in fall

1 Public Education and Outreach

Provide educational material about stormwater

Pathogens messaging

Pet waste and surface water quality informational flyer was distributed last spring

Reminder for how pet waste left on our grounds, in forest areas and parks, can have many adverse effects on the environment

What can I do? Review and follow BSU guidelines for managing pet waste

- Bring a plastic bag when you walk your pet
- Bag pet waste and properly dispose of it by putting it in a trash can

Employees ***Students*** ***Visitors*** ***Contractors***

3 Illicit Discharge Detection and Elimination

Legal Authority (2.3.4.a and 2.3.4.6.a) **IDDE Policy**	An ordinance, bylaw or other regulatory mechanism which provides the MS4 operator the legal authority to: prohibit IDs, investigate suspected IDs, eliminate IDs, and enforce the IDDE program (already required under the 2003 Small MS4 Permit).
Protocol & Responsibilities (2.3.4.6.c)	Identifies who is responsible for eliminating known IDs or other problems. Establishes protocols to: eliminate illicit connections or other problems, document and verify the removal of IDs and track progress towards overall program goals.
Priority Ranking Assessment and Priority Ranking of Outfalls (2.3.4.7)	Assesses the ID and SSO potential of all outfalls and priority rank them as problem, high priority, low priority, or excluded based on a number of criteria.

Catchment Investigations (2.3.4.8) **Mapping**	Requires a written systematic procedure to investigate each catchment with an outfall within 18 months of the permit effective date. Also must identify maps, historic plans, and records; include a manhole inspection methodology; and establish procedures to isolate, confirm, and remove sources of IDs.
Indicators of IDDE Program Progress (2.3.4.9)	Describes the indicators to be used to track progress of the program and gauge its success.
Ongoing Screening (2.3.4.10)	Consists of dry weather screening and sampling and wet weather screening and sampling once every five years upon completion of all catchment investigations.
Employee Training (2.3.4.11)	Creates a program of training on how to recognize IDs and SSOs. Training frequency and type must be documented in the annual report.

3 IDDE: BSU Policy

Bridgewater State University

Illicit Discharge Detection and Elimination (IDDE) Policy

June 2019

Responsible Officer: Environmental Health and Safety Officer

1. PURPOSE

The purpose of this policy is to establish methods for controlling the introduction of pollutants into the Bridgewater State University (BSU) separate storm sewer system to comply with requirements of the 2016 National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (MS4) in Massachusetts, as implemented through the United States Environmental Protection Agency (EPA). The 2016 Small MS4 Permit was signed by EPA and the Massachusetts Department of Environmental Protection (MassDEP) on April 4, 2016 and became effective on July 1, 2018 in compliance with the provisions

3 IDDE: BSU Policy

- No employee, student, visitor, contractor or department at BSU shall cause or allow discharges into BSU's storm drain system or watercourses which are not composed entirely of stormwater, except for the allowed discharges provided in the 2016 Small MS4 Permit
- Prohibited discharges include, but are not limited to: **oil, anti-freeze, grease, chemicals, wash water, paint, animal waste, garbage, and litter**
- The spilling, dumping, or disposal of materials other than stormwater to the storm drain system is prohibited

