

IDDE Program Manual 2024



SEPTEMBER 2024

Town of Hudson, Massachusetts





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DEFINITIONS

Authorized Agent	The Select Board, Department of Public Works/Board of Health, its employees, officers, or agents designated, to administer, implement, and enforce the Town of <i>Hudson's Illicit Discharge Detection and Elimination Program</i> . The Authorized Agent, shall administer, implement, and enforce these rules and regulations.
Catchment	The drainage area contributing to a single outfall, including land area, and any drainage networks if applicable.
Direct Connection	Any non-stormwater pipe connected to the storm drain system, such as pipe from a washing machine or floor drain or a sewer service connection from a house. These types of discharges are often continuous / regular flows.
Drainage System	Any natural and manmade channels, swales, ditches, swamps, rivers, streams, creeks, wetlands, branches, reservoirs, ponds, drainage ways, inlets, catch basins, gutters, pipes, culverts, bridges, head walls, wing walls, stormwater drains, lakes, and other physical works, properties, and improvements that transfer, control, convey or otherwise influence the movement of stormwater runoff.
Illicit Discharge	Any non-stormwater flow entering the Town's drainage system.
Indirect Discharge	A non-connection discharge to the drainage network. This includes a wide variety of sources, such as sanitary sewer overflows (SSO's), infiltration into the drainage system from failed septic systems or leaking sewer collection systems, or other waste or spills collected by catch basins. Grass clippings, leaf litter, pet waste, and other solid material dumped or otherwise deposited into the storm drain system are also considered indirect illicit discharges. These are commonly intermittent or transitory discharges.
Interconnection	The point where one MS4 permittee discharges stormwater to Hudson's drainage system.
Junction Manhole	A manhole or structure that contains two or more inlets within it. Manholes from solely private entities, individual catch basins, or both are not junction manholes.
Key Junction Manhole	"junction manholes that can represent one or more junction manholes without compromising adequate implementation of the illicit discharge program. Adequate implementation of the illicit discharge program would not be compromised if the exclusion of a particular junction manhole as a key junction manhole would not affect the permittee's ability to determine the possible presence of an upstream illicit discharge. A permittee may exclude a junction manhole located upstream from another located in the immediate vicinity or that is serving a drainage alignment with no potential for illicit connections." (Adapted from the Central



Massachusetts Stormwater Coalition's *Illicit Discharge Detection and Elimination Program* Template.)

Outfall	The exit point of a drainage line.
Prosecutor	The Town's attorney who will implement legal proceedings against non-compliant property owners who intentionally or neglectfully fail to meet the <i>Stormwater Division's Rules and Regulations</i> .
Sanitary Sewer Overflows	A discharge from private or public sewer lines and systems, to the drainage network.
Total Maximum Daily Loads	The amount of pollution that a waterbody can receive and still meet water quality standards, and an allocation of that amount to the pollutant's sources.
Urbanized Area	An area of land that meets the minimum population density requirements, land use types, and linked areas (from one area of population density, to a next with lesser populations in-between).

ACRONYMS

BOH	Board of Health
DPW	Department of Public Works
EPA	Environmental Protection Agency
IDDE	Illicit Discharge Detection and Elimination
MS4	Municipal Separate Storm Sewer System
SOPs	Standard Operating Procedures
SSOs	Sanitary Sewer Overflows
SWMP	Stormwater Management Plan
TMDLs	Total Maximum Daily Loads
WoE	Weight of Evidence



1. INTRODUCTION

The U.S. Environmental Protection Agency (EPA) established the National Pollutant Discharge Elimination System (NPDES) program as part of the Clean Water Act (CWA) to regulate discharges to surface water. In Massachusetts, the EPA and the Massachusetts Department of Environmental Protection (MassDEP) are the co-permitting authorities regulating stormwater runoff that enters local water bodies through Municipal Separate Storm Sewer Systems (MS4s) in “Urbanized Areas.” This Land Development Program Manual has been developed for the Town of Hudson, Massachusetts (the Town) to comply with EPA and MassDEP requirements for MS4 regulated communities.

The Town of Hudson, Massachusetts is required to obtain a permit for stormwater discharges from the EPA and MassDEP and is currently included under a NPDES General Permit for Stormwater Discharges from Small MS4’s in Massachusetts¹ (the MS4 General Permit). The MS4 General Permit authorizes cities and towns to discharge stormwater into the waters of the United States if the municipalities maintain and implement a Stormwater Management Plan (SWMP). The MS4 General Permit includes six components called *minimum control measures* which, when implemented, shall result in the reduction of pollutants discharging into receiving waters. The six minimum control measures are as follows:

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

An education and outreach plan have been developed and will be attached to the latest SWMP. This IDDE Program Manual and its subsequent implementation will satisfy the requirements of the third minimum control measure.

The Town is committed to working with its residents and state and federal environmental agencies to achieve water quality goals and to protect public health. The Town has established this IDDE Program Manual to outline program objectives, standard operating procedures (SOPs), and workflow processes for successful and efficient implementation of illicit discharge detection, investigation, and elimination. This manual is based on current regulatory requirements included in the 2016 MS4 General Permit published in the Federal Register on April 13, 2016. The 2016 MS4 General Permit replaced the 2003 MS4 General Permit and became effective July 1, 2018.

This IDDE Program Manual is a working document and will be revised in the future as necessary. This manual includes and references legal authority, statement of responsibilities, assessment and priority ranking of investigation areas, stormwater discharge outfall screening and sampling, illicit discharge confirmation and removal, follow-up screening, prevention procedures, and training.

¹ 2003 MS4 General Permit https://www3.epa.gov/region1/npdes/permits/permit_final_ms4.pdf and 2016 MS4 General Permit <https://www.epa.gov/npdes-permits/massachusetts-small-ms4-general-permit>



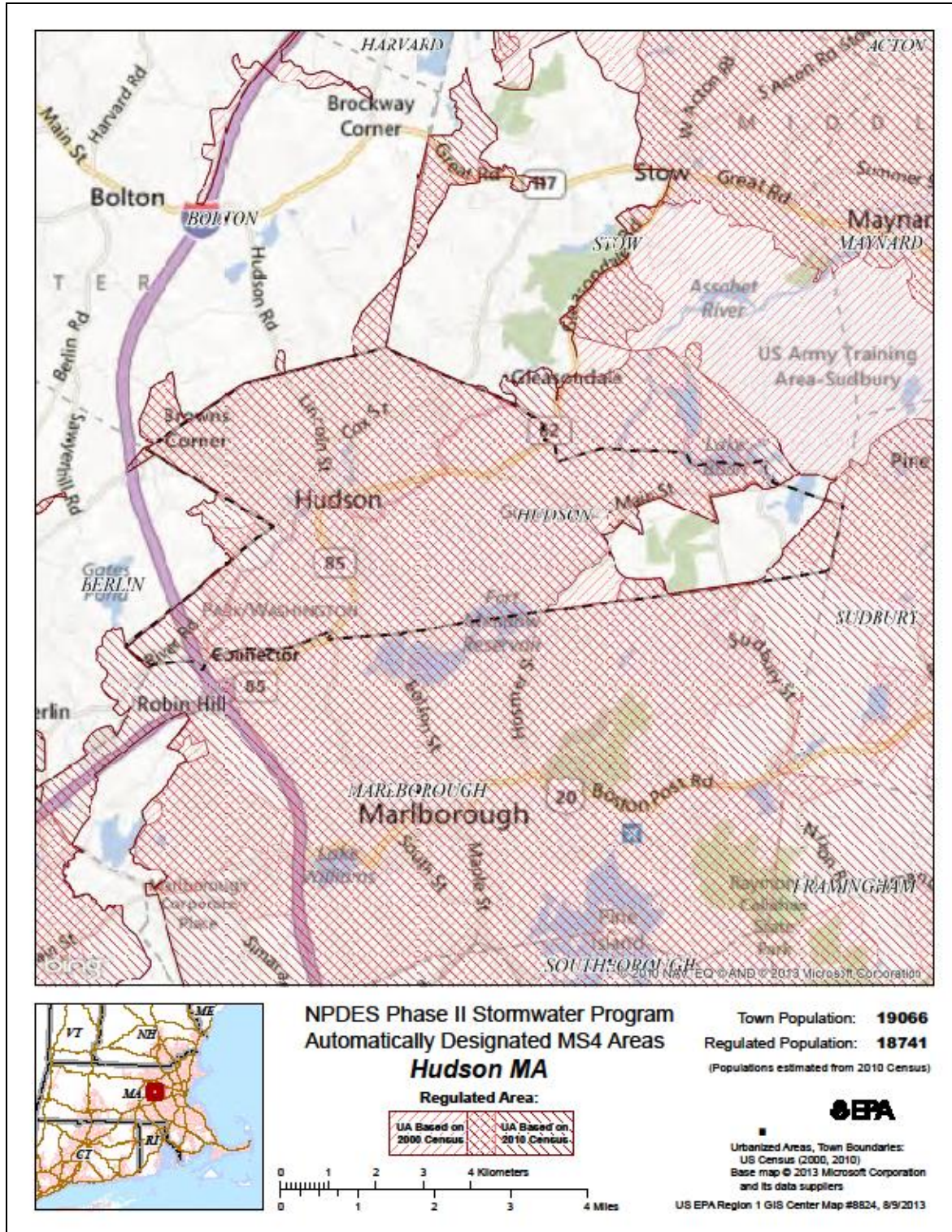
The Town of Hudson's Department of Public Works manages the Town's IDDE Program Manual with support from other municipal departments.

1.1 PLAN APPLICABILITY

This IDDE Program Manual is implemented in the Town's Urbanized Area, which encompasses the majority of the Town. Urbanized Areas are defined by the latest United States decennial census as the land area that meet minimum population density requirements as determined by the latest United States decennial census. Figure 1-1 shows the Town's Urbanized Area based on the 2010 census.



Figure 1-1: Hudson's Urbanized Area





1.2 WHAT IS AN ILLICIT DISCHARGE?

The EPA defines an illicit discharge as “any discharge to an MS4 that is not composed entirely of stormwater”; exceptions are discharges regulated by a separate NPDES permit and allowable non-stormwater discharges that do not significantly contribute pollutants to the MS4. Non-stormwater discharges considered allowable are outlined in Part 1, Section F of the MS4 General Permit and are shown below in Figure 1-2.

Figure 1-2: Allowable Non-Stormwater Discharges



Water line flushing
Landscape irrigation
Irrigation water, springs
Lawn watering
Dechlorinated swimming pool discharges



Diverted stream flow
Rising ground waters
Uncontaminated groundwater infiltration
Uncontaminated pumped groundwater
Flows from riparian habitats and wetlands



Foundation drains
Footing drains
Air conditioning condensation
Water from crawl space pumps



Discharge from potable water sources
Street wash water
Residential building wash water, without
detergents



Illicit discharges can enter the drainage system via direct connections or indirect discharges, which are defined as follows:

- **Direct Connection:** any non-stormwater pipe connected to the storm drain system, such as pipe from a washing machine or floor drain or a sewer service connection from a house. These types of discharges are often continuous.
- **Indirect Discharge:** includes a wide variety of sources, such as sanitary sewer overflows (SSO's), infiltration into the drainage system from failed septic systems or leaking sewer collection systems, or other waste or spills collected by catch basins. Grass clippings, leaf litter, pet waste, and other solid material dumped or otherwise deposited into the storm drain system are also considered indirect illicit discharges. These are commonly intermittent or transitory discharges.

1.3 SIGNIFICANCE OF ILLICIT DISCHARGE

Illicit discharges are not permitted under the MS4 General Permit or local regulations and can result in violations and fines for MS4 permittees. Additionally, illicit discharges contribute to elevated levels of pollutants to surface water bodies and can potentially contaminate groundwater. When these pollutants enter water bodies, they can contaminate drinking water supplies, create public safety concerns, hinder recreational activities, and harm wildlife habitats.

According to a survey implemented by the Center for Watershed Protection in 2003, the respondents indicated that the following are the most common sources of illicit discharges:

- Illegal dumping practices (95%)
- Broken sanitary sewer line (81%)
- Cross-connections (71%)
- Connection of floor drains to stormwater infrastructure (62%)
- Sanitary sewer overflows (52%)
- Inflow/infiltration (48%)
- Straight sewer pipe discharge (38%)
- Failing septic systems (33%)
- Improper RV/boat waste disposal (33%)
- Pump station failure (14%)

1.4 EPA'S REQUIREMENTS FOR MUNICIPALITIES

The 2016 MS4 General Permit was signed on April 4, 2016 and published in the Federal Register on April 13, 2016. The 2016 MS4 General Permit replaced the 2003 MS4 General Permit and became effective July 1, 2018. The 2016 MS4 General Permit obligates regulated dischargers to develop and maintain a written Illicit Discharge Detection and Elimination Program.

Operators authorized under the 2016 MS4 General Permit are required to submit annual reports by September 30th each year. Annual reports must include a self-assessment of MS4 General Permit compliance, a summary of recently collected information, and a discussion of planned activities for the next reporting period.



Under the MS4 General Permit, the Town is required to develop, implement, and enforce a program to detect and eliminate illicit discharges. The permit directs municipalities to develop a program that includes the following:

- Developing and maintaining a stormwater system map showing all municipally-owned outfalls (see Section 2);
- Prohibiting illicit discharges through regulatory mechanism and enforcement (see Section 3);
- Informing the public and municipal employees about the program (see Section 8); and
- Evaluating permitted non-stormwater discharges to determine if they are discharging significant pollution.

1.4.1 Discharges to Impaired Waterways

The MS4 General Permit includes additional requirements for MS4 discharges to any impaired waterway with or without an approved Total Maximum Daily Load (TMDL). The EPA establishes TMDLs to limit the loading of pollutants into impaired waterways. The MS4 General Permit defines a 'water quality limited water body' as "any water body that does not meet applicable water quality standards, including but not limited to waters listed in categories 5 or 4b on the Massachusetts Integrated Report of Waters." The Integrated List of Waters is typically reissued by the MassDEP every two years and must undergo EPA approval to take effect. The most recent EPA approved list is the Final Massachusetts Integrated List of Waters (2022 Integrated List).

The Town of Hudson is located within the Assabet River Drainage Basin, also known as the SuAsCo watershed. A list of impaired waters within the Town of Hudson along with the causes of impairment are provided in Table 1-1. Figure 1-2 is a map of Hudson's impaired water bodies.



Table 1-1: Impaired Waters in Hudson, MA (Based on Approved Integrated List – 2022)

Segment ID	Name	Impairment Category Classification	Impairments	EPA TMDL No.	Pollutant of Concern Sampling Requirements*
MA82B-04	Assabet River	Category 5	Dissolved Oxygen	35106 (Assabet River TMDL for Total Phosphorus)	- Dissolved Oxygen - Temperature - BOD ₅ - Total Phosphorus
			Excess Algal Growth	35106 (Assabet River TMDL for Total Phosphorus)	- Total Phosphorus
			Total Phosphorus	35106 (Assabet River TMDL for Total Phosphorus)	- Total Phosphorus
			<i>Water Chestnut</i>		- NMR
			Fecal Coliform		- Fecal Coliform
			E. coli		- E. coli
			Nutrient/Eutrophication Biological Indicators		- Total Phosphorus
			<i>Benthic Macroinvertebrate</i>		- NMR
			<i>Fish Bioassessments</i>		- NMR



Segment ID	Name	Impairment Category Classification	Impairments	EPA TMDL No.	Pollutant of Concern Sampling Requirements*
MA82B-05	Assabet River	Category 5	Dissolved Oxygen	35107 (Assabet River TMDL for Total Phosphorus)	- Dissolved Oxygen - Temperature - BOD ₅ - Total Phosphorus
			Excess Algal Growth	35107 (Assabet River TMDL for Total Phosphorus)	- Total Phosphorus
			Fecal Coliform	--	- Fecal Coliform
			E. Coli	--	- E. Coli
			Nutrient/Eutrophication Biological Indicators	35107 (Assabet River TMDL for Total Phosphorus)	- Total Phosphorus
			Total Phosphorus	35107 (Assabet River TMDL for Total Phosphorus)	- Total Phosphorus
			Curly Leaf Pondweed	--	- NMR
			Fanwort	--	- NMR
			Eurasian Water Milfoil, <i>Myriophyllum Spicatum</i>	--	- NMR
			Water Chestnut	--	- NMR
			Debris /Trash	--	- NMR
			Odor	--	- NMR



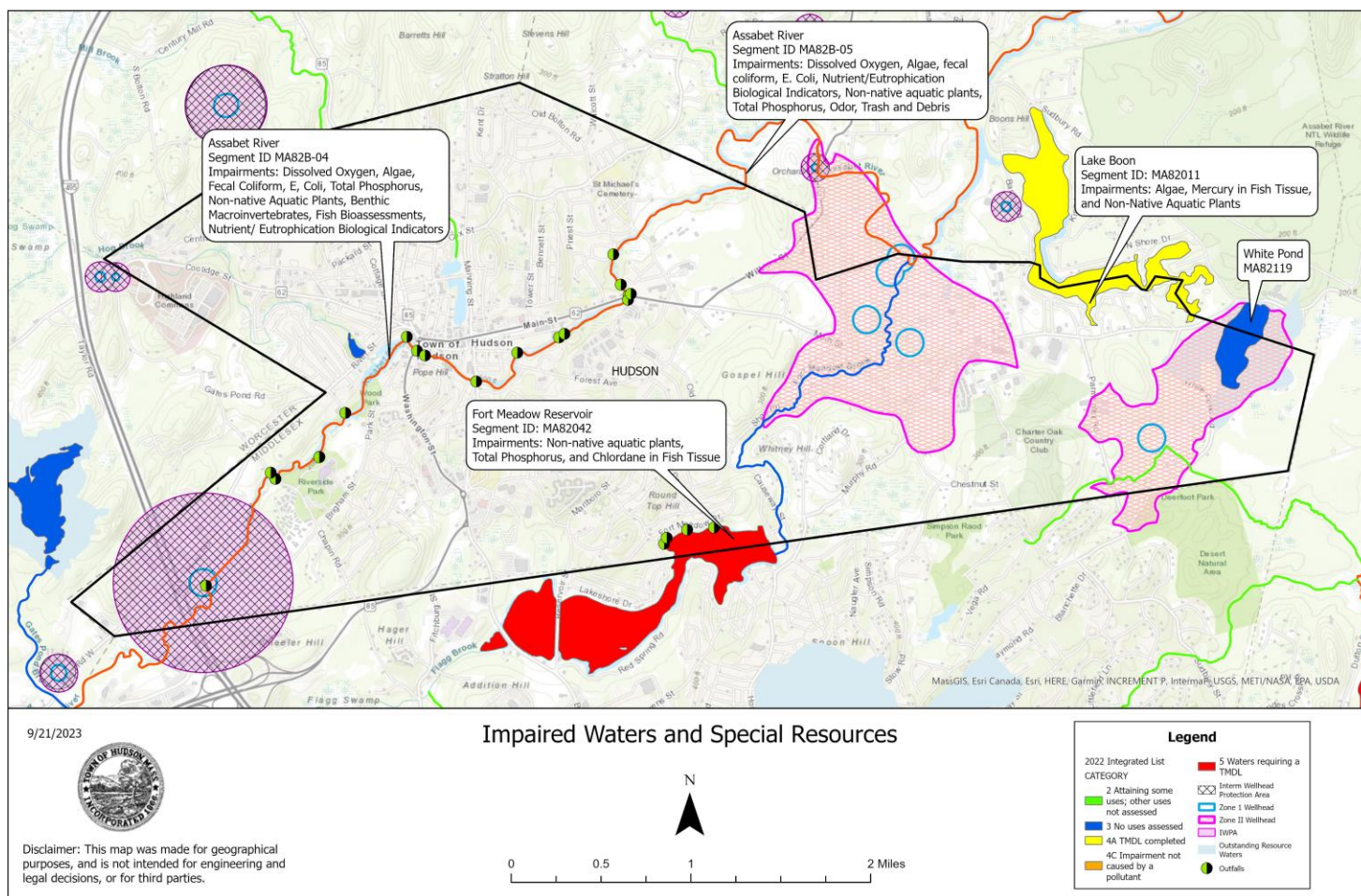
Segment ID	Name	Impairment Category Classification	Impairments	EPA TMDL No.	Pollutant of Concern Sampling Requirements*
MA82011	Lake Boon	Category 4A	Algae	2353 (TMDL of Phosphorus for Lake Boon)	- Total Phosphorus
			Mercury in Fish Tissue	33880 (Northeast Regional Mercury TMDL)	- NMR
			Non-Native Aquatic Plants	--	- NMR
			Fanwort	--	- NMR
MA82042	Fort Meadow Reservoir	Category 5	Total Phosphorus	--	- Total Phosphorus
			Chlordane in Fish Tissue	--	- NMR
			Eurasian Water Milfoil, <i>Myriophyllum spicatum</i>	--	- NMR
			Non-Native Aquatic Plants	--	- NMR
			Fanwort	--	- NMR

*Sampling Requirements listed are per Appendix G of the 2016 MS4 General Permit. NMR: No Monitoring Required

**Note: Items in gray, italicized font may require consultation from the MassDEP, per Appendix G of the 2016 MS4 General Permit.