What can I do? Review BSU IDDE Policy

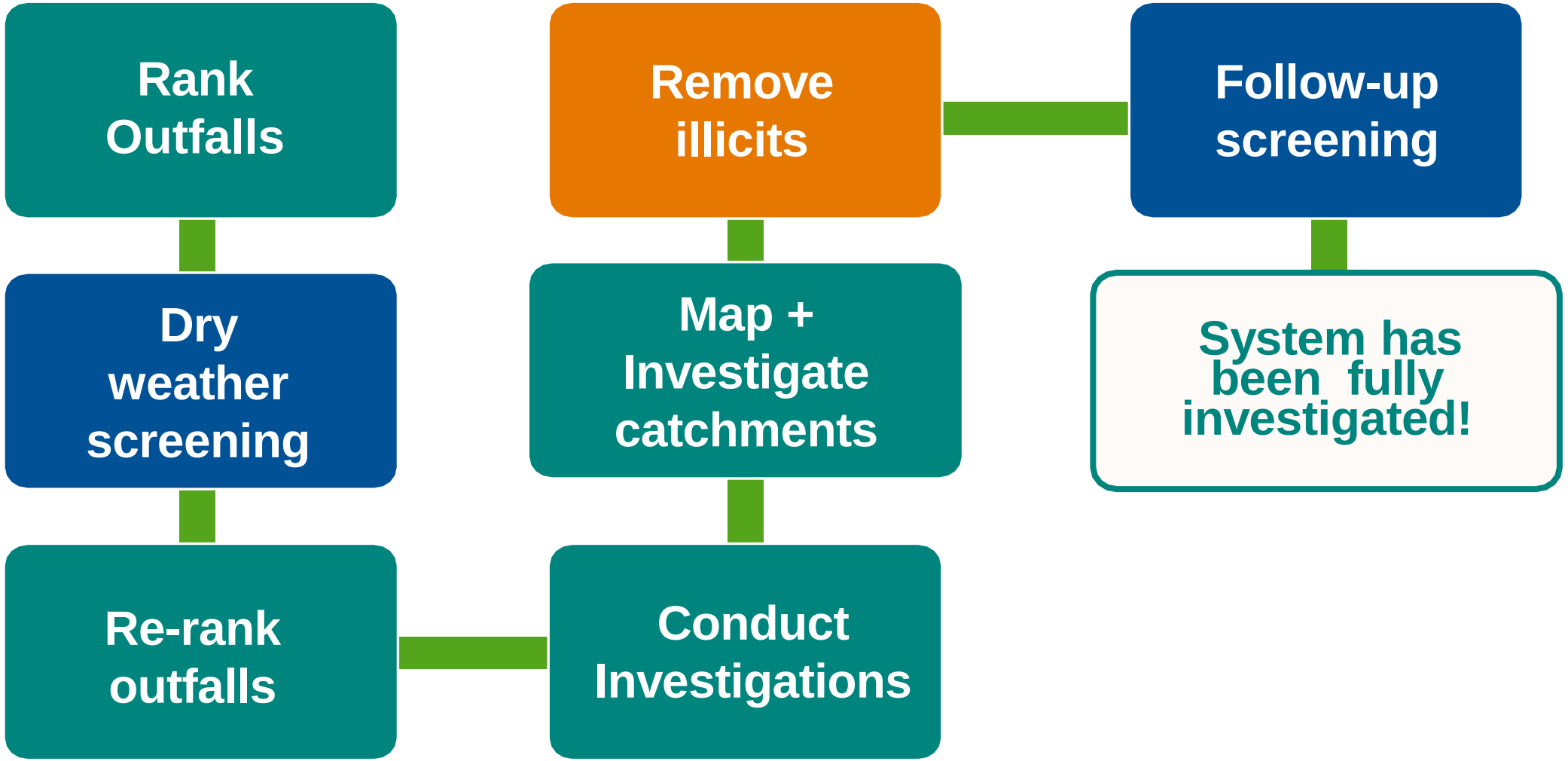
- Report a spill or illicit discharge to the EHS Officer once observed
- BSU shall take immediate action to perform an initial investigation and take appropriate measures to prevent further discharge and begin remediation of pollution

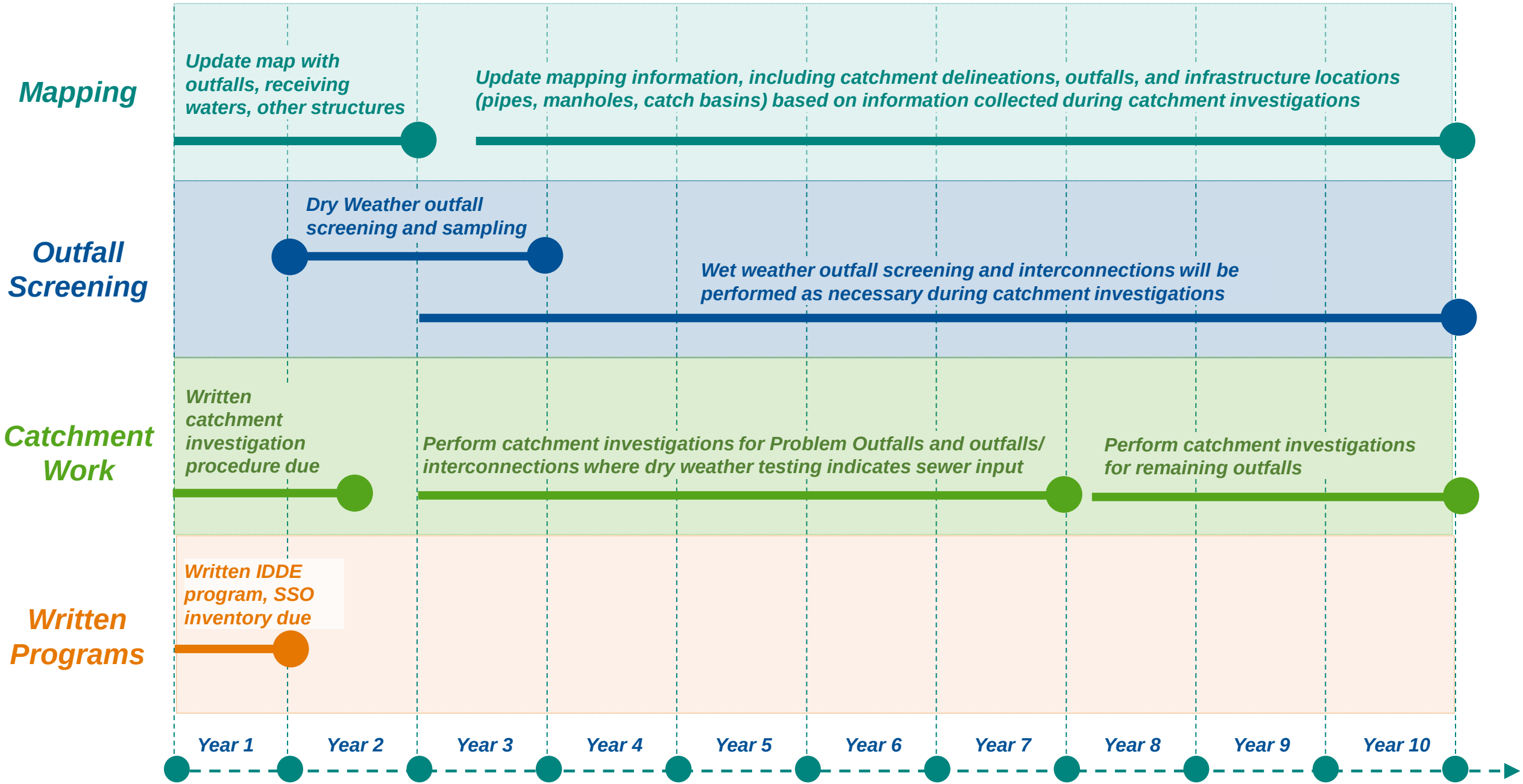
3 IDDE: BSU Mapping

3 IDDE: Priority Ranking of Outfalls

Outfall/ Interconnection ID	Receiving Water / MS4	Previous Screening Results Indicate Likely Sewer Input? [1]	Discharging to Area of Concern to Public Health? [2]	Frequency of Past Discharge Complaints	Receiving Water Quality [3]	Land Use of Generating Sites [4]	Age of Development/ Infrastructure [5]	Historic Combined Sewers or Septic? [6]	Culverted Streams? [7]	Score	Priority Ranking*
Information Source		Outfall inspections and sample results	GIS Maps	Facilities Maintenance (FM) Staff	Impaired Waters List	Land Use/GIS Maps, Aerial Photography	Land Use Information, Visual Observation	FM Staff, GIS Maps	GIS and Storm System Maps		
Scoring Criteria		Yes = 3 (**Problem**) No = 0	Yes = 3 No = 0	Frequent = 3 Occasional = 2 None = 0	Poor = 3 Fair = 2 Good = 0	High = 3 Medium = 2 Low = 1	High = 3 Medium = 2 Low = 1	Yes = 3 No = 0	Yes = 3 No = 0		
Interconnection 01	Town of Bridgewater	0	0	0	3	1	3	0	0	7	High
Outfall 03	Town River	0	0	0	3	1	1	0	3	8	High
Outfall 04	Town River	0	0	0	3	1	3	0	0	7	High
Interconnection 05	Town of Bridgewater	0	0	0	3	1	3	0	0	7	High
Outfall 06	Town River	0	0	0	3	1	1	0	0	5	High
Interconnection 07	Town of Bridgewater	0	0	0	3	1	1	0	3	8	High
Interconnection 08	Town of Bridgewater	0	0	0	3	1	1	0	0	5	High
Outfall 10	South Brook	0	0	0	3	2	1	0	0	6	High
Outfall 11	South Brook	0	0	0	3	2	1	0	0	6	High
Outfall 12	South Brook	0	0	0	3	1	1	0	0	5	High
Outfall 13	South Brook	0	0	0	3	1	1	0	0	5	High
Interconnection 14	Town of Bridgewater	0	0	0	3	1	1	0	0	5	High
Interconnection 16	Town of Bridgewater	0	0	0	3	1	3	0	0	7	High
Interconnection 18	Town of Bridgewater	0	0	0	3	1	1	0	0	5	High
Interconnection 19	Town of Bridgewater	0	0	0	3	1	1	0	0	5	High
Outfall 20	Town River	0	0	0	3	1	2	0	0	6	High
Interconnection 21	MBTA	0	0	0	3	1	3	0	0	7	High

3 IDDE: System Investigation Procedure




Mapping
Update map with outfalls, receiving waters, other structures
Update mapping information, including catchment delineations, outfalls, and infrastructure locations (pipes, manholes, catch basins) based on information collected during catchment investigations
Outfall Screening
Dry Weather outfall screening and sampling
Wet weather outfall screening and interconnections will be performed as necessary during catchment investigations
Catchment Work
Written catchment investigation procedure due
Perform catchment investigations for Problem Outfalls and outfalls/ interconnections where dry weather testing indicates sewer input
Perform catchment investigations for remaining outfalls
Written Programs
Written IDDE program, SSO inventory due
Year 1
Year 2
Year 3
Year 4
Year 5
Year 6
Year 7
Year 8
Year 9
Year 10

6 Good Housekeeping in Campus Operations

BSU has developed standard operating procedures for the following:

Catch Basin Inspection and Cleaning

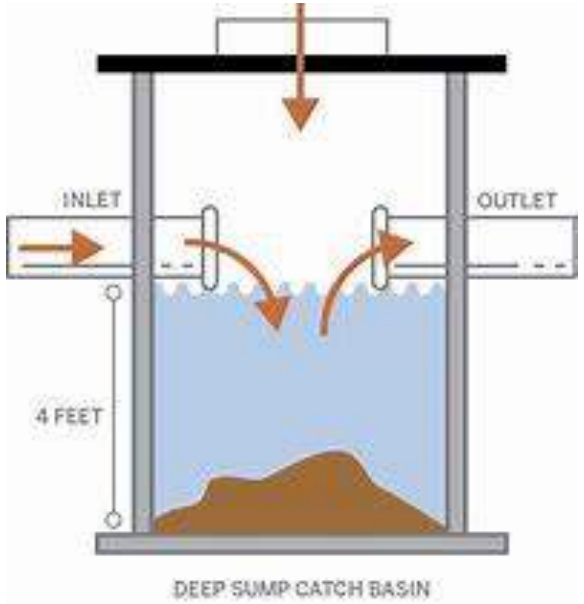
Sweeping Streets and Parking Lots

Snow and Ice Removal

Inspecting Constructed Best Management Practices (BMPs)