Figure 1-2: Hudson's Impaired Waters: 2022 Integrated List





The Town of Hudson discharges to two water bodies with approved TMDLs: the Assabet River and Lake Boon. While Fort Meadow Reservoir is impaired for both pollutant and non-pollutant issues, it is not explicitly required to meet TMDL provisions. TMDL and impaired waters in the Town are subject to additional requirements under the MS4 General Permit for the known outfalls (and their contributing drainage areas) that discharge into these waters. Additional requirements for water quality limited water bodies include:

- Supplementing the public education and outreach program with annual timed messages on specific topics;
- Amending ordinance requirements to address specific stormwater pollutant management;
- Developing a retrofit inventory and priority ranking; and
- Implementing improved “good housekeeping” practices such as proper leaf litter management or increased street sweeping.

Where the MS4 discharges directly into a water quality limited water or water subject to an approved TMDL, the Town must sample these discharges for pollutants of concern shown in Table 1-1. While these additional sampling parameters may not be associated with illicit discharges, they are listed in this manual to be considered during outfall screening as a part of this IDDE Program. For the purposes of this manual, outfalls discharging within 350 feet of impaired water bodies are considered direct discharges. Particularly, the presence of bacteria and mixed-pathogen impairments has implications on catchment prioritization, which is further discussed in Section 4. Portions of the Assabet River and Boons Pond are bacteria or mixed-pathogen impaired water bodies.

Note: Reissuance of the Massachusetts Integrated List of Waters may necessitate modifications to this manual to maintain compliance with applicable requirements.

1.5 PURPOSE OF THE IDDE PROGRAM MANUAL

The purpose of this IDDE Program Manual is to establish a strategic written program to identify and eliminate illicit discharges to the MS4 or to the waters of Massachusetts in accordance with the requirements of the MS4 General Permit.

The IDDE Program contained herein has outlined an implementation period, beginning in 2019. This manual is intended to assist the Town in implementing the IDDE Program in a prioritized and strategic way to detect and eliminate illicit discharges. The manual will also provide a basis for identifying labor and operational budgeting each year; it is to be used as both a guide for IDDE activities and as a training tool for staff.



2. STORMWATER SYSTEM MAP

The Town has undergone initial efforts to map its outfalls and drainage system structures (catch basins, manholes, culverts, open channels, etc.) in a Geographic Information System (GIS). The Town of Hudson continues to refine and add to the stormwater system GIS data that shows the location of all stormwater catch basins and connecting surface and subsurface infrastructure. The Town plans to complete the buildout of the compliance database and will update the information regularly to reflect the results of condition evaluations. The database will include infrastructure properties (e.g. size, type, etc.) and, where possible, depict the direction of in-flow and out-flow pipes and the locations of all stormwater outfalls discharging to receiving waters or to an interconnected MS4 within the Urbanized Area, as stipulated in the MS4 General Permit. Figures found in **Appendix D** depict the Hudson MS4 system.

PROPOSED PLAN: System Mapping

1. Update map (as needed)

Throughout General Permit term, the Town will continue to update and improve the map as necessary to reflect infrastructure properties, corrections, modifications, and progress made.



3. LEGAL AUTHORITY

3.1 TOWN OF HUDSON ILLICIT DISCHARGE AUTHORITY

The Town of Hudson contains stormwater-specific bylaws and associated Rules and Regulations. On May 1, 2024, the Town adopted a Stormwater Utility Bylaw for a stormwater utility fee. The Utility Fee was implemented and the first bills were dated November 15, 2023. Note that the Bylaw is codified in the Town's General Bylaws as Article VI, Section 52. In the fall of 2023, the Department of Public Works submitted a draft of Stormwater's Rules and Regulations to the Select Board, and it was approved on October 25, 2023. The Rules and Regulations contain language to prohibit and eliminate illicit discharges and connections:

- Section 3.2- Prohibitions: Illicit discharges and connections within the storm drainage system are prohibited.
- Section 3.3- Flow Obstructions Prohibited: any flow restriction structures or devices within the drainage systems are prohibited.
- Section 5.1 a.: Violations and Enforcement: The DPW has the right to enforce the Stormwater Division's *Rules and Regulations* through verbal and written communications. In addition, DPW has the legal authority to "pursue all civil and criminal remedies for such violations."
- Section 5.1 c.: Notice of Violation: Any notice of violation issued DPW allows for the elimination of illicit connections and discharges.

In addition, many articles and sections of the Town's Sewer Use Regulations, adopted on June 5, 2000, include information and restrictions pertaining to all public sewers, including both sanitary and stormwater systems.

These articles and Rules and Regulations give the Town the legal authority to inspect their stormwater systems and address violations to ensure only stormwater and unpolluted drainage discharge to Hudson's natural outlets and waterways.

3.2 RESPONSIBLE PARTIES

Per the *Stormwater Division Rules and Regulations*, the Hudson Department of Public Works (or designee) is designated to administer the IDDE program. The Health Department and Building Departments are also responsible to assist with the IDDE Program. The Town's Department of Public Works is the primary manager of the IDDE program with support and collaboration from the Board of Health as well as the Town's Building Department. Responsible parties are listed in Table 3-1.

Table 3-1: Responsible Parties for Implementing IDDE Program

Primary Responsible Party	Responsibilities
Health Department/Board of Health	<ul style="list-style-type: none">- Administers IDDE when discharge is from infiltration from Septic Systems, leeching fields or any infrastructure that poses a threat to human health and safety.- Oversees illicit discharges when public health and safety concerns arise.



	<ul style="list-style-type: none">- Collaborates on enforcement activities (as needed)
Department of Public Works (as designated by the Select Board) – Engineering/Stormwater and Operations Division	<ul style="list-style-type: none">- Administers IDDE when discharge is from inflow/direct connection to the stormwater system.- Administers enforcement.- Coordinates with the Building and Wastewater Departments.- Conducts investigations, screening, and sampling.- Reviews screening results and citizen complaints.- Conducts training.- Compiles annual documentation.- Coordinates and monitors enforcement activities.
Department of Public Works – Wastewater Department	<ul style="list-style-type: none">- Administers I&I and conducts opportunistic inspections.- Provides field inspection and investigation support.
Building Department	<ul style="list-style-type: none">- Manages building inspections and code enforcement.- Adds DPW/Stormwater inspection step when a building permit application is submitted (involving site work).



4. GENERIC ILLICIT DISCHARGE PROGRAM WORKFLOW

Illicit discharges and connections have serious consequences on the Town's drainage system and water quality. From toxic algae blooms prohibiting recreational activities to stricter water treatment requirements, evidence of illicit discharges is present within and near the Town's drainage system. Since stormwater flows untreated and discharges directly to waterbodies (lakes, ponds, rivers, streams, etc.), environmental impacts become noticeable at the outfall and within the waterbodies. When conducting outfall inspections, as stipulated in Section 6.1.3.1, Department of Public Works field crews, should look for the following signs of illicit discharges:

1. Visual or olfactory signs (staining of the outfall, and/or strong smells)
2. Colored discharges (anything other than clear)
3. Algae
4. Surfactants (suds from detergents)
5. Toilet paper
6. Trash and debris
7. Wet flow during dry weather
8. Any other non-stormwater discharges

The signs mentioned above can be seen at the outfall, or near the outfall where it daylight into a waterbody.

4.1 WHEN ILLICIT DISCHARGE INVESTIGATIONS ARE NECESSARY

The MS4 permit requires investigations of illicit discharges to be conducted regularly during dry weather and wet weather screening. Additionally, investigations are triggered when the Town receives a complaint from the public. If flows are observed during dry weather, the IDDE Program is initiated. Town of Hudson's initial Outfall screening was completed in the summer of 2021. The initial catchment areas are available in **Appendix D** as part of the IDDE Prioritization map. **Appendix D** also contains the IDDE Prioritization in a spreadsheet. However, any new outfalls added due to new development will require screening. It is worth noting that only Town-owned outfalls are screened as part of this IDDE Program Manual. Privately-owned outfalls are the responsibility of the property owner(s).

Finally, the illicit discharge program can be initiated when Town personnel conduct routine inspections of various infrastructure. Town staff responsible for inspections and IDDE administration are outlined in Table 3-1 in the previous section. Public and private infrastructure inspections and protocol are discussed in Section 5.

4.1.1 Illicit Potential

The Town of Hudson operates a 3 million-gallon per day (MGD) advance wastewater treatment facility that serves approximately 15,000 people in Hudson. The entire collection system consists of approximately 51 miles of gravity sewer, 15 pump stations, and 7 miles of force main sewers and is composed of 100-percent separate sanitary sewers. The facility accepts up to 400,000 gallons per year of septage from residential wastewater systems in Hudson. In addition, stormwater structural best management practices can contribute to removal of potential illicit discharges when



a spill occurs. Hudson currently has recorded 26 detention basins and thousands of drainage manholes and catch basins mapped.

4.2 WHAT ARE THE PHASES OF THE IDDE PROGRAM

There are three phases of the IDDE Program in Hudson as outlined below.

1. Phase I: Data Collection and Phase 2 Mapping Preparation
2. Phase II: Field Sampling and Inspections / Investigation to Isolate the Source
3. Phase III: Removing and Enforcing Corrections to Illicit Connections and Discharges

Each phase of the IDDE Program is discussed in Sections 5, 6, and 7 respectively. Specific requirements of administrative and documenting needs are discussed further in Sections 5, 6, and 7. Trained Town personnel, and/or subcontractors can perform the work under the IDDE Program. However, dry weather and wet weather screening may be contracted when Town personnel or equipment and materials are unavailable. Figure 4-1 on the proceeding page outlines the general IDDE Workflow.

Materials necessary for full program implementation consist of tools to open catch basins and manholes, a flashlight, and testing equipment for various parameters. In addition, sampling tubes, a cooler, a sampling pole, and gloves are necessary when testing for outfall screening begins. Dyes of different colors, and sandbags are also required when determining the origin of the illicit discharge.

4.2.1 IDDE Strategies

The Town will use the following illicit discharge identification strategies:

1. Utilize outfall screening and sampling assessments from the previous round of investigations, described in Section 0. Review and identify drainage areas with illicit discharge indicators and/or verify that illicit discharges previously investigated have been eliminated. Update the catchment delineation map as needed.
2. Review Town's most recent catchment delineation map and prepare an updated outfall screening plan for Phase II. During drainage system and sanitary sewer cleaning and maintenance, opportunistic identification procedures for illicit discharges will be conducted in accordance with the protocol outlined in Section 6.1.1 and the SOP in **Appendix A**. Review and update the SOP as needed.
3. Review any additional pending inspections identified by various Town Departments including Public Works, Building Department and Health Department and the public and ensure inspections / investigations were completed and any illicit discharges were eliminated. If not eliminated, prepare opportunistic and / or essential investigation schedule for illicit discharges at those locations for Phase II.

4.3 WHO ENFORCES THE PHASES OF THE IDDE PROGRAM?

Generally, the Department of Public Works administers the IDDE program when the illicit discharge is from inflow. Property owners are responsible for removing any illicit connections from their properties. Instances involving connections within the Town's right of way is the responsibility of DPW. The Health Department is responsible for administering all phases of the IDDE Program during infiltration events. In particular, the Health Department gets involved when septic systems are leaking, or when the illicit discharge poses a public health and safety concern. During

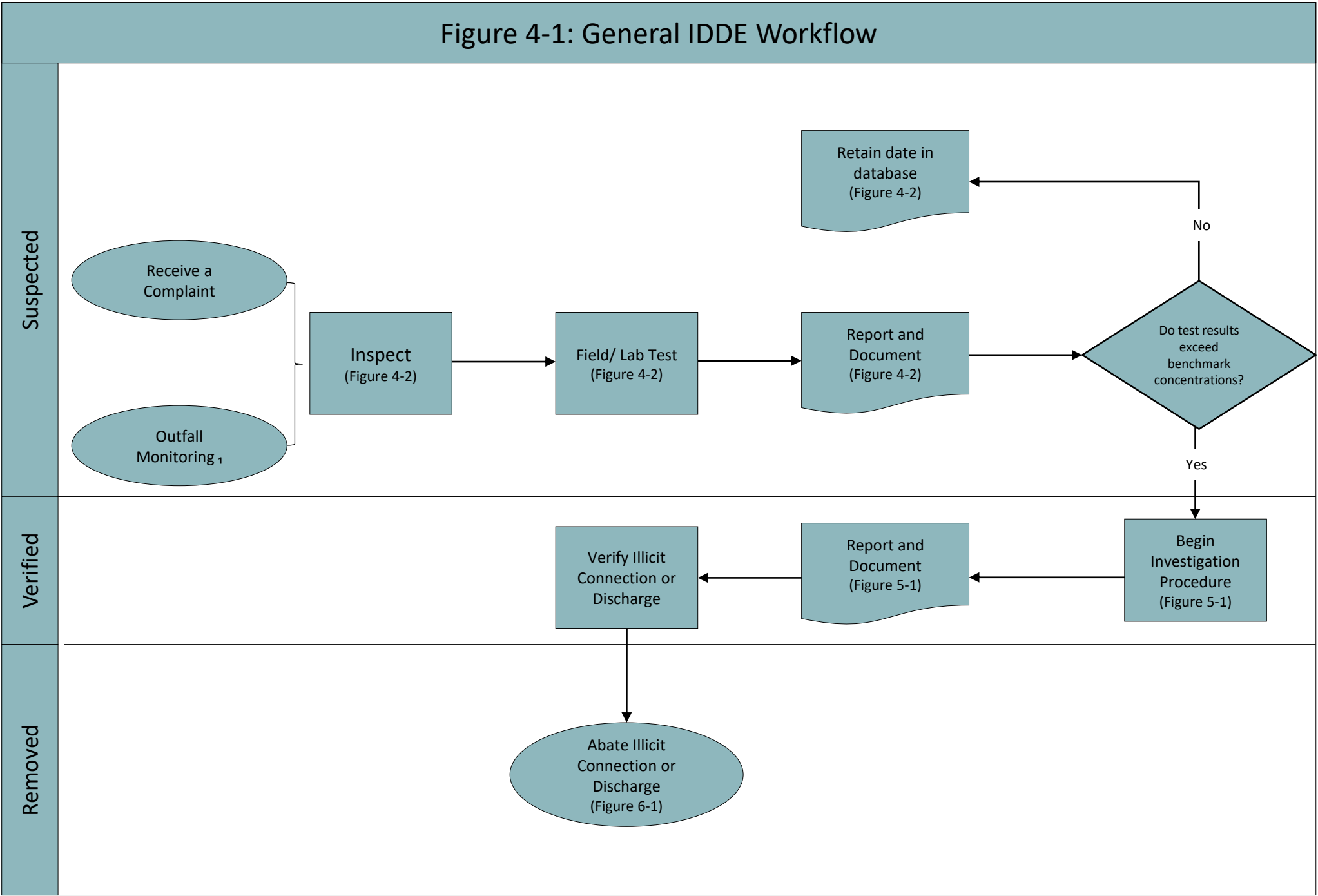


Plumbing and Gas line installation inspections, the Building Department ensures internal connections are installed per construction standards and discharges from all appliances, toilets, faucets, showers and any other wastewater discharging units are plumbed to the sewer line. Only treated groundwater through sump pumps are allowed to be discharged surficial outside in the yard / connected to the town's drainage system through a DPW approval process. If the Building Department observes cross connections to drainage systems during routine inspections, DPW shall be notified at the earliest convenience. Note that, Phases I-III is executed by the Engineering or Stormwater Divisions of the Department of Public Works.



Figure 4-1: General IDDE Workflow

Figure 4-1: General IDDE Workflow



LEGEND	
WORK ORDER PROCESS	
Symbol	Description
	Start/End
	Process
	Decision
	Document

*SVF- System Vulnerability Factor
₁ Outfall monitoring is triggered by dry weather



5. PHASE I: LOCATING AND RECORDING POTENTIAL ILLICIT DISCHARGES, MAPPING FOR PHASE II

Phase I of the IDDE Program deals with locating potential illicit discharges or connections. In general, the Town receives citizen complaints via web reporting through the Stormwater Division's website, or other communication mediums. Finding illicit discharges also occurs during operations and inspections as discussed in Section 6. The following identification procedures are based on requirements outlined in the 2016 MS4 General Permit. Any illicit connections or discharges observed, sampled, and removed must be documented in the Annual Report to the EPA. Utilize outfall screening and sampling assessments from previous round of Phase II, described in Section 0 during wet-weather and dry-weather sampling to identify drainage areas with illicit discharge indicators and/or to verify that illicit discharges previously abated have been eliminated.

5.1 PUBLIC REPORTING

At the annual Town Meeting on May 1, 2023, the Stormwater Utility and associated Bylaw were approved. The first bills were issued in November of 2023. During this time, the Stormwater Division through the Department of Public Works created a dedicated Stormwater website (www.townofhudson.org/stormwater). The Stormwater website includes information on the MS4 Permit, the needs for stormwater infrastructure, and a webform to report any stormwater, flooding or drainage concerns. The report is an open form and allows residents to fill in information on illicit discharges or connections.

As a result of the stormwater utility billing, and the creation of the webform, residents and Town personnel have been contacting the Town with several concerns ranging in illicit discharges to overburdened systems. While most residents utilized the dedicated webform, others called, or visited the Department of Public Works. Tracking of webforms, phone calls, and in-person visits is a necessary part of the IDDE Program and must be reported in the Annual Report to the EPA. **Appendix K** contains a basic public reporting tracking sheet for illicit discharges. As an excel spreadsheet, there are two tabs:

1. Tracking Sheet- Where data is collected during public, or personnel complaints.
2. Explanation of Columns- Description of each header in each column in the Tracking Sheet tab.

5.2 DATA COLLECTION

Upon receipt of a public (or inter-departmental) complaint, track all information in **Appendix K** as discussed above. Begin gathering available information on the drainage system in the area. Review maps and plans through GIS and the Town's plans database. While reviewing maps, verify that the receiving waterbody is not subject to a TMDL by looking up the waterbody segment ID and the latest 303(d) List of Impaired Waterways. Testing requirements at outfalls will change if a TMDL is present or if the waterbody is a category 4. In addition, review the stormwater management system in the mapping system from the outfall to the most upstream catch basin. While GIS is a great tool and contains various drainage layers, it is possible that changes occurred in field that were not reflected in GIS. Field inspections of catch basins and manholes may be necessary to verify the most upstream portions of drainage systems. Finally, check public records for any previous reports or SSOs using web forms, previous MS4 Annual Reports or any other tracking system in place.