6 Good Housekeeping: CB Inspection/Cleaning

- Inspect each catch basin at least annually
- Inspect catch basins in high-use areas or located near construction activities more frequently
- Clean catch basin sumps that are **more than 50% full**
- A catch basin sump is more than 50% full if the contents within the sump exceed one half the distance between the bottom interior of the catch basin to the invert of the deepest outlet of the catch basin



Question:
When should this catch basin be cleaned?
Answer:
When the sediments in the sump is at least __ feet deep

6 Good Housekeeping: CB Inspection/Cleaning

- Catch basin inspection and cleaning should address both the grate opening and the basin sump
- **Document if catch basin needs frequent cleaning – steps should be taken to investigate source of excessive sediment loading**
- At the end of each day, **record:**
  - ✓ **the location and # of catch basins inspected,**
  - ✓ **the location and # of catch basins cleaned, and**
  - ✓ **the total volume or mass of material removed from all catch basins**
- Report maintenance or repair needs to Facilities Management

6 Good Housekeeping: CB Inspection/Cleaning

Observations such as the following can indicate a potential connection of a sanitary sewer to the storm drain system, which is an illicit connection:

- **Indications of sanitary sewage, including toilet paper, fecal matter or sewage odors**
- **Foaming, such as from detergent**
- **Optical enhancers, fluorescent dye added to laundry detergent**

What can I do?

- Review Standard Operating Procedure for Catch Basin Inspection and Cleaning
- Notify EHS if illicit discharges are observed or suspected
- Help maintain complete and accurate records

6 Good Housekeeping: Sweeping Streets/Lots

- All streets shall be swept and/or cleaned twice per year, in the spring and fall
- Most of the streets adjacent to and on campus are owned by the Town of Bridgewater
- The Town routinely sweeps its streets as part of its annual roadway maintenance program
- BSU is in the process of coordinating street sweeping requirements for all campus roadways with the Town of Bridgewater

Bridgewater
Massachusetts
Bridgewater...Preserving Our Past. Enriching Our Present. Building Our Future.

6 Good Housekeeping: Sweeping Streets/Lots

BSU Responsibilities:

- Regularly inspect and clean parking lots for trash
- Advance SW8000 sweeper is being fixed
- **Document parking lots swept and/or cleaned**
- **Document if parking lot needs frequent cleaning – steps should be taken to investigate source of excessive trash or sediment loading**
- **Record estimated volume or mass of material removed**

What can I do?

- Review Standard Operating Procedure for Sweeping Streets and Parking Lots
- Notify EHS if there is evidence that sweepings have been contaminated by a spill or some other means
- Help maintain complete and accurate records

6 Good Housekeeping: Snow and Ice Removal

- BSU procedures for snow and ice removal follow those of the Massachusetts Department of Transportation (MassDOT)
- Employees designated as part of the emergency snow crew are trained on snow removal and salt application through MassDOT and meet internally to review equipment, control speeds, and management operations prior to the start of winter
- Proper training provides for the appropriate application of materials, minimizing the risk of overusing salt on campus
- **Sand is no longer used on campus**, which has greatly reduced the amount of sediment buildup requiring removal in the spring
- The major materials used in snow and ice control are coarse salt, magnesium chloride (ICE B'GONE), and calcium chloride (Peladow™)

6 Good Housekeeping: Inspecting BMPs

Constructed BMPs are permanent site features designed to treat stormwater before infiltrating it to the subsurface or discharging it to a surface water body. General inspection procedures are provided for:

- Bioretention Areas and Rain Gardens
- Constructed Stormwater Wetlands
- Extended Dry Detention Basins
- Proprietary Media Filters
- Sand and Organic Filters
- Wet Basins
- Dry Wells
- Infiltration Basins

What can I do?

- Review Standard Operating Procedures for Inspecting Constructed BMPs
- Help maintain complete and accurate records

APPENDIX F

SOURCE ISOLATION AND CONFIRMATION METHODS:
INSTRUCTIONS, MANUALS, AND STANDARD OPERATING PROCEDURES

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DRY WEATHER OUTFALL AND INTERCONNECTION INSPECTION PROCEDURES

Introduction

All outfalls/interconnections listed in the Outfall/Interconnection Inventory (excluding those ranked Problem and Excluded) require inspection for the presence of dry weather flow. Outfalls from an engineered storm drain system can be in the form of pipes or ditches. Interconnections are typically located at manhole structures.