5.2.1 Mapping Requirements

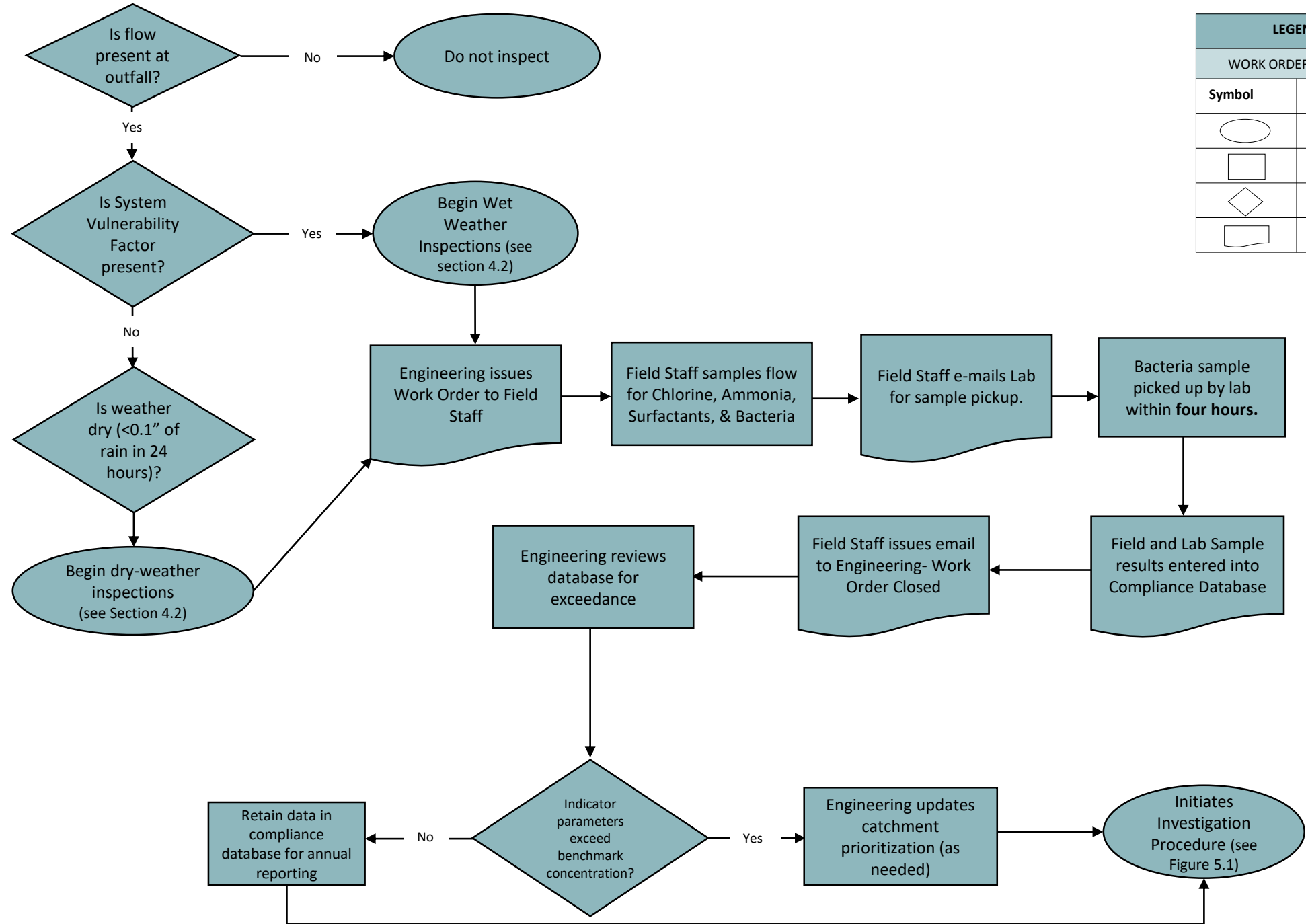
Conduct a preliminary review of drainage plans, GIS mapping, and record plans to define the specific catchment area for the catchment to be investigated. Once an approximate catchment area is defined, identify known System Vulnerability Factors (SVFs) within the catchment as defined by the MS4 General Permit. For catchments having at least one SVF, wet-weather outfall identification procedures investigations must be performed. SVFs indicate a higher potential for illicit discharges and include at least the following:

- History of SSOs;
- Common or twin-invert manholes or trenches serving both storm and sanitary sewer systems;
- Areas formerly served by combined sewer systems;
- Areas where the sanitary sewer system is shallower than the stormwater system;
- Areas where the sanitary sewers regularly surcharge;
- Sanitary sewer alignments known or suspected to have been constructed with an underdrain system;
- Extensive and documented sanitary sewer infrastructure defects such as leaking service laterals, cracked, broken, or offset sanitary infrastructure; and
- Widespread code-required septic system upgrades required at property transfers (indicative of inadequate soils, water table separation, or other physical constraints of the area rather than poor owner maintenance).



Figure 5-1: Outfall Monitoring – Workflow Process

Figure 5-1: Outfall Monitoring



LEGEND	
WORK ORDER PROCESS	
Symbol	Description
	Start/End
	Process
	Decision
	Document



5.3 NOTIFICATION TO RESIDENTS

After data collection and map overview, it is time to schedule an inspection. Distribute notifications to residents and property owners within the investigation area to inform them of the potential need to gain access to their property to inspect municipal drainage infrastructure, internal plumbing, and/or conduct dye testing. A sample outreach letter for overserved illicit discharges is attached as **Appendix H**. In addition, a sample notification letter that DPW will inspect the drainage networks is attached as **Appendix I**.

5.4 PHASE I RECORD KEEPING

All records from outfall inspections including work orders, email correspondence, field collection data summary forms, and compliance database updates from the previous fiscal year and incomplete work from years prior should be well documented. Summaries of data collection and complaint do not need to be documented in the MS4 Annual Report. However, citizen or Town personnel complaints, documents and maps should be saved in an electronic folder by permit year within the DPW drive. Subfolders should be created by street name and address if applicable. Each file name must include the date received or created, an address or street name where applicable. The file name should also include the general subject (drainage complaint, pollutant complain, etc.). A sample file name is shown below:

"YYYY-MM-DD_Main St-1_Drainage Complaint"

5.5 MAPPING FOR NEXT ROUND OF PHASE II WORK

Utilize the data collected from 5.1 to 5.3 and prior Phase III and Phase II work, prepare an updated catchment delineation map. Prepare maps and scheduled for the next round of annual dry weather and wet weather sampling and screening. Ensure that the timelines / schedules are prepared such that the scope of work for screening and sampling can be practically achieved based on weather forecasts,



6. PHASE II: ILLICIT DISCHARGE SOURCE DETERMINATION

This section outlines procedures utilized to isolate the source(s) of illicit discharges through systematic identification of catchment areas consistent with the MS4 General Permit. This section also describes the prioritization factors for inspection program implementation as outlined in Section 6.2. **Error! Reference source not found.** A catchment is defined as a land area which conveys stormwater runoff to a discrete pipe network, discharging at a discrete outfall. Identification procedures may vary depending on the nature of the illicit discharge potential identified during opportunistic / annual inspections, outfall inspection, or citizen complaint. This section of the IDDE Program Manual outlines the general components of the Town's investigation identification procedures, which are also illustrated in the workflow diagram in Figure 6-1. When signs of an obvious direct connection (such as toilet paper spotted in manholes or catch basins) is verified during an opportunistic or outfall inspection, several identification steps will be bypassed to quickly determine the illicit discharge's origin and eliminate the source. Consistent with the 2016 MS4 General Permit, all catchment identifications shall be completed within 10 years of the effective date of the permit.

6.1 INSPECTIONS

The MS4 Permit requires inspections of outfalls during dry weather and wet weather. Inspections by field crews are necessary to confirm stormwater versus non-stormwater discharges from an outfall, or into other drainage infrastructure. However, opportunities to conduct inspections occurs during routine operations as described in Section 6.1.1. In addition, routine inspections to private properties regularly occur by various departments as discussed in Section 6.1.2.

6.1.1 Opportunistic Investigation Procedures

The Town's ongoing drainage and sanitary sewer system inspection and maintenance activities provide a useful opportunity to identify potential illicit discharges on an ongoing basis. In general, maintenance activities of stormwater infrastructure are scheduled by the DPW and can be triggered by a report submitted through the Town's Stormwater website or other reporting recorded in Phase I. Common reports of illicit discharges from residents is usually for visual and olfactory factors observed at outfalls or drainage outlets. Reports typically include observation for colors, suds, trash/debris and strong odors including gas, or sewage. Per MS4 Permit requirements the Town currently conducts catch basin cleaning, and drainage pipe cleaning. These activities allow trained staff and/or contractors to visually inspect numerous drainage structures for obvious signs of illicit connections. Inspection procedures outlined in Sections 6.1.1 and 6.1.2 below focus on the detection of direct and indirect illicit discharges into the Town's MS4, and ultimately into the waters of the United States.

Sewer system evaluations also provide an opportunity to detect potential illicit connections. Closed-circuit television (CCTV) pipeline inspections can reveal damaged sewer lines with a potential for infiltration into the nearby stormwater system. Drain Manhole inspections and dye testing are methods of locating both direct and indirect illicit discharges.

Town staff and/or Town-contractors will use the SOP for Illicit Discharge Opportunistic Investigation (included in **Appendix A**) and will conduct olfactory (odor) and visual inspections (color, turbidity, floatables, staining, and pipe benthic growth) consistent with Chapter 11 of the Center for Watershed Protection's manual titled Illicit Discharge



Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments (2004)². Town employee training related to illicit discharge detection procedures will be provided as detailed in Section 8.

6.1.2 Private Property Inspections

The Town's IDDE Program also relies on opportunistic private property inspections to detect and eliminate potential illicit discharges into the MS4. The Hudson Building Department is the authority responsible for building and plumbing code enforcement, hence identifying potential illicit discharges inside the building. The Hudson Department of Public Works, Engineering Division is primarily responsible for the inspection of sewer connections and repairs outside the building. Furthermore, the Health Department is responsible for reviewing new plans, and performing inspections of septic systems. When septic systems are cleaned, reports are legally required to be submitted to the Health Department. Hence identifying potential illicit discharges during site inspections outside the building.

PROPOSED PLAN: Implement SOP for Opportunistic Identification Procedures

1. Detect Illicit Discharges

The Town staff will continue to conduct opportunistic identification procedures to detect obvious evidence of illicit discharges. **Appendix A** contains a copy of the Town's SOP for the Illicit Discharge Opportunistic Inspection Program. Town staff and/or Town-contractors who conduct drainage system or sanitary sewer system operations and maintenance will be trained in olfactory and visual detection of illicit discharges in accordance with Chapter 11 of the Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments (2004).

Sewer malfunctions, which are investigated by Public Works, may also lead to the discovery of illicit discharges.

2. Record Keeping

If an illicit discharge is identified during an opportunistic inspection, the Town staff and/or third-party contractor will alert the Director of Public Works via e-mail. The Director of Public Works will compile the findings into the Town's compliance database and will identify areas for further investigation. All e-mail correspondence and database updates will be documented traceable by location and calendar year.

3. Identify Additional Problem Areas

Problem areas for indirect illicit discharges, specifically illegal dumping, will be identified during drainage system maintenance activities. Problem areas will be documented using a digital data collection system or paper forms and will be targeted for further investigation, landowner outreach, potential enforcement activities, and/or catch basin stenciling in subsequent years.

² https://www3.epa.gov/npdes/pubs/idde_manualwithappendices.pdf



6.1.3 Outfall and Interconnection Inspection

The Town's primary method for detecting illicit discharges not identified via opportunistic or private property inspection will be through outfall inspection (i.e. screening and sampling). Outfalls within the Town of Hudson as well as outfall locations for interconnected MS4s and other separate stormwater systems receiving a discharge from the Town's MS4s will be inspected for illicit discharges. The Town of Hudson has approximately 229 outfalls. Initial outfall screening and priority ranking has been completed by Woodard & Curran in 2021 (see **Appendix D**).

All outfalls must be inspected by Permit Year 3 (June 30, 2022). The Town has contracted with Woodard & Curran to locate sources of five specific outfalls throughout the Town. The scope of work was approved in Permit Year 6, and work is anticipated to begin in Permit Year 7. In addition to the five specific outfalls, Woodard & Curran will investigate illicit discharges from outfalls that were ranked as problem or high in the 2021 priority ranking. All work must comply with this Illicit Discharge Detection and Elimination Program Manual.

6.1.3.1 Outfall Inspection

Outfalls need to be inspected to determine any potential illicit connections. Upon arrival at an outfall, begin the visual and olfactory inspection consistent with Chapter 11 of the Center for Watershed Protection's manual titled Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments (2004)³. Screening inspections will be conducted by Town staff and/or a third-party contractor and will be documented through digital data collection tools or paper forms. Outfall screening documentation will include the data collection fields outlined on the Outfall Inspection Form, provided in **Appendix B**.

Both dry-weather and wet-weather screening may be necessary to identify outfalls and interconnections with illicit discharges. For the purposes of this manual, dry-weather conditions consist of no more than 0.1 inches of rainfall in the previous 24-hour period and no significant snowmelt. Wet-weather conditions consist of a precipitation event producing sufficient flow to create a stormwater discharge. For wet-weather inspection requirements, review Section 6.3.

Base flow in storm drain systems is common and can be present at any time of year due to shallow groundwater infiltration; therefore, it is essential to conduct dry-weather outfall and interconnection screening investigations during periods when groundwater infiltration is minimal. Coordination with the Hudson Water Department will be necessary to confirm that the dry-weather flows present are not a result of hydrant flushing.

6.1.3.2 Sampling

If flow is observed during inspections, two samples will be collected from the outfall (or if the outfall is inaccessible, the nearest accessible upstream drainage structure) in accordance with EPA's Draft Bacterial Source Tracking Protocol (2012)⁴. It should be acknowledged that not all sections of the Draft Bacterial Source Tracking Protocol are applicable

³ https://www3.epa.gov/npdes/pubs/idde_manualwithappendices.pdf

⁴ <https://www3.epa.gov/region1/npdes/stormwater/assets/pdfs/epa-ne-bst-protocol-2012.pdf>



to this manual. One sample will be analyzed in the field for ammonia, chlorine, surfactants, conductivity, salinity and temperature; the other sample will be submitted to a Massachusetts-certified laboratory to be analyzed for Escherichia coli (E. coli). Sampling results will be maintained in a compliance database and will be included in annual reports. An example database format is included in **Appendix C**. For specific outfalls that discharge directly to impaired waters (as identified in the table included in **Appendix D**), additional laboratory or field test kit parameters may be required.

Benchmark concentrations, instrumentation, and analytical methods used for stormwater sampling are included in Table 6-4. If flow is not observed during screening, the non-flowing condition should be noted on the Outfall Inspection Form and no sample will be collected. Currently, outfall screenings and illicit discharge investigations are conducted by a contractor. All sampling shall be conducted under the contractor's Water Quality Sampling Plan detailing sample collection, preservation, and quality control requirements. A local Water Quality Sample Plan shall be developed when equipment is purchased and staff is trained to use the equipment properly. When the Water Quality Sample Plan is developed, it will be incorporated to the IDDE Program Manual as an attachment. A summary of the outfall monitoring workflow is shown in Figure 5-1.

Table 6-1: Sampling Guidelines for Water Quality Indicator Parameters

Indicator Parameter	Benchmark Concentration	Instrumentation
E. coli	235 cfu/100 mL	via MA-certified laboratory
Surfactants (as MBAS)	≥ 0.25 mg/L	CHEMetrics K-9400 Field Kit
Ammonia (NH ₃)	≥ 0.5 mg/L	CHEMetrics K-1510 Field Kit
Total Chlorine	> 0.05 mg/L - method detection limit	CHEMetrics K-2504 Field Kit



PROPOSED PLAN: Conducting Outfall Inspections¹

- | | |
|---|--|
| 1. Conduct Dry-Weather and Wet-Weather Outfall and Interconnection Inspections | Dry-weather and wet-weather outfall and interconnection inspections will be conducted by Town staff, or a third-party contractor, as necessary. Outfall data collection should be consistent with data fields shown on the example Outfall Inspection Form included in Appendix B . |
| 2. Record Keeping | If a potential illicit discharge is identified during a town-wide outfall inspection, the Town staff and/or third-party contractor will alert the Department of Public Works via e-mail. The Department of Public Works will compile the findings into the Town's compliance database and will identify areas for further investigation. All e-mail correspondence and database updates will be documented traceable by location and calendar year. |
| 3. Identify Additional Problem Areas | Areas identified with consistent illegal dumping near the outfall will be identified during outfall inspections. Problem areas will be documented using a digital data collection system or paper forms and will be targeted for catch basin stenciling, public outreach, further investigation, or enforcement depending on the nature of the illicit discharge. During field inspections, crews should also document any maintenance or structural issues with the outfalls, such as trash around the outfall or damaged infrastructure that should be considered for repair. Observed spills or environmental hazards should be immediately reported to the Authorized Agent and the incident should be documented on the Outfall Inspection Form or other digital data collection tools. |

¹. Outfall inspections are required for Town-owned inspections. However, through a contractor, the Town inspected outfall screening in 2020 and completed inspections within 2021. Outfall inspections will be necessary for any new or unmapped outfalls during dry weather.



6.2 IDDE PROGRAM PRIORITIZATION

The Town has developed the following prioritization system to focus outfall inspection resources to areas with the most significant potential for illicit discharges. In Hudson, IDDE priority areas have been developed based on preliminary catchment boundary delineations. A catchment is defined as a land area which conveys stormwater runoff to a discrete pipe network, discharging to a discrete outfall. These hydrologic units provide an initial prioritization structure while pipe network connectivity is refined during IDDE determination and as catchments can be more accurately defined. Consistent with the 2016 MS4 General Permit, all identifications will follow standard catchment-based identification procedures as described in Section 6.

Hydrologic units, or catchments, have been prioritized and classified as one of the following, consistent with the 2016 MS4 General Permit: Problem Catchments, High Priority Catchments/Outfalls, Low Priority Catchments/Outfalls, and Excluded Catchments. **Appendix D** contains the initial prioritization that was performed in 2021. The following are the EPA's definitions for each of the categories listed above:

Excluded

- Catchments with no potential for illicit discharges, and may be excluded from the IDDE Program. This category 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 through undeveloped land (that neither cross nor are in proximity to sanitary sewer alignments). Based on the hydrologic unit prioritization methodology, the Town of Hudson has not excluded any catchments under this IDDE Program Manual.

Low Priority

- Catchments determined by the Town as low priority based on outfall/interconnection screening and/or catchment characteristics, and are not classified as High Priority, Problem, or Excluded.

High Priority

- Outfalls that are discharging to an area of concern for public health due to proximity of discharges to public swimming areas or drinking water supplies; or catchments determined by the Town as high priority based on the following:
- 2022 Integrated List Waterbody segments defined by MassDEP as bacteria impaired waters
- Outfalls that discharge into Centennial Beach swimming area in the Fort Meadow Reservoir

Problem

- Catchments with outfalls/interconnections with known or suspected illicit discharges based on existing information (see **Appendix D**). Includes areas where screening indicates sewer input (olfactory/visual evidence of sewage, Ammonia ≥ 0.5 mg/L, surfactants ≥ 0.25 mg/L, bacteria ≥ 126 colony forming units/100mL, detectable chlorine). At this time, the Town has identified two problem outfalls. Problem catchments will be reconsidered upon completion of initial outfall inspections.



Hydrologic units or outfalls that do not discharge directly to public swimming areas or bacteria impaired waters were ranked into High or Low Priority catchments. During the prioritization process, individual stormwater pipe segments were prioritized according to the following:

- Land Use
- Parcel Density
- Sewer Pipe/Stormwater Drainage Pipe Crossing
- On-Site Wastewater Package Plant (Presence or Absence)

The prioritization matrix and scoring criteria used for catchment rankings are shown in the Table in **Appendix D** and within associated figures exhibiting catchment priority. Outfall investigations will initially commence in High Priority catchments. Catchment prioritization will be re-evaluated after additional interconnections and other inspection results have been evaluated.

6.3 CATCHMENT IDENTIFICATION PROCEDURE- TARGETED INVESTIGATIONS

Within three years of the effective date of the new MS4 permit, catchment areas were to be reassessed to refine prioritization based on initial inspection results. Classification of all catchment areas will be reevaluated based on new field information to identify appropriate next steps and updates to this manual.

The Town will implement the following Catchment Investigation Procedure in Problem, High, and Low Priority Catchments, as defined in Section 6.2 and will proceed systematically from the highest to lowest priority catchments. The potential for an illicit connection is evaluated based on a Weight of Evidence (WoE) assessment that incorporates both olfactory/visual evidence and sampling results. Sampling is required when flows are observed from an outfall during dry weather as discussed in Section 6.1.3.1.

Figure 6-2 gives an overview of how sampling data is used to identify the potential sources of illicit discharges. For the purposes of this manual, an individual targeted catchment investigation will be considered complete once all potential sources of wastewater (or other illicit discharges) have been identified. Upon completion of all catchment investigations and illicit discharge confirmation and removal (if necessary), each outfall will be reprioritized for dry-weather and wet-weather inspection and scheduled for ongoing inspection once every five years.