During a dry weather period, it is anticipated that minimal flow from stormwater outfalls will be observed. Therefore, dry weather inspections aim to characterize any/all flow observed during a dry weather period and identify the potential source(s) of an illicit discharge through qualitative testing.

These procedures rely primarily on visual observations and the use of field test kits and portable instrumentation during dry weather to complete a screening-level investigation of stormwater outfall discharges or flows within the drainage system. Analytical sampling is required for indicator bacteria and pollutants of concern.

Objectives of Dry Weather Inspections

A dry weather period is a time interval during which less than 0.1 inch of rain is observed over the previous 24 hours and no significant snow melt is occurring. Unlike wet weather sampling, dry weather inspections are not intended to capture a “first flush” of stormwater discharge, rather they are intended to identify any/all discharges from a stormwater outfall during a period without recorded rainfall. The objective of inspections during a dry weather period is to characterize observed discharges and facilitate detection of illicit discharges.

Visual Condition Assessment

The attached *Dry Weather Outfall/Interconnection Inspection Form* is a tool to assist in documenting observations related to the quantitative and qualitative characteristics of any/all flows conveyed by the structure during a dry period.

For any visual observation of discharge from a stormwater outfall or interconnection, an investigation into the pollution source should occur, but the following are often true:

1. Color or odor: Indicator of raw materials, chemicals, or sewage.
2. Cloudiness: indicator of suspended solids such as dust, ash, powdered chemicals and ground up materials.
3. Excessive sediment: indicator of disturbed earth of other unpaved areas lacking adequate erosion control measures.
4. Sanitary waste and optical enhancers (fluorescent dyes added to laundry detergent): indicators of illicit discharge.
5. Oil sheen: result of a leak or spill.
6. Foam: indicator of upstream vehicle washing activities, or an illicit discharge.
7. Orange staining: indicator of high mineral concentrations.

Many of these observations are indicators of an illicit discharge. Examples of illicit discharges include: cross-connections of sewer services to engineered storm drain systems; leaking septic systems; intentional

discharge of pollutants to catch basins; combined sewer overflows; connected floor drains; and sump pumps connected to the system (under some circumstances). Additional guidelines for illicit discharge investigations are included in the *Locating Illicit Discharges Procedures*.

If dry weather flow is present at the outfall or interconnection, and the flow does not appear to be an obvious illicit discharge (e.g. flow is clear, odorless, etc.) attempt to identify the source of flow (e.g. intermittent stream, wetlands drainage, etc.) and document the discharge for future comparison.

Although many of the observations are indicators of illicit discharge it should be noted that several of these indicators may also occur naturally. Orange staining may be the result of naturally occurring iron, and thus unrelated to pollution. Foam can be formed when the physical characteristics of water are altered by the presence of organic materials. Foam is typically found in waters with high organic content such as bog lakes, streams that originate from bog lakes, productive lakes, wetlands, or woody areas. To determine the difference between natural foam and foam cause by pollution, consider the following:

1. Wind direction or turbulence: natural foam occurrences on the beach coincide with onshore winds. Often, foam can be found along a shoreline and/or on open waters during windy days. Natural occurrences in rivers can be found downstream of a turbulent site.
2. Proximity to a potential pollution source: some entities including the textile industry, paper production facilities, oil industries, and fire-fighting activities work with materials that cause foaming in water. If these materials are released to a water body in large quantities, they can cause foaming. Also, the presence of silt in water, such as from a construction site can cause foam.
3. Feeling: natural foam is typically persistent, light, not slimy to the touch.
4. Presence of decomposing plants or organic material in the water.

Both bacteria and petroleum can create a sheen on the water surface. The source of the sheen can be differentiated by disturbing it, such as with a pole. A sheen caused by oil will remain intact and move in a swirl pattern; a sheen caused by bacteria will separate and appear “blocky”. Bacterial or naturally occurring sheens are usually silver or relatively dull in color and will break up into a number of small patches of sheen. The cause may be presence of iron, decomposition of organic material or presence of certain bacteria. Bacterial sheen is not a pollutant but should be noted.

Optical enhancers, fluorescent dyes added to laundry detergent, are typically detected through the use of clean, white cotton pads placed within the discharge for several days, dried then viewed under a UV light. If the cotton pad displays fluorescent patches, optical enhancers are present. Optical enhancers are occasionally visible as a bluish-purple haze on the water surface; however quantitative testing is the preferred method to confirm the presence of optical enhancers.

The *Dry Weather Outfall/Interconnection Inspection Form* includes fields where these and other specific observations can be noted. The field sampling personnel, or inspector, shall indicate the presence of a specific water quality indicator or parameter by marking “Yes” or marking within the circle for materials that are present. If “Yes” or a circle is marked, provide additional details in the comments section. If the indicator in question is not present, mark “No” or leave the circle blank.

Within the comments section, provide additional information with regard to recorded precipitation totals, or more detailed descriptions of observations made during the inspection and corrective actions taken. Take photographs to assist with documenting observations.

If an outfall/interconnection is inaccessible or submerged, the field sampling personnel shall proceed to the first accessible upstream manhole or structure for the observation and sampling and report the location with the screening results.