The investigation procedure will be initiated by the Authorized Agent and conducted by trained Town staff or a third-party subcontractor as needed. The investigation of an illicit discharge may also be initiated by a public complaint received via the Town's website or by phone as discussed in Section 5.1 above. The procedure includes the following implementation steps:

1. Conduct field investigations during dry weather only to reduce the effect of stormwater flows on the MS4. Conduct a visual and olfactory inspection of key junction manholes in the drainage area to attempt to identify obvious source(s) of illicit cross-connection, inflow, or infiltration. A key junction manhole is a location that allows effective assessment of upstream drainage. Begin investigation in the upper portion of each catchment and work downstream. If visual evidence of a direct discharge is identified and the originating segment of pipe can be isolated, skip to Step 5.
 - When flow is observed in a junction manhole, use field kits to analyze samples for ammonia, chlorine, surfactants, conductivity, salinity, and temperature and record results. Use a WoE approach to compare to the sampling thresholds shown in Table 4-2 to identify the likely source of any potential illicit connection(s). Junction manholes with obvious signs of contamination (e.g. toilet paper) do not need to be sampled.



-
- When flow is not observed in a junction manhole, partially block each inlet of the manhole using sandbags or other barriers for a forty-eight (48) hour dry period (i.e. when no precipitation or significant snowmelt is expected). Re-inspect the junction manhole after forty-eight (48) hours for intermittent flows, and then sample any captured flow for standard sampling parameters.
2. Isolate the pipe or open drainage segment thought to be emitting the illicit discharge(s) using “bracketed” field sample collection procedures for standard sampling parameters. Bracketing approaches help to locate the origin of the illicit discharge between adjacent structures.
 3. Conduct additional investigations as needed, before or after “bracketed” field sampling, to verify the source(s) of pollutants. These investigations can include laboratory water quality testing (e.g. E. coli), wet-weather and/or high groundwater investigation monitoring, CCTV pipe inspections, and targeted internal plumbing inspections via lateral tests using dye flushing and/or sanitary sewer collection system dye flooding. Locations will be prioritized for further investigation based on a WoE determination of the likelihood of illicit discharge.
 4. When illicit discharge locations are verified in association with a physical address or indirect interconnection with the sanitary sewer, field staff will photograph the problem area at ground level, identify any other indicators of exact location, summarize sampling results, and suggest potential remedies to the problem. They will forward this information to the Department of Public Works who will then notify the Authorized Agent, via e-mail, for initiation of the corrective action process described in Section 7.
 5. The Authorized Agent shall order compliance by the property owner and/or responsible party via a written notice. See Section 7 for discussion of the corrective action process.



Figure 6-1: Illicit Discharge Investigation – Workflow Process

Figure 6-1: Illicit Discharge Investigation

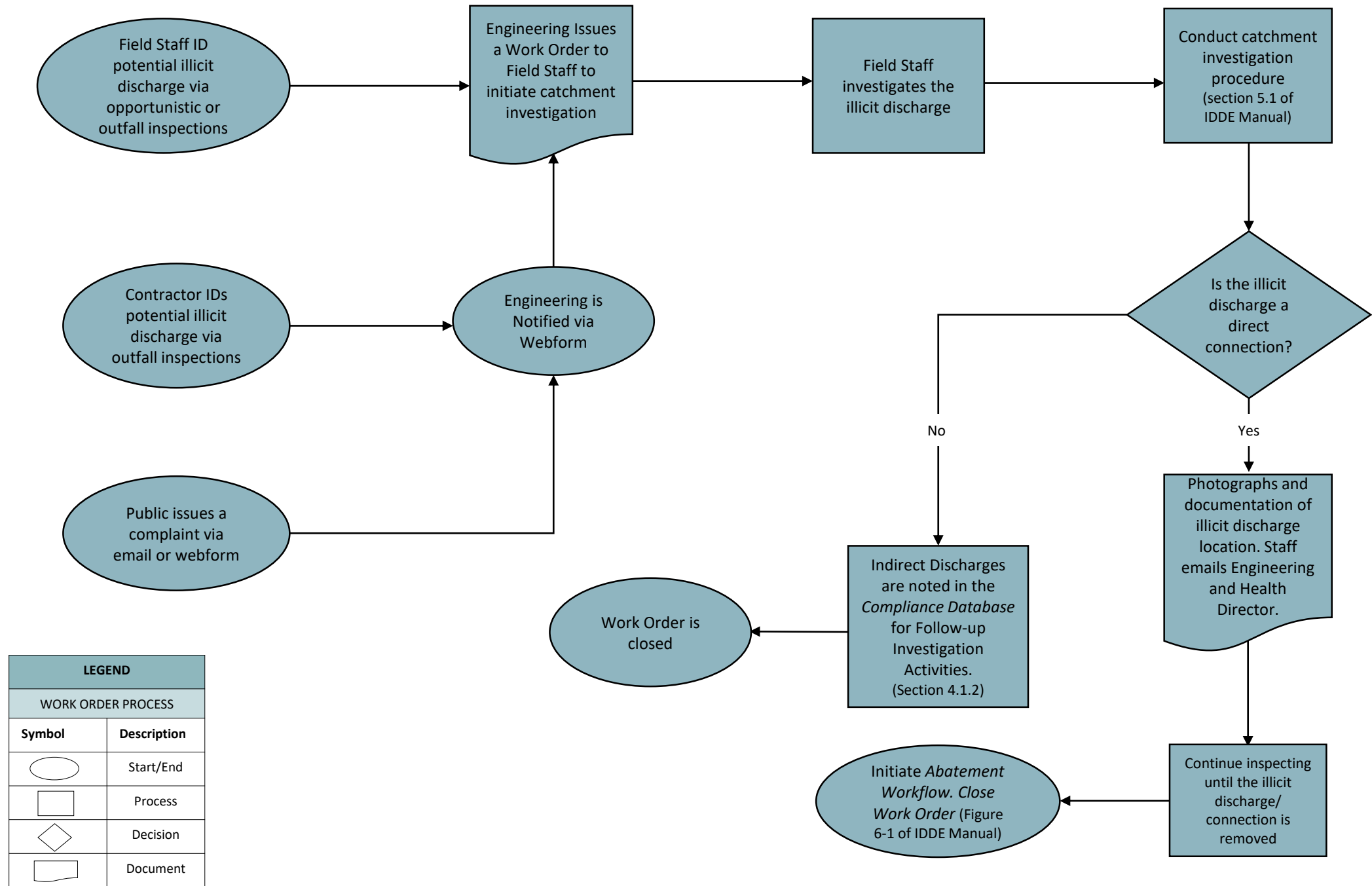
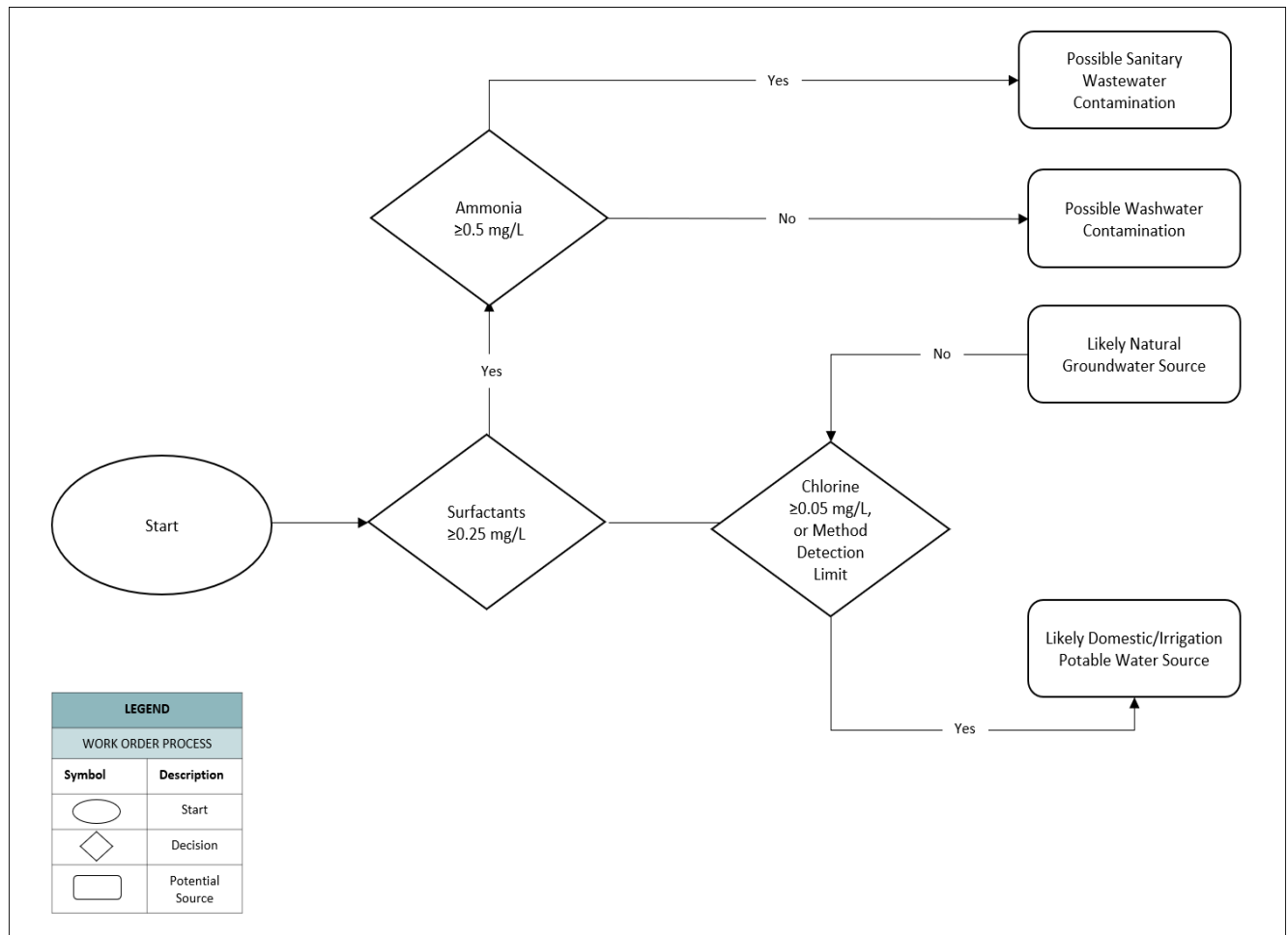




Figure 6-2: Flow Chart to Identify Possible Illicit Discharges¹



¹ Adapted from Chapter 12 of the Center for Watershed Protection's Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments (2004): Figure 47, pg. 131.

6.4 FOLLOW-UP INSPECTIONS

Illicit discharges should be removed in accordance with the Illicit Discharge Enforcement procedures as outlined in Section 7. Within sixty (60) days of an illicit discharge removal, dry-weather follow-up sampling will be conducted just upstream and downstream in the nearest manholes to the illicit discharge (initially identified) to confirm removal. Field sampling shall follow similar procedures for “bracket” sampling outlined in Section 6.1.1.

6.5 CONFIRMATORY INSPECTIONS AND ONGOING OUTFALL/INTERCONNECTION MONITORING

Within one (1) year of the removal of all identified illicit discharges within a catchment area, dry-weather and wet-weather confirmatory outfall or interconnection screening and sampling will be conducted following the procedures described in Section 0. Post-enforcement screening results will be used to reprioritize the catchment and refine the



catchment categorization to ensure that the Town's resources remain focused in areas with the most significant potential for illicit discharges. The priority ranking of all known catchment areas will be updated regularly.

If confirmatory screening indicates the presence of more sources of illicit discharges, the catchment will be scheduled for additional investigation following the priority ranking from highest to lowest priority catchments. Pursuant to Part 2.3.4.10 of the MS4 Permit, when confirmatory screening does not indicate the presence of additional sources of illicit discharge, the catchment will be reprioritized and scheduled for ongoing outfall inspections once every five years.

6.6 ADDITIONAL DRAINAGE INFRASTRUCTURE MAPPING

Unmapped stormwater infrastructure and MS4 interconnections discovered during field activities will be GPS-located, added to the Town's GIS database, and inspected following the procedures described in Section 6.1.3. Currently, the Town of Hudson does not have any interconnections.

6.7 PHASE II RECORD KEEPING

Phase II of the *Illicit Discharge Detection and Elimination Program* is dedicated to outfall and catchment inspections. In addition, priority outfall inspections are also included within Phase II. Before inspections begin, collecting data, maps and records is required within Phase I as shown in Section 5.4. Once the inspection is conducted and finalized in Phase II, Phase III begins for notifications, and correction for any removal of illicit discharges. Section 7.6 conducts the Phase III record keeping standards. However, given the type of work conducted under Phase II, record keeping is not required within this phase. Therefore, proceed to Phase III on the next page.



7. PHASE III: ENFORCING AND REMOVING ILLICIT DISCHARGES

Upon confirmation of a verified illicit discharge (via CCTV and/or dye testing), the Department of Public Works will send an e-mail notification to the Board of Health indicating that field staff have verified an illicit discharge and that the 60-day window for remediation has been opened. The Department of Public Works will initiate the enforcement workflow process as shown in Figure 6-1.

Connections from private properties are common sources of direct and indirect illicit discharges. This section is focused on the procedures to follow if the Town finds that a private property owner is the responsible party for an illicit discharge. If the Town is found responsible for the removal of an illicit discharge, for instance in the case of exfiltration from a broken sewer main, the Town will follow a 60-day corrective action timeline (as possible). The Town will structure its enforcement activities based on factors such as flow volume and impacts to human health. Any deviation from the 60-day corrective action timeline must be justified, summarized, and included with an updated timeline during the MS4 Annual Report.

7.1 VOLUNTARY COMPLIANCE

The preferred approach for addressing illicit discharges from private properties is to pursue voluntary compliance from the private property owner and/or responsible party using the education methods further described in Section 8.2. Often, business operators and residential property owners are not aware of the existence of illicit connections or activities on their properties constituting an illicit discharge. In these cases, providing information about the connection or operation, the environmental consequences, and suggestions on how to remedy the problem may be enough to secure voluntary compliance from the property owner and/or responsible party.

7.2 OPERATIONAL PROBLEMS

Property owners and/or responsible parties are responsible for correcting any operational problems that are causing illicit discharges to the municipal storm drain system. Operation modifications could include sewer lateral maintenance to repair defects or eliminate blockages, moving vehicle washing activities indoors or undercover, locating an appropriate discharge location for liquid wastes, or other appropriate measures. Through site visits and education, the Authorized Agent or other program partners may provide technical assistance to aid property owners in identifying and addressing operational problems.

7.3 STRUCTURAL PROBLEMS

Many illicit discharges will require a structural modification to correct the problem. Structural modifications are used to redirect illicit discharges from private properties to a sanitary wastewater collection, on-site disposal system, or other appropriate location. Structural repairs to defective sanitary sewer collection infrastructure may also be necessary. Correcting structural problems is the responsibility of the property owner and/or responsible party, though the Authorized Agent may provide guidance during the process.

7.4 ENFORCEMENT ACTIONS

When voluntary compliance cannot be obtained, the Authorized Agent will pursue follow-up enforcement action. The *Stormwater Rules and Regulations* sets enforcement actions in Section V. Pursuant to Section 5.1 of the Stormwater Division's Rules and Regulations, the Authorized Agent may issue a Notice of Violation. In the event that property owners are unresponsive to the Notice of Violation, the Authorized Agent may seek alternative measures including issuing a secondary Notice of Violation, a fine, or seeking civil relief. The Stormwater Rules and Regulations place



liability on the property owner where a violation is confirmed. Specifically, Section 5.2 d. states, “*Liability for Losses: Any person violating any of the provisions of these Rules and Regulations shall become liable to the Town for any expense, loss, or damage occasioned the Town by reason of such violation.*”

In the event the owner does not remove an illicit connection, the Department of Public Works has the authority to perform the work, and invoice the owner for all expenses from removal, to final restoration. A sample Notice of Violation, is contained within **Appendix F**. Table 7-1 below outlines enforcement actions and associated regulations. Table 7-2 on the following page outlines detailed enforcement steps and timelines.

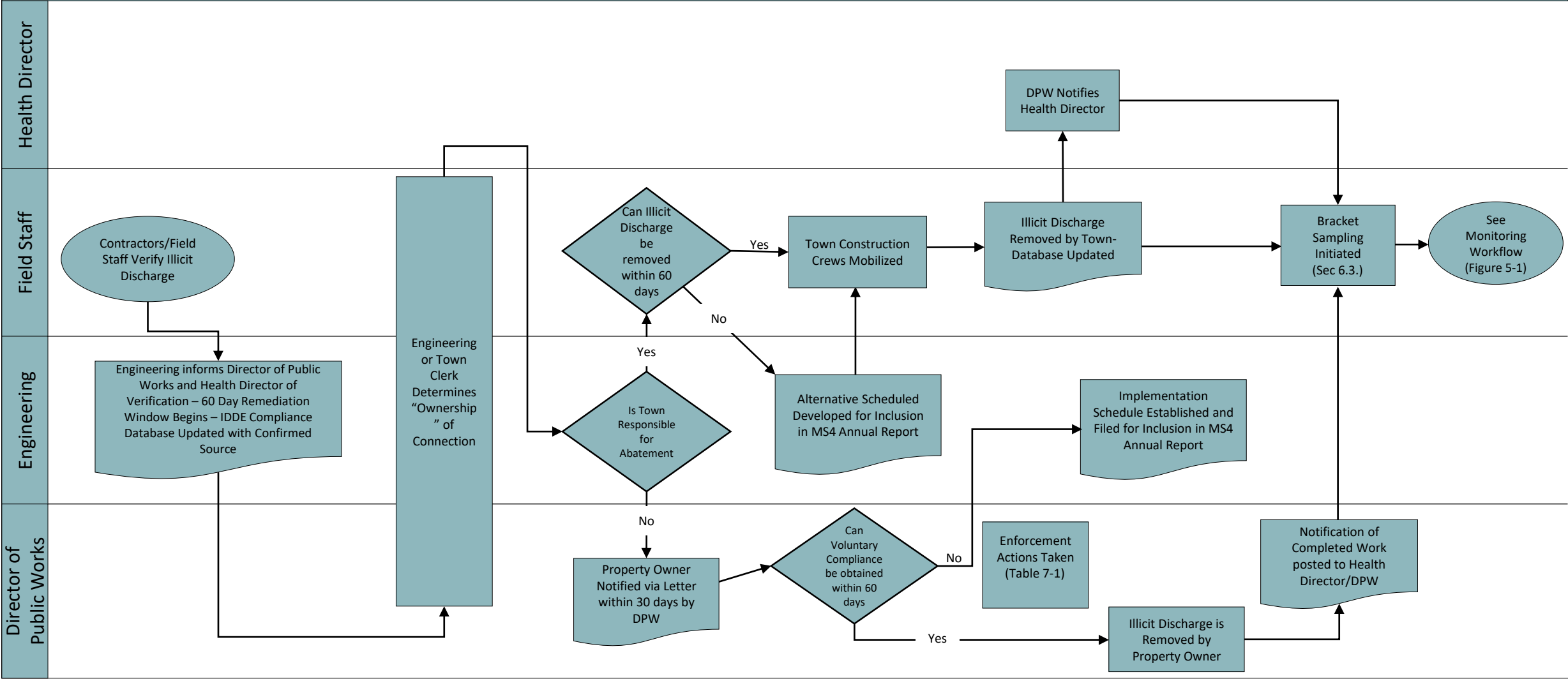
Table 7-1 Enforcement Actions

Enforcement Action	<i>Stormwater Rules and Regulations Citation</i>	Details
Illicit Discharge Flyer for Public Education	Appendix J of IDDE Program Manual	An illicit discharge flyer was created to give property owners a chance to inform DPW of any known illicit connections or discharges to drainage systems. See Appendix J for the IDDE education and outreach flyer.
Notice of Violation	5.1. c.	The notice must include information about the violation, and can require remediation and monitoring actions as outlined in 5.1.c. of the <i>Stormwater Rules and Regulations</i> .
Fines	5.2. c.	Fines are \$25.00 per violation and per day.
Civil Relief	5.1.b	Civil relief should only be sought when the property owner is non-responsive to letters, and fines.



Figure 7-1: Illicit Discharge Removal and Enforcement – Workflow Process

Figure 7-1: Illicit Discharge Abatement Workflow



LEGEND	
WORK ORDER PROCESS	
Symbol	Description
	Start/End
	Process
	Decision
	Document



7.4.1 Enforcement Timeline

The timeline for corrective action procedures for a direct illicit connection is 60 days, starting from the day that an illicit connection is confirmed. As soon as possible, contact the property owner by knocking on their door, calling them, or sending a letter. However, a letter is the best step in the event that enforcement actions may be necessary. The Town can send a second and third Notice of Violation letter within the first 90 days of illicit connection verification. Follow the enforcement timeline in Table 7-2 to determine when to send the second and third notification letters. **Appendix F** contains sample Notice of Violation letters for the first, second, and third notification attempts.

If property owners are not addressing problems in a timely manner (within sixty (60) days of confirmation), a stricter enforcement approach may be warranted if an “imminent and substantial danger” exists. The Town may step in and perform the repairs necessary to remove an illicit connection, eliminate an illicit discharge, and/or clean-up a dumping incident. Property owners will be responsible for reimbursing the Town for any costs incurred in correcting private illicit discharge problems. Table 7-2 below displays the enforcement timeline.

Table 7-2: Enforcement Timeline

Illicit Discharge Elimination Step	Details
Step 1 – Initial Actions (0 to 60 Days)	<ul style="list-style-type: none">- Provide landowner Notice of Violation letter*. Notify landowner in writing within thirty (30) days of verification to remove illicit discharge.- Encourage voluntary compliance.- Set compliance date (determined on individual incident basis).- Provide guidance (as applicable).- Request evidence of corrected problem.- Conduct site visit to verify compliance and completion of work.
Step 2 – Follow-up Actions (60 to 90 Days)	<ul style="list-style-type: none">- Request evidence of corrected problem.- Conduct site visit to verify compliance and completion of work.- If unresolved, send 2nd Notice of Violation letter*, indicating that unresolved issues and fines will be referred to prosecutor.
Step 3 – Final Actions (90+ Days)	<ul style="list-style-type: none">- Send final Notice of Violation letter*.- Prosecutor to commence fines in accordance with the Stormwater Division’s Rules and Regulations, Section 5.2 c.

*Document copies of all letters

7.5 FOLLOW-UP SCREENING

Within one year of the illicit discharge correction, dry-weather confirmatory sampling should be conducted just “upstream” and “downstream” in the manholes nearest to the eliminated illicit discharge to confirm removal. Field sample collection includes testing for ammonia, chlorine, and surfactants; follow similar procedures for “bracket” sampling as described in Section 6.1.1.



7.6 PHASE III RECORD KEEPING

All records from outfall screening and catchment investigations should be well documented utilizing digital data collection technologies and compliance database updates. As with inspection activities, summaries of investigation activities will be included in each MS4 Annual Report. Records should contain a summary of each catchment under investigation and any evidence of known or suspected illicit discharges. A sample Catchment Investigation Summary reporting template is provided in **Appendix E**.

In addition, summaries of inspection activities will be included in each MS4 Annual Report. Records should include:

- Recommended investigation and/or enforcement plans for immediate responses to verified illicit discharges observed during opportunistic or target inspections;
- Laboratory data and field screening results;
- Dates and times of completed screening and sampling events;
- Weather conditions forty-eight (48) hours prior to, twenty-four (24) hours prior to, and during each sampling event;
- An updated priority ranking of all catchment areas based on new field information (if applicable); and
- An updated map showing boundaries of all MS4 catchment areas (if modified).

Throughout the investigation and corrective action activities, all information related to the incident or property in question should be well documented utilizing a series of work orders, e-mail correspondence, and compliance database updates. Along with monitoring and investigation activities, summaries of corrective action will be included in each MS4 Annual Report. Records for each verified illicit discharge removed from the Town's MS4 should include:

- Location and source of discharge;
- Description of discharge;
- Method/date of discovery;
- Date of elimination;
- Mitigation action and associated costs; and
- Estimated volume of flow removed.

Additional records should be maintained for each illicit discharge not removed within sixty (60) days of verification, including:

- Justification for delayed corrective action;
- Schedule for removal of illicit discharge; and
- Description of legal actions against landowner (if applicable).

All records should be placed in the MS4 Compliance Folder. Each illicit discharge or connection that is verified should be placed in its own separate folder filed by Street Name, address number, and the permit year the illicit was



discovered. For example, “Main St-123_Illicit Connection_PY7.” Folders must contain communications, photos, maps, plans, work orders, and any other documents used during the investigation of illicit connections.



8. TRAINING, EDUCATION AND VOLUNTARY REPORTING PLAN

8.1 ANNUAL EMPLOYEE TRAINING

Employee training is an important component of the Town's stormwater program. Town staff are trained in the opportunistic inspection SOP, along with annual Stormwater Pollution Prevention Plan via the training module provided in **Appendix G**. Town staff involved with the IDDE Program must be able to recognize and identify illicit discharges during standard drainage and sanitary sewer system maintenance operations.

PROPOSED PLAN: Annual Employee Training

- 1. Conduct IDDE Training Annually** Town staff responsible for stormwater and sewer collection system maintenance, in addition to those who specifically conduct site visits and inspections, will be trained to identify illicit discharges. Topics may vary each year based on staff education needs.

8.2 PUBLIC EDUCATION

Under the MS4 General Permit, the Town must inform public employees, businesses, and the general public of the hazards of illicit discharges. Targeted mailing of educational brochures and fact sheets in neighborhoods with consistent indirect illicit discharges are a component of the IDDE Program (see **Appendix H** for a sample outreach letter). General awareness of illicit discharges will also be fostered through educational materials found on the Town's website. As an additional method available to DPW, social media posts can be administrated each year.

8.3 VOLUNTARY REPORTING

8.3.1 Incidental Detection

The Town has a general complaint reporting webform that residents, field personnel, and outside agencies can report illicit discharges. This service encourages residents to participate in the reporting process and helps the Town to receive timely information regarding issues such as illegal dumping, spills, or strong odors associated with septic outbreaks or failures. In the event of a release of hazardous materials, emergency services should be contacted immediately.

8.3.2 Contact Information

During normal business hours (Monday through Friday 7:30 AM to 3:30 PM, excluding holidays), Hudson residents, other Town departments, or outside agencies reporting incidents that have occurred within the Town limits can call the Town of Hudson Department of Public Works at (978) 562-9333.

After hours, emergency water quality incidents should be reported to the Police Department by calling the Hudson Police Office at (978) 562-7122. Residents that encounter a non-emergency incident are encouraged to report the problem the next business day.



9. PROGRAM TIMELINE AND MILESTONES

As of 2024, the Town of Hudson has completed initial dry weather inspections of all outfalls. Staff training is performed in-house annually in the spring. The Town will implement the IDDE Program outlined in this manual following the table below:

Table 8-1 IDDE Timeline

Task	Status
Baseline Dry-Weather and Wet-Weather Outfall Inspections	Completed- June 25, 2021
Additional Outfall Inspections	Ongoing
Preliminary Prioritization of Catchments	June 25, 2021
Conduct Staff Training	Annually, in the Spring
Conduct Opportunistic Inspections	Ongoing
Conduct Catchment Investigations	Ongoing
Summarize Previous Year Results of Catchment Investigations for MS4 Annual Report	Annually

Note: Indirect discharges shall be noted and additional investigation (e.g. dye testing, CCTV inspection, internal plumbing inspection) will be conducted as needed throughout the Program period.

Program success is based on trainings conducted, catchment prioritization, dry-weather and wet-weather outfall inspections, investigations, volume of illicit discharges removed, and percent and area of catchments investigated. The Town will evaluate and report the program's overall effectiveness in its MS4 General Permit Annual Report.



10. REFERENCES

- Center for Watershed Protection and Robert Pitt University of Alabama, 2004. *Illicit Discharge Detection and Elimination: A Guidance Document for Program Development and Technical Assessments*; October.
- Massachusetts Department of Environmental Protection, 2022. *Massachusetts Final 2022 Integrated List of Waters*; November 16, 2022.
- New England Interstate Water Pollution Control Commission, 2003. *Illicit Discharge Detection and Elimination Manual: A Handbook for Municipalities*; January.
- Town of Hudson, Massachusetts, 2000. *Town of Hudson Sewer Use Regulations*. June.
- U.S. Environmental Protection Agency, 2003. *National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges from Small Municipal Separate Storm Sewer Systems*; April.
- U.S. Environmental Protection Agency, 2012. *Draft EPA New England Bacterial Source Tracking Protocol*; January.
- U.S. Environmental Protection Agency, 2016. *National Pollutant Discharge Elimination System (NPDES) General Permits for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems in Massachusetts*.

APPENDIX A: OPPORTUNISTIC INSPECTION SOP



STANDARD OPERATING PROCEDURE FOR ILLICIT DISCHARGE AND OPPORTUNISTIC INSPECTION PROGRAM

Purpose: The purpose of this Standard Operating Procedure (SOP) is to provide basic guidance for the identification of possible illicit discharges to Hudson's storm sewer system and ultimately the Town's receiving waters as required by the Small MS4 General Permit and as outlined in the Illicit Discharge Detection and Elimination (IDDE) Program Manual.

Scope: This SOP shall be used in the performance of opportunistic IDDE inspections as required by Control Measure 3 of the MS4 General Permit: Illicit Discharge Detection and Elimination.

References: Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments (October 2004)

Responsible Parties:

- Authorized Agent/Overall Program Management: Director of Public Works (infiltration), or Health Department (inflow).
- Opportunistic Inspections: Department of Public Works (infiltration), or Health Department (inflow).
- Tracking and Record Keeping: Department of Public Works – Engineering or Stormwater Division.
- Review and Follow-Up: Department of Public Works – Engineering or Stormwater Division or Director of Public and Community Health
- Corrective Action: The Violator, or Director of Public Works when the violator is nonresponsive or the situation is an emergency. Per the rules and regulations, the violator is responsible for paying for the corrective action.
- Enforcement: Director of Public Works or Health Department

Inspection Procedure:

- Inspections will be conducted in a safe manner and all required Personal Protective Equipment (PPE) will be used;
- Abnormal conditions and suspected illicit discharges via visual or olfactory indicators will be noted and will be reported via e-mail (correspondence) to the Director of Public Works for further investigation;
- If the illicit discharge is an indirect discharge (i.e. oil/grease, dog waste bags or other dumped material, etc.), the location should be noted and filed for periodic review for targeted outreach; attempts to remove and dispose of material per state laws should be considered if the material is



known, otherwise removal of contaminated sediments via vacuum truck or mechanical removal should not be undertaken without further discussion with the Director of Public Works;

- Digital photographs shall be recorded and attached to each correspondence and should include photos of adjacent land areas/properties for reference;
- When an illicit discharge is confirmed or suspected, an attempt will be made to locate the source of the illicit discharge from within the Town ROW and will be documented for notification to the Director of Public Works;
- Completed field notes on illegal dumping or other indirect discharges will be compiled on an annual basis and utilized by the Department of Public Works – Engineering Division to identify locations for catch basin stenciling, outreach letters, or other voluntary compliance education options.

Corrective Action: When a suspected illicit discharge is verified through further investigation, the Director of Public Works will notify the Engineering Division, the Building Department, and Director of Public and Community Health via e-mail with description of issue and photographs of the illicit discharge.

Record Keeping and Program Evaluation: Inspections that indicated an indirect or transitory illicit discharge will be summarized and forwarded to the Director of Public Works for appropriate action. All inspection forms and correspondence should be made available in paper or digital forms by the Department of Public Works.

On at least an annual basis, field notes and correspondence will be reviewed by the Director of Public Works for accuracy and conformance to the SOP and the IDDE Program Manual. The Director of Public Works is responsible for tabulating the field notes and correspondence yearly for inclusion in the Town's MS4 Annual Report.



APPENDIX B: OUTFALL INSPECTION FORM

OUTFALL RECONNAISSANCE INVENTORY/ SAMPLE COLLECTION FIELD SHEET

Section 1: Background Data

Subwatershed:		Outfall ID:	
Today's date:		Time (Military):	
Investigators:		Form completed by:	
Temperature (°F):	Rainfall (in.):	Last 24 hours:	Last 48 hours:
Latitude:	Longitude:	GPS Unit:	GPS LMK #:
Camera:		Photo #s:	
Land Use in Drainage Area (Check all that apply): <div style="display: flex; justify-content: space-between;"> <div> <input type="checkbox"/> Industrial <input type="checkbox"/> Ultra-Urban Residential <input type="checkbox"/> Suburban Residential <input type="checkbox"/> Commercial </div> <div> <input type="checkbox"/> Open Space <input type="checkbox"/> Institutional Other: _____ Known Industries: _____ </div> </div>			
Notes (e.g., origin of outfall, if known):			

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
<input type="checkbox"/> Closed Pipe	<input type="checkbox"/> RCP <input type="checkbox"/> CMP <input type="checkbox"/> PVC <input type="checkbox"/> HDPE <input type="checkbox"/> Steel <input type="checkbox"/> Other: _____	<input type="checkbox"/> Circular <input type="checkbox"/> Elliptical <input type="checkbox"/> Box <input type="checkbox"/> Other: _____	<input type="checkbox"/> Single <input type="checkbox"/> Double <input type="checkbox"/> Triple <input type="checkbox"/> Other: _____	Diameter/Dimensions: _____ 	In Water: <input type="checkbox"/> No <input type="checkbox"/> Partially <input type="checkbox"/> Fully With Sediment: <input type="checkbox"/> No <input type="checkbox"/> Partially <input type="checkbox"/> Fully
<input type="checkbox"/> Open drainage	<input type="checkbox"/> Concrete <input type="checkbox"/> Earthen <input type="checkbox"/> rip-rap <input type="checkbox"/> Other: _____	<input type="checkbox"/> Trapezoid <input type="checkbox"/> Parabolic <input type="checkbox"/> Other: _____		Depth: _____ Top Width: _____ Bottom Width: _____	
<input type="checkbox"/> In-Stream	(applicable when collecting samples)				
Flow Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <i>If No, Skip to Section 5</i>				
Flow Description (If present)	<input type="checkbox"/> Trickle <input type="checkbox"/> Moderate <input type="checkbox"/> Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
<input type="checkbox"/> Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
Temperature			°F	Probe
Conductivity			µS/cm	Probe
Salinity (as Applicable)			ppt	Probe
Ammonia			mg/L	Field test kit
Surfactants			mg/L	Field test kit
Chlorine			mg/L	Field test kit

OUTFALL RECONNAISSANCE INVENTORY FIELD SHEET

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No (If No, Skip to Section 5)

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	<input type="checkbox"/>	<input type="checkbox"/> Sewage <input type="checkbox"/> Rancid/sour <input type="checkbox"/> Petroleum/gas <input type="checkbox"/> Sulfide <input type="checkbox"/> Other:	<input type="checkbox"/> 1 – Faint	<input type="checkbox"/> 2 – Easily detected	<input type="checkbox"/> 3 – Noticeable from a distance
Color	<input type="checkbox"/>	<input type="checkbox"/> Clear <input type="checkbox"/> Brown <input type="checkbox"/> Gray <input type="checkbox"/> Yellow <input type="checkbox"/> Green <input type="checkbox"/> Orange <input type="checkbox"/> Red <input type="checkbox"/> Other:	<input type="checkbox"/> 1 – Faint colors in sample bottle	<input type="checkbox"/> 2 – Clearly visible in sample bottle	<input type="checkbox"/> 3 – Clearly visible in outfall flow
Turbidity	<input type="checkbox"/>	See severity	<input type="checkbox"/> 1 – Slight cloudiness	<input type="checkbox"/> 2 – Cloudy	<input type="checkbox"/> 3 – Opaque
Floatables -Does Not Include Trash!!	<input type="checkbox"/>	<input type="checkbox"/> Sewage (Toilet Paper, etc.) <input type="checkbox"/> Suds <input type="checkbox"/> Petroleum (oil sheen) <input type="checkbox"/> Other:	<input type="checkbox"/> 1 – Few/slight; origin not obvious	<input type="checkbox"/> 2 – Some; indications of origin (e.g., possible suds or oil sheen)	<input type="checkbox"/> 3 – Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☐ No (If No, Skip to Section 6)

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	<input type="checkbox"/>	<input type="checkbox"/> Spalling, Cracking or Chipping <input type="checkbox"/> Peeling Paint <input type="checkbox"/> Corrosion	
Deposits/Stains	<input type="checkbox"/>	<input type="checkbox"/> Oily <input type="checkbox"/> Flow Line <input type="checkbox"/> Paint <input type="checkbox"/> Other:	
Abnormal Vegetation	<input type="checkbox"/>	<input type="checkbox"/> Excessive <input type="checkbox"/> Inhibited	
Poor pool quality	<input type="checkbox"/>	<input type="checkbox"/> Odors <input type="checkbox"/> Colors <input type="checkbox"/> Floatables <input type="checkbox"/> Oil Sheen <input type="checkbox"/> Suds <input type="checkbox"/> Excessive Algae <input type="checkbox"/> Other:	
Pipe benthic growth	<input type="checkbox"/>	<input type="checkbox"/> Brown <input type="checkbox"/> Orange <input type="checkbox"/> Green <input type="checkbox"/> Other:	

Section 6: Overall Outfall Characterization

<input type="checkbox"/> Unlikely <input type="checkbox"/> Potential (presence of two or more indicators) <input type="checkbox"/> Suspect (one or more indicators with a severity of 3) <input type="checkbox"/> Obvious

Section 7: Data Collection

1. Sample for the lab?	<input type="checkbox"/> Yes <input type="checkbox"/> No
2. If yes, collected from:	<input type="checkbox"/> Flow <input type="checkbox"/> Pool
3. Intermittent flow trap set?	<input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, type: <input type="checkbox"/> OBM <input type="checkbox"/> Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?



APPENDIX C: EXAMPLE BASELINE SCREENING RESULTS TABLE

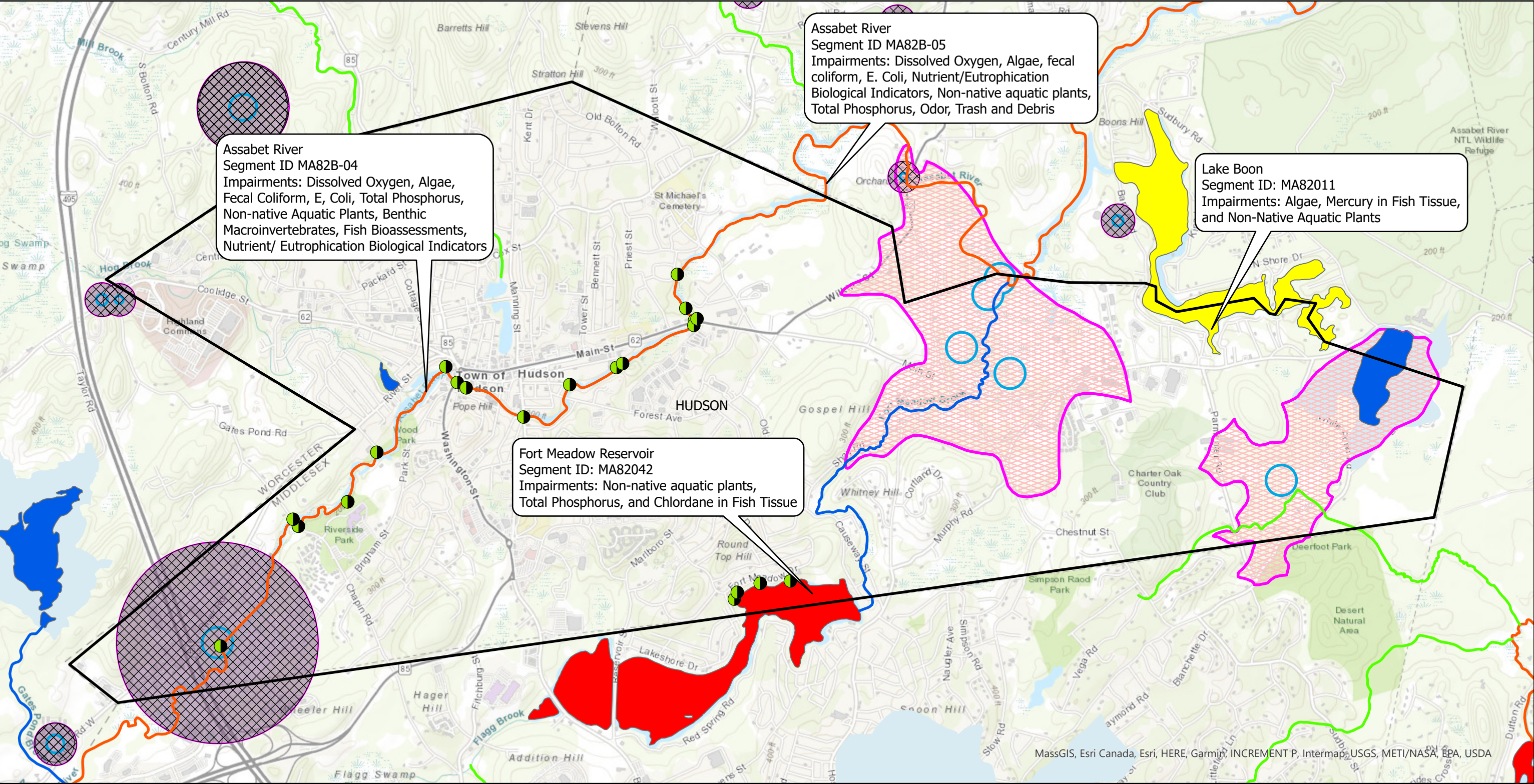


BASELINE OUTFALL SCREENING RESULTS

Unique ID	Screening Date	Sample Location	Weather Conditions (at time of Sampling)	Precipitation in previous 24 hours (in.)	Precipitation in previous 48 hours (in.)	Ammonia (mg/L)	Surfactants (mg/L)	Chlorine (mg/L)	E. coli (MPN/100 mL)	Conductivity (μ S/cm)	Salinity (ppt)	Temperature ($^{\circ}$ F)



APPENDIX D: STORMWATER SYSTEM OVERVIEW AND PRIORITIZATION



9/5/2023



Disclaimer: This map was made for geographical purposes, and is not intended for engineering and legal decisions, or for third parties.