If no flow is observed, but evidence of illicit flow exists, the field sampling personnel shall revisit the outfall during dry weather within one week of the initial observation, if practicable, to perform, a second dry weather screening and sample any observed flow.

Measuring Water Quality

Where dry weather flow is observed at an outfall/interconnection, at least one (1) sample needs to be collected and analyzed for additional data about water quality. Water quality samples can be in the form of screening using field test kits and instrumentation, or by discrete analytical samples processed by a laboratory. Samples shall be analyzed at a minimum for:

- ammonia,
- chlorine,
- conductivity,
- salinity,
- *E. coli* (freshwater receiving water) or enterococcus (saline or brackish receiving water),
- surfactants (such as MBAS),
- temperature, and
- pollutants of concern.

All analyses with the exception of indicator bacteria and pollutants of concern can be performed with field test kits or field instrumentation and are not subject to 40 CFR part 136 requirements.

Analytical Sample Collection

A discrete manual or grab sample can classify water at a distinct point in time. These samples are easily collected and used primarily when the water quality of the discharge is expected to be homogeneous, or unchanging, in nature. A flow-weighted composite sample will classify water quality over a measured period of time. These samples are used when the water quality of the discharge is expected to be heterogeneous, or fluctuating, in nature. Grab samples are more common for dry weather outfall inspections due to the time-sensitive nature of the process.

The general procedure and protocols for the collection of samples shall include the following:

1. Do not eat, drink or smoke during sample collection and processing.
2. Do not collect or process samples near a running vehicle.
3. Do not park vehicles in the immediate sample collection area, including both running and non-running vehicles.
4. Put on clean, powder-free protective gloves (nitrile/latex/other) before sampling, even when handling sample containers and lids.
5. Never touch the inside surface of a sample container or lid, even with gloved hands.
6. Never allow the inner surface of a sample container or lid to be contacted by any material other than the sample water.
7. Collect samples as close to the outfall opening as possible, directly from the flow, in sample bottles. Be careful not to disturb sediments or collect surface debris/scum. The bacterial sample should be collected first followed by samples for any pollutants of concern. Samples for bacteria and pollutants of concern should be placed on ice.
8. Do not overfill sample containers, and do not dump out any liquid in them. Liquids are often added to sample containers intentionally by the analytical laboratory as a preservative or for pH adjustment.
9. Do not allow any object or material to fall into or contact the collected water sample.
10. Replace and tighten sample container lids immediately after sample collection.

11. Accurately label the sample with the time and location (obtain labels from the selected laboratory).
12. Document on the *Dry Weather Outfall/Interconnection Inspection Form* that analytical samples were collected, specify parameters, and note the sample time on the Inspection Form. This creates a reference point for samples.
13. For field measured parameters using test strips or test kits, a separate bottle should be used to collect a single sample from which aliquots are analyzed for ammonia, chlorine and surfactants. If using a dipper or other device, triple rinse the device with distilled water and then in the water to be sampled. Analyze the sample aliquots using test strips or test kits from the field kit bottle as soon as reasonably possible. When concurrent analyses are not possible, ammonia and chlorine samples should be processed first, followed by surfactant analysis. Record all results.
14. For field measured parameters using instrumentation, use a properly calibrated meter to record all parameters directly from the stream or outfall. Triple rinse the meter probe with distilled water prior to immersing the probe in the water to be sampled. When flow volume or depth is insufficient to immerse the meter probe, a clean sample bottle may be utilized to collect a sufficient volume of water to immerse the probe. In such instances, meter readings should be taken immediately. Record all results.
15. Fill out a chain-of-custody form for the laboratory samples (obtain chain-of-custody forms from the selected laboratory).
16. Deliver samples to the selected laboratory.
17. Dispose of used test strips and test kit ampules properly according to manufacture instructions.
18. Decontaminate all testing personnel and equipment.

Analytical Sample Quality Control and Assurance

Upon completion of successful sample collection, the samples must be sent or delivered to an approved laboratory that follows 40 CFR 136 methods for analytical testing. Quality control and assurance are important to ensuring accurate analytical test results.

Sample preservation is required to prevent contaminate degradation between sampling and analysis, and should be completed in accordance with 40 CFR 136.3.

Maximum acceptable holding times are also specified for each analytical method in 40 CFR 136.3. Holding time is defined as the period of time between sample collection and extraction for analysis of the sample at the laboratory. Holding time is important because prompt laboratory analysis allows the laboratory to review the data and if analytical problems are found, re-analyze the affected samples within the holding times.

Chain of custody forms are designed to provide sample submittal information and document transfers of sample custody. The forms are typically provided by the laboratory and must be completed by the field sampling personnel for each sample submitted to the lab for analysis. The document must be signed by both the person releasing the sample and the person receiving the sample every time the sample changes hands. The sampling personnel shall keep one copy of the form and send the remaining copies to the laboratory with the samples. Custody seals, which are dated, signed and affixed to the sample container, may be used if the samples are shipped in a cooler via courier or commercial overnight shipping.