Impaired Waters and Special Resources



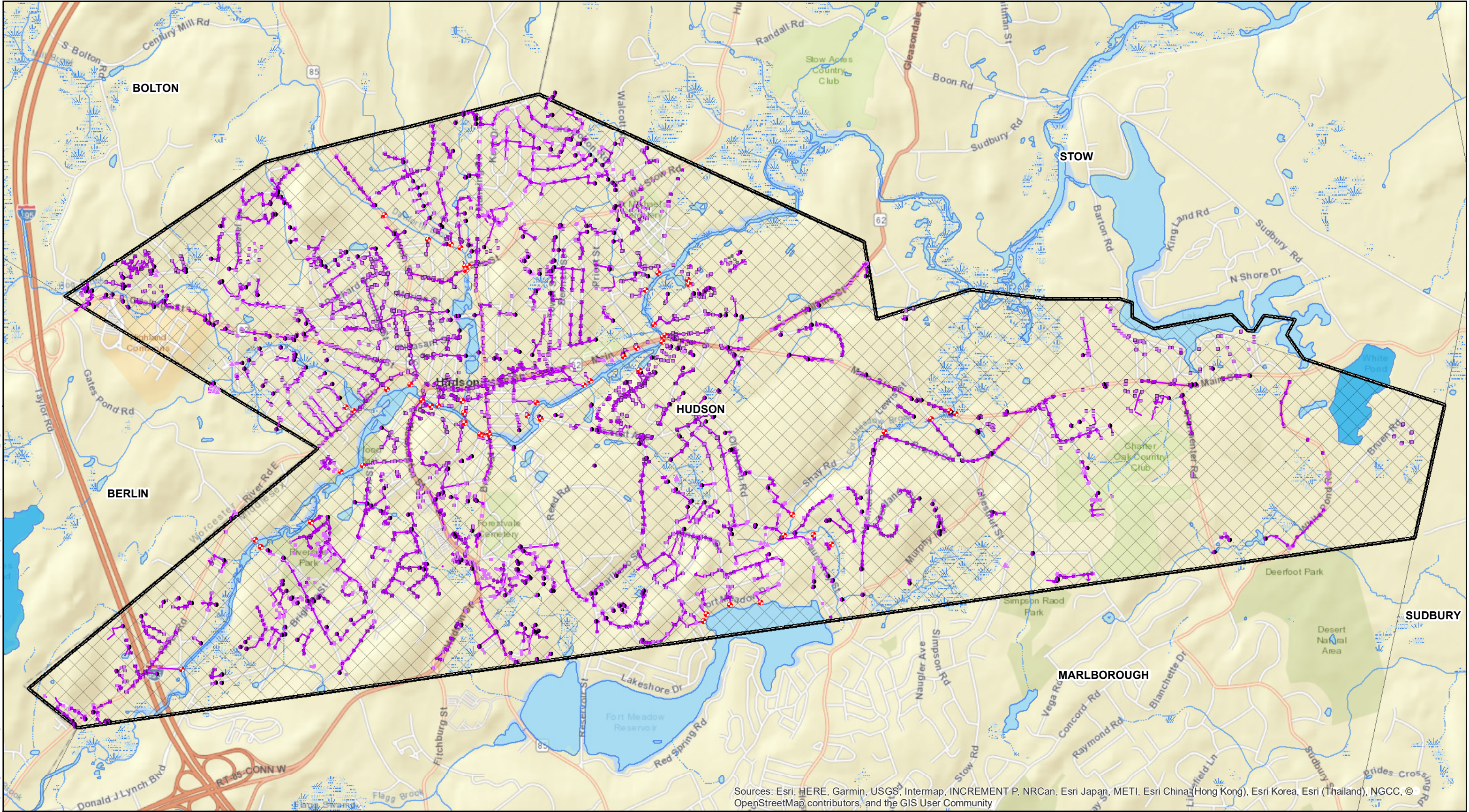
Legend

- 2022 Integrated List

CATEGORY

 - 2
 - 3
 - 4A
 - 4C
 - 5
- Interm Wellhead Protection Area
 - Zone I Wellhead
 - Zone II Wellhead
 - IWPA
 - Outstanding Resource Waters
 - Outfalls

Figure Exported: 9/10/2018 By: esri User Using: I:\wshared\Projects\0230927\00 Hudson MA - MS4 Program Evaluation\MapGIS\Projects\Stormwater System Overview August 2018.mxd



Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, © OpenStreetMap contributors, and the GIS User Community

Stormwater Collection System Overview

Town of Hudson, MA

Legend

	Hudson Boundary		Stormwater Outfall		Stormwater Manhole		Stormwater Inlet		Stormwater Structure (Miscellaneous)
	Urbanized Area		Stormwater Outlet		Stormwater Catch Basin		Stormwater Pipe		

Project #: 230927
Map Created: August 2018

Third Party GIS Disclaimer: This map is for reference and graphical purposes only and should not be relied upon by third parties for any legal decisions. Any reliance upon the map or data contained herein shall be at the users' sole risk. **Data Sources:**

Outfall ID	Prioritization Status
OF-006	PROBLEM
OUT-281	PROBLEM
OUT-453	HIGH
OUT-307	HIGH
OUT-305	HIGH
OUT-155	HIGH
OUT-432	HIGH
OUT-308	HIGH
OUT-310	HIGH
OUT-390	HIGH
OUT-309	HIGH
OUT-391	HIGH
OUT-322	HIGH
OUT-266	HIGH
OUT-415	HIGH
OUT-413	HIGH
OUT-367	HIGH
OF-030	HIGH
OUT-313	HIGH
OUT-352	HIGH
OUT-351	HIGH
OUT-349	HIGH
OF-029	HIGH
OUT-314	HIGH
OUT-338	HIGH
OUT-015	HIGH
OUT-019	HIGH
OUT-376	HIGH
OUT-137	HIGH
OF-047	HIGH
OUT-144	HIGH
OUT-300	HIGH
OUT-303	HIGH
OUT-304	HIGH
OUT-340	HIGH
OUT-141	HIGH
OUT-302	HIGH
OUT-143	HIGH
OUT-396	HIGH
OUT-145	HIGH
OUT-361	HIGH
OUT-319	HIGH
OUT-377	HIGH
OUT-320	HIGH
OUT-149	HIGH

OUT-017	HIGH
OUT-270	HIGH
OUT-517	HIGH
OUT-334	HIGH
OUT-512	HIGH
OUT-329	HIGH
OUT-528	HIGH
OUT-164	HIGH
OUT-133	HIGH
OUT-435	HIGH
OUT-436	HIGH
OUT-124	HIGH
OUT-438	HIGH
OUT-442	HIGH
OUT-443	HIGH
OUT-486	HIGH
OUT-485	HIGH
OUT-187	HIGH
OUT-489	HIGH
OUT-490	HIGH
OUT-210	HIGH
OUT-114	HIGH
OUT-035	HIGH
OUT-525	HIGH
OF-034	HIGH
OUT-404	HIGH
OUT-405	HIGH
OUT-183	HIGH
OUT-248	HIGH
OUT-236	HIGH
OUT-388	HIGH
OUT-366	HIGH
OUT-409	HIGH
OUT-348	HIGH
OUT-084	HIGH
OF-013	HIGH
OF-023	HIGH
OUT-451	HIGH
OF-019	HIGH
OUT-462	HIGH
OF-050	HIGH
OF-051	HIGH
OUT-265	HIGH
OF-037	HIGH
OUT-246	HIGH
OUT-244	HIGH
OF-012	HIGH

OUT-280	HIGH
OUT-279	HIGH
OUT-271	HIGH
OF-031	HIGH
OUT-513	HIGH
OF-009	HIGH
OF-026	HIGH
OF-039	HIGH
OF-001	HIGH
OF-002	HIGH
OF-021	HIGH
OF-017	HIGH
OF-048	HIGH
OF-024	HIGH
OUT-425	HIGH
OUT-365	HIGH
OUT-192	HIGH
OUT-476	HIGH
OF-055	HIGH
OF-054	HIGH
OUT-038	HIGH
OF-010	HIGH
OUT-474	HIGH
OF-049	HIGH
OF-020	HIGH
OF-059	HIGH
OUT-427	LOW
OUT-003	LOW
OUT-416	LOW
OUT-117	LOW
OUT-383	LOW
OUT-156	LOW
OUT-157	LOW
OUT-111	LOW
OUT-122	LOW
OUT-386	LOW
OUT-350	LOW
OF-025	LOW
OUT-134	LOW
OUT-239	LOW
OUT-297	LOW
OUT-152	LOW
OUT-316	LOW
OUT-298	LOW
OUT-140	LOW
OUT-301	LOW
OUT-146	LOW

OUT-358	LOW
OUT-153	LOW
OUT-375	LOW
OUT-372	LOW
OUT-450	LOW
OUT-480	LOW
OUT-175	LOW
OUT-471	LOW
OUT-044	LOW
OUT-371	LOW
OUT-354	LOW
OUT-081	LOW
OUT-521	LOW
OUT-515	LOW
OUT-163	LOW
OUT-169	LOW
OUT-410	LOW
OUT-424	LOW
OUT-167	LOW
OUT-202	LOW
OUT-168	LOW
OUT-172	LOW
OUT-418	LOW
OUT-492	LOW
OUT-434	LOW
OUT-445	LOW
OUT-189	LOW
OUT-201	LOW
OUT-530	LOW
OUT-052	LOW
OUT-484	LOW
OUT-200	LOW
OUT-218	LOW
OUT-252	LOW
OUT-251	LOW
OUT-206	LOW
OUT-205	LOW
OUT-258	LOW
OUT-262	LOW
OUT-067	LOW
OUT-488	LOW
OUT-342	LOW
OUT-182	LOW
OUT-090	LOW
OUT-283	LOW
OUT-426	LOW
OUT-402	LOW

OUT-460	LOW
OUT-272	LOW
OUT-277	LOW
OUT-071	LOW
OUT-245	LOW
OUT-407	LOW
OUT-070	LOW
OUT-077	LOW
OUT-275	LOW
OUT-065	LOW
OUT-466	LOW
OF-045	LOW
OF-062	LOW
OF-058	LOW
OUT-532	LOW
OUT-446	LOW
OUT-179	LOW
OUT-318	LOW
OUT-295	LOW
OUT-292	LOW
OUT-293	LOW
OUT-288	LOW
OUT-176	LOW
OUT-177	LOW
OUT-503	LOW
OUT-178	LOW
OUT-519	LOW
OUT-395	LOW
OUT-043	LOW



APPENDIX E: SAMPLE CATCHMENT INVESTIGATION SUMMARY FORM



CATCHMENT INVESTIGATION SUMMARY

Reporting Period:							
Catchment Name:				Outfall Feature ID:			
Outfall Description:	Size (in.):		Material:		Shape:		
	Latitude:		Longitude:				
Outfall Photo:		Catchment Characteristics as of this Reporting Period:					
Insert Outfall Photo Here		Priority Ranking:					
		Receiving Water:					
		Total Catchment Area (acres):					
		Total Linear Feet (LF) of MS4 Drain Pipe:					
		Total Drain Pipe Investigated to Date (# LF / %):				/ %	
		Total Drain Pipe "Cleared" to Date (# LF / %):				/ %	
		Total # Illicit Discharges Verified to Date:					
		Total # Illicit Discharges Removed to Date:					
		Total # Illicit Discharges Outstanding ≤ 60 days:					
		Total # Illicit Discharges Outstanding > 60 days:					
		Most Recent Dry-Weather Outfall Monitoring Date:					
		Dry Results:		Ammonia		Surfactants (mg/L):	
				Chlorine		E. coli (MPN/100)	
		Most Recent Wet-Weather Outfall Monitoring Date:					
Wet Results:		Ammonia		Surfactants (mg/L):			
		Chlorine		E. coli (MPN/100)			

Narrative of Current Investigation Status as of this Reporting Period:

During this Reporting Period, # direct illicit connections on Street Name were abated, resulting in the removal of approximately # gallons per day of wastewater flow into the River/Stream . These abatements were completed on Date in compliance with alternative schedules arranged between the Town and private property owners. To date, approximately # gallons per day of wastewater flow have been removed from this catchment.

Confirmatory bracket sampling was conducted on Date to clear the drain pipes upstream of Manhole # # on Street Name . Test kit results did not indicate additional sources of wastewater contamination, so these pipes were cleared.

Since all known sources of wastewater contamination in this catchment have been removed, dry- and wet-weather confirmatory outfall monitoring was scheduled in accordance with Section 5.3 of the Town's Illicit Discharge Detection and Elimination Plan. Dry-weather confirmatory outfall monitoring was completed on Date . Wet-weather confirmatory outfall monitoring was completed on Date .

Narrative of Follow-Up Activities Planned for the next Reporting Period:

The Town plans to conduct outfall monitoring in Date . Confirmatory outfall monitoring results will be used to reprioritize this catchment for ongoing monitoring every # years.



Attach an aerial map depicting, at a minimum, the problem catchment area, existing stormwater infrastructure (i.e. catchbasins, storm manholes, MS4 outfall, other outfall, storm pipe) and catchment investigation status (i.e. cleared, upstream contamination, suspected, confirmed and other). Map should be legible, to scale, and include a legend as appropriate.



APPENDIX F: SAMPLE NOTICE OF VIOLATION FORMS



TOWN OF HUDSON
DEPARTMENT OF PUBLIC WORKS
1 MUNICIPAL DRIVE
HUDSON, MA 01749
TEL. 978 562 9333
FAX. 978 568 9612

VIA REGULAR MAIL AND CERTIFIED MAIL/RETURN RECEIPT REQUESTED

DATE

OWNER'S NAME
OWNER'S ADDRESS

Re: **Illicit Discharge Violation-Owner's Address**

Dear Owner:

This letter is to notify you that the Town of Hudson has recently identified a violation of Section 3.0 of the *Stormwater Division's Rules and Regulations* at the above referenced property. In addition to providing formal notification of the violation, this letter describes the schedule under which the violation must be remedied to avoid future penalties.

Description of Illicit Discharge Violation

On **DATE**, the Town of Hudson determined that the sewer service of **ADDRESS** is connected to the Town's municipal separate storm sewer system (MS4) in violation of the *Stormwater Division's Rules and Regulations*. This means that your sewer service is connected to the wrong pipe in the street. This illicit sewer service connection was confirmed via **dye testing from your building's wastewater lines and closed-circuit television inspection (CCTV)** of the storm drain pipe as documented in the photographs below.



Photo 1
Property at Ground Level



Photo 2
Positive Dye Test during CCTV Inspection

The *Stormwater Division's Rules and Regulations* was adopted on October 25, 2023. These rules and regulations protect the public interests and benefits of a properly-functioning stormwater management system. Without these regulations, water quality impacts would be significantly higher than current conditions. Illicit discharges, any non-stormwater flows, to the drainage systems is prohibited as discussed in the *Stormwater Division's Rules and Regulations* and summarized below and on the following page:

- Stormwater Division's Rules and Regulations, Section 3.1: Stormwater Management Systems: The drainage network is controlled by the Town, through the Department of Public Works (DPW). Property owners cannot connect or discharge to the drainage system without receiving prior authorization from the DPW.



TOWN OF HUDSON
DEPARTMENT OF PUBLIC WORKS
1 MUNICIPAL DRIVE
HUDSON, MA 01749
TEL. 978 562 9333
FAX. 978 568 9612

- Stormwater Division's Rules and Regulations, Section 3.2: Prohibitions: Polluted discharges and illicit connections are prohibited from the stormwater management systems.
- Stormwater Division's Rules and Regulations, Section 3.3: Wastewater System Connections: Connections from wastewater systems to drainage systems are prohibited. The Department of Public Works (DPW) has the authority to immediately disconnect such connections to the storm drains.
- Stormwater Division's Rules and Regulations, Section 3.5: Authorized Discharges to Stormwater Drains: Only non-polluted water is allowed to enter the Town's drainage system. Authorized discharges include environmental water discharges (i.e. groundwater flows from wetlands, and diverted stream wells), and some man-made water discharges. For a full list, visit our website at www.townofhudson.org/stormwater.
- Stormwater Division's Rules and Regulations, Section 5.1: Property Owner Liability: Whereas the property owner cannot remove an illicit connection, the DPW has the authority to remove it, restore the disturbed areas, and invoice the property owner for the work.
- Stormwater Division's Rules and Regulations, Section 5.2: Penalties: The DPW has the right to issue violation notices and fines, and invoicing for any expense, loss, or damage occurred to the drainage system.

In addition, the Town's *Sewer Use Regulations*, adopted on June 5, 2000, include information and restrictions pertaining to stormwater drainage systems, and sanitary sewer systems. These articles and sections of local regulations give the Town the legal authority to inspect their stormwater systems and address violations by property owners as necessary to ensure only stormwater and unpolluted drainage discharge to Hudson's natural outlets and waterways.

The illicit sewer service connection at your property results in the discharge of raw, untreated sewage to our **Town's waters** and contributes to pollution of water bodies, creating a hazard to public health and wildlife.

Required Action

It is your responsibility as the property owner to bring the sewer piping at **ADDRESS** into compliance with the Town of Hudson's *Stormwater Division's Stormwater Regulations*. Please contact the Department of Public Works at 978-532-9333 within **seven (7) calendar days** to acknowledge receipt of this notice and discuss a plan for corrective actions. The Town requests that you redirect your sewer service to the sanitary sewer system within 30 days of the date on this notice.

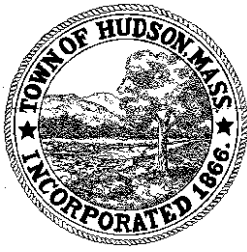
Redirection of sewer service connections must be completed by a licensed contractor. The Town's website contains Note that this letter does not relieve you or your representatives from obtaining permits that may be required for redirecting your sewer service connection to comply with applicable building, sewer, or street opening regulations.

If you neglect to remove the illicit connection by **DATE**, the Town has the right to pursue further actions to ensure compliance with the Town of Hudson's *Stormwater Division's Rules and Regulations*.

Your cooperation is greatly appreciated.

Sincerely,

Eric Ryder, *Director of Public Works*
Town of Hudson
cc: **XXX, Town Attorney**



TOWN OF HUDSON
DEPARTMENT OF PUBLIC WORKS
1 MUNICIPAL DRIVE
HUDSON, MA 01749
TEL. 978 562 9333
FAX. 978 568 9612

VIA REGULAR MAIL AND CERTIFIED MAIL/RETURN RECEIPT REQUESTED

DATE

OWNER'S NAME

OWNER'S ADDRESS

Re: **Illicit Discharge Violation-Owner's Address**
SECOND NOTIFICATION ATTEMPT

Dear Owner:

On **DATE**, the Department of Public works sent a letter to you regarding a violation of Section 3.0, of the *Stormwater Division's Rules and Regulations*. The previous letter contained information about the violation which is summarized below. In addition to providing formal notification of the violation, this letter describes the schedule under which the violation must be remedied to avoid future penalties.

Description of Illicit Discharge Violation

On **DATE**, the Town of Hudson determined that the sewer service of **ADDRESS** is connected to the Town's municipal separate storm sewer system (MS4) in violation of the *Stormwater Division's Rules and Regulations*. This means that your sewer service is connected to the wrong pipe in the street. This illicit sewer service connection was confirmed via **dye testing from your building's wastewater lines and closed-circuit television inspection (CCTV)** of the storm drain pipe as documented in the photographs below.



Photo 1
Property at Ground Level



Photo 2
Positive Dye Test during CCTV Inspection

The *Stormwater Division's Rules and Regulations* was adopted on October 25, 2023. These rules and regulations protect the public interests and benefits of a properly-functioning stormwater management system. Without these regulations, water quality impacts would be significantly higher than current conditions. Illicit discharges, any non-stormwater flows, to the drainage systems is prohibited as discussed in the *Stormwater Division's Rules and Regulations* and summarized below:



TOWN OF HUDSON
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- Stormwater Division's Rules and Regulations, Section 3.1: Stormwater Management Systems: The drainage network is controlled by the Town, through the Department of Public Works (DPW). Property owners cannot connect or discharge to the drainage system without receiving prior authorization from the DPW.
- Stormwater Division's Rules and Regulations, Section 3.2: Prohibitions: Polluted discharges and illicit connections are prohibited from the stormwater management systems.
- Stormwater Division's Rules and Regulations, Section 3.3: Wastewater System Connections: Connections from wastewater systems to drainage systems are prohibited. The Department of Public Works (DPW) has the authority to immediately disconnect such connections to the storm drains.
- Stormwater Division's Rules and Regulations, Section 3.5: Authorized Discharges to Stormwater Drains: Only non-polluted water is allowed to enter the Town's drainage system. Authorized discharges include environmental water discharges (i.e. groundwater flows from wetlands, and diverted stream wells), and some man-made water discharges. For a full list, visit our website at www.townofhudson.org/stormwater.
- Stormwater Division's Rules and Regulations, Section 5.1: Property Owner Liability: Whereas the property owner cannot remove an illicit connection, the DPW has the authority to remove it, restore the disturbed areas, and invoice the property owner for the work.
- Stormwater Division's Rules and Regulations, Section 5.2: Penalties: The DPW has the right to issue violation notices and fines, and invoicing for any expense, loss, or damage occurred to the drainage system.

These articles and sections of local regulations give the Town the legal authority to inspect their stormwater systems and address violations by property owners as necessary to ensure only stormwater and unpolluted drainage discharge to Hudson's natural outlets and waterways. The illicit sewer service connection at your property results in the discharge of raw, untreated sewage to our **Town's waters** and contributes to pollution of water bodies, creating a hazard to public health and wildlife.

Required Action

It is your responsibility as the property owner to bring the sewer piping at **ADDRESS** into compliance with the Town of Hudson's *Stormwater Division's Stormwater Regulations*. Please contact the Department of Public Works at 978-532-9333 within **seven (7) calendar days** to acknowledge receipt of this notice and discuss a plan for corrective actions. The Town requests that you redirect your sewer service to the sanitary sewer system within 30 days of the date on this notice.

Redirection of sewer service connections must be completed by a licensed contractor. The Town's website contains Note that this letter does not relieve you or your representatives from obtaining permits that may be required for redirecting your sewer service connection to comply with applicable building, sewer, or street opening regulations.

If you neglect to remove the illicit connection by **DATE**, the Town has the right to pursue further actions to ensure compliance with the Town of Hudson's *Stormwater Division's Rules and Regulations*.

Your cooperation is greatly appreciated.

Sincerely,

Eric Ryder, *Director of Public Works*
Town of Hudson

cc: **XXX, Town Attorney**

DPW | *Stormwater Division*

www.townofhudson.org/stormwater

978-562-9333 ext. 324

stormwater@townofhudson.org



TOWN OF HUDSON
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1 MUNICIPAL DRIVE
HUDSON, MA 01749
TEL. 978 562 9333
FAX. 978 568 9612

VIA REGULAR MAIL AND CERTIFIED MAIL/RETURN RECEIPT REQUESTED

DATE

OWNER'S NAME

OWNER'S ADDRESS

Re: **Illicit Discharge Violation-Owner's Address**
THIRD AND FINAL NOTIFICATION ATTEMPT

Dear Owner:

On **DATE**, the Department of Public works sent a letter to you regarding a violation of Section 3.0, of the *Stormwater Division's Rules and Regulations*. The previous letter contained information about the violation which consisted of a direct discharge or connection to the stormwater infrastructures. A second letter was mailed to you on **DATE**, but the DPW has not received any information from you. Failure to act from this letter will require legal actions consisting of civil injunction relief in a court. In addition to providing formal notification of the violation, this letter describes the schedule under which the violation must be remedied to avoid future penalties.

Information regarding the illicit **discharge**/connection is shown below consisting of a description of the violation, and a schedule.

Description of Illicit Discharge Violation

On **DATE**, the Town of Hudson determined that the sewer service of **ADDRESS** is connected to the Town's municipal separate storm sewer system (MS4) in violation of the *Stormwater Division's Rules and Regulations*. This means that your sewer service is connected to the wrong pipe in the street. This illicit sewer service connection was confirmed via **dye testing from your building's wastewater lines and closed-circuit television inspection (CCTV)** of the storm drain pipe as documented in the photographs below.



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In addition, the Town's *Sewer Use Regulations*, adopted on June 5, 2000, include information and restrictions pertaining to stormwater drainage systems, and sanitary sewer systems. These statutes of local regulations give the Town the legal authority to inspect their stormwater systems and address violations by property owners as necessary to ensure only stormwater and unpolluted drainage discharge to Hudson's natural outlets and waterways. The illicit sewer service connection at your property results in the discharge of raw, untreated sewage to our **Town's waters** and contributes to pollution of water bodies, creating a hazard to public health and wildlife.

Required Action

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Redirection of sewer service connections must be completed by a licensed contractor. The Town's website contains Note that this letter does not relieve you or your representatives from obtaining permits that may be required for redirecting your sewer service connection to comply with applicable building, sewer, or street opening regulations.



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HUDSON, MA 01749
TEL. 978 562 9333
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If you neglect to remove the illicit connection by **DATE**, the Town has the right to pursue civil relief injunction actions to ensure compliance with the Town of Hudson's *Stormwater Division's Rules and Regulations*.

Your cooperation is greatly appreciated.

Sincerely,

Eric Ryder, *Director of Public Works*
Town of Hudson

cc: **XXX, Town Attorney**



APPENDIX G: TRAINING MODULE



Town of Hudson, MA –Annual Training
Illicit Discharge Detection and Elimination Program Overview
and Good Housekeeping and Pollution Prevention

April 19, 2024

Presentation Overview

- What are illicit discharges?
- How are illicit discharges identified?
- Administrative and Legal Authority
- Outfall Inspections & Results
- Catchment Investigation Overview
- Finding and Confirm Discharges
- Illicit Discharge Mitigation (removal)
- Reporting Requirements
- Next Steps



What are Illicit Discharges?

Any entrance into our drainage system that is not stormwater

- Failed Septic Systems
- Hazardous waste spills
- Leaky sewer lines
- Grass clippings, leaf litter, pet waste or other solid materials
- Sewer laterals
- Washing machines



Locating Problem Pollutants

- Some ways pollutant entry are found include:
 - Discovery by DPW staff
 - Citizen complaints
 - Outfall investigations
 - Catchment investigations



Allowable Waters to our Drainage System



Water line flushing
Landscape irrigation
Irrigation water, springs
Lawn watering
Dechlorinated swimming pool discharges



Diverted stream flow
Rising ground waters
Uncontaminated groundwater infiltration
Uncontaminated pumped groundwater
Flows from riparian habitats and wetlands



Foundation drains
Footing drains
Air conditioning condensation
Water from crawl space pumps



Discharge from potable water sources
Street wash water
Residential building wash water, without
detergents



Hudson's Authority for Polluted Connections

- ***Stormwater Rules and Regulations***, grants the Town the legal authority to:
 - Prohibit pollutant connections
 - Investigate suspected illicit discharges
 - Eliminate illicit discharges into the drainage system, including discharges from non Town-owned parcels.
 - Implement appropriate enforcement procedures and actions
- ***Illicit Detection and Elimination Program Manual***
 - How to investigate and eliminate pollutants.



Outfall Screening and Sampling

- Sampling at Outfalls
- If no flow- Record in the Town's Annual Reports
- If flow was observed, it was sampled for:
 - Ammonia
 - Chlorine
 - Conductivity
 - Salinity
 - Soaps
 - Temperature
 - Bacteria (requires laboratory analysis)
 - Pollutants of Concern



Hudson's Outfall Sampling Results: Jan-Nov 2020

- Testing Requirements and Criteria
- 2 outfalls had sample results that met or exceeded grouped criteria
 - These outfalls are considered “Problem Outfalls” for catchment investigations
- 66 outfalls had screening results that met or exceeded individual threshold criteria
 - These outfalls are considered “High Priority” for catchment investigations



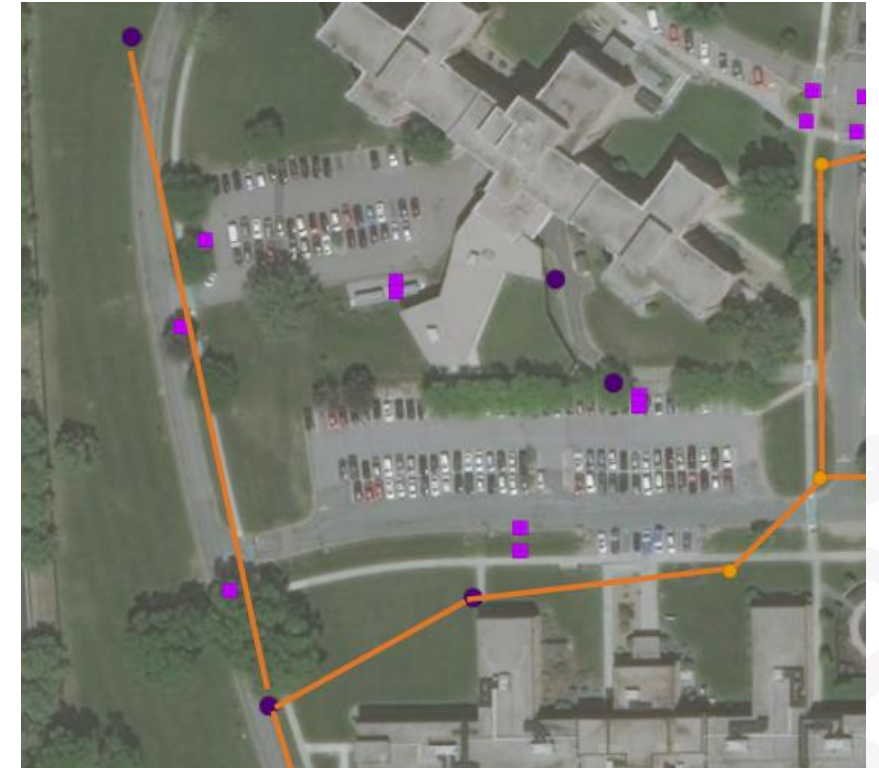
What is a catchment?

“The land area from which stormwater runoff is collected by a permittee’s ...[storm drainage system] and discharged to a single outfall”



Catchment Investigation Procedure: Manhole Investigation

- Evaluate manholes with two or more inlets during dry weather for evidence of illicit discharges
 - Toilet paper
 - Gray bacterial growth
 - Sanitary products
 - Excrement/pet waste
 - Oily sheen
- If flow is observed, sample for ammonia, chlorine, and soaps.



Catchment Investigation Procedure: Source Isolation and Confirmation

- Positive results initiate investigation procedure
- Isolate and confirm the source of illicit discharges by:
 - Sandbagging
 - Dye Testing
 - CCTV Inspections
 - Smoke Testing, or
 - Targeted Internal Plumbing Inspections



We found the source of the illicit discharge—now what?

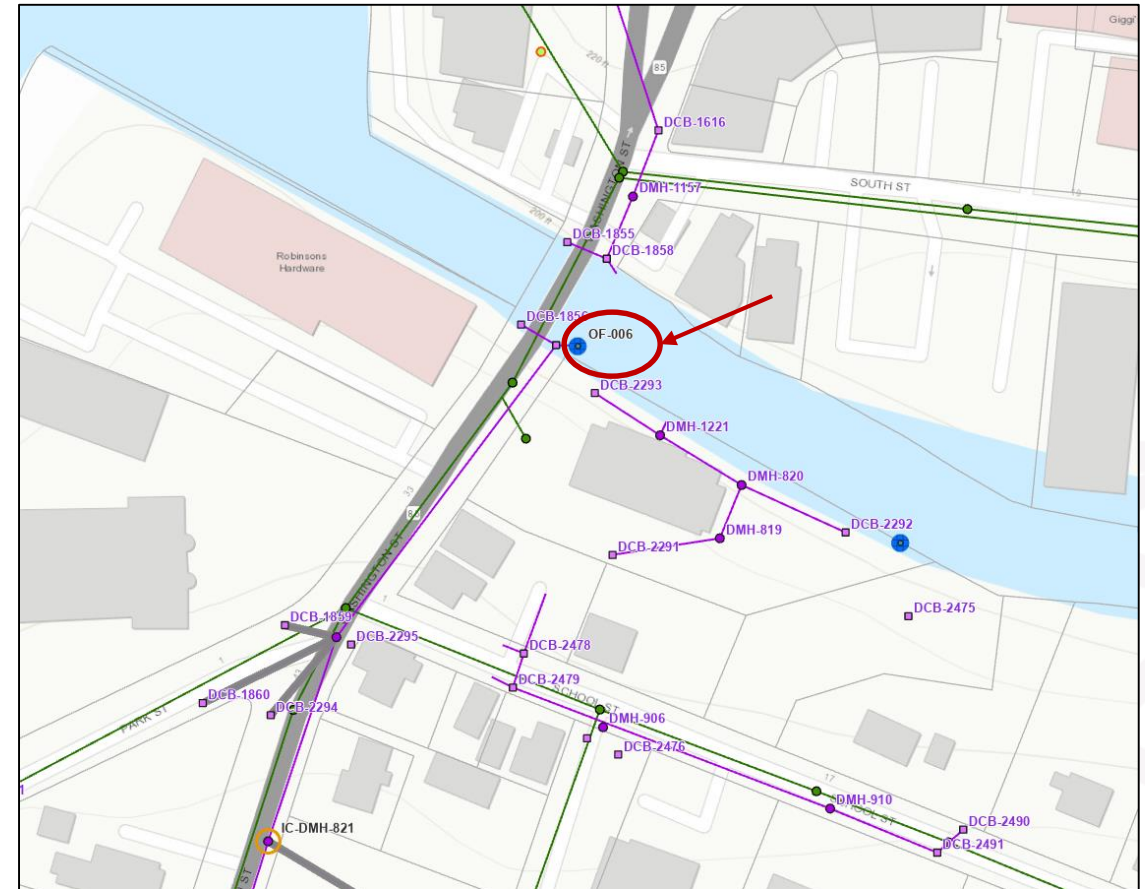
- Once verified, the Town has 60 days to:
 - Notify all responsible parties
 - Require the responsible parties to eliminate the discharge within 60 days:
 - Structural modifications
 - Operational modifications
 - If elimination within 60 days is not possible, the responsible parties and the Town must establish a schedule for removal
- Update Annual Report
- Confirmatory outfall sampling (within 1 year)



Next Steps- 1. Continued Catchment Investigations

■ Continued Infrastructure Investigations

- OF-006, near 32 Washington Street
- OF-001, 22 Lee Circle
- OUT-021, 77 Cherry Street
- OUT-038, 295 Cox Street
- OUT-418, 290 River Rd and 46 Rolling Ln



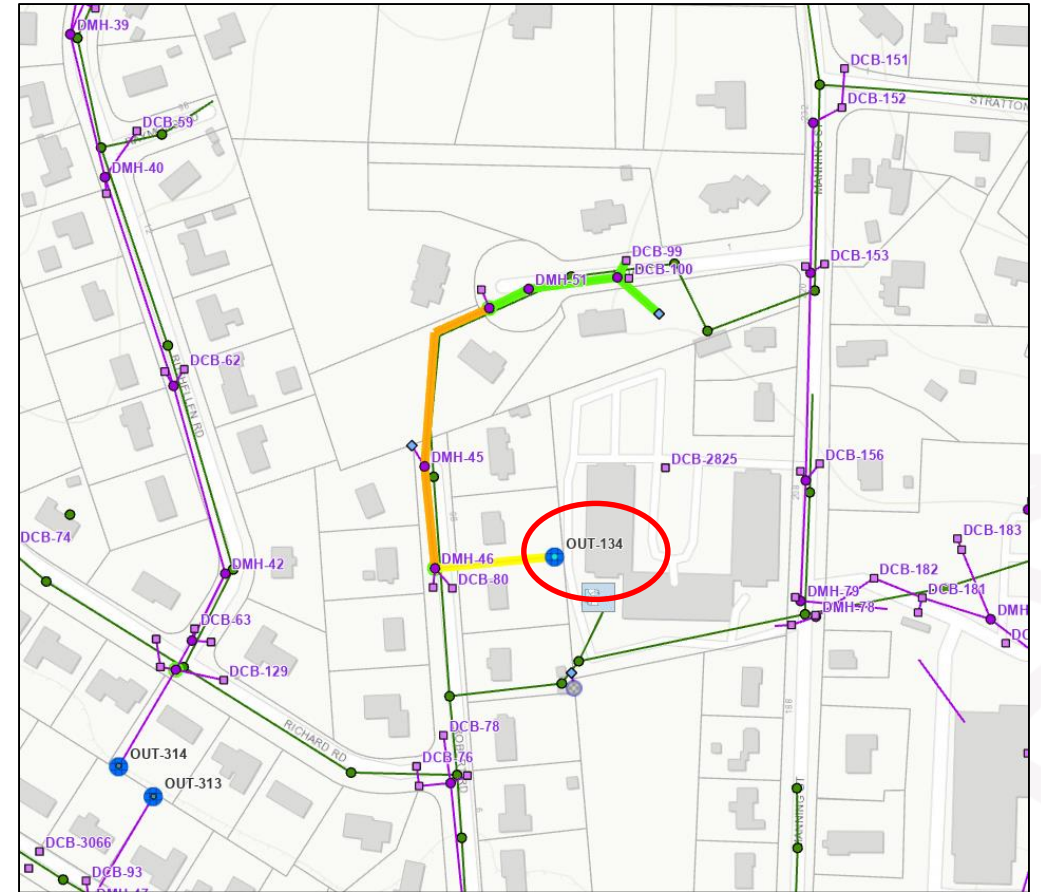
Next Steps- 2.Verification

■ Verification

- OUT-134
- OUT-275
- OUT-281
- OUT-319
- OUT-438
- OUT-513

■ Verification Methods

- Inspect adjacent building infrastructure
- CCTV of drainage pipes and laterals.
- Dye Testing
 - Adjacent Drainage or Sanitary Sewer Infrastructure
 - Building





Property, Vehicles, Equipment and Infrastructure: Maintenance and More

April 17, 2024

Presentation Overview

- Best Management Practices
- Winter Road Maintenance
- Catch Basin Cleaning
- Street Sweeping
- Stormwater Treatment Structures
- Parks and Open Spaces
- Buildings and Facilities
- Vehicles and Equipment



What is a stormwater best management practice (BMP)?