Attachments

1. Dry Weather Outfall/Interconnection Inspection Form

Related Procedures

1. Wet Weather Outfall/Interconnection Inspection
2. Locating Illicit Discharges

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MANHOLE (INTERCONNECTION) INSPECTION FORM

Manhole #: _____ **GPS Location:** _____ **Date/Time:** _____

Inspector: _____ **Last rainfall event:** _____ **Weather:** _____

Inspection:	**Not Found** ☐ **Surface** ☐ **Internal** ☐ **Follow-up Required** ☐		
Photos of manhole taken: ☐			
Manhole Material:	Concrete ☐ Corrugated metal ☐ Stone ☐ Brick ☐ Other: _____ ☐	**Manhole Condition:**	Good ☐ Poor ☐ Fair ☐ Crumbling ☐ Comments: _____
Pipe Material:	Concrete ☐ HDPE ☐ PVC ☐ Clay Tile ☐ Other: _____ ☐	**Pipe Measurements:**	Inlet 1 Dia. (in): d1 = _____ Inlet 2 Dia. (in): d2 = _____ Inlet 3 Dia. (in): d3 = _____ Outlet Dia. (in): D = _____

Required Maintenance/Problems (check all that apply):

☐ Tree Work Required	☐ Cannot Remove Cover
☐ New Cover is Required	☐ Corrosion at Structure
☐ Frame Maintenance is Required	☐ Erosion Around Structure
☐ Pipe is Blocked	☐ Remove Trash and Debris
☐ Remove Accumulated Sediment	☐ Need Cement Around Cover
☐ Pipe Maintenance is Required	☐ Pavement Maintenance is Required
☐ Manhole Undermined or Bypassed	**Other:** _____

Standing Water in Manhole? Yes ☐ No ☐ **Color of Water:** Clear ☐ Cloudy ☐ Other: _____ ☐ Depth above outlet invert: ____	**Flow in Manhole?** Yes ☐ No ☐ **Description of Flow:** Heavy: ☐ Moderate: ☐ Trickling: ☐ Dry: ☐	**Color of Flow:** Clear ☐ Suspended Solids ☐ Cloudy ☐ Other: _____ ☐ **Odor:** None ☐ Oil ☐ Sewage ☐ Other: _____ ☐

If sediment in manhole indicate percent of pipe filled: %	**Check those present:**
Interconnection: Yes ☐ No ☐ If Yes, Interconnection ID #: _____ Continue to **Dry Weather Outfall/Interconnection Inspection Form** If No, indicate if Sample of Flow Collected for Analysis: Yes ☐ No ☐	○ Foam ○ Sanitary Waste ○ Orange Staining ○ Optical Enhancers ○ Floatables ○ Oil Sheen ○ Bacterial Sheen ○ Other: _____

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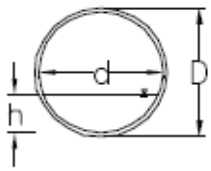
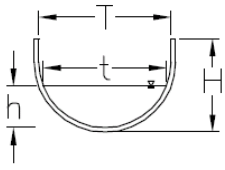
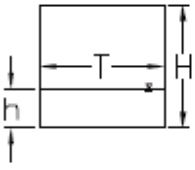
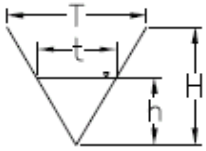
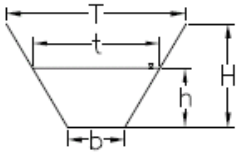
OUTFALL INSPECTION FORM

ID #: _____ **GPS Location:** _____ **Date/Time:** _____

Inspector: _____ **Last rainfall event:** _____ **Weather:** _____

Type of Outfall (check one):		**Pipe Outfall** ☐	**Open Swale Outfall** ☐
Outfall Label:	**Stencil** ☐ **Ground Inset** ☐ **Sign** ☐ **None** ☐ **Other**_____		
Photos of outfall/interconnection taken: ☐			
Pipe Material:	Concrete ☐ Corrugated metal ☐ Clay Tile ☐ Plastic ☐ Other: _____ ☐	**Pipe Condition:**	Good ☐ Poor ☐ Fair ☐ Crumbling ☐
Swale Material:	Paved (asphalt) ☐ Concrete ☐ Earthen ☐ Stone ☐ Other: _____ ☐	**Swale Condition:**	Good ☐ Poor ☐ Fair ☐ Crumbling ☐

Shape of Pipe/Swale (check one)

 ☐  ☐	 ☐	 ☐	 ☐
Rounded Pipe/Swale	**Rectangular Pipe/Swale**	**Triangular Swale**	**Trapezoidal Swale**

Pipe Measurements: Inner Dia. (in): d=_____ Outer Dia. (in): D=_____ Pipe Width (in): T=_____ Pipe Height (in): H=_____ Flow Height (in): h=_____*	**Swale Measurements:** Swale Width (in): T=_____ Flow Width (in): t =_____ Swale Height (in): H=_____ Flow Height (in): h=_____* Bottom Width (in): b=_____	**Is there a headwall?** Yes ☐ No ☐ **Headwall Condition:** Good ☐ Poor ☐ Fair ☐ Crumbling ☐

If the outlet is submerged indicate approximate height of water above the outlet invert. h above invert (in):	**Required Maintenance:**
Is riprap present? Yes ☐ No ☐ **Has channelization occurred?** Yes ☐ No ☐ **Has scouring occurred below the outlet?** Yes ☐ No ☐ **Is there excessive vegetation?** Yes ☐ No ☐ **Is there orange staining?** Yes ☐ No ☐	○ Tree Work ○ Remove Trash/Debris ○ Ditch Work ○ Blocked Pipe ○ Structural Corrosion ○ N/A ○ Erosion at Structure ○ Other _____

Comments (include precipitation in previous 48 hours):

DRY WEATHER OUTFALL/INTERCONNECTION INSPECTION FORM

ID #: _____ **Weather:** _____ **Date:** _____

Inspector: _____ **Last rainfall event:** _____ **Time:** _____

Description of Flow:			Heavy ☐ Moderate ☐ Trickling ☐ Dry ☐
Visual Inspection:	**Yes**	**No**	**Comments (Include probable source of observed contamination):**
Color	☐	☐	
Odor	☐	☐	
Turbidity	☐	☐	
Excessive Sediment	☐	☐	
Sanitary Waste	☐	☐	
Floatable Solids	☐	☐	
Oil Sheen	☐	☐	
Bacterial Sheen	☐	☐	
Foam	☐	☐	
Algae	☐	☐	
Optical Enhancers	☐	☐	
Other _____			

If flow is observed, sample and test the flow.

Sample Parameters	**Analytical Test Method**[1]	**Field Screening Result (or Time Sample Taken)**	**Full Analytical?**
Ammonia[2]	EPA 350.1, Rev.2.0; SM 4500-NH_3 (B-C)		☐ Yes ☐ No
Chlorine[2]	SM 4500-Cl G		☐ Yes ☐ No
Surfactants[2]	SM 5540 C		☐ Yes ☐ No
Specific Conductance[3]	EPA 120.1; SM 2510 B		☐ Yes ☐ No
Salinity[4]	SM 2520		☐ Yes ☐ No
Temperature	SM 2550 B		☐ Yes ☐ No
Indicator Bacteria E.coli[5]	EPA 1603; SM 9221 B; SM 9221 F; SM 9223 B; Colilert®; Colilert®-18		☐ Yes ☐ No
Pollutant of Concern Total Nitrogen	EPA Cadmium Reduction (automated)- 353.2, Rev. 2.0; SM 4500-NO_3 (E-F)		☐ Yes ☐ No
Comments:			

[1] – 40 CFR § 136

[2] – 2016 Massachusetts MS4 Permit

[3] – *Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments*, Center for Watershed Protection and Robert Pitt of University of Alabama, 2004, p. 134, Table 45.

[4] – *EPA New England Bacterial Source Tracking Protocol*, 2012, p. 4.

[5] – 314 CMR 4.00 MA – Surface Water Quality Standards – Class B Waters.

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WET WEATHER OUTFALL/INTERCONNECTION INSPECTION FORM

ID #: _____ **Weather:** _____ **Date:** _____

Inspector: _____ **Last rainfall event:** _____ **Time:** _____

Description of Flow:			Heavy ☐ Moderate ☐ Trickling ☐
Visual Inspection:	**Yes**	**No**	**Comments (Include probable source of observed contamination):**
Color	☐	☐	
Odor	☐	☐	
Turbidity	☐	☐	
Excessive Sediment	☐	☐	
Sanitary Waste	☐	☐	
Floatable Solids	☐	☐	
Oil Sheen	☐	☐	
Bacterial Sheen	☐	☐	
Foam	☐	☐	
Algae	☐	☐	
Optical Enhancers	☐	☐	
Other _____			

Sample Parameters	**Analytical Test Method**[1]	**Field Screening Result (or Time Sample Taken)**	**Full Analytical?**
Ammonia[2]	EPA 350.1, Rev.2.0; SM 4500-NH_3 (B-C)		☐ Yes ☐ No
Chlorine[2]	SM 4500-Cl G		☐ Yes ☐ No
Surfactants[2]	SM 5540 C		☐ Yes ☐ No
Specific Conductance[3]	EPA 120.1; SM 2510 B		☐ Yes ☐ No
Salinity[4]	SM 2520		☐ Yes ☐ No
Temperature	SM 2550 B		☐ Yes ☐ No
Indicator Bacteria E.coli[5]	EPA 1603; SM 9221 B; SM 9221 F; SM 9223 B; Colilert®; Colilert®-18		☐ Yes ☐ No
Pollutant of Concern Total Nitrogen	EPA Cadmium Reduction (automated)- 353.2, Rev. 2.0; SM 4500-NO_3 (E-F)		☐ Yes ☐ No

Comments (include precipitation in previous 48 hours):

[1] – 40 CFR § 136

[2] – 2016 Massachusetts MS4 Permit

[3] – *Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments*, Center for Watershed Protection and Robert Pitt of University of Alabama, 2004, p. 134, Table 45.

[4] – *EPA New England Bacterial Source Tracking Protocol*, 2012, p. 4.

[5] – 314 CMR 4.00 MA – Surface Water Quality Standards – Class B Waters.