Activities or physical structures designed to prevent or reduce potential pollutant sources from entering the drainage system and surface waterbodies



Winter Road Maintenance Requirements

- Salt, Sand, and Deicing Agents
- Minimize the use of sodium chloride and other salts
 - Evaluate the use of alternative materials
- Ensure that snow is not disposed into surface waterbodies



Catch Basin Cleaning Requirements

- Inspect Annually
 - 3,500 Catch Basins, some are private
- Clean
 - When more than 50% full.
 - More frequently if sediment-laden due to construction or erosion activities.



Catch Basin Cleaning Procedures

- Proper Drainage Procedures
- Storage and Disposal
- Annual Reporting Requirements
 - Number of catch basins cleaned
 - Number of catch basins inspected
 - Total volume or weight of material removed from catch basins



Street Sweeping Requirements

- Town-Owned Streets and Parking Lots Sweeping Requirements
- Increase Street Sweeping Frequency
 - Catch Basin Inspection Results
 - Certain Land Use
 - Certain Pollutants: Assabet River, Lake Boon, Fort Meadow Reservoir
- Storage and Disposal Requirements
- Annual Reporting Requirements
 - Mileage of streets swept
 - Total volume or weight of street sweepings removed annually



Stormwater Treatment Structure Requirements

- Annually inspect all Town-owned stormwater treatment structures
- Inspection and maintenance frequencies and procedures for all stormwater treatment structures, including:
 - Detention Basins
 - Infiltration Basins and Structures
 - Constructed Wetlands
 - Swales
 - Leaching Catch Basins
 - Proprietary Treatment Devices



Parks and Open Spaces – Mowing BMPs

- Remove debris and trash from areas prior to mowing
- Mow as high as possible, ideally at 3”– 4” above the ground
- Collect grass clippings and leaves after mowing
 - Do not blow or wash them into the street, gutter, storm drains or surface water
 - Properly dispose of organic waste after mowing, weeding, and trimming
- Never refuel, change the mower oil, or brush or hose off mowers near a storm drain or surface water



Parks and Open Spaces – Pesticide BMPs

- Application Procedures
- Trained, Certified and Licensed
 - Always use appropriate PPE
- Integrated Pest Management (IPM) Plans



Parks and Open Spaces – Fertilizer BMPs

- Application
 - Always use appropriate PPE
- Time fertilizer applications to:
 - Maximum plant uptake (fall and spring)
 - Help infiltrate the root zone, when the soil is moist
 - Avoid before or during heavy rain storm or frozen soil conditions
- Avoid applying fertilizer near pavement



Parks and Open Spaces – Pesticide & Fertilizer Storage BMPs

- Storage Requirements
- Ordering
- Lock and Post



Parks and Open Spaces – Pet Waste Management BMPs

- Check for pet waste
- Document and Educate
- Install pet waste stations
- Routine pickups from pet waste receptacles



Parks and Open Spaces – Waterfowl Management BMPs

- Identify waterfowl gathering areas
- Take measures to discourage gathering including:
 - Installing a 3-foot fence barrier between congregation areas and the MS4/waterbodies
 - Strobe lights or reflective tape
 - Establish no-mow zones to reduce feeding areas
 - Plant thick vegetation along waterlines
 - Place swan or coyote decoys in congregation areas
- Do not destroy geese eggs (they will lay more!)
- Reach out to the Mass Wildlife Field Headquarters



Buildings and Facilities – Trash Container Management BMPs

- Cover and Contain
- Placement
- Inspect Containers
- Clean Surrounding Areas
- Schedule Pickups



Vehicles and Equipment – Maintenance & Storage BMPs

- Routine Inspections
- Preventative Maintenance
- Proper Vehicle Repair
- Store and Park Vehicles and Equipment
- Do not store leaking vehicles or equipment over a storm drain



Vehicles and Equipment – Washing BMPs

- Vehicle and equipment washing
- Do not discharge wash water to a
 - storm drain,
 - surface water, or
 - areas near drinking water wells
- Minimize water and soap use
- Never perform engine or undercarriage washing outdoors



Vehicles and Equipment – Fueling BMPs

- Routine Inspections
- Maintain Fuel Storage Areas
- Fueling Area Procedures
- Where to Keep Spill Kits



Questions?

Q&A Session



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Contact Information

Maeghan Dos Anjos
Stormwater Manager



978-562-9333 ext. 324



774-563-9226



mdosanjos@townofhudson.org



Finding and Reporting Illicit Discharges to the Storm Drain

Please fill in the blanks during the presentation. We will go over answers at the end.

1. MS4 stands for Municipal Separate _____ System.
2. EPA's definition of an "illicit discharge" is "any discharge to a MS4 that is not composed entirely of _____."
3. Some allowable non-stormwater discharges include flows from firefighting activities, hydrant flushing, _____ swimming pool water, _____ vehicle washing, lawn watering, and _____ footer drains.
4. The IDDE program will focus on identifying direct connections during _____ inspections.
5. Observations made using your _____ and _____ can sometimes detect an illicit discharge as well as chemical analysis.
6. You might have an illicit discharge if it smells like _____.
7. If you suspect an illicit discharge, record location in notes, photo and/or work order system and contact _____ who will investigate and report to _____.

Your Name: _____

Your Role In IDDE: _____



APPENDIX H: SAMPLE OUTREACH LETTER



TOWN OF HUDSON
DEPARTMENT OF PUBLIC WORKS
1 MUNICIPAL DRIVE
HUDSON, MA 01749
TEL. 978 562 9333
FAX. 978 568 9612

DATE

ABUTTER'S NAME

ABUTTER'S ADDRESS

Dear Resident:

Your neighborhood has a drainage system in place to ensure that homes and streets do not flood. The Town of Hudson Department of Public Works maintains this drainage system and provides regular drainage system cleaning services to its residents in an effort to keep our Town and our environment clean and safe.

During recent cleaning activities, dog waste bags, used cigarettes, litter, trash and/or dumped yard waste were found in your neighborhood's drainage system. Please note that the catch basins in your streets do not lead to a wastewater treatment plant; these basins discharge directly to our streams and rivers.



Catch basins help to drain roadways and neighborhoods. The drain does not lead to a treatment facility.

Dumping your waste into the Town's drainage system is prohibited in accordance with state and federal law and the Town of Hudson's *Stormwater Division's Rules and Regulations*. Illegal dumping contributes to pollution of water bodies and can pose a hazard to public health and wildlife. While non-polluted stormwater discharges are allowed in the drainage system, any contaminated discharges are strictly prohibited. Allowed and prohibited discharges are briefly displayed in the table below.

Table 1: Some Examples of Allowed and Prohibited Discharges to our Drainage Systems

Allowed Discharges	Prohibited Discharges
Uncontaminated Groundwater Infiltration	Trash and debris
Dechlorinated Pool Water	Oil and gas
Water line flushing	Paints
Foundation drains	Detergents
Street Wash Waters	Plumbing, Sewage or Septic Discharges
Flows from riparian habitats and wetlands	Fertilizers, Herbicides, and Insecticides
Wash Waters without Detergents	Wash Waters Containing Detergents



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1 MUNICIPAL DRIVE
HUDSON, MA 01749
TEL. 978 562 9333
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If you have questions or wish to provide information about this issue, please contact the Town's Department of Public Works at [\(978\) 562-9333](tel:9785629333).

Sincerely,

Eric Ryder
Public Works Director

APPENDIX I: SAMPLE NOTIFICATION LETTER



TOWN OF HUDSON
DEPARTMENT OF PUBLIC WORKS
1 MUNICIPAL DRIVE
HUDSON, MA 01749
TEL. 978 562 9333
FAX. 978 568 9612

3/14/2024

Residents/Homeowner

ADDRESS

Hudson, MA. 01749

Subject: Inspection Notification
NEIGHBORHOOD or STREETS

Dear Owner,

The Town of Hudson's *Department of Public Works* (DPW) **will conduct drainage inspections in your area.** Inspections are anticipated to take place on **3/14/2024.**

What Will Be Inspected?

The DPW will inspect *structures at the surface* that are used to hold, or convey stormwater flows. Specific structures to be inspected consists of the **drainage manholes, and catch basins.** **Drainage pipes are subsurface and will be reviewed as staff time and resources permit.**

Why is DPW Conducting Drainage Inspections?

Inspections are necessary to verify mapping and confirm the maintenance needs, if any, of our *drainage systems*. In addition, we will confirm the drainage network is complied with the local Stormwater Rules and Regulations, and the Municipal Separate Storm and Sanitary System.

What Does This Mean for Me?

Per our *Stormwater Rules and Regulations*, Sections 3.5 a.xv., and 3.6, if a pipe is connected to our drainage systems, and it is discharging clean water to our systems, it may mean an after-the-fact Drainage Release Form and plans. If the pipe contains anything other than stormwater, the pipe will need to be removed as soon as possible (*Stormwater Rules and Regulations*, Sections 3.2 and 3.4.).

SAFETY FIRST

Crews will be wearing reflective vests or shirts, and driving Town vehicles.

Often times, drainage structures are located within the street, either near a sidewalk, or in the center of the road. Drive slow in work areas, and keep a safe distance from our crews.

If you have any questions, please feel free to contact our office.

Sincerely,

Eric Ryder
DPW Director

APPENDIX J: IDDE EDUCATION AND OUTREACH FLYER



Stormwater Division

ALLOWABLE DISCHARGES AND CONNECTIONS

The following are **allowable discharges to our drains:**

- Water Line flushing
- Landscape irrigation
- Diverted stream flows
- Uncontaminated groundwater infiltration
- Pumped groundwater
- Potable water discharges
- Foundation drains
- Air conditioning condensation
- Irrigation water, springs
- Water from crawl space pumps
- Footing drains
- Lawn watering
- Residential car washing
- Flows from streams and wetlands
- Dechlorinated swimming pool
- Street wash waters
- Wash waters free of soap

ABOUT THE STORMWATER DIVISION

The Stormwater Division began in Hudson in August of 2023. Responsible for administering the **Municipal Separate Storm and Sewer Permit (MS4)**, the Stormwater Division:

- Performs certain aspects of construction oversight
- Administers the *Stormwater Management Program*
- Conducts inspections to confirm compliance with *water criteria* with the MS4 Permit
- Implements an Education and Outreach Program
- Develops mapping, reports, and plans for the MS4 Permit requirements



TO LEARN MORE

To learn more, or report a stormwater issue, visit our website:
www.townofhudson.org/stormwater

CONTACT US!



978-562-9333, extension 324



stormwater@townofhudson.org



Monday-Friday: 7:30 a.m.-3:30 p.m.



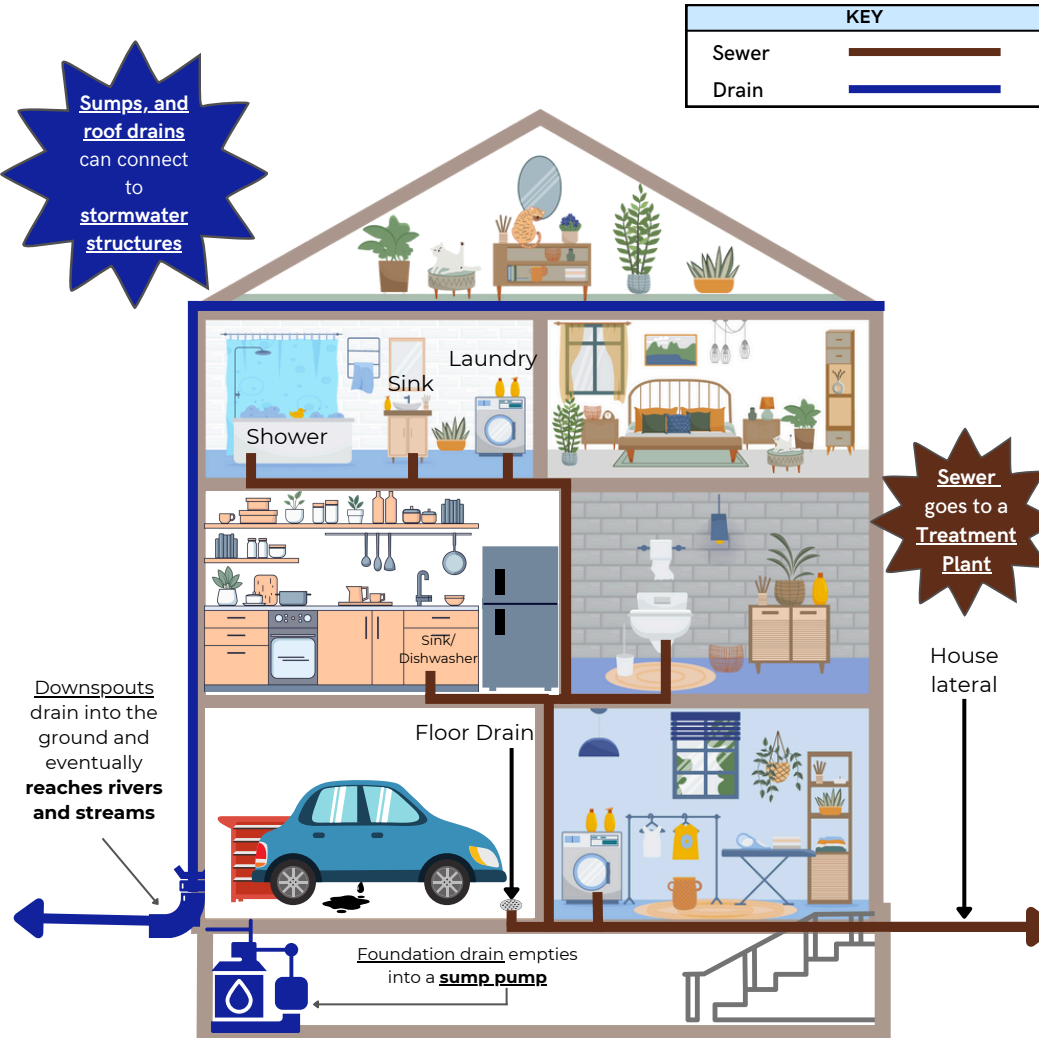
www.townofhudson.org/stormwater



ILLICIT DISCHARGES

Cleaner Drains, Cleaner Waters:

Your Guide to Keeping Hudson Clean



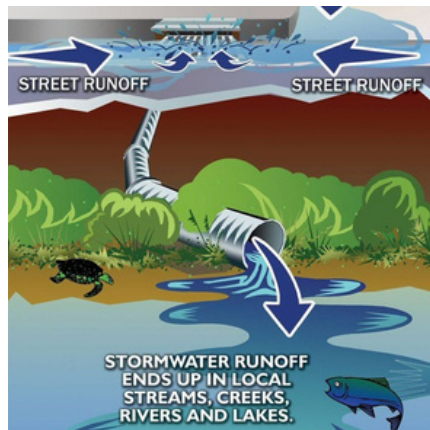
CONNECTING SEWER TO DRAINS IS ILLEGAL!!!
Your bathroom, sinks, showers/tubs, & washing machines
MUST CONNECT TO SEWER OR SEPTIC SYSTEMS!

Clean Drains = Clean Waterways

DOWNSTREAM FOR YOU, IS UPSTREAM FOR SOMEBODY ELSE

The Department of Public Works maintains three types of underground structures:

1. **Water**- Water services from town lines to service your home/business
2. **Sewer**- collects wastewater from sinks, toilets, dishwashers, and washing machines (laundry)
3. **Drains**- collects water from rain and snow melt.



While water and sewer gets treated, **stormwater runs into our drainage structures, and empties to streams and rivers UNTREATED.** As it runs across the land and streets, it carries pollutants like yard waste, pet waste, and more.

ILLEGAL POLLUTION

The following are **illegal connections or discharges to our drainage system**:

- Wash waters from dishwashers and/or laundry,
- Sanitary wastewater, or septic system effluents
- Grey waters
- Oil, hydraulic fluid, or hazardous materials
- Discarded household hazardous wastes and cooking oil
- Fertilizers, pesticides, herbicides
- Sediment (from eroded land)
- Pet waste
- Yard waste
- Floor drains



This photo of an *illicit discharge* displays a white liquid instead of a clear water discharge which indicates a polluted flow from a drainage system.

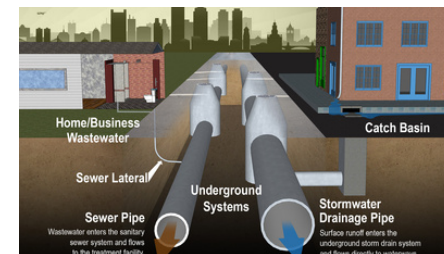
NEVER connect to drainage structures without notifying DPW! Polluted flows disturb and even cancel recreational uses (i.e. swimming/boating), and harm ecosystems!



Why Stormwater Matters

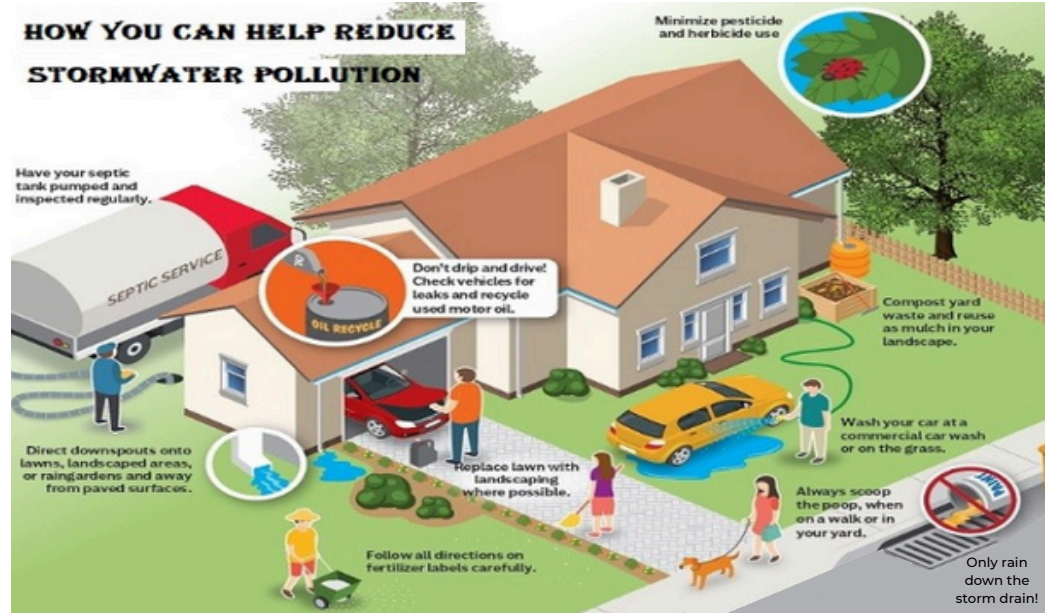
HOW IS STORMWATER DIFFERENT FROM WASTEWATER

Sewer/ Waste water is water discharged from bathrooms, sinks, showers, kitchens and other plumbing components. This water is carried through the Town's sewer pipes to be treated. Sanitary sewers are designed to carry waste water away from toilets, dishwashers, sinks etc. The pipes are smaller in size than the stormwater pipes.



Stormwater is water from rain or precipitation that drains into the street's drainage system, where it flows into streams and creeks untreated. These drain systems help prevent flooding and erosion. Rain gutters from your homes and sump pumps from basements carry ground water / stormwater. Stormwater is not treated prior to entering waterways. Stormwater pipes are designed to carry rainwater away and are normally much larger in size than sanitary sewers.

HOW YOU CAN HELP REDUCE STORMWATER POLLUTION



Why Am I Receiving This Message?

During regular inspections of storm drains, or mapping verification, DPW personnel observed within your area:

1. Pollutants within our drainage system,
2. Pollutants downstream in a stream or lake, or
3. Unmapped pipe connections to our systems.

If your property is tied to our system legally, through an **authorized Drainage Release**, you are covered. If not, we are providing an opportunity to property owners to correct sewer and drainage discharges. Public education is our **first step before we enforce the Illicit Discharge Detection and Elimination Program.**



APPENDIX K: PUBLIC REPORTING TRACKING SHEET

[illegible]

[illegible